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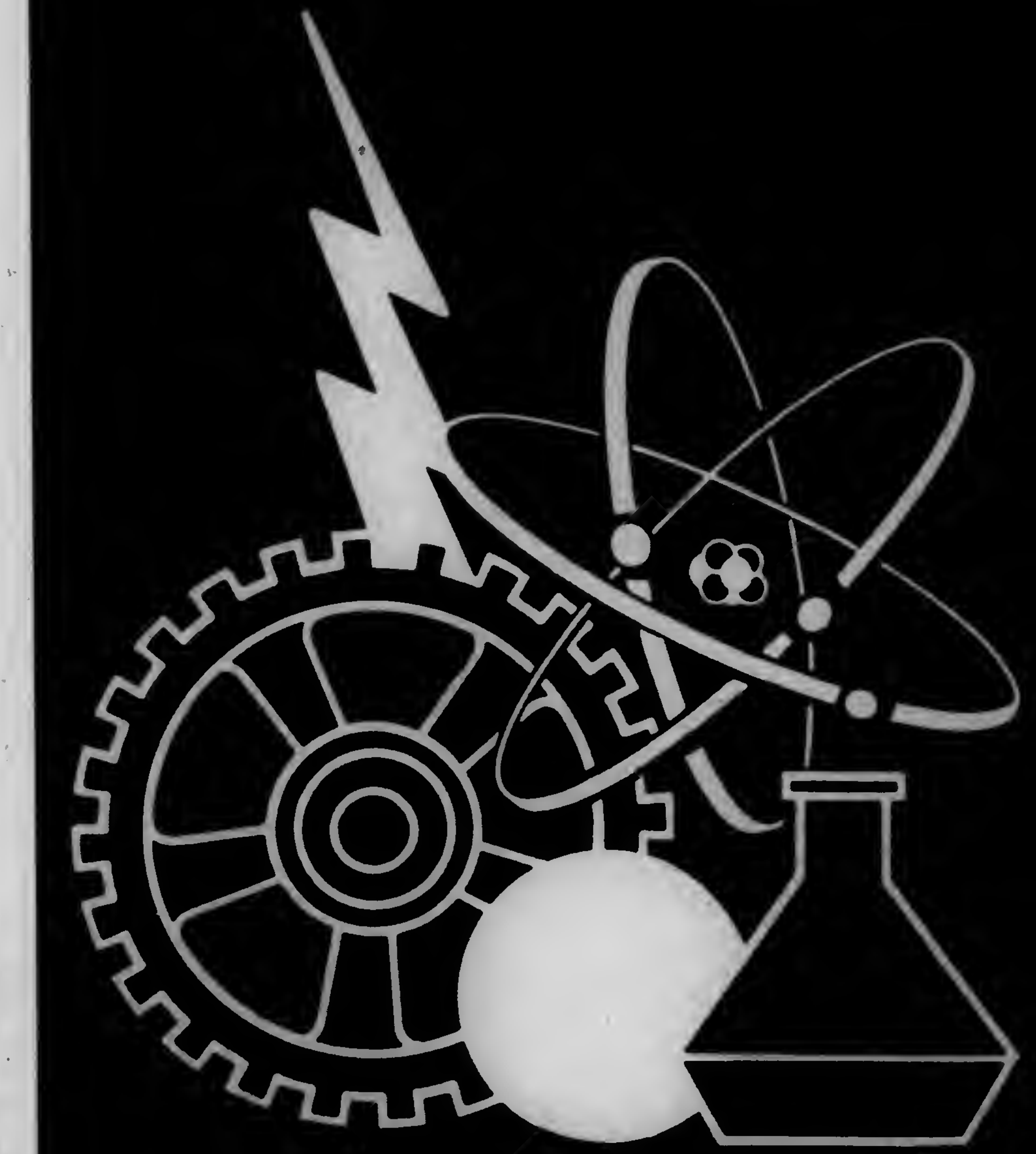
December 22, 1998



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December 22, 1998 Volume 1217 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1214 O.G. 47, on September 15, 1998.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1998, and were announced in the *Official Gazette* at 1213 O.G. 153, on August 18, 1998.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a and filing fee under 37 CFR 1.16(a) paid)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	*	*
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	*	*
USPTO was ISA but not IPEA	*	*
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	*	*
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	*	*
Other National fees		
— For each independent claim in excess of 3	*	*
— For each claim in excess of 20.	*	*
— For each application containing a multiple dependent claim	*	*
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Sep. 16, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on December 19, 1995 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,475,878 through 5,477,557
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 17, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,072,453 through 5,073,983
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 15, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,712,251 through 4,713,841
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) ....*
By other than a small entity..*

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) ....*
By other than a small entity..*

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) ....*
By other than a small entity..*

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity..$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional..$1,640.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON October 14, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,616,372	06/819,135	10/14/86
4,616,377	06/662,880	10/14/86
4,616,385	06/644,008	10/14/86
4,616,387	06/659,531	10/14/86
4,616,389	06/722,855	10/14/86
4,616,394	06/733,102	10/14/86
4,616,400	06/684,523	10/14/86
4,616,403	06/646,659	10/14/86
4,616,428	06/695,260	10/14/86
4,616,430	06/623,922	10/14/86
4,616,438	06/668,802	10/14/86
4,616,450	06/708,499	10/14/86
4,616,469	06/732,904	10/14/86
4,616,477	06/751,190	10/14/86
4,616,481	06/696,217	10/14/86
4,616,486	06/747,109	10/14/86
4,616,487	06/768,760	10/14/86
4,616,503	06/714,727	10/14/86
4,616,512	06/674,165	10/14/86
4,616,513	06/725,500	10/14/86
4,616,517	06/828,585	10/14/86
4,616,518	06/645,375	10/14/86
4,616,534	06/664,039	10/14/86
4,616,536	06/806,978	10/14/86
4,616,537	06/782,977	10/14/86
4,616,539	06/756,652	10/14/86
4,616,542	06/648,380	10/14/86
4,616,550	06/641,966	10/14/86
4,616,553	06/698,811	10/14/86
4,616,557	06/753,725	10/14/86
4,616,565	06/622,613	10/14/86
4,616,568	06/634,102	10/14/86
4,616,572	06/661,582	10/14/86
4,616,579	06/718,493	10/14/86
4,616,580	06/694,033	10/14/86
4,616,583	06/767,584	10/14/86
4,616,585	06/793,824	10/14/86
4,616,591	06/724,536	10/14/86
4,616,604	06/548,863	10/14/86
4,616,608	06/676,006	10/14/86
4,616,610	06/716,820	10/14/86
4,616,621	06/542,994	10/14/86
4,616,622	06/639,399	10/14/86
4,616,635	06/719,687	10/14/86
4,616,654	06/658,861	10/14/86
4,616,660	06/680,007	10/14/86
4,616,673	06/805,266	10/14/86
4,616,677	06/723,135	10/14/86
4,616,678	06/771,026	10/14/86
4,616,684	06/703,746	10/14/86
4,616,688	06/562,141	10/14/86
4,616,698	06/368,569	10/14/86
4,616,700	06/652,175	10/14/86
4,616,702	06/606,472	10/14/86
4,616,705	06/843,858	10/14/86
4,616,713	06/676,491	10/14/86
4,616,716	06/593,678	10/14/86
4,616,720	06/653,841	10/14/86
4,616,721	06/675,354	10/14/86
4,616,728	06/711,439	10/14/86
4,616,737	06/677,330	10/14/86
4,616,744	06/691,270	10/14/86
4,616,768	06/616,048	10/14/86
4,616,779	06/632,060	10/14/86
4,616,783	06/640,512	10/14/86
4,616,784	06/673,294	10/14/86
4,616,785	06/403,487	10/14/86
4,616,788	06/698,246	10/14/86
4,616,789	06/541,096	10/14/86
4,616,794	06/769,079	10/14/86
4,616,796	06/364,407	10/14/86
4,616,799	06/786,164	10/14/86
4,616,804	06/575,400	10/14/86
4,616,805	06/740,575	10/14/86
4,616,806	06/751,474	10/14/86
4,616,815	06/708,300	10/14/86
4,616,816	06/778,615	10/14/86
4,616,817	06/606,684	10/14/86
4,616,820	06/730,159	10/14/86
4,616,821	06/715,940	10/14/86
4,616,823	06/640,775	10/14/86
4,616,825	06/708,019	10/14/86
4,616,837	06/808,006	10/14/86
4,616,846	06/765,341	10/14/86
4,616,848	06/771,766	10/14/86
4,616,874	06/615,045	10/14/86
4,616,875	06/542,458	10/14/86
4,616,882	06/645,928	10/14/86
4,616,883	06/789,265	10/14/86
4,616,897	06/681,400	10/14/86
4,616,900	06/595,686	10/14/86
4,616,902	06/629,317	10/14/86
4,616,907	06/722,263	10/14/86
4,616,908	06/632,449	10/14/86
4,616,911	06/738,313	10/14/86
4,616,915	06/677,090	10/14/86
4,616,924	06/594,624	10/14/86
4,616,928	06/622,769	10/14/86
4,616,931	06/549,507	10/14/86
4,616,933	06/593,882	10/14/86
4,616,935	06/683,584	10/14/86
4,616,945	06/696,689	10/14/86
4,616,953	06/781,030	10/14/86
4,616,955	06/661,855	10/14/86
4,616,956	06/618,298	10/14/86
4,616,965	06/583,712	10/14/86
4,616,966	06/540,686	10/14/86
4,616,973	06/687,778	10/14/86
4,616,982	06/661,944	10/14/86
4,616,992	06/743,948	10/14/86
4,617,001	06/459,572	10/14/86
4,617,009	06/637,046	10/14/86
4,617,020	06/662,498	10/14/86
4,617,022	06/784,689	10/14/86
4,617,025	06/725,702	10/14/86
4,617,035	06/675,846	10/14/86
4,617,044	06/769,210	10/14/86
4,617,049	06/768,062	10/14/86
4,617,063	06/710,028	10/14/86
4,617,072	06/633,870	10/14/86
4,617,076	06/651,580	10/14/86
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4,617,107	06/531,891	10/14/86
4,617,108	06/736,183	10/14/86
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4,617,124	06/397,762	10/14/86
4,617,127	06/736,047	10/14/86
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4,617,142	06/717,040	10/14/86
4,617,150	06/769,536	10/14/86
4,617,151	06/712,291	10/14/86
4,617,152	06/703,056	10/14/86
4,617,155	06/701,372	10/14/86
4,617,157	06/725,805	10/14/86
4,617,164	06/571,069	10/14/86
4,617,173	06/676,694	10/14/86
4,617,182	06/769,230	10/14/86
4,617,183	06/771,574	10/14/86
4,617,186	06/687,276	10/14/86
4,617,195	06/644,273	10/14/86
4,617,206	06/645,884	10/14/86
4,617,207	06/639,030	10/14/86
4,617,209	06/689,792	10/14/86
4,617,219	06/685,481	10/14/86
4,617,224	06/661,069	10/14/86
4,617,227	06/710,813	10/14/86
4,617,247	06/697,580	10/14/86
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4,617,254	06/723,009	10/14/86
4,617,274	06/534,848	10/14/86
4,617,279	06/775,355	10/14/86
4,617,285	06/713,600	10/14/86
4,617,287	06/782,806	10/14/86
4,617,290	06/630,245	10/14/86
4,617,293	06/613,131	10/14/86
4,617,300	06/652,707	10/14/86
4,617,305	06/582,314	10/14/86
4,617,315	06/738,043	10/14/86
4,617,331	06/750,840	10/14/86
4,617,335	06/758,149	10/14/86
4,617,337	06/673,005	10/14/86
4,617,340	06/740,983	10/14/86
4,617,343	06/602,789	10/14/86
4,617,344	06/732,239	10/14/86
4,617,350	06/826,373	10/14/86
4,617,363	06/707,013	10/14/86
4,617,384	06/426,457	10/14/86
4,617,387	06/640,907	10/14/86
4,617,395	06/660,956	10/14/86
4,617,399	06/718,681	10/14/86
4,617,402	06/528,454	10/14/86
4,617,411	06/715,445	10/14/86
4,617,424	06/608,464	10/14/86
4,617,427	06/701,288	10/14/86
4,617,428	06/659,398	10/14/86
4,617,431	06/557,432	10/14/86
4,617,435	06/753,777	10/14/86
4,617,441	06/623,788	10/14/86
4,617,444	06/718,066	10/14/86
4,617,450	06/477,725	10/14/86
4,617,455	06/774,462	10/14/86
4,617,461	06/603,876	10/14/86
4,617,470	06/692,761	10/14/86
4,617,480	06/663,517	10/14/86
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4,617,490	06/679,191	10/14/86
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4,617,512	06/511,076	10/14/86
4,617,521	06/741,263	10/14/86
4,617,531	06/775,926	10/14/86
4,617,533	06/701,391	10/14/86
4,617,543	06/694,427	10/14/86

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4,617,546	06/657,924	10/14/86
4,617,562	06/483,729	10/14/86
4,617,564	06/542,327	10/14/86
4,617,568	06/620,029	10/14/86
4,617,570	06/526,848	10/14/86
4,617,577	06/532,734	10/14/86
4,617,578	06/699,159	10/14/86
4,617,582	06/622,246	10/14/86
4,617,592	06/473,400	10/14/86
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4,617,601	06/491,141	10/14/86
4,617,603	06/706,134	10/14/86
4,617,607	06/807,258	10/14/86
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4,617,615	06/682,561	10/14/86
4,617,618	06/585,786	10/14/86
4,617,639	06/638,913	10/14/86
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4,617,646	06/626,161	10/14/86
4,617,653	06/566,323	10/14/86
4,617,659	06/669,358	10/14/86
4,617,661	06/669,229	10/14/86
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4,617,671	06/696,357	10/14/86
4,617,672	06/775,538	10/14/86
4,617,675	06/709,580	10/14/86

PATENTS WHICH EXPIRED ON October 9, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,961,234	07/328,288	10/09/90
4,961,235	07/344,314	10/09/90
4,961,238	07/214,337	10/09/90
4,961,239	07/234,608	10/09/90
4,961,240	07/320,174	10/09/90
4,961,244	07/217,403	10/09/90
4,961,245	07/475,392	10/09/90
4,961,249	07/466,932	10/09/90
4,961,252	07/447,831	10/09/90
4,961,256	07/417,628	10/09/90
4,961,257	07/449,706	10/09/90
4,961,258	07/338,082	10/09/90
4,961,260	07/310,242	10/09/90
4,961,263	07/448,625	10/09/90
4,961,264	07/313,381	10/09/90
4,961,276	07/206,436	10/09/90
4,961,278	07/326,495	10/09/90
4,961,279	07/359,204	10/09/90
4,961,281	07/438,787	10/09/90
4,961,285	07/312,607	10/09/90
4,961,286	07/366,497	10/09/90
4,961,287	07/399,889	10/09/90
4,961,288	07/250,843	10/09/90
4,961,289	07/410,015	10/09/90
4,961,292	07/333,233	10/09/90
4,961,296	07/401,500	10/09/90
4,961,300	07/291,789	10/09/90
4,961,309	07/341,801	10/09/90
4,961,319	07/289,177	10/09/90
4,961,322	07/291,144	10/09/90
4,961,327	07/360,686	10/09/90
4,961,329	07/407,966	10/09/90
4,961,332	07/197,837	10/09/90
4,961,334	06/825,668	10/09/90
4,961,343	07/382,900	10/09/90
4,961,345	07/129,521	10/09/90
4,961,349	07/408,076	10/09/90
4,961,351	07/311,526	10/09/90
4,961,354	06/833,155	10/09/90
4,961,358	07/330,691	10/09/90
4,961,360	07/250,519	10/09/90
4,961,364	07/158,562	10/09/90
4,961,373	07/243,905	10/09/90
4,961,374	07/493,366	10/09/90
4,961,381	07/350,829	10/09/90
4,961,382	07/164,612	10/09/90
4,961,389	07/410,400	10/09/90
4,961,392	07/319,347	10/09/90
4,961,394	07/328,124	10/09/90
4,961,411	07/191,132	10/09/90
4,961,416	07/364,156	10/09/90
4,961,426	07/234,229	10/09/90
4,961,428	07/189,156	10/09/90
4,961,431	07/149,190	10/09/90
4,961,432	07/308,763	10/09/90
4,961,443	07/449,687	10/09/90
4,961,444	07/382,609	10/09/90
4,961,451	07/225,937	10/09/90
4,961,452	07/346,692	10/09/90
4,961,453	07/360,441	10/09/90
4,961,461	07/207,573	10/09/90
4,961,463	07/343,219	10/09/90
4,961,464	07/408,267	10/09/90
4,961,469	07/341,819	10/09/90
4,961,471	07/380,889	10/09/90
4,961,472	07/377,126	10/09/90
4,961,478	07/326,385	10/09/90
4,961,484	07/340,547	10/09/90
4,961,488	07/363,976	10/09/90
4,961,490	07/158,617	10/09/90
4,961,500	07/452,056	10/09/90
4,961,505	07/464,547	10/09/90
4,961,506	07/207,254	10/09/90
4,961,515	07/413,118	10/09/90
4,961,521	07/439,623	10/09/90
4,961,528	07/326,583	10/09/90
4,961,531	07/247,235	10/09/90
4,961,533	07/428,408	10/09/90
4,961,538	07/179,078	10/09/90
4,961,539	07/388,020	10/09/90
4,961,546	07/417,956	10/09/90
4,961,550	07/301,774	10/09/90
4,961,556	07/322,366	10/09/90
4,961,559	07/451,835	10/09/90
4,961,567	07/319,682	10/09/90
4,961,582	07/408,182	10/09/90
4,961,590	07/310,266	10/09/90
4,961,591	07/288,944	10/09/90
4,961,593	07/271,899	10/09/90
4,961,596	07/351,366	10/09/90
4,961,599	07/229,969	10/09/90
4,961,606	07/249,779	10/09/90
4,961,609	07/383,931	10/09/90
4,961,617	07/381,954	10/09/90
4,961,618	07/361,078	10/09/90
4,961,622	07/312,624	10/09/90
4,961,626	07/313,686	10/09/90
4,961,634	07/365,795	10/09/90
4,961,637	07/258,170	10/09/90
4,961,638	07/318,953	10/09/90
4,961,641	07/443,721	10/09/90
4,961,643	07/307,538	10/09/90
4,961,654	07/335,467	10/09/90
4,961,658	07/206,315	10/09/90
4,961,661	06/904,347	10/09/90
4,961,663	07/434,753	10/09/90
4,961,668	07/429,196	10/09/90
4,961,669	07/304,451	10/09/90
4,961,671	07/484,479	10/09/90
4,961,676	07/277,285	10/09/90
4,961,682	07/247,527	10/09/90
4,961,688	07/294,409	10/09/90
4,961,695	07/316,705	10/09/90
4,961,715	07/294,750	10/09/90
4,961,721	07/327,193	10/09/90
4,961,730	07/414,005	10/09/90
4,961,742	07/328,491	10/09/90
4,961,747	07/279,600	10/09/90
4,961,755	07/286,547	10/09/90
4,961,763	07/340,368	10/09/90
4,961,765	07/338,876	10/09/90

Patent Number	Application Number	Issue Date
4,961,766	07/396,037	10/09/90
4,961,767	07/373,628	10/09/90
4,961,771	07/290,664	10/09/90
4,961,774	07/153,718	10/09/90
4,961,783	07/204,160	10/09/90
4,961,786	07/345,874	10/09/90
4,961,796	07/319,089	10/09/90
4,961,798	07/415,581	10/09/90
4,961,799	07/336,200	10/09/90
4,961,802	07/268,496	10/09/90
4,961,814	07/344,604	10/09/90
4,961,815	07/303,440	10/09/90
4,961,818	06/747,292	10/09/90
4,961,826	06/897,986	10/09/90
4,961,829	07/251,813	10/09/90
4,961,842	07/267,943	10/09/90
4,961,844	07/332,020	10/09/90
4,961,848	07/352,957	10/09/90
4,961,853	07/378,571	10/09/90
4,961,863	07/321,617	10/09/90
4,961,864	07/316,288	10/09/90
4,961,866	07/179,091	10/09/90
4,961,867	07/310,798	10/09/90
4,961,871	07/436,274	10/09/90
4,961,873	07/398,346	10/09/90
4,961,879	07/204,137	10/09/90
4,961,880	07/239,146	10/09/90
4,961,886	07/204,436	10/09/90
4,961,897	07/308,500	10/09/90
4,961,901	07/339,747	10/09/90
4,961,907	07/322,262	10/09/90
4,961,908	07/119,110	10/09/90
4,961,912	07/140,059	10/09/90
4,961,913	07/238,735	10/09/90
4,961,914	07/218,858	10/09/90
4,961,915	06/815,054	10/09/90
4,961,919	07/294,311	10/09/90
4,961,921	07/341,322	10/09/90
4,961,930	07/188,291	10/09/90
4,961,939	07/360,630	10/09/90
4,961,946	07/322,741	10/09/90
4,961,948	07/313,998	10/09/90
4,961,949	07/288,864	10/09/90
4,961,950	07/400,399	10/09/90
4,961,952	07/211,230	10/09/90
4,961,954	07/304,479	10/09/90
4,961,960	06/600,042	10/09/90
4,961,966	07/477,390	10/09/90
4,961,968	07/329,618	10/09/90
4,961,971	07/285,922	10/09/90
4,961,972	07/018,599	10/09/90
4,961,984	07/373,581	10/09/90
4,962,002	07/373,693	10/09/90
4,962,006	07/449,072	10/09/90
4,962,021	06/876,473	10/09/90
4,962,022	06/910,413	10/09/90
4,962,024	07/230,933	10/09/90
4,962,035	07/127,214	10/09/90
4,962,041	07/330,151	10/09/90
4,962,054	07/328,880	10/09/90
4,962,063	07/321,943	10/09/90
4,962,065	07/478,028	10/09/90
4,962,068	07/466,086	10/09/90
4,962,070	07/125,221	10/09/90
4,962,071	07/346,429	10/09/90
4,962,077	07/378,565	10/09/90
4,962,079	07/286,048	10/09/90
4,962,092	07/361,890	10/09/90
4,962,096	07/172,581	10/09/90
4,962,101	07/396,163	10/09/90
4,962,102	07/378,894	10/09/90
4,962,106	07/308,349	10/09/90
4,962,108	07/282,169	10/09/90
4,962,118	07/311,327	10/09/90
4,962,123	07/237,748	10/09/90
4,962,125	07/235,654	10/09/90
4,962,129	06/834,689	10/09/90
4,962,136	07/185,535	10/09/90
4,962,137	07/326,932	10/09/90
4,962,139	07/150,375	10/09/90
4,962,143	07/424,638	10/09/90
4,962,145	07/282,888	10/09/90
4,962,146	07/259,455	10/09/90
4,962,147	07/199,553	10/09/90
4,962,148	07/242,025	10/09/90
4,962,153	07/466,542	10/09/90
4,962,166	07/233,935	10/09/90
4,962,167	07/271,108	10/09/90
4,962,176	06/945,126	10/09/90
4,962,178	07/266,555	10/09/90
4,962,182	07/289,272	10/09/90
4,962,185	07/415,834	10/09/90
4,962,196	07/331,072	10/09/90
4,962,204	07/315,158	10/09/90
4,962,205	07/392,482	10/09/90
4,962,209	07/020,960	10/09/90
4,962,211	07/445,977	10/09/90
4,962,215	07/285,532	10/09/90
4,962,216	07/417,222	10/09/90
4,962,217	07/460,788	10/09/90
4,962,225	07/176,597	10/09/90
4,962,234	07/201,270	10/09/90
4,962,238	07/417,112	10/09/90
4,962,239	07/456,702	10/09/90
4,962,240	07/321,067	10/09/90
4,962,249	07/480,709	10/09/90
4,962,253	07/397,150	10/09/90
4,962,270	07/315,867	10/09/90
4,962,291	07/403,440	10/09/90
4,962,293	07/408,566	10/09/90
4,962,294	07/322,955	10/09/90
4,962,300	06/239,608	10/09/90
4,962,303	07/371,884	10/09/90
4,962,305	07/387,349	10/09/90
4,962,306	07/444,926	10/09/90
4,962,307	07/340,534	10/09/90
4,962,308	07/229,591	10/09/90
4,962,315	07/291,159	10/09/90
4,962,319	07/400,217	10/09/90
4,962,326	07/222,842	10/09/90
4,962,330	07/326,756	10/09/90
4,962,349	07/296,268	10/09/90
4,962,350	07/398,817	10/09/90
4,962,355	07/263,306	10/09/90
4,962,360	07/354,663	10/09/90
4,962,367	07/291,494	10/09/90
4,962,369	07/308,771	10/09/90
4,962,371	07/270,555	10/09/90
4,962,384	07/443,054	10/09/90
4,962,385	07/306,847	10/09/90
4,962,387	07/355,669	10/09/90
4,962,416	07/182,639	10/09/90
4,962,417	07/193,549	10/09/90
4,962,425	07/263,023	10/09/90
4,962,426	07/334,330	10/09/90
4,962,429	07/297,823	10/09/90
4,962,431	07/311,778	10/09/90
4,962,436	07/324,354	10/09/90
4,962,438	07/336,193	10/09/90
4,962,439	07/301,975	10/09/90
4,962,445	07/341,602	10/09/90
4,962,448	07/251,636	10/09/90
4,962,453	07/307,765	10/09/90
4,962,460	07/309,800	10/09/90
4,962,471	07/260,155	10/09/90
4,962,472	07/273,035	10/09/90
4,962,473	07/283,439	10/09/90
4,962,474	07/121,611	10/09/90
4,962,477	06/505,617	10/09/90
4,962,479	07/195,759	10/09/90
4,962,486	07/204,135	10/09/90
4,962,490	07/467,109	10/09/90
4,962,491	07/478,227	10/09/90
4,962,496	07/260,343	10/09/90
4,962,513	07/430,369	10/09/90

Patent Number	Application Number	Issue Date
4,962,518	07/235,946	10/09/90
4,962,521	07/285,816	10/09/90
4,962,528	07/355,226	10/09/90
4,962,529	06/870,297	10/09/90

PATENTS WHICH EXPIRED ON October 11, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
5,353,439	07/972,217	10/11/94
5,353,440	08/012,650	10/11/94
5,353,441	08/120,057	10/11/94
5,353,443	08/095,003	10/11/94
5,353,444	08/062,132	10/11/94
5,353,446	08/132,098	10/11/94
5,353,447	08/197,616	10/11/94
5,353,448	07/906,418	10/11/94
5,353,450	07/910,142	10/11/94
5,353,453	08/103,284	10/11/94
5,353,454	08/110,890	10/11/94
5,353,456	07/962,417	10/11/94
5,353,457	08/132,673	10/11/94
5,353,458	07/821,222	10/11/94
5,353,460	08/125,784	10/11/94
5,353,461	08/123,054	10/11/94
5,353,465	07/954,493	10/11/94
5,353,470	08/029,023	10/11/94
5,353,471	07/992,526	10/11/94
5,353,472	07/997,022	10/11/94
5,353,473	08/045,302	10/11/94
5,353,476	08/035,416	10/11/94
5,353,477	07/927,400	10/11/94
5,353,482	08/040,773	10/11/94
5,353,483	08/085,624	10/11/94
5,353,489	08/030,810	10/11/94
5,353,494	07/970,712	10/11/94
5,353,502	07/819,333	10/11/94
5,353,504	08/055,186	10/11/94
5,353,506	07/996,076	10/11/94
5,353,509	08/097,553	10/11/94
5,353,511	07/989,567	10/11/94
5,353,515	08/219,072	10/11/94
5,353,518	08/072,053	10/11/94
5,353,519	07/969,570	10/11/94
5,353,522	08/095,561	10/11/94
5,353,524	08/150,597	10/11/94
5,353,527	08/131,385	10/11/94
5,353,528	08/150,797	10/11/94
5,353,532	07/902,918	10/11/94
5,353,533	08/004,911	10/11/94
5,353,540	08/126,098	10/11/94
5,353,542	08/023,937	10/11/94
5,353,546	08/081,982	10/11/94
5,353,547	08/099,317	10/11/94
5,353,555	07/950,995	10/11/94
5,353,559	07/748,628	10/11/94
5,353,562	08/179,511	10/11/94
5,353,569	07/983,061	10/11/94
5,353,576	07/283,198	10/11/94
5,353,577	08/106,044	10/11/94
5,353,578	08/025,025	10/11/94
5,353,587	08/221,972	10/11/94
5,353,593	08/028,526	10/11/94
5,353,596	08/020,791	10/11/94
5,353,597	08/144,911	10/11/94
5,353,600	08/159,385	10/11/94
5,353,602	08/036,901	10/11/94
5,353,605	08/113,129	10/11/94
5,353,607	08/001,324	10/11/94
5,353,609	08/012,763	10/11/94
5,353,616	07/690,528	10/11/94
5,353,619	07/983,825	10/11/94
5,353,633	07/773,902	10/11/94
5,353,639	08/063,742	10/11/94
5,353,665	07/964,646	10/11/94
5,353,671	08/111,289	10/11/94
5,353,677	08/114,884	10/11/94
5,353,678	08/064,960	10/11/94
5,353,680	08/158,804	10/11/94
5,353,690	08/026,433	10/11/94
5,353,691	08/047,976	10/11/94
5,353,694	08/105,510	10/11/94
5,353,701	08/102,700	10/11/94
5,353,703	07/952,689	10/11/94
5,353,704	08/089,731	10/11/94
5,353,709	07/925,074	10/11/94
5,353,710	07/957,550	10/11/94
5,353,715	07/924,712	10/11/94
5,353,716	07/854,426	10/11/94
5,353,717	08/104,918	10/11/94
5,353,718	07/970,726	10/11/94
5,353,720	08/077,379	10/11/94
5,353,724	08/069,736	10/11/94
5,353,727	07/866,577	10/11/94
5,353,738	08/020,679	10/11/94
5,353,739	08/126,889	10/11/94
5,353,742	08/134,722	10/11/94
5,353,746	08/063,877	10/11/94
5,353,747	08/206,330	10/11/94
5,353,756	08/092,439	10/11/94
5,353,758	07/901,428	10/11/94
5,353,762	08/059,995	10/11/94
5,353,776	08/034,605	10/11/94
5,353,778	08/065,365	10/11/94
5,353,784	08/042,295	10/11/94
5,353,787	08/074,792	10/11/94
5,353,793	07/797,538	10/11/94
5,353,796	07/722,914	10/11/94
5,353,809	08/046,192	10/11/94
5,353,821	08/141,396	10/11/94
5,353,824	08/166,700	10/11/94
5,353,826	08/007,198	10/11/94
5,353,828	08/139,535	10/11/94
5,353,830	07/838,257	10/11/94
5,353,843	07/988,748	10/11/94
5,353,858	07/919,790	10/11/94
5,353,861	07/865,492	10/11/94
5,353,863	08/206,941	10/11/94
5,353,864	08/024,702	10/11/94
5,353,867	08/037,942	10/11/94
5,353,868	08/049,823	10/11/94
5,353,870	08/068,143	10/11/94
5,353,878	07/990,788	10/11/94
5,353,883	08/083,334	10/11/94
5,353,885	08/089,356	10/11/94
5,353,887	08/013,581	10/11/94
5,353,892	08/136,124	10/11/94
5,353,895	08/074,425	10/11/94
5,353,900	08/024,511	10/11/94
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 374,558, Re. S.N. 29/095,205, Oct. 15, 1998, Cl. D06/333, INFANT CAR SEAT, James M. Kain, Owner of Record: *Lisco, Inc., Tampa, Fla.,* Attorney or Agent: Christopher B. Fagan, Ex. Gp.: 2913

5,519,212, Re. S.N. 09/082,320, May 21, 1998, Cl. 250/234, TOPPING ATOMIC FORCE MICROSCOPE WITH PHASE OR FREQUENCY DETECTION, Virgil B. Elings, et. al., Owner of Record: *Digital Instruments Inc., Santa Barbara, Calif.,* Attorney or Agent: Eckhard H. Kuesters, Ex. Gp.: 2878

5,568,207, Re. S.N. 09/182,862, Oct. 21, 1998, Cl. 351/57, AUXILIARY LENSES FOR EYEGLASSES, Richard Chao, Owner of Record: *Contour Optik Inc.,* Attorney or Agent: Peter P. Tong, Ex. Gp.: 2873

5,568,997, Re. S.N. 09/181,986, Oct. 29, 1998, Cl. 405/232, METHOD AND APPARATUS FOR FORCING PILES INTO OR OUT OF THE GROUND, Yrjo Raunisto, Owner of Record: *Inventor,* Attorney or Agent: Walter C. Gillis, Ex. Gp.: 3633

5,572,850, Re. S.N. 08/185,664, Nov. 4, 1998, Cl. 53/399, STRETCH WRAPPING WITH FILM SEVERING, Patrick R. Lancaster III, et. al., Owner of Record: *Lantech Technology Investment Corp., Louisville, Ky.,* Attorney or Agent: Elizabeth M. Burke, Ex. Gp.: 3725

5,602,227, Re. S.N. 09/178,151, Oct. 23, 1998, Cl. 528/361, BIODEGRADABLE COPOLYMERS, Isao Noda, Owner of Record: *The Proctor & Gamble Co., Cincinnati, Ohio,* Attorney or Agent: Bart S. Hersko, Ex. Gp.: 1711

5,605,622, Re. S.N. 09/185,731, Nov. 3, 1998, Cl. 210/169, SWIMMING POOL VACUUM SYSTEM, Michael J. Ferraro, Owner of Record: *Inventor,* Attorney or Agent: Robert A. Parsons, Ex. Gp.: 1747

5,611,705, Re. S.N. 09/166,238, Oct. 5, 1998, Cl. 439/266, MOUNTING APPARATUS FOR BALL GRID ARRAY DEVICE, Wayne K. Ptaff, Owner of Record: *Inventor,* Attorney or Agent: Jack A. Kanz, Ex. Gp.: 3202

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,993,131, Re. S.N. 90/005,152, Oct. 20, 1998, Cl. 029/024.5, METHOD AND APPARATUS OF INFINITELY SIZING A MINI BLIND, Delbert B. Graves, et. al., Owner of Record: *Newell Window Furnishings, Inc., Freeport, Ill.,* Attorney or Agent: Keith D. Lindenbaum, Foley and Lardner, Milwaukee, Wis., Ex. Gp.: 3726, Requester: Owner

5,362,754, Re. S.N. 90/005,155, Oct. 23, 1998, Cl. 514/566, M-EDTA PHARMECEUTICAL PREPARATIONS AND USES THEREOF, Issam Raad, et. al., Owner of Record: *Board of Regents, University of Texas System, Austin, Tex.,* Attorney or Agent: Arnold White and Durkee, Houston, Tex., Ex. Gp.: 1614, Requester: Charles R. Hoffmann, Hoffmann and Baron, Jericho, N.Y.

5,547,381, Re. S.N. 90/005,156, Oct. 23, 1998, Cl. 433/219, FANGS AND APPLICATION THEREOF, Donald W. Nutting, Owner of Record: *Inventor,* Attorney or Agent: Scott B. Allison, Chrisman Bynum and Johnson, Boulder, Colo., Ex. Gp.: 3732, Requester: Owner

5,596,656, Re. S.N. 90/005,153, Oct. 21, 1998, Cl. 382/186, UNISTROKES FOR COMPUTERIZED INTERPRETATION OF HANDWRITING, David Goldberg, Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Xerox Corp., Rochester, N.Y., Ex. Gp.: 2721, Requester: Bradley J. Hulbert, McDonnell Boehnen Hulbert and Berghoff, Chicago, Ill.

5,597,939, Re. S.N. 90/005,154, Oct. 22, 1998, Cl. 558/008, HERBICIDAL SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING SUBSTITUENTS BONDED VIA OXYGEN OF THE FORMULA, Klaus-Helmut Mul, Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Sprung Horn Schaefer and Biscoe, Tarrytown, N.Y., Ex. Gp.: 1613, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filling of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
November 2, 1998
DUE TO FAILURE TO RENEW

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Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner
for Patents (Acting)

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held August 27, 1997 and have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR § 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before February 5, 1999.

Buchel, Rudolph J., Jr., 7707 Stockwell Rd., Fredericksburg, VA 22417

Kim, Ki S., 4614 Wilwyn Way, Rockville, MD 20852

Spark, Matthew J., Townsend & Townsend & Crew, LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834

November 9, 1998

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held May 3, 1995 and have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR § 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the

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Director, Office of Enrollment and Discipline on or before February 5, 1999.

Yount, Steven R., 614 S. 18th St., #1, Arlington, VA 22202

November 24, 1998
KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR § 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before February 5, 1999.

Daniels, Kent J., 702 Seyton Dr., Nepean, Ont., K2H 9R9, Canada

Donnelly, Victoria, 3 Peary Way, Kanata, Ont., K2L 1Z9, Canada

Green, Lora M., 8034 Inverness Ridge Rd., Potomac, MD 20854

Kelley, Steven S., 4308 Lamarre Dr., Fairfax, VA 22030

Lutz, Laura C., 547 S. Saint Asaph St., Alexandria, VA 22314

Martineau, Louis, 4830 Harvard, Montreal, Que., H3X 3N9, Canada

Seccuro, Carman J., 3425 S. Utah St., Arlington, VA 22206

Travis, Gary M., 149 Hanna Rd., Toronto, Ont., M4G 3N6, Canada

November 9, 1998
KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Patent Term Extended Under 35 U.S.C. § 156(e)(2)

An order granting an interim extension of the term of the following patent was issued on September 15, 1998.

On January 8, 1997, Merck & Co., Inc., the owner of record in the Patent and Trademark Office (PTO) of U.S. Patent No. 4,199,569, filed an application for patent term extension under 35 U.S.C. § 156 based upon the regulatory review of the human drug product STROMECTOL® (ivermectin). The human drug product STROMECTOL® was approved for commercial marketing or use under section 505 of the Federal Food, Drug and Cosmetic Act by the Food and Drug Administration on November 22, 1996. The original term of the patent expired on October 3, 1997, but an interim extension under 35 U.S.C. § 156(e)(2) has been granted for a period of one year, i.e, until October 3, 1998. The patent claims the active ingredient ivermectin in the human drug product STROMECTOL® and a method of use of ivermectin. An extension of 1,026 days is requested.

PTO review of the application to date indicates that the subject patent would be eligible for extension of the patent term under 35 U.S.C. § 156. A final determination of the length of the extension of the patent term and issuance of a patent term extension certificate cannot be made until a final determination of the length of the regulatory review period is made by the Food and Drug Administration. Since the term of the patent, as already extended under 35 U.S.C. § 156(e)(2), would expire before a certificate of patent term extension can be issued, a second interim extension of the patent term is appropriate. The rights derived from an extension under 35 U.S.C. § 156(e), including an interim extension, are limited by 35 U.S.C. § 156(b).

A second interim extension under 35 U.S.C. § 156(e)(2) of the term of U.S. Patent No. 4,199,569 is granted for a period of one year from October 3, 1998, the expiration date of the patent, as extended by the prior one-year interim extension under 35 U.S.C. § 156(e)(2).

Patent Term Extended Under 35 U.S.C. § 156(e)(2)

An order granting an interim extension of the term of the following patent was issued on November 9, 1998.

SCM Chemicals, Inc., the owner of record in the Patent and Trademark Office (PTO) of U.S. Patent No. 4,209,430, filed an application for patent term extension under 35 U.S.C. § 156 on October 23, 1996 (certificate of mailing October 19, 1996), requesting an extension of 1,385 days. The original term of the patent is due to expire on November 24, 1998. The patent claims the food additive "Silvacote K," and a method of use of the food additive "Silvacote K." "Silvacote K" was approved by the Food and Drug Administration for commercial marketing or use on August 31, 1996. In accordance with the limitation of 35 U.S.C. § 156(g)(6)(C), applicant is entitled to an extension of at least two years.

The initial PTO review of the application to date indicates that the subject patent would be eligible for extension of the patent term under 35 U.S.C. § 156. A final determination of the length of the extension of the patent term and issuance of a patent term extension certificate cannot be made until a final determination of the length of the regulatory review period is made. Since the original term of the patent would expire before a certificate of patent term extension can be issued, an interim extension of the patent term is appropriate.

An interim extension under 35 U.S.C. § 156(e)(2) of the term of U.S. Patent No. 4,209,430 has been granted for a period of one year from the original expiration date of the patent.

Certificates of Correction for December 22, 1998

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5,801,437
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Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

November 2-6, 1998

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
11-4	EX	75/148,395	Moore Business Forms, Inc.	2(d)	Refusal Reversed		"LANDMARK VISTA" [pre-recorded computer programs related to real estate sold to real estate agents and sales people]	"LANDMARK CORPORATION" (and design) [general real estate brokerage services]	No
11-4	EX	75/061,117	American Home Improvement Products, Inc.	Section 6(a) disclaimer requirement (of "geographically descriptive" word "AMERICAN")	Refusal Affirmed		"AMERICAN HOMEPRO" [distributorships of home improvement products such as windows, doors, awnings, patio covers, patio enclosures, vinyl siding and kitchen cabinets]		No
11-6	EX (R)	74/688,234	Miavana Wholesale Co. Inc.	2(e)(4)	Request for Reconsideration Denied [Refusal Affirmed]		BATEY [canned vegetables, dried beans, fruit drinks and non-alcoholic malt based beverage, namely, malta]		No
11-6	EX	74/663,449	U.S. Cargo, Inc.	2(e)(2)	Refusal Affirmed		"U.S. CARGO" [towable trailers for carrying cargo and vehicles and for commercial purposes]		Yes

[1] EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Box Designations	Explanation
Box REISSUE	All new and continuing reissue application filings.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
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Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Assistant Commissioner for Trademarks
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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
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Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	(203) 946-8130
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
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New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
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	Cleveland Public Library	(216) 623-2870
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
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	Dallas Public Library	(214) 670-1468
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	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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NICHOLAS P. GODICI, (Acting) Assistant Commissioner for Patents
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TECHNOLOGY CENTERS		DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
1600	**BIOTECHNOLOGY, ORGANIC CHEMISTRY & DESIGNS**			
1610	Organic chemistry, bio-affecting & body treating composition	John E. Kittle	308-0193 308-7922	03/03/97
2900	Designs			12/13/93
1620	Immunology & plants	Mary C. Lee	308-2359	04/29/97
1640	Combinatorial, linker & non-heterocyclic chemistry		308-8494	10/08/96
1630	Recombinant molecular & micro-biology, multicellular organism	John J. Doll	308-1123 305-7230	12/01/96
1650	Non-recombinant molecular & micro-biology, non-immuno proteins & peptides			01/28/98
1700	**CHEMICAL AND MATERIAL ENGINEERING**			
1710	Synthetic resins	Theodore Morris	308-1495	04/01/97
1770	Stock materials & miscellaneous articles		305-3599	01/17/97
1720	Fluid separation & agitation, metal foundry, welding, plastic molding apparatus, fuels & related compositions	Richard V. Fisher	308-1193 305-3599	02/15/97
1730	Glass & paper making, tobacco, non-metallic molding, adhesive bonding, tires & coating apparatus			02/05/97
1740	Metallurgy, electrochemistry, cleaning, disinfecting, sterilizing, analytical chemistry & wave energy			12/21/96
1750	Chemical products & processes, solar cells & sputtering apparatuses	Esther M. Kepplinger	308-1495 305-3935	01/05/97
1760	Food technology, petroleum processing, coating & etching			06/03/96
2700	**COMMUNICATIONS AND INFORMATION PROCESSING**			
2710	Television	James L. Dwyer (Acting)	305-4800	09/01/96
2740	Audio, radio, telephone & speech processing		308-5401	10/16/96
2720	Image & Fax	Jin F. Ng	305-4800	10/17/96
2730	General communications & digital communication systems		305-5401	09/24/96
2750	Storage processing, multiple computers, & multiple process coordinating	Robert E. Garrett	305-0286 308-2177	07/07/96
2760	Specialized data processing	Joseph J. Rolla	305-9700 308-5355	07/07/96
2770	Computer graphics & data bases	Gerald Goldberg	305-9700 308-5355	07/02/96

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	TECHNOLOGY CENTERS	DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
2780	Processors, control systems, input/output	Joseph J. Rolla	305-9700 308-5355	08/12/96
2800	**PHYSICS, OPTICS, SYSTEMS COMPONENTS & ELECTRICAL ENGINEERING**			
2810	Semiconductors, electrical circuits, static memory, digital logic	Rolf G. Hille	306-3421 308-7725	06/25/96
2820	Semiconductors & electrical circuits			03/18/97
2830	Power generation & distribution music, electrical components & control circuits	Stewart J. Levy	308-0658 308-7722	01/12/97
2850	Photocopying, recorders, printing, measuring & testing	Margaret A. Focarino	306-3421 308-7725	08/26/96
2870	Liquid crystals, optical elements, optical systems, fiber optics, lasers, electric lamps, registers, optics, measuring & radiant energy	Janice A. Howell	308-0530 305-3594	09/18/96
3600	**TRANSPORTATION, CONSTRUCTION, AGRICULTURE & NATIONAL SECURITY**			
3610	Surface transportation & material handling	Richard A. Bertsch	308-1134 308-2177	09/09/96
3620	Static structures, closures, machine elements & power transmissions, civil engineering, connections, hardware & furniture	Al Lawrence Smith	308-1020 305-3597	02/24/97
3630	Supports & sign exhibiting			06/24/97
3640	Aeronautics, agriculture, earth moving/working, petroleum & mining, plant & animal husbandry, butchering, optics, radio wave & acoustic wave communication, data processing for vehicles, weaponry, nuclear systems & national security	John F. Terapane, Jr.	306-4180 306-4195	12/02/95
3700	**MECHANICAL ENGINEERING, MANUFACTURING AND PRODUCTS**			
3710	Amusement and education devices	Ethel Rollins-Cross	308-1078	10/23/96
3720	Packages, containers, manufacturing devices & processes, machine tools & hand tools		305-3579	12/21/96
3730	Medical instruments, diagnostic equipment, treatment devices, surgery & surgical supplies	John J. Love	308-0873 305-3139	11/28/96
3740	Thermal & combustion technology, motive and fluid power systems, textile manufacturing & apparel	Donald G. Kelly	308-0975 308-7763	11/18/96
3750	Fluid handling & dispensing			11/19/96

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of November 1, 1998

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308-9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/11/98	08/10/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308-9102—South Tower, 5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/98	06/15/98
Law Office 103—Michael A. Szoke, Managing Attorney, (703) 308-9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/13/98	06/08/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/98	08/17/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—South Tower, 6th Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/11/98	07/06/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—South Tower, 7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/26/98	08/04/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/28/98	08/18/98
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—South Tower, 8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/98	08/17/98
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308-9109—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/23/98	09/15/98
Law Office 112—Janice O'Lear, Managing Attorney, (703) 308-9112—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/98	07/16/98
Law Office 113—Meryl Hershkowitz, Managing Attorney, (703) 308-9113—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/29/98	07/06/98
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Sims, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	08/14/98	—0—
Renewals (All Classes)	09/08/98	—0—
Section 12(c) Publications (All Classes)	08/25/98	—0—

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1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

DECEMBER 22, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,298,604 (3690th)

CLOTRIMAZOLE-BETAMETHASONE DIPROPIONATE COMBINATION

Susan B. Hammell, Berkeley Heights, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Reexamination Request No. 90/004,624, May 8, 1997.

Reexamination Certificate for Patent 4,298,604, issued Nov. 3, 1981, Ser. No. 194,524, Oct. 6, 1980.

Int. Cl.^{6} A61K *31/56;31/415;31/58*

U.S. Cl. 514—180

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. A pharmaceutical composition comprising about 0.001 to about 0.33 percent by weight betamethasone dipropionate and about 0.01 to about 10 percent by weight clotrimazole, wherein the ratio of clotrimazole to bethamethasone dipropionate ranges from about 10 to about 30 to 1, in a pharmaceutically acceptable carrier.

B1 5,264,268 (3691st)

SANITARY NAPKIN WITH COMPOSITE COVER

Thomas J. Luceri, Bridgewater, and Deborah J. Parr, Plainsboro, both of N.J., assignors to McNeil-PPC, Inc., Milltown, N.J.

Reexamination Request No. 90/004,029, Nov. 27, 1995.

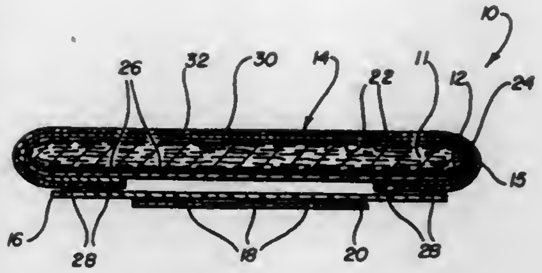
Reexamination Certificate for Patent 5,264,268, issued Nov. 23, 1993, Ser. No. 925,361, Aug. 4, 1992.

Continuation of Ser. No. 464,808, Jan. 16, 1990, Pat. No. 5,135,521.

Int. Cl.^{6} A61F *13/15;* **B32B** *5/24*

U.S. Cl. 428—138

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



Claim **1** is determined to be patentable as amended.

New claims **2–5** are added and determined to be patentable.

1. An absorbent article, said article comprising:

a. an absorbent body capable of absorbing a liquid;

b. a *substantially hydrophobic* liquid-permeable body-side liner superposed in facing relation with said absorbent body; and

c. a *slightly wicking* fibrous-flow modulating layer for modulating the flow of said liquid, said flow-modulating layer being in liquid communication with said absorbent body, being located between said absorbent body and said body-side liner [and], comprising heat-bonded bicomponent fibers, *and having a body-facing surface disposed toward said body-side liner bonded to said body-side liner,* wherein the average pore size of said absorbent body is less than the average pore size of said flow-modulating layer.

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REISSUES

DECEMBER 22, 1998

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

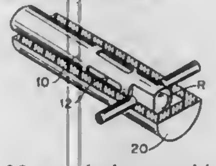
Re. 35,997
SELF CLEANING RECIPROCATING AND/OR ROTATING DEVICE

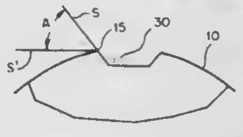
Dennis T. Pinkerton, West Islip, N.Y., assignor to Roper Holdings, Inc., Wilmington, Del.

Original No. 5,279,210, dated Jan. 18, 1994, Ser. No. 940,085, Sep. 3, 1992. Application for reissue Jan. 17, 1996, Ser. No. 587,997

Int. Cl.^{6} F01B *11/02;* **F16J** *10/00*

U.S. Cl. 92—170.1 **39 Claims**





28. A valveless, positive displacement pump for controlling the movement of a fluid from a fluid source to a fluid outlet comprising:

a substantially hollow sleeve;

a piston movably supported at least partially within said sleeve such that said sleeve overlaps at least a portion of said piston, said piston having an outer diameter dimensioned to provide a gap having a clearance of less than 0.0005 inches between said piston and said sleeve in said overlap area;

means for supplying fluid, said fluid comprising at least one component which will coagulate on the surface of at least one of said sleeve or said piston and decrease said clearance between said sleeve and said piston and tending to bind said piston to said sleeve;

said sleeve comprising a control portion and a journal portion, said control portion comprising at least one inlet and at least one outlet, wherein said inlet is in fluidic communication with said supplying means;

said piston further comprising at least one groove which extends entirely around the circumference of said piston forming a scraping edge which moves across a portion of said contact area to scrape said coagulum from said gap.

Re. 35,998
ELECTRIC COOKING APPARATUS

Hisashi Goto, Kakamigahara, Japan, assignor to Alco Kogyo Kabushiki Kaisha, Japan

Original No. 5,546,851, dated Aug. 20, 1996, Ser. No. 364,153, Dec. 27, 1994. Application for reissue Mar. 31, 1997, Ser. No. 828,516

Claims priority, application Japan, Dec. 27, 1993, 5-350791; Nov. 10, 1994, 6-302853

Int. Cl.^{6} A47J *27/00*

U.S. Cl. 99—446 **16 Claims**

1. A cooking apparatus, comprising:

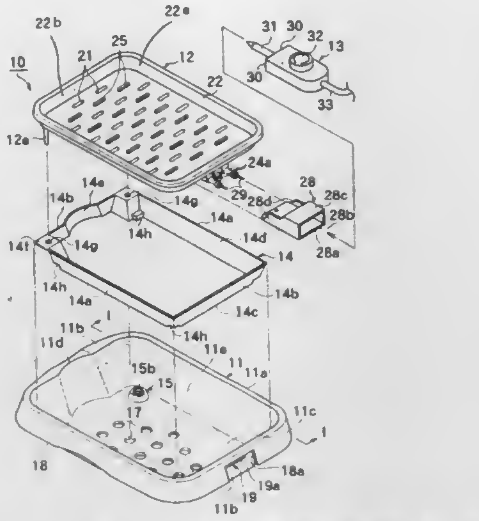
a cooking plate;

means for heating said cooking plate;

a plurality of drip holes in said cooking plate;

each of said drip holes being individually surrounded by **[**one of a separate projection and**]** a separate groove on a bottom side of said cooking plate;

a first container disposed below said cooking plate for supporting said cooking plate and for receiving a fluid dripping through said drip holes; and



a second container disposed below said first container for supporting said first container.

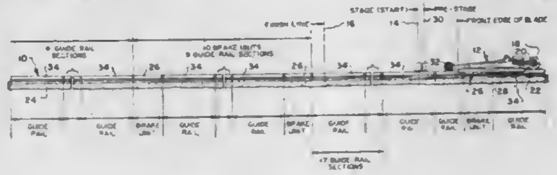
Re. 35,999
HUMAN AMUSEMENT RIDE

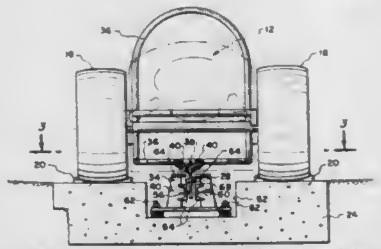
Leroy H. Gutknecht, Las Vegas, Nev., assignor to Thrilltime Entertainment International, Inc., Burnaby, Canada

Original No. 5,551,347, dated Sep. 3, 1996, Ser. No. 424,655, Apr. 19, 1995. Application for reissue Sep. 8, 1997, Ser. No. 925,054

Int. Cl.^{6} A63G *25/00*

U.S. Cl. 104—53 **15 Claims**





11. A human amusement ride comprising:

a track having a Start position, a Finish position and a braking area located past said Finish position;

a vehicle within which a human is to be located, said vehicle being mounted on said track, said vehicle to move from said Start position to said Finish position and then into said braking area;

a guide rail assembly included within said track, said guide rail assembly having at least one guide rail section, said guide rail section having a longitudinal through slot;

a guide blade mounted on said vehicle, said guide blade to connect with said slot as said vehicle that moves along said track, said guide blade to be continuously in engagement with said slot; and

a braking arrangement mounted within said braking area of said track, said braking arrangement being positioned to move between a non-braking position and a braking position, said *braking arrangement, in said braking position, applying a force against said guide blade to cause said vehicle to slow, said guide blade being positioned to both guide said vehicle in conjunction with said slot and brake said vehicle by said braking arrangement.*

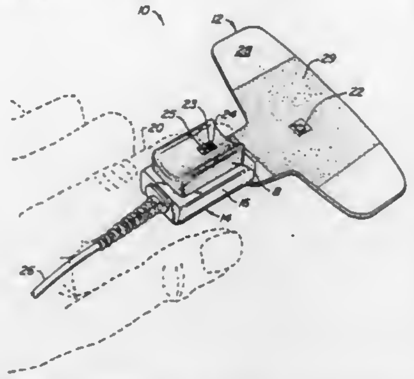
Re. 36,000
ADHESIVE PULSE OXIMETER SENSOR WITH REUSABLE PORTION

David B. Swedlow, Danville; Russell DeLonzor, Union City, and Jessica Warring, Millbrae, all of Calif., assignors to Nellcor Puritan Bennett Incorporated, Hayward, Calif.

Original No. 5,209,230, dated May 11, 1993, Ser. No. 741,290, Aug. 6, 1991. Continuation-in-part of Ser. No. 600,541, Oct. 19, 1990, abandoned. Application for reissue May 10, 1995, Ser. No. 437,964

Int. Cl.^{6} A61B *5/02*

U.S. Cl. 128—633 27 Claims



18. A sensor for attaching to a patient for electrooptical measurement of blood characteristics, comprising:

a disposable, flexible member having a plurality of conductors disposed on a substrate and including at least one electronic means for emitting or detecting electromagnetic radiation, said at least one electronic means being connected to at least one of said conductors disposed on said substrate;

conducting cable means for electrically connecting said electronic means to an external sensor monitoring system;

means for releasably connecting said flexible member conductors to said conducting cable means to provide a connection between said electronic means and said conducting cable means; and

means for securing said flexible member to said patient.

Re. 36,001
SAND MOLD MEMBER AND METHOD

June-Sang Siak, Troy; William Thomas Whited, Saginaw; Mark Allen Datte, Auburn, and Richard Michael Schreck, Bloomfield Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Original No. 5,582,231, dated Dec. 10, 1996, Ser. No. 431,923, Apr. 28, 1995. Application for reissue Aug. 18, 1997, Ser. No. 916,729

Int. Cl.^{6} B22C *1/20*

U.S. Cl. 164—525 33 Claims

1. A method of making a mold member for shaping molten metal [cash] *cage* thereagainst, comprising the steps of:

a. preparing a batch of coated and particles coated with an aqueous sol comprising water and sufficient gelatin to bind sand particles together upon drying, said gelatin consisting essentially of gelatins having a Bloom rating less than about 175 [grams] *Bloom*;

b. cooling the coated and particles sufficiently to gelatinize said sol as coating of gel on said sand particles;

c. conditioning the coated sand particles to provide conditioned sand particles having a water content in said gel between about 70% to about 85% by [volume] *weight*;

d. heating the conditioned sand particles in a mold sufficiently to (1) liquefy said gel and cause it to migrate along the surface of the sand particles and concentrate at contact points between contiguous said sand particles, and (2) there to coalesce with liquefied gel accumulated at said contact points; and

e. drying the liquefied gel in said mold to crystallize and harden said gel at said contact points sufficiently to form said mold member.

31. A foundry mold member comprising a plurality of sand particles each bound to the next by a binder which (1) is concentrated at contact points between contiguous said particles, (2) consists essentially of gelatins having a Bloom rating less than about 175 Bloom grams, and (3) is present in an amount between about 0.5% to about 1.6% by weight of said member.

Re. 36,002
TRANSMISSION SLEEVE FOR A DOWN HOLE HAMMER

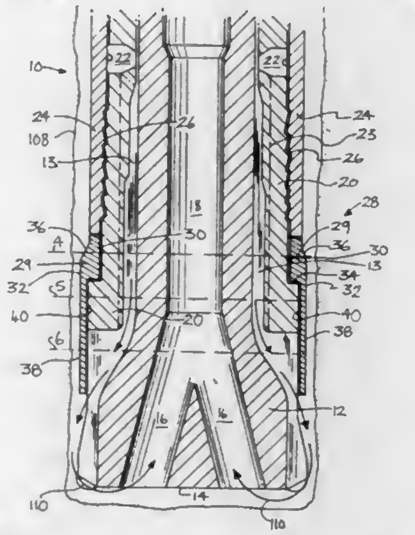
John Elsby, Lemming; Brian T. Sanfead, Connolly, and Andrew Greathead, Woodvale, all of Australia, assignors to SDS Digger Tools PTY, Ltd., Bayswater Western Australia, Australia

Original No. 5,154,244, dated Oct. 13, 1992, Ser. No. 691,725, Apr. 26, 1991. Continuation of Ser. No. 322,981, Oct. 13, 1994. Application for reissue Aug. 22, 1996, Ser. No. 701,542

Claims priority, application Australia, Apr. 26, 1990, PJ9817; Dec. 12, 1990, PK3850

Int. Cl.^{6} E21B *12/00*

U.S. Cl. 175—296 6 Claims



1. A sacrificial transmission sleeve for a reverse circulation down hole hammer of the percussive type actuated by a fluid under pressure, including an outer sleeve, a drill bit retaining means held in the outer sleeve, and a drill bit retained in the retaining means

and extending forwardly therefrom, a portion of the drill bit provided with longitudinal grooves forming exhaust passages for the fluid, the transmission sleeve comprising a body and an annular flange, the body being formed of a first inner surface and a second outer surface, the diameter of the second outer surface being greater than that of the outer sleeve and substantially the same as that of the drill bit, [the transmission sleeve being shaped for location between the outer sleeve and the drill bit retaining means such that they are longitudinally spaced apart,] the annular flange being of a diameter substantially the same as the drill bit and extending from the body towards the drill bit, the annular flange also being configured to encircle the portion of the drill bit provided with the longitudinal grooves to form a continuous shroud around at least a part of the grooves so as to assist in the downward passage of exhaust fluid to a face of the drill bit.

Re. 36,003
OCCUPANT RESTRAINT SYSTEM

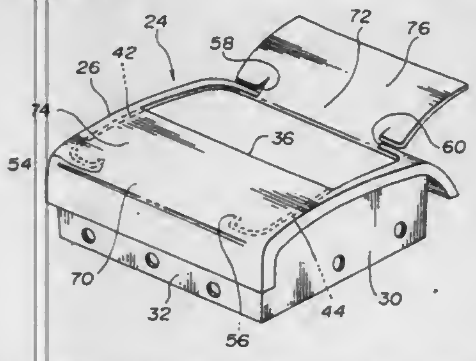
Izumi Sato, Fuji, Japan, assignor to Nihon Plast Co., Ltd., Fuji, Japan

Original No. 5,383,681, dated Jan. 24, 1995, Ser. No. 122,651, Sep. 17, 1993. Application for reissue Jan. 24, 1997, Ser. No. 787,128

Claims priority, application Japan, Sep. 29, 1992, 4-259656

Int. Cl.^{6} B60R *21/20*

U.S. Cl. 280—728.3 27 Claims



25. A container for a folded inflatable occupant restraint cushion for an occupant restraint system comprising:

a base wall having a substantially planar portion adapted to contain the folded inflatable occupant restraint cushion, with a cushion portion adjacent said base wall;

a first tear line extending across the substantially planar portion of said base wall and having opposite ends in the substantially planar portion of said base wall;

second tear lines extending from said opposite ends of said first tear line and along a peripheral edge of said base wall, respectively, each of said second tear lines having an end in the substantially planar portion of said base wall; and

third tear lines extending at an angle from the ends of said second tear lines toward said first tear line in the substantially planar portion of the base wall to define an integrally hinged tongue forcibly separable from said base wall by said cushion portion of said inflatable cushion, said third tear lines terminating in the substantially planar portion of the base wall before said first tear line;

said first tear line and said second tear lines cooperating to define a flap integrally hinged to said tongue and forcibly separable from said base wall and movable between a normally closed position and an open position by said cushion portion of said inflatable cushion.

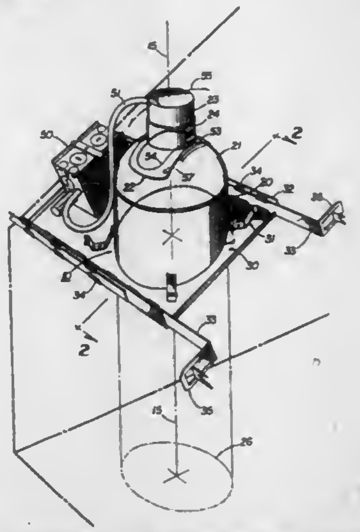
Re. 36,004
INCLINED CEILING DOWNLIGHT FIXTURES

Jon D. Hinnefeld, Greencastle; Mark E. Jennings, Crawfordsville, and Michael D. Wallace, Greencastle, all of Ind., assignors to NSI Enterprises, Inc., Atlanta, Ga.

Original No. 5,452,193, dated Sep. 19, 1995, Ser. No. 117,227, Sep. 3, 1993. Application for reissue May 3, 1996, Ser. No. 642,309

Int. Cl.^{6} F21V *17/00*

U.S. Cl. 362—366 31 Claims



19. In a downlight fixture for installation in a sloped ceiling, the fixture having a housing which includes an upper end, a lower end and a longitudinal axis, the fixture carrying a lamp socket to which a lamp is operably joined to produce light which emanates from the fixture at least through the lower end of the housing, the improvement comprising a substantially elliptical cross-section formed in at least a portion of the housing between the upper end and the lower end, the elliptical section of the housing being normal to the longitudinal axis of the housing, the lower end of the housing forming an opening which is substantially circular in a plane oblique to the longitudinal axis of the housing.

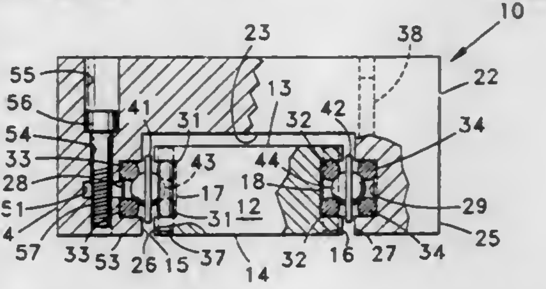
Re. 36,005
ANTIFRICTION SLIDE ASSEMBLIES

Lionel E. Herbeck, Rochester, N.Y., assignor to Automation Gages, Inc., Rochester, N.Y.

Original No. 5,374,128, dated Dec. 20, 1994, Ser. No. 207,205, Mar. 8, 1994. Application for reissue Dec. 13, 1996, Ser. No. 766,817

Int. Cl.^{6} F16C *29/12*

U.S. Cl. 384—49 9 Claims



1. An antifriction [ball] slide assembly, comprising a pair of elongate members,

means forming on each of said members a pair of laterally spaced, longitudinally extending, parallel [ball] bearing races,

means mounting said members for longitudinal reciprocation relative to each other, and with the pair of races on one of said members confronting upon and registering with the pair of races on the other of said members,

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each of said races comprising a pair of spaced, parallel, longitudinally extending bearing surfaces,

said mounting means including two linear sets of [ball] bearing each of which sets is mounted for limited reciprocation between a confronting pair of said races, and with the [ball] bearings of each set thereof having portions thereof [projecting between and] having tangential rolling engagement with each pair of spaced bearing surfaces of the associated pair of said races, and

adjustable means on said one member operable selectively and positively to reduce the space separating one of said pair of spaced bearing surfaces defining one of said races on said one member, thereby to effect a corresponding preloading of said [ball] bearings,

said one member having therein an elongate slot extending between opposite ends of said one member, and opening at one side thereof on the space between said one pair of spaced bearing surfaces on said one member,

said one pair of spaced bearing surfaces extending longitudinally of said one member adjacent opposite sides, respectively of said slot, and

said adjustable means comprising means for selectively applying compressive forces to said one member at opposite sides of said slot, thereby slightly to close said opening at said one side of said slot, and simultaneously to reduce the space separating said one pair of spaced bearing surfaces.

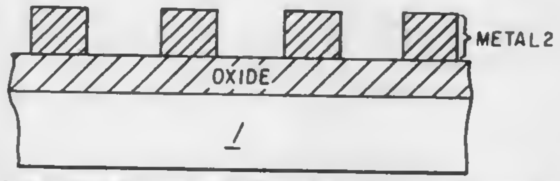
Re. 36,006
METAL SELECTIVE POLYMER REMOVAL

Brynne K. Bohannon, Sachse, Tex., and Daniel J. Syverson, Chaska, Minn., assignors to FSI International, Inc., Chaska, Minn.

Original No. 5,348,619, dated Sep. 20, 1994, Ser. No. 940,101, Sep. 3, 1992. Application for reissue Oct. 31, 1996, Ser. No. 739,885

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 438—734 **19 Claims**



1. A process for removal of [metal etch] byproducts *from a metal etch* from a semiconductor wafer comprising the following steps:

introducing HF into a chamber containing said wafer which includes non-water soluble byproducts thereon;

introducing N_2+xH_2O, where x is a real number, into said chamber; and

removing soluble byproducts from said wafer after performing the above steps.

Re. 36,007
METHOD AND APPARATUS FOR CONTROL OF ENGINE COMPRESSION BRAKES BEFORE DURING AND AFTER AN ELECTRONICALLY CONTROLLED GEAR SHIFT

Gregory R. White, Columbus; Larry R. Webber, Fredericksburg, both of Ind.; Dean S. Anderson, Cedar Falls, Iowa, and Jon A. Steeby, Schoolcraft, Mich., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Original No. 5,393,276, dated Feb. 28, 1995, Ser. No. 135,175, Oct. 12, 1993. Application for reissue Nov. 21, 1996, Ser. No. 749,373

Int. Cl.^{6} B60K *41/28*

U.S. Cl. 477—91 **9 Claims**

1. A device for controlling activation of an engine compression brake in association with a vehicle drive train including an engine, a throttle control connected to the engine, a manual/automatic transmission having a plurality of selectable gear reduction ratios, and a manual clutch situated between the engine and the transmission, said device comprising:

[means for determining a valid gear ratio corresponding to one of the gear reduction ratios of the transmission and producing a valid gear ratio signal in response thereto;]

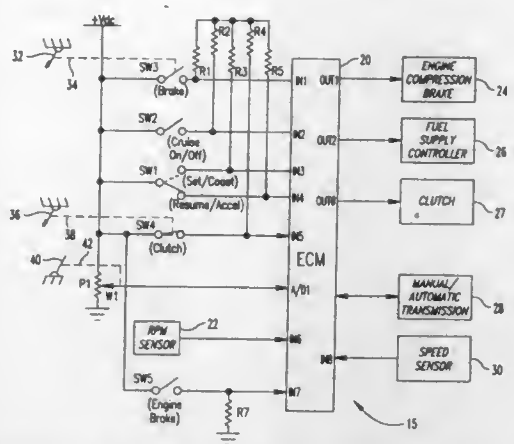
means for sensing an automatic shift state of the transmission corresponding to an active shift time period and producing a shift not active signal when said automatic shift state is not active;

means for sensing a closed throttle position for the throttle control and producing a throttle closed signal in response thereto;

means for sensing engagement of said clutch and producing a clutch engaged signal in response thereto;

means for enabling engine compression brake operation and producing a brake enable signal in response thereto; and

means for activating the compression brake in response to the concurrent presence of [said valid gear ratio signal,] said throttle closed signal, said clutch engaged signal, said shift not active signal and said brake enable signal.



Re. 36,008
PROCESS FOR THE PRODUCTION OF TEREPHTHALIC ACID

Eric Hindmarsh, North Yorkshire; John Arthur Turner, and David Parker, both of Middlesborough, all of England, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original No. 5,304,676, dated Apr. 19, 1994, Ser. No. 827,205, Jan. 30, 1992. Application for reissue Apr. 19, 1996, Ser. No. 634,991

Claims priority, application United Kingdom, Feb. 5, 1991, 9102393

Int. Cl.^{6} C07C *51/215*

U.S. Cl. 562—414 **15 Claims**

9. A process for the production of terephthalic acid comprising:

in a first reactor oxidizing para xylene to terephthalic acid in a liquid reaction medium which comprises acetic acid, the reaction being accompanied by the evolution of vapor comprising acetic acid and water;

condensing said vapor and passing part of the condensate to a distillation column for separating acetic acid and water;

separating terephthalic acid from the liquid reaction medium as a crude solid;

dissolving the crude terephthalic acid in a liquid comprising water to produce a solution;

in a second reactor contacting the solution under reducing conditions with hydrogen and a heterogeneous catalyst for the reduction of at least some impurities;

cooling the solution after said reduction to precipitate solid purified terephthalic acid;

separating primary aqueous mother liquor from the precipitate;

treating the primary aqueous mother liquor to produce a less pure precipitate comprising terephthalic acid and a secondary mother liquor containing dissolved contaminants including p-toluic acid;

passing at least part of the secondary mother liquor to said distillation column for the separation of acetic acid from water;

operating the distillation column to produce a bottom product containing acetic acid from said condensate together with p-toluic acid and other high boiling point contaminants present in the secondary mother liquor and an overhead product comprising water derived from said condensate and said secondary mother liquor; and

supplying said bottom product to the first reactor.

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PLANT PATENTS

GRANTED DECEMBER 22, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,727
MINIATURE ROSE PLANT NAMED 'POULLUTE'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser ApS, Fredensborg, Denmark

Filed May 1, 1997, Ser. No. 847,109
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein illustrated and described, as a distinct and novel rose variety due to its abundant pink flowers with good keepability, attractive long lasting foliage and compact growth, year round flowering under glasshouse conditions, suitability for production from softwood cuttings in pots, durable flowers and foliage which make the variety suitable for distribution in the floral industry.

10,728
MINIATURE ROSE PLANT NAMED 'POULOBE'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser Aps, Fredensborg, Denmark

Filed Apr. 8, 1997, Ser. No. 843,475
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct cultivar of rose plant named 'POULobe', as illustrated and described.

10,729
FLORIBUNDA ROSE PLANT NAMED 'POULGRET'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser ApS, Fredensborg, Denmark

Filed May 29, 1997, Ser. No. 864,849
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein illustrated and described, as a distinct and novel rose variety due to its abundant creamy white flowers, dark green glossy foliage, compact even growth, and rapid repeat flowering suitable for production from softwood cuttings in pots, durable flowers and foliage which make the variety suitable for distribution in the floral industry.

10,730
FLORIBUNDA ROSE PLANT NAMED 'POULCAPE'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser ApS, Fredensborg, Denmark

Filed May 29, 1997, Ser. No. 864,847
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein illustrated and described, as a distinct and novel rose variety due to its abundant light yellow flowers with good keepability, attractive long lasting foliage, even compact growth habit, year round flowering under glasshouse conditions, suitability for production from softwood cuttings in pots, durable flowers which make the variety suitable for distribution in the floral and nursery industry.

10,731
APPLE TREE NAMED 'MT. TIMP GOLD'

Grant H. Elliott, Provo, Utah, assignor to The Burchell Nursery, Inc., Oakdale, Calif.

Filed Apr. 2, 1997, Ser. No. 826,654
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—35.1 **1 Claim**

1. A new and distinct variety of apple tree substantially as illustrated and described and which is somewhat similar in its harvesting date to the Red Delicious cultivar which matures in approximately the same season and about 10 days later than the common commercial variety Golden Delicious but which is distinguished therefrom, and characterized principally as to novelty by producing an attractively colored yellow skinned fruit which is ripe for harvesting and shipment approximately September 20 to about October 10 under the ecological conditions prevailing in the San Joaquin Valley of Central California.

10,732
ELM NAMED 'PRINCE RICHARD'

Curtis W. Wilkins, P.O. Box 143, Glen Flora, Tex. 77443

Filed Dec. 19, 1996, Ser. No. 769,414
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—53.3 **1 Claim**

1. A new and distinct variety of *Ulmus parvifolia* plant as herein described and illustrated, primarily distinguished by its overall height, rounded head, and high density branching.

10,733
RHAPHIOLEPIS INDICA PLANT NAMED 'CREEKLIN''

Jeff Nowlin, Conroe, Tex., assignor to Turkey Creek Farms, Inc., Humble, Tex.

Filed Jun. 16, 1997, Ser. No. 876,302
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—67.5 **1 Claim**

1. A new and distinct Hawthorne, *Rhaphiolepis indica* plant named 'Creeklin'', as illustrated and described.

10,734
CHRYSANTHEMUM PLANT NAMED 'WHITE GIANT TIME'

Peter Wain, Hapshire, United Kingdom, assignor to Cleangro, Ltd., West Sussex, United Kingdom

Filed Apr. 8, 1997, Ser. No. 838,350
Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as herein shown and described.

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10,735

CHRYSANTHEMUM PLANT NAMED 'MOVIE TIME'

Peter Wain, Portsmouth, United Kingdom, assignor to Clean-gro, Ltd., West Sussex, England

Filed Apr. 8, 1997, Ser. No. 838,354

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct variety of Chrysanthemum plant as herein shown and described.

10,736

BEGONIA PLANT NAMED 'LADY ROSE'

Terry McCullough, Brenham, Tex., assignor to Turkey Creek Farms, Inc., Humble, Tex.

Filed Jun. 6, 1997, Ser. No. 870,004

Int. Cl.^{6} A01H *5/00*

U.S. Cl. Plt.—87.17 **1 Claim**

1. A new and distinct Begonia plant named Lady Rose, as illustrated and described.

PATENTS

GRANTED December 22, 1998

ERRATA

Patents

For CLASS	See PATENT NO.
104—281	5,850,794
105—198	5,850,795
109—051	5,850,796
119—061	5,850,797
119—170	5,850,798
169—061	5,850,876
273—317	5,850,885
220—203	5,850,908
047—127	5,851,164
430—517	5,851,243
029—623	5,851,244
423—097	5,851,490
436—518	5,851,907
548—136	5,852,202
548—314	5,852,203
548—421	5,852,204
548—965	5,852,205
556—466	5,852,206
324—689	5,852,368
324—678	5,852,369
455—063	5,852,767

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PATENTS

GRANTED DECEMBER 22, 1998

GENERAL AND MECHANICAL

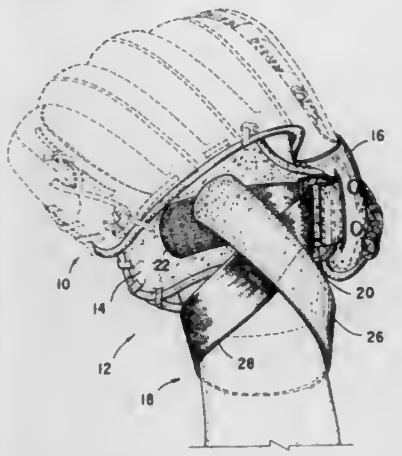
5,850,633

BASEBALL GLOVE WITH ELONGATED STRAP

Kenneth Paul Lovin, 1514 S. Longview St., Beavercreek, Ohio 45432

Filed Nov. 8, 1996, Ser. No. 751,761
Int. Cl.⁶ A41D *13/10;19/00*

U.S. Cl. 2—19 **2 Claims**



1. A baseball glove comprising:
- a bipartite wrist section having a first portion and a second portion,
- an elongated wrist strap having a proximate section attached to said first portion of the glove and an extension having a distal section, said extension being made of a fabric material and including a first surface and an opposing second surface,
- a ring attached to said second portion,
- a first patch of fastening material attached at said proximate section,
- a second patch of mating fastening material attached to said first surface at said distal section, and
- a leather portion attached to said second surface at said distal section,
- said extension being of predetermined and sufficient length to be looped through said ring, wrapped around a wrist of a user and fastened to said proximate section to secure the glove to the user's hand.

5,850,634

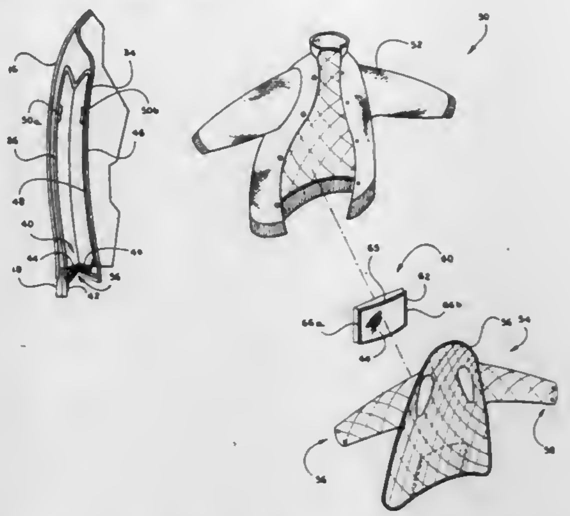
UPPER BODY CLOTHING ARTICLE CONVERTIBLE INTO A CARRYING ARTICLE

Timothy B. Toombs, 6790 Browns Mill Lake Rd., Lithonia, Ga. 30038

Filed Dec. 15, 1997, Ser. No. 990,621
Int. Cl.⁶ A45F *4/00;* **A41D** *1/02*

U.S. Cl. 2—93 **20 Claims**

11. A convertible jacket having an as-worn configuration and a stored configuration, comprising:
- a jacket shell defining a rear panel having a bottom portion;
- a lining defining a rear panel having a bottom portion, the lining positioned so that the rear panel of the lining opposes the rear panel of the jacket shell and the bottom portion of the rear panel of the lining is adjacent to the bottom portion of the rear panel of the jacket shell when the jacket is in the as-worn configuration;
- a selectively openable seam between the bottom portion of the rear panel of the lining and the bottom portion of the rear panel of the jacket shell;
- a carrying article attached to the bottom portion of the rear panel of the lining and having a concealed configuration and a carrying configuration; and
- the jacket converting from the as-worn configuration to the stored configuration as the carrying article converts from the concealed configuration to the carrying configuration, wherein the jacket shell and the jacket lining are foldable into the carrying article when the carrying article is in the carrying configuration and the jacket is in the stored position,
- the carrying article is positioned between the rear panel of the jacket shell and the rear panel of the lining when the jacket is in the as-worn configuration and the carrying article is in the concealed configuration, and
- the carrying article is configured inside-out when the jacket is in the as-worn configuration and the carrying article is in the stored configuration, so that the carrying article is converted from inside-out to outside-out as the carrying article is converted from the concealed configuration to the carrying configuration and the jacket is converted from the as-worn configuration to the stored configuration.



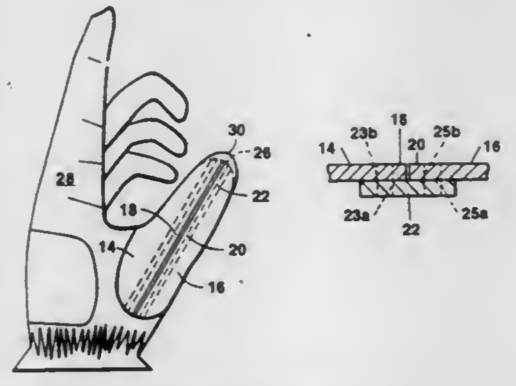
5,850,635

PANEL INSERT FOR A SPORTS GLOVE WITH ASYMMETRICAL THUMB SEAM PATTERN

Alan H. Lazarus, Cincinnati, Ohio, assignor to Boyce-Lazarus Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 650,300, May 13, 1996, Pat. No. 5,682,614, which is a continuation-in-part of Ser. No. 236,119, May 2, 1994, Pat. No. 5,515,548. This application Aug. 28, 1997, Ser. No. 919,645
Int. Cl.⁶ A41D *19/00*

U.S. Cl. 2—169 **3 Claims**



1. In a glove including a thumb unit comprised of:

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A. A pattern having an inner surface and an outer surface comprised of:
  1. a central palm portion arranged to cover the palm and two sides of said thumb when said pattern is sewn into a completed unit; and
  2. two adjacent wing portions having side edges attached to each side of said palm portion each arranged to cover approximately one half the back of said thumb when said pattern is sewn into a completed unit, said unit formed in part by joining the top edges of said palm portion and said wing portion with a cross seam, said cross seam arranged to lie within that part of said back which when in use will cover the thumbnail of the wearer; the improvement which

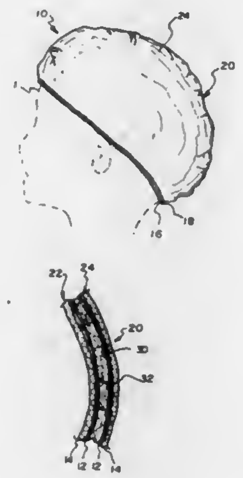
comprises the addition of a panel of flexible material inserted on the inner surface of said pattern positioned to bridge and join the side edges of said wing portions to complete the construction of said unit.

5,850,636

HEATABLE HAIR CAP

Michelle G. Reuven, 4219 E. 4th St. #5, Long Beach, Calif. 90814

Filed Dec. 31, 1997, Ser. No. 1,441
Int. Cl.^{6} A42B *1/04*
U.S. Cl. 2—174 **16 Claims**



1. A heatable hair cap, comprising:
- a cap member having an interior layer and an exterior layer, said interior and exterior layers of said cap member defining a cap member interior space therebetween;
- said interior layer of said cap member forming a head cavity for receiving a portion of a head therein, said cap member having a lower periphery defining an opening into said head cavity;
- a heatable gel solution being provided in said cap member interior space for providing heat; and
- a flexible container being provided in said cap member interior space said heatable gel solution being contained in said flexible container.

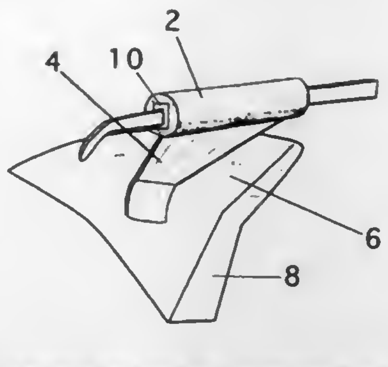
5,850,637

PLIABLE EYEGLASS ATTACHMENT FOR DEFLECTING WIND AROUND THE EAR

John M. Lewis, 820 Mercer St., Fredericksburg, Va. 22401

Filed Dec. 2, 1996, Ser. No. 759,310
Int. Cl.^{6} A41D *9/02;* G02C *5/14*
U.S. Cl. 2—455 **12 Claims**

1. A wind deflector of the type attachable to eyeglass temple stems comprising a mounting means, a pressure plate hinge adjacent to and communicating with said mounting means, and an ear flap communicating with said pressure plate hinge.

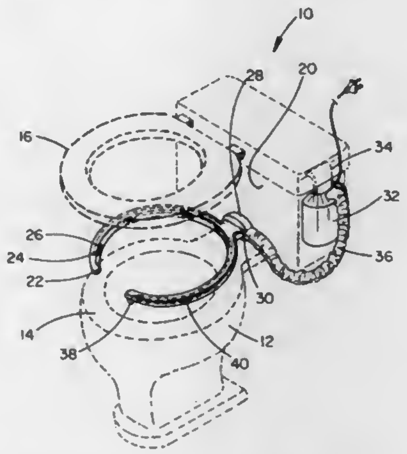


5,850,638

TOILET VENTILATION SYSTEM

Tong X. Her, 4527 E. Belmont Ave., Fresno, Calif. 93702

Filed Dec. 11, 1997, Ser. No. 988,655
Int. Cl.^{6} E03D *9/05*
U.S. Cl. 4—213 **1 Claim**



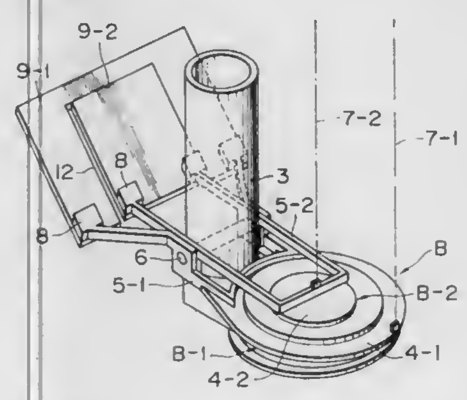
1. A toilet ventilator system for use with a toilet bowl having an upper peripheral edge with a front portion and a rear portion, a toilet seat having an annular configuration hingably coupled to the rear portion of the upper peripheral edge of the bowl and adapted to pivot between a raised and lowered orientation, and a water basin having a rectilinear configuration and mounted to a rear of the toilet bowl with the water basin having an upper peripheral edge, the system comprising:
- a ventilation housing having a C-shaped configuration defined by a top face, a bottom face, an inner side face, and an outer side face defining a constant square vertical cross-section along an entire length thereof, the top face of the housing secured to the lower surface of the toilet seat with pair of closed spaced ends of the housing spaced from a center of a front portion of the toilet seat by an equal distance for acting as a bumper between the toilet seat and the upper peripheral edge of the toilet bowl, the inner side face of the housing having a plurality of ventilation ports formed therein and spaced along a length thereof, each port having a plurality of grouped apertures in communication with the interior space of the housing wherein a rear portion of the ventilation housing has a rectangular mounting adapter formed in coplanar relationship therewith and has an aperture formed on a side face thereof, the rear portion having a width which is less than a spacing between mounting arms of the toilet seat;
- a vacuum assembly having a planar inner face, an arcuate outer face, a top face, and a bottom face, the vacuum assembly further including an inlet formed on the outer face, an outlet formed on the bottom face, a thin hook mounted on the top face and having a planar bottom portion situated in coplanar relationship with the inner face and a top portion defining a portion of a horizontally oriented cylinder for engaging the upper peripheral edge of the water storage basin for suspending the vacuum assembly from the water storage basin above and off of the floor supporting the toilet, the vacuum assembly adapted to effect the suction of air from the inlet to the outlet upon the actuation thereof, whereby suctioned air passes through a scented filter situated within the vacuum assembly prior to exiting;
- a flexible tube mounted between the aperture of the rear portion of the ventilation housing and the inlet of the vacuum assembly for suctioning foul odor from the apertures of the ventilation ports of the ventilation housing, the flexible tube including a resilient wire with a flexible sheath situated thereon; and
- a push button momentary switch mounted to the bottom face of the ventilation housing at one of the ends thereof, the switch connected to the vacuum assembly via a wire situated within the interior space of the ventilation housing and the tube, the push button momentary switch adapted to actuate the vacuum assembly only upon the depression thereof by a force greater than that applied by a weight of the lid and seat in the lowered orientation thereof.

5,850,639

TANK DEVICE FOR FLUSHING TOILET BOWL

Kinya Arita; Shinji Shibata, and Hiroyuki Matsushita, all of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka-ken, Japan

PCT No. PCT/JP95/01626, § 371 Date Oct. 28, 1996, § 102(e) Date Oct. 28, 1996, PCT Pub. No. WO96/27052, PCT Pub. Date Jun. 9, 1996
PCT Filed Aug. 16, 1995, Ser. No. 732,288
Claims priority, application Japan, Feb. 28, 1995, 7/40462
Int. Cl.^{6} E03D *1/34*
U.S. Cl. 4—388 **17 Claims**



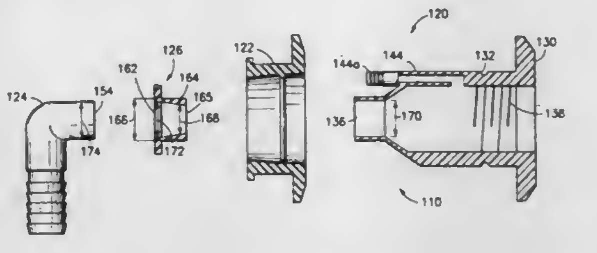
11. A tank flushing device comprising:
- a valve for closing an opening in a flush water tank, wherein said valve includes: a first flow stopping member having an outer dimension larger than a size of the opening in the flush water tank, said first flow stopping member having a through-hole formed therein; and a second flow stopping member movably mounted to open and close said through-hole in said first flow stopping member, wherein said first manner of activation of said valve entails moving said first flow stopping member relative to the opening in the flush water tank and said second manner of activation entails moving said second flow stopping member relative to said through-hole in said first flow stopping member;
- an activator for activating said valve to allow flush water to flow past said valve and through the opening in the flush water tank, wherein said activator can activate said valve in a first manner to allow a first quantity of water to flow past said valve, and said activator can activate said valve in a second manner to allow a second quantity of water, which is less than said first quantity of water, to flow past said valve;
- a first pivot support mounted within the flush water tank;
- a first support arm arranged for pivoting movement about said first pivot support;
- said first flow stopping member secured to said first support arm;
- a first damping plate secured to said first support arm for developing a surface tension with an upper surface of the flush water within the tank body; and
- a second support arm arranged for pivoting movement within said flush water tank, wherein said second flow stopping member is secured to said second support arm.

5,850,640

HYDROTHERAPY JET AND FIXTURES FOR SPA TUBS AND POOLS AND A METHOD OF INSTALLATION

John Pinciaro, 451 Moose Hill Rd., Monroe, Conn. 06468

Filed Jul. 17, 1996, Ser. No. 682,432
Int. Cl.^{6} A61H *33/04*
U.S. Cl. 4—541.6 **12 Claims**



1. A watertight spa let fixture assembly for installation in a hole in a tub wall or a pool wall, comprising:
- a) a resilient wall grommet having an outer surface sized to permit said wall grommet to be inserted into the hole, an inner surface, and first and second ends, said first end having a lip sized greater than said outer surface of said wall grommet which prevents said wall grommet from passing completely through the hole; and
- b) a jet valve body means for receiving a jet valve insert, said jet valve body means having an outer surface sized to permit said jet valve body means to be inserted into said wall grommet and compress said wall grommet to form a watertight seal between said jet valve body means and the wall, means for preventing said jet valve body means from passing completely through said wall grommet, a first water conduit means for receiving water, an air inlet means for receiving air, said air inlet means being distinct from said first water conduit means, and nozzle means for mixing the water and air into an aerated water mixture.

5,850,641

SELF-CONTAINED EMERGENCY EYE WASH STATION

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Division of Ser. No. 655,764, May 30, 1996, Pat. No. 5,695,124, which is a division of Ser. No. 451,191, May 26, 1995, Pat. No. 5,566,406. This application Aug. 6, 1997, Ser. No. 906,997
Int. Cl.^{6} A61H *33/00*
U.S. Cl. 4—620 **6 Claims**

1. A self-contained emergency eye wash station for dispensing eye wash fluid, comprising:
- a flexible container containing the eye wash fluid;
- a nozzle in fluid communication with said flexible container and dispensing the eye wash fluid from said flexible container;
- a reservoir collecting the eye wash fluid dispensed from said nozzle; and

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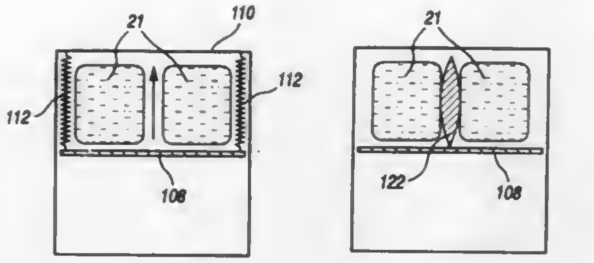
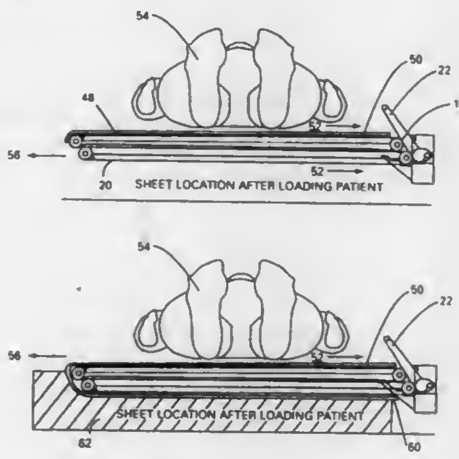


means, coupled to said flexible container, for applying pressure to said flexible container to cause the eye wash fluid to be dispensed from said nozzle at a constant flow rate.

5,850,642
APPARATUS AND METHOD FOR APPLYING PROTECTIVE MATERIAL

Wilbur A. Foster, 1713 Camp Craft Rd., Austin, Tex. 78746-7319

Filed Apr. 22, 1997, Ser. No. 844,833
Int. Cl.^{6} A61G *7/10;7/14*
U.S. Cl. 5—81.1 C **4 Claims**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SHEET LOCATION AFTER LOADING PATIENT
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SHEET LOCATION AFTER LOADING PATIENT
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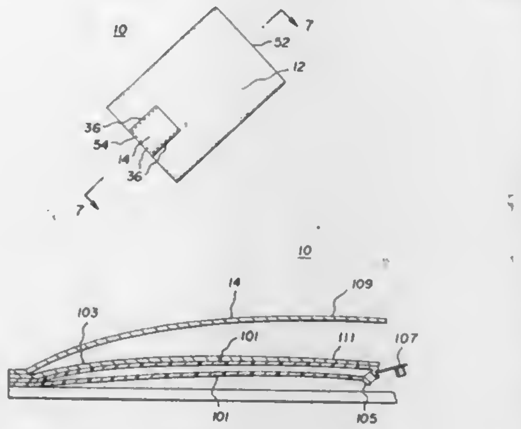
1. An object moving apparatus comprising:
(a)a moveable support stand;
(b) a stationary lower support platform and endless belt means connected to said moveable support stand; and
(c) a moveable upper support tray and endless belt means pivotally joined to said stationary lower support platform without interior obstruction so that sheet-like protective material placed between them is free to move whereby when said endless belt means are operated said sheet-like protective material moves between an object to be moved and said moveable support stand.

3. A method of inserting protective material between an object and a moveable support stand comprising the steps of:
(a) connecting a stationary lower support platform and endless belt means to the moveable support stand;
(b) pivotally connecting a moveable upper support tray and endless belt means to the stationary lower support platform without interior obstruction so that protective material placed between them is free to move;
(c) pivoting the moveable upper support tray to an open position;
(d) inserting sheet-like protective material between said moveable upper support tray and said stationary lower support platform;
(e) closing said moveable upper support tray and folding a portion of said protective material on top of said moveable upper support tray; and
(f) simultaneously moving said endless belt means and moving said support stand under said object so that as said moveable upper support tray crawls under said object, said protective material moves with the endless belt means between the object and the endless belt means.

5,850,643
COMFORT SYSTEM FOR AIRCRAFT

John David Brumfield, 351 Walnut St., Hamlin, W. Va. 25523-1405

Continuation-in-part of Ser. No. 831,053, Apr. 1, 1997, abandoned. This application Jan. 16, 1998, Ser. No. 8,058
Int. Cl.^{6} A47G *9/06;9/00*
U.S. Cl. 5—419 **9 Claims**

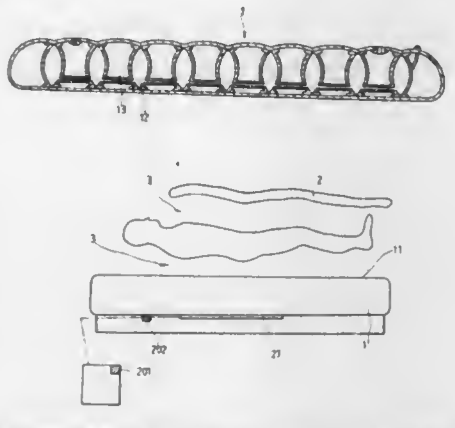


1. A comforter system comprising:
(a) a blanket;
(b) a pocket attached to said blanket, said pocket being positioned adjacent an end of said blanket and being open toward the center of said blanket when said blanket is in an open position, said pocket comprising an outer pocket layer and an inner pocket layer, and
(c) an inflatable pillow element secured to said inner pocket layer between said inner pocket layer and said blanket, said blanket adapted to be folded and stored in said pocket.

5,850,644
TEMPERATURE AND PRESSURE CONTROL MEANS FOR WATER BED

Yu Chun Hsia, No. 3, Chiao Ai 9th Road, Hsin Tien City, Taipei Hsien, Taiwan

Filed Aug. 24, 1995, Ser. No. 518,807
Int. Cl.^{6} A47C *27/08*
U.S. Cl. 5—422 **4 Claims**

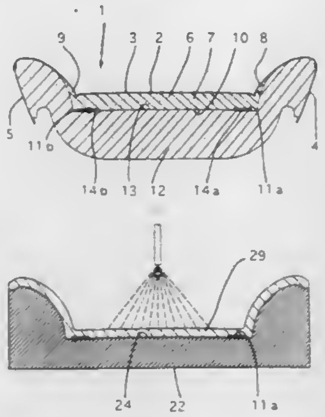


1. A temperature and pressure control for a water bed having a mattress with a plurality of air chambers and water reservoirs, comprising:
a temperature detecting circuit including a pair of temperature detecting elements connected in parallel with an input of a first comparator to respectively detect an ambient air temperature and a mattress temperature, said first comparator comparing said detected ambient air temperature with said detected mattress temperature and producing a resultant value at an output thereof;
a temperature adjusting circuit including a pair of first variable resistors connected in parallel with an input of a second comparator, one of said first variable resistors being used to input a preferred preset temperature value and the other of said first variable resistors being used to input a predetermined heat dissipation rate of a quilt overlaying said mattress;
a temperature control circuit including a first microprocessor coupled to a timing pulse generator for receiving pulse time sequence signals therefrom, said first microprocessor being coupled to said output of said temperature detecting circuit for input of said resultant value, said first microprocessor being coupled to said temperature adjusting circuit for input of said preferred preset temperature value and said predetermined heat dissipation rate, said first microprocessor determining a target temperature value responsive to said input of said resultant value, said preferred preset temperature value, and said predetermined heat dissipation rate, said first microprocessor having an output coupled to means for heating the mattress for (a) output of a turn-off signal responsive to said mattress temperature being higher than said target temperature, and (b) output of a turn-on signal responsive to said mattress temperature being lower than said target temperature;
a pressure detecting circuit including an analog-to-converter, an operational amplifier having an output coupled to said analog-to-digital converter and a pressure detecting element connected to an input of said operational amplifier for detecting an internal pressure of said mattress, said operational amplifier amplifying a signal from said pressure detecting element representing an internal pressure of said mattress and supplying said amplified signal to said analog-to-digital converter for converting said pressure signal to digital data at an output thereof;
a pressure adjusting circuit including a third comparator and a pair of second variable resistors connected in parallel with an input of said third comparator, said pair of second variable resistors being used to input a softness value and a hardness value to said third comparator for establishing a preset internal pressure value at an output thereof; and
a pressure control circuit including a second microprocessor coupled to a time sequence circuit for receiving a pulse time sequence signal therefrom, said second microprocessor being coupled to said output of said analog-to-digital converter for input of said digital data representation of said internal pressure of said mattress and said output of said third comparator of said pressure adjusting circuit for input of said preset internal pressure value, said second microprocessor determining a pressure value responsive to said input of said digital data and said preset internal pressure value, said second microprocessor having a first output coupled to a pump for and a second output coupled to a pressure-relief electromagnetic valve for (a) output of an energization signal to said second output and a turn-off signal to said first output responsive to said pressure value being higher than said preset internal pressure value for reducing said internal pressure in said mattress, and (b) output of a turn-on signal to said first output responsive to said pressure value being lower than said said preset internal pressure value for controlling said pump to inflate said mattress.

5,850,645
MULTI-LAYER SEAT HAVING DIFFERENT HARDNESS AND METHOD FOR MANUFACTURING THE SAME

Taro Ogawa, 8-52, Kojima Ajinokami 1-chome, Kurashiki-City, Okayama Perfecture 711, and Fumio Goto, 829-4 Kushida, Kurashiki-City, both of Japan, 710-01

PCT No. PCT/JP96/01802, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO97/03918, PCT Pub. Date Feb. 6, 1997
PCT Filed Jun. 28, 1996, Ser. No. 817,455
Claims priority, application Japan, Jul. 24, 1995, 7-207334
Int. Cl.^{6} B68G *7/00*
U.S. Cl. 5—653 **25 Claims**



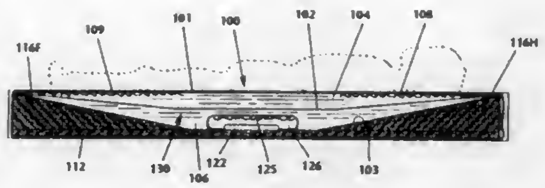
1. A seat comprising a surface material and a first cushioning body
and a second cushioning body covered with said surface material, said first cushioning body and said second cushioning body having a shape
generally corresponding to an outline of the seat, said first cushioning body as an upper layer being integral with at least a part
of said surface material and having a main portion of relatively low compressibility and side portions of outwardly increasing relatively higher local compressibility; and said second cushioning body as a lower layer being connected to and
positioned under said first cushioning body, wherein said first cushioning body has a contact surface having a shape
corresponding to a shape of a contact surface of said second cushioning body, and
fastener means integrally formed in said contact surfaces for connecting said first
and said second cushion bodies, so that said first and said second cushioning bodies
are connected through said fastener means provided on said contact surfaces thereof.

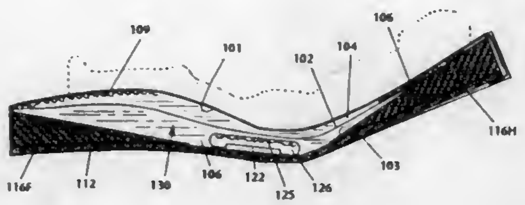
5,850,646
PRESSURE RELIEF MATTRESS

David R. Turner, 535 N. Corry Street, Fort Bragg, Calif. 95437

Continuation-in-part of Ser. No. 137,835, Oct. 15, 1993, Pat. No. 5,513,400. This application Mar. 22, 1996, Ser. No. 620,176
Int. Cl.^{6} A47C *27/08*
U.S. Cl. 5—680 **7 Claims**

6. A hybrid liquid mattress with a soft, flexible basin adapted for use with an articulated frame, the improvement comprising:
a articulatable, flexible base member supporting a basin;
a cavity formed by said basin;
a flotation bladder filled with liquid and formed to fit into said cavity;





- a smaller flotation bladder disposed beneath a medial portion of said flotation bladder;
- said mattress being movable from a generally horizontal first position to a second position in which said head end of said mattress is tilted to slope upwardly and said liquid drains from said head end of said flotation bladder and said smaller flotation bladder prevents bottom contact by the posterior of a patient on said mattress.

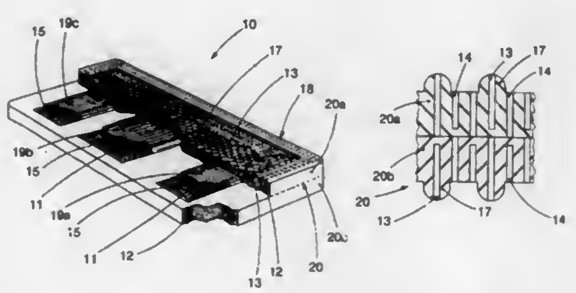
5,850,647

Patent Not Issued For This Number

5,850,648
VENTILATED MATTRESS WITH SEMI-SPHERICAL PROJECTIONS

Luciana Morson, Via Divisione Julia 8, 33078 S. Vito Al Tagliamento (PN), Italy

Filed Oct. 17, 1997, Ser. No. 951,941
Claims priority, application Italy, Jun. 5, 1997, UD97A0103
Int. Cl.⁶ A47C *27/15*
U.S. Cl. 5—724 36 Claims

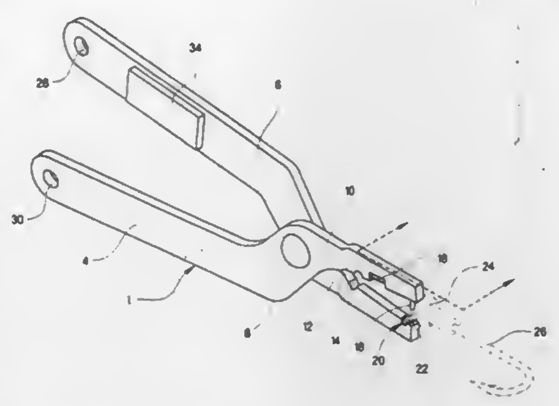


1. An anatomical mattress comprising: at least two layers of elastic material each having a main surface, the two layers being joined along the main surfaces thereof to define a generally parallelepiped-shaped body, the body having a peripheral frame and two generally flat opposite surfaces, at least a portion of one of the opposite surfaces of the body having a plurality of semi-spherical-shaped elements extending outwardly therefrom and defining a lying plane of the mattress; and at least two transverse reinforcing and stiffening bands disposed in the body, one of the transverse reinforcing and stiffening bands being disposed substantially in correspondence with the shoulders of a user and the other transverse reinforcing and stiffening band being disposed substantially in correspondence with the feet of the user.

5,850,649
FISHING TOOL

Julius Ray Simpson, 975 N. Oliver Rd., Belle Plaine, Kans. 67013

Filed Jul. 16, 1997, Ser. No. 895,099
Int. Cl.⁶ A01K *69/00*
U.S. Cl. 7—106 19 Claims



1. A fishing tool comprising:

(a) a first pivoting member having a forward end and a rearward end, the forward end forming a first jaw and the rearward end forming a first handle;

(b) a second pivoting member having a forward end and a rearward end, the forward end forming a second jaw, and the rearward end forming a second handle, the second pivoting member being pivotally attached to the first pivoting member so that as the first handle pivots toward the second handle, the first jaw pivots toward the second jaw;

(c) a pin having a base end and a jig eye clearing end, the base end of the pin being fixedly attached to the first jaw, the pin being positioned upon and aligned with respect to the first jaw so that the jig eye clearing end of the pin extends toward the second jaw upon such pivoting motion of the first jaw toward the second jaw; the second jaw having a pin receiving channel, the pin receiving channel being fitted, positioned, and aligned for receiving the pin upon further pivoting motion of the first jaw toward the second jaw; and

(d) a jig eye recess within the second jaw, the jig eye recess having a forward arcuately curved wall, a rearward arcuately curved wall, and having a jig eye extension slot separating the forward and rearward arcuately curved walls, the jig eye recess being fitted for receiving and retaining the eye of a ball head jig, the jig eye recess being positioned upon and aligned with respect to the second jaw so that upon placement of the eye of the ball head jig within the jig eye recess, and upon further pivoting motion of the first jaw toward the second jaw, the jig eye clearing end of the pin may pass through the eye, clearing obstructions there across, and allowing the eye to be utilized for attachment of fishing line.

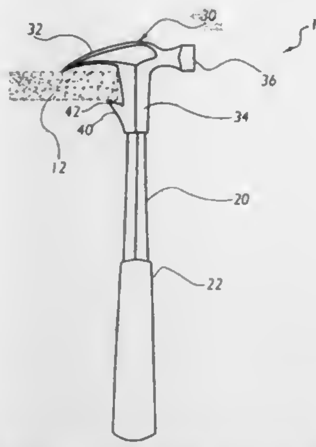
5,850,650
COMBINATION HAMMER AND LUMBER MANIPULATING TOOL

John J. Karsnia, 2729 County Rd. 94, International Falls, Minn. 56649

Filed Jun. 13, 1997, Ser. No. 876,165
Int. Cl.⁶ B25D *1/04*
U.S. Cl. 7—146 13 Claims

1. A combination hammer and lumber manipulating tool for manipulating a piece of lumber, comprising:

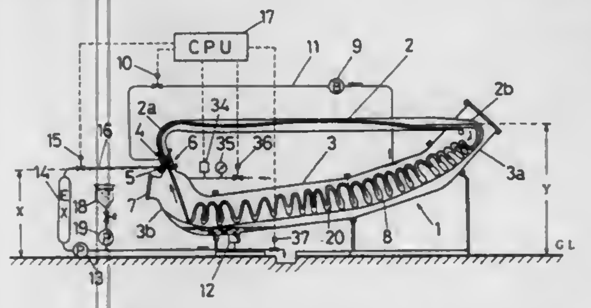
- a hammer-head having a claw, a striking head and a socket for receiving a handle; and
- a jaw non-movably secured to said socket opposing said claw and spaced from said claw a finite distance, wherein said piece of lumber is positionable between said jaw and said claw.



5,850,651
AIR JET FLOW TYPE APPARATUS AND METHOD FOR TREATING TEXTILE MATERIAL

Osamu Ishimaru, Habikino; Masao Takigawa, Toyonaka, and Satoshi Nomura, Itami, all of Japan, assignors to Hisaka Works, Ltd, Osaka, Japan

Filed Mar. 20, 1997, Ser. No. 822,089
Claims priority, application Japan, Jul. 21, 1995, 7-185331; Aug. 28, 1995, 7-218434
Int. Cl.⁶ D06B *3/28*
U.S. Cl. 8—152 16 Claims

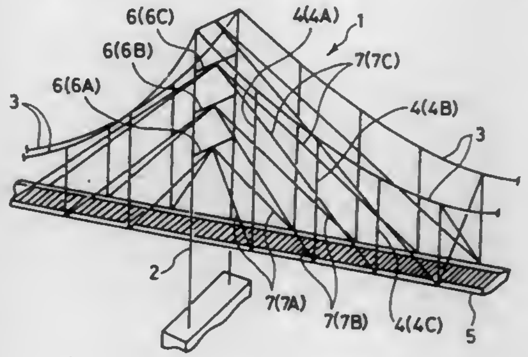


13. A method for treating a textile fabric in rope form in an air jet flow type, comprising charging the textile fabric in a circular fabric treating passageway comprised of a transferring passageway and a residence chamber both ends of which are jointed to one another, and carrying out dyeing and other treatment to the charged textile fabric while transferring the textile fabric from the transferring passageway to the residence chamber, but in zigzag form in the residence chamber, with jetting force of air and liquor mixed fluid which is jetted from the treating fluid jetting section having an air jetting portion and a liquor jetting portion and while re-circulating the fabric to the transferring passageway from the residence chamber with jetting force of the fluid, characterized in that the exit section of the residence chamber is located at a position lower than the entrance section thereof to thereby allow the treating liquor jetting portion at the inlet of the transferring passageway to locate at low position, the textile fabric is taken up at a short distance into the transferring passageway from the residence chamber with jetting force of the treating fluid which is jetted from the treating fluid jetting section and wetted with the treating liquor while being circulatingly transferred and, thereafter, the textile fabric moves down gradually in its advancing direction from the entrance section of the residence chamber, and dyeing and other treatment for feeling, etc. are applied to the textile fabric while being transferred in zigzag form as if floating, with separation of the treating liquor from the textile fabric by the dual bottom of the residence chamber, thereafter being again taken up in direction to the treating fluid jetting section for re-circulating.

5,850,652
METHOD OF SUSPENDING BRIDGE-GIRDER OF SUSPENSION BRIDGE

Nobumichi Yamamura, Osaka, and Hiroshi Tanaka, Neyagawa, both of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

PCT No. PCT/JP96/00645, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/31658, PCT Pub. Date Oct. 10, 1996
PCT Filed Mar. 13, 1996, Ser. No. 750,297
Claims priority, application Japan, Apr. 5, 1995, 7-079235
Int. Cl.⁶ E01D *11/00;11/02*
U.S. Cl. 14—18 3 Claims



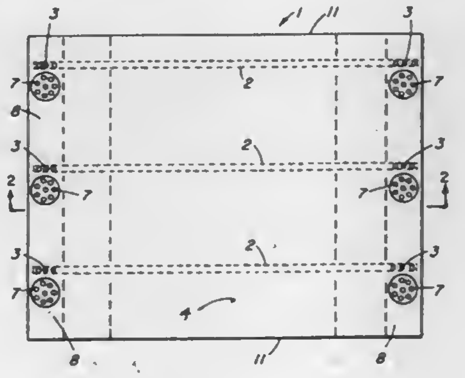
1. A method of suspending a bridge girder of a suspension bridge wherein the bridge comprises a right vertical tower and a left vertical tower, the right vertical tower and the left vertical tower holding a right main cable and a left main cable respectively, a plurality of hanger ropes hanging from the respective main cables at predetermined intervals, the bridge girder being suspended from the right main cable and the left main cable through the hanger ropes, and horizontal beams extending in the width direction between the right tower and the left tower in sequence at a plurality of positions vertically along the height of the towers;

- comprising connecting by means of obliquely extending auxiliary cables, a portion around the center of the respective horizontal beams, a portion around the connecting position of the respective hanger ropes on both sides of the bridge girder.

5,850,653
PRE-CAST CONCRETE DECKING FOR LOAD SUPPORTING STRUCTURES

Aftab A. Mufti, 1267 Wright Avenue, Halifax, Nova Scotia, Canada, B3J 1C6

Filed Feb. 26, 1997, Ser. No. 805,830
Int. Cl.⁶ E01D *19/12*
U.S. Cl. 14—73 7 Claims



1. A pre-cast concrete panel intended for use in load supporting structures, said panel comprising:

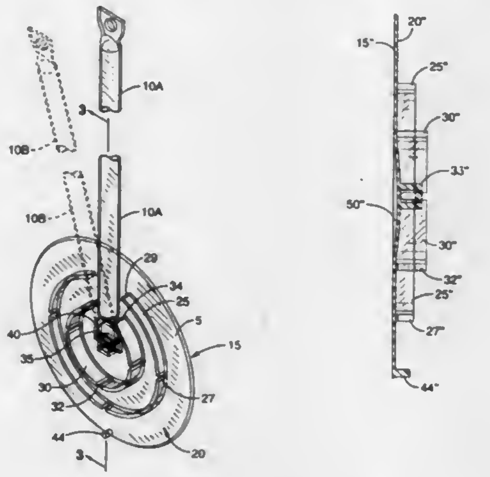
(1) a concrete body defining two opposed, outer, lower edge portions for said panel that lie in a common bottom plane of the concrete body, said concrete body being impregnated with non-metallic, non-corrodible reinforcing fibres;
(2) a lower surface to said concrete body that is intermediate the opposed outer, lower edge portions of said concrete body; and
(3) a spaced tension member spanning the width of said concrete body adjacent said lower surface, said tension member:
  (a) having anchoring means carried by and extending transversely from said tension member at the outer ends of said tension member, said anchor means being embedded within the concrete body of said panel at said outer lower edge portions; and
  (b) having an intervening length extending between said outer ends that is not embedded within the concrete body of said panel; and
  (c) being positioned at or above said common bottom plane of the concrete body,

whereby upon application of a vertical load to said panel, the tension member resists such loading by carrying tensile forces which support an arching action within the concrete body of the panel.

5,850,654
FLUID-WETTED OR SUBMERGED SURFACE CLEANING APPARATUS

Daniel Coffey, 1710 Esplanade, No. H, Redondo Beach, Calif. 90277

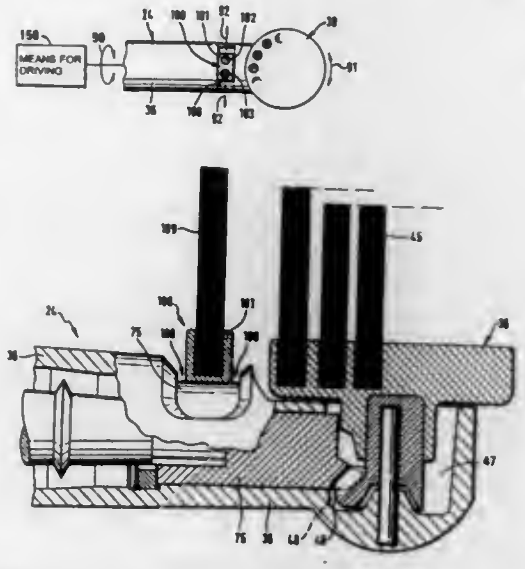
Filed Dec. 6, 1996, Ser. No. 761,439
Int. Cl.^{6} E04H *4/16;* A47L *13/02*
U.S. Cl. 15—1.7 **25 Claims**



1. An apparatus for cleaning a selected surface, comprising:
a) a membrane element, comprising:
  i) a lower surface configured as a means for generating and controlling an inter-surfacial cleaning force associated with said lower surface while said membrane element is in motion;
  ii) an upper surface;
  iii) means for generating and controlling additional cleaning force which causes said lower surface and the selected surface to be pressed more closely together while said membrane element is in motion and for structural support associated with said upper surface;
  iv) a perimeter scraping edge surrounding at least a portion of said membrane element; and
b) an elongated handle affixed to said membrane element upper surface.

5,850,655
ELECTRIC TOOTHBRUSH

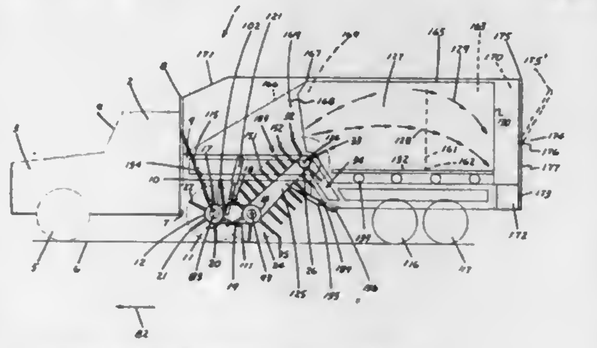
Wolfgang Göcking, Frankfurt; Georges Driesen, Eschborn, and Michael Drössler, Oberursel, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany
Continuation of Ser. No. 507,372, Aug. 22, 1995, Pat. No. 5,732,433. This application Sep. 15, 1997, Ser. No. 929,826
Claims priority, application Germany, Mar. 20, 1993, 43 09 035.4
Int. Cl.^{6} A46B *13/02;* A61C *17/34*
U.S. Cl. 15—28 **14 Claims**



13. An electric toothbrush comprising:
a brush section and a rotatably carried shaft received in said brush section, said brush section including a bristle supporting structure coupled to the shaft for motion about an axis perpendicular to an axis of rotation of the shaft, and
only a single row of interproximal brushes coupled to the shaft.

5,850,656
HIGHWAY DEBRIS ENTRAINMENT AND STORAGE DEVICE

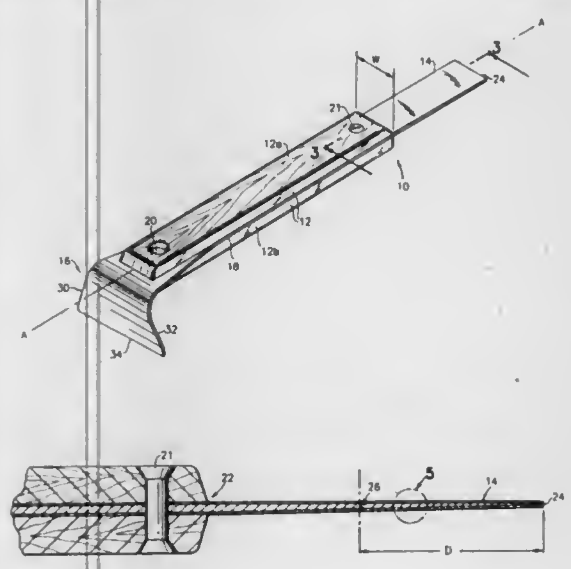
Owen Smith, Scottsdale, Ariz.; Charles C. Holley, Bloomington, Minn., and William E. Daniels, Jr., Paola, Kans., assignors to The Toro Company, Bloomington, Minn.
Division of Ser. No. 293,366, Aug. 19, 1994, Pat. No. 5,577,286. This application Sep. 30, 1996, Ser. No. 723,428
Int. Cl.^{6} E01H *1/04*
U.S. Cl. 15—84 **5 Claims**



1. A debris collection machine, comprising:
(a) a motor vehicle;
(b) a rigid frame, the rigid frame being rigidly affixed to the motor vehicle;
(c) debris entrainment means interconnected to the rigid frame, the debris entrainment means including a plurality of regularly spaced entrainment fingers rotating about a first axle at a first rate of angular rotation, the entrainment fingers having a tip and having substantially flat sides; and
(d) debris conveying means interconnected to the frame, the debris conveying means including a plurality of regularly spaced conveying fingers, the conveying fingers having a base and having substantially flat sides, the conveying fingers having a first width and the entrainment fingers having a second width, the first width being slightly less than spacing between the entrainment fingers, the second width being slightly less than spacing between the conveying fingers such that the conveying fingers and the entraining fingers are occasionally interlacing as the entrainment fingers rotate about the first axle, the spacing between a side of each of the entrainment fingers and the nearest side of an adjacent conveying finger is approximately a half inch or less, the tip of the entrainment finger clearing the base of each adjacent conveying finger by a distance less than one inch such that adjacent flat sides of the entrainment and conveying fingers form a substantially continuous planar surface for transporting debris.

5,850,657
WOODWORKING TOOL FOR PREPARING A WOOD SURFACE FOR FINISHING

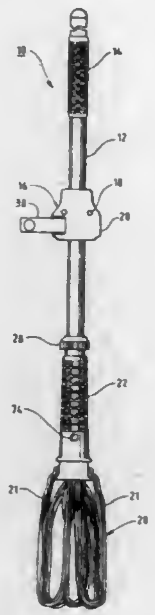
Richard S. List, Northborough; Andre J. Lazure, Southbridge; Mark S. Corriveau, Sturbridge, and Steven J. Corron, Shrewsbury, all of Mass., assignors to Hyde Tools, Southbridge, Mass.
Filed Jan. 7, 1997, Ser. No. 779,408
Int. Cl.^{6} A47L *13/08*
U.S. Cl. 15—105 **23 Claims**



1. A woodworking tool comprising an elongate handgrip; a scraper element having a first substantially straight edge at one end of said handgrip; and a spreader element having a second substantially straight edge at the other end of said handgrip, said first and second edges being substantially parallel to each other, said spreader element being substantially more flexible than said scraper element, whereby the stiffer scraper element and more flexible spreader element may be alternatingly used to prepare a wood surface for finishing by reversing the relative positions of said elements within the hand of the user.

5,850,658
WRINGABLE MOP

Paul B. Specht, Wilmette, Ill., assignor to Freudenberg Household Products LP, River Grove, Ill.
Continuation of Ser. No. 583,952, Jan. 11, 1996, abandoned. This application May 5, 1997, Ser. No. 851,054
Int. Cl.^{6} A47L *13/142*
U.S. Cl. 15—120.1 **8 Claims**



7. A mop comprising in combination:
an elongate handle member,
an operating member mounted in axially movable relationship to said handle member between a first mopping position and a second position,
a plurality of elongate liquid absorbent members constituting a mopping element,
said mopping element having a first end portion connected to a distal end portion of said handle member, and an opposite second end portion connected to said operating member,
a movable locking member on one of said handle member and said operating member,
said movable locking member movable between a locking condition and a release condition,
a shoulder on the other of said handle member and said operating member for engagement by said movable locking member,
and ramp means adjacent said shoulder on said other of said handle and said operating member for opening said locking member to enable receipt of said shoulder when said operating member is moved to said second position.

5,850,659
TOOTHBRUSH WITH BENDABLE HEAD

C. P. Butler, Lithonia, Ga., and F. M. Butler, Jr., Del Ray Beach, Fla., assignors to The Smart Brush Corporation, Grayson, Ga.
Continuation-in-part of Ser. No. 622,697, Mar. 26, 1996, Pat. No. 5,749,381. This application Jul. 18, 1996, Ser. No. 684,292
Int. Cl.^{6} A46B *7/04;9/04*
U.S. Cl. 15—167.1 **12 Claims**

1. A toothbrush with a bendable head for brushing teeth and gums, said toothbrush comprising:
a generally cylindrical handle, having a longitudinal axis and a cross-section defined by a circular portion for supporting at least one finger and a flat portion for supporting a thumb and fingertips;

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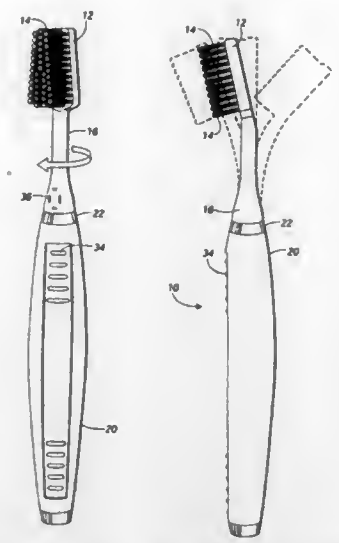


rotation means attached to said handle for releasably attaching said handle to a stem, and for selectively positioning said stem at one of a plurality of locations about the longitudinal axis of said handle;

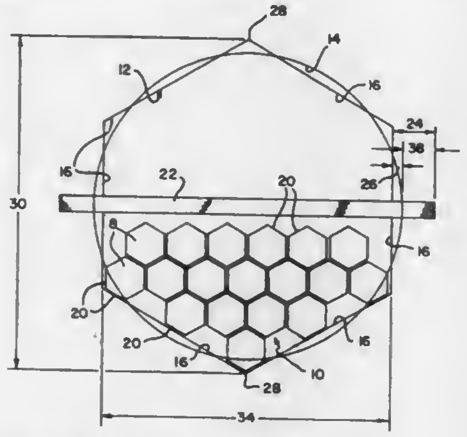
wherein said stem is connected to said rotation means, said stem comprising means for laterally adjusting the position of said stem relative to the longitudinal axis of said handle; and

an elongated, rubber head connected to said stem and having a front portion with a plurality of tufts of bristles anchored to a flexible substrate embedded within said rubber head, said front portion being arranged so that in one of said plurality of locations of said rotation means the bristles of the head are at about a forty-five degree angle relative to the surface of said flat portion of said handle, whereby the Bass technique of brushing teeth and gums is implemented by the user of the toothbrush by moving the toothbrush in short strokes against the surface of the teeth and gums in a conventional manner.

5,850,660
TOOTHBRUSH WITH HEXAGONAL BRISTLES IN HEXAGONAL TUFT HOLES

James O'Halloran, Kutztown, Pa., assignor to Radius Inc., Kutztown, Pa.

Filed Jan. 25, 1996, Ser. No. 590,406
Int. Cl.⁶ A46B *3/16*
U.S. Cl. 15—195 7 Claims



1. A brush having a handle, comprising:

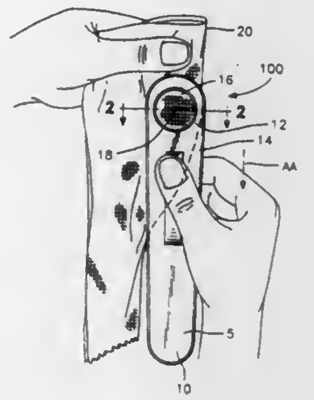
a brush head having a plurality of tuft receiving holes, each of said tuft receiving holes having a hexagonal cross-section defined by opposite pairs of side walls which are parallel, each of said side walls providing a flat inwardly facing surface;

a plurality of bristle bundles, each said bristle bundle having a portion positioned in and secured in a respective one of said tuft receiving holes, and each said bristle bundle having a plurality of hexagonal cross-section bristles, each said hexagonal cross-section bristle having opposite pairs of flat surfaces, said hexagonal cross-section bristles arranged in each said bundles such that a plurality of outwardly facing flat bristle surfaces about the periphery of said portion of each said bristle bundle within said respective tuft receiving hole are aligned and in frictional engagement with one of said flat inwardly facing surfaces of said tuft receiving hole side walls.

5,850,661
DEVICE FOR CLEANING COMPUTER MOUSE BALL

Arthur V. Lawrence, 13620 Redwood Hwy., Wilderville, Oreg. 97543

Filed Nov. 25, 1996, Ser. No. 754,937
Int. Cl.⁶ A63B *47/04;* **A47L** *25/00*
U.S. Cl. 15—210.1 16 Claims



1. A device for cleaning a generally spherical object with a cleaning cloth comprising:

a cleaning cloth for enclosing the object;

a cleaner body having a fixed end affixing two prongs; and,

an opening located in each of the prongs for receiving the enclosed object, wherein the enclosed object is positioned in said openings and the cleaning cloth is drawn through said openings to clean the object.

5,850,662
ELASTIC PLASTIC SCRUBBERS FOR BATHING THE BACK AND THE METHOD OF MANUFACTURE

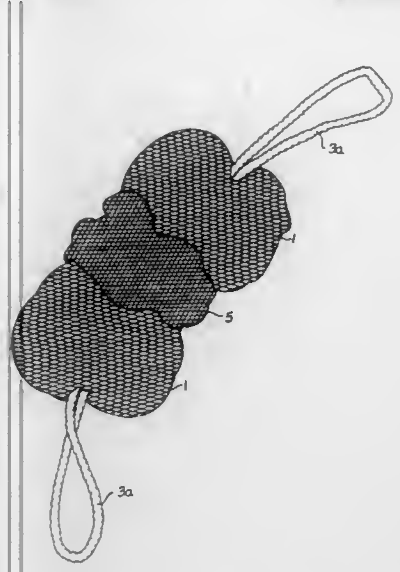
Jesus Javier Galvan-Garza, Platon #799 Col. Contry la Silla, Guadalupe N. L., Mexico, 67170

Filed Dec. 20, 1996, Ser. No. 769,803
Int. Cl.⁶ A47K *7/02;7/04*
U.S. Cl. 15—222 2 Claims

1. A plastic elastic scrubber for bathing the back, comprising in combination:

an elastic plastic mesh tubular element,

strings forming two handles, each having two ends extending inside the tubular element from opposite ends and secured to the mesh, said strings being secured to said tubular element when pleated in a manner forming an initial body of reduced length, thereby permitting the tubular element to be elastically

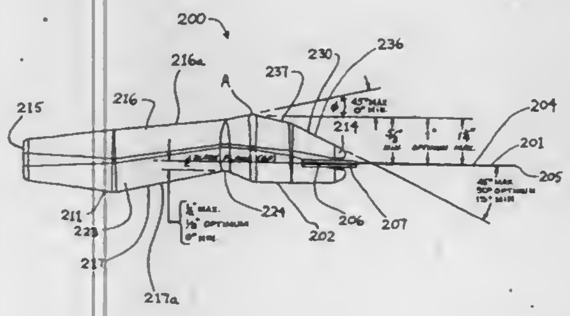


lengthened by pulling the two handles apart to provide a scrubber for engaging a users back.

5,850,663
ERGONOMIC TOOL HANDLE

Thomas B. Hardy, and Mark S. Corriveau, both of Sturbridge, Mass., assignors to Hyde Manufacturing Co., Southbridge, Mass.

Filed Feb. 7, 1996, Ser. No. 597,846
Int. Cl.⁶ A47L *13/022;* **B05C** *17/10;* **E04F** *21/06*
U.S. Cl. 15—236.01 19 Claims



1. A spreading tool for wiping against a work surface comprising:

a blade having a working edge adapted for contacting the work surface and a rear blade edge opposite said working edge, said blade lying in a blade plane; and

an elongated handle including a front end, a rear end, a top surface and a bottom surface, said handle being affixed to said blade such that the blade plane passes between said top and bottom surfaces of said handle, said handle further including

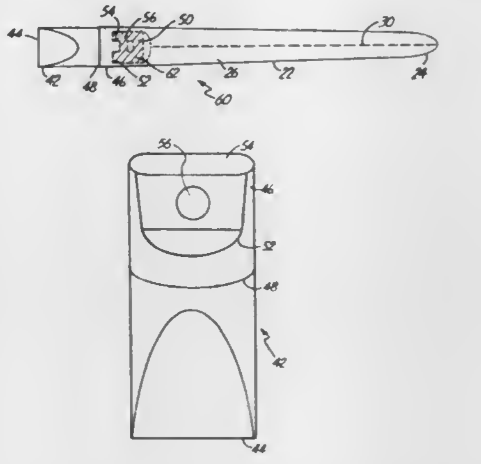
a gripping portion adjacent said rear end of said handle, said gripping portion having upper and lower surfaces and extending generally rearward of said rear blade edge and being adapted for gripping by a user's hand when the user's fore and middle fingers are substantially extended, and

an arched finger support portion adjacent said front end of said handle for supporting the user's substantially extended fore and middle fingers, said arched finger support portion comprising a first sloping planar surface and a second sloping planar surface, said first sloping planar surface being adjacent said front end of said handle and said second sloping planar surface being disposed rearwardly of said first sloping planar surface and meeting said upper surface of said gripping portion at an apex.

5,850,664
METHOD AND APPARATUS FOR CONSTRUCTING A PAINT APPLICATOR

Ladd B. Forsline, 16 Gehringer Dr., Kutztown, Pa. 19530

Continuation-in-part of Ser. No. 717,090, Sep. 20, 1996, Pat. No. 5,749,117. This application May 6, 1997, Ser. No. 851,861
Int. Cl.⁶ B05C *17/00*
U.S. Cl. 15—245.1 37 Claims



1. A device for application and manipulation of paint, comprising:

a handle having a distal end and a proximal end;

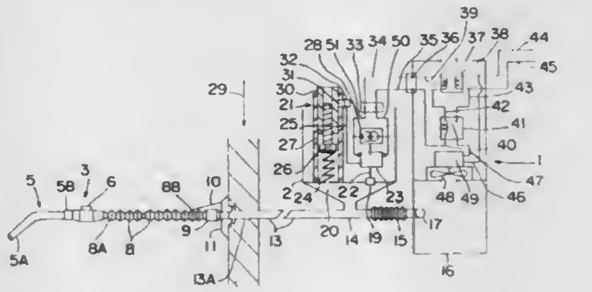
a working tip comprised of a flexible, polymer material having a proximal end including structure defining at least one aperture; and

a cavity located at the distal end of the handle into which the proximal end of the working tip is inserted and secured by a flowable adhesive material which at least partially penetrates the at least one aperture prior to curing.

5,850,665
CONTROL DEVICE FOR AN INTEGRATED SUCTION CLEANER UNIT

Serge Bousset, Fenols, France, assignor to Aldes Aeraulique, Venissieux Cedex, France

Continuation of Ser. No. 532,763, Oct. 13, 1995. This application Jul. 11, 1997, Ser. No. 893,659
Claims priority, application France, Apr. 13, 1993, 93/04588
Int. Cl.⁶ A47L *5/38*
U.S. Cl. 15—319 17 Claims



1. A control device for an integrated suction cleaner installation comprising:

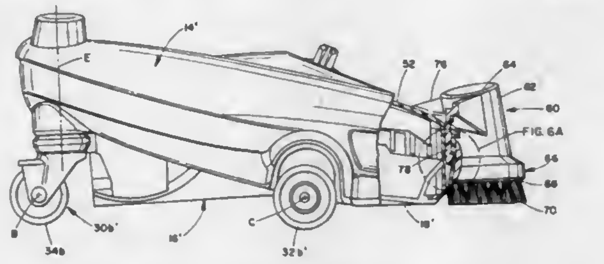
a suction cleaning unit (1) pneumatically connected to a system of tubes (13) which open at their ends (13A) onto couplings (11) onto which a mating end (9) of a hose (8) is inserted, the hose having at its other end (8A) a handle (5) suitable for receiving cleaning accessories:

said system of tubes (**13**) between the suction cleaning unit (**1**) and couplings (**11**), capable of transmission of acoustic pressure waves;
means for operating said suction cleaning unit (**1**);
means (**19**, **23** and **28**) for detecting a specific acoustic pressure wave created by handling of the hose, and located within the system of tubes, said specific acoustic pressure wave detecting means adapted to signal said operating means;
means (**21**, **32**) for detecting an increase of negative pressure in the tube system (**13**), said negative pressure detecting means adapted to signal said operating means;
wherein said means for operating said suction cleaning unit is activated when said specific acoustic pressure wave detecting means senses said specific acoustical pressure wave and said means for operating said suction cleaning unit is deactivated after said negative pressure detecting means senses said increase of negative pressure.

5,850,666
UPRIGHT VACUUM CLEANER

Richard C. Farone, Wickliffe; Craig M. Saunders, Rocky River; Jeffrey M. Kalman; Paul D. Stephens, both of Cleveland Heights; Robert A. Salo, Mentor; Charles J. Thùr, Broadview. Heights, and Michael F. Wright, Stow, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio

Filed Jan. 10, 1997, Ser. No. 781,805
Int. Cl.^{6} A47L *9/00*
U.S. Cl. 15—339 **2 Claims**

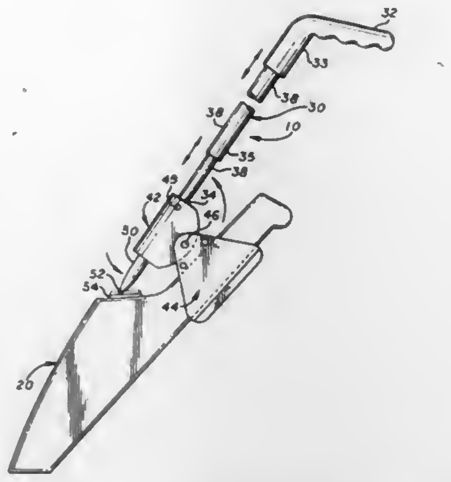


1. An upright vacuum cleaner comprising:
an upper section including a handle;
a lower cleaning nozzle section including an underside with a main suction opening formed therethrough;
first and second laterally spaced casters extending from said underside of said nozzle, each of said first and second casters being pivotable relative to said nozzle and including a wheel rotatable about a rolling axis; and,
first and second laterally spaced fixed wheels positioned forward of said first and second casters and rotatable about only a single rolling axis, each of said first and second forward wheels including a rolling surface and curved inner and outer transition surfaces connecting said rolling surface to inner and outer wheel sides, respectively.

5,850,667
EXTENSION HANDLE FOR PORTABLE VACUUM

Joseph A. Orsini, 6620 Coral Lake Dr., Margate, Fla. 33063
Filed Jan. 17, 1997, Ser. No. 785,586
Int. Cl.^{6} A47L *5/24*
U.S. Cl. 15—339 **11 Claims**

8. A device for use with a portable vacuum having a housing with a handle grip portion, a suction intake mouth, and an on/off switch for actuation of a vacuum motor within the housing; said device comprising:
an elongate shaft having a proximal end zone, a mid zone and a distal end zone;
attachment means for attaching said distal end zone of said elongate shaft to the portable vacuum; and

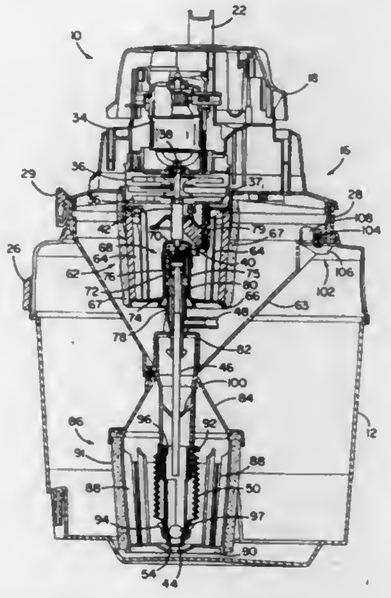


switch actuation means for operating the on/off switch to activate and deactivate the vacuum motor upon applying and releasing pressure at the suction intake mouth of the vacuum.

5,850,668
SELF-EVACUATING VACUUM CLEANER

Robert C. Berfield, Jersey Shore; Randy L. Buss, Hughesville, and Craig A. Seasholtz, Avis, all of Pa., assignors to Shop Vac Corporation, Williamsport, Pa.

Filed Jul. 12, 1996, Ser. No. 678,997
Int. Cl.^{6} A47L *7/00*
U.S. Cl. 15—353 **16 Claims**

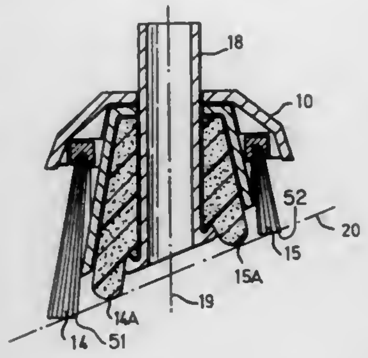


1. A wet/dry vacuum cleaner comprising:
a tank for receiving vacuumed material;
a tank lid;
a motor and an air impeller carried by the tank lid;
a pump for removing liquid material from the tank; and
the pump comprising an upper pump assembly and a lower pump assembly;
wherein the upper pump assembly includes a pump impeller and the upper pump assembly is attached to the lid;
the lower pump assembly includes a pump inlet tube disposed within the tank, wherein the pump inlet tube communicates with a lower portion of the tank; and
the lower pump assembly is removably attached to the upper pump assembly.

5,850,669
VACUUM CLEANER HEAD

Andreas Schupp, and Timmy Hok Yin Sin, both of New Territories, Hong Kong, assignors to Techtronic Industries Co., Ltd., Hong Kong

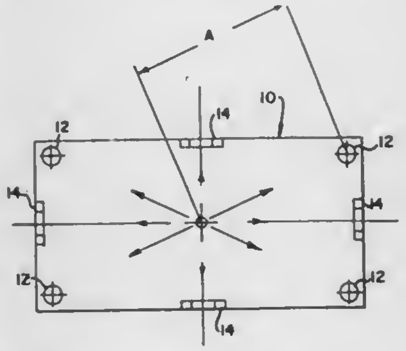
Filed Feb. 4, 1997, Ser. No. 795,336
Claims priority, application United Kingdom, Feb. 7, 1996, 9602422; Jun. 27, 1996, 9613493
Int. Cl.^{6} A47L *5/24;9/06*
U.S. Cl. 15—366 **5 Claims**



1. A vacuum cleaner head adapted to be attached directly to a vacuum cleaner body, said head comprising:
a generally rectangular hollow housing having a central axis, said hollow housing having an upper surface fitting against an outer surface of said body and a lower surface that provides rubbing elements contacting the ground in use, said rubbing elements lying in a plane at an angle from said central axis of approximately 70° and disposed along two opposing sides of said lower surface to form a gap between two opposing sides to allow dust and debris to enter said vacuum cleaner body through said head, said rubbing elements formed of bristles mounted in two rows to said head extending along said opposing sides.

5,850,670
ADJUSTABLE LEADER PIN BUSHING FOR PLASTIC MOLD

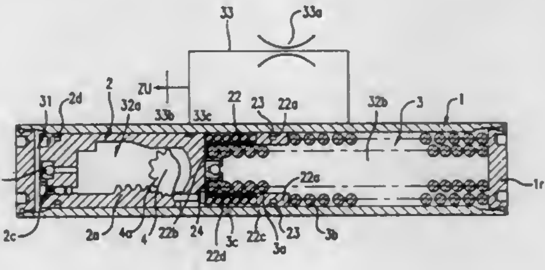
Borislav Boskovic, 2102 Bannockburn, Inverness, Ill. 60067
Continuation-in-part of Ser. No. 761,019, Dec. 5, 1996, Pat. No. 5,694,661. This application Dec. 8, 1997, Ser. No. 986,664
Int. Cl.^{6} F16L *5/00*
U.S. Cl. 16—2.1 **17 Claims**



1. An adjustable bushing, comprising
a. a housing body having predetermined internal width dimension,
b. means at one end of said housing body forming an internal ledge,
c. a liner within said housing body, said liner having predetermined external width dimensions less than said predetermined internal width dimensions, forming a gap between said liner and said body,
d. a removable cap secure to the other end of said housing body, said cap having an internal projection complementary to said ledge, said liner being located between said ledge and said projection, and
e. means axially biassing said liner between said ledge and said projection.

5,850,671
DOOR CLOSER

Uwe Käser, Wiernsheim, Germany, assignor to GEZE GmbH & Co., Germany
Continuation of Ser. No. 712,344, Sep. 11, 1996, abandoned. This application Oct. 28, 1997, Ser. No. 959,737
Claims priority, application Germany, Mar. 1, 1996, 196 08 023.1
Int. Cl.^{6} E05F *1/08*
U.S. Cl. 16—79 **21 Claims**

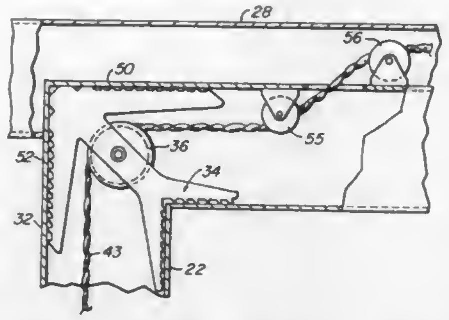


1. Door closer for a door having a door closure, comprising:
an energy accumulator for closing the door closure, the energy accumulator being at least partially charged by manual opening of the door closure, and being at least partially discharged to effect closing of the door closure;
the energy accumulator comprising a first partial energy accumulator and a second partial energy accumulator, door closing taking place by discharge of the first partial energy accumulator, and the second partial energy accumulator; and
a time function means for controlling discharge of the second partial energy accumulator whereby it is ensured that, after the opening, the door closes completely within a predetermined time, said time function means including
  means for automatically initiating discharge of the second partial energy accumulator if the closed position is not reached within a predetermined time period, and for automatically stopping discharge of the second partial energy accumulator as soon as a closed position is reached; and
  means for controlling discharge of the second partial energy accumulator such that during the closing operation, the second partial energy accumulator discharges continuously but more slowly than the first partial energy accumulator, with discharge phases of a different discharge speed.

5,850,672
APPARATUS OR KIT FOR CLOSING SLIDING CLOSURE

Kenneth R. Dalton, 332 S. Huntington, San Dimas, Calif. 91773
Filed Mar. 31, 1997, Ser. No. 829,354
Int. Cl.^{6} E05F *1/00*
U.S. Cl. 16—81 **12 Claims**

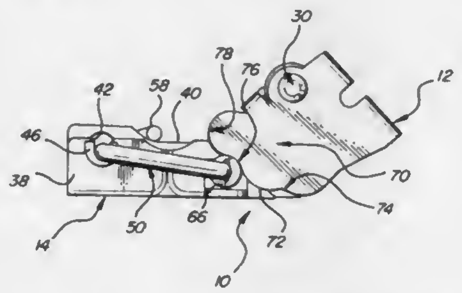
1. Apparatus for the automatic return to a closed position of a sliding closure disposed in a stationary mounting frame having spaced-apart tubular vertical stiles and a tubular upper header cooperating with one of the stiles to define a corner structure having interior walls defining inner and outer corners, said apparatus comprising:
a corner insert member configurated and adapted to fit within said corner structure and engage the interior walls adjacent both the inner and outer corners,
pulley means rotatably mounted on the corner insert member,



- a cable trained about the pulley and adapted to be attached to an upper member of the stationary mounting frame, and
- weight means suspended from the cable,
- whereby upon movement of the sliding closure from its closed position, the weight means is drawn upwardly toward the pulley, and when the sliding closure is released the weight means is gravity-urged downwardly to move the sliding closure toward its closed position.

5,850,673
CONSTANT CONTACT HINGE ASSEMBLY

Vincent Wood, Sr., and Vincent Wood, Jr., both of 4920 Kebbe Dr., Sterling Heights, Mich. 48310
Filed Apr. 3, 1996, Ser. No. 627,091
Int. Cl.⁶ E05D *11/10*
U.S. Cl. 16—334 **5 Claims**

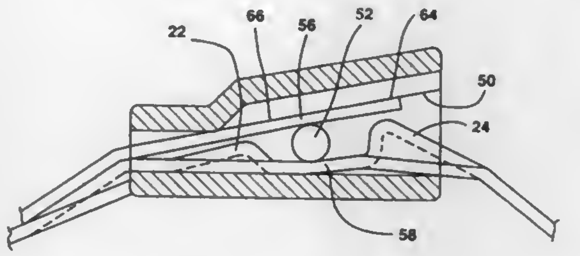


1. An automotive door hinge providing door-off assembly and three position detent action at a closed position, partially open position and fully open position, said hinge comprising:

- a first frame member having a pair of spaced horizontally extending flanges with a hinge pin mounted between said flanges;
- a swinging member having a pair of spaced horizontally extending ears journalled on said hinge pin for rotation of said swinging member relative to said first frame member;
- a second frame member detachably attached to said swinging member for rotation with said swinging member relative to said first frame member about said hinge pin;
- a torsion spring mounted on one of said first and second frame members;
- a detent holding mechanism operable between said first and second frame members comprising:
  - a cam located on an other of said first and second frame members, said cam having a smooth continuous cam surface between a closed door position detent on said cam surface and a partially open door position detent on said cam surface, and said cam having a smooth continuous cam surface between said partially open door position detent and a fully open door position detent on said cam surface; and
  - a cam follower mounted on said torsion spring, said cam follower being held in constant contact against one of said smooth continuous cam surfaces by said torsion spring for continuous movement along one of said smooth continuous cam **23** surfaces between detent positions.

5,850,674
SMOOTH BAND CLAMP WITH MOVABLE LOCKING ELEMENT

George A. Jansen, Denver, Colo., assignor to Band-It-IDEX, Inc., Denver, Colo.
Filed Sep. 9, 1996, Ser. No. 711,255
Int. Cl.⁶ B65D *63/08*
U.S. Cl. 24—21 **24 Claims**

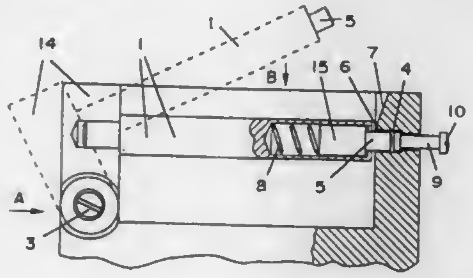


1. A clamping device having a band and cooperating buckle for facilitating securement of a band periphery, comprising:

- band having a first end and a second end;
- a buckle positioned on said band, having a passage extending therethrough of a size and shape sufficient to receive said band;
- locking means disposed within said buckle and between overlapping portions of said band to effectuate securement of the band periphery;
- wherein said buckle has a base, opposed side wells and a top defining said passage, said top and side walls adjoining to define internal shoulder portions such that said locking means secures said overlapping portions of said band against said base and said shoulder portions.

5,850,675
DEVICE FOR DETACHABLY FIXING A WATCHBAND TO A WATCH CASE

Francis Bourquin, Chemin des Lorettes 12, 2520 La Neuveville, and Louis Wiser, Rue du Paddock 114, 2854 Bassecourt, both of Switzerland
Filed Mar. 18, 1997, Ser. No. 820,673
Claims priority, application Switzerland, Mar. 18, 1996, 00709/96
Int. Cl.⁶ A44C *5/00*
U.S. Cl. 24—265 WS **18 Claims**



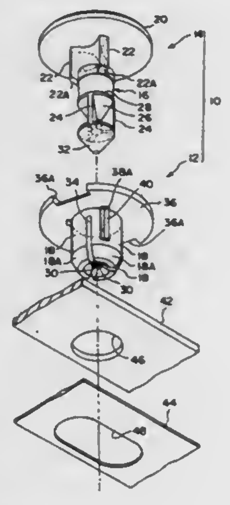
1. A device for securing a watchband to a watch case, said device comprising:

- a pair of opposed watchband securing horns on a watch case, one of said horns pivotally connected to the watch case for pivotal motion towards and away from the opposed horn about a pivot axis extending transversely of the watch case, and including a first connector for a watchband securing rod;
- a watchband securing rod having a length and first and second ends, the first end secured to the one horn by the first connector for pivotal motion of the rod with the one horn in a direction transversely of the length of the rod towards and away from the watch case and the opposed horn;

- one end of said rod being moveable lengthwise of the rod for varying the rod length, said rod at its full length being longer than the distance between the opposed horns when the one horn is pivoted to its closest position relative to the other horn;
- an elastic element normally biasing the moveable end of the rod towards a full length position but yieldable elastically for permitting the length of the rod to decrease;
- the opposed horn including a bore hole for receiving the second end of the rod opposite the first end attached to the pivoted horn, said bore hole defining a rod end receiving entrance for receiving the second end of the rod when the rod is to be secured to the opposed horn, said entrance located a distance inwardly from an end of the horn facing away from the watch case and facing towards the pivoted horn;
- a rod camming surface located on the opposed horn between said rod end receiving entrance and the end of the horn facing away from the watch case and arranged to engage the second end of the rod at its full length as the rod is pivoted towards the rod end receiving entrance and to cause the rod to decrease in length against the bias of said elastic element by causing relative motion between said moveable end and the rod while the second end of the rod traverses the camming surface at least until the second end intersects the rod receiving entrance, whereupon the rod may expand to full length under the influence of the elastic element with the second end located in said bore hole.

5,850,676
CLIP WITH ENGAGING MECHANISM

Kenji Takahashi, Toyota; Mitsuru Kogami, Utsunomiya, and Kazunari Miyasaka, Toyota, all of Japan, assignors to Nifco Inc., Yokohama, Japan
Filed Dec. 9, 1997, Ser. No. 987,234
Claims priority, application Japan, Mar. 12, 1997, 9-057778
Int. Cl.⁶ F16B *13/00;19/00*
U.S. Cl. 24—297 **5 Claims**

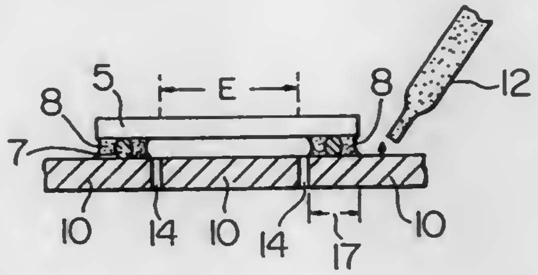


1. A clip comprising:

- a female member including a plurality of elastic pieces arranged to form a hollow portion therein, said elastic pieces elastically deformable in radial directions and being formed of a cylindrical member, and a plurality of first slits formed in the cylindrical member and extending along an axial direction thereof from a front end of the cylindrical member to partially divide the same to thereby define the elastic pieces; engaging portions disposed in the elastic pieces, each of the engaging portions being formed of a second slit formed in each of the elastic pieces extending along the axial direction; and a collar plate disposed at rear ends of the elastic pieces, said collar plate having a hole communicating with the hollow portion defined by the elastic pieces, and
- a male member including a head to abut against the collar plate; a leg extending from the head to be inserted into the hollow portion to expand the elastic pieces; and lock portions disposed in the leg, each of said lock portions being formed of a rib projecting radially outwardly from the leg and extending along an axial direction of the leg to engage the second slit so that the elastic pieces are prevented from being deviated when a deviating force is applied thereto.

5,850,677
METHOD OF MOUNTING A PIEZOELECTRIC ELEMENT

Morimoto Ryoichi, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan
Division of Ser. No. 496,918, Jun. 30, 1995, Pat. No. 5,604,667, which is a continuation of Ser. No. 255,362, Jun. 8, 1994, abandoned, which is a continuation of Ser. No. 134,415, Oct. 8, 1993, Pat. No. 5,359,494. This application Nov. 14, 1996, Ser. No. 749,054
Claims priority, application Japan, Oct. 13, 1992, U.M. 4-7726; Jan. 8, 1993, U.M. 5-2825
Int. Cl.⁶ H01L *41/22*
U.S. Cl. 29—25.35 **16 Claims**



1. A method of mounting a piezoelectric element to a circuit board, the piezoelectric element having a vibration region, the method comprising the steps of:

- positioning the piezoelectric element relative to the circuit board;
- soldering the piezoelectric element to the circuit board to form a soldered electrical connection;
- applying a bonding agent around at least a portion of the soldered electrical connection; and
- drawing excess bonding agent away from the vibration region of the piezoelectric element through at least one hole in the circuit board.

5,850,678
CONDENSER AND THE PRODUCTION METHOD THEREOF

Kazuo Kawa, Akiruno, Japan, assignor to JCC Engineering Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1996, Ser. No. 717,326
Claims priority, application Japan, Apr. 17, 1996, 8-121118
Int. Cl.⁶ B65H *18/26;* H01G *7/00*
U.S. Cl. 29—25.42 **3 Claims**

1. A method for producing a condenser element by rolling up a condenser element material including a positive foil sheet, a negative foil sheet and an isolating sheet placed one on another in combination, each of said positive foil sheet and said negative foil sheet having a plurality of preattached lead terminals with a predetermined space provided therebetween, said method comprising the steps of:

- rolling up said condenser element material around a rolling up shaft rotated in one direction to run said condenser element material supplied thereto at a predetermined constant speed;

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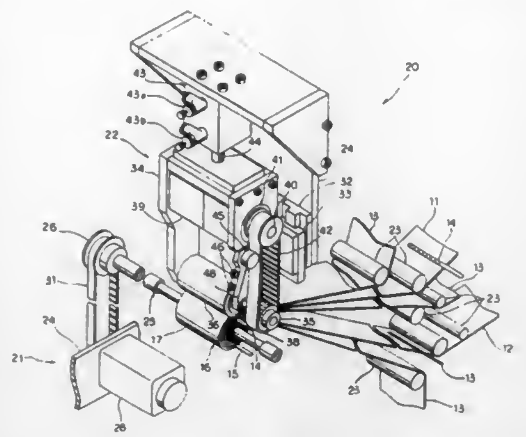


rotating a servo-motor in a direction opposite to the rotating direction of said rolling up shaft under control to provide said servo-motor with a predetermined constant torque;

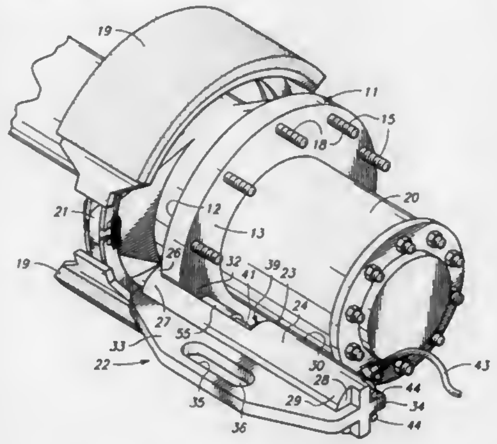
applying said predetermined constant torque of said servo-motor to a rotational axis of a drive roller, thereby rotating said drive roller in the direction opposite to the rotating direction of said rolling up shaft; and

pressing said drive roller against the outer surface of said condenser element material so that said drive roller may cooperate with said rolling up shaft to substantially eliminate a tension applied to a preceding wrap of rolled up condenser element material as said condenser element material is rolled up, thereby to prevent said condenser element material from being irregularly tightened, so that said plurality of lead terminals may be substantially arranged circumferentially in a same phase and diametrically in alignment.

5,850,679
TOOL FOR MOUNTING AND REMOVING WHEEL LUG BOLTS FROM VEHICLE WHEEL HUBS

Jay F. Hoffman, 23317 N. Elk Chattaroy Rd., Colbert, Wash. 99005

Filed Apr. 11, 1996, Ser. No. 631,797
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—252 18 Claims



1. A vehicle wheel hub lug bolt removal and installation tool utilizing a ram cylinder for selectively removing and installing wheel hub lug bolts from a vehicle mounted wheel hub adjacent a brake drum and brake linkage and with the wheel hub having a thickness dimension and at least one lug bolt receiving orifice, comprising:

a rigid elongated frame including an abutment surface at one end, and a ram cylinder mounting surface at a remaining end;

a cup member releasably mountable to the abutment and including an internal lug bolt receiving bore;

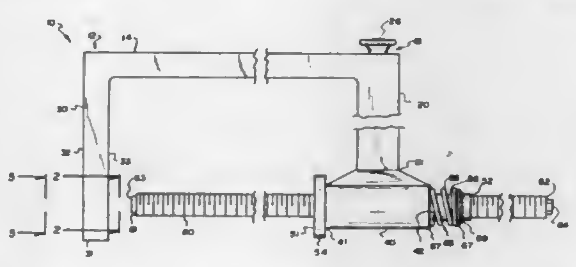
a ram cylinder receiving recess formed in the elongated frame between the ram cylinder mounting surface and the abutment surface; and

a wheel hub receiving recess formed by the frame between the abutment surface and ram cylinder receiving recess.

5,850,680
DISK BRAKE ASSEMBLY TOOL

Theresa Verrier, and James Verrier, both of 5 Clark Rd., Stony Point, N.Y. 10980

Filed Jan. 29, 1998, Ser. No. 15,109
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—257 13 Claims



13. A disc brake assembly tool for use with a disc brake assembly having a caliper body, a piston, and a break pad, the caliper body having a piston cylinder and a side wall, the piston cylinder being spaced apart from the side wall of the caliper body to define a channel for positioning the break pad, the side wall having an opening therethrough into the channel, the piston being disposable within the piston cylinder of the caliper body, the piston body being extendable into the channel of the caliper body, said disc brake assembly tool comprising:

a base having an elongate center portion, an arm portion, and a foot portion, said arm and foot portions each having a terminal end, said arm and foot portions being extended substantially perpendicular from said center portion, said arm portion being spaced apart from said foot portion;

a mount member being coupled to said terminal end of said arm portion, said mount member having proximal and distal ends, and a mount bore being extended therethrough, said mount bore being generally parallel with said central portion, said mount bore having an elongate groove being extended along the length of said mount bore;

a tubular sleeve having a threaded lumen, an outer surface, opposite proximal and distal ends, and proximal and distal portions, said lumen of said sleeve having a longitudinal axis being extended between said ends of said sleeve, said proximal and distal portions of said sleeve forming and abutment therebetween, said sleeve being inserted through said mount bore, said proximal end of said sleeve being extended towards said foot portion, said distal portion of said sleeve being extended from said mount bore of said mount member;

outer surface of said proximal portion of said sleeve having an elongate ridge, said ridge of said proximal portion of said sleeve being disposed within said groove of said mount bore;

said outer surface of said proximal portion of said sleeve having a pair of spaced apart holes, said holes of said proximal portion of said sleeve being positioned towards said arm portion of said base one of said holes of said proximal portion of said sleeve being located towards said proximal end of said sleeve, an other of said holes of said proximal portion of said sleeve being located towards said distal end of said sleeve;

said proximal end of said sleeve having a radial flange being outwardly radially extended therefrom;

a securing bore being extended through said arm portion from said central portion to said mount member, said securing bore opening into said mount bore of said mount member;

an elongate securing pin being extended through said securing bore, said securing pin having opposite first and second ends, said first end of said securing pin being positioned towards said central portion, said first end of said securing pin having a knob being extending therefrom, said second end of said securing pin being extendable into said mount bore such that said second end of said securing pin is insertable into one of said holes of said proximal portion of said sleeve;

first biasing assembly biasing said second end of said securing pin towards said mount bore of said mount member, said first biasing assembly being positioned towards said first end of said securing pin;

said sleeve being positionable within said mount bore between an extended position and a retracted position, said second end of said securing pin being insertable within one of said holes of said proximal portion of said sleeve when said sleeve is in said extended position, said securing pin being insertable within the other hole of said proximal portion of said sleeve when said sleeve is in said retracted position;

an elongate threaded rod having opposite proximal and distal ends, said threaded rod being threadingly extended through said threaded lumen of said sleeve, said distal end of said threaded rod extending from said distal end of said sleeve, said proximal end of said threaded rod extending from said proximal end of said sleeve, said threaded rod being extendable towards said foot portion;

said proximal end of said threaded rod having a rectangular stub extending therefrom;

a second biasing assembly biasing said sleeve away from said foot portion, said second biasing assembly having a second spring, a stop washer, and a snap ring;

said stop washer of said second biasing assembly being disposed around said distal portion of said sleeve, said stop washer abutting said distal end of said mount member, said stop washer abutting said abutment of said sleeve when said sleeve is positioned in said retracted position;

said outer surface of said distal portion of said sleeve having a radial groove;

said snap ring of said second biasing assembly being disposed around said distal portion of said sleeve and positioned in said radial groove of said distal portion of said sleeve;

said second spring of said second biasing assembly being disposed around said distal portion of said sleeve and interposed between said stop washer of said second biasing assembly and said snap ring of said second biasing assembly;

said foot portion having proximal and distal surfaces, and a slot therethrough between said surfaces of said foot portion, said slot of said foot portion being extended from said terminal end of said foot portion towards said central portion;

said threaded lumen of sleeve being aligned with said slot such that said longitudinal axis of said lumen of said sleeve extends through a portion of said slot of said foot portion, said proximal end of said threaded rod being extendable through said slot of said foot portion; and

an piston adapter plate being generally rectangular and having a mounting hole interposed between a pair of guide pin holes, said piston adapter plate being mountable to said proximal end of said threaded rod such that said stub of said proximal end of said threaded rod is inserted into said mounting hole.

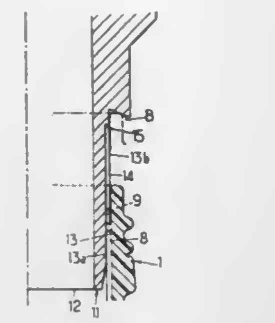
5,850,681
METHOD AND ARRANGEMENT FOR ANGULARLY POSITIONING A CONTAINER OR A CONTAINER PREFORM ON A MANDREL INSERTED IN THE NECK THEREOF

Paul La Barre, Saint Adresse, France, assignor to Sidel, Le Havre, France

PCT No. PCT/FR94/00586, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO94/26499, PCT Pub. Date Nov. 24, 1994

PCT Filed May 17, 1994, Ser. No. 553,657
Claims priority, application France, May 19, 1993, 93 06056
Int. Cl.⁶ B23Q *3/00;7/00*
U.S. Cl. 29—464 18 Claims

1. A method of positioning a container or a container preform of thermoplastic material and having a neck with a substantially circular cylindrical inside wall, in a predetermined angular position on a mandrel, comprising



providing at least one approximately radial projection on either the inside wall of the neck or the outside wall of the mandrel so that the projection can bear against at least one thrust shoulder provided on whichever of the outside wall of the mandrel or the inside wall of the neck does not have the at least one projection, said shoulder facing respectively towards the free end of the mandrel or the free end of the neck and extending over said wall on which it is positioned while being inclined relative to the axis of the mandrel or the axis of of said neck, respectively, and

inserting the mandrel into the neck, thereby causing the neck to rotate relative to the mandrel, rotation being generated by said at least one radial projection sliding against said at least one shoulder, until locking means prevent relative movement of the mandrel and of the container or preform once the neck is disposed in said predetermined angular orientation relative to the mandrel.

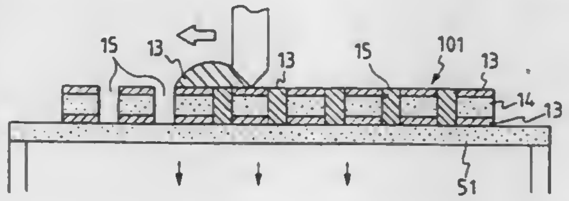
5,850,682
METHOD OF MANUFACTURING CHIP-TYPE COMMON MODE CHOKE COIL

Tomoaki Ushiro, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Division of Ser. No. 180,216, Jan. 12, 1994, Pat. No. 5,552,756. This application Jul. 9, 1996, Ser. No. 677,071

Claims priority, application Japan, Jan. 13, 1993, Hei. 5-22148

Int. Cl.⁶ H01F *41/02*
U.S. Cl. 29—608 20 Claims



1. A method for manufacturing a chip type common mode choke coil, said method comprising the steps of:

(a) forming a stack of green sheets including:
  (1) a lamination including a plurality of non-magnetic sheets each having conductive lines printed thereon, said conductive lines being coupled together and having a shape which will form primary and secondary coils having respective center loops; and
  (2) first and second magnetic layers located on a top and a bottom surface of said lamination, respectively, and extending over said center loops;
(b) forming core receiving holes through both said lamination and said magnetic layers in the area of said center loops after said stack has been formed; and
(c) inserting magnetic material into said core receiving holes.

5,850,683
COMPONENT MOUNTING APPARATUS

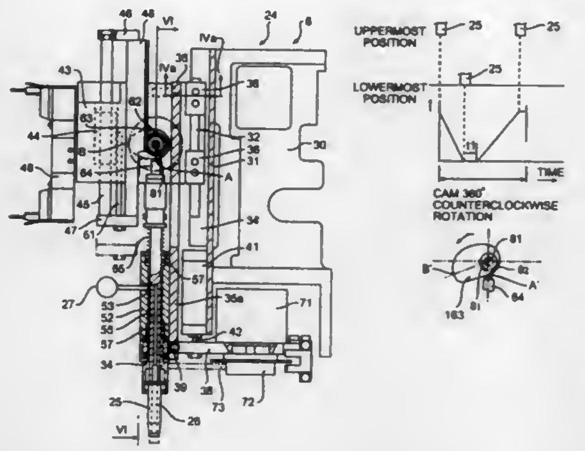
Tadao Okazaki, and Yongsik Won, both of Shizuoka, Japan, assignors to Samsung Aerospace Industries, Ltd., Kyongsangnam-do, Rep. of Korea

Filed Jan. 28, 1997, Ser. No. 787,048

Claims priority, application Japan, Jan. 29, 1996, 8-012607

Int. Cl.⁶ H05K *3/30;13/04*

U.S. Cl. 29—740 **10 Claims**



1. A component mounting apparatus for mounting a component from a component stage on a printed circuit board, comprising:

a mounting head movably connected between said component stage and said printed circuit board;

a holder connected to said mounting head;

a suction bit, connected to said holder, for picking up said component;

an eccentric cam rotatably connected to said holder;

a rack member connected to move linearly with respect to said holder, linear movement of said rack member causing said eccentric cam to rotate by a predetermined degree; and

a follower, connected to said suction bit and contacting a surface of said eccentric cam, for moving said suction bit up and down when said eccentric cam is rotated by the predetermined degree by said rack member.

5,850,684
CABLE-END-PORTION BEND FORMING DEVICE FOR AUTOMATIC CONNECTING APPARATUS

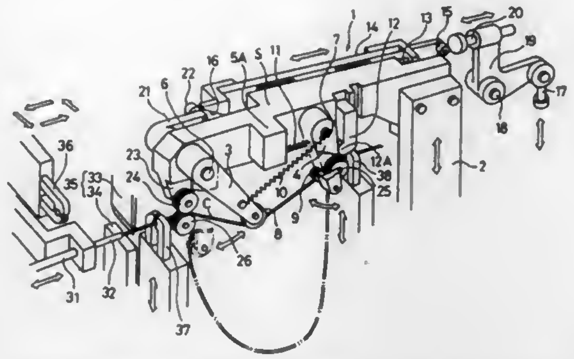
Toshikatsu Ichitou; Hideyuki Ishioka, both of Tokyo; Takahiro Okamura; Atsuro Nakamura, both of Mie; Shinichi Takehana, Nagano; Hirokazu Yokozawa, Nagano, and Toshiharu Hizawa, Nagano, all of Japan, assignors to Hirose Electric Co., Ltd., Tokyo, and Sumitomo Wiring System, Ltd., Yokkaichi, both of Japan

Filed Feb. 8, 1995, Ser. No. 385,814

Claims priority, application Japan, Mar. 29, 1994, 6-081157

Int. Cl.⁶ B23P *19/02*

U.S. Cl. 29—748 **5 Claims**



1. A cable-end-portion bend forming device for an automatic cable connecting apparatus, comprising:

a front guide roller and a rear guide roller spaced from said front guide roller for guiding a cable supplied to said device;

a front forming roller and a rear forming roller positioned between said front guide roller and said rear guide roller to engage the cable against said front guide roller and said rear guide roller, respectively; and

a supporting member for rotatably supporting said rear forming roller movably mounted to move said rear forming roller between a position in close proximity to said rear guide roller and a position spaced apart therefrom.

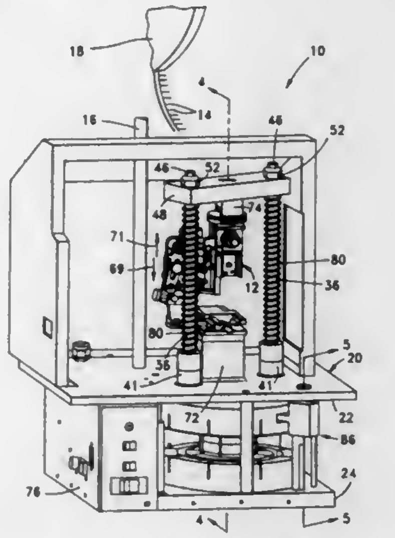
5,850,685
MANUAL CYCLING MECHANISM FOR A MAGNETICALLY POWERED TERMINATING MACHINE

Donald William Wright, Felton; Michael Anthony Yeomans, Camp Hill, and Michael David Strong, Mechanicsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 29, 1997, Ser. No. 901,976

Int. Cl.⁶ H01R *43/04;43/048*

U.S. Cl. 29—751 **12 Claims**



1. In a machine for receiving and operating a terminal applicator in the attaching of an electrical terminal to a conductor, said machine including a frame, a magnetic power unit having a fixed magnetic portion attached to said frame and a movable magnetic portion coupled to said terminal applicator arranged to move in a power stoke along a first axis for effecting said operating thereof and in a return stroke, a cycling mechanism for moving said movable portion through said power and return strokes comprising:

a feature attached to said movable portion;

a latch member;

a first coupling attached to said frame and coupled to said latch member and arranged to selectively move said latch member in a first direction substantially parallel to said first axis under power of said magnetic power unit during said power stroke when said movable magnetic portion is reciprocated relative to said fixed magnetic portion and in a second opposite direction; and

means for causing said latch member to releasably engage said feature so that when said latch member is moved in said first and second directions said moving portion of said magnetic power unit is moved through said power and said return strokes, respectively.

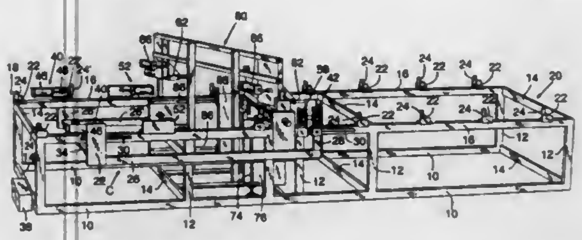
5,850,686
APPARATUS FOR MAKING WALL FRAME STRUCTURES

Michael M. Mertes, Beaverton, Oreg., assignor to Gary J. Haberman, Beaverton, Oreg.

Filed Jan. 25, 1996, Ser. No. 591,937

Int. Cl.⁶ B23P *11/00*

U.S. Cl. 29—809 **11 Claims**



1. Apparatus for making wall frame structures having top and bottom plate members and interconnecting stud members, the apparatus comprising:

a) an elongated frame having longitudinally opposite, infeed and outfeed ends,

b) a plates carriage mounted on the frame for movement in a longitudinal direction of the frame, the plates carriage configured for receiving and moving opposite, laterally spaced apart, longitudinally extending, top plate members and bottom plate members longitudinally along the frame from the infeed end to the outfeed end thereof,

c) drive means interengaging the frame and plates carriage for moving the plates carriage in an outfeed direction of the frame to move corresponding top and bottom plate members received by the plates carriage in stepwise increments in the outfeed direction along the frame,

d) a stud carriage mounted on the frame for delivery and positioning a stud member perpendicularly between top and bottom plate members on the plates carriage,

e) securing means on the frame for securing the opposite ends of the stud member to top and bottom plate members on the plates carriage, and

f) control means for controlling the operation of said drive means and said stud carriage and said securing means for sequentially and repeatingly:

1) operating said drive means to move corresponding, laterally spaced, longitudinally extending top and bottom plate members stepwise in predetermined increments longitudinally along the frame in the outfeed direction thereof, and then,

2) operating said stud carriage to deliver and position a stud member between the top and bottom plate members, and then

3) operating said securing means to secure the opposite ends of the positioned stud member to the top and bottom plate members.

5,850,687
MACHINE AND A METHOD FOR DRIVING INSERTS INTO PIECES OF SHEET METAL

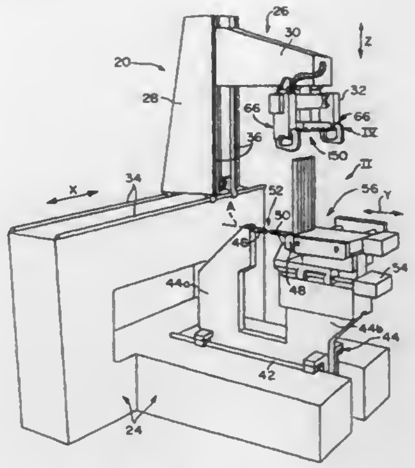
Katsuhide Ito, Turin, Italy, assignor to Amada America, Inc., Buena Park, Calif.

Filed Mar. 8, 1996, Ser. No. 613,171

Claims priority, application Italy, Mar. 10, 1995, T095A0184

Int. Cl.⁶ B23P *19/04*

U.S. Cl. 29—818 **14 Claims**



1. A machine for driving inserts into pieces of sheet metal, comprising:

a punch and a die which are movable relative to one another along a substantially horizontal axis along which inserts are to be driven, wherein said punch and said die define a driving zone therebetween;

a slidable support;

a piece-holder head rotably attached to said slidable support and having at least one gripping member for gripping the piece of sheet metal under two different operative conditions;

means for moving said at least one gripping member relative to said piece-holder head, such that said at least one gripping member holds the piece of sheet metal in a floating manner with respect to said piece-holder head under a first of said two different operative positions, so that the piece is free to undergo adjustment movements, relative to said piece-holder head, when the piece is acted upon by an external force;

means for locking said at least one gripping member relative to said piece-holder head, such that said at least one gripping member holds the piece relatively rigid with respect to said piece-holder head under a second of said two operative conditions, so that said punch and die can cooperate to drive an insert into the hole in the piece of sheet metal; and

a locating means for imparting an external force to the piece when the piece is held under the first operative condition, to cause the adjustment movements of the piece to align the hole, into which an insert is to be driven, with the axis along which the inserts are to be driven.

5,850,688
METHOD OF MANUFACTURING ELECTRONIC COMPONENT

Daizo Ando, Katano; Tadashi Nakamura, Hirakata; Shinji Umeda, Neyagawa, and Kunihiko Oishi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

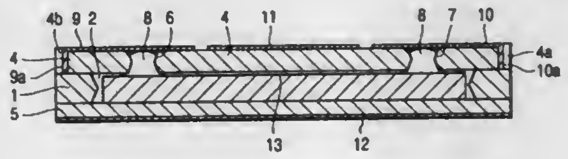
Division of Ser. No. 381,655, Jan. 31, 1995, Pat. No. 5,644,478.

This application Mar. 19, 1997, Ser. No. 820,546

Claims priority, application Japan, Jan. 31, 1994, 6-009202

Int. Cl.⁶ H05K *3/30*

U.S. Cl. 29—832 **15 Claims**



1. A manufacturing method for an electronic component comprising the steps of:

producing a framework by forming an opening through a first opening plane and a second opening plane on opposing sides of a base plate resulting in an opening entirely through the base plate;

fixing a first plate onto said first opening plane of the framework;

mounting an electronic element inside of the opening formed in said framework;

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fixing a second plate onto said second opening plane of the framework; and

heating the electronic component resulting from the preceding steps, thereby directly joining said framework and first plate, and said framework and second plate, respectively.

5,850,689

METHOD AND APPARATUS FOR SUPPORTING PRINTED BOARD

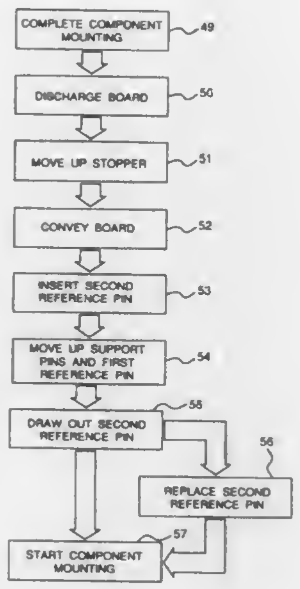
Seiichi Mogi, Neyagawa; Wataru Hirai, Osaka; Muneyoshi Fujiwara, Katano; Osamu Okuda, and Hirokazu Honkawa, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 17, 1996, Ser. No. 586,314

Claims priority, application Japan, Jan. 17, 1995, 7-004894

Int. Cl.^{6} H05K *3/30;* B23P *19/00*

U.S. Cl. 29—834 **10 Claims**


COMPLETE COMPONENT MOUNTING
49
DISCHARGE BOARD
50
MOVE UP STOPPER
51
CONVEY BOARD
52
INSERT SECOND REFERENCE PIN
53
MOVE UP SUPPORT PINS AND FIRST REFERENCE PIN
54
DRAW OUT SECOND REFERENCE PIN
56
REPLACE SECOND REFERENCE PIN
57
START COMPONENT MOUNTING

1. A method for supporting a printed board, comprising:

a first step of conveying to a specified position a printed board having a first reference hole and a second reference hole for setting a position and posture thereof;

a second step of stopping the conveyed printed board at the specified position;

a third step of inserting a first reference pin provided at the specified position in to the first reference hole of the stopped printed board;

a fourth step of inserting a second reference pin in to the second reference hole of the printed board, the second reference pin being movable in parallel to a mounting surface of the printed board and in any arbitrary direction relative to the first reference pin;

a fifth step of pinching the printed board to hold the position and posture thereof with the reference pin and the second reference pin both inserted;

a sixth step of drawing out, after the fifth step, at least one reference pin of the first reference and the second reference pin from its corresponding reference hole; and

a seventh step of mounting, after the sixth step, an electronic component onto the printed board.

6. An apparatus for supporting a printed board, comprising:

a conveying device for conveying to a specified position a printed board having a first reference hole and a second reference hole for setting a position and posture of the printed board;

a stop member for stopping the printed board at the specified position;

a first reference pin provided at a specified position and being fittable to the first reference hole and movable perpendicularly to a mounting surface of the printed board;

a second reference pin which is fittable to the second reference hole and movable perpendicularly to the mounting surface and which is provided in a device movable in parallel to the mounting surface and in any arbitrary direction relative to the first reference pin;

a holding device for pinching end portions of the printed board to hold the position and posture thereof; and

a control unit for controlling operations of the conveying device, the stop member, the first and second reference ping and the holding device in a sequence of operations.

5,850,690

METHOD OF MANUFACTURING AND ASSEMBLING AN INTEGRATED CIRCUIT CARD

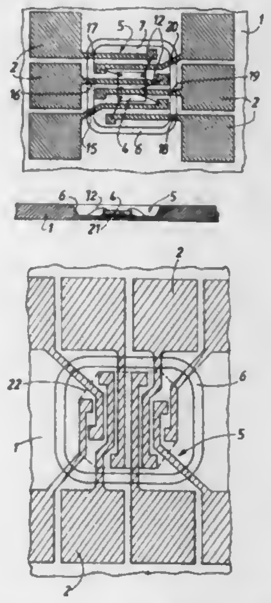
François Launay, Caen; Jacques Venambre, Ifs, both of France; Jan Severin, Waalre, and Harry Van Noort, Veldhoven, both of Netherlands, assignors to De La Rue Cartes et Systemes SAS, Paris, France

Filed Jul. 8, 1996, Ser. No. 677,001

Claims priority, application France, Jul. 11, 1995, 95 08369

Int. Cl.^{6} H05K *3/34;13/04;* H01L *21/56;23/28*

U.S. Cl. 29—841 **4 Claims**



1. A method of manufacturing and assembling an electronic card comprising an electrically insulating card support provided with a cavity having a bottom and at least first and second opposing side walls, the cavity being provided in the card support for accommodating an integrated circuit defining first and second opposed sides, said integrated circuit having a first group of contacts which are provided on said first side and a second group of contacts which are provided on said first side and, said electrically insulating card support having on one surface metal contact pads electrically connected to respective contacts of said integrated circuit, said metal contact pads being respectively arranged in first and second groups adjacent the first and second side walls of said cavity, the method comprising the following steps:

a first step comprises providing electrical conductor tracks on the card support, each of said tracks being positioned against the bottom and a sidewall of said cavity and each of said tracks connected to one of said metal contact pads arranged on the surface of the support, the conductor tracks being provided so that each traverses the bottom of the cavity from one of said first and second side walls towards the other of said first and second side walls by more than half the dimension of the cavity defined by the first and second side walls, wherein said tracks connected to said first group of metal contacts pads alternate with said tracks connected to said second group of metal contact pads,

a second step comprises gluing said second side of said integrated circuit, to the bottom of the cavity, wherein said first group of contacts on said integrated circuit are positioned adjacent said first group of metal contact pads and said second group of contacts on said integrated circuit are positioned adjacent said second group of metal contact pads, the integrated circuit being glued by means of non-conducting glue on a number of said tracks,

a third step comprises soldering conductor wires between the contacts of the integrated circuit and ends of corresponding conductor tracks, the ends of said tracks connected to said first group of metal contact pads being connected to said second group of contacts on said integrated circuit and ends of said tracks connected to said second group of metal contact pads being connected to said first group of contacts of said integrated circuit, and

a fourth step comprises filling the cavity with a protective resin which is subsequently polymerised.

5,850,691

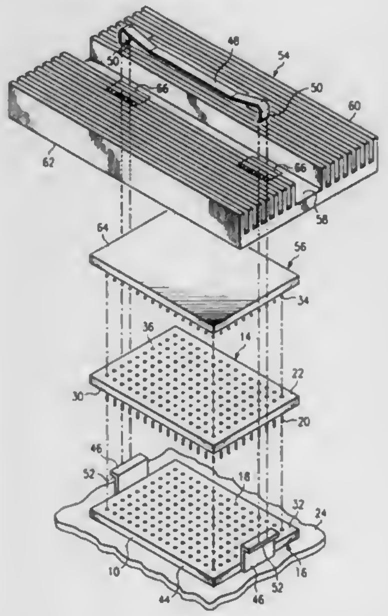
METHOD FOR SECURING AN ELECTRONIC COMPONENT TO A PIN GRID ARRAY SOCKET

James S. Bell, Cedar Park, Tex., assignor to Dell USA, L. P., Round Rock, Tex.

Division of Ser. No. 504,812, Jul. 20, 1995, abandoned. This application Nov. 4, 1996, Ser. No. 740,833

Int. Cl.^{6} H05K *3/32;7/12;13/04*

U.S. Cl. 29—845 **6 Claims**



1. A method for securing an electrical component to a circuit board having a plurality of securing openings therethrough, the method steps comprising:

placing a planar base member on said circuit board in a manner to register a plurality of conductor pin apertures formed through said base member with said plurality of securing openings, wherein an elongated, resilient clamping projection is integrally formed with the base member;

registering and inserting a plurality of conductor pins projecting outwardly from a pin grid array (PGA) socket through said plurality of conductor pin apertures and said plurality of securing openings thereby sandwiching said base member in its entirety between said circuit board and said PGA socket;

securing the electrical component to said PGA socket; and

soldering said PGA socket to said circuit board.

5,850,692

PROCESS OF MAKING CABLE PLUG CONNECTOR

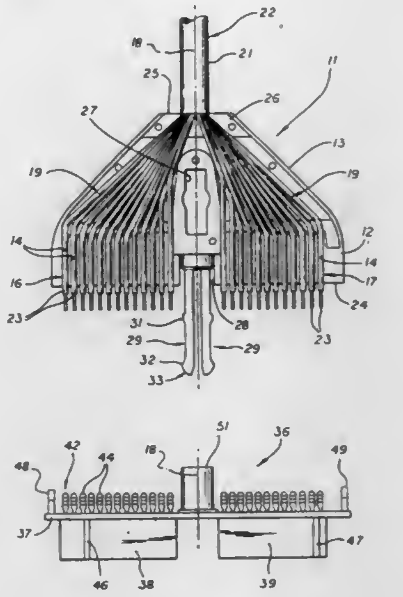
Manfred Schock, Dreieich; Juergen Frommer, Fellbach; Manfred Illg, Weinstadt, and Werner Pfitzenreiter, Lorch, all of Germany, assignors to ITT Manufacturing Enterprises, Inc., Wilmington, Del.

Division of Sér. No. 545,748, Jan. 16, 1996, Pat. No. 5,607,321. This application Feb. 4, 1997, Ser. No. 795,419

Claims priority, application Germany, Mar. 1, 1994, 44 06 643.0

Int. Cl.^{6} H01R *43/04*

U.S. Cl. 29—861 **2 Claims**



1. A process for assembling a largely round cable (**22**) provided with a number of individual wires (**19**) to a flat plug into which the wires are placed, in which process the wires have free front ends (**23**) stripped of insulation and are fitted with contacts (**42**) that have connection elements (**44**), including:

placing and bending the individual wires alongside each other in a plug wire holder (**11**) so wire front portions extend in a forward direction, with the wire free front ends lying in a common plane and projecting forwardly beyond a front end (**24**) of the wire holder, and thereafter cuting the wire free ends to the same projecting length, and stripping insulation off the wire free ends to the same length;

connecting a contact carrier (**36**) with said number of adjacent contacts (**42**) thereon, to the front end of the plug wire holder and connecting regions of the stripped wire ends to the connection elements (**44**) of the contacts.

5,850,693

METHOD OF MANUFACTURING AN ARRAY OF SURFACE MOUNT CONTACTS

Orest D. Guran; Donald E. Wood, and Richard J. Middlehurst, all of Fremont, Calif., assignors to Berg Technology, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 381,785, Jan. 31, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 631,701

Int. Cl.^{6} H05K *3/30;* H01R *43/00*

U.S. Cl. 29—884 **1 Claim**

1. A method of improving the solderability of an array of surface mount contacts carried by an insulative carrier comprising:

positioning and holding the contacts in at least two rows in a patterned array on the carrier in an array of a plurality of adjacent apertures in the carrier, wherein the carrier is formed of an electrically insulative material having a first side and a second side and each contact has a first side and a second side opposed to the first side and each contact has a surface

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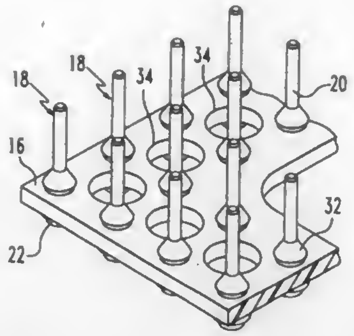
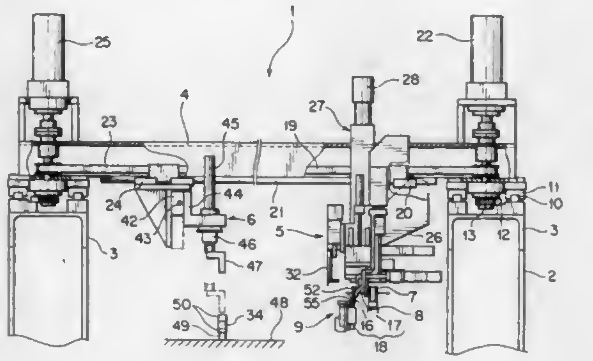


mounting portion disposed on the first side of the carrier and a contact engaging portion extending from the second side of the carrier, and

forming a plurality of openings in the carrier located between adjacent contacts in said array, wherein the openings are disposed in a regular pattern extending substantially between the contact receiving apertures and said openings have a transverse extent and said apertures have a transverse extent and the ratio of the transverse extent of the openings to the transverse extent of the contact receiving apertures is from about 2:1 to about 4:1 and the contacts are floatably mounted in the carrier.

5,850,694
TERMINAL INSERTION APPARATUS AND TERMINAL POSTURE CORRECTING DEVICE AND METHOD

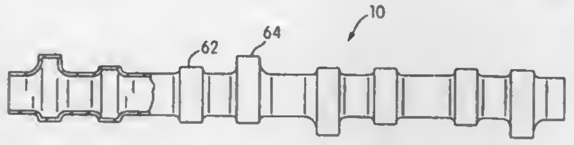
Takamichi Maejima, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jul. 25, 1996, Ser. No. 684,856
Claims priority, application Japan, Jul. 26, 1995, 7-190578
Int. Cl.⁶ H01R *43/00*
U.S. Cl. 29—884 **16 Claims**



1. A terminal insertion apparatus comprising:
a Y-axis beam movable by servo drive along an X-axis beam;
a terminal insertion head having wire catching hands and a terminal guiding piece and slidably engaged with said Y-axis beam, said terminal insertion head being movable toward a connector housing by servo drive;
a high speed transfer belt having an electric wire clamp for clamping a wire of a terminal end and being movable in the X-axis direction by servo drive; and
a terminal posture correcting device located at a forward position of a transfer head in a terminal insertion direction of said electric wire clamp, being movable by servo drive in a direction in parallel to that of said high speed transfer belt, said terminal posture correcting device including a pair of chuck pieces for chucking a terminal of the terminal end clamped by said wire clamp and deliver said terminal end to said wire catching hands and a terminal holder movable in a direction perpendicular to the opening/closing direction of said terminal chuck pieces.

5,850,695
ONE-PIECE HOLLOW CAMSHAFTS AND PROCESS FOR PRODUCING SAME

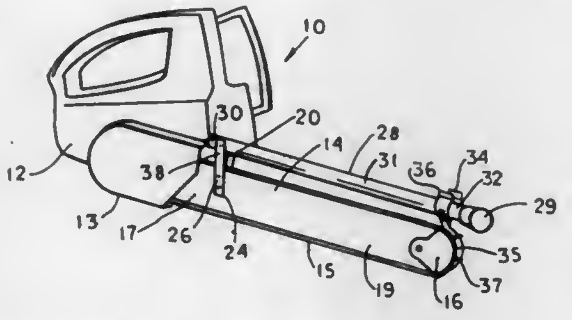
Friedrich Klaas, and Helmut Bogel, both of Aalen, Germany, assignors to Cosma International Inc., Aurora, Canada
PCT No. PCT/DE94/01218, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO95/14851, PCT Pub. Date Jun. 1, 1995
PCT Filed Oct. 14, 1994, Ser. No. 648,072
Claims priority, application Germany, Nov. 26, 1993, 43 40 399.9; Aug. 1, 1994, 44 27 201.4
Int. Cl.⁶ C21C *7/04*
U.S. Cl. 29—888.1 **14 Claims**



1. A method for producing a hollow camshaft comprising:
i) forming a camshaft preform having cam preforms of respective widths in a longitudinal pipe direction by:
providing a hollow metal pipe;
expanding a diameter of said hollow pipe at spaced longitudinal locations by applying pressurized fluid internally to said hollow pipe;
axially compressing said hollow pipe during said expanding step to accumulate metal at said spaced longitudinal locations; and
ii) forming said hollow camshaft from said camshaft preform by:
axially compressing said camshaft preform while applying said pressurized fluid to reduce the predetermined widths of said cam preforms while shaping said camshaft preform into the hollow camshaft, said hollow camshaft having cams of smaller widths in the longitudinal direction than the widths of said cam preforms.

5,850,696
CHAIN SAW GUARD

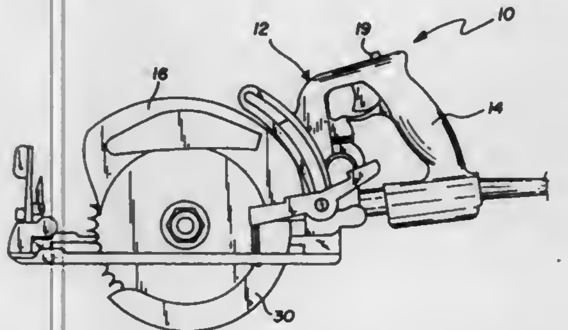
Angelo Sciarrone, 7883 Lake Pleasant Rd., Erie, Pa. 16509
Filed Sep. 5, 1997, Ser. No. 924,175
Int. Cl.⁶ B27B *17/02*
U.S. Cl. 30—382 **20 Claims**



1. In combination, a chain saw and a guard;
said chain saw having a frame, a chain guide fixed to said frame;
a chain supported on said chain guide;
said chain guide being fixed to said frame at a first end and having a second end spaced from said frame;
a hinge fixed adjacent said first end of said chain guide;
a support member is attached adjacent said second end of said chain guide;
said guard having a first end and a second end;
said first end of said guard being swingably attached to said hinge;
said second end of said guard being swingable to a position generally parallel to said chain guide and into supporting relation with said support member for supporting said guard above said chain guide.

5,850,697
AUTOMATIC GUARD LIFTING SYSTEM

James E Welch, P.O. Box 881471, Steamboat Springs, Colo. 80488
Filed Mar. 20, 1997, Ser. No. 821,213
Int. Cl.⁶ B23D *45/16*
U.S. Cl. 30—391 **4 Claims**

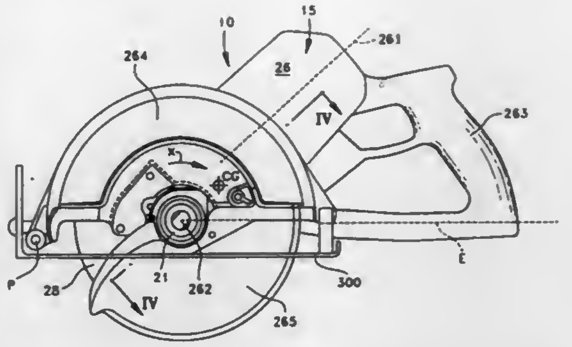


1. An automatic guard lifting system for automatically elevating a lower guard of a conventional circular saw, comprising:
an elevating means for elevating the lower guard of the circular saw, the elevating means secured to said circular saw and mechanically connected to said lower guard; and
said elevating means electrically connected to a power switch and an activating switch of said circular saw, wherein said elevating means elevates said lower guard when both said power switch and said activating switch are closed, and wherein said elevating means descends said lower guard when either said power switch or said activating switch are open;
wherein said elevating means comprises:
a motor mounted adjacent to an upper guard of said circular saw, said motor including a shaft projecting through said upper guard;
a sleeve secured to an interior portion of said upper guard, said sleeve having a first end and a second end, said sleeve including a slot extending from said first end to said second end;
a cable having opposite ends, one of said ends of said cable being secured to said shaft of said motor, said cable being slidably received in said sleeve; and
an arm pivotally connected to said lower guard, said arm being secured to the other of said ends of said cable for moving said lower guard between elevated and descended positions.

5,850,698
PORTABLE CIRCULAR SAW

Richard Hurn, Bel Air; Judd Staples, Baltimore, both of Md.; Gregory Arnold, Shreveport, La., and David Campbell, Bel Air, Md., assignors to Black & Decker Inc., Newark, Del.
Filed May 30, 1997, Ser. No. 866,790
Int. Cl.⁶ B23D *47/12*
U.S. Cl. 30—391 **65 Claims**

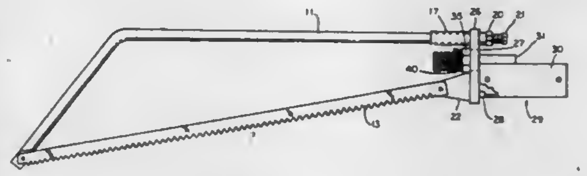
1. A portable circular saw comprising:
a motor having an axis;
a housing enclosing the motor therein;
a handle fixedly attached to and carried by the housing;
an arbor for carrying a saw blade, said arbor being operatively connected to the motor and having an axis of rotation substantially perpendicular to the motor axis; and
a shoe supporting the housing thereon;
wherein the housing is inclined at an angle relative to the shoe when the saw is at a maximum depth of cut setting,



part of the handle is disposed between the housing and the shoe and
a first plane substantially perpendicular to a second plane defined by the shoe intersects the shoe, the handle and the housing, in that order, when the saw is at the maximum depth of cut setting.

5,850,699
SEVERING OR CUTTING TOOL

Stephen John Field, 193 Dennis Rd., Cedar Vale, Australia, QLD 4285
Filed Sep. 10, 1996, Ser. No. 711,596
Int. Cl.⁶ B27B *21/06*
U.S. Cl. 30—513 **4 Claims**



1. A cutting means for use with elongate hand graspable extension member, said tool comprising:
coupling means for coupling said tool to said extension member;
a blade support frame mounted to said coupling means for movement relative thereto, and
a cutting blade mounted at one end to said coupling means and at its other end to said blade support frame,
wherein said coupling means includes a first socket adapted to receive an end of said extension member, and a second socket for slidably receiving one end of said blade support frame, said second socket being adapted to receive a threaded adjustment screw, said screw being adapted to abut said one end of said blade support frame for slidably moving said one end of said frame in said second socket to apply tension to said cutting blade.

5,850,700
EYE ALIGNMENT APPARATUS FOR ARCHERY

Ronald Capson, 747 W. U.S. Hwy. 26, Blackfoot, Id. 83221, and James Sherman, P.O. Box 333, Lewiston, Id. 83501
Filed Aug. 9, 1996, Ser. No. 694,515
Int. Cl.⁶ F41G *1/467*
U.S. Cl. 33—265 **6 Claims**

1. An eye alignment apparatus for attachment to an archery bow, comprising:
a. a framework;
b. a lens mounted to the framework;
c. a first alignment indicia mounted to the framework and spaced apart from the lens;

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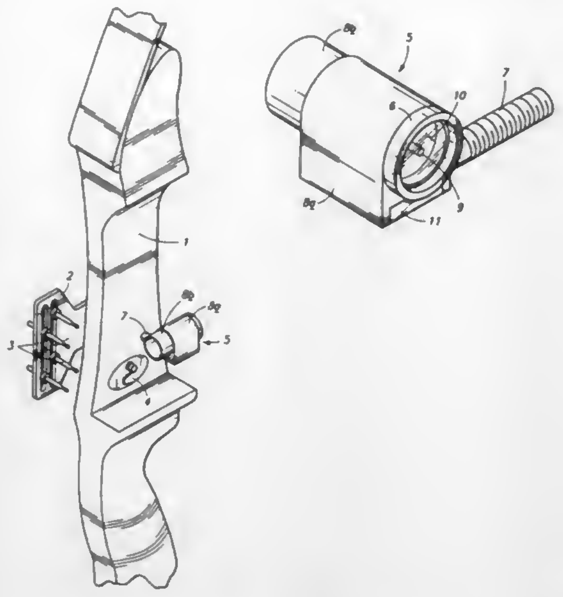


d. a second alignment indicia mounted at the lens; and wherein the first alignment indicia and the second alignment indicia can only be viewed in a predetermined way from a predetermined approximate angle.

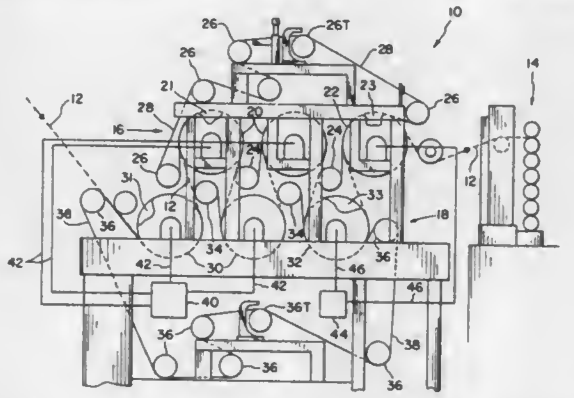
5,850,701
DRYER GROUP WITH CONTROLLED HEATING AND COOLING OF A PAPER WEB IN A PAPER-MAKING MACHINE

Edwin X. Graf, Menasha, Wis., assignor to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Jun. 5, 1997, Ser. No. 869,791

Int. Cl.^{6} D21F *5/00*

U.S. Cl. 34—117 **16 Claims**



2. A dryer group for drying a paper web moving in a running direction through a paper-making machine, said dryer group comprising:

- an upper tier including a plurality of rotatable upper cylinders for carrying the paper web, each of said upper cylinders having an inner chamber, said plurality of upper cylinders including at least two drying cylinders and at least one cooling cylinder, said at least one cooling cylinder disposed downstream from said at least two drying cylinders, relative to the running direction of the paper web;
- a plurality of upper carrier rolls, each said upper carrier roll disposed adjacent to a pair of said upper cylinders;
- an upper felt alternately carried by each of said upper cylinders and each of said upper carrier rolls;
- a lower tier including a plurality of rotatable lower cylinders for carrying the paper web, each of said lower cylinders having an inner chamber, said plurality of lower cylinders including at least two drying cylinders and at least one cooling cylinder, said at least one cooling cylinder disposed downstream from said at least two drying cylinders, relative to the running direction of the paper web;
- a plurality of lower carrier rolls, each said lower carrier roll disposed adjacent to a pair of said lower cylinders;
- a lower felt alternately carried by each of said lower cylinders and each of said lower carrier rolls;
- a steam generating device fluidly connected with said inner chamber of each said drying cylinder of said upper tier and said lower tier; and
- a cooling fluid generating device fluidly connected with said inner chamber of each said cooling cylinder of said upper tier and said lower tier, said cooling fluid generating device defining a means for providing independent flows of cooling fluid to each said cooling cylinder of said upper tier and said lower tier.

5,850,702
SNOWBOARD BOOT SOLE

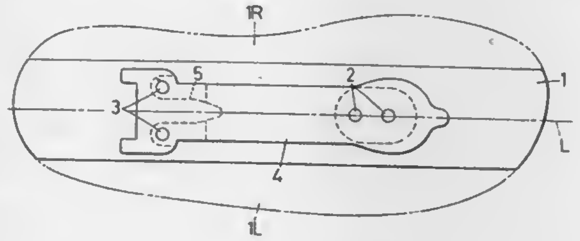
Shinpei Okajima, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed May 14, 1997, Ser. No. 856,343

Claims priority, application Japan, Jun. 19, 1996, 8-178634

Int. Cl.^{6} A43B *13/14;5/00;23/00*

U.S. Cl. 36—31 **17 Claims**



1. A sole for a snowboard boot comprising:

- a continuous sole member having a front edge, a rear edge, a left lateral edge, and a right lateral edge;
- a sole core member extending continuously with the sole member along a longitudinal center core line (T) to the front edge and to the rear edge of the sole member, wherein the sole core member is stiffer than the sole member, wherein a left edge the sole core member is spaced apart from the left lateral edge of the sole member, and wherein a right edge of the sole core member is spaced apart from the right lateral edge of the sole member.

5,850,703
CUSHIONED INSOLE

John G. Pearce, and Charles E. Shuler, both of Fort Worth, Tex., assignors to Boot Royalty Company, L.P., Fort Worth, Tex.

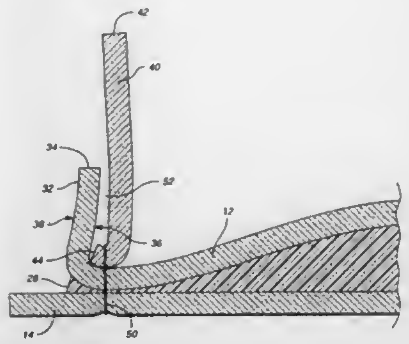
Filed Jul. 23, 1997, Ser. No. 898,937

Int. Cl.^{6} A43B *13/38;9/10;13/18;* **A43D** *9/00*

U.S. Cl. 36—43 **30 Claims**

1. A cushioned insole comprising:

- a lower insole layer;
- a cushion layer;
- an upper insole layer secured to said lower layer by stitching the upper layer to the lower layer forming a peripheral margin exteriorly of the stitching on the upper layer and capturing the cushion layer between the upper layer and lower layer; and



- an attachment rib affixed to the upper layer by said stitching, said peripheral margin of the upper layer being attached to the rib by being upturned thereagainst and attached thereto.

5,850,704
ASSEMBLY FOR THE ATTACHMENT OF AN ACCESSORY TO A BOOM OF A WORKING MACHINE

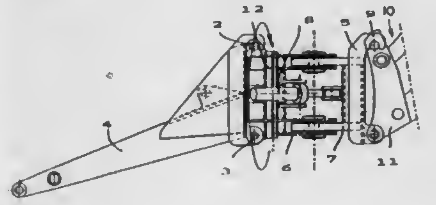
Vesa Harinen, Varkaus, Finland, assignor to Kojex OY, Joroinen, Finland

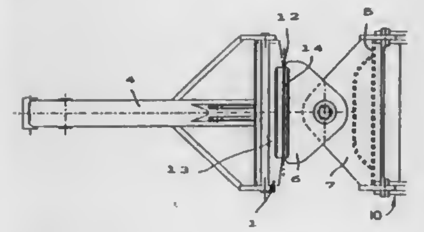
Filed Mar. 19, 1997, Ser. No. 821,580

Claims priority, application Finland, Sep. 19, 1994, 944325

Int. Cl.^{6} E02F *3/76*

U.S. Cl. 37—468 **1 Claim**





1. An assembly for attaching as accessory to a boom of a working machine, said assembly comprising:

- a support block;
- quick mounting devices attached to said support block for mounting an accessory on the assembly and on the working machine via said assembly;
- a mounting bracket at an end of said assembly opposite said support block, said mounting bracket including mounting devices for removably mounting said assembly on a boom or on a quick mounting fixture attached to the boom;
- first spindle arms connected to said support block;
- second spindle arms connected to said mounting bracket, said first spindle arms being pivotally coupled to said second spindle arms to pivotally couple said support block to said mounting bracket about a first rotation axis;
- a hydraulic piston assembly coupled at one portion thereof to said support block and coupled at another portion thereof to said mounting bracket to pivot said support block and said mounting bracket with respect to each other;
- said support block comprising:
  - a support frame to which said quick mounting devices are attached;
  - a rotating ring attached to said support frame; and
  - a plate to which said rotating ring is rotatably mounted, said plate being attached to said first spindle arms, said rotating ring being rotatable 360° in either of opposite directions with respect to said plate about a second rotation that is generally perpendicular to said first rotation axis.

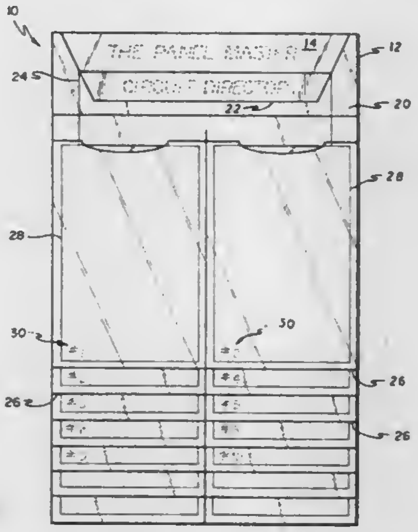
5,850,705
CIRCUIT DIRECTORY FOR ELECTRIC PANELS

David S. Groh, 2412 Ridge Rd., Elverson, Pa. 19520

Filed Nov. 7, 1996, Ser. No. 739,730

Int. Cl.^{6} G09F *1/10*

U.S. Cl. 40—124.2 **8 Claims**



1. A system for displaying a directory of an electrical panel contained in a housing and having a plurality of circuit breakers disposed thereon, the system comprising:

- a. a support panel including a top edge, a front surface and a rear surface;
- b. an adhesive backing disposed on the rear surface for mounting the support panel to the housing of the electrical panel;
- c. a transparent cover having a generally similar size and shape as said support panel, said cover being secured to the front surface of said support panel in such a manner as to create a pocket formed therebetween, said pocket having a generally similar size and shape as said support panel and having an opening proximate the top edge of said support panel;
- d. a plurality of circuit cards having a front surface and a back surface containing control information for said circuit breakers on said front surface; and
- e. a plurality of sleeves, each smaller in size than said pocket and having a top edge and an aperture proximate the top edge for receiving each of said circuit cards, wherein said sleeves are attached to said support panel in a staggered manner and protectively display said circuit cards.

5,850,706
SCOPE COVER

Daniel D. Evans, 3234 N. 20th Pl., Phoenix, Ariz. 85016

Continuation-in-part of Ser. No. 555,146, Nov. 8, 1995, Pat. No. 5,661,920, which is a continuation-in-part of Ser. No. 26,116, Jun. 27, 1994, abandoned. This application Aug. 29, 1997, Ser. No. 921,126

Int. Cl.^{6} F41A *35/02*

U.S. Cl. 42—96 **4 Claims**

1. A cover for a telescopic sight comprising in combination:

- a first end piece;
- a second end piece generally parallel to and spaced apart from the first end piece;

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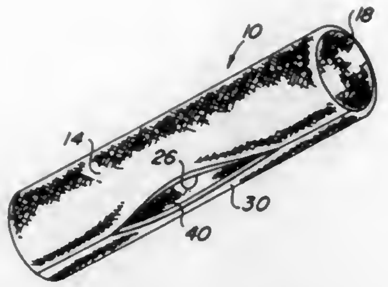


a generally cylindrical element extending between and secured to the first and second end pieces;

a longitudinally extending opening in the cylindrical element having a generally elongated oval configuration through which the telescopic sight extends to be disposed within the cover.

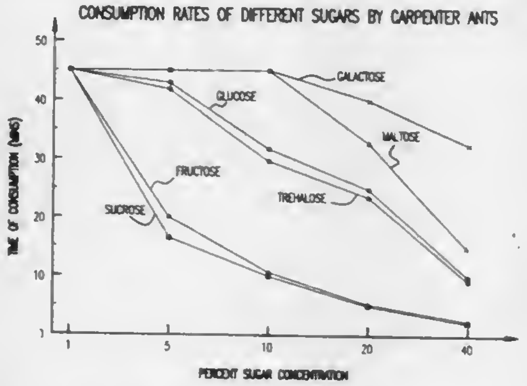
5,850,707
INSECT BAIT

Richard D. Fell, Blacksburg, Va., and Colleen A. Cannon, Berlin, Germany, assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Continuation of Ser. No. 359,694, Dec. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 69,584, Jun. 1, 1993, abandoned. This application Apr. 24, 1997, Ser. No. 845,366

Int. Cl.⁶ A01N *63/00*

U.S. Cl. 43—131 **11 Claims**



1. An insect bait, comprising:

a gelatinized matrix material;

a sugar or combination of sugars dispersed in said matrix material; and

casein hydrolysate dispersed in said matrix material, said casein hydrolysate constituting 1–20% by weight.

5,850,708
SURFACE FOR SPORTS AND OTHER USES

Jerry G. Bergevin, Edmonds, Wash., assignor to Turf Systems International, Inc., Lynnwood, Wash.

Continuation-in-part of Ser. No. 334,414, Nov. 4, 1994, Pat. No. 5,586,408, which is a continuation of Ser. No. 78,624, Jun. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 902,147, Jun. 22, 1992, abandoned. This application Nov. 6, 1996, Ser. No. 744,758

Int. Cl.⁶ A01C *29/00;1/04;* **A01B** *79/00;* **A01N** *3/00*

U.S. Cl. 47—1.01 **25 Claims**

1. A playing surface comprising:

(a) a foundation;

(b) a synthetic grass turf located on top of the foundation and including a backing material and a plurality of synthetic grass fibers extending generally vertically upward from the backing material, the synthetic grass fibers being formed of at least a first group of fibers having a first length and a second group of fibers having a second length longer than the first length so that the second group of fibers extends upward from the backing material a greater distance than the first group of fibers;

(c) a layer of growth medium disposed in the synthetic grass turf to a depth sufficient to substantially fill the synthetic grass turf to the top of the first group of fibers; and

(d) natural grass plants, having grass blades, crowns and roots disposed in the growth medium, the roots extending downward through the growth medium, the backing material, and into the foundation, the crowns being located slightly below the top of the first group of fibers and the grass blades extending upwardly above the top of the first group of fibers and slightly above, the second group of fibers.

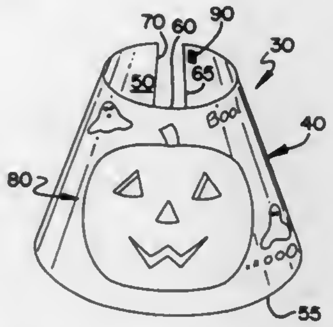
5,850,709
ROSE CONE COVER WITH INDICIA

Dominick E. Mahoney, 559 Hillcrest Ter., Round Lake Park, Ill. 60073

Continuation of Ser. No. 536,928, Sep. 29, 1995, abandoned. This application Nov. 26, 1997, Ser. No. 980,180

Int. Cl.⁶ A01G *13/02*

U.S. Cl. 47—21 **5 Claims**



1. A decorative article comprising in combination:

an outdoor plant cone having a base, a conical structure, and a generally closed top, adapted by size and shape to protect plants with a generally solid exterior surface;

a conical sleeve for interchangeably surrounding the conical structure of the outdoor plant cone; and

an indicia on said conical sleeve, said indicia adapted to change the exterior appearance of the plant cone.

5,850,710
EMERGENCY ESCAPE WINDOW

Willie J. Brock, 2826 Connally Dr., Atlanta, Ga. 30311

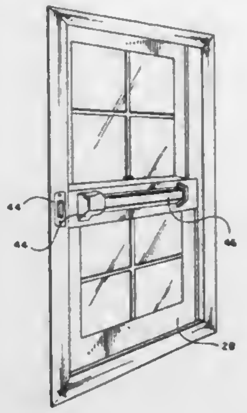
Continuation-in-part of Ser. No. 237,699, May 4, 1994, abandoned. This application Dec. 20, 1996, Ser. No. 770,286

Int. Cl.⁶ E05B *65/10*

U.S. Cl. 49—141 **5 Claims**

1. A window for a wall containing an opening, comprising:

a window frame, for positioning in said opening and fastening to said wall, having a first vertically extending frame member with top and bottom end portions and front and rear side portions, said front side portion of said first vertical frame member being narrower than said rear side portion of said first vertical frame member creating a tapered mating face that angles inward from a rear edge of said first vertical frame member, and having a second vertically extending frame member spaced from said first vertical frame member with top and bottom end portions and front and rear side portions, and a horizontally extending frame member attached to said top portions of said first and second vertical frame members;



a window jamb, for positioning in said window frame, having a first vertical jamb member with front and rear side portions positioned adjacent said first vertical frame member, and having a second vertical jamb member with front and rear side portions positioned adjacent said second vertical frame member, said front side portion of said first vertical jamb member being wider than said rear side portion of said first vertical jamb member creating a mating face, said mating face having a tapered central portion that angles inward from a front edge of said first vertical jamb member and having a straight end portion adjacent said tapered central portion; and

a hinge fastened to said front side portion of said second vertical frame member and said front side portion of said second vertical jamb member, said jamb being pivotally movable relative to said frame between a closed position at which said jamb is flush with said frame and an open position at which said jamb is displaced from said frame, said tapered mating faces being adjacent one another when said jamb and frame are in the closed position.

5,850,711
VEHICLE WINDOW OPENING/CLOSING DEVICE

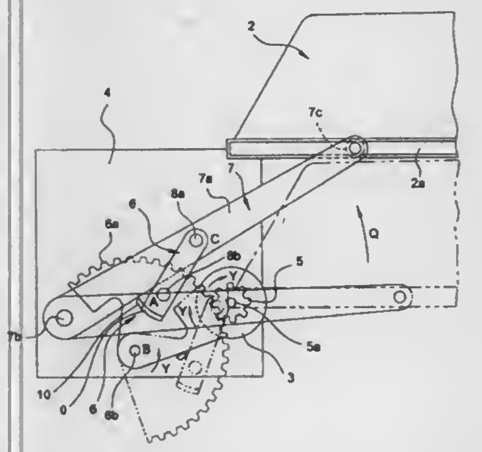
Shunzo Takahashi, Kiryu, and Masayuki Tamura, Ohta, both of Japan, assignors to Mitsuba Corporation, Kiryu, Japan

Filed May 20, 1997, Ser. No. 858,185

Claims priority, application Japan, May 23, 1996, 8-151591

Int. Cl.⁶ E05F *11/44*

U.S. Cl. 49—351 **11 Claims**



1. A vehicle window opening/closing device for opening and closing a window glass, said device comprising:

a pinion gear for reciprocating the opening/closing device by forward and backward drive of an output shaft;

a sector gear having a first journaling point for being rotatably supported by a body and said sector gear being swung about said first journaling point by rotation of said pinion gear;

a lift arm having an extreme end with coupling means for being coupled with the window glass and a base end with support means for being rotatably supported by the body;

a coupling link having an end with a second journaling point at which said coupling link is rotatably supported by said sector gear and an opposite end of said coupling link having a third journaling point at which said coupling link is rotatably supported by said lift arm;

means for setting a fully-closed-position of the window glass to a position where said second journaling point crosses a fulcrum position that is established as a straight line between said first journaling point and said third journaling point with said second journaling point approaching said fulcrum position from one side of said straight line as the fully closed position is approached by movements of said coupling link and said lift arm caused by a swing motion of said sector gear, and said second journaling point crossing said straight line to a beyond-fulcrum-position at the opposite side of said straight line when reaching the fully-closed-position; and

regulating means for regulating movement of at least one of said sector gear and said coupling link in order to regulate movement of said second journaling point in a direction further beyond said beyond-fulcrum-position.

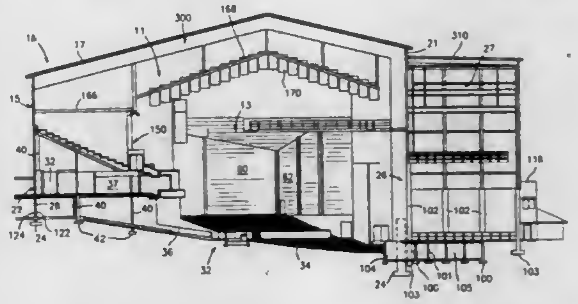
5,850,712
THEATER

Robert M. Errato, 44 Mountain Brook Rd., North Haven, Conn. 06473

Filed Jun. 30, 1997, Ser. No. 885,079

Int. Cl.⁶ E04H *3/12*

U.S. Cl. 52—8 **33 Claims**



1. A static structure for providing live entertainment performances, said static structure comprising:

an outer shell structure enclosing a central core module;

first structural means for supporting said outer shell structure;

a non-cantilevered balcony module located within said central core module; and

said balcony module being supported by means other than the first structural means so that said first structural means does not support the weight of the balcony module.

5,850,713
DEVICE RAISING AND LOWERING APPARATUS

Yukinori Hojo, Kurashiki, Japan, assignor to Yuasa Koki Co., Ltd, Okayama, Japan

Filed Dec. 20, 1996, Ser. No. 772,144

Int. Cl.⁶ E04H *12/34;* **B06F** *11/04*

U.S. Cl. 52—115 **4 Claims**

1. A device raising and lowering apparatus comprising:

a multiple-stage oil pressure cylinder means including a plurality of cylinder units, each of said cylinder units including an internal cylinder and an external cylinder coupled at lower ends thereof via an end member, an upper one of said internal cylinders slidably engaging an exterior surface of a lower one of said internal cylinders and an upper one of said external cylinders slidably engaging an interior surface of a lower one

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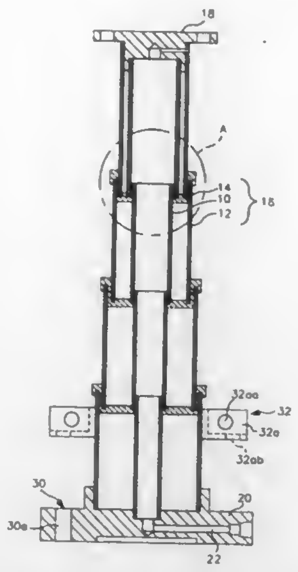
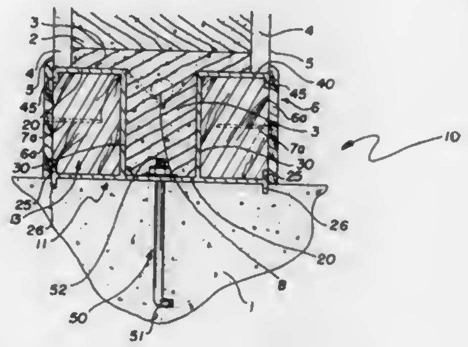


of said external cylinders so that said cylinder units are connected together in an up-to-down relationship, a key groove being formed in an external surface of each of said upper external cylinders and extending in a vertical direction so that which is screwed to a lower external cylinder and functions as a dust seal is inserted into said key groove to prevent said external cylinders from rotating, an upper end of an uppermost one of said internal cylinders being covered by a support table, a lower end of a lowest one of said internal cylinders being covered by a base so that said internal cylinders form therein a sealed space communicating with one another and filled with pressure oil which is fed or discharged through a lowest internal cylinder so as to extend or contract said pressure cylinder means to raise or lower a device placed on said support table, and said end member of each of said cylinder units being provided with a hole so that a space between said inner and outer cylinders of each of said cylinder units communicates with a space of other cylinder units so that heated air circulates in said space; and

a fixture structure including a mounting structure provided in said base and a holding member attached to said lowest external cylinder, wherein said base and holding member are attached to a fixed member so that said multi-stage oil pressure cylinder means is fixedly held upright.

5,850,714
WALL CONSTRUCTION SYSTEM

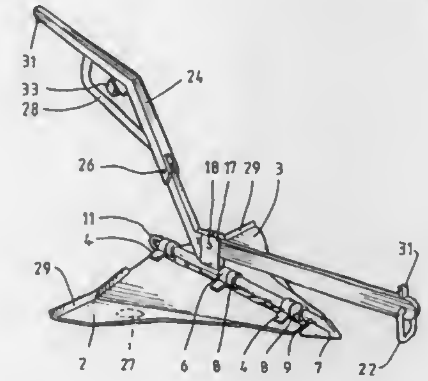
Ken Llem, 6 Morgan S 100, Irvine, Calif. 92718
Filed Jun. 5, 1997, Ser. No. 870,038
Int. Cl.^{6} E02D *27/00*
U.S. Cl. 52—293.3 **13 Claims**



1. A wall construction system comprising:
an elongated base member comprising:
an elongated bottom plate;
an elongated setback sidewall extending upward from said elongated bottom plate;
an elongated top plate extending outward from said elongated setback sidewall;
said elongated setback sidewall orthogonally oriented relative to said elongated bottom plate and said elongated top plate; and
said elongated top plate paralleling said elongated bottom plate in spaced relation, said elongated bottom plate, said elongated setback sidewall, and said elongated top plate forming an elongated channel;
an elongated wood member fitted within said elongated channel for securing of a molding thereto;
said elongated bottom plate has a side edge, an upper surface, and a lower surface;
said elongated setback sidewall has a bottom edge, a top edge, an innermost surface, and an outermost surface;
said elongated top plate has an outer edge, an inner edge, an upper surface, and a lower surface;
said elongated wood member has inner face, an outer face, a top face, and a bottom face;
said elongated wood member fitting within said elongated channel such that said inner face abuts said outermost surface of said elongated setback sidewall, such that said top face abuts said lower surface of said elongated top plate, and such that said bottom face abuts said upper surface of said elongated bottom plate;
said elongated bottom plate includes a lower lip along said side edge thereof;
said lower lip extending upward from said upper surface of said elongated bottom plate;
said elongated top plate includes an upper lip along said outer edge thereof;
said upper lip extending downward from said lower surface of said elongated top plate;
said outer face of said elongated wood member has an upper groove therein adjacent said top face and has a lower groove therein adjacent said bottom face;
said lower groove receiving said lower lip of said elongated bottom plate; and
said upper groove receiving said upper lip of said elongated top plate.

5,850,715
GROUND ANCHOR

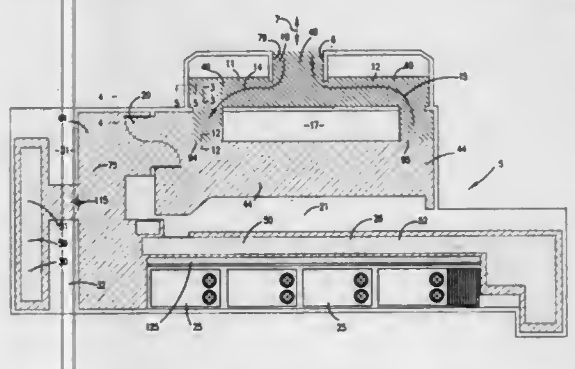
Rex William Francis, Lot 27 Dunstan Rd., Avonsleigh, Australia
PCT No. PCT/AU94/00048, § 371 Date Aug. 7, 1996, § 102(e) Date Aug. 7, 1996, PCT Pub. No. WO95/21119, PCT Pub. Date Aug. 10, 1995
PCT Filed Feb. 7, 1994, Ser. No. 687,560
Claims priority, application Australia, Jan. 28, 1994, 54790/94
Int. Cl.^{6} E02D *5/80*
U.S. Cl. 52—155 **16 Claims**



1. An anchor comprising: an elongate, substantially cylindrical member; two substantially triangular-shaped plate members pivotally mounted on or to said elongate member whereby to be selectively and pivotally movable relative to said elongate member between a first storage position, wherein said plate members abut or overlie one another, and a second in-use position, in which said plate members extend away from one another; a shank attached to said elongate member and extending substantially parallel thereto; and a further member attached to said elongate member, and operatively connected to said shank said further member acting as a carrying means for said anchor and as a handle or control means to assist in ground-engagement thereof.

5,850,716
FLOORING SYSTEM

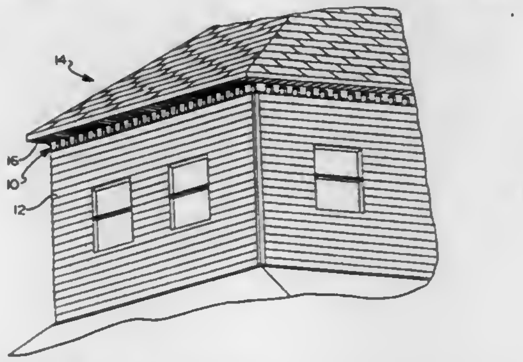
Jeffrey H. Thompson, 4124 Queen Ave. South, Minneapolis, Minn. 55410, and Charles L. Amlaw, 4820 Larkspur La., Edina, Minn. 55435
Continuation of Ser. No. 553,079, Nov. 3, 1995, abandoned.
This application Sep. 8, 1997, Ser. No. 937,230
Int. Cl.^{6} E04F *11/16;* F04B *5/00*
U.S. Cl. 52—177 **12 Claims**



1. A kitchen comprising:
(A) an entryway to a dining area;
(B) a main kitchen traffic area adjacent to said entryway;
(C) a food preparation line adjacent to said main kitchen traffic area; said food preparation line including cooking equipment and a work area;
(D) a dishwashing area adjacent to said main kitchen traffic area; said dishwashing area including dishwashing equipment; and
(E) a continuous, floor area; said continuous, floor area including:
  (i) a first floor area; a second floor area; a third floor area; a fourth floor area; and a subfloor positioned under said first, second, third, and fourth floor areas;
  (ii) said first floor area:
    (a) being positioned in said entryway; and
    (b) including bristled flooring secured to said subfloor; said bristled flooring comprising tufts of debris-trapping bristles secured to a flexible polymeric backing; said debris-trapping bristles being constructed and arranged to remove water, dirt, and grease from shoes of a person walking on the bristled flooring;
  (iii) said second floor area:
    (a) being positioned in said dishwashing area, in front of said dishwashing equipment; and
    (b) defining a first recess in said subfloor; said first recess including a first cushioning underlayment positioned therein;
  (iv) said third floor area:
    (a) being positioned in front of said food preparation line; and
    (b) defining a second recess in said subfloor; said second recess including a second cushioning underlayment positioned therein;
  (v) said fourth floor area:
    (a) being positioned in said main kitchen traffic area; and
  (vi) a flexible polymeric flooring sheet material; said flexible polymeric flooring sheet material being:
    (a) positioned in said second floor area; over said first cushioning underlayment; and in front of said dishwashing equipment;
    (b) positioned in said third floor area; over said second cushioning underlayment; and in front of said food preparation line; and
    (c) positioned in said fourth floor area in said main kitchen traffic area and abutting said bristled flooring in said first floor area.

5,850,717
DENTIL MOLDING APPARATUS AND METHOD FOR SECURING A MOLDING INSERT MEMBER

Charles E. Schiedegger, Metamora; Aundrea Nurenberg, Lapeer; Richard J. MacLeod, Milford; Michael C. Clark, Columbiaville, and J. Richard Logan, Oxford, all of Mich., assignors to Tapco International, Plymouth, Mich.
Continuation of Ser. No. 351,796, Dec. 8, 1994, Pat. No. 5,579,617. This application Oct. 10, 1996, Ser. No. 729,023
Int. Cl.^{6} E04B *2/00;7/00*
U.S. Cl. 52—288.1 **18 Claims**



1. A molding apparatus comprising:
an elongated hanger member having a substantially planar back member adapted to be fixedly secured directly to a vertical wall;
said hanger member having a first channel with an opening and a second channel with an opening, said first channel opening facing said second channel opening, said first and second channels protruding outwardly and extending away from said back member in offset distances, said second channel being spaced apart from said first channel, and said first channel being formed by depending lip portions;
a molding insert member having a first edge and a second portion spaced apart from said first edge, wherein said first edge is received within said first channel and said second portion is received within said second channel to attach said molding insert member to said hanger member without independent fastening elements; and
an end cover covering an exposed end portion of said molding insert member.

5,850,718
FOUNDATION FOR MANUFACTURED HOME

Charles J. MacKarvich, 1720 Tyler Green Trail, Smyrna, Ga. 30080
Continuation-in-part of Ser. No. 644,069, May 9, 1996, which is a continuation-in-part of Ser. No. 629,834, Apr. 10, 1996.
This application Oct. 29, 1996, Ser. No. 739,717
Int. Cl.^{6} E02D *27/00*
U.S. Cl. 52—292 **16 Claims**

1. A support assembly for supporting a manufactured home having first and second aligned sections, with each section including an external and an internal support joist for supporting the manufactured home above a ground surface, said support assembly including:

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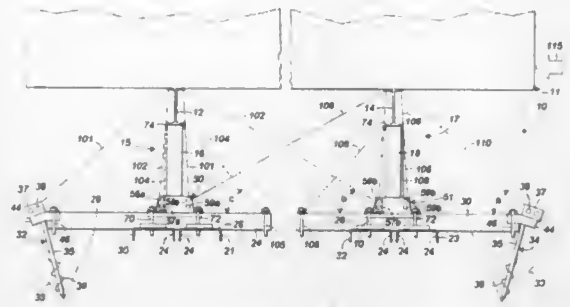


first and second outer upright piers, said first outer upright pier having an upper end adapted to support an external support joist of the first aligned section and a lower end adapted to be placed adjacent the ground surface, said second outer upright pier having an upper end adapted to support an external support joist of the second aligned section and a lower end adapted to be placed adjacent the ground surface;

first and second inner upright piers, said first inner upright pier having an upper end adapted to support an internal support joist of the first aligned section and a lower end adapted to be placed adjacent the ground surface, said second inner upright pier having an upper end adapted to support an internal support joist of the second aligned section and a lower end adapted to be placed adjacent the ground surface;

at least one support platform positioned beneath said lower end of each pier;

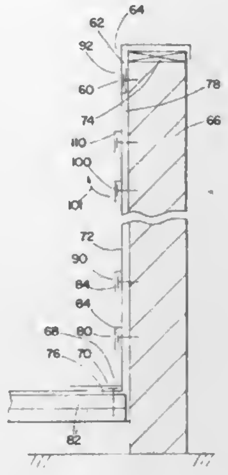
first and second tie down anchors adapted to be anchored in the ground, said first tie down anchor positioned outside of said first outer upright pier, and said second tie down anchor positioned outside of said second outer upright pier;

first and second anchor ties, said first anchor tie having first and second ends and being connected at its first end to said first tie down anchor and adapted to extend at an upward incline from said first tie down anchor and over the external support joist of the first aligned section and downwardly therefrom to connect at its second end to said at least one support platform positioned beneath said first outer upright pier, said second anchor tie having first and second ends and being connected at its first end to said second tie down anchor and adapted to extend at an upward incline from said second tie down anchor and over the external support joist of the second aligned section and downwardly therefrom to connect at its second end to said at least one support platform positioned beneath said second outer upright pier;

first and second rectilinear compression members, said first rectilinear compression member extending laterally between said first tie down anchor and said lower end of said first outer upright pier and arranged to resist movement of said first tie down anchor toward said first outer upright pier, said second rectilinear compression member extending laterally between said second tie down anchor and said lower end of said second outer pier and arranged to resist movement of said second tie down anchor toward said second outer upright pier; and

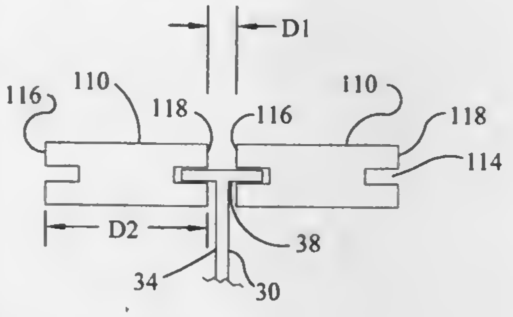
first and second cross ties, said first cross tie having first and second ends and being connected at its first end at said lower end of said first inner upright pier and adapted to extend at an upward incline and over the support joist of the second aligned section and downwardly therefrom to connect at its second end to said at least one support platform positioned beneath said lower end of said second inner upright pier, said second cross tie having a first and second end and being connected at its first end at said lower end of said second inner upright pier and adapted to extend at an upward incline and over the internal support joist of the first aligned section and downwardly therefrom to connect at its second end to said at least one support platform positioned beneath said lower end of said first inner upright pier.

5,850,719
ROOFING MEMBRANE WITH EXTERNAL TABS
Robert L. Mayle, 2047 Hyde Rd., Port Clinton, Ohio 43452
Division of Ser. No. 679,682, Jul. 11, 1996, Pat. No. 5,775,052. This application Apr. 21, 1998, Ser. No. 63,550
Int. Cl.⁶ E04B *5/00*
U.S. Cl. 52—408 7 Claims



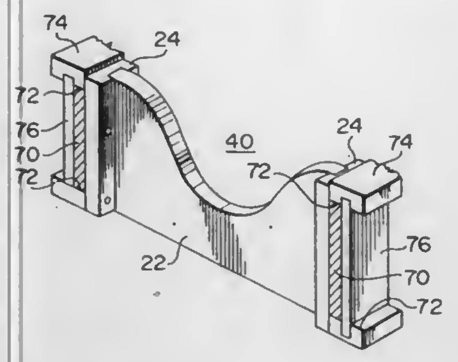
1. A roof membrane, comprised of:
a sheet of roofing material;
at least two tabs affixed to an underside surface of said sheet of roofing material;
at least one tab affixed to an exterior surface of said sheet of roofing material; and
wherein said tab affixed to said exterior surface of said sheet of roofing material is placed between said tabs affixed to said underside surface of said sheet of roofing material.

5,850,720
PLASTIC DECKING AND SECUREMENT SYSTEM AND METHOD OF INSTALLATION
Mark C. Willis, 4215 Hart Rd., Richfield, Ohio 44286, assignor to Mark C. Willis, Richfield, Ohio
Continuation-in-part of Ser. No. 407,715, Mar. 21, 1995, Pat. No. 5,623,803. This application Nov. 1, 1996, Ser. No. 742,862
Int. Cl.⁶ E04H *12/02*
U.S. Cl. 52—650.3 5 Claims



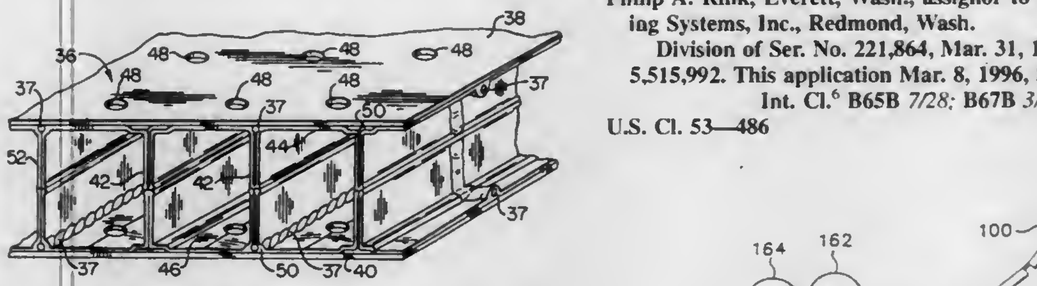
1. A structure comprising:
a frame, said frame comprising spaced-apart, supporting members;
a plurality of planks, said planks comprising plastic material and being received transversely to said supporting members, each of said planks having a first and second side surface, a first longitudinal groove being in said first side surface; and,
a plurality of connectors, said connectors protruding from said frame and being fixedly attached thereto so that said planks are slidable relative to said frame in a direction parallel a longitudinal centerline of said grooves.

5,850,721
JOIST BRIDGING
Wallace Martin, Langley, Canada, assignor to Cross Bridging Ltd., British Columbia, Canada
Filed May 30, 1997, Ser. No. 866,500
Int. Cl.⁶ E04C *3/02*
U.S. Cl. 52—690 20 Claims



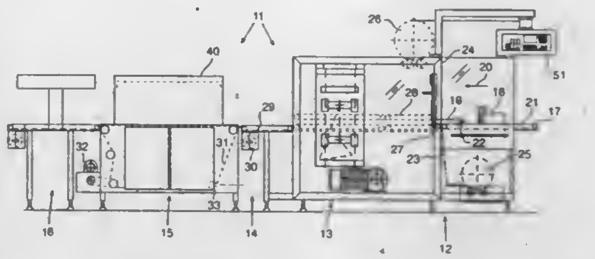
1. A joist bridge comprising:
(a) a web comprising a sheet of material having first and second sides first and second opposed ends, a generally straight first edge and a second edge opposed to the first edge and having a centrally located indentation; and,
(b) parallel end members extending along and affixed to each of the ends of the web, each of end members projecting flange like on each of the first and second sides of the web wherein the second edge comprises a central concave region following an arc between a pair of convex knee regions.

5,850,722
LIGHTWEIGHT SUPERPLASTICALLY FORMED, DIFFUSION BONDED PANEL STRUCTURE AND PROCESS OF MANUFACTURE
Ken K. Yasui, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Sep. 27, 1996, Ser. No. 721,481
Int. Cl.⁶ B32B *3/12;* E04C *2/08;2/36*
U.S. Cl. 52—793.11 21 Claims



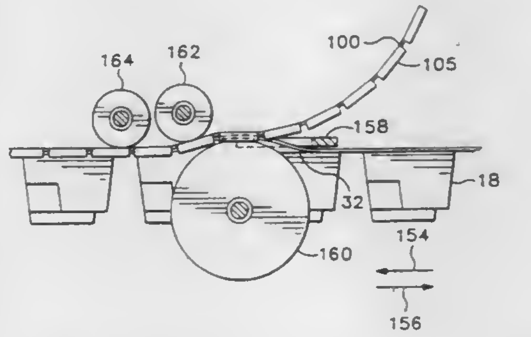
1. A superplastically formed, diffusion bonded panel having:
a first face sheet;
a second face sheet separated from said first face sheet;
at least one first separator web positioned generally perpendicular to said first and second face sheets and connected to said face sheets to maintain the separation thereof, each said first separator web having:
first and second sides; and
a centerline bulge there along generally centered between said first and second face sheets and extending from said first and second sides; and
at least one reinforcement member connected in the panel having:
at least portions thereof that are not bonded thereto, said at least one reinforcement member being for retarding the growth of a crack growing transverse thereto.

5,850,723
METHOD AND APPARATUS FOR PACKING ARTICLES IN SHRINK FILM
Karl-Heinz Kallfass, Nürtingen, Germany, assignor to Kallfass Verpackungsmachinen GmbH & Co., Nurtingen, Germany
Filed Dec. 15, 1995, Ser. No. 573,144
Claims priority, application Germany, Dec. 23, 1994, 44 46 278.6
Int. Cl.⁶ B65B *53/02*
U.S. Cl. 53—442 17 Claims



1. A method for packing a series of different articles in shrinkage film when the film is shrunk about some of the articles and not others, the method comprising the steps of:
enveloping the articles with shrinkage film;
conveying the series of articles on a packing line containing a shrinkage tunnel, the series of articles containing a first group of articles, the shrink film envelope of which is to be shrunk, and a second group of articles, the shrink film envelope of which remains unshrunk;
passing the series of articles through the shrinkage tunnel; and
controlling the heat action of the shrinkage tunnel such that during the passage through the shrinkage tunnel of articles belonging to the second group the heat action applied to the whole shrink film envelope is reduced to an amount not sufficient for initiating shrinkage of the film while the heat action applied to articles belonging to the first group causes shrinkage of the film.

5,850,724
POCKET TAPE SEALING AND UNSEALING METHOD AND APPARATUS
Philip A. Rink, Everett, Wash., assignor to CNA Manufacturing Systems, Inc., Redmond, Wash.
Division of Ser. No. 221,864, Mar. 31, 1994, Pat. No. 5,515,992. This application Mar. 8, 1996, Ser. No. 612,587
Int. Cl.⁶ B65B *7/28;* B67B *3/22*
U.S. Cl. 53—486 8 Claims



1. Apparatus for applying a cover to a pocket component tape, wherein said pocket component tape has first and second longitudinal edges, comprising:
means for deforming said pocket component tape by contacting the first and second longitudinal edges of said pocket component tape to bring the edges closer together and then returning

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said pocket component tape to its undeformed state to allow said first and second longitudinal edges to move further apart; and

means for bringing the cover adjacent the pocket component tape in a region where said first and second longitudinal edges are closer together,

whereby when said deforming/returning means allows said first and second longitudinal edges to move further apart, said cover and said pocket component tape are in engaging relation.

5,850,725
PACKAGING MACHINE FOR MULTI-PACKS

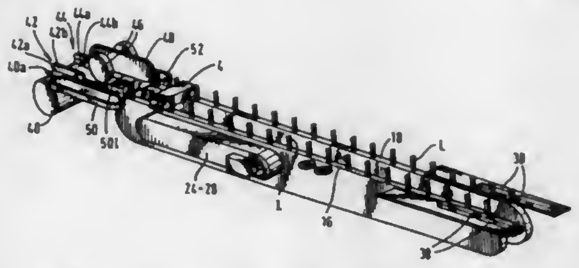
Eric Chalendar, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 17, 1997, Ser. No. 932,420

Claims priority, application United Kingdom, Mar. 30, 1995, 9506541

Int. Cl.⁶ B65B *43/18*

U.S. Cl. 53—566 **7 Claims**



1. A packaging machine for packaging articles into cartons comprising a carton conveyor for conveying an open-ended carton through the machine, and a carton feeding and erecting mechanism for supplying cartons to said carton conveyor, the feeding and erecting mechanism including:

a vacuum conveyor disposed for conveying movement along a first substantially linear path for engaging a lower surface of a collapsed carton and moving the collapsed carton onto said carton conveyor;

a feeder disposed generally beneath said vacuum conveyor for selecting a collapsed carton from a carton supply and placing the collapsed carton on said vacuum conveyor;

an erector disposed above said vacuum conveyor and having vacuum engagement means for engaging an upper surface of said collapsed carton and moving said upper surface upwardly with respect to said lower surface thereby erecting said carton; and

an upper carton engaging conveyor having thereon a series of upper carton engaging elements, disposed for movement along a second substantially linear path parallel to and above at least a portion of said first path for synchronous movement of said engaging elements with said vacuum conveyor, for engaging the erected carton and for moving therewith to maintain the carton in erected condition until moved onto said carton conveyor.

5,850,726
WRAPPING APPARATUS AND METHOD

Steven E. Degrasse, New Albany, Ind.; Kenneth J. McDowell, Louisville, Ky.; Doonie Norris, Pleasureville, Ky.; Patrick R. Lancaster, III, Louisville, Ky., and David Eldridge, Ferncreek, Ky., assignors to Lantech, Inc., Louisville, Ky.

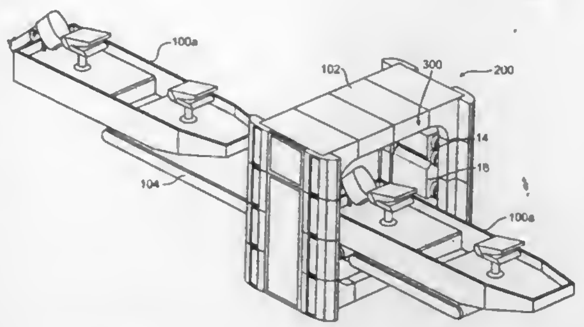
Filed Nov. 12, 1996, Ser. No. 747,127

Int. Cl.⁶ B65B *13/04*

U.S. Cl. 53—588 **32 Claims**

1. An apparatus for wrapping a load comprising:

a packaging material dispenser for dispensing stretch wrap packaging material;



a segmented wrapping frame for supporting the packaging material dispenser, the frame comprising segments of track which are assembled to one another to form a track for the packaging material dispenser so the packaging material dispenser can revolve around the load, wherein at least one of the assembled segments is adjustable in length; and

a motor for driving the packaging material dispenser around the load to wrap packaging material around the load.

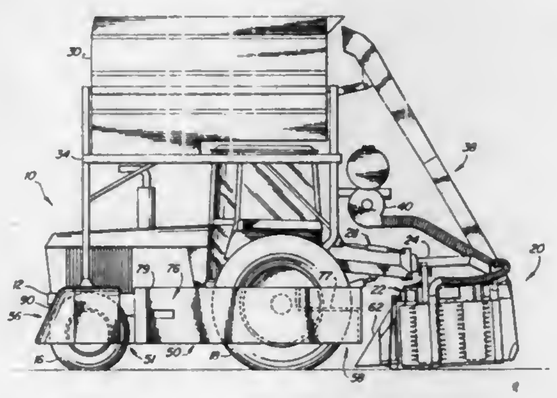
5,850,727
SHIELD STRUCTURE FOR A TRACTOR WITH A REAR MOUNTED HARVESTER

Jeffrey Robert Fox, Minburn, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 28, 1997, Ser. No. 808,146

Int. Cl.⁶ A01D *46/08;75/18*

U.S. Cl. 56—1 **20 Claims**



7. In a tractor having a fore-and-aft extending frame with forward steerable wheels mounted on an oscillatable axle and steerable about an upright axis over a preselected steering range, the axle connected to the frame and oscillatable over a range of angles relative to the frame, the tractor including rear drive wheels connected to the frame, and adapted for forward movement over a field wherein crops are planted in parallel rows, rear mounted harvesting structure supported by the frame, and shield structure for protecting the crops as the tractor moves forwardly over the field and comprising a forward shield portion connected to the steerable wheels; and a second shield portion connected to the tractor axle and having a forward end interacting with the forward shield portion and extending rearwardly therefrom to provide a generally continuous crop deflecting surface from the fore end of the frame to a location behind the axle as the tractor moves forwardly over the field, wherein the forward shield and second shield portions include mating portions facilitating full oscillation of the axle over the range of angles without interference between the forward and second shield portions.

5,850,728
WHEELED DEVICE FOR HAND HELD BRUSH CUTTER

Peter L. Rappolt, 97 Woorarra Avenue, Elanora Heights, NSW. 2101, Australia

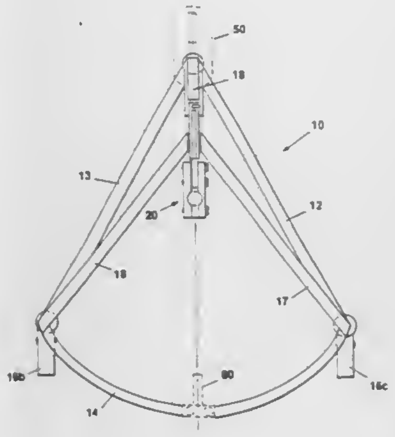
PCT No. PCT/AU95/00136, § 371 Date Sep. 13, 1996, § 102(e) Date Sep. 13, 1996, PCT Pub. No. WO95/24824, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 15, 1995, Ser. No. 704,709

Claims priority, application Australia, Mar. 15, 1994, PM4436; Oct. 12, 1994, 75758194

Int. Cl.⁶ A01D *34/68;34/82*

U.S. Cl. 56—17.1 **9 Claims**



1. An attachment for use with a brush cutter having a blade rotatable about a blade center, the attachment comprising:

a frame having a front end and a rear end;

three wheels mounted on the frame to support the frame for movement over the ground, the wheels comprising a front wheel mounted at the front end and two spaced apart rear wheels mounted at the rear end;

an adjustable boom mounting means for attaching a brush cutter to the frame, the boom mounting means adapted to firmly locate the center of the blade within an area bounded by the wheels;

the frame including two side members each side member extending generally parallel to a line joining the front wheel to the respective rear wheel so as to allow a blade of sufficient to the extend sideways of the frame while clearing the wheels;

wherein the boom mounting means is adapted to be secured in one of a plurality of positions to position the center of the blade forwards or rearwards relative to the frame.

5,850,729
APPARATUS FOR DETACHING THE TERMINAL SPRIAL WINDINGS FROM THE SURFACE OF A SPINNING COP

Wolfgang Irmen, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

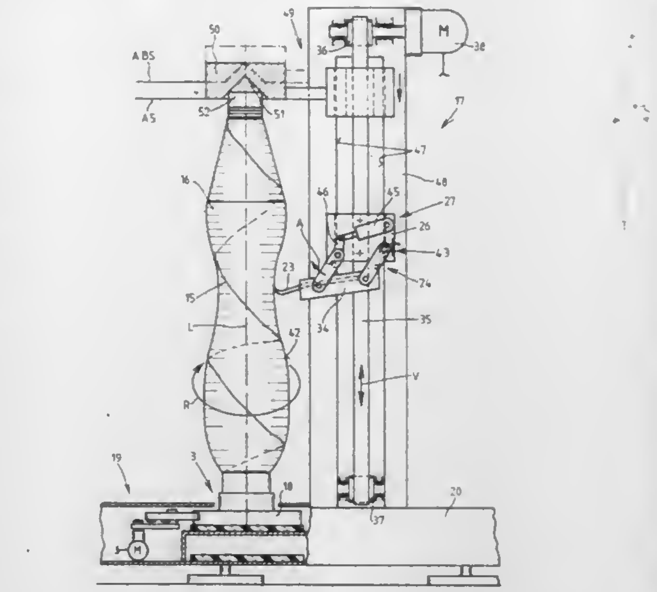
Filed Jun. 24, 1997, Ser. No. 881,137

Claims priority, application Germany, Jun. 24, 1996, 196 25 090.0

Int. Cl.⁶ D01M *9/00*

U.S. Cl. 57—278 **13 Claims**

1. Apparatus for detaching a terminal spiral winding of yarn from the yarn surface of a textile yarn spinning cop while rotating the cop opposite the winding direction of the yarn thereon, the apparatus having a yarn detaching arrangement and means for moving the yarn detaching arrangement lengthwise along the cop, the yarn detaching arrangement having a yarn detacher element for acting on the reserve yarn winding on the cop and a guide linkage for selectively articulating the yarn detacher element toward and



away from the yarn surface of the cop, the guide linkage including means for maintaining the yarn detacher element in proximate following relation to the yarn surface of the cop during movement along the cop.

5,850,730
OPENING DEVICE FOR AN OPEN-END SPINNING UNIT

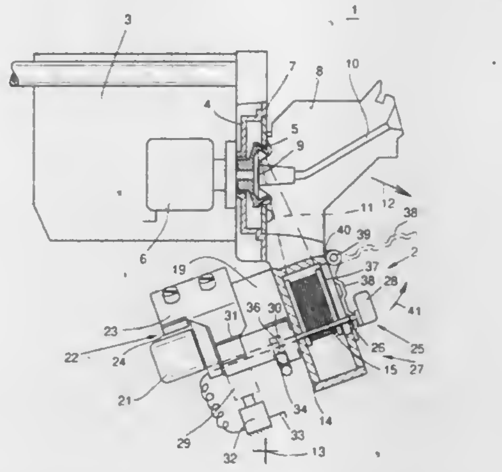
Heinz-George Wassenhoven; Norbert Schippers, and Maximilian Preutenborbeck, all of Mönchengladbach, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Dec. 4, 1997, Ser. No. 985,161

Claims priority, application Germany, Dec. 6, 1996, 196 50 597.6

Int. Cl.⁶ D01H *4/00*

U.S. Cl. 57—408 **10 Claims**



1. An opening device for an open-end spinning unit of a cheese-producing textile machine comprising a housing, an opening roller rotatable within the housing, an electric motor for driving the opening roller, a spring-biased brake for the opening roller, a switch for opening and closing electrical current flow to the motor, and a locking and unlocking device selectively actuable for fixing the opening roller axially in place in the housing, for positively controlling the brake, and for actuating the switch.

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5,850,731

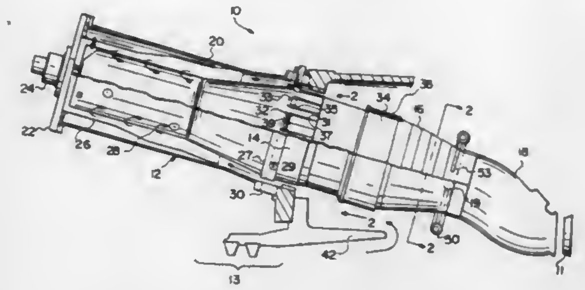
CATALYTIC COMBUSTOR WITH LEAN DIRECT INJECTION OF GAS FUEL FOR LOW EMISSIONS COMBUSTION AND METHODS OF OPERATION

Kenneth W. Beebe, Galway; Stephen L. Hung, Waterford, and Martin B. Cutrone, Niskayuna, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Division of Ser. No. 575,809, Dec. 22, 1995. This application Jul. 17, 1997, Ser. No. 896,232

Int. Cl.^{6} F02C *7/26*

U.S. Cl. 60—39.06 **5 Claims**



1. A method of operating a combustor for a gas turbine under low, mid-range and high-load conditions, comprising the steps of:

(i) under low load conditions, flowing fuel and air into a diffusion flame combustion zone and causing combustion of the fuel in said zone to generate combustion products for flow in a direction downstream from said diffusion flow combustion zone;

(ii) under mid-range load conditions, supplying fuel to and mixing the fuel with the products of combustion flowing downstream from said diffusion flame combustion zone, causing combustion of the mixture in the presence of a catalyst in a catalytic combustion zone downstream of the diffusion flame combustion zone and continuing flow of combustion products therefrom in a downstream direction within a liner into a post-catalytic combustion zone; and

(iii) under high-load conditions, introducing fuel and air downstream of the catalytic combustion zone and into the post-catalytic combustion zone by lean direct injection of fuel and air at locations radially inwardly of the liner without premixing outside the liner for mixing with combustion products from the diffusion flame combustion zone and the catalytic combustion zone and causing combustion of the mixture in the post-catalytic combustion zone.

5,850,732

LOW EMISSIONS COMBUSTION SYSTEM FOR A GAS TURBINE ENGINE

Jeffrey W. Willis; Guillermo Pont, both of Los Angeles, and Bruce L. Alder, Jr., Agoura, all of Calif., assignors to Capstone Turbine Corporation, Tarzana, Calif.

Filed May 13, 1997, Ser. No. 855,210

Int. Cl.^{6} F02G *3/00;* **F02C** *3/08*

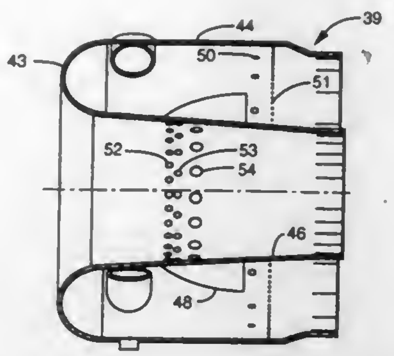
U.S. Cl. 60—39.36 **60 Claims**

1. A low emissions combustion system for a gas turbine engine, comprising:

an annular combustor having an outer liner, an inner liner, a closed upstream end, and an open discharge end;

a plurality of tangential fuel injectors spaced around and mounted to the periphery of said closed end of said combustor;

a curved, generally skirt-shaped, flow control baffle extending from said inner liner downstream into the annular combustor between said inner liner and said outer liner, said curved, generally skirt-shaped, flow control baffle projecting from generally one-third to two-thirds of the distance between said inner liner and said outer liner;



a plurality of spaced air dilution openings in said inner liner beneath said curved, generally skirt-shaped, flow control baffle, said curved, generally skirt-shaped, flow control baffle directing the air from said plurality of spaced air dilution openings in a downstream direction; and

a plurality of spaced air dilution openings in said outer liner of said annular combustor to inject additional dilution air into said annular combustor.

5,850,733

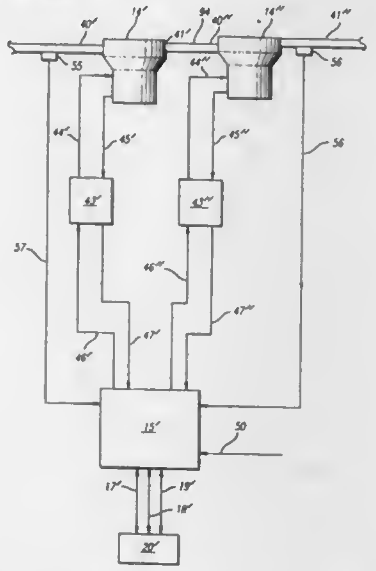
GASEOUS FUEL COMPRESSION AND CONTROL SYSTEM AND METHOD

Robert W. Bosley, Cerritos; Edward C. Edelman, Agoura Hills, and Ronald F. Miller, Marina del Rey, all of Calif., assignors to Capstone Turbine Corporation, Tarzana, Calif.

Division of Ser. No. 730,945, Oct. 16, 1996, Pat. No. 5,819,524. This application May 27, 1998, Ser. No. 85,817

Int. Cl.^{6} F02C *9/26*

U.S. Cl. 60—39.464 **20 Claims**



1. A gaseous fuel compression and control system, comprising:

a turbogenerator set including a turbogenerator and turbogenerator power controller, said turbogenerator including a compressor, a turbine, a combustor with a plurality of gaseous fuel nozzles and a plurality of air inlets, a recuperator, and a permanent magnet motor/generator;

a first helical flow compressor/turbine;

a first motor operably associated with said first helical flow compressor/turbine to drive said first helical flow compressor/turbine;

a first helical flow compressor/turbine motor inverter drive operably associated with said first helical flow compressor/turbine motor to provide electrical power to said first helical flow compressor/turbine motor and receive operational data from said first helical flow compressor/turbine motor;

a second helical flow compressor/turbine;

a second motor operably associated with said second helical flow compressor/turbine to drive said second helical flow compressor/turbine; and

a second helical flow compressor/turbine motor inverter drive operably associated with said second helical flow compressor/turbine motor to provide electrical power to said second helical flow compressor/turbine motor and receive operational data from said second helical flow compressor/turbine motor;

said first helical flow compressor/turbine receiving gaseous fuel and supplying intermediately pressurized gaseous fuel to the second helical flow compressor/turbine and said second helical flow compressor/turbine supplying pressurized gaseous fuel to the gaseous fuel nozzles of said turbogenerator combustor, said turbogenerator compressor/turbine supplying compressed combustion air to said air inlets of said turbogenerator combustor,

said first and said second helical flow compressor/turbine motor inverter drives also operably associated with said turbogenerator power controller to receive control signals from said turbogenerator power controller, said turbogenerator power controller also receiving operational data from said helical flow compressor/turbine motor inverter and turbogenerator parameter signals from said turbogenerator.

5,850,734

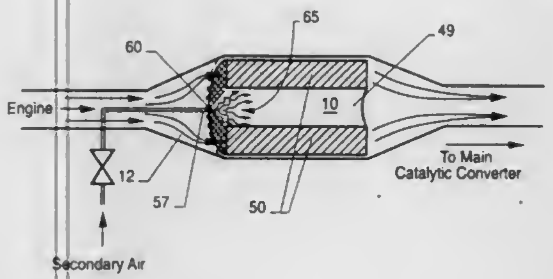
CLOSE-COUPLED CATALYTIC CONVERTER SYSTEM

Thomas D. Ketcham, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 3, 1996, Ser. No. 707,280

Int. Cl.^{6} F01N *3/20;3/28*

U.S. Cl. 60—274 **28 Claims**



1. A method of treating a hydrocarbon-containing engine exhaust stream comprising:

causing exhaust gases from an engine exhaust gas stream to flow through a close-coupled catalyzed structure and thereafter through a main catalyzed structure having a light-off temperature, wherein the close-coupled catalyzed structure has an inlet and an outlet end located in a housing, a light-off temperature, and a first substantially unobstructed flow region, and a second more obstructed flow region abutting the first region, the flow through the close-coupled catalyzed structure involving, prior to the main catalyzed structure attaining its light-off temperature, activating a secondary air source located in the housing capable of diverting a substantial portion the exhaust gases away from the first region and through the second region.

5,850,735

METHOD FOR PURIFYING EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE

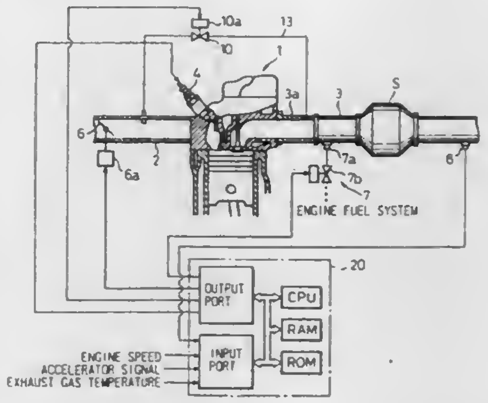
Yasushi Araki; Tatsuji Mizuno, both of Susono, and Toshiaki Tanaka, Numazu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 10, 1996, Ser. No. 711,597

Claims priority, application Japan, Sep. 11, 1995, 7-232695; Nov. 30, 1995, 7-312770; Dec. 13, 1995, 7-324539

Int. Cl.^{6} F01N *3/02;3/08;3/36*

U.S. Cl. 60—274 **12 Claims**



1. A method for purifying the exhaust gas of an internal combustion engine comprising:

a step for contacting the exhaust gas of an internal combustion engine containing sulfur oxide with a sulfate absorbent at a temperature lower than a releasing temperature, said sulfate absorbent absorbing sulfur oxide in the exhaust gas when the temperature is lower than said releasing temperature and releasing the absorbed sulfur oxide when the temperature becomes higher than said releasing temperature;

a step for raising the temperature of the sulfate absorbent after it has absorbed sulfur oxide to a predetermined temperature higher than said releasing temperature to, thereby, cause the sulfate absorbent to release the absorbed sulfur oxide;

wherein said predetermined temperature is selected in such a manner that the ratio of the sulfur trioxide component in the sulfur oxide mixture released from the sulfate absorbent at said predetermined temperature becomes lower than the ratio of the sulfur trioxide in the sulfur oxide mixture released from the sulfate absorbent at said releasing temperature.

5,850,736

HYDROSTATIC TRANSMISSION

Shinya Sakakura; Ryota Ohashi, and Shigenori Sakikawa, all of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Japan

Continuation of Ser. No. 508,395, Jul. 31, 1995, Pat. No. 5,588,294. This application Oct. 11, 1996, Ser. No. 730,657

Claims priority, application Japan, Sep. 13, 1994, 6-218611

Int. Cl.^{6} F16D *31/02;39/00*

U.S. Cl. 60—464 **20 Claims**

1. A hydrostatic transmission, comprising:

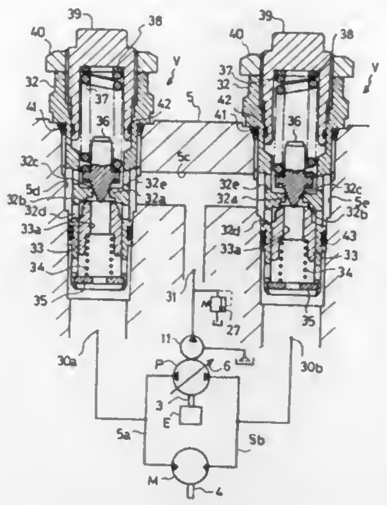
a hydraulic motor;

a hydraulic pump; and

a closed circuit having a low pressure side and a high pressure side for connecting said hydraulic pump and said hydraulic motor in fluid communication with each other, wherein said closed circuit includes,

a valve casing,

a check valve disposed within said valve casing, wherein said check valve allows oil to be supplied only to the low pressure side of said closed circuit,



a relief valve disposed opposite to said check valve within said valve casing, wherein said relief valve regulates oil pressure within said closed circuit, and

a cover detachably mounted to an end of said valve casing.

5,850,737

PROCESS FOR CONTROLLING THE CHARGING PRESSURE IN AN EXHAUST GAS TURBOCHARGER WITH AN ADJUSTABLE TURBINE GEOMETRY

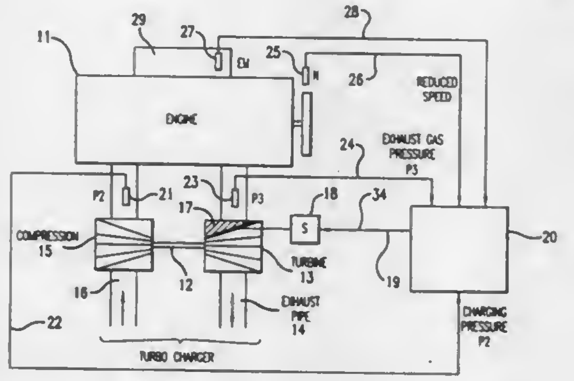
Werner Aschner, Ulm; Horst Hanauer, Althütte, and Gernot Hertweck, Fellbach, all of Germany, assignors to Mercedes Benz AG, Germany

Filed Aug. 30, 1996, Ser. No. 706,318

Claims priority, application Germany, Aug. 30, 1995, 195 31 871.4

Int. Cl.^{6} F02B *37/22*

U.S. Cl. 60—602 **7 Claims**



1. In an internal-combustion engine charged by an exhaust gas turbocharger with an adjustable turbine geometry, a process for controlling charging pressure to an operating-point-dependent desired charging pressure value, comprising the steps of:

detecting a first control quantity in the form of a control deviation between a desired charging pressure value and an actual charging pressure value;

detecting at least one additional control quantity;

generating a regulator current determined as a function of said control deviation and said additional control quantity, an electronic control unit; and

controlling said turbine geometry as a function of said regulator current, including controlling said turbine geometry into a configuration which reduces the approach flow cross-section onto the turbine, after a positive load chance of the internal-combustion engine.

5,850,738

SUPERCHARGING PRESSURE CONTROL DEVICE

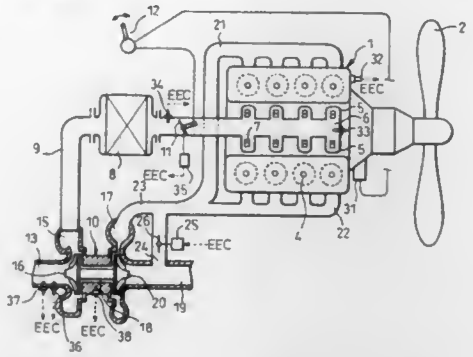
Takashi Hayashi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 24, 1996, Ser. No. 773,283

Claims priority, application Japan, Dec. 28, 1995, 7-343899

Int. Cl.^{6} F02B *37/12*

U.S. Cl. 60—602 **4 Claims**



1. A supercharging pressure control device comprising:

a supercharger having a compressor for raising the pressure of air;

supercharging pressure detecting means for detecting an outlet air pressure of said compressor;

speed detecting means for detecting a speed of said supercharger;

first control means for controlling the outlet air pressure of said compressor so that the outlet air pressure detected by said supercharging pressure detecting means becomes a predetermined pressure setting;

second control means for controlling a supercharger speed so that the supercharger speed detected by said speed detecting means becomes a predetermined speed setting; and

selecting means for selectively causing one of said first and second control means to operate based on said detected compressor outlet air pressure and supercharger speed.

5,850,739

STEAM TURBINE POWER PLANT AND METHOD OF OPERATING SAME

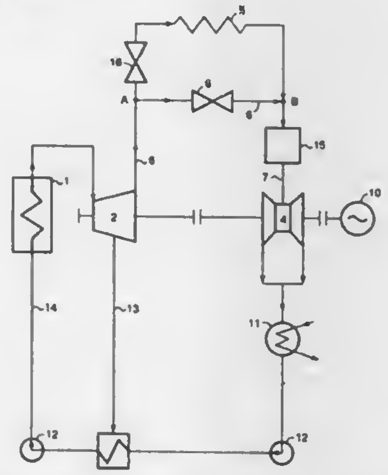
Sergey Alexandrovich Masnol, Metallistov pr.105, flat 13, 195197, Saint-Petersburg, Russian Federation

PCT No. PCT/RU94/00119, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO95/33127, PCT Pub. Date Dec. 7, 1995

PCT Filed Jun. 1, 1994, Ser. No. 737,883

Int. Cl.^{6} F01K *7/34*

U.S. Cl. 60—653 **3 Claims**



1. A method of operating a steam turbine power plant of the type including a turbine, a reheater connected to the turbine, a supply of

cold steam from the turbine and a supply of reheated steam to the turbine, during rated and steady-state operating conditions of the plant, said method comprising the steps of

dividing the supply of cold steam from the turbine into first and second flow streams;

directing the first flow stream amounting to 90%–50% of the total supply from the turbine to the bypass line;

directing the second flow stream amounting to 10%–50% of the total supply from the turbine to the reheater for heating to a temperature of 650°–850° C. at a maximum pressure of 0.1–1.0 Mpa, and

combining the first and second flow streams from the bypass line and the reheater into a single combined stream which constitutes said supply of reheated steam to the turbine.

5,850,740

FLUIDIZED BED POWER PLANT, AND CONTROL APPARATUS AND METHOD THEREOF

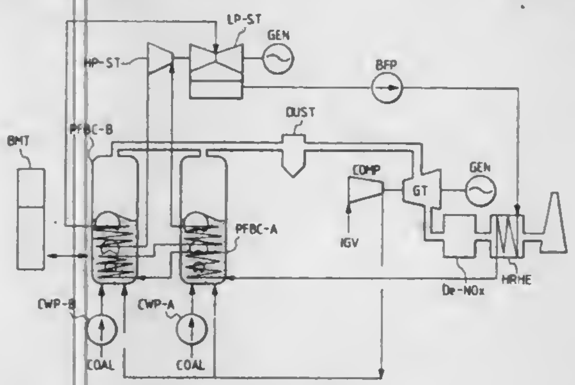
Yoshio Sato; Masahide Nomura, both of Hitachi; Yasunori Yamamoto, Kure, and Eiji Toyama, Toukai-mura, all of Japan, assignors to Hitachi, Ltd., and Babcock-Hitachi Kabushiki Kaishia, both of Tokyo, Japan

Filed Jan. 5, 1996, Ser. No. 582,360

Claims priority, application Japan, Jan. 20, 1995, 7-006926

Int. Cl.^{6} F01K *13/00*

U.S. Cl. 60—676 **6 Claims**



1. A fluidized bed power plant, comprising:

a first fluidized bed boiler for forming a first fluidized bed including fuel and a fluidized bed medium, burning fuel, and generating steam;

a first steam turbine driven by the steam generated by said first fluidized bed boiler;

a second fluidized bed boiler for forming a second fluidized bed including fuel and a fluidized bed medium, burning fuel, and heating the steam which has driven said first steam turbine;

a second steam turbine driven by the steam heated by said second fluidized bed boiler;

a first fluidized bed steam temperature control apparatus for controlling fuel flow fed to said first fluidized bed in accordance with a signal of a detected temperature of the steam generated in said first fluidized bed boiler and fed to said first steam turbine;

a first fluidized bed temperature control apparatus for controlling a height of a fluidized layer formed in said first fluidized bed in accordance with a signal of a detected temperature of said fluidized layer formed in said first fluidized bed boiler;

a second fluidized bed steam temperature control apparatus for controlling fuel flow fed to said second fluidized bed in accordance with a signal of detected temperature of the steam generated in said second fluidized bed boiler and fed to said second steam turbine; and

a second fluidized bed temperature control apparatus for controlling a height of a fluidized layer formed in said second fluidized bed in accordance with a signal of detected temperature of said fluidized layer formed in said second fluidized bed boiler.

5,850,741

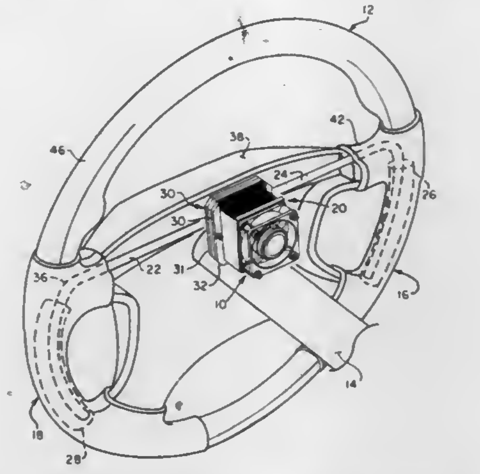
AUTOMOTIVE VEHICLE STEERING WHEEL HEATING AND COOLING APPARATUS

Steve Feher, 1 Keahole Pl. Ste. 1505, Honolulu, Hi. 96825

Filed Jun. 9, 1997, Ser. No. 871,870

Int. Cl.^{6} F25B *21/02*

U.S. Cl. 62—3.61 **17 Claims**



1. A selectively temperature conditioned automotive vehicle steering wheel assembly, comprising:

a steering wheel including a hand-gripping portion and arm means interconnected with the hand-gripping portion and extending therefrom:

electrically energizable thermoelectric heat pump means mounted on the arm means spaced from the steering wheel hand-gripping portion in the ambient air for providing a first surface having a modified temperature from vehicle ambient temperature and a second surface in heat exchanging contact with the ambient air and having a temperature modified oppositely from that of said first surface;

heat exchanger means mounted on the steering wheel hand-gripping portion; and

heat transfer means interconnecting the modified temperature first surface with the heat exchanger means.

5,850,742

APPARATUS AND METHOD OF CONTROLLING AUTOMATIC DOOR OF AIR CONDITIONER

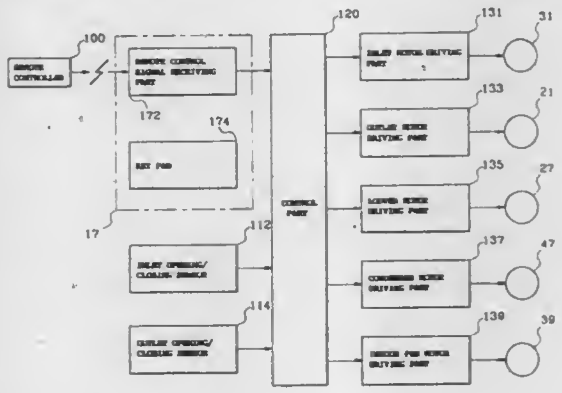
Yong-Woong Bang, and Je-Myoung Moon, both of Kyungki-do, Rep. of Korea, assignors to Smasung Electronics Co., Ltd., Suwon-City, Rep. of Korea

Filed Aug. 14, 1997, Ser. No. 911,144

Claims priority, application Rep. of Korea, Sep. 12, 1996, 1996-39522

Int. Cl.^{6} F25D *17/06*

U.S. Cl. 62—89 **8 Claims**



1. An air conditioner comprising:

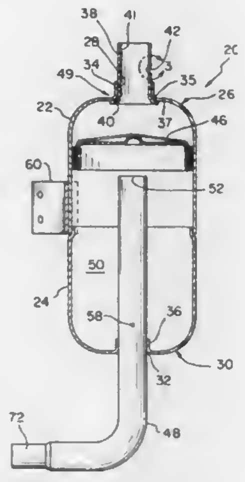
an inlet for receiving room air;

a heat exchanger for changing the temperature of the air received through the inlet;
an outlet for discharging the air back into the room;
a fan for circulating the air sequentially through the inlet, the heat exchanger, and the outlet;
a door for opening/closing one of the inlet and outlet;
power means operably connected to the door for moving the door between open and closed positions;
control means connected to the heat exchanger, the fan, and the power means for automatically actuating the power means to open the door when the heat exchanger and fan are activated and for closing the door when the heat exchanger and fan are deactivated; and
manually actuable control by-pass means for maintaining the door open when the heat exchanger and the fan are deactivated.

5,850,743
SUCTION ACCUMULATOR ASSEMBLY

Nelik I. Drelman, Tipton; Rick L. Bunch, Tecumseh, and Tara C. Kandpal, deceased, late of Tecumseh, all of Mich., by Geeta Kandpal, executrix, assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 13, 1996, Ser. No. 747,889
Int. Cl.^{6} F25B *43/00*
U.S. Cl. 062—503 **9 Claims**



1. A suction accumulator, comprising:
a housing having an inlet and an outlet;
said inlet having an outwardly directed annular neck, an annular arcuate portion, and an annular flange, said annular arcuate portion being disposed between, and integral with, said neck and said flange;
an inlet tube disposed within said housing inlet, said inlet tube having a flared outlet end and a tubular portion, said flared outlet end having an outer surface congruent with said arcuate portion of said housing inlet and a flared inner surface divergingly opening into said housing, said tubular portion being congruent with said neck of said housing inlet, said inlet tube being attached to said housing at said housing inlet, said inlet tube being attached to said housing inlet by one of a group consisting of brazing, welding, and soldering;
a suction tube disposed within said housing outlet; and
a mounting bracket secured to said housing and adapted to be secured to a compressor.

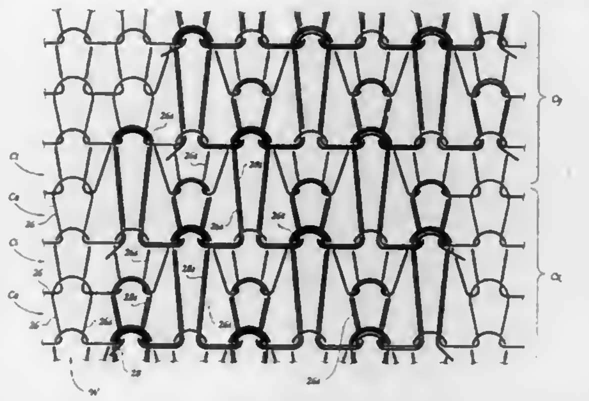
5,850,744

Patent Not Issued For This Number

5,850,745
KNITTED BRASSIERE BLANK HAVING INTEGRAL SEAMLESS ELASTICATED CONTOURS DEFINING BRA CUP BORDERS

David Albright, Rockingham, N.C., assignor to The Russell Group, Ltd., Rockingham, N.C.

Continuation-in-part of Ser. No. 811,894, Mar. 5, 1997, Pat. No. 5,855,123. This application Apr. 15, 1997, Ser. No. 834,196
Int. Cl.^{6} A41B *9/06*
U.S. Cl. 66—176 **10 Claims**

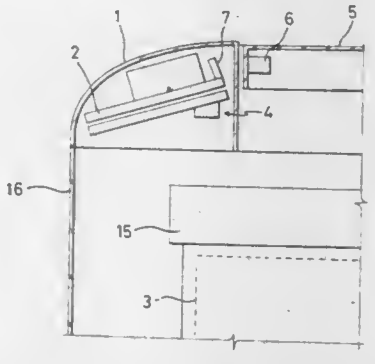


1. A knitted blank for manufacture of a brassiere comprising a frontal portion having a pair of arcuately curved elasticated annular contours knitted seamlessly in the frontal portion side by side one another for defining elasticated borders of breast cups, the blank being formed of a knitted textile fabric comprising a body yarn formed in stitch loops aligned with one another in transversely extending courses and longitudinally extending wales, the elasticated contours extending in an arcuate curvature longitudinally across a plurality of adjacent courses of the body yarn and transversely across a plurality of adjacent wales of the body yarn and comprising segments of an elastic yarn formed with the body yarn in selected stitch loops of the elasticated contours to elasticize the borders as an integral seamless element of the fabric.

5,850,746
DEWATERING APPARATUS OF AUTOMATIC WASHING MACHINE

Dong Geun Lee, Kyungsangnam-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 29, 1996, Ser. No. 741,225
Claims priority, application Rep. of Korea, Feb. 22, 1996, 4164/1996
Int. Cl.^{6} D06F *33/02;37/42*
U.S. Cl. 68—12.06 **12 Claims**



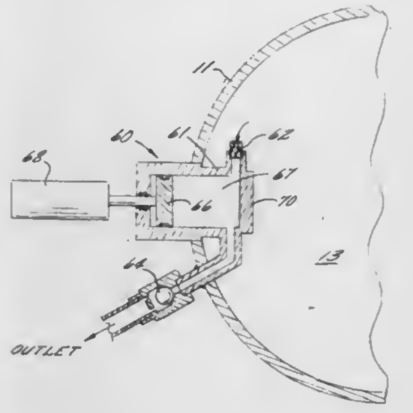
1. In an automatic washing machine comprising a body, and a rotatable washing tub mounted within the body, a dewatering apparatus comprising:

an unbalance sensor constructed and arranged to sense unbalance of the washing tub during a dewatering cycle, the unbalance sensor comprising:
a casing having an outwardly extending conical cut-off plate defining a bottom of said casing; and
an electrically conductive roller freely disposed within said casing and rolling on said cut-off plate so as to tend to roll towards and rest at an apex of said cut-off plate, wherein said cut-off plate is provided with a pair of spaced electrical terminals provided at said apex, whereby said roller, when resting at said apex, contacts both terminals simultaneously so as electrically connect said terminals.

5,850,747
LIQUIFIED GAS DRY-CLEANING SYSTEM WITH PRESSURE VESSEL TEMPERATURE COMPENSATING COMPRESSOR

James L. Roberts, Green Lake, and Andrew Kegler, Ripon, both of Wis., assignors to Raytheon Commercial Laundry LLC, Ripon, Wis.

Filed Dec. 24, 1997, Ser. No. 998,219
Int. Cl.^{6} B08B *5/00;11/00*
U.S. Cl. 68—15 **9 Claims**



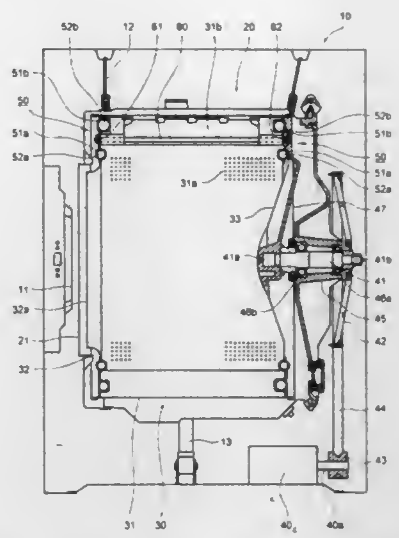
1. A liquified gas dry-cleaning system, comprising:
a storage tank containing a quantity of liquified gas derived from a liquifiable gas;
a pressure vessel containing items to be cleaned in a bath of the liquified gas;
a circulating system for transporting the liquified gas between the storage tank and the pressure vessel; and
a compressor mounted in direct contactng relation to the pressure vessel for evacuating from the pressure vessel a gaseous form of the liquifiable gas and for directing heat generated during operation of the compressor directly to an interior of the pressure vessel so that effects of a temperature decrease within the pressurized vessel incident to gaseous evacuation are minimized.

5,850,748
FRONT LOADING CLOTHES WASHING MACHINE WITH DYNAMIC BALANCING MECHANISM

Cin Yong Kim, Suwon; Do Weon Kim, Seoul; Jin Soo Kim; Sam Yong Jang, both of Suwon, and Geum Chan Lee, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 774,876
Claims priority, application Rep. of Korea, Dec. 28, 1995, 1995 50073 U; Feb. 15, 1996, 1996 3764; May 30, 1996, 1996 13846 U; May 11, 1996, 1996 11524 U
Int. Cl.^{6} D08F *37/22*
U.S. Cl. 68—23.2 **14 Claims**

14. A front-loading washing machine, comprising:
a housing;
a front-loading tub suspended within the housing;

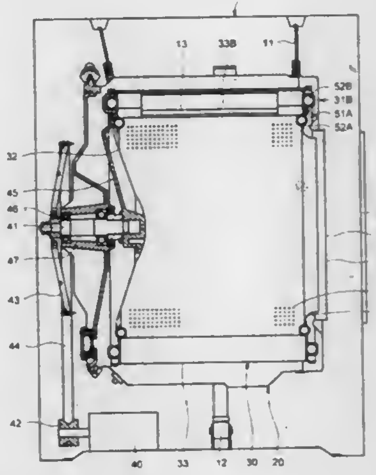


a spin basket mounted within the tub for rotation about a horizontal axis, the spin basket including axially spaced front and rear sides;
a drive mechanism for rotating the spin basket; and
a dynamic balancing mechanism mounted on the spin basket at least at one of the front and rear sides thereof for balancing the spin basket during rotation thereof, the balancing mechanism comprising:
  an annular chamber mounted on the at least one side in coaxial relationship with the horizontal axis, and
  a plurality of balls freely movable within the chamber;
wherein the at least one side of the spin basket comprises a panel, a first and second plate members connected to the spin basket, the first and second plate members having first and second grooves formed therein, the first and second grooves being axially aligned with one another to form the annular channel.

5,850,749
BALANCING DEVICE FOR A DRUM WASHING MACHINE

Jin-Soo Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 30, 1997, Ser. No. 865,680
Claims priority, application Rep. of Korea, May 30, 1996, 96-13845; May 30, 1996, 96-13855
Int. Cl.^{6} D06F *37/22*
U.S. Cl. 68—23.2 **3 Claims**



1. A drum washing machine, comprising:
a housing;

a tub suspended in the housing;
a drum-type spin basket rotatably installed in the tub; and
at least two radially spaced races provided on the spin basket concentric with the spin basket, each race containing liquid and a plurality of balls;
an internal ball-contacting surface of a radially inner one of the races being smoother than an internal ball-contacting surface of a radially outer one of the races;
the liquid in the inner race having less viscosity than the liquid in the outer race; and
the balls in the outer race being of larger diameter than the balls in the inner race.

5,850,750
CLOTHES WASHER HAVING A PULSATOR APPARATUS

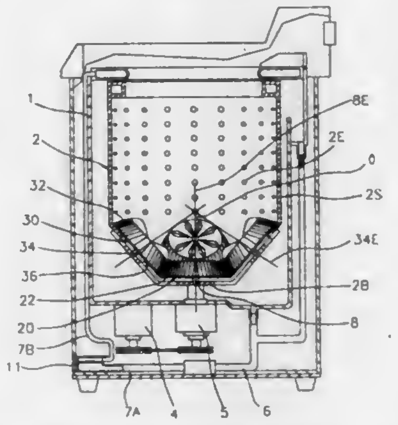
In-Su Cho, Kwangju, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed Jun. 6, 1997, Ser. No. 870,825

Claims priority, application Rep. of Korea, Jun. 29, 1996, 1996 25894

Int. Cl.⁶ D06F *17/08;17/10*

U.S. Cl. 68—133 **6 Claims**



1. A clothes washer having a pulsator apparatus comprising:
a housing;
a water basket disposed in said housing for containing water;
a clothes basket disposed in said water basket and comprising a bottom portion and a side wall;
an operating force transmitting means mounted between said housing and said water basket for transmitting the operating force to said clothes basket;
a driving pulsator fixed on a shaft extended perpendicular to the operating force transmitting means and rotatably arranged on said bottom portion in said clothes basket; and
a plurality of driven pulsators operated by said driving pulsator.

5,850,751
ACTUATING MECHANISM FOR A COMBINATION LOCK

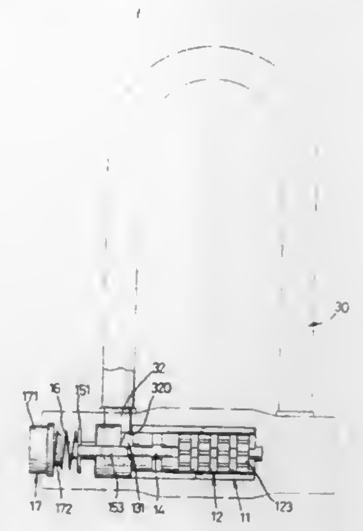
Lambert Kuo, No. 16, Lane 459, Sec. 1, An Ho Rd., Tainan, Taiwan

Filed Feb. 24, 1998, Ser. No. 28,278

Int. Cl.⁶ E05B *37/02*

U.S. Cl. 70—26 **6 Claims**

1. An actuating mechanism in combination with a lock comprising:
a semi-cylindrical receiving base (**11**) defining a channel (**111**) and including a first end portion and a second end portion formed with a cylinder (**113**) radially defining a lock hole (**114**) communicating with said channel (**111**), and a retaining post (**116**) extending from said cylinder (**113**);



a shackle (**30**) including a first end portion (**31**) and a second end portion (**32**) slidably received in said lock hole (**114**) and defining a lock cavity (**320**) communicating with said lock hole (**114**);
a locking member (**13**) slidably mounted in said channel (**111**) and including a first end portion and a second end portion formed with a locking hook (**131**) detachably received in said lock cavity (**320**);
a rotary ring module (**12**) fixedly mounted in said channel (**111**) and located adjacent to said first end portion of said locking member (**13**);
a drive shaft (**14**) slidably extending through said rotary ring module (**12**) and including a first end portion and a second end portion fixedly engaged with said locking member (**13**) such that said locking member (**13**) can be moved with said drive shaft (**14**) synchronously;
a circular piece (**151**) slidably mounted on said retaining post (**116**) and formed with a side extension (**153**) abutting on said second end portion of said drive shaft (**14**);
a biasing member (**16**) including a first end portion urged on said circular piece (**151**) and a second end portion; and
a pressing member (**17**) urged on said second end portion of said biasing member (**16**).

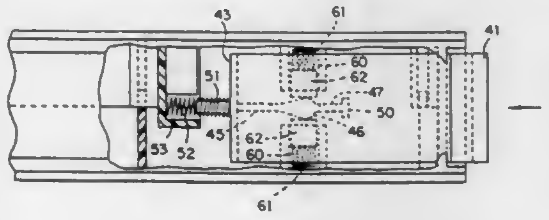
5,850,752
SECURITY CASE

Michael Lax, Westbury, N.Y., assignor to Autronic Plastics, Inc., Westbury, N.Y.

Continuation of Ser. No. 398,280, Mar. 3, 1995, Pat. No. 5,598,728. This application Sep. 30, 1996, Ser. No. 720,504

Int. Cl.⁶ E05B *47/00*

U.S. Cl. 70—276 **12 Claims**



1. A security device comprising:
a case having an access opening to receive merchandise, top and bottom surfaces, and two opposing sidewall surfaces having, respectively, first and second coupling elements near the access opening, said first and second coupling elements of common shape and size; and
a locking mechanism for maintaining the case enclosed when the locking mechanism is closed, the locking mechanism being fully separable from said case when the locking mechanism is open and including
a base housing having a wall defining a region accommodating interior components,
two flanges extending generally parallel to each other from the base housing and spaced apart from each other to receive and retain the top and bottom surfaces of said case and prevent access to at least a portion of an interior region of the case through said access opening,
a non-moveable engagement element fixed to the base housing for releasably engaging with the first coupling element of the case,
a linearly slidable engagement element extendable into the region accommodating interior components of the base housing for engaging the second coupling element of the case when the linearly slidable engagement element is in a first position and disengaging from the second coupling element of the case, when the linearly slidable engagement element extends linearly outward from the case and beyond the second coupling element to a second position, and
a locking device within the interior component space of the base housing retaining the linearly slidable engagement element in the first position when the locking mechanism is closed.

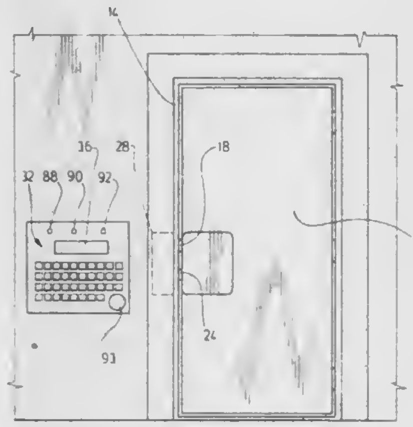
5,850,753
CODE-OPERATED CATCH MECHANISM FOR HOTEL ROOM DOOR

Shivendra Varma, 2 McFadden Drive, Brampton, Ontario, Canada, L6Z 3H4

Continuation-in-part of Ser. No. 172,251, Dec. 23, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 541,198

Int. Cl.⁶ E05B *49/00*

U.S. Cl. 70—278 **14 Claims**



1. A system which controls access to a room comprising a door that pivots on a frame between open and closed orientations, the door having a latch mechanism comprising a latch displaceable when the door is closed between a locking position within the frame and an unlocking position clear of the frame, a latch actuator manually operable from within the room to displace the latch from its locking position to its unlocking position and means for urging the latch to its locking position, the system further comprising:
catch means mounted within the frame for receiving the latch when advanced to its locking position, the catch means having a locking state in which the catch means engage the received latch to prevent the door from opening and an unlocking state in which the catch means permit the received latch to displace with the door thereby to allow the door to open; and,
setting means manually operable from within the room to set a predetermined condition indicating a requirement for privacy; and,
control means for controlling the state of the catch means in response to the condition and in response to a plurality of access codes, the control means comprising input means external to the room and proximate to the door for receiving codes, the control means being programmed to respond to receipt of one of the access codes by placing the catch means in the unlocking state regardless whether the condition is set and to respond to receipt of another of the access codes by placing the catch means in the unlocking state only if the condition is not set.

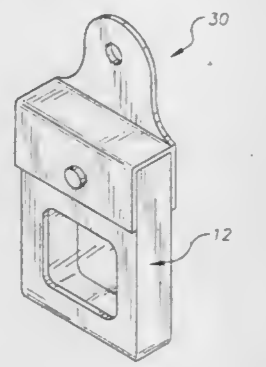
5,850,754
CAR ALARM CONTROLLER HOLDER SYSTEM

Kirk G. Dobbins, 15715 Birch River, Houston, Tex. 77082

Filed Nov. 10, 1997, Ser. No. 967,428

Int. Cl.⁶ A45C *11/32*

U.S. Cl. 70—456 R **16 Claims**



1. A car alarm controller holder system comprising:
a main holder assembly;
a key ring attachable insertion opening cover; and
a controller key ring insertion opening cover;
said main holder assembly including a replaceable, transparent, flexible controller access opening cover and a controller receiving member;
said controller receiving member including a top insertion opening, front and back indents, a front controller access opening, a front insertion opening cover securing mechanism, and two back insertion opening cover securing mechanisms;
said main holder assembly defining a controller receiving compartment therein;
said controller access opening cover being positioned over said front controller access opening of said controller receiving member;
said key ring attachable insertion opening cover including a first channel shaped cover portion and a key ring attachment portion;
said first channel shaped cover portion including a front panel with a front cover securing mechanism, a top panel and a rear panel with two back cover securing mechanisms;
said key ring attachment portion extending outwardly from said first channel shaped cover portion and including a key ring receiving aperture formed through an attachment end thereof;
said controller key ring insertion opening cover including a second channel shaped cover portion including a curved front panel with a front securing mechanism and a front cover indent, a left top panel, a right top panel, a rear panel with a back cover indent and two back securing mechanisms;
said controller key ring insertion opening cover including a controller key ring portion pass through opening formed between said left and right top panels.

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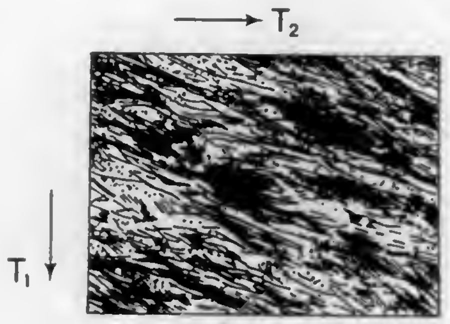
5,850,755
METHOD AND APPARATUS FOR INTENSIVE PLASTIC DEFORMATION OF FLAT BILLETS

Vladimir M. Segal, 1831-A Wild Oak Clr., Bryan, Tex. 77802
Filed Feb. 8, 1995, Ser. No. 385,334
Int. Cl.^{6} B21C *23/02*
U.S. Cl. 72—261 **4 Claims**



1. A method of intensive plastic deformation of flat billets having large ratios of billet dimensions along longitudinal axes to a billet thickness, comprising the steps of inserting a billet into a vertical channel whose length corresponds to a billet dimension along a first longitudinal axis while a width corresponds to a billet dimension along a second longitudinal axis, and a thickness corresponds to a billet thickness; extruding the billet along the first longitudinal axis from the vertical channel into a horizontal channel which is contiguous with and oriented at an angle to the vertical channel; ejecting of the billet along an axis of horizontal channel after completing the extruding; repeating the steps of inserting, extruding and ejecting of the billet along the first longitudinal axis; rotating the billet 90 degrees about a perpendicular axis to a fixed flat surface of the billet; inserting the billet into an another vertical channel whose length corresponds to the billet dimension along the second longitudinal axis while a width corresponds to the billet dimension along the first longitudinal axis, and a thickness corresponds to the billet thickness; extruding the billet along the second longitudinal axis from the another vertical channel into a corresponding another horizontal channel having the same cross-section, and being contiguous with and oriented at an angle to the another vertical channel; ejecting of the billet along an axis of the another horizontal channel after completing the extruding; repeating the steps of inserting, extruding and ejecting of the billet along the second longitudinal axis; rotating the billet 90 degrees in the direction opposed to the first-mentioned rotating about the perpendicular axis to the fixed flat surface of the billet; performing a number of the extruding steps along the first and second longitudinal axis of the billet in any sequence in accordance with equations:

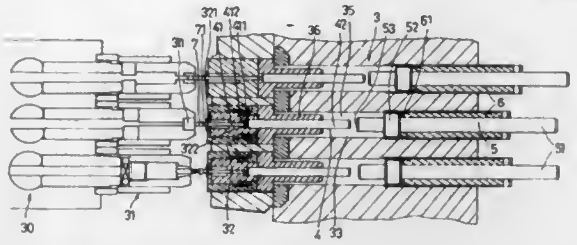
$$N_1 = \frac{N}{1 + \tan\phi},$$

$$N_2 = \frac{N\tan\phi}{1 + \tan\phi}$$

where N is an established total number of extruding steps; N_1 is a number of extruding steps along the first longitudinal axis; N_2 is a number of extruding steps along the second longitudinal axis; ϕ is an angle between the first longitudinal axis and a direction of anisotropy at the billet flat surface.

5,850,756
WORKPIECE EJECTING MECHANISM FOR A FORGING APPARATUS

Yun-Te Chang, Tainan, Taiwan, assignor to FWU Kuang Enterprises Co., Ltd., Tainan Hsien, Taiwan
Filed Aug. 1, 1997, Ser. No. 904,823
Int. Cl.^{6} B21D *45/00*
U.S. Cl. 72—344 **3 Claims**



1. A forging apparatus, comprising:

a machine bed;

a rod passage formed in said machine bed;

an operating mechanism mounted operatively on said machine bed;

a female die mechanism fixed on said machine bed;

a male die mechanism driven by said operating mechanism to press against said female die mechanism for clamping and forging a workpiece located between said male die mechanism and said female die mechanism;

a workpiece pushing rod which is mounted movably within said rod passage having a rear end and a front end said front end being disposed adjacent the female die mechanism;

a driving rod which is movably mounted in said rod passage and having a rear end and a front end, said front end being disposed towards the rear end of the workpiece pushing rod;

a swing arm mechanism disposed adjacent the rear end of the driving rod, said swing arm mechanism providing a forward thrust to a rear end of the driving rod so as to impel the front end of the driving rod to engage the rear end of the workpiece pushing rod and move the workpiece pushing rod forward, thereby pushing a workpiece out of the female die mechanism; and

an air passage formed in said machine bed and communicated fluidly with a portion of said rod passage which is located between said workpiece pushing rod and said driving rod, whereby compressed air provided through said air passage biases the workpiece pushing rod forward to press against the workpiece and biases the driving rod rearward to press against the swing arm mechanism.

5,850,757
APPARATUS FOR MEASURING THE AMOUNT OF LIQUID IN A TANK MOUNTED WITHIN A VEHICLE BY MEASURING THE TANK PIVOT CELL AND INCLINOMETER

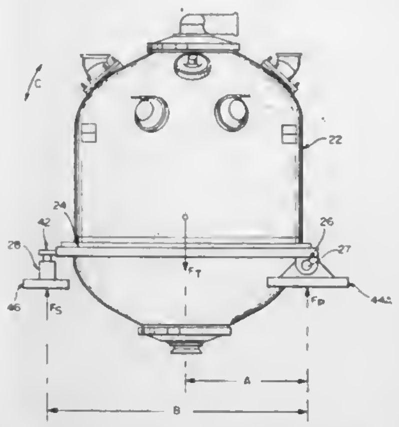
Scott M. Wierenga, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 12, 1997, Ser. No. 910,193
Int. Cl.^{6} G01F *23/20*
U.S. Cl. 73—296 **2 Claims**

1. An apparatus for measuring the amount of liquid in a tank mounted within a vehicle, said apparatus comprising:

a tank-mount mechanically coupled to and surrounding said tank to prevent translational movement of said tank, said tank-mount including

a plurality of pivoting members allowing only rotational movement of said tank, said members pivoting about a common axis, defined by an orifice of each of a plurality of fixed members that are mechanically coupled to the vehicle, and

an extended end positioned on a side opposite to said plurality of pivoting members which extends outwardly from said tank;



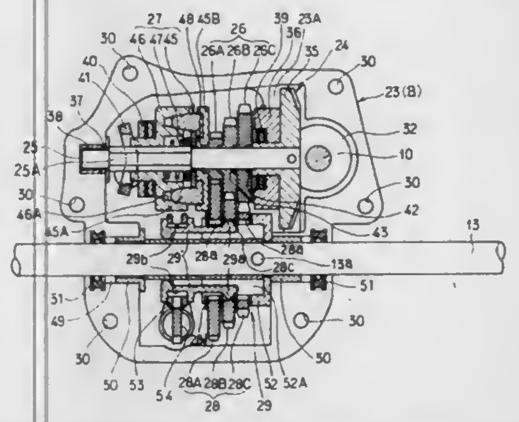
a load cell in contact with said extended end for providing a first signal proportional to a force F_s placed on said load cell by said extended end;

a Central Processing Unit in electrical communication with said load cell, and which processes the first signal from said load cell and calculates the amount of the liquid in said tank based on the force F_s on said load cell, a distance A from the center of gravity of said tank to the common axis, and a distance B from the common axis to where said extended end applies the load F_s to said load cell such that the actual weight FT of the tank and the fluid is calculated by the equation FT=(B/A)×(F_s); and

an inclinometer electrically coupled to said Central Processing Unit, said inclinometer transmitting a second signal to said Central Processing Unit directly proportional to the angle of inclination of the vehicle, wherein said Central Processing Unit processes the second signal and adjusts the relationship between the total weight of said tank and the force registered by the load cell accordingly.

5,850,758
TRANSMISSION FOR SELF-PROPELLED WALKING LAWN MOWERS

Travis McCloud, Morristown, Tenn., and Hirohiko Kawada, Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg., Co., Ltd., Hyogo-ken, Japan, and Tuff Torq Corporation, Morristown, Tenn.
Filed Feb. 14, 1997, Ser. No. 800,787
Int. Cl.^{6} H16H *3/083*
U.S. Cl. 74—371 **13 Claims**



1. A transmission for self-propelled walking lawn mowers comprising:

a casing having a top wall and a bottom wall;

an input shaft connected to a drive source and extending within the casing;

an output shaft penetrating the casing and adapted to be connected to drive wheels;

an intermediate shaft disposed parallel to the output shaft and connected to the input shaft via a transmission gear mechanism;

at least one drive gear mounted on the intermediate shaft;

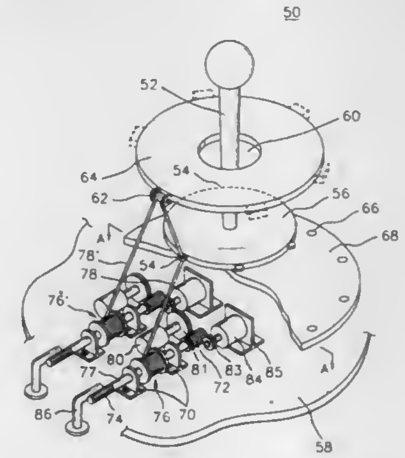
a driven gear set, comprising at least one gear, mounted on the output shaft to mesh with the drive gear; and

a clutch mounted on the intermediate shaft to engage and disengage the drive gear set with and from the intermediate shaft,

wherein the intermediate shaft comprises a first end supported by the casing and a second end terminating inside the casing, and wherein the transmission gear mechanism comprises a large gear fixedly mounted at the second end of the intermediate shaft and a small gear disposed between the large gear and the oppositely facing wall of the casing and fixedly mounted on the input shaft to mesh with the large gear.

5,850,759
FORCE FEED BACK MANIPULATOR WITH SIX DEGREES OF FREEDOM

Jeong-Tae Kim, Kyunggi-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 27, 1996, Ser. No. 773,868
Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995-66362
Int. Cl.^{6} G05G *9/00*
U.S. Cl. 74—471 X **4 Claims**



1. A manipulator having six degrees of freedom comprising:

a moving plate having three moving points arranged with substantial equal angles therebetween;

a fixed plate having three protruding portions arranged with substantial equal angles therebetween, the fixed plate being positioned under the moving plate and being spaced apart from the moving plate;

three frames rotatably mounted on the protruding portions, respectively, each frame having a first fixed point and a second fixed point located opposite said first fixed point; and

three universal joints mounted beneath the moving plate, corresponding to the three moving points, respectively;

three rack gear sets, each rack gear set having a pair of rack gears hinged to one of said three universal joints;

three pinion gear sets, each pinion gear set being associated with one of said three frames to provide an associated frame and one of said three rack gear sets to provide an associated rack gear set, each pinion gear set includes a first pinion gear positioned on said first fixed point of said associated frame and being engaged with one of said pair of rack gears of said associated rack gear set, and a second pinion gear positioned on said second fixed point of said associated frame and being engaged with another of said pair of rack gears of said associated rack gear set; and

three shaft encoder sets, each shaft encoder set includes:

a first shaft encoder having a first encoder gear engaged with said first pinion gear of one of said pinion gear sets to

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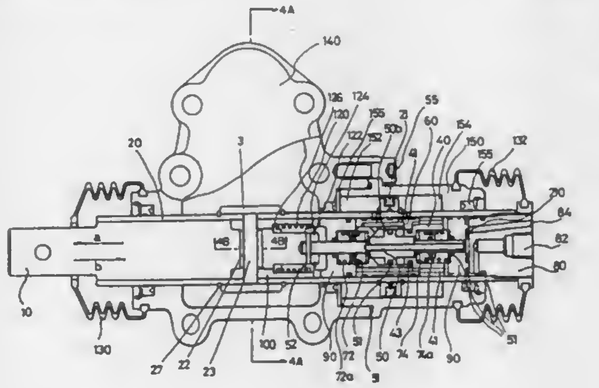
provide an associated pinion gear set, said first shaft encoder detects a distance variation between one moving point and said first fixed point of said associated frame in accordance with a rotation of said first pinion gear of said associated pinion gear set when the moving plate moves, and

a second shaft encoder having a second encoder gear engaged with said second pinion gear of said associated pinion gear set, said second shaft encoder detects a distance variation between said one moving point and said second fixed point of said associated frame in accordance with a rotation of said second pinion gear of said associated pinion gear set when the moving plate moves.

5,850,760
BOOSTER FOR TRANSMISSION GEAR BOXES

Young Jong Jin, and Seung Hwan Bae, both of Kyongsangnam-do, Rep. of Korea, assignors to Kia Heavy Industries Corporation, Kyongsangnam-do, Rep. of Korea
Filed Dec. 27, 1996, Ser. No. 774,823
Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995 65449; Dec. 29, 1995, 1995 52610
Int. Cl.^{6} F16H *59/04;35/00;* F16B *9/10*
U.S. Cl. 74—473.11 11 Claims



1. A booster for transmission gear boxes, comprising:

a pneumatic cylinder;

a cylindrical actuating rod cooperating with a gearshift lever to thereby transmit a levering motion of said gearshift lever to the booster, said actuating rod having a transverse through hole;

a hollow piston rod movably penetrating said pneumatic cylinder in an axial direction and partially receiving said actuating rod on one end thereof thus cooperating with said actuating rod in accordance with a levering motion of the gearshift lever, said piston rod having a piston on its outer surface at a position inside the cylinder to thereby form two pressure chambers inside the cylinder;

a connector mounted to the other end of said piston rod, said connector including an air inlet port and an air outlet port for introducing and discharging pressurized air into and from the piston rod respectively;

a striker coupled to both the actuating rod and piston rod through a first coupling pin thereby moving along with said actuating and piston rods in the same direction, said striker having coupling means for coupling the striker to a connecting lever of a transmission gear box to enable the connecting lever to be operated in conjunction with the striker, said first coupling pin passing said transverse through hole of the actuating rod and being fixed to said hollow piston rod on both ends thereof;

a booster housing assembled with said pneumatic cylinder and covering the piston rod and the striker;

a valve lift shaft coupled to said actuating rod through a second coupling pin inside said piston rod thus being operated in conjunction with said actuating rod;

two movable valves provided on both ends of said valve lift shaft, said movable valves selectively moving along with said valve lift shaft in the same direction to control the flow direction of said pressurized air from the connector to the chambers of the cylinder;

two valve holding springs symmetrically provided on both ends of said valve lift shaft and biasing said movable valves respectively;

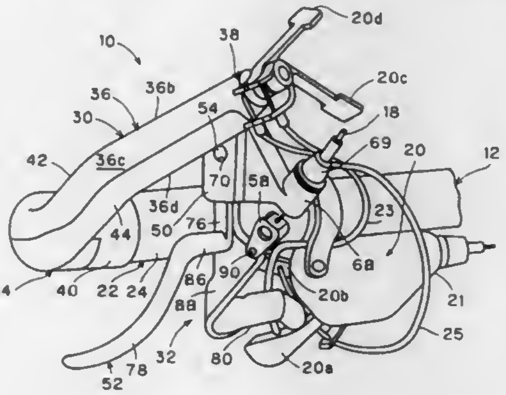
two valve seats fitted over said valve lift shaft and brought into slidable contact with the internal surface of said piston rod, said valve seats having a plurality of communication passages to introduce or discharge the pressurized air into or from the chambers of the cylinder;

two washers fitted over the actuating rod at positions inside the piston rod; and

a return spring fitted over said actuating rod and held by said washers and elastically returning the actuating rod to a neutral position when the actuating rod is released from external force.

5,850,761
BRAKE OPERATING DEVICE FOR HANDLE BAR AND BAR ENDS

Masanori Sugimoto, Osakasayama, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Dec. 17, 1996, Ser. No. 768,897
Int. Cl.^{6} G05G *11/00*
U.S. Cl. 74—489 45 Claims



16. An attachment assembly for attachment to one end of a handle bar, comprising:

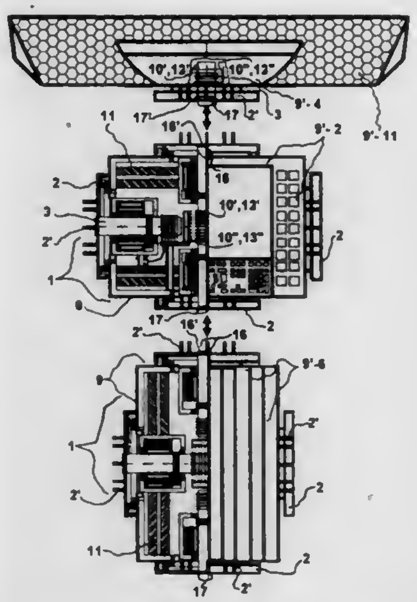
a bar end having a first end with a clamp for coupling to the one end of the handle bar, a middle grip portion configured and sized without obstructions for receiving a rider's hand, and a second end positioned remotely from the handle bar; and

a brake operating device fixedly coupled to said bar end, said brake operating device including

- a retaining portion forming a connection point for coupling one end of a control wire thereto,
- a first hand portion swingably mounted about a pivot point from a release position to a brake position and positioned adjacent said middle grip portion of said bar end to permit the rider's hand to grasp said first hand portion from said middle grip portion of said bar end, and
- a second hand portion swingably mounted about a pivot point from a release position to a brake position and positioned adjacent the handle bar coupled to said first end of said bar end to permit the rider's hand to grasp said second hand portion from the handle bar.

5,850,762
MULTI-BLOCK ROBOT

Uwe Kochanneck, Im Spahenfelde 25, D-44145 Dortmund, Germany
Filed May 13, 1996, Ser. No. 645,423
Claims priority, application Germany, May 16, 1995, 195 17 852.1
Int. Cl.^{6} B25J *17/00;18/00;* B60K *1/00*
U.S. Cl. 74—490.03 5 Claims



1. A robot system with robot specific effects, said robot system comprising:

multiblocks of nearly the same design, each surrounded with one closed chamber for the accommodation of driving units, basic gears, generator units, basic control electronic for said basic units and integrating built-in equipment for overall robot control, combined with multiblocks composed of central chambers and thereof separated socket flange booster chambers,

said central chambers, accomodating said driving units, said basic gears, said generator units and said basic control electronic for said basic units,

said socket flange booster chambers, with nearly the same contour as said central chambers and integrating said built-in equipment for overall robot control,

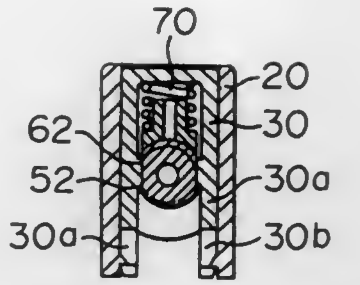
said central chambers and said socket booster chambers, connecting the current and communication links between said central chambers and said socket flange booster chambers during the operation for plug in connection of said central chambers with said socket flange booster chambers.

5,850,763
LENGTH ADJUSTING DEVICE FOR CONTROL CABLE

Yoshiharu Kitamura, Aikawa-machi, Japan, assignor to HNK Spring Co., Ltd., Yokohama, and Uni-Flex, Inc., Ina, both of Japan
Division of Ser. No. 674,751, Jul. 2, 1996, Pat. No. 5,706,706, which is a division of Ser. No. 422,303, Apr. 13, 1995, which is a division of Ser. No. 41,480, Apr. 2, 1993, Pat. No. 5,435,202. This application Aug. 6, 1997, Ser. No. 906,755
Claims priority, application Japan, Apr. 5, 1992, 49029310; Jul. 24, 1992, 4-218405
Int. Cl.^{6} F16C *1/10*
U.S. Cl. 74—502.4 1 Claim

1. In combination, a length-adjusting device for a control cable, comprising:

a stationary base member with an outer cable (a) or an inner cable (b) of said control cable being fixedly secured thereto, and into which a cylindrical adjusting pipe having circular



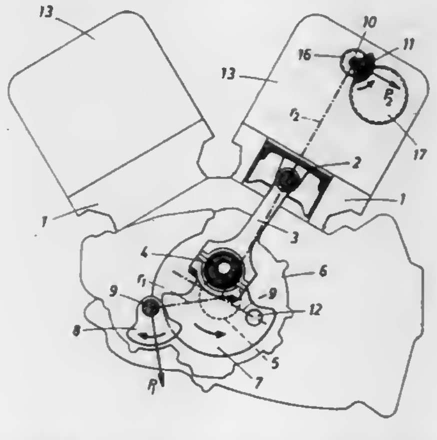
grooves formed and disposed thereon in parallel is inserted so as to be moveable in an axial direction thereof;

an adjusting piece, having a resilient spring, and having a pair of similarly pitched locking teeth for engagement to and release from said circular grooves, which is moveably inserted in a direction perpendicular to the axis of said adjusting pipe and into an aperture in said stationary base member; and

wherein said adjusting piece is biased by said resilient spring disposed between said stationary base member and said adjusting piece, for engaging said circular grooves with said locking teeth, and at the same time enabling the release of said engagement by movement against the resilient force of said resilient spring by means of an external force, and wherein said adjusting piece having opposing side plates provided with latching windows at their ends for engagement with corresponding latching elements provided on a pair of oppositely disposed side plates of said stationary base member.

5,850,764
CRANKSHAFT DRIVE FOR AN INTERNAL COMBUSTION ENGINE

Willy Bostelmann, Wels, and Claus Holweg, Murau, both of Austria, assignors to Bombardier-Rotax Gesellschaft m.b.h., Gunskirchen, Austria
Filed Dec. 12, 1996, Ser. No. 766,376
Claims priority, application Austria, Dec. 22, 1995, a 2093/95
Int. Cl.^{6} F02B *75/06;* F16F *15/26*
U.S. Cl. 74—603 6 Claims



1. A crankshaft drive in an internal combustion engine, which comprises

(a) at least one cylinder having a cylinder head,

(b) a crankcase supporting inside thereof

- (1) a crankshaft rotating at a predetermined direction and at a predetermined speed, and
- (2) a balance shaft extending parallel and closely adjacent to the crankshaft and rotating at the predetermined speed of the crankshaft in a direction opposite to the predetermined rotating direction of the crankshaft,

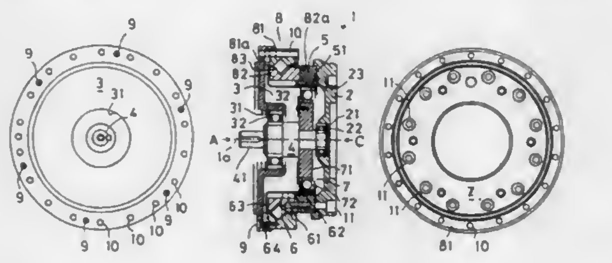
(3) the crankshaft and the balance shaft carrying balance weight means for balancing a mass of first order, and

(c) an auxiliary shaft outside the crankcase and extending parallel to the crankshaft and rotating at the predetermined speed of the crankshaft in the predetermined rotating direction of the crankshaft,

(1) the auxiliary shaft carrying a counterweight for balancing a residual moment resulting from the rotating balance shaft with respect to the rotating crankshaft.

5,850,765
FLAT WAVE GEAR DRIVE

Naomi Shirasawa, Nagano-ken, Japan, assignor to Harmonic Drive Systems, Inc., Tokyo, Japan
PCT No. PCT/JP96/01309, § 371 Date Feb. 26, 1997, § 102(e) Date Feb. 26, 1997, PCT Pub. No. WO96/36822, PCT Pub. Date Nov. 21, 1996
PCT Filed May 17, 1996, Ser. No. 765,923
Claims priority, application Japan, May 19, 1995, 7-120957
Int. Cl.^{6} F16H *1/32*
U.S. Cl. 74—640 **7 Claims**



1. A flat wave gear drive comprising:

a first end plate and a second end plate provided at both ends in an axial direction;

a silk-hat-shaped flexible external gear provided between the end plates, which has an annular body, external teeth formed on an outer circumferential surface of an opening end at a side of said first end plate, an annular diaphragm continuing radially and outwardly from an opening end of the body at a side of said second end plate, and an annular thick boss continuing into an outer edge of the diaphragm;

a circular rigid internal gear provided around said external teeth, which is formed on an inner circumferential surface thereof with internal teeth engageable with said external teeth;

a wave generator provided inside the annular body where said external teeth are formed, which flexes the body radially to engage the external teeth with the internal teeth partially and moves the engaged portions in a circumferential direction;

an input shaft which is fixed to and extends through said wave generator and which is rotatably supported at one end portion thereof on said first end plate and is rotatably supported at the other end portion on said second end plate; and,

a bearing provided around the annular body of said flexible external gear, which has an outer ring fixed to said second end plate via said annular boss and an inner ring fixed to said first end plate via said rigid internal gear.

5,850,766
PIPE JOINT BREAK-OUT DEVICE

Charles William Stokes, 647 Ellis St., Mt. Pleasant, S.C. 29464
Filed May 16, 1997, Ser. No. 857,877
Int. Cl.^{6} B25B *13/50*
U.S. Cl. 81—57.34 **12 Claims**

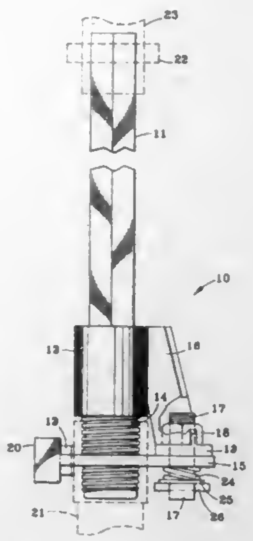
1. A device for effecting relative rotation between two threaded pipes about an axis of said pipes, comprising;

a central shank having two opposite ends, and being adapted at one end for connection to a top head drive of a drilling machine and at the other end for connection to an opposite end of a first of said threaded pipes;

a movable arm, being adapted to extend about said shank, and being connected to said shank via a hinge connection;

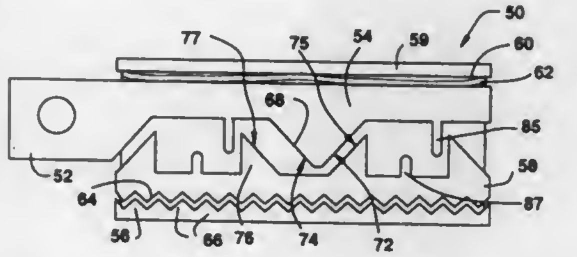
a stationary arm projecting from said shank is hinged to said movable arm via said hinge connection: and

a gripping assembly being attached to said arm and being adapted to contact said first threaded pipe.



5,850,767
RATCHET REVERSING MECHANISM

David P. Newman, Arvada, Colo., assignor to Camax Tool Co., Arvada, Colo.
Continuation-in-part of Ser. No. 86,653, Jul. 6, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,268
Int. Cl.^{6} B25B *13/46*
U.S. Cl. 81—58.3 **3 Claims**



1. A ratchet mechanism comprising:

a rotatable driver body (**52**);

a driver ring (**54**) fastened to said body for rotation thereby in forward and reverse directions, said driver ring having opposite faces and a circular opening;

driver cam teeth (**68**) projecting from one face of said driver ring, said driver cam teeth having opposed oppositely sloping faces **72**,**74** and;

a first tongue (**85**) also extending from said one face of said driver ring spaced angularly between said driver ring cam teeth to impart angular force, said first tongue having faces extending essentially perpendicular to said driver ring;

a socket member (**56**) having an outer circular surface configuration matched to said opening in said driver ring and an inner surface configuration of irregular shape for engaging with an item to be rotated thereby, said socket member being rotatably fitted within said driver ring;

a pawl ring (**58**) surrounding said socket member and having first and second faces, driven ring cam teeth (**76**) extending from said first face of said pawl ring and engagable with said driver ring cam teeth (**68**) on adjacent driver ring, said driven ring cam teeth having oppositely sloping faces **75**,**77** spaced apart a distance greater than the width of said driver cam teeth **68** between said sloping faces thereof **72**,**74** whereby said driver cam teeth can enter the space between said sloping faces of said driven ring cam teeth;

a series of driven teeth (**66**) around said socket member and having tooth faces located facing toward said pawl ring;

said pawl ring also having a series of driving teeth (**64**) extending from said second face of said pawl ring and engagable with said driven teeth (**66**) of said socket member, said cam teeth (**68**, **76**) having a rise greater than the depth of said driving and driven teeth (**64**,**66**);

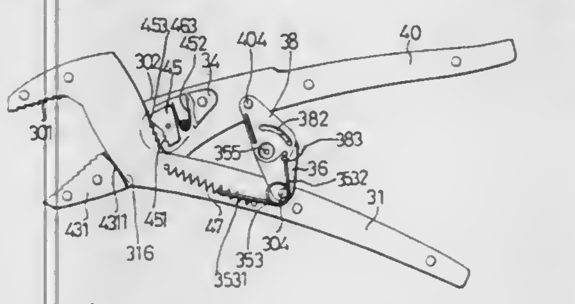
a second tongue (**87**) extending from said first face of said pawl ring in angularly spaced relation to said driven ring cam tooth (**76**), said second tongue having faces extending essentially perpendicular to said pawl ring for receiving angular force from said first tongue (**85**);

a retainer (**59**) on said socket member extending in opposed relation to the other face of said driver ring; and

spring means (**62**), positioned between said retainer and said driver ring, for biasing said driver ring and said pawl ring toward said socket member such that said driven teeth (**66**) and said driving teeth (**64**) tend to mesh.

5,850,768
PLIERS FOR GRIPPING WORKPIECES OF DIFFERENT SIZES

Jessie Chow, No. 288, Hou Juan Road, Taichung, Taiwan
Continuation-in-part of Ser. No. 524,638, Sep. 7, 1995, Pat. No. 5,660,089. This application Jan. 27, 1997, Ser. No. 791,454
Int. Cl.^{6} B25B *7/04*
U.S. Cl. 81—413 **1 Claim**



1. A pair of pliers, comprising:

first and second handle members including first and second non-channeled jaw ends, first and second handle ends and first and second intermediate portions formed between said first and said second jaw ends and said first and said second handle ends respectively, said first intermediate portion of said first handle member including a pair of parallel planar members for slidably receiving said second intermediate portion of said second handle member therebetween, said first intermediate portion of said first handle member including a rack means located closer to said first handle end and including a contact surface means located closer to said first jaw end, said second handle member including a stop means secured on said second jaw end thereof for engaging with said contact surface means and for preventing said second intermediate portion from disengaging from said first intermediate portion;

spring means for biasing said second jaw end away from said first jaw end;

a pawl means pivotally secured on said second intermediate portion and including a toothed end for engaging with said rack means and including a contact end for engaging with said rack means and for preventing said toothed end from engaging with said rack means;

means for biasing said contact end of said pawl means to engage with said rack means;

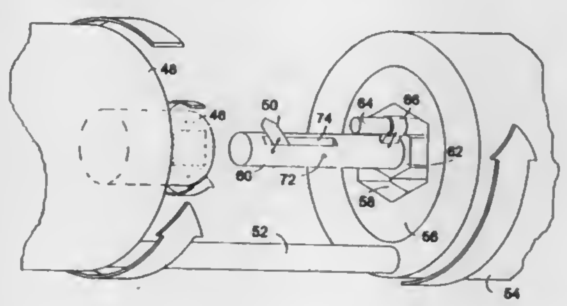
two panels pivotally coupled to said first handle end of said first handle member, a plate pivotally coupled to said second handle end of said second handle member and pivotally coupled between said panels at a shaft, said plate including a curved slot having a curvature located at said shaft, each said panel including a protrusion extending therefrom and slidably engaged with the curved slot so as to limit a rotational movement between said panels and said plate, each said panel including a rounded relatively thicker section through which the shaft extends, each said panel further including a stub extending therefrom and facing each other; said plate further including a hook portion;

a torsion spring mounted between the stubs, the torsion spring including a first end attached to the first handle member and a second end attached to the hook portion of the plate;

said second jaw end being moved away from said first jaw end so as to grip a workpiece of large size, said stop means being caused to engage and to move along said contact surface means when said first and said second handle ends are moved toward each other in order to move said first and said second jaw ends toward each other so as to grip the workpiece, said second handle member being moved relative to said first handle member so as to rotate said pawl means in order to engage with said toothed end with said rack means and so as to secure said first and said second intermediate portions together when said first and said second jaw ends grip the workpiece therebetween.

5,850,769
BROACHING CUTTER

David R. Lund, 1823 Cornish Ave., Charleston, S.C. 29412
Division of Ser. No. 505,570, Jul. 21, 1995, Pat. No. 5,735,652. This application Jul. 30, 1997, Ser. No. 903,157
Int. Cl.^{6} B23B *41/04*; B23D *9/00*
U.S. Cl. 82—1.3 **2 Claims**



1. A device for broaching a workpiece, said device comprising:

means for rotating said workpiece;

a housing;

means for coupling said housing to said rotating means so that said rotating means rotates said housing with said workpiece;

a holder carried by and rotatable with said housing, said holder having a hole formed therein and a cam race formed about said hole;

a hollow shaft received by said holder within said hole, said holder rotatable with respect to said hollow shaft;

a cam follower carried by said hollow shaft, said cam follower engaging said holder and following said cam race as said holder rotates with respect to said hollow shaft;

a cutter bit carried by said hollow shaft;

means for connection said cutter bit to said cam follower so that said cutter bit moves radially with respect to the axis of rotation of said workpiece as said cam follower follows said cam race.

5,850,770

SECURING DEVICE FOR WORKPIECE SPINDLE OF LATHE

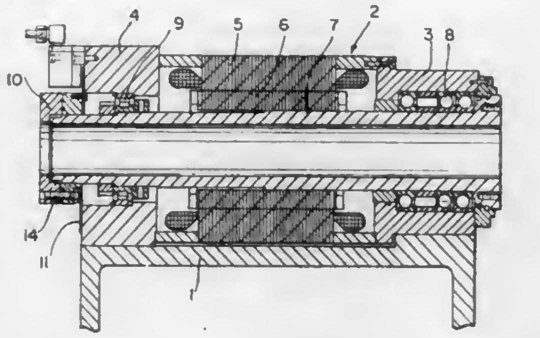
Gerhard Rehage, Guetersloh, Germany, assignor to Gildemeister Aktiengesellschaft, Bielefeld, Germany

Filed May 15, 1996, Ser. No. 648,343

Claims priority, application Germany, Jun. 22, 1995, 195 22 711.5

Int. Cl.^{6} B23B *31/10*

U.S. Cl. 82—142 **5 Claims**



1. A securing device for a workpiece spindle of a lathe, comprising a spindle housing having a plane surface and rotatably supporting a workpiece spindle; a brake disk non-rotatably connectable with the workpiece spindle; a clamping device for fixing said brake disk and mounted on said spindle housing, said brake disk being formed as a disk which is rigid in a circumferential direction and is bending-elastic in a direction of a spindle axis, said disk being pressable by said clamping device against said plane surface of said spindle housing: and a clamping ring which is non-rotatably connectable with the workpiece spindle, said brake disk being mounted on a brake disk support which is mounted on said clamping ring.

5,850,771

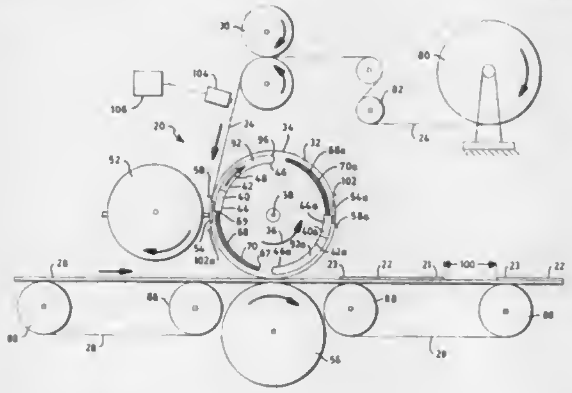
NON-CONTINUOUS COMPONENT APPLICATOR

Thomas Michael Killian, Sobieski, Wis., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 9, 1996, Ser. No. 762,178

Int. Cl.^{6} B32B *31/18*

U.S. Cl. 83—23 **35 Claims**



1. An apparatus for intermittently applying a component onto a moving substrate, said apparatus comprising:

a conveyor configured to provide said moving substrate at a selected substrate speed;

a transporter configured to deliver a component web at a selected component web speed which differs from said substrate speed;

a rotatable applicator roll having an appointed rotational direction and an outside applicator surface, said applicator roll configured to be rotated at a rate which provides to said applicator surface a surface speed which is substantially equal to said substrate speed;

at least one deceleration carriage assembled to rotate with said applicator roll and configured to receive and hold a selected portion of said component, said deceleration carriage configured to translate along a carriage movement path from an appointed first position to an appointed second position while moving in a retrograde direction which is substantially opposite to said rotation direction, and configured to be repositionable along a carriage return path to said first position. said deceleration carriage located in a slot formed in said applicator roll and said deceleration carriage configured to translate along said carriage movement path in said slot; and

a divider which coordinates with said applicator roll and intermittently separates said component web into an individual component web segment.

5,850,772

METHOD OF CONTROLLING FLY CUTTING ROTARY SHEAR

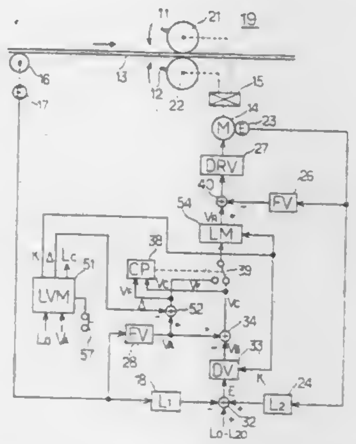
Shigeki Hayashi, Tama, Japan, assignor to Nusco Co. Ltd., Tokyo, Japan

Filed Jun. 18, 1997, Ser. No. 877,803

Claims priority, application Japan, Jun. 24, 1996, 8-163310

Int. Cl.^{6} B26D *1/56*

U.S. Cl. 83—37 **15 Claims**



1. A method of controlling an on-the-fly rotary shear in which a difference between a run length L_1 of a stock and a circumferential length L_2 which results from a rotation of a cutting edge is subtracted, together with a circumferential length L_{20} corresponding to one revolution of the cutting edge, from a preset cut length L_0 to define a remaining length, which is then converted into a speed, referred to as a remaining length speed, which is subtracted from a stock running speed to define a speed reference for the rotation of the cutting edge, an acceleration or a deceleration being applied to the rotation of the cutting edge depending on the positive or negative sign of the remaining length to reduce the latter toward zero. thus achieving an on-the-fly cutting of the stock by the cutting edge while the rotational running of the cutting edge tracks the running of the stock in the proximity of the remaining length which is equal to zero;

characterized in that a positioning setting time t_s in the proximity of zero remaining length as well as a cutting time t_T during which the cutting edge is brought into contact with the stock are excluded from a period of time allotted to a cutting operation which is determined by a present cut length L_0 and a stock running speed V to define a remaining time during which the rotation of the cutting edge maintains a speed difference Δ relative to the stock running speed V except for an interval which is used to accelerate or decelerate the rotation of the cutting edge.

5,850,773

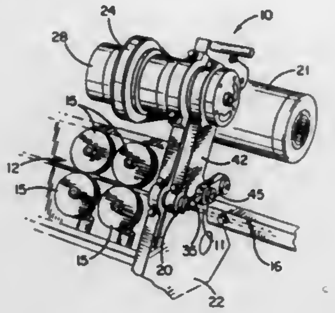
APPARATUS FOR CUTTING WIRE

Irvin Burns, Walloon Lake, Mich., assignor to Rockford Manufacturing Group, Roscoe, Ill.

Filed Mar. 28, 1996, Ser. No. 627,935

Int. Cl.^{6} B21F *11/00;* **B26D** *1/553;5/16*

U.S. Cl. 83—159 **8 Claims**



1. Apparatus for cutting wire, said apparatus comprising a support, a wiper holder having a wire wiper and mounted on said support to pivot about a first axis, a cutter holder having a wire cutter and connected to said wiper holder to pivot relative to said wiper holder about a second axis parallel to the first axis, and an actuator acting directly on one of said holders and acting on the other holder through said one holder to cause said wiper holder to pivot about said first axis and to simultaneously cause said cutter holder to pivot about said second axis.

5,850,774

PANEL CUTTING MACHINE

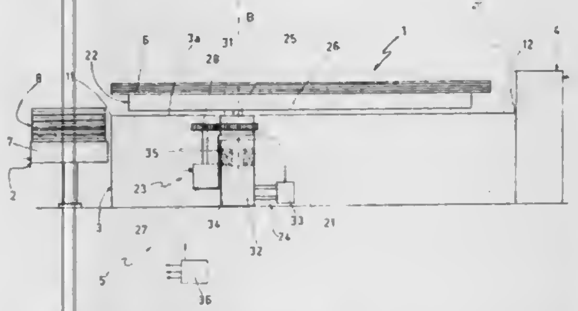
Valter Naldi, Bologna, Italy, assignor to SELCO S.r.l., Italy

Continuation of Ser. No. 243,866, May 17, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 668,319

Claims priority, application Italy, May 17, 1993, B093A0214

Int. Cl.^{6} B26D *7/06*

U.S. Cl. 83—418 **12 Claims**



1. A cutting machine comprising:

a loading station (2) for loading a pack (6) of rectangular panels;

a cutting station (4);

a fixed structure (3) between said loading station (2) and said cutting station (4) including a horizontal work surface (3*a*) with a first lateral edge (13) perpendicular to a cutting line (A) defined in said cutting station (4);

a device (5) for rotating by 90°, at said work surface (3*a*), said pack (6) of panels loaded onto said work surface (3*a*) at said loading station (2);

wherein said device (5) comprises:

a horizontal frame (22) for supporting said pack (6);

first means (24) for moving said frame (22) from a level below to a level above said work surface (3*a*) and vice versa; and

second means (23) for rotating said frame (22) 90° clockwise and vice versa about an unmoving rotation axis (B) perpendicular to the work surface (3*a*), when said frame (22) is above said work surface (3*a*);

wherein said work surface (3*a*) defines a first opening with a longitudinal axis parallel to said cutting line (A), for enabling said frame (22) to move freely from a level below to a level above said work surface (3*a*) and vice versa; and a second opening with a longitudinal axis perpendicular to said cutting line (A), for enabling said frame (22) to move freely from a level below to a level above said work surface (3*a*) and vice versa;

said elements cooperating in such a manner that a first side of said pack (6) is aligned with said first lateral edge (13) and a second side of said pack is aligned with a side of said frame (22) parallel to and closest to said cutting line (A); and

wherein the distance between said rotation axis (B) and said first lateral edge (13) equals the distance between said rotation axis (B) and said side of said frame (22) parallel to and closest to said cutting line (A) when said frame (22) is aligned with said first opening.

5,850,775

PUMP PISTON

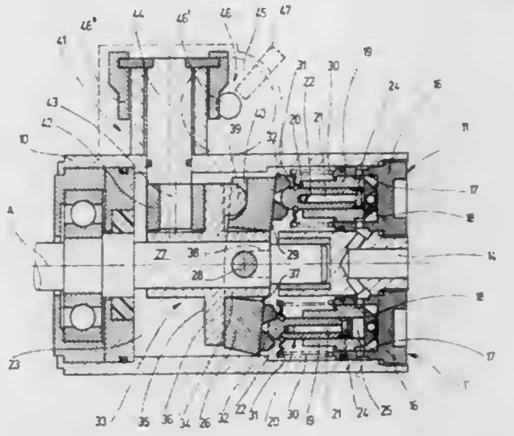
Hans-Peter Stiefel, Ditzingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 26, 1996, Ser. No. 670,470

Claims priority, application Germany, Jun. 27, 1996, 195 23 282.8

Int. Cl.^{6} F01B *3/02*

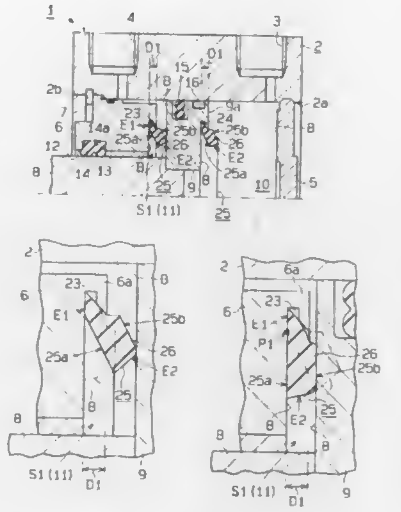
U.S. Cl. 92—12.2 **14 Claims**



1. A piston pump with at least one piston (**20**) supported so that the piston moves in a housing (**10**), a drive shaft (**27**), upon which a swash plate (**26**) for driving the piston (**20**) is non-rotatably disposed, said swash plate pivots around a swash plate pivot axis, and with a device for adjusting a pivot angle between the drive shaft (**27**) and the swash plate (**26**), the device for adjusting the pivot angle of the swash plate (**26**) has a displacing device (**41**) disposed on the housing (**10**), said displacing device acts upon the swash plate (**26**) via a rotating intermediate member (**33**) for adjusting the pivot angle, the swash plate (**26**) is pivotably secured on a driving pin (**28**) disposed in a direction of the swash plate pivot axis, and that the intermediate member (**33**) includes a sleeve section (**34**), which extends in a longitudinal direction of the drive shaft, from a section (**36**) of the intermediate member (**33**) which carries an annular face (**35**) into a central recess (**37**) of the swash plate (**26**), and which contains first and second longitudinal slots (**38**) which run in the longitudinal direction of the drive shaft and are diametrically opposed to each other in relation to the drive shaft (**27**), and the driving pin (**28**) extends through said longitudinal slots (**38**), and on the intermediate member (**33**) or on the swash plate (**26**), an axially directed projection (**39**) is provided, which engages in a recess (**40**) in the swash plate (**26**) or in the intermediate member (**33**).

5,850,776
FLUID PRESSURE CYLINDERS PROVIDED WITH IMPACT ABSORBING MECHANISMS

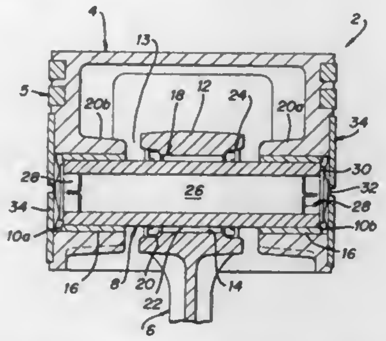
Terumasa Takeuchi, and Junji Mutsuura, both of Komaki, Japan, assignors to CKD Corporation, Japan
Filed Apr. 8, 1997, Ser. No. 838,506
Claims priority, application Japan, Apr. 18, 1996, 8-096596; Apr. 18, 1996, 8-096597; Jun. 21, 1996, 8-161608; Jun. 24, 1996, 8-163252; Aug. 22, 1996, 8-221424
Int. Cl.^{6} F01B *11/02*
U.S. Cl. 92—85 R **28 Claims**



1. A fluid pressure cylinder comprising:
- a cylinder body having a closed space therein;
- a piston slidably accommodated in the cylinder body to divide the closed space into first and second pressure chambers;
- means for supplying fluid to each chamber such that the piston reciprocates between a first stroke end and a second stroke end by receiving fluid in one of the first and second pressure chambers;
- a rod connected to the piston, wherein the rod extends from the cylinder body;
- first and second bumper surfaces, one of the first and second bumper surfaces being fixed to the piston and the other being fixed to the cylinder such that the bumper surfaces face each other, wherein the bumper surfaces approach each other when the piston reaches the first stroke end and separate from one another when the piston moves toward the second stroke end, and wherein the bumper surface that is fixed to the cylinder limits movement of the piston and determines the position of the first stroke end;
- an annular cushion retainer connected to the first bumper surface;
- a ring-like, elastomeric cushion located between the first and second bumper surfaces for deforming and cushioning an impact produced when the piston reaches the first stroke end, the cushion having a shape corresponding generally to a hollow conical section, the cushion including:
  - a base section that is retained by the cushion retainer so that the cushion is retained in close proximity to the first bumper surface;
  - a buffer section joined to the base section, the buffer section being spaced from the first bumper surface, the buffer section having an outer surface for contacting the second bumper surface and an inner surface that faces the first bumper surface, the outer surface forming a circular seal with the second bumper surface when the piston approaches the first stroke end, and wherein the circular seal creates a sealed fluid pocket that acts to further cushion the impact, wherein the cushion is flexed such that the buffer section moves toward the first bumper surface against its elasticity when the piston approaches the first stroke end, and wherein the buffer section moves away from the first bumper surface due to its elasticity when the piston moves from the first stroke end towards the second stroke end.

5,850,777
FLOATING WRIST PIN COUPLING FOR A PISTON ASSEMBLY

Mark W. Marklin, and Glen D. Prince, both of Mendon, Ill., assignors to Coltec Industries Inc., Charlotte, N.C.
Filed Jul. 9, 1997, Ser. No. 890,144
Int. Cl.^{6} F16J *1/14*
U.S. Cl. 92—187 **13 Claims**

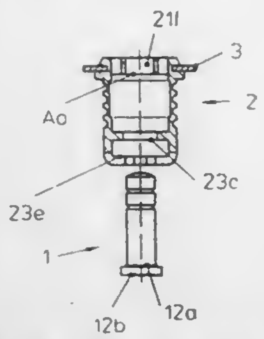


1. A piston assembly for a non-lubricated reciprocating machine comprising:
- a piston having two opposed wrist pin receiving bosses, each of said bosses including a transverse bore extending laterally through said piston;
- a connecting rod having a pin end receivable in said piston with said pin end positioned between said two wrist pin receiving bosses, said pin end including a transverse opening positioned in axial alignment with said transverse bores;
- a cylindrical wrist pin mounted within said piston with a first end of said wrist pin positioned within one of said transverse bores and a second end of said wrist pin positioned within the other of said transverse bores; said wrist pin extending through said transverse opening in the pin end of said connecting rod and being mounted for rotation within said transverse opening in the pin end of said connecting rod and said transverse bores in the wrist pin receiving bosses;
- a bearing assembly secured within said transverse opening in the pin end of said connecting rod, said bearing assembly being positioned between said cylindrical wrist pin and said connecting rod;
- said bearing assembly including a plurality of rotatable needle bearings;
- wherein said needle bearings are sealed in a lubricant to provide lubrication to the bearing assembly.

5,850,778
PRESSURE INDICATOR

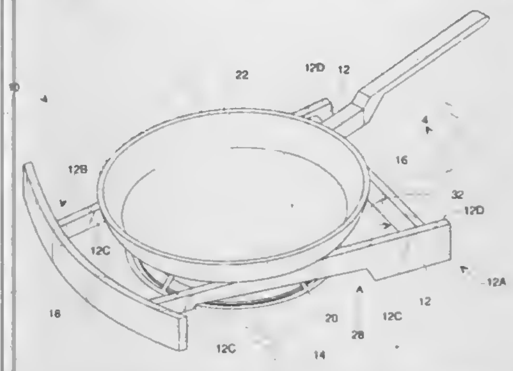
Wolfgang Fischbach, Daaden, Germany, assignor to Heinrich Baumgarten KG, Neunkirchen, Germany
PCT No. PCT/EP96/00285, § 371 Date Jul. 24, 1997, § 102(e) Date Jul. 24, 1997, PCT Pub. No. WO96/22717, PCT Pub. Date Aug. 1, 1996
PCT Filed Jan. 24, 1996, Ser. No. 894,075
Claims priority, application Germany, Jan. 25, 1995, 295 01 112.2
Int. Cl.^{6} A47J *27/00;27/092*
U.S. Cl. 99—342 **18 Claims**

1. A pressure indicator for a cooking utensil that has an interior separate from the environment, comprising a hollow holding piece secured to the cooking utensil, an indicator pin arranged longitudinally movably in the holding piece, the holding piece including a fastening piece secured to the cooking utensil, the fastening piece having a first wall and a first opening in the first wall, a pipe section projecting from the fastening piece into the interior of the cooking utensil, and a front piece closing off the pipe section, a portion of the front piece having a second wall and a second opening in the second wall, the indicator pin including a shaft and a control flange, the indicator pin being movable between first, second and third positions, an interior facing surface of the first wall defining an outer stop against which the control flange contacts to hold the indicator pin within the holding piece in the third position, the indicator pin being supported in the second opening in the first and second positions, an interior facing surface on a side of the second wall remote from said first wall defining an inner stop against which the control flange contacts to seal the interior of the cooking utensil from the environment in the second position, the second wall being elastic and yields in both directions to the control flange (1) to vent the interior of the cooking utensil when a pressure limit is exceeded by allowing the indicator pin to move from the second position to the third position and (2) to allow the indicator pin to be reset into one of the first and second positions after the pressure falls beneath the exceeded pressure limit, and a further portion of said front piece additionally including a stroke limiter for limiting travel of the control flange into the interior of the cooking utensil with the control flange being oriented on a side of said second wall remote from said first wall, the pipe section being longitudinally elastic and being dimensioned so as to oppose axial shortening thereof with a deforming resistance acting as a restoring force and with said indicator pin in the second position.



5,850,779
PAN TILTING APPARATUS

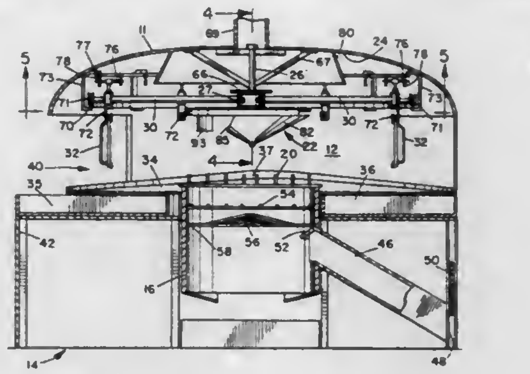
John A. R. Zimmerman, 7826 W. Flower St., Phoenix, Ariz. 85033
Filed Nov. 3, 1997, Ser. No. 963,207
Int. Cl.^{6} A47J *37/10;* **A47G** *23/02;* **F24C** *15/10*
U.S. Cl. 99—425 **3 Claims**



1. A pan tilting apparatus comprising a structure adapted to rest on a top surface of an oven, surrounding a burner of the oven, the structure adapted to support a pan such that the pan is tilted and positioned above the burner, the structure further comprising a barrier depending outwardly from the structure for keeping the pan from sliding off of the structure, the structure further comprising legs extending from the structure for defining apertures between the structure and the top surface of the oven when the legs are resting on the top surface of the oven and supporting the structure, to permit air flow to the burner, and viewing of the burner through the apertures.

5,850,780
COOKING APPARATUS

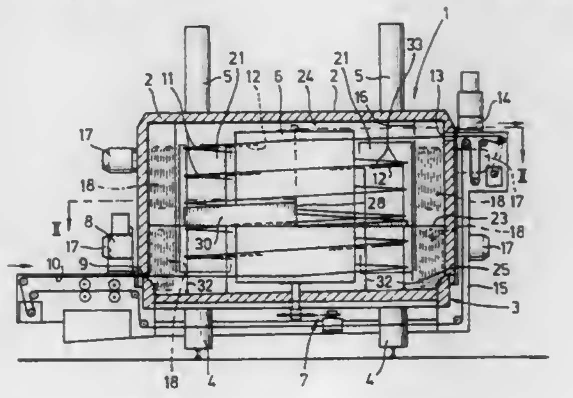
Hugo R. Mascia, and Maria S. Mascia, both of 808 Calle Pluma, San Clemente, Calif. 92673
Filed Mar. 4, 1997, Ser. No. 811,409
Int. Cl.^{6} A47J *37/04;37/06*
U.S. Cl. 99—427 **12 Claims**



1. A cooking apparatus, comprising:
- an outer housing defining a cooking chamber having a front portion;
- the housing having at least one permanently open opening extending across the front portion of the chamber, the opening being of sufficient size for access into the cooking chamber to load and unload food, and providing for air flow into the cooking chamber during cooking;
- a heat source at the center of the cooking chamber;
- a plurality of food holding racks for supporting food to be cooked mounted at spaced intervals in a path around the heat source and spaced outwardly from the heat source;
- a mounting assembly for supporting the racks at spaced intervals around said path; and
- a drive mechanism for rotating the mounting assembly so that the racks travel in said path around the heat source.

5,850,781
OVEN WITH ZONES SITUATED ABOVE ONE ANOTHER

Hendrikus Antonius Jacobus Kuenen, Overloon, Netherlands, assignor to Koppens B.V., Bakel, Netherlands
Filed Oct. 15, 1997, Ser. No. 950,998
Claims priority, application Netherlands, Oct. 15, 1996, 1004285
Int. Cl.^{6} A21B *1/02;1/48;* **A47J** *27/16;37/04*
U.S. Cl. 99—443 C **20 Claims**



1. Oven for heating food products, comprising:

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- a housing defining a plurality of separate zones with at least two of said zones being located above one another;
- each zone having separate means for setting a cooking state in the relevant zone, said cooking state including at least one of temperature and relative humidity; and
- a conveyor belt for supporting food products to be heated, said conveyor belt being structured and arranged to run through each of the zones, and having at least one path with a plurality of windings.

5,850,782
APPARATUS FOR CONTINUOUS TEMPERING OF FAT-CONTAINING, CHOCOLATE MASSES

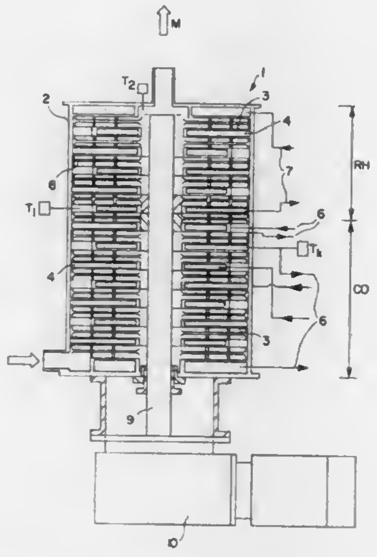
Lars Aasted, Charlottenlund, Denmark, assignor to Aasted Mikroverk ApS, Farum, Denmark

Filed May 8, 1997, Ser. No. 853,375

Claims priority, application Denmark, May 9, 1996, 0558/96

Int. Cl.⁶ A23C *3/04;* **A23G** *1/18;* **B23Q** *15/00;* **F25C** *1/14*

U.S. Cl. 99—455 **17 Claims**



1. An apparatus for the continuous tempering of a fat-containing, chocolate mass comprising a cylindrical tempering column having a cooling stage and a subsequent reheating stage through which the mass flows, each stage containing a plurality of mass chambers interconnected for the flow of the mass separated by intermediary heat exchange chambers, said heat exchange chambers being adapted to absorb heat from the mass chambers during flow of cooling media through the heat exchange chambers in the cooling stage and to submit heat to the mass chambers during flow of heating media through the heat exchange chambers in the reheating stage, a drive shaft arranged for rotation about an axis located centrally of the column, a mixing and stirring element located in each mass chamber and adapted to be rotated by said drive shaft, each of said mixing and stirring elements having at least one radially extending plate shaped arm and a plurality of upper and lower plate shaped mixing blades extending in an essentially axial direction from an upper and lower side of said arm, respectively, said upper mixing blades extending radially outward in a direction opposite to an outward radial extension of said lower mixing blades with respect to the direction of rotation of the mixing and stirring element, wherein an end mixing blade extending axially from at least one of said upper and lower sides of said arm at a peripheral end thereof, has an axially extending end surface spaced radially from an inner cylindrical wall surface of the cylindrical column to provide a shear gap between said surfaces through which gap the mass flows when the mixing and stirring elements are rotated in the mass chambers.

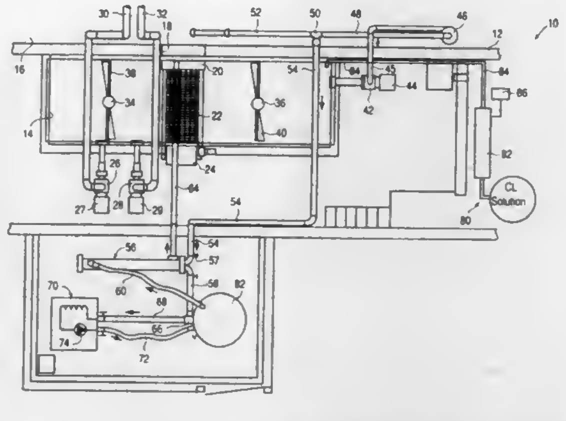
5,850,783
DRENCHING APPARATUS

Clint P. Arrington, and D. Frank Kelsey, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Filed May 31, 1996, Ser. No. 656,797

Int. Cl.⁶ A23B *7/00;7/16;* **A23L** *1/31;3/36*

U.S. Cl. 99—483 **12 Claims**



1. An improved drench apparatus drenching fruit and vegetables with an aqueous chemical solution having a pit for holding a large volume of said solution, drench pump means for drawing solution from the pit and discharging it into manifolds equipped with nozzles for drenching the fruit, recovery means for returning excess solution to the pit; the improvement comprising:

- a holding tank for holding a volume of said solution;
- a heater, including a heater pump, connected to said holding tank and arranged to maintain the temperature of the solution therein at a given minimum;
- a re-circulation pump connected to draw solution from said pit and direct it to said heater;
- conduit means connecting said holding tank to said pit; and
- the volume of said holding tank being sufficient to assure incremental portions of solution in said tank are maintained at said given minimum temperature for a time sufficient to assure the eradication of pathogens before being discharged into said pit.

5,850,784
KITCHEN CADDY WITH CUTTING BOARD

Jamie C. Conner, c/o Source Manufacturing Company, Inc., 191 Post Rd. West, Westport, Conn. 06880

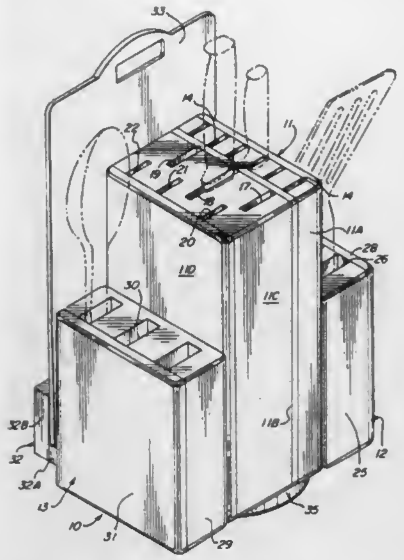
Filed Sep. 22, 1997, Ser. No. 935,132

Int. Cl.⁶ A47J *43/00;* **A47F** *5/02;7/00;* **B23Q** *3/00*

U.S. Cl. 99—485 **10 Claims**

1. A kitchen caddy comprising:

- a solid main housing section,
- a pair of opposed solid side housing sections connected to the opposed sides of said main housing section,
- each of said main and side housing sections including a plurality of spaced slots formed therein,
- said slots extending longitudinally through said respective housing sections,
- said slots in said main housing section being of various widths so as to accommodate knife blades of corresponding varying widths, and
- said slots formed in said side housing sections having a width sized for accommodating the handle of various kitchen tools,
- a flanged ledge connected to the rear of said connected housing sections,



- said flanged ledge including an upwardly extending flange spaced from the rear of said connected housing sections, and a cutting board stowed on said flanged ledge.

5,850,785
COUPLING CONSTRUCTION BETWEEN AN EXTENDED-NIP ROLL AND A BACKUP ROLL

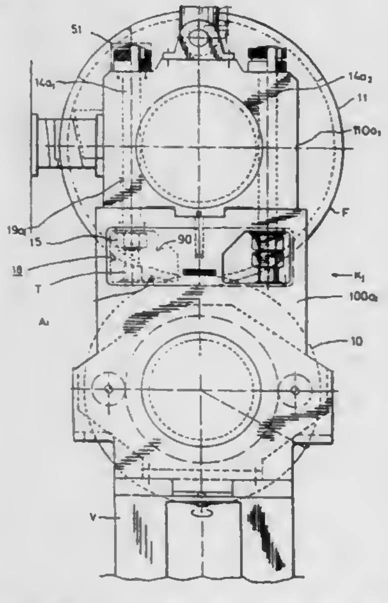
Oiva Vallius, Jyväskylä, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Apr. 11, 1997, Ser. No. 840,137

Claims priority, application Finland, Jun. 5, 1996, 962336

Int. Cl.⁶ D21G *1/00;* **B30B** *3/04*

U.S. Cl. 100—35 **20 Claims**



15. A method for coupling an extended-nip roll and a backup roll, comprising the steps of:

- supporting each end of the extended nip roll in a first bearing housing,
- supporting each end of the backup roll in a second bearing housing,
- passing a plurality of tie bolts through a respective bolt hole in each of said first bearing housings into an aligning bolt hole in a respective one of said second bearing housings, each of said tie bolts having first and second threaded ends,
- fixedly retaining said first end of each of said tie bolts relative to said first and second bearing housings, and
- stretching said second end of each of said tie bolts by forcing said second end in a direction opposite to said first end to tighten said tie bolt.

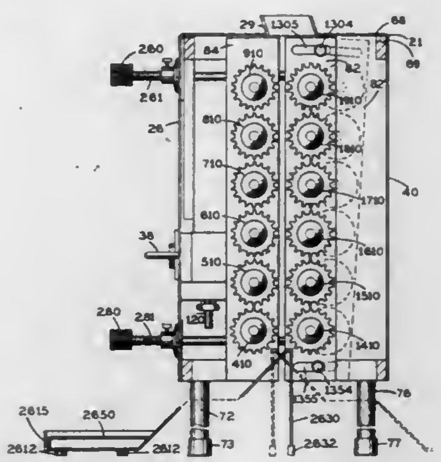
5,850,786
APPARATUS FOR PROGRESSIVELY FLATTENING MEAT

Phil Bifulco, 1604 NW. 34th Terrace, Lauderhill, Fla. 33313

Filed Jul. 23, 1996, Ser. No. 685,064

Int. Cl.⁶ B30B *3/04*

U.S. Cl. 100—53 **9 Claims**



1. An apparatus for flattening meat without piercing nor shredding the meat comprising:

- a first row of stacked rollers, each roller having non-sharpened outer edges;
- a second row of stacked rollers, each roller having non-sharpened outer edges, the first row of stacked rollers being spaced and fully separated from the second row of stacked rollers;
- means for adjusting the spacing between the first row of stacked rollers and the second row of stacked rollers, wherein meat passing between the first and the second rows of stacked rollers is substantially flattened but not pierced nor shredded;
- wherein the means for adjusting the spacing includes:
  - means for adjusting the spacing between each outer corner of said rows of stacked rollers to form a substantially V-cross-sectional shape.

5,850,787
STAMPING DEVICE

Wolfgang Pichler, Wels, Austria, assignor to Trodat-Werke Walter Just Ges. m.b.H., Linz, Austria

PCT No. PCT/AT95/00235, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO96/16816, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 29, 1995, Ser. No. 836,796

Claims priority, application Austria, Dec. 1, 1994, 2229/94

Int. Cl.⁶ B41K *1/36;1/56*

U.S. Cl. 101—105 **6 Claims**

1. A stamping device with top inking, comprising:

- a stamping insert (3) having a reversing mechanism (4);
- a receiving frame (6) made of metal and having side portions (6') for guiding the reversing mechanism (4) of the stamping insert (3);
- at least one spring (16);
- a plastic external frame (22) having arms (22');
- a U-shaped metal actuator bow (21) having arms (21') and inserted in the plastic external frame (22) and movable relative to the receiving frame (6) against the bias of said at least one spring (16) for actuating the stamping insert (3) between

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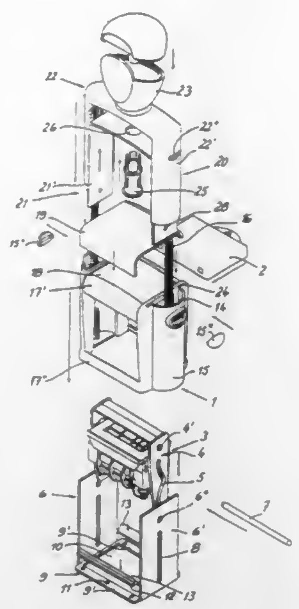


an ink receiving position in engagement with an ink pad (2) and a stamping position;

a substantially parallelpiped external housing (1) of plastic having receiving slots (24) for receiving the side portions (6') of the receiving frame (6) and outwardly bulging cavities (15) for receiving at least one spring (16), the arms (21') of the U-shaped metal actuator bow (21), and the arms (22') of the plastic external frame (22).

5,850,788

METERING STRIP

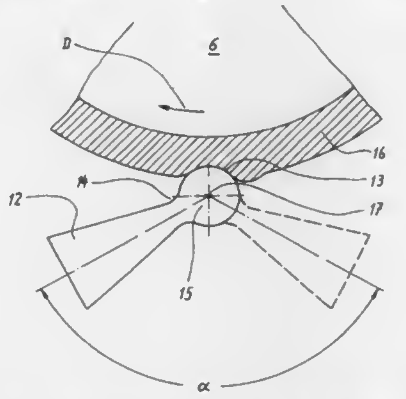
Herbert Janser, Bolligen, Switzerland; Eugen Zwahlen, Bern, Switzerland; Peter Gertsch, Niederscherli, Switzerland, and Robert Imhof, Bern, Switzerland, assignors to Maschinenfabrik WIFAG, Bern, Switzerland

Continuation-in-part of Ser. No. 003,548, Jan. 13, 1993, abandoned. This application Sep. 19, 1997, Ser. No. 933,577

Claims priority, application Germany, Jan. 14, 1992, 42 00 769.0

Int. Cl.^{6} B41F *31/00*

U.S. Cl. 101—350.6 **19 Claims**



1. An inking system in combination with an offset printing press, the system comprising:

an inking roller with a contact surface;

an inking means for applying a first ink film to said contact surface of said inking roller, said first ink film having a first thickness;

a metering strip including a cylindrical shaped edge surface in contact with said inking roller at a position angularly spaced down stream from said inking means, said cylindrical edge surface being pressed into said contact surface to form a metering nip for removing an excess portion of said first ink film and for forming a second ink film downstream of said metering strip, said second ink film having a second thickness less than said first thickness, said metering strip including a support portion extending along said cylindrical edge surface, said cylindrical edge surface extending over an angular range of greater than 180 degrees to form a transition portion with said support portion, said transition portion being shaped to define undercuts forming ink runoff means for guiding said excess portion of said first ink film away from said contact surface of said inking roller, said cylindrical edge surface having an axis of symmetry and said metering strip being pivotable about said axis.

5,850,789

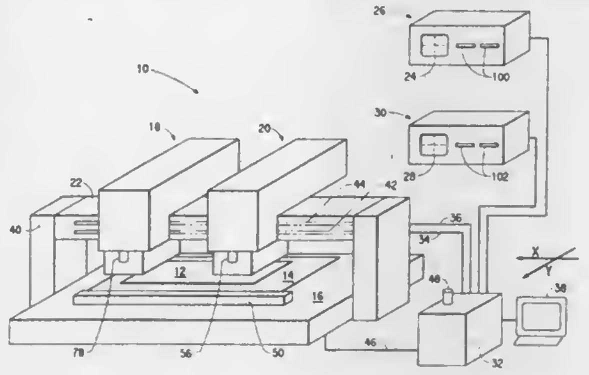
METHOD AND APPARATUS FOR MOUNTING PRINTING PLATES

Andreas Johannes Rudolf, Goslar, Germany; David Leo Fox, North Rose, N.Y.; John Leon Fox, Rose, N.Y.; Richard Orton Toles, Wolcott, N.Y.; David Anthony Debski, Newark, Del.; William Webb Early, Wilmington, Del., and Christian Beers, Roedermark, Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 22, 1997, Ser. No. 898,098

Int. Cl.^{6} B41L *3/08*

U.S. Cl. 101—486 **16 Claims**



1. An apparatus for mounting a plurality of plates onto a carrier sheet, each plate having a first and a second registration mark thereon, comprising:

a table mounted on a stationary base;

a first camera assembly adjacent the table and moveably attached to a support, said first camera assembly connected to a first video monitor for viewing said first registration marks;

a second camera assembly adjacent the table and moveably attached to said support, said second camera assembly connected to a second video monitor for viewing said second registration marks;

means connected to said first and said second camera assemblies for independently moving each camera assembly relative to said table; and

a motion controller connected to said moving means for sending moving signals thereto, said motion controller including means for generating at least two moving signals corresponding to said two registration marks for each plate.

5,850,790

SEED TINE ASSEMBLY

Torstein Salte, Kleppe, Norway, assignor to Kverneland Klepp AS, Kvernaland, Norway

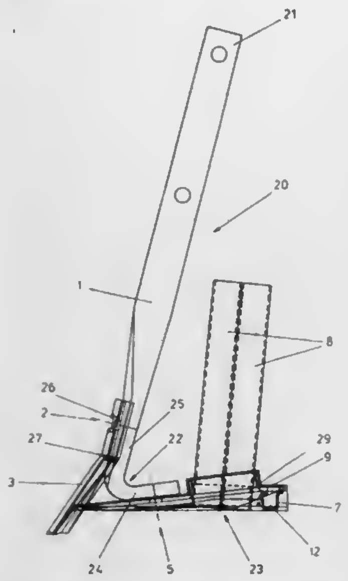
PCT No. PCT/GB96/02640, § 371 Date Jul. 2, 1997, § 102(e) Date Jul. 2, 1997, PCT Pub. No. WO97/16955, PCT Pub. Date May 15, 1997

PCT Filed Oct. 30, 1996, Ser. No. 860,738

Claims priority, application United Kingdom, Nov. 9, 1995, 9522950

Int. Cl.^{6} A01C *5/00*

U.S. Cl. 111—149 **14 Claims**



1. A seed tine assembly for mounting on a frame component of a seed drilling implement, said assembly comprising:

a tine having an upper end which is intended to be mounted on the frame component, and having a lower soil-engaging end;

a seed share mounted on the tine at the lower end, and arranged to form a furrow in the soil below the surface of the soil;

a tine point mounted on the lower end of the tine and projecting downwardly therefrom; and

a supply tube mounted on the share and projecting upwardly therefrom, said tube having an upper end which is intended to receive an air-driven supply of seed and a lower end arranged to distribute seed into the furrow formed by the share:

in which the lower end of the tine comprises a onepiece generally L-shaped member having a base leg which is detachably and mechanically secured to the share, and an upright leg to which the tine point is detachably secured.

5,850,791

SEWING MACHINE HAVING MOVABLE BED

Yasuhiko Kawaguchi, Kaizu-gun; Akio Takahashi, Hashima-gun; Masaki Shimizu, Toyoake; Hirokazu Hirose, Chiryu, and Yoshikazu Kurono, Hazu-gun, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 18, 1997, Ser. No. 972,747

Claims priority, application Japan, Nov. 20, 1996, 8-309569; Mar. 24, 1997, 9-070141

Int. Cl.^{6} D05B *19/14;69/24*

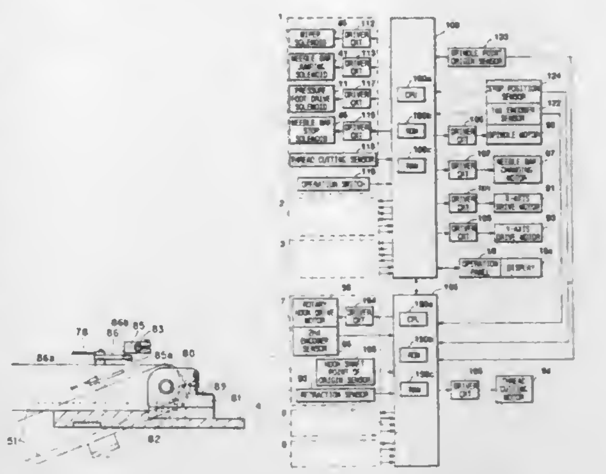
U.S. Cl. 112—275 **20 Claims**

1. A sewing machine for stitching a workpiece fabric with a needle thread and a bobbin thread comprising:

a base frame;

at least one head portion mounted on the base frame;

at least one bed portion movable between a using position and a retracting position with respect to the at least one head portion, the bed portion accommodating therein a rotary hook containing the bobbin thread;



a needle bar having a lower end fixedly provided with a sewing needle through which the needle thread is passed, the needle bar being supported and reciprocally driven by the at least one head portion, a stitching being formed by cooperation of the sewing needle and the rotary hook;

judgment means for making judgment as to whether or not the at least one bed portion is at the using position; and

stitch suspension means for stopping the cooperation of the sewing needle and the rotary hook when the judgment means determines that the bed portion is out of the using position.

5,850.792

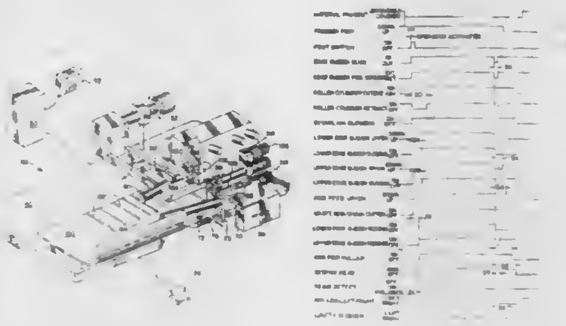
METHOD AND APPARATUS FOR SEWING SLEEVES ON SHIRT BODIES

Maximilian Adamski, Jr., and Stephen J. Pagett, both of Tega Cay, S.C., assignors to Union Special Corporation, Huntley, Ill.

Division of Ser. No. 311,330, Sep. 23, 1994, Pat. No. 5,676,078. This application Aug. 7, 1997, Ser. No. 908,272

Int. Cl.^{6} D05B *3/12;35/10*

U.S. Cl. 112—470.07 **28 Claims**



1. A sewing machine in combination with a work piece control and advancing mechanism and a microprocessor for setting sleeves into a shirt body in which the sew cycle of the sleeve setting procedure is performed automatically;

said sewing machine including stitch forming instruments for forming a seam having a stitch line a predetermined distance from the aligned circular edges of a shirt body arm hole and a sleeve arm hole;

a frame, said sewing machine and said work piece control and advancing mechanism mounted on said frame;

said work piece control and advancing mechanism including edge guider mechanisms that function to individually control the circular edges of the shirt body arm hole and the sleeve arm hole such that their marginal edges are maintained aligned and a predetermined distance from said stitch line as the circular edges of the work pieces advance toward said stitch forming instruments;

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said work piece control and advancing mechanism including a seam detector mechanism that detects the beginning of the seam as it returns to said edge guider mechanisms and sends a seam detect signal to said microprocessor;

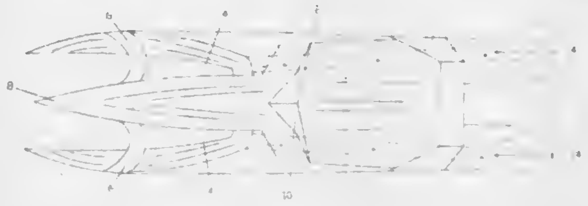
said microprocessor, in response to said seam detect signal, causes said edge guider mechanisms to be withdrawn from the sew area;

said microprocessor, in response to said seam detect signal, actuating components of the sewing machine and work piece control and advancing mechanism at predetermined times measured from the seam detect signal to automatically complete the sew cycle and eject the sewn garment from the stitch forming instruments.

5,850,793
HYDROCHANNEL TRI-HULL

Timothy M. Bronson, Englewood, Fla., assignor to Tim Bronson, Englewood, Fla.

Filed Jul. 12, 1996, Ser. No. 678,962
Int. Cl.^{6} B63B *1/20;1/38*
U.S. Cl. 114—67 A **4 Claims**



1. A tri-hull boat hull comprising two outer hulls each having a bottom surface and an outside surface; a middle hull having an upper surface, a bow, and a slight downward curvature on said upper surface toward said bow; said middle hull being positioned between said outer hulls and connected to said outer hulls thereby forming an intersection between said middle hull and each of said outer hulls, said middle hull and said outer hulls remaining connected rearward of said intersection to form a rear portion of said tri-hull; a plurality of structural wings, at least one of said structural wings connected between each of said outer hulls and said middle hull; one hydrochannel formed on said bottom surface of each of said outer hulls; two air intake channels each having an air intake opening and an air exit opening, each of said air intake openings located at one of said intersections of said middle hull to one of said outer hulls and having air flowing therethrough, each of said air exit openings communicating with one of said hydrochannels; at least two adjustable air flow relief valves, at least one of said air flow relief valves being connected through said outside surface of each of said outer hulls and being in communication with one of said air intake channels; and a pair of sub fins on said bottom of each of said outer hulls to provide traction for turning of said tri-hull so that, as said tri-hull moves forward, water moves through each of said hydrochannels, and air flows through one of said air intake channels and exits from said air exit openings to apply an equalization or a downward force upon said water in each of said hydrochannels and create an equalization or an upward force to said rear portion of said tri-hull with a resulting equalization or a downward force being applied to said bow.

5,850,794
METHOD FOR ARRANGING AND ARRANGEMENT OF FUNCTIONAL COMPONENTS AT THE TRACK SUPPORT STRUCTURE OF RAIL-BOUND VEHICLES

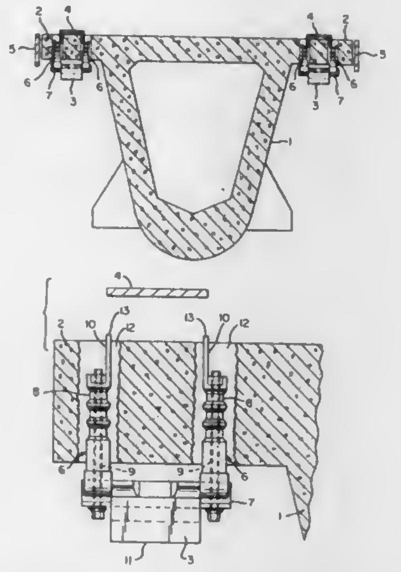
Hans Georg Raschbichler; Luitpold Miller, both of Ottobrunn; Gert Schwindt, Gröbenzell; Reinhard Rampelmann, Starnberg, and Christian Rosin, Reichling, all of Germany, assignors to Thyssen Industrie AG, Essen, Germany

PCT No. PCT/EP95/03755, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO96/09438, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 22, 1995, Ser. No. 809,349

Claims priority, application Germany, Sep. 23, 1994, 44 34 121.0

Int. Cl.^{6} E01B *26/00*
U.S. Cl. 104—281 **10 Claims**



10. An arrangement of functional components at a support structure of a track for rail-bound vehicles, said arrangement comprising:

a first functional component having connected thereto first positioning elements;

said first functional component having a functional surface:

said first positioning elements having abutment surfaces positioned at a defined distance to said functional surface;

a second functional component placed onto said abutment surfaces for exactly positioning said second functional component relative to said first functional component;

connecting locations provided at the track for connecting thereto said first functional component, wherein said first positioning elements are introduced into said connecting locations;

wherein at least said first and said second functional components are in a defined position relative to one another and relative to the track;

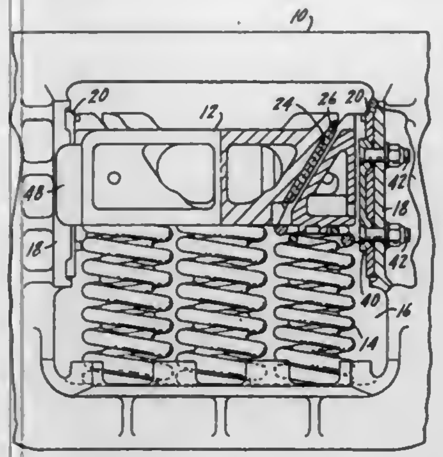
wherein said first positioning elements include anchor connections having connecting stays with end faces as an abutment surface for respectively arranging said second functional component thereat;

further comprising grooved transverse beams and screw connections, wherein said anchor connections include anchor bolts, wherein said first functional components are positive-lockingly and frictionally connected via said grooved transverse beams and said screw connections to said anchor bolts of said anchor connections, wherein a positive-locking action of said grooved transverse beams is effective only after a frictional connection of said screw connections fails.

5,850,795
RAIL CAR TRUCK DAMPING SYSTEM

Armand P. Taillon, Chicago, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

Filed Dec. 15, 1997, Ser. No. 990,131
Int. Cl.^{6} B61F *5/06*
U.S. Cl. 105—198.2 **17 Claims**



1. A rail car truck damping system including a bolster having at least one bolster pocket with an interior slanted wall, a side frame having a column wear resistant surface facing said bolster pocket,

a friction wedge positioned within said bolster pocket, said wedge having a body with an area of contact facing said bolster pocket slanted wall, said bolster pocket facing area of contact being formed by a pair of spaced planar generally parallel surfaces with a recess therebetween,

said bolster pocket slanted wall having an elongated outward extension aligned with said wedge slanted wall facing recess and extending therein, said extension functioning to resist lateral movement of said wedge within said bolster pocket,

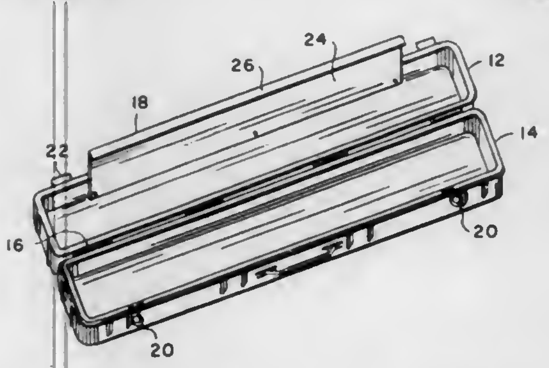
said wedge body having an area of contact facing said side frame column wear resistant surface, said wedge body side frame facing area of contact being formed by a pair of spaced planar generally parallel surfaces, with a recess therebetween,

said side frame column wear resistant surface having a generally vertical extension aligned with said wedge side frame facing recess and extending therein, said side frame wear resistant surface extension restraining relative lateral movement between said bolster and side frame.

5,850,796
CASE OR LOCKBOX RESISTANT TO FORCED ENTRY AND THEFT AND METHOD FOR CONVERTING CASE TO SECURE AND MOUNTABLE LOCKING CONTAINER

Daniel M. Cislo, 3413 Rambla Pacifico, Malibu, Calif. 90265

Filed Nov. 22, 1996, Ser. No. 755,549
Int. Cl.^{6} E05G *1/04*
U.S. Cl. 109—51 **3 Claims**



1. A securable case resistant to forced entry comprising:

first and second housings coupled together, each having generally flat adjacent sides which may be brought together and come in contact to close the securable case, and said flat sides thereby defining a front plane when said housings are in a closed condition;

a guard member having a securing portion and a generally flat upstanding portion, said upstanding portion attachable along a substantial length of an inside edge of said first of the housings, said upstanding portion extending past the adjacent side of said second housing when the securable case is in said closed condition, said securing portion of said guard member adapted to be engaged for securing said housings together in said closed condition;

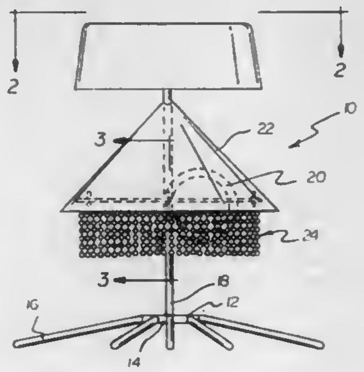
a lock mounted through said adjacent side of said second housing, and generally perpendicular through said front plane, said lock being movable to a locked position in close proximity to and overlying said securing portion of said guard member without extending through said guard member, such that said adjacent sides of the housings being secured together when the case is in said closed condition and said lock is in said locked position without extending through said guard member; further comprising a second lock mounted through said adjacent side of said second housing, and generally perpendicular through said front plane, opposite the first lock, such that said guard member lying between said locks when the case being in said closed and a locked condition, thereby reducing any forced movement of said guard member and said first housing and second housing;

whereby said guard member resists insertion of a prying tool along said substantial length of said adjacent sides between said housings in said front plane while providing a locking surface to engage said locks.

5,850,797
ELEVATED PET BOWL

William E. Hunicke, 199 Coulwood Dr., Charlotte, N.C. 28214

Filed Dec. 4, 1997, Ser. No. 985,418
Int. Cl.^{6} A01K *5/01*
U.S. Cl. 119—61 **8 Claims**



2. A pet bowl protector comprising:

a base including a post; and

a pet food dish mounted to the post for containing pet food therein;

wherein a cone is mounted to the post;

wherein a plurality of strings of beads are coupled to the cone and depend downwardly therefrom.

5,850,798
CAT-BOX LINER

Eric M. Engel, 481 W. 22nd St., Apt. 1, New York, N.Y. 10011

Filed Sep. 30, 1997, Ser. No. 941,181
Int. Cl.^{6} A01K *1/015;29/00*
U.S. Cl. 119—170 **29 Claims**

1. A liner for a cat box having sides extending upwardly from a bottom to a vertical height, said liner comprising:

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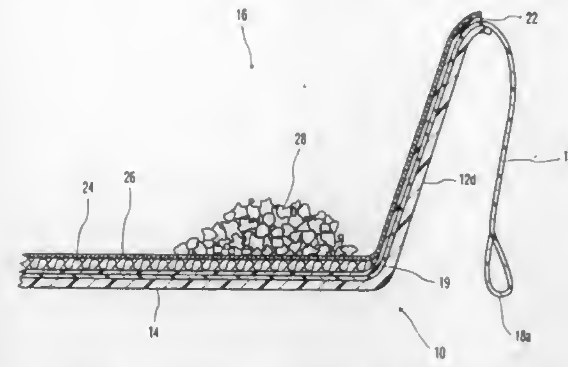
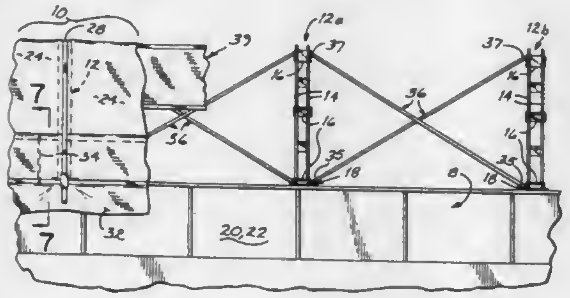


(a) a bag for placement in a cat box, said bag comprising:
  (i) a bottom portion for lining the cat box;
  (ii) a contiguous top portion; and
  (iii) a main, closable opening in said bag located at a periphery of said top portion distal from said bottom portion, along a surface of said bag;
(b) a fluid-impermeable layer for placement within the box, being located within said bottom portion of said bag and being bonded about substantially its entire periphery to said bag;
(c) a sorbent layer for placement above said fluid-impermeable layer; and
(d) a claw-resistant layer above said sorbent layer and affixed to said fluid-impermeable layer so as to stiffen the affixed layers whereby they tend to stay in place in the cat box;
(e) said fluid-impermeable layer having an area larger than that of said sorbent layer, and being placed adjacent said bag bottom portion without the interposition of a sorbent layer or claw-resistant layer between them;
(f) said top portion of said bag being for draping over the sides of the box for a drape length and providing ballast for helping the liner to stay in place.

5,850,799
PORTABLE BARGE COVER

William C. Geisel; Daniel V. Ricciardi; John V. O'Bryant; Kenneth P. Wade, all of Cincinnati, Ohio, and David K. Thibodeau, Union, Ky., assignors to Midland Enterprises Inc., Cincinnati, Ohio

Filed Jul. 16, 1997, Ser. No. 895,121
Int. Cl.^{6} B63B *19/14*
U.S. Cl. 114—201 R **25 Claims**

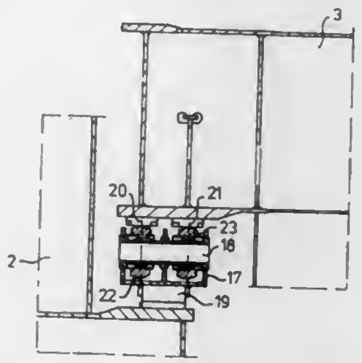


1. A portable barge cover for protecting cargo in a hold of a barge comprising:
a plurality of removable arched members for spanning from a first side of the hold across to an opposite second side of the hold along the length of the hold, wherein each arched member is constructed in sections comprising:
  a plurality of substantially parallel arcuate metal poles held fixably apart by a plurality of plates spaced apart along the length of the poles, and
  a means for flexibly holding the poles to said first and second sides of the hold, where said means is attached to a first and second opposing ends of the poles;
a plurality of flexible sheets for placement over the arched members to provide a weather tight covering over the cargo in the hold of the barge; and
a plurality of straps for crossing over the flexible sheets from said first side to said second side of the hold to secure the flexible sheets in place over the arched members.

5,850,800
BOGIE WHEELS WITH CURVED CONTACT SURFACES

Johan Albert Commandeur, Zwijndrecht, Netherlands, assignor to IHC Gusto Engineering B.V., Schiedam, Netherlands

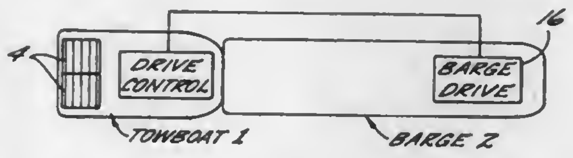
Filed Jan. 17, 1997, Ser. No. 785,602
Int. Cl.^{6} B63B *21/00*
U.S. Cl. 114—230 **8 Claims**



1. A vessel comprising a hull, a generally cylindrical turret wall, a turret rotatingly mounted within the turret wall, and a circular raceway on one of the vessel and the turret, the turret being supported in an axial direction by plural bogie wheels connected to one of the turret and the vessel and running on the raceway, wherein the bogie wheels have a curved metal contact surface with a radius of curvature of between 5 m and 50 m and a wheel diameter of between 300 mm and 1200 mm, the raceway having a diameter between 10 m and 30 m, and having a flat contact surface, wherein the Rockwell C hardness of the contact surface of the bogie wheels is at least 1.2 times the Rockwell C hardness of the raceway.

5,850,801
PUSHING UNIT

Dieter Grimmig, Dresden, Germany, assignor to Hans Grimmig GmbH, Dresden, and Schiffswerft Oberelbe GmbH, Bad Schandau, both of Germany
PCT No. PCT/DE95/00187, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/22485, PCT Pub. Date Aug. 24, 1995
PCT Filed Feb. 15, 1995, Ser. No. 693,110
Claims priority, application Germany, Feb. 18, 1994, 44 05 177.8
Int. Cl.^{6} B63B *21/56*
U.S. Cl. 114—242 **19 Claims**

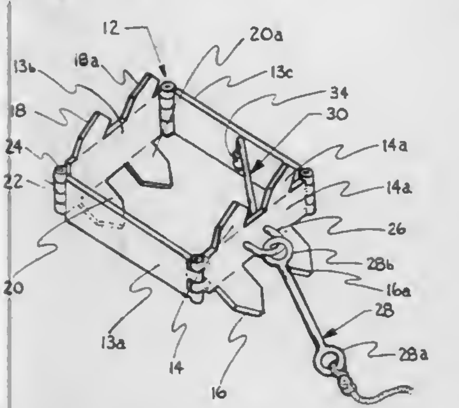


1. A cargo transport assembly for transporting cargo on a shallow waterway, and comprising
a towboat including a paddle wheel drive, and
at least one barge operatively connected to the towboat, said one barge including a barge drive, with said barge drive being vertically adjustable and rotatable by 360°, and said barge further including at least one vertically adjustable skew, and
a drive control located on the towboat for controlling said barge drive.

5,850,802
COLLAPSIBLE BOAT ANCHOR

Ryan T. Dvorak, 3670 N. Moorpark Rd., Thousand Oaks, Calif. 91360

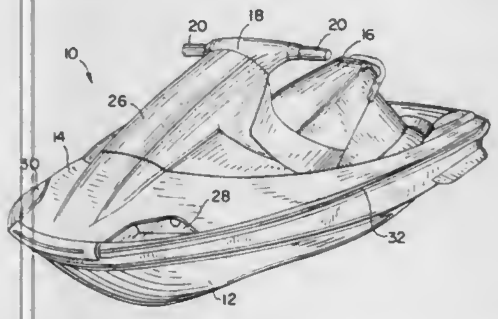
Filed Jul. 16, 1997, Ser. No. 895,157
Int. Cl.^{6} B63B *21/24*
U.S. Cl. 114—303 **5 Claims**



1. A boat anchor capable of collapsing, comprising;
a.) four elongate sides, each of predetermined length and pivotally connected as to provide a foundation to support a plurality of anchor flukes;
b.) said flukes being affixed to said foundation in an arrangement as to allow said anchor to set on whichever side it may fall;
c.) securing means for engaging and disengaging at least two of said pivotally connected elongate sides for providing an operative and storage configuration respectively, and;
d.) means for attaching an anchor line to said anchor.

5,850,803
PERSONAL WATERCRAFT HAVING DAYTIME RUNNING HEADLIGHT

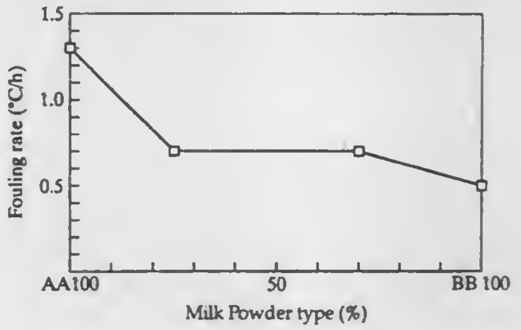
Corbett B. Jones, Mequon; Edwin B. Hatch, West Bend; Steven J. Gonring, Slinger; David D. Jones, Mequon, and Joseph H. Pomeroy, Fond du Lac, all of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed May 21, 1997, Ser. No. 861,290
Int. Cl.^{6} B63B *8/00*
U.S. Cl. 114—343 **17 Claims**



1. A personal watercraft comprising:
a hull shell and a deck shell attached along a deck line to define an engine compartment therebetween;
an engine located within the engine compartment;
a steering assembly having a grippable steering member mounted on the deck shell;
a seat located rearward of the steering assembly;
a headlight mounted to the watercraft above the deckline and forward of the steering member;
an electrical power source located within the engine compartment that provides electrical power to the headlight whenever the engine is operating; and
an electronic control unit for the personal watercraft;
a run relay that receives a control signal from the electronic control unit, wherein the control signal from the electronic control unit closes the run relay so that electrical power can be supplied from the electrical power source to the headlight when the engine is operating; and
a user-operated override switch that temporarily opens the run relay when the engine is operating.

5,850,804
MILK COMPOSITIONS HAVING LOW FOULING RATES SELECTED BY REFERENCE TO β-LACTOGLOBULIN PHENOTYPES

Jeremy Paul Hill; Michael John Boland, and Andrew Faulks Smith, all of Palmerston North, New Zealand, assignors to New Zealand Dairy Board, Wellington, New Zealand
PCT No. PCT/NZ96/00045, § 371 Date Jun. 9, 1997, § 102(e) Date Jun. 9, 1997, PCT Pub. No. WO96/36240, PCT Pub. Date Nov. 21, 1996
PCT Filed May 22, 1996, Ser. No. 776,202
Claims priority, application New Zealand, May 19, 1995, 272161
Int. Cl.^{6} A01J *5/007*
U.S. Cl. 119—14.02 **23 Claims**



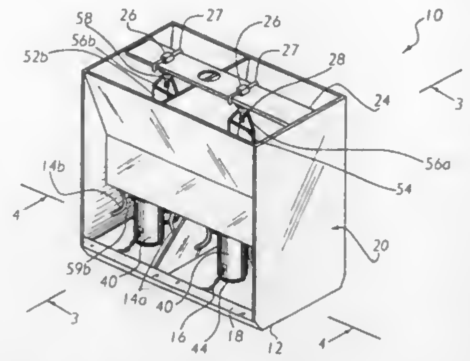
1. A method of selecting milk for milk powder manufacturing properties which comprises testing milk from identified cows for the presence of variants of β-lactoglobulin and selecting those cows whose milk contains any non-fouling variant and does not contain any fouling variant, and milking separately the non-fouling variant milk producing cows and recovering and maintaining their milk separately from milk from any other source.

5,850,805
CLOG RESISTANT ANIMAL FEEDER

Michael Kleinsasser, 17866 Glendale Dr., Frankford, S. Dak. 57440

Filed Aug. 29, 1997, Ser. No. 920,664
Int. Cl.^{6} A01K *5/00*
U.S. Cl. 119—54 **6 Claims**

1. A clog resistant animal feeder which is resistant to clogging, comprising:
a trough having a front portion and a rear portion;
a storage bin attached to said trough;
wherein said storage bin includes at least one interior side wall and a lower portion for storing feed within;
wherein said lower portion includes an aperture;
a dispensing means attached to said lower portion of said storage bin about said aperture which is movable for preventing clogging of said feed within said storage bin and said dispensing means; and



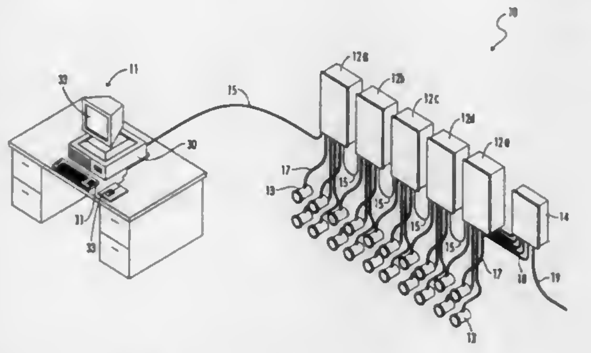
wherein said dispensing means comprises:
- a height adjusting means attached within said storage bin;
- an elongated frame having a lower end and an upper end, wherein said upper end is attached to said height adjusting means and said lower end projects through said storage bin;
- a first tube secured to said lower portion of said storage bin about said aperture for receiving said feed from within said storage bin; and
- a second tube having a bottom perimeter movably attached to said lower end of said elongated frame for engaging said first tube for loosening clogged feed within said first tube or said storage bin.

5,850,806

CONTROLLABLE STROBE LIGHT SYSTEM AND METHOD FOR DIRECTING THE MOVEMENTS OF FISH

Fred Mark, West Chelmsford, Mass.; Richard Northrup; Larry Ouellette, both of Nashua, N.H.; Roberto Schipp; Ronald Ihrie, both of Nashville, Tenn.; Edward Boyer, Milford, N.H., and William F. Somers, Nashville, Tenn., assignors to Flash Technology Corporation of America, Brentwood, Tenn.

Filed Dec. 12, 1996, Ser. No. 766,192
Int. Cl.^{6} A01K *61/00*
U.S. Cl. 119—219 **21 Claims**



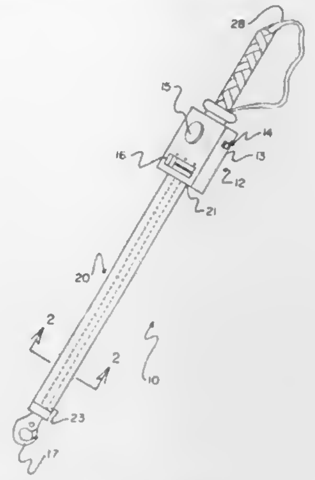
1. A system for directing the movement of fish in water near a man made structure, the system comprising:
- a. a plurality of flash heads, each flash head including a flash tube means for generating one or more light pulses visible to fish proximate to the flash head, and a waterproof housing enclosing the flash tube means;
- b. a system control unit operatively connected to each flash head and including processor means for causing the flash tube means to generate the light pulses in a predetermined flash sequence; and
- c. the system control unit further comprising a command interface means for accepting system commands from an operator of the system, the system commands including flash sequence commands, the processor means including sequence command processing means for varying and executing the flash sequence in response to the flash sequence commands.

5,850,807

ILLUMINATED PET LEASH

Russell R. Keeler, 363 Park Ave., Harleysville, Pa. 19438

Filed Jul. 16, 1997, Ser. No. 895,219
Int. Cl.^{6} A01K *27/00*
U.S. Cl. 119—799 **13 Claims**



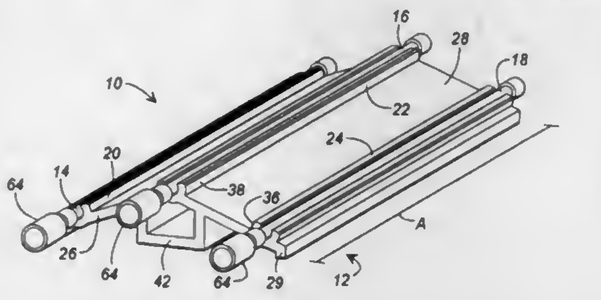
1. An illuminated pet leash comprising:
- an elongated non-opaque tube having a bundle of optical fibers longitudinally disposed therein;
- a housing attached to a first end of the tube;
- a snap swively connected to a second end of the tube; and
- a means for remotely energizing a light source, the light source being disposed within the housing and further being disposed in lighting relationship to the bundle of optical fibers.

5,850,808

SYSTEM FOR REPELLING PESTS

Brett R. Burdick, Knoxville, Tenn., assignor to FI-Shock, Inc., Knoxville, Tenn.

Filed Oct. 14, 1997, Ser. No. 949,423
Int. Cl.^{6} A01K *29/00*
U.S. Cl. 119—903 **16 Claims**



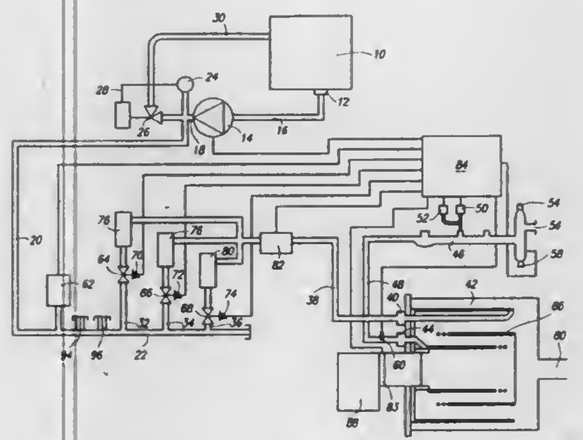
1. A system for repelling pests comprising:
- a support provided by an electrically non-conductive material, the support having at least three spaced apart grooves defined thereon of substantially equal length to provide at least one middle groove having an outer groove on each side thereof and spaced apart from the middle groove a distance corresponding to the width of an appendage of the pest to be repelled,
- a conductor received within each groove,
- a power supply having oppositely charged poles for providing electrical power to each conductor, wherein each conductor received within each middle groove is in electrical communication with one pole of the power supply and the adjacent conductors in the outer grooves are in electrical communication with the other pole of the power supply such that the placement of the appendage of the pest in contact with a conductor in electrical communication with each pole of the power supply completes an electronic circuit so that an electric current is applied to the pest.

5,850,809

STEAM-RAISING SYSTEM

Robert John Watts, East Sussex, England, assignor to Eaton-Williams Group Limited, Kent, England

Filed Feb. 14, 1996, Ser. No. 601,440
Claims priority, application United Kingdom, Feb. 16, 1995, 9503076
Int. Cl.^{6} F22D *7/00;5/26*
U.S. Cl. 122—406.4 **12 Claims**



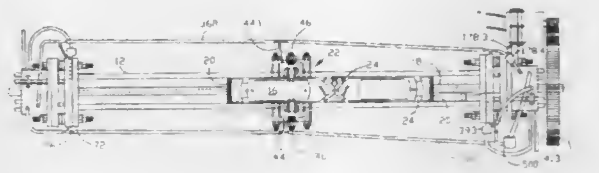
1. A steam-raising system comprising a boiler having (a) a passageway for water and/or steam, (b) an inlet to the passageway through which water is introduced continuously for given periods when the boiler is in use, (c) a heater to heat the passageway, and (d) an outlet from the passageway from which steam emerges continuously as water is introduced through the inlet, the system further comprising a pump connected by a flow-path to the said inlet to pump water thereto along the said flow-path and flow control means in the said flow-path, wherein the flow control means comprise a plurality of lines which constitute a part of the flow-path, which are connected between the pump and boiler in parallel with one another, and which are independently openable to enable the amount of water delivered to the boiler to be varied, each of the said lines comprises a shut-off valve and a flow regulator which maintains a constant flow through the line substantially independently of the pressures upstream of its inlet and downstream of its outlet, temperature monitoring means are provided downstream of the boiler to monitor the temperature of the steam output of the boiler, control means are connected to the temperature monitoring means and the shut-off valves to control operation of those valves in dependence upon an output from the temperature monitoring means, and the control means are such as to close each of the said lines at a predetermined temperature below that at which it opens that line, to provide a hysteresis range between the closing and opening temperatures.

5,850,810

ROTATING PISTON ENGINE WITH VARIABLE EFFECTIVE COMPRESSION STROKE

Louis Charles Strieber, 6800 W. Gate Blvd. 190 139B316, Austin, Tex. 78745, and Edward M. Strieber, Jr., P.O. Box 203312, Austin, Tex. 78720-3312

Continuation-in-part of Ser. No. 512,670, Aug. 8, 1995, Pat. No. 5,622,142. This application Sep. 9, 1996, Ser. No. 711,170
Int. Cl.^{6} F02B *75/26*
U.S. Cl. 123—45 A **22 Claims**



1. A spinning and shuttling piston assembly for maximizing the distance the piston is driven during the power stroke, maximizing the use of power produced by combustion, and maximizing the conversion of linear motion into rotary motion comprising, in combination:
- a) a block and head arrangement having a cylinder with a cylinder sidewall and at least a first cylinder head, with the cylinder having an axis with each direction on the axis defining a piston stroke;
- b) a spinning and shuttling cylindrical piston with at least a first crown and being in the cylinder on the axis, with the piston having a piston sidewall in close relationship with the cylinder sidewall, with the piston being shuttleable on the axis in both axial directions and spinnable about the axis in the cylinder;
- c) a power output shaft rotatably mounted to the block and head arrangement and trained to the spinning and shuttling piston such that both spinning and shuttling of the piston rotates the power output shaft;
- d) means in the block and head arrangement for driving the piston in at least one of the directions; and
- e) piston spin means between the piston and the block and head arrangement for forcing the piston to spin in one direction of rotation about the axis regardless of the axial direction of piston movement such that both spinning of the piston in the one rotation direction and shuttling of the piston drives the power output shaft, with the piston spin means comprising a track and rider arrangement between the piston and the block and head arrangement, with the track and rider arrangement having a track on one of the piston and block and head arrangement and a rider on the other of the piston and block and head arrangement, and wherein the track comprises an endless track which criss-crosses itself at least once to form at least one intersection, with the rider including means for maintaining linear movement across the intersection when the rider engages the intersection, and wherein the track and rider arrangement comprises means for activating and deactivating the means for maintaining linear movement prior to and after the rider engages the intersection.

5,850,811

APPARATUS FOR CONTROLLING TIMINGS OF EXHAUST VALVES AND METHOD THEREOF

Naoki Tomisawa, and Seizi Suga, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Aug. 27, 1997, Ser. No. 917,830
Claims priority, application Japan, Aug. 28, 1996, 8-226831
Int. Cl.^{6} F02D *13/00*
U.S. Cl. 123—90.15 **8 Claims**

1. An apparatus for controlling timings of exhaust valves comprising:
- a variable valve timing mechanism for varying timings for opening and closing exhaust valves.
- a complete combustion detection means for detecting the complete combustion state of an engine based on whether or not a rotational speed of the engine becomes equal to or greater than a predetermined rotational speed.
- a cranking detection means for detecting the cranking state of the engine and
- a valve timing control means for controlling said variable valve timing mechanism in order to advance, by a predetermined angle, the timing for opening the exhaust valve for a predetermined period of time after a time after the lapse of a

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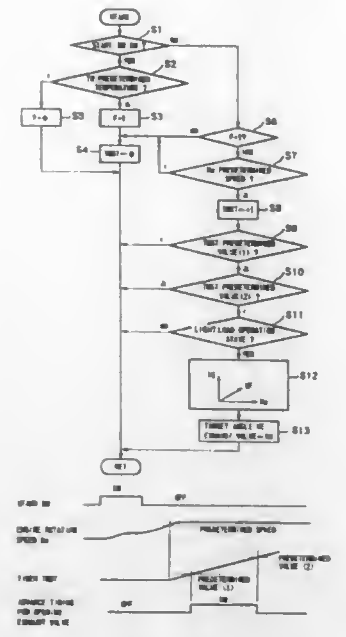
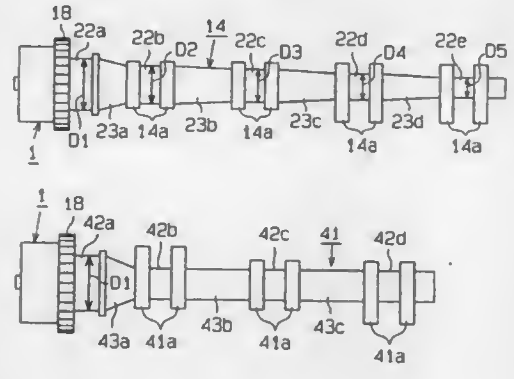


predetermined delay time from when the completer combustion state of the engine is detected.

5,850,812
ENGINE HAVING VARIABLE VALVE TIMING MECHANISM

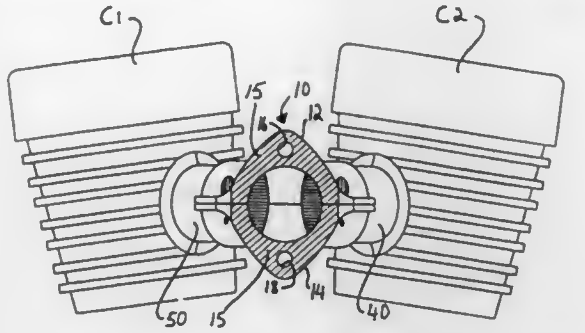
Toshiharu Noguchi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Continuation of Ser. No. 803,652, Feb. 21, 1997, abandoned. This application Sep. 18, 1997, Ser. No. 933,102
Claims priority, application Japan, Feb. 22, 1996, 8-035037
Int. Cl.^{6} F01L *1/344*
U.S. Cl. 123—90.17 19 Claims



1. An engine comprising:
a valve;
a crankshaft,
a camshaft driven by the crankshaft for selectively opening and closing said valve; and
a valve timing control apparatus, which applies torque to the camshaft to change the valve timing, attached to a proximal end of the camshaft, wherein the camshaft is supported at the proximal end by a proximal end journal, and wherein the camshaft has a distal section, which is distal of the proximal end journal, wherein at least one cam is located on the distal section, and wherein the distal section has an outside diameter at a portion remote from the valve timing control apparatus that is less than the outside diameters of other portions of the distal section that are closer to the valve timing control apparatus.

5,850,813
SPLIT INTAKE MANIFOLD, STRUCTURE, INSTALLATION AND METHOD

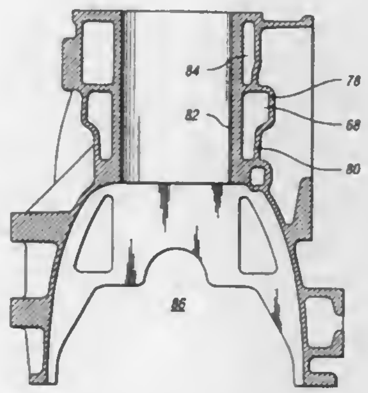
Rick Cooney, Las Vegas, Nev., and Dennis A. Sheehan, 10952 Longford St., Lake View Terrace, Calif. 91342, assignors to Dennis A. Sheehan, Sun Valley, Calif.
Filed Jun. 9, 1997, Ser. No. 871,871
Int. Cl.^{6} F02M *35/10*
U.S. Cl. 123—184.46 8 Claims



1. A manifold for a multi-cylinder internal combustion engine comprising a separate upper member and a separate lower member, each said member being so configured and constructed as to fit together in gas tight relationship and when so fitted together to define an inlet air-fuel mixture conduit constructed and configured for receiving a carburetor and two outlet air-fuel mixture conduits, said inlet conduit being in fluid communication with said outlet conduits, said outlet conduits being so disposed with respect to the inlet conduit and to each other as to permit said outlet conduits to be connected to separate internal combustion engine cylinder input ports for passing an air-fuel mixture from the carburetor to the separate internal combustion engine cylinder input ports of respective cylinders.

5,850,814
CYLINDER BORE ISOLATOR CORE FOR CASTING ENGINE CYLINDER BLOCKS

Gary Michael Fenn, Plymouth; Thomas John Heater, Milford, and Mark Allen Hayley, Troy, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Apr. 7, 1998, Ser. No. 56,358
Int. Cl.^{6} F02F *7/00*
U.S. Cl. 123—195 R 6 Claims

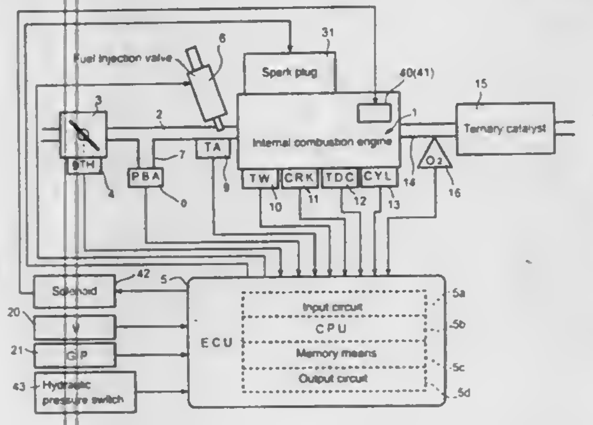


1. A cast cylinder block for an internal combustion engine comprising an integral crankcase portion and a cylinder portion, said engine having a crankshaft axis and a cylinder axis extending radially from said crankshaft axis;
at least one cylinder in said cylinder block portion having a cylindrical wall, said cylinder block having a top deck for supporting a cylinder head;

a coolant jacket formed in said cylinder portion and at least partially surrounding said cylindrical wall at an outward radial location radially inward from said top deck relative to said crankshaft axis;
an isolation chamber formed in said cylinder portion and at least partially surrounding said cylindrical wall at a location that is radially inward from said coolant jacket relative to said crankshaft axis, said isolation chamber containing ambient air that is isolated from crankcase gases in said crankcase portion.

5,850,815
CONTROL SYSTEM AND CONTROL PROCESS IN INTERNAL COMBUSTION ENGINE

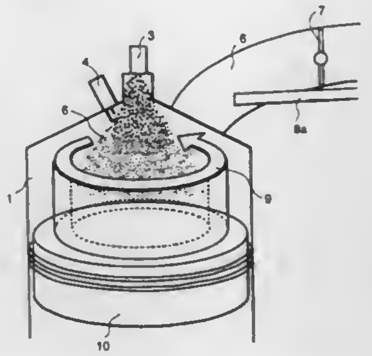
Toru Yano; Isao Komoriya; Yuji Yasui; Takahiro Yonekura; Yutaka Asano; Yusuke Tatara; Eisuke Kimura, and Kohei Hanada, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1997, Ser. No. 834,195
Claims priority, application Japan, Apr. 17, 1996, 8-095710; Apr. 22, 1996, 8-122803
Int. Cl.^{6} F02P *5/00*
U.S. Cl. 123—417 9 Claims



1. A control system in an internal combustion engine, comprising a means for detecting an operational state of the internal combustion engine, a valve timing changing means for changing a valve timing of at least one of an intake valve and an exhaust valve between low speed valve timing and high speed valve timing in accordance with said detected operational state of the internal combustion engine, a fuel supply means in an intake air supply passage of the engine for supplying an air-fuel mixture to the engine an air-fuel ratio control means for controlling switching of an air-fuel ratio of said air-fuel mixture supplied to the engine selectively to a richer level and to a leaner level than a theoretical air-fuel ratio, and an electronic control unit for determining when said valve timing changing means has changed the valve timing from said low speed valve timing with the air-fuel mixture at said leaner level to high speed valve time and for causing said air-fuel ratio control means to switch the air-fuel ratio of said air-fuel mixture to said richer level for a predetermined period after the valve timing is changed by said valve timing changing means to said high speed valve timing, said electronic control unit causing said air-fuel ratio control means to change the air-fuel ratio of said air-fuel mixture to said leaner level than the theoretical air-fuel ratio after said predetermined period.

5,850,816
METHOD FOR STRATIFYING AIR-FUEL MIXTURE IN DIRECT FUEL INJECTION INTERNAL COMBUSTION ENGINE AND ELECTRONIC SYSTEM ENGINE CONTROL APPARATUS USING ABOVE METHOD

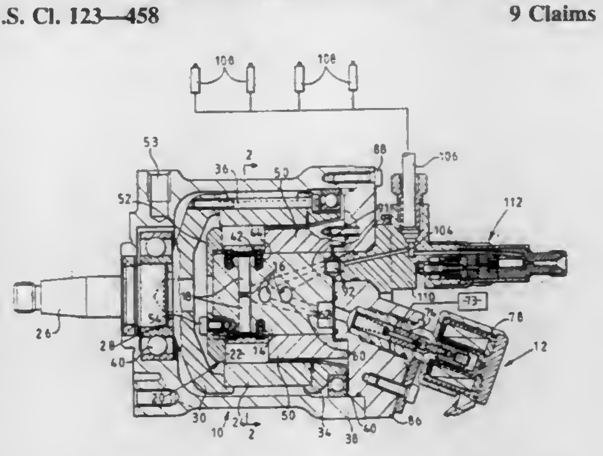
Minoru Ohsuga, Hitachinaka; Takuya Shiraishi, Kashima; Yoko Nakayama, Hitachi, and Mamoru Fujieda, Tomobemachi, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 7, 1997, Ser. No. 833,524
Claims priority, application Japan, Apr. 5, 1996, 8-083529
Int. Cl.^{6} F02B *17/00*
U.S. Cl. 123—430 24 Claims



1. A method for combusting an air-fuel mixture in a direct fuel injection internal combustion engine in which a dense air-fuel mixture having a large mixture rate of fuel at a center portion of a swirl formed in a cylinder is collected and ignited, wherein a strength of said swirl is from 1 to 3.5.

5,850,817
FUEL PUMP

Pierre Bouchauveau, Blois; Dany Guillot, Huisseau/Cosson, and Claude Leveque, Mont Pies Chambord, all of France, assignors to Lucas Industries Public Limited Co., Solihull, England
Filed Nov. 27, 1996, Ser. No. 757,911
Int. Cl.^{6} F02M *41/00;37/04*
U.S. Cl. 123—458 9 Claims



1. A fuel supply system comprising a fuel pump for supplying high pressure fuel to a common delivery line, a plurality of individually actuable injectors connected to the delivery line and control means associated with each injector operable to deliver fuel through the respective injector of an associated engine, and a control valve connected to the delivery line and operable to control the pressure of fuel within the delivery line, wherein the control valve comprises a housing defining a bore within which a valve needle is slidable, the valve needle being engageable with a seating to control fuel flow to an outlet, wherein the valve needle is moveable by fuel pressure exerted on said needle, which pressure is controlled by an electromagnetically actuable valve.

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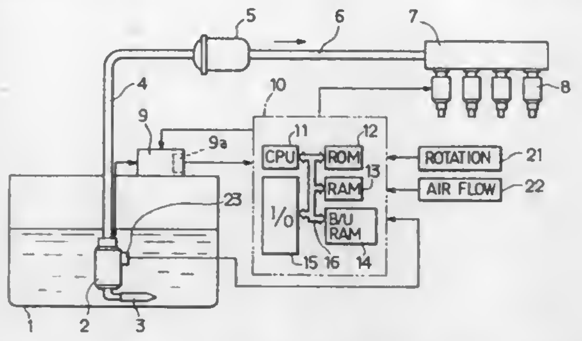
5,850,818
FUEL SUPPLY APPARATUS HAVING ABNORMALITY DETECTING FUNCTION

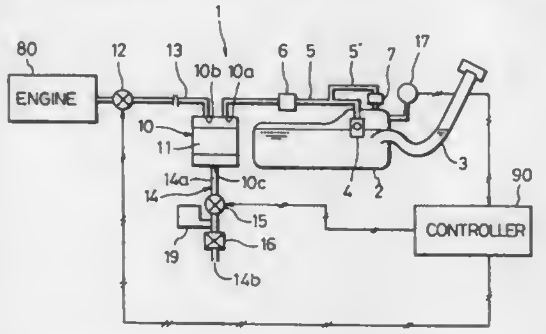
Naoki Yoshiume, and Makoto Miwa, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Sep. 3, 1996, Ser. No. 707,251
Claims priority, application Japan, Sep. 27, 1995, 7-248940
Int. Cl.^{6} F02M *37/04*
U.S. Cl. 123—497 **38 Claims**



1. A fuel supply apparatus for an internal combustion engine having a fuel pump and a fuel supply system, the apparatus comprising:
calculation means for calculating a reference number of rotations of the fuel pump which changes as a function of a drive state of the internal combustion engine;
detection means for detecting an actual number of rotations of the fuel pump; and
abnormality determination means for determining whether an abnormality has occurred in the fuel supply system of the internal combustion engine based on the said reference number of rotations of the fuel pump and the said actual number of rotations of the fuel pump.

5,850,819
FUEL EVAPORATIVE EMISSION TREATMENT SYSTEM

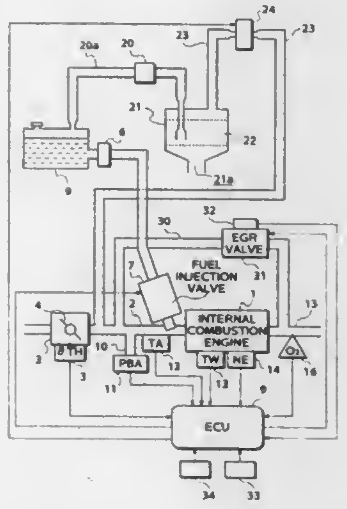
Masafumi Kunimitsu; Kiyoshi Mori; Tomokazu Muraguchi, all of Okazaki; Yoichiro Ando, Seto, and Yasuo Kimura, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1995, Ser. No. 569,994
Claims priority, application Japan, Dec. 9, 1994, 6-306743; Aug. 24, 1995, 7-215819
Int. Cl.^{6} F02M *37/04*
U.S. Cl. 123—520 **16 Claims**



1. A fuel evaporative emission treatment system, comprising:
a canister for absorbing evaporative fuel, said canister having an evaporative fuel introduction part in communication with a fuel tank through a vent hose, an evaporative fuel emission part in communication with an intake system of an engine, and a vent part;
a first passage forming means having a first passage, a first end of said first passage being in communication with said vent part of said canister and a second end of said first passage being open to an external atmosphere;
a first switching means, provided between said first and second ends of said first passage, for opening and closing said first passage;
a filter provided in said first passage between said first switching means and said second end of said first passage, such that said filter cleans atmospheric air flowing in from said second end of said first passage towards said canister;
a second passage forming means having a second passage, a first end of said second passage being in fluid communication with said vent part of said canister and a second end of said second passage being in communication with the external atmosphere; and
a second switching means, provided in said second passage, for opening and closing said second passage.

5,850,820
EVAPORATIVE FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

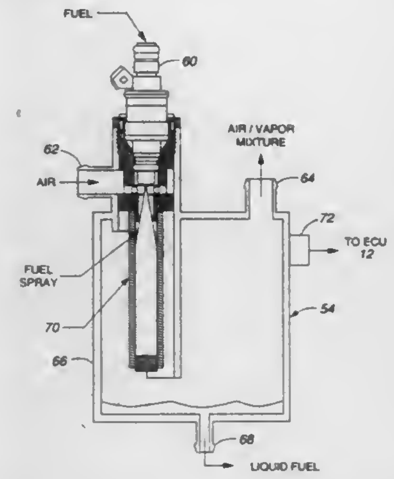
Kojiro Tsutsumi; Shigeto Kashiwabara; Yasunari Seki, and Sachito Fujimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1996, Ser. No. 771,255
Claims priority, application Japan, Dec. 22, 1995, 7-349430
Int. Cl.^{6} F02M *37/04*
U.S. Cl. 123—520 **13 Claims**



1. An evaporative fuel control system for an internal combustion engine having an intake system, a throttle valve arranged in said intake system, and a fuel tank, comprising:
a canister for adsorbing evaporative fuel generated in said fuel tank;
a purging passage extending between said canister and said intake system, for purging evaporative fuel into said intake system at a location downstream of said throttle valve;
a purge control valve arranged across said purging passage, for controlling a flow rate of evaporative fuel supplied to said intake system through said purging passage; and
operating error-determining means operable when said engine is in a predetermined stable operating condition, for changing said flow rate of evaporative fuel supplied to said engine by controlling said purge control valve, for detecting a first degree of influence of said evaporative fuel on an air-fuel ratio of a mixture supplied to said engine, and a second degree of influence of the same, respectively before and after said changing of said flow rate of said evaporative fuel, and for determining an operating error of said purge control valve, based on the detected first and second degrees of influence.

5,850,821
METHOD AND SYSTEM FOR ESTIMATING AIR/FUEL RATIO OF AN ENGINE HAVING A NON-HEATED FUEL VAPORIZER

Eric Warren Curtis, Ann Arbor, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Apr. 28, 1997, Ser. No. 842,107
Int. Cl.^{6} F02M *17/00*
U.S. Cl. 123—524 **14 Claims**

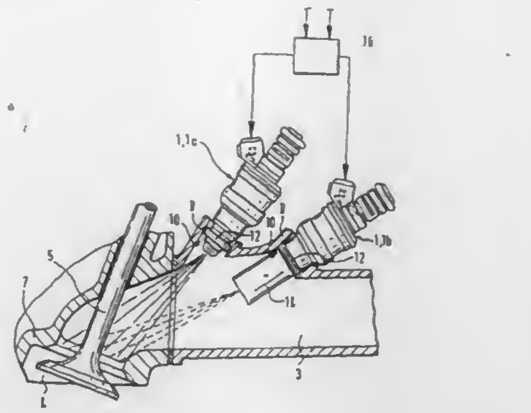


1. A method for estimating air/fuel ratio of an internal combustion engine having an unheated fuel vaporizer device, the method comprising:
determining a temperature of the fuel vaporizer device,
determining a mass rate of air entering the fuel vaporizer device;
determining a mass rate of fuel vaporized by the fuel vaporizer based on the temperature of the fuel vaporizer device and the mass rate of air entering the fuel vaporizer device; and
estimating the air/fuel ratio based on the mass rate of air entering the fuel vaporizer device and the mass rate of fuel vaporized by the fuel vaporizer.

5,850,822
INJECTION ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE AND METHOD FOR FUEL INJECTION

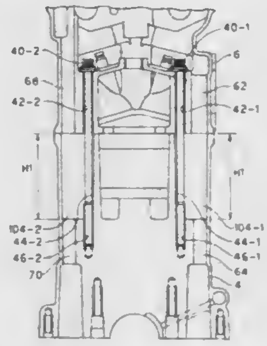
Peter Romann, Stuttgart; Klaus-Henning Krohn, Bamberg; Jörg Lange, Eberdingen, and Christof Vogel, Bischberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE96/01487, § 371 Date Jul. 29, 1997, § 102(e) Date Jul. 29, 1997, PCT Pub. No. WO97/12146, PCT Pub. Date Apr. 3, 1997
PCT Filed Aug. 8, 1996, Ser. No. 849,041
Claims priority, application Germany, Sep. 26, 1995, 195 357 44.2
Int. Cl.^{6} F02M *53/06;69/34;* **F02D** *41/06*
U.S. Cl. 123—549 **11 Claims**

1. A fuel injection arrangement for an internal combustion engine, comprising:
at least one intake pipe leading to at least one combustion space;
at least one inlet valve arranged between the at least one combustion space and the at least one intake pipe; and
at least two fuel injection valves assigned to each of the at least one combustion space, independent of a number of the at least one inlet valve, the at least two fuel injection valves opening into the at least one intake pipe, at least one of the at least two fuel injection valves including an evaporator device; the at least one of the at least two fuel injection valves injecting a fuel vapor into the at least one intake pope.



5,850,823
BLOWBY GAS RETURNING STRUCTURE FOR ENGINE

Satoshi Kasahara, Shizuoka-ken, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan
Filed Sep. 19, 1997, Ser. No. 934,502
Claims priority, application Japan, Nov. 29, 1996, 8-334842
Int. Cl.^{6} F02F *7/00*
U.S. Cl. 123—572 **11 Claims**

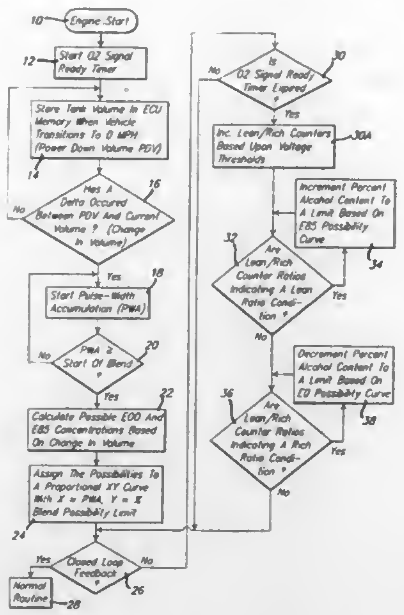


1. In a blowby gas-returning structure for an engine, in which a blowby gas passage is provided in both a cylinder block and a cylinder head so that a blowby gas flowing through between an engine piston and an engine cylinder sleeve is introduced into a gas-side breather chamber, said chamber being formed by a baffle plate within a cylinder head cover, the improvement wherein said cylinder block is provided with a void space section which shares space with a cylinder head-mounting bolt and said blowby gas passage.

5,850,824
METHOD OF DETERMINING THE COMPOSITION OF FUEL IN A FLEXIBLE FUELED VEHICLE WITH AN O2 SENSOR

Gary L. Seitz, Chelsea; Yi Cheng, Jackson; Mark E. Hope, Ann Arbor; Shean Huff, Ann Arbor; Mary Joyce, Farmington Hills; Jerry Kennie, Canton; Dennis A. Krozek, Novi, and Robert J. Nankee, II, Canton, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 29, 1997, Ser. No. 959,797
Int. Cl.^{6} F02D *41/06*
U.S. Cl. 123—688 **12 Claims**

1. A method for controlling combustion parameters of an internal combustion engine in a flexible fueled vehicle with an oxygen sensor prior to a closed loop operating condition comprising:


10
Engine Start
12
Start O2 Signal Ready Timer
Store Tank Volume In ECU Memory When Vehicle Transitions To 0 MPH (Power Down Volume PDV)
14
Has A Delta Occured Between PDV And Current Volume ? (Change In Volume)
16
No
Yes
Start Pulse-Width Accumulation (PWA)
18
PWA ≥ Start Of Blend ?
20
No
Yes
Calculate Possible E00 And E85 Concentrations Based On Change In Volume
22
Assign The Possibilities To A Proportional XY Curve With X = PWA, Y = % Blend Possibility Limit
24
Closed Loop Feedback ?
Yes
No
26
Normal Routine
28
Is O2 Signal Ready Timer Expired ?
30
No
Yes
Inc. Lean/Rich Counters Based Upon Voltage Thresholds
30A
Increment Percent Alcohol Content To A Limit Based On E85 Possibility Curve
34
Are Lean/Rich Counter Ratios Indicating A Lean Ratio Condition ?
32
Yes
No
Decrement Percent Alcohol Content To A Limit Based On E0 Possibility Curve
38
Are Lean/Rich Counter Ratios Indicating A Rich Ratio Condition ?
36
Yes
No

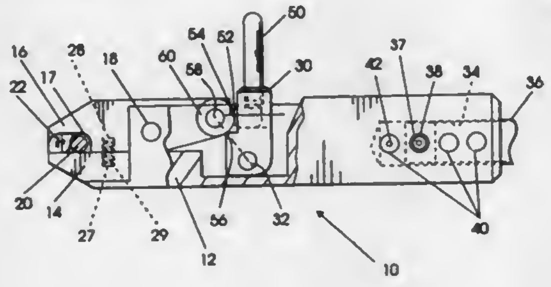
determining if newly added fuel has started to blend with old fuel in a fuel system of said vehicle;
determining possible blend ratios of ethanol and gasoline based on a volume of said newly added fuel and a percent alcohol content of said old fuel;
determining if a lean operating condition exists;
determining if a rich operating condition exists;
incrementing a percent alcohol content value based on a first of said possible blend ratios if said lean ratio condition exists;
decrementing said percent alcohol content based on a second of said possible blend ratios if said rich ratio condition exists; and
setting said combustion parameters according to said percent alcohol content.

5,850,825
BOWSTRING RELEASE DEVICE

John William Scott, 587 Adams Ridge Rd., Clay City, Ky. 40312

Continuation of Ser. No. 486,697, Jun. 7, 1995, Pat. No. 5,596,977, which is a continuation of Ser. No. 191,385, Jan. 31, 1994, Pat. No. 5,448,983. This application Jan. 13, 1997, Ser. No. 781,297
Int. Cl.^{6} F41B *5/18*

U.S. Cl. 124—35.2 14 Claims



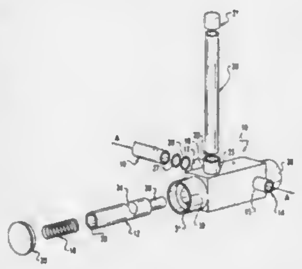
1. An adjustable bowstring release device comprising:
a body;
a bowstring engaging and releasing device supported on and by said body;
a control for effecting the release of a bowstring engaged with at least a portion of said bowstring engaging and releasing device;
a wrist strap engageable with a wrist of a user;
an interconnection between said body and said strap;
said interconnection comprising a pair of members disposable into a nested relation with each other, and each member having a longitudinal axis, said axis of each member being coincident;
each said member having a hole formed therein and extending transverse to said axis, said hole in each said member alignable with said hole in the other of said members;
a force resisting member extending through said holes to retain said members in said nested relation under loading; one of said interconnection members attached to said body and said other of said interconnection members connected to said wrist strap.

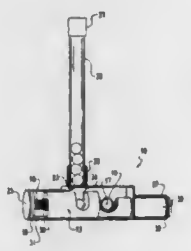
5,850,826
PAINT BALL BLOW GUN DEVICE

Christopher L. Guthrie, 4716 Otisco Rd., Henryville, Ind. 47126

Filed Sep. 5, 1996, Ser. No. 708,532
Int. Cl.^{6} F41B *1/00*

U.S. Cl. 124—62 16 Claims





1. An assembly for launching spherical projectiles comprising:
a plastic or wooden housing member with a loading aperture for receiving projectiles, a muzzle aperture for releasing projectiles and an air input aperture for a supply of air, said housing member defining an interior channel;
a barrel mount engaged with said muzzle aperture of said housing member;
a mouthpiece mount engaged with said air input aperture of said housing member; and
a loading chamber member having a breech channel;
wherein said loading chamber member is slidably received in the interior channel of said housing member; and wherein said loading chamber is movable from a first position to a second position within said housing member, and is biased to its first position;
wherein when said loading chamber is in its first position said breech channel is aligned with said muzzle aperture and said air input aperture to define a projectile launching pathway and wherein when said loading chamber is in its second position said breech channel is aligned with said loading aperture to define a projectile loading pathway.

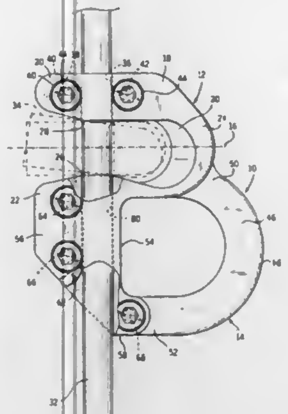
5,850,827
RECEIVER FOR ARROW NOCK AND RELEASE AID

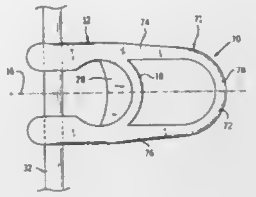
Paul L. Peck, Fond du Lac, Wis., assignor to Tru-Fire Corporation, North Fond du Lac, Wis.

Filed Mar. 26, 1997, Ser. No. 824,504
Int. Cl.^{6} F41B *5/18*

U.S. Cl. 124—91 54 Claims

1. A bow string receiver for receiving an arrow nock and for grasping by a release aid, wherein the receiver is attachable to a bow string, said receiver comprising:
a. A first frame for receiving the arrow nock, said first frame disposed to at least partially surround said arrow nock; and





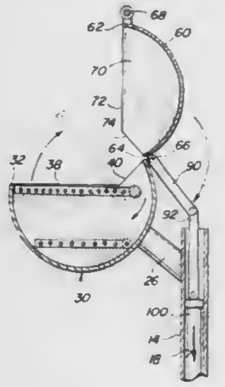
b. a second frame, separate from said first frame, said second frame for attaching the release aid.

5,850,828
GRILL APPARATUS

Thomas J. Valentino, 6809 N. 56th Ave., Glendale, Ariz. 85301

Filed Mar. 27, 1998, Ser. No. 49,209
Int. Cl.^{6} A47J *37/00*

U.S. Cl. 126—25 R 15 Claims



1. Grill apparatus comprising in combination:
a base;
a cylinder secured to the base and extending upwardly therefrom;
a bore in the cylinder;
a support bracket secured to the cylinder and extending outwardly therefrom;
a firebox secured to the support bracket remote from the cylinder;
a lid pivotally secured to the firebox;
counterweight means secured to the lid, including a counterweight movable in the bore in the cylinder and bushings for supporting the counterweight as it moves vertically in response to the pivoting of the lid; and
grill means in the firebox for receiving food to be cooked.

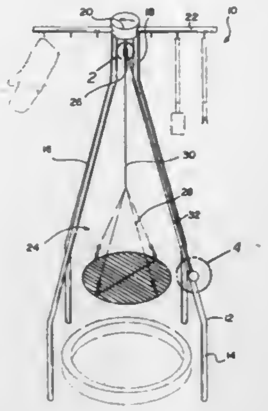
5,850,829
ADJUSTABLE GRILL STAND

Diana Taylor, and Bob Taylor, both of 307 Short Columbia St., Monroe, Wash. 98272

Filed Feb. 5, 1998, Ser. No. 19,169
Int. Cl.^{6} A47J *37/00;* F24B *3/00*

U.S. Cl. 126—30 5 Claims

1. A camping fire cooking and utility stand comprising, in combination:



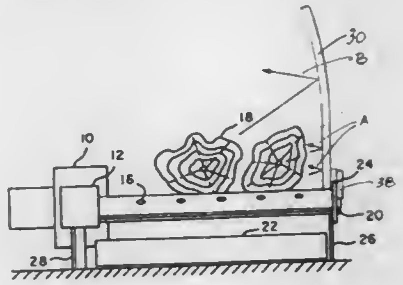
four legs each having a lower extent which is vertically oriented and has a first length, an intermediate extent which is slanted upwardly and inwardly and has a second length that is three times the first length, and an upper extent which is vertically oriented and has a third length half the first length, each of the legs having a top end coupled to a member such that the legs are spaced with respect to each other and further rested on a ground surface about a camping fire, wherein each extent of the legs is linear;
a horizontally oriented cross bar mounted at a central extent thereof to the member and extending from diametrically opposed points, the cross bar having a plurality of hangers spacedly coupled to a bottom thereof for hanging various utensils therefrom, wherein the cross bar has a length equal to a distance between the bottom extents of the legs; and
a grill assembly including a pulley with a clevis and an eyelet mounted to a hook at a bottom of the member, a circular planar grill having a plurality of secondary chains each having a first end coupled about a periphery of the grill and a second end coupled together, a primary cable having a first end coupled to the seconds end of the secondary chains and a second end with a sphere mounted thereon, and a plurality of hooks spacedly coupled along the intermediate extent of one of the legs, whereby the primary cable is situated about the pulley and the sphere is situated beneath one of the hooks for maintaining the grill at a predetermined elevation, wherein a diameter of the sphere is greater than that of the hooks.

5,850,830
HEAT REFLECTOR FOR USE WITH FIREPLACE GRATE FOR HIGH TEMPERATURE COMBUSTION

Richard D. Smith, 2415 S. Court, Palo Alto, Calif. 94301

Filed Jan. 7, 1997, Ser. No. 779,702
Int. Cl.^{6} F24B *1/195*

U.S. Cl. 126—552 8 Claims



1. The combination of a heat reflector and a fireplace grate having improved combustion efficiency, said grate having a combustion zone directly thereabove when fuel is burned thereon in a fireplace, wherein said grate comprises
a plurality of substantially parallel, hollow first support members defining a first generally planar surface for supporting the

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lower surface of solid fuel, said combustion zone being located in the region above said first planar surface,

a plurality of substantially parallel second support members defining a second generally planar support surface located below said first surface, said second support members being located between alternate ones of said first support members and defining, in combination with said first support members, a plurality of troughs for supporting glowing coals,

a multiplicity of orifices extending through each of said first support members, each orifice being directed toward said first planar surface for creating a zone of turbulence in one of said troughs beneath the lower surface of the solid fuel, and

a blower in communication with said first support members for moving air to and through said orifices,

and wherein said heat reflector comprises a first portion for absorbing radiant energy from the combustion zone and reradiating thermal energy back into the combustion zone, and a second portion for absorbing radiant energy from the combustion zone and reradiating thermal energy over the fireplace grate and out of the fireplace.

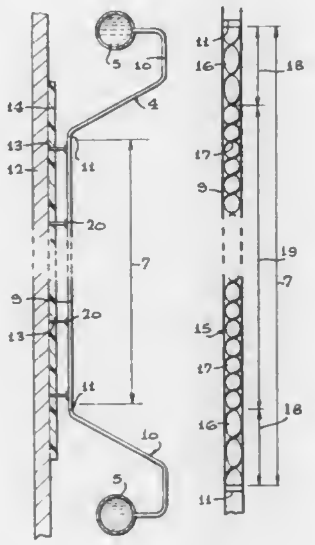
5,850,831
LOOSE-TIGHT-LOOSE TWIST, TWISTED-TAPE INSERT SOLAR CENTRAL RECEIVER

Myroslaw Marko, Westlake Village, Calif., assignor to Boeing North American, Inc., Seal Beach, Calif.

Filed Sep. 27, 1996, Ser. No. 719,522

Int. Cl.^{6} F24J *2/30*

U.S. Cl. 126—645 **3 Claims**



1. A solar central receiver comprising:

a straight tube, the tube having two ends, each end a having a butt welded end bend, the tube having a molten salt therein for transporting heat,

a staged twist, twisted-tape inside the straight tube such that the molten salt in the tube swirls at different rates in the tube for absorbing heat at rates corresponding to a peak thermal strain in the tube for each twist stage,

a butt weld drop through at each end of the straight tube to restrict the axial movement of the staged twist, twisted tape in the tube without inhibiting the flow of the molten salt.

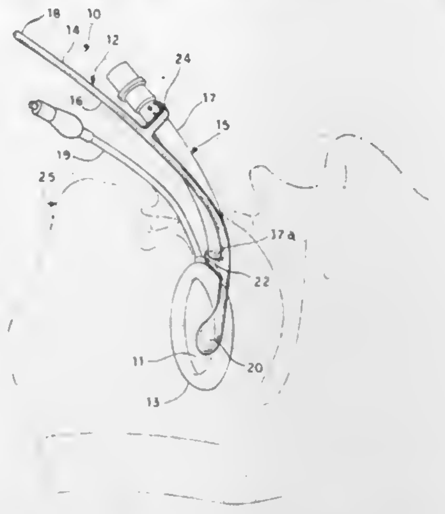
5,850,832
LARYNGEAL MASK AIRWAY INSERTION GUIDE

Kyo Y. Chu, P.O. Box 690099, Stockton, Calif. 95269

Filed Jun. 23, 1997, Ser. No. 880,798

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—200.26 **9 Claims**



1. An insertion guide device for use in the insertion of a laryngeal mask airway (LMA) into the throat of a patient, wherein a LMA comprises a respiratory tube, a tube-connecting portion and a mask body, said insertion guide comprising:

a unitary, elongated member, having a distal surface and a proximate surface defining a top end portion, a bottom end portion, and a curved portion, whereby said insertion guide conforms to the length and the contour of the respiratory tube, the tube-connecting portion and the mask body in order to removably engage the LMA upon its insertion into a patient's throat, wherein said elongated member includes

first member means for removably engaging the tube-connecting portion, said first means extending from said proximate surface;

second means for removably engaging the respiratory tube, said second means extending from said distal surface; and,

third means for removably engaging the mask body integrally extending from said bottom end portion.

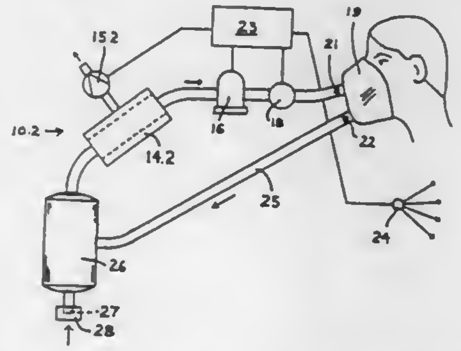
5,850,833
APPARATUS FOR HYPOXIC TRAINING AND THERAPY

Igor K. Kotliar, P.O. Box 2021, New York, N.Y. 10159-2021

Filed May 22, 1995, Ser. No. 445,677

Int. Cl.^{6} A61G *10/00*

U.S. Cl. 128—202.12 **21 Claims**



1. An apparatus for supplying a low oxygen gas mixture to a user, said apparatus comprising

an oxygen reducing apparatus communicating with the ambient atmosphere and receiving air therefrom, and an outlet supplying air having an oxygen concentration lower than that of the ambient atmosphere; and

a breathing device having an inlet structure communicating with the outlet of said oxygen reducing apparatus and supplying said reduced oxygen air to said user to breathe;

said oxygen reducing apparatus including

a separating unit defining therein an interior space, and having therein a membrane structure separating said interior space into a retentate space and a permeate space;

said separating unit having a gas inlet receiving air from the ambient atmosphere and communicating with said retentate space, a retentate outlet communicating with said retentate space and with said outlet of said oxygen reducing apparatus, and a permeate outlet communicating with said permeate space; and

a vacuum pump device connected with said permeate outlet and drawing gas from said permeate space and causing separation of gas entering the retentate space, said vacuum pump device drawing said gas so that said separating unit yields at said retentate outlet an air mixture having an oxygen content of about 7 to 17%; and

said breathing device further having an outlet structure transmitting air exhaled by the user; and

air transmitting means receiving said exhaled air and transmitting the exhaled air to the gas inlet of the separating unit so that said exhaled air is separated in the separating unit together with air received from the external environment.

5,850,834
RESPIRATION AIDING DEVICE

Norio Yoshida, and Hiroshi Kimura, both of Ichikawa, Japan, assignors to Keytron Co., Ltd., Tokyo, Japan

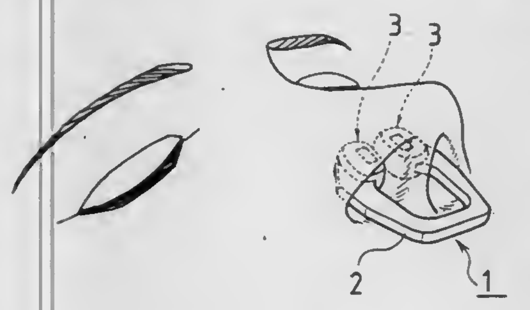
PCT No. PCT/JP96/01877, § 371 Date Jul. 16, 1997, § 102(e) Date Jul. 16, 1997, PCT Pub. No. WO97/02063, PCT Pub. Date Jan. 23, 1997

PCT Filed Jul. 5, 1996, Ser. No. 793,944

Claims priority, application Japan, Jul. 5, 1995, 7-007778

Int. Cl.^{6} A61M *15/08*

U.S. Cl. 128—204.12 **4 Claims**



1. A respiration aiding device, comprising:

a link portion formed into a substantial U-shape and having elasticity and both ends thereof adapted to be inserted into right and left nares;

a pair of nasal septum presser portions formed at the both ends of said link portion and comprising substantially flat surfaces adapted to press against opposing sides of a nasal septum; and

a pair of magnets mounted at opposing positions of said pair of nasal septum presser portions so that a north pole of one magnet and a south pole of the other magnet are disposed in confronting relation with each other,

wherein the attracting power due to magnetic forces of said pair of opposing magnets are set so as to retain said nasal septum presser portions on both sides of a nasal septum.

5,850,835
RESPIRATOR SYSTEM

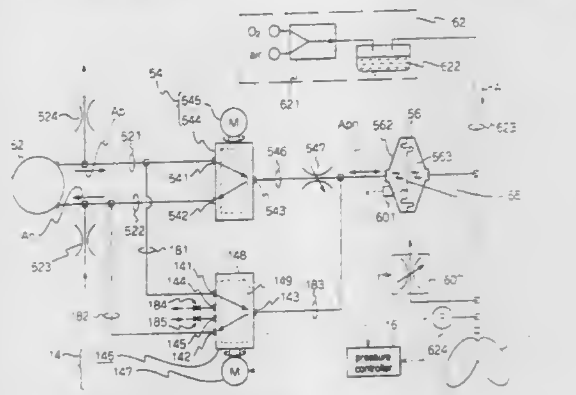
Toshihisa Takaki; Mikio Yasukawa, both of Shizuoka; Hiroshi Takabayashi, Tokyo; Yasuhito Sugiura, Shizuoka; Katuyoshi Suzuki, Shizuoka; Masahiro Kamada, Shizuoka; Yoshitugu Yamada, 1-37-14, Daizawa, Setagaya-ku, Tokyo, and Kazufuku Nitta, Saitama, all of Japan, assignors to Suzuki Motor Corporation, Shizuoka; Metran Medical Instrument Mfg. Co. Ltd., Tokyo; Japan Science and Technology Corporation, Saitama, and Yoshitugu Yamada, Tokyo, all of Japan

Filed Mar. 27, 1997, Ser. No. 835,035

Claims priority, application Japan, Mar. 28, 1996, 8-099428

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—204.18 **5 Claims**



1. A respirator system comprising:

a blower unit for supplying and vacuuming air,

a control valve for selecting a positive pressure and a negative pressure from the blower unit to send a vibrating air pressure,

a diaphragm for vibrating with the vibrating air pressure to send respiration gas to a patient,

a hollow housing partitioned by the diaphragm into a first pressure chamber cooperating with the vibrating air pressure and a second pressure chamber cooperating with the respiration gas,

a sensor for sensing the position of the diaphragm in the hollow housing,

a pressure regulator for increasing or decreasing the positive pressure and the negative pressure; and

a pressure controller for driving and controlling the pressure regulator based on data on the diaphragm position outputted from the sensor.

5,850,836
MORPHOMETRIC X-RAY ABSORPTIOMETRY (MXA)

Peter Steiger, Framingham, and Howard P. Weiss, Newton, both of Mass., assignors to Hologic, Inc., Waltham, Mass.

Continuation of Ser. No. 176,418, Jan. 3, 1998, Pat. No. 5,483,960. This application Sep. 22, 1995, Ser. No. 532,391

The portion of the term of this patent subsequent to Jan. 3, 2014, has been disclaimed.

Int. Cl.^{6} A61B *6/00*

U.S. Cl. 128—653.1 **15 Claims**

1. A method for vertebral morphometry comprising the steps of:

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obtaining paired AP (anterior/posterior or posterior/anterior) centerline and lateral morphometry images of a patient covering at least the T4 (thoracic **4**) through L4 (lumbar **4**) vertebrae by using radiation to carry out an AP scan and a lateral scan without moving the patient between the scans, wherein said AP scan is carried out first to produce an AP image which is analyzed to determine the centerline of the patient's vertebral column and said centerline is used to maintain a constant distance between the centerline and an origin of the radiation while carrying out the lateral scan;

displaying the paired AP image and the lateral image side-by-side together with a pair of spatially synchronized cursors pointing to anatomically corresponding current locations on both images to help identify vertebrae and visualize spatial relationships of anatomy and pathology between said AP and lateral images which are displayed side-by-side;

designating six points for each vertebra with said cursor;

calculating posterior, mid- and anterior vertebral heights and vertebral wedge indices with the use of points designated in the designating step; and

displaying calculated heights and indices characterizing the patient.

5,850,837
DEVICE FOR CORRECTING AN INGROWN NAIL

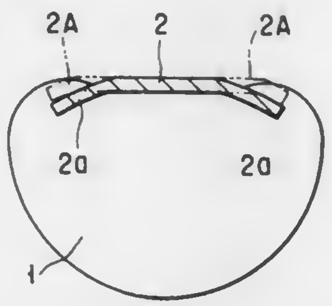
Kaisuke Shiroyama, Zama; Tatsuhiko Ueki, Yokohama, and George Murota, Tokyo, all of Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, and Furukawa Techno Material Co., Ltd., Hiratsuka, both of Japan

Filed Mar. 18, 1997, Ser. No. 819,911

Claims priority, application Japan, Mar. 21, 1996, 8-064747; Mar. 21, 1996, 8-064748

Int. Cl.⁶ A61F *13/06*

U.S. Cl. 128—892 **4 Claims**



1. A device for correcting an ingrown nail, which is adapted to be installed onto a nail of a human toe to correct the ingrown nail, comprising a superelastic tape consisting essentially of nickel/titanium alloy which is shaped-memory-treated to memorize a first shape, and which is deformed to a second shape different from the first shape so as to be installed onto a surface of the nail of the human toe in said second shape.

5,850,838
FOLDING SMOKING PIPE WITH COMBINED MOUTHPIECE AND BOWL COVER

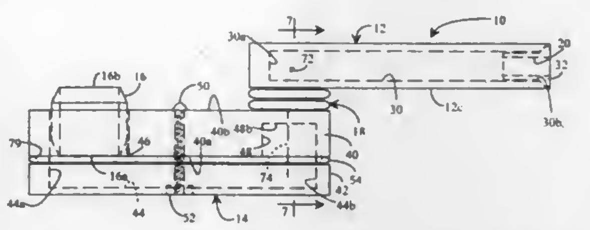
Erik O. Sigrist, 19275 SW. Anderson, Aloha, Oreg. 97007

Filed Jul. 14, 1997, Ser. No. 892,686

Int. Cl.⁶ A24F *3/00*

U.S. Cl. 131—180 **5 Claims**

1. A smoking pipe comprising:
- a bowl;
- a first block defining a first conduit therethrough, said first block carrying said bowl in fluid communication with a distal end of said first conduit;
- a mouthpiece;



- a second block defining a second conduit, said second block carrying said mouthpiece in fluid communication with a distal end of said second conduit, said second block including a downward facing surface in face-to-face relation to said first block; and
- a rotary coupling establishing fluid communication between a proximal end of said first conduit and a proximal end of said second conduit and allowing one of said first and second blocks to rotate in relation to the other one of said first and second blocks, said first and second blocks being positionable by relative rotation to place said downward facing surface over said bowl to close a top opening of said bowl.

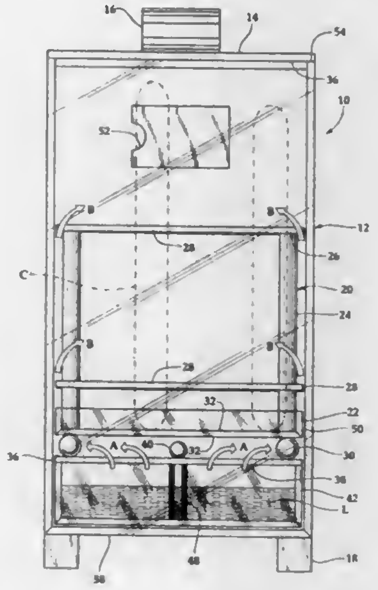
5,850,839
CIGAR AROMATIZING DEVICE

Larry W. Adaml, 2385 Fiesta Dr., Sarasota, Fla. 34231

Filed May 6, 1997, Ser. No. 851,747

Int. Cl.⁶ A24B *15/00;15/30;* **A24F** *11/00;47/00*

U.S. Cl. 131—274 **5 Claims**



1. A cigar aromatizing device comprising:
- an enclosure having a bottom surface and a removable lid for covering an opening of said enclosure;
- a liquid tray positionable through said opening into said enclosure adjacent said bottom surface, said liquid tray having an open upper end thereof and a sealed bottom for holding and facilitating evaporation of a quantity of vaporizable aromatic liquid therein;
- a cigar suspension rack positionable through said opening into said enclosure above said liquid tray, said rack configured to removably support a plurality of cigars each in spaced apart relation one cigar to another wherein each of said cigars may be supportively inserted into, and removed from, said rack and whereby, when the aromatic liquid is placed in said liquid tray and allowed to vaporize at substantially ambient conditions within said enclosure with said lid covering said opening, each cigar in said rack becomes aromatically flavored by vapors produced from the aromatic liquid.

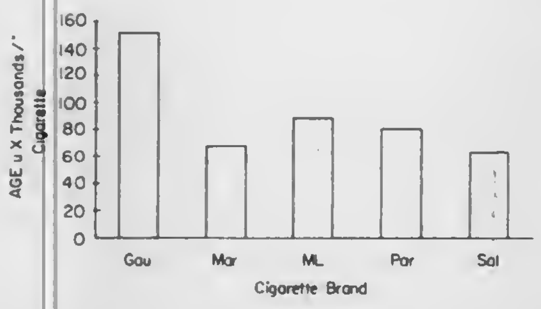
5,850,840
METHODS FOR MEASUREMENT AND TREATMENT PREDICATED ON THE PRESENCE OF ADVANCED GLYCOSYLATION ENDPRODUCTS IN TOBACCO AND ITS COMBUSTION BYPRODUCTS

Carla J. Cerami, New York, N.Y.; Richard J. Bucala, Cos Cob, Conn.; Helen Vlassara; Anthony Cerami, both of Shelter Island, N.Y., and Henry W. Founds, Mendham, N.J., assignors to Alteon Inc., Ramsey, N.J., and The Picower Institute for Medical Research, Manhasset, N.Y.

Continuation-in-part of Ser. No. 617,350, Mar. 18, 1996, abandoned, and a continuation-in-part of Ser. No. 617,349, Mar. 18, 1996, which is a continuation-in-part of Ser. No. 613,960, Mar. 8, 1996, abandoned, which is a continuation-in-part of Ser. No. 613,234, Mar. 8, 1996. This application Dec. 23, 1996, Ser. No. 772,335

Int. Cl.⁶ A24F *1/10*

U.S. Cl. 131—330 **4 Claims**



1. A filter for trapping and removing advanced glycosylation endproducts (AGEs) or other AGE-precedent glycotoxins present in tobacco smoke passed therethrough comprising a porous material containing a quantity of an agent uniformly disposed therein for contact with said smoke, wherein said agent is capable of reacting with glycosylation products to counteract an effect selected from the group consisting of AGE formation, deleterious activity of said AGEs, and the combination thereof.

5,850,841
CLEANING APPARATUS OF SEMICONDUCTOR DEVICE

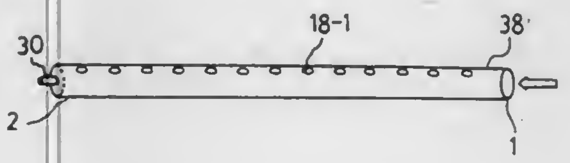
Suk-Bin Han, and Yun-Jun Huh, both of Chungcheongbuk-Do, Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Aug. 13, 1997, Ser. No. 910,883

Claims priority, application Rep. of Korea, Aug. 16, 1996, 33875/1996

Int. Cl.⁶ B05B *1/14;* **B08B** *3/02;3/04*

U.S. Cl. 134—86 **2 Claims**



1. A cleaning apparatus of a semiconductor device which comprises a bath where wafers are cleaned, and a cleaning solution spraying nozzle mounted at the bottom of the bath for spraying a cleaning solution through multiple holes of a specific size which are formed at the same interval on its surface, one side of the nozzle being connected to a cleaning solution supply tube and the other side of the nozzle being sealed, wherein the nozzle has a releasing hole at its sealed end side.

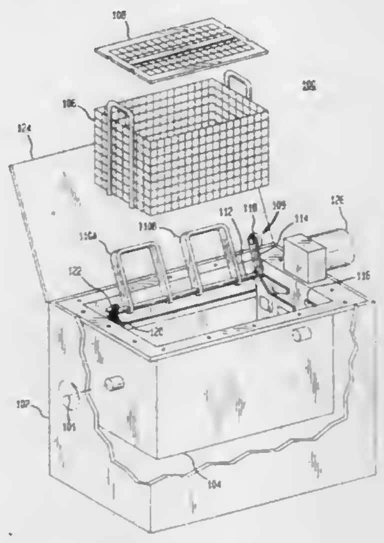
5,850,842
CAM LATCHING MECHANISM FOR A PARTS WASHER

Thomas Michael Sweeney, Baltimore; Randal Monroe Brown, Hanover, both of Md.; Bryan Engle Patterson, Delta, Pa.; Kenneth John Breece, Street, and John Paul Brubaker, Jr., Catonsville, both of Md., assignors to Better Engineering Mfg., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 855,608, May 13, 1997, abandoned. This application Jun. 19, 1997, Ser. No. 878,138

Int. Cl.⁶ B08B *3/04*

U.S. Cl. 134—140 **24 Claims**



1. A tumbling-type parts washer comprising:
- a housing;
- a rotor assembly disposed within said housing, said rotor assembly being configured to receive for tumbling a basket for holding parts to be cleaned;
- a cam plate mounted on an inner wall of said housing adjacent said rotor assembly and having an inner diameter that defines a substantially circular cam surface, said inner diameter accessible through an open portion in said cam plate; and
- a torsion bar assembly mounted on said rotor assembly for rotation therewith, wherein cooperation between said torsion bar assembly and said inner diameter cam surface of said cam plate secures the parts in the basket during at least a portion of rotation of said rotor assembly from a loading/unloading position.

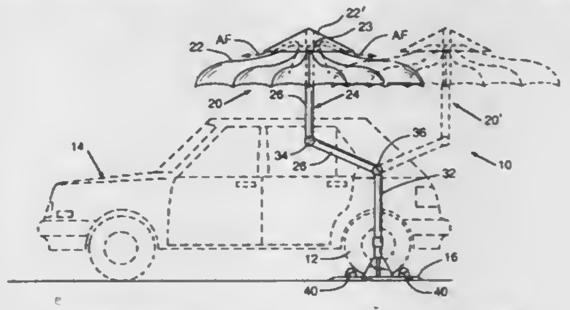
5,850,843
UMBRELLA SUPPORTED BY VEHICLE WHEEL

Monty Mahood, 235 Follett Run Rd., and Fred A. Beardsley, 889 Hatch Run Rd., both of Warren, Pa. 16365

Filed Jun. 18, 1997, Ser. No. 878,059

Int. Cl.⁶ E04H *15/06*

U.S. Cl. 135—88.06 **18 Claims**



1. An apparatus supported by a vehicle wheel comprising
- a base plate positionable beneath said vehicle wheel;
- an umbrella mounted to said base plate;

said umbrella includes a support shaft having a first end mounted to said base plate and a second end connected to a flexible cover for providing shelter;

said support shaft comprising a lower section an upper section, and a center section between said lower and upper sections, said lower section pivotally connected to a first end of said center section, said upper section pivotally connected to a second end of said center section;

said lower section is pivotally connected to said center section by a first pivot means and said upper section is pivotally connected to said center section by a second pivot means;

said first and second pivot means including a pivot joint having opposed first and second bearing surfaces, said first and second bearing surfaces having means for locking said first and second pivot joints in a set position;

said first pivot means including means for removably connecting said lower section to said center section and said second pivot means includes means for removably connecting said upper section to said center section;

said lower section threadedly connected to said first pivot means;

said first end of said center section threadedly connected to said first pivot means;

said second end of said center section threadedly connected to said second pivot means; and

said upper section threadedly connected to said second pivot means, whereby said upper, center and lower sections can be disassembled from said first and second pivot means, respectively, in order to store or transport said apparatus.

5,850,844

PRESSURE REDUCTION VALVE

Bjørn Scholz Iversen, Kongsberg, Norway, assignor to Kongsberg Automotive ASA, Kongsberg, Norway

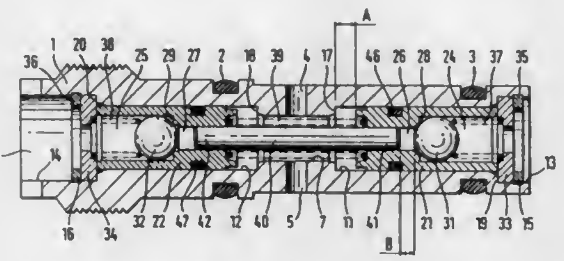
PCT No. PCT/NO96/00023, § 371 Date Nov. 5, 1997, § 102(e) Date Nov. 5, 1997, PCT Pub. No. WO96/23996, PCT Pub. Date Aug. 8, 1996

PCT Filed Feb. 1, 1996, Ser. No. 875,088

Claims priority, application Norway, Feb. 3, 1995, 95 0409

Int. Cl.^{6} G05D *11/00*

U.S. Cl. 137—111 **3 Claims**



1. A pressure reduction valve for reducing the pressure in the circuits of double-acting, closed hydraulic systems with a slave activator and a master activator, when the master activator is unattended, comprising a valve housing (**1**) which contains a first seat (**28**) which defines two spaces (**24**,**26**), wherein the first space (**24**) is arranged to communicate with the first circuit and the second space (**26**) is arranged to communicate with a reservoir for the hydraulic fluid, in the first space (**24**) there is provided a first valve body (**31**) and a first spring (**37**), one end of which abuts against a section of the housing (**1**) and the second end of which abuts against the valve body (**31**), and the valve body (**31**) is arranged to be moved in one direction to sealingly abut against the seat (**28**) under the influence of the force which is exerted by the pressure of the fluid in the first circuit, and the force of the first spring (**37**), and in an opposite direction under the influence of an opening body section (**41**) which in turn is influenced by the pressure of the fluid in the second circuit,

characterized in that the first seat (**28**) constitutes a section of a slide valve (**21**) which is sealingly provided in a boring (**6**) in the housing (**1**), and which is arranged to slide in the valve body's direction of movement, and to be influenced by the first spring (**37**) via the valve body (**31**) when it abuts against its seat, and that the above-mentioned components in the bousing (**1**) of the reduction valve constitute a first valve device, and in the housing (**1**) there is provided a second, similar valve device, whose valve body (**32**) is arranged to be moved in one direction to abut against its seat (**29**) under the influence of the force which is exerted by the pressure of the fluid of the second hydraulic circuit and the force which is exerted by a second spring (**38**), and in an opposite direction under the influence of an opening body section (**42**) which in turn is influenced by the pressure of the fluid in the first circuit, the valve devices' opening body sections (**41**,**42**) being interconnected, and the slide valves (**21**,**22**) are influenced by a spring device (**39**) which attempts to move the slide valves (**21**,**22**) in the respective valve bodies' (**31**,**32**) opening directions in the housing (**1**).

5,850,845

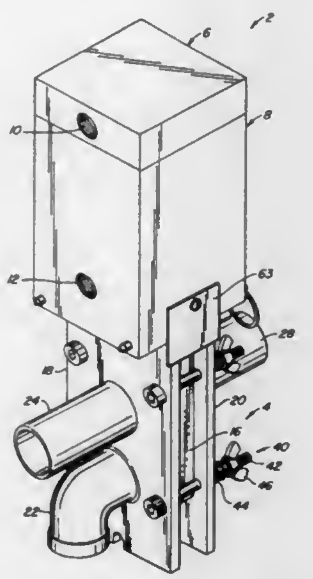
BACKFLUSH VALVE FOR MILKING MACHINE SYSTEM

Lawrence Pereira, and Richard Daniel Pereira, both of Turlock, Calif., assignors to Pereira Construction, Inc., Hilmar, Calif.

Filed Oct. 17, 1996, Ser. No. 733,359

Int. Cl.^{6} A01J *7/00;* B08B *9/02*

U.S. Cl. 157—259 **29 Claims**



1. An improved milking system backflush valve of the type comprising a body, a cleaning solution inlet carried by the body, the body comprising inlet and outlet plates and a slide pad mounted between the inlet plate and the outlet plate, the inlet plate having a milk inlet and the outlet plate having a milk outlet, the slide pad defining a fluid path, a slide driver operably coupled to the slide pad to selectively move the slide pad between a milking position, at which the slide pad fluid path fluidly couples the milk inlet to the milk outlet, and a backflush position, at which the outlet is blocked off and the slide pad fluid path fluidly couples the milk inlet to the cleaning solution inlet to backflush the milk inlet and upstream of the inlet to prevent contamination therein, the improvement comprising:

the slide pad and the inlet and outlet plates comprising contacting sliding surfaces, said sliding surfaces of said pad and said plates each having surface roughness of no more than about 16 RMS; and

a clamping element biasing the plates against the pad with a desired force;

whereby the sliding surfaces and the desired force create a fluid seal between the slide pad and the plates.

5,850,846

HANDLE ASSEMBLY FOR SINGLE-CONTROL VALVE

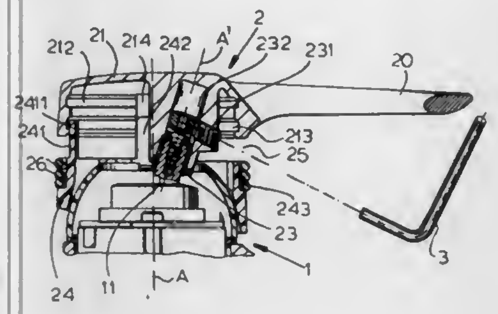
Fred Hannemann, Herzberg, and Roland Weiss, Iserlohn, both of Germany, assignors to Friedrich Grohe AG, Hemer, Germany

Filed Feb. 11, 1997, Ser. No. 798,621

Claims priority, application Germany, Mar. 6, 1996, 196 08 594.2

Int. Cl.^{6} F16K *11/02*

U.S. Cl. 137—315 **11 Claims**



1. In combination

a single-control valve having

a valve housing and

a stem projecting along a stem axis from the housing and displaceable relative to the housing to control flow through the valve; and

a handle assembly comprising:

a handle body having

an actuating arm,

a cup-shaped part spacedly surrounding the stem and projecting toward the valve housing, and

a mounting collar fittable snugly over the stem;

an annular cover skirt;

interengaging formations on the skirt and body supporting the skirt on the body for displacement of the skirt relative to the body between an access position forming with the body an access hole and a use position closely snugly juxtaposed with the body; and

means including a fastener engaged in the collar with the stem and accessible through the hole by a tool only in the access position of the skirt, the fastener being hidden by the skirt in the use position.

5,850,847

Patent Not Issued For This Number

5,850,848

FLOAT VALVE

Daoud A. Jandal, La Crosse; Jeffrey S. Seewald, Onalaska, both of Wis.; Ralph C. Mullally, and William J. Plzak, both of La Crescent, Minn., assignors to Gas Research Institute, Chicago, Ill.

Filed Jun. 15, 1995, Ser. No. 490,595

Int. Cl.^{6} F16K *31/20;33/00*

U.S. Cl. 137—422 **9 Claims**

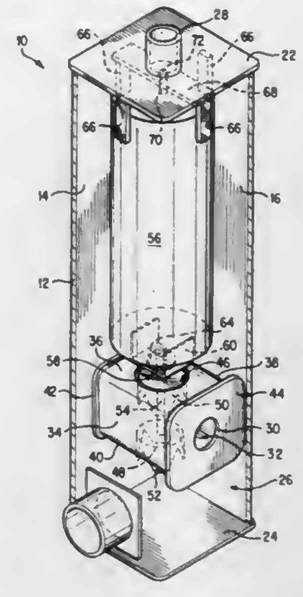
1. A valve comprising:

a valve body having an inlet, a first outlet and a second outlet;

a first valve plug and a second valve plug adapted to seal the first and second outlets, the valve plugs being mounted on a valve stem;

a float disposed within the valve body and guided therein by guide alignment means; and

a freely moveable coupling member for connecting the float to the valve stem movably mounted with respect to the valve stem and being contiguous with at least one of said valve



plugs in all positions of said valve plus, said freely moveable coupling member is constructed and arranged to permit movement of the float valve within a predetermined limit when said float engages at least one end of said float guide alignment means in at least one of said valve positions.

5,850,849

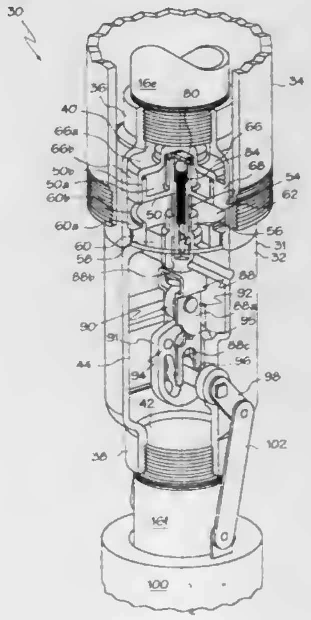
STORAGE TANK SHUTOFF VALVE WITH DOUBLE CAM ASSEMBLY

Chester Wood, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 182,219, Jan. 14, 1994, Pat. No. 5,472,012. This application Jun. 7, 1995, Ser. No. 486,813

Int. Cl.^{6} F16K *31/26;33/00*

U.S. Cl. 137—446 **21 Claims**



21. An assembly adapted for cutting off the flow of a fluid into a storage tank and the like in response to a first predetermined fluid level in the tank, comprising:

a) a housing having an inlet and an outlet and an internal flow passage therebetween, said housing being adapted for placement in a storage tank;

b) a valve assembly disposed in said housing, said valve assembly including a shutoff valve movable within said housing

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between a first open position permitting the flow of fluid through said internal flow passage and a second closed position substantially blocking fluid flow through said internal passage;

c) a shield disposed within said housing in the internal flow passage between the inlet and the shutoff valve for at least partially diverting fluid flow around the shutoff valve and at least partially shielding the shutoff valve from direct fluid impingement from fluid entering the internal flow passage through the housing inlet;

d) a guide associated with said housing for guiding movement of the shutoff valve in said housing; and

e) an actuating assembly, said actuating assembly being interconnected to said valve assembly for moving said shutoff valve between said open and closed positions as a function of a fluid level in a storage tank, said actuating assembly including a cam assembly, said cam assembly having a first portion and a second portion, a first cam follower surface and a second cam follower surface, the first being operative to contact the the first cam follower surface to force said shutoff valve toward said closed position as a function of said first predetermined fluid level in said storage tank, and said second portion being operative to contact the second cam follower surface to force said shutoff valve toward said open position as a function of a second predetermined fluid in said storage tank.

5,850,850

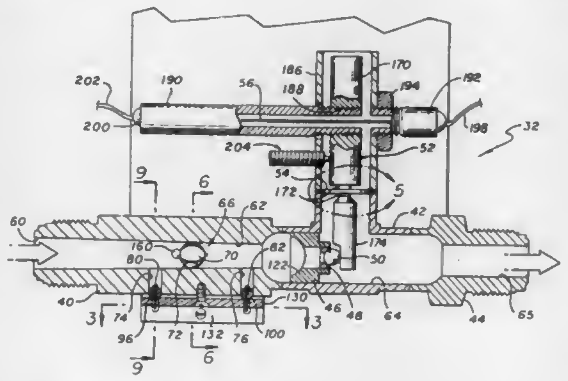
FLOW CONTROLLER, PARTS OF FLOW CONTROLLER, AND RELATED METHOD

Daniel T. Mudd, Long Beach, Calif., assignor to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 365,861, Dec. 29, 1994, Pat. No. 5,660,207. This application Jul. 23, 1996, Ser. No. 685,260

Int. Cl.^{6} G05D *7/06;* **F16K** *41/10*

U.S. Cl. 137—486 **12 Claims**



1. A fluid flow controller, comprising:

input pipe structure defining an inlet for receiving a fluid having a flow and defining a fluid flow opening through said structure;

a sensor to provide measurements corresponding to said fluid flow;

an actuator to adjust said fluid flow in response to said sensor;

intermediate pipe structure for receiving said fluid downstream from said input pipe structure and defining a fluid flow opening through said intermediate pipe structure;

output pipe structure for receiving said fluid downstream from said intermediate pipe structure and defining a fluid flow opening through said output pipe structure;

a valve seat mounted in said intermediate pipe structure;

a valve gate member associated with said valve seat;

a gate-member controller including,

- a controller rod structure having a gate-member control portion,
- a mounting portion and an actuation portion, and

a mounting structure for said controller rod structure including a diaphragm having a first face for the gate-member control portion side of said diaphragm and a second face for the actuation portion side of said diaphragm, said controller rod structure substantially pivotally connected to said diaphragm along said controller rod structure mounting portion, said actuation and gate-member control portions of said controller rod structure movable to multiple alternative positions in opposing directions with reference to the position of said mounting structure in substantially pivotal fashion in response to said actuator to adjust said fluid flow to multiple alternative flow rates, with said diaphragm carrying substantially the full structurally-supported weight of said controller rod structure and substantially unsupported by fixed structure along said second face in the vicinity of said substantially pivotal connection.

5,850,851

CHECK VALVE AND FUEL TANK UTILIZING THE SAME

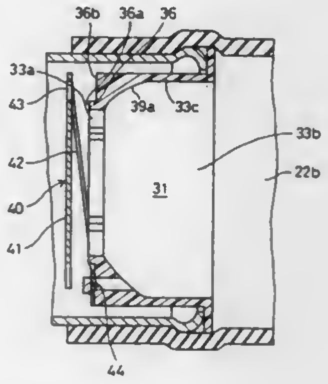
Natsushi Miura, Aichi-ken; Hiroyuki Hagano, Inazawa, and Masayuki Nakagawa, Iwakura, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Mar. 18, 1996, Ser. No. 617,098

Claims priority, application Japan, Mar. 28, 1995, 7-096116

Int. Cl.^{6} F16K *21/04*

U.S. Cl. 137—583 **18 Claims**



1. A check valve comprising:

an axially extending passage-defining member having a first end and an internal hollow tubular passage extending therethrough;

an annular flange extending inwardly in a radial direction from said first end and defining a fluid flow port;

a seat element extending axially upward from said annular flange; and

a valve plate positioned over said fluid flow port, said valve plate comprising a leaf element and an integrally formed arm element, said leaf element having a substantially disc shape and being constructed and arranged to alternate between an open-valve position, in which said fluid flow port is open and a closed-valve position where fluid flow is restricted,

said arm element having a base element fixed to said annular flange and having two annular arm parts each extending from said base element at least partially around a periphery of said leaf element, and each terminating at a distal end connected to said leaf element,

wherein when said leaf element is biased in the open-valve position, said arm element moves relative to the base element to define a space between said leaf element and said seat element, thereby permitting fluid to flow past through said fluid flow port, and when said bias is removed, said arm element presses said leaf element toward said seat element to close said fluid flow port.

5,850,852

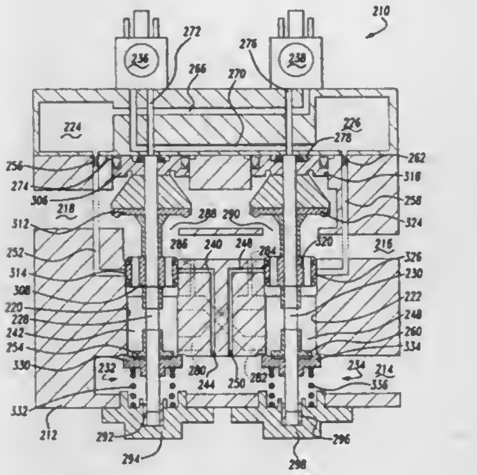
CROSSFLOW WITH CROSSMIRROR AND LOCK OUT CAPABILITY VALVE

Neil E. Russell, Bloomfield Hills, Mich.; Logan H. Mathis, and C. Brian Wolfe, both of Lavonia, Ga., assignors to Ross Operating Valve Company, Troy, Mich.

Continuation-in-part of Ser. No. 770,878, Dec. 20, 1996. This application Mar. 6, 1997, Ser. No. 812,689

Int. Cl.^{6} F15B *13/043;20/00*

U.S. Cl. 137—596.16 **18 Claims**



1. A control valve system comprising:

a housing defining an inlet, an outlet and an exhaust;

a first passage in said housing extending between said inlet and said outlet;

a second passage extending between said outlet and said exhaust;

a first plurality of valves disposed within said first passage, each of said first plurality of valves being movable between a deactuated position where said first passage is closed and an actuated position where said first passage is open;

a second plurality of valves disposed within said second passage, each of said second plurality of valves being movable between a deactuated position where said second passage is open and an actuated position where said second passage is closed; and

means for prohibiting movement of said first and second plurality of valves when one of said first and second plurality of valves is in said actuated position and one other of said first and second plurality of valves is in said deactuated position; and

means for automatically moving said one of said first and second plurality of valves from said actuated position to said deactuated position after a specified time period.

5,850,853

FLUID CONTROL SYSTEM AND VALVE TO BE USED THEREIN

Tadahiro Ohmi, 2-1-17-301, Komegafukuro, Aoba-ku, Sendai-shi, Miyagi-ken; Michio Yamaji, Osaka; Nobukazu Ikeda, Osaka, and Hiroshi Morokoshi, Osaka, all of Japan, assignors to Fujikin Incorporated, and Tadahiro Ohmi, both of JPX

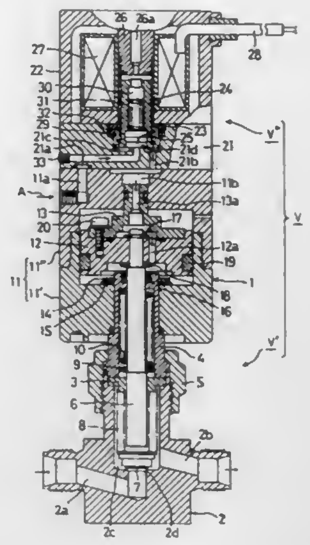
Filed Apr. 9, 1996, Ser. No. 630,081

Claims priority, application Japan, Jul. 14, 1995, 7-178374

Int. Cl.^{6} F16K *31/42*

U.S. Cl. 137—606 **6 Claims**

1. A fluid control system comprising a principal control line and plural branch control lines for feeding plural types of fluids into the principal control line, with a processing device being attached to the principal control line, and plural valve assemblies in the branch control lines for switching the fluids supplied to the processing device, wherein each of the valve assemblies comprises:



a fluid drive valve comprising a body defining an inflow passage, an outflow passage, a first valve chamber, and a first valve seat; a stem running through the first valve chamber and supported to be movable in the vertical direction; a disk engaged with the stem for being brought into contact with and moved away from the first valve seat by motion of the stem; a valve closing spring thrusting the stem in the downward direction; a cylinder fixed to the upper portion of the body for forming a fluid pressure actuator;

a piston provided in the cylinder, slidingly movable in the vertical direction and fixing the upper end of the stem; a first feed port opening in the upper face of the cylinder for introducing a working fluid fed from the side of the cylinder; a second feed port penetrating through the upper face of the cylinder; a piston cap which is fixed to the upper face of the piston and whose upper portion is slidably inserted in a penetration hole communicating with the second feed port; a penetration hole provided in the piston cap for introducing the working fluid from the second feed port into the lower space of the piston and a communicating hole provided in the piston, and

an electromagnetic valve comprising a body defining an inlet, an outlet, a second valve chamber, and a second valve seat and integrally attached to the upper side of the cylinder of the fluid pressure actuator, with the inlet being connected to the first feed port provided in the upper face of the cylinder and the outlet being connected to the second feed port provided in the upper face of the cylinder; a plunger slidably supported by the body; a disk on the plunger for contacting and moving away from the second valve seat; a spring for thrusting the plunder in the valve closing direction in which the disk contacts the second valve seat; a magnetic core above the plunger; an exciting coil surrounding the magnetic core; and a coil case enclosing the excitation coil.

5,850,854

PIPE CLOSURE

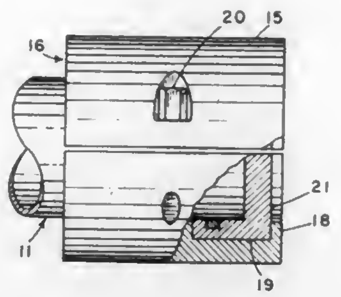
Norman Lee Carroll, 156 Merritt Dr., Butler, Pa. 16001

Filed Oct. 2, 1997, Ser. No. 942,466

Int. Cl.^{6} B65D *59/00;* **F16L** *55/10*

U.S. Cl. 138—96 R **3 Claims**

1. A pipe closure comprising: an end cap placed on the end of a pipe, said end cap having an internal annular recess, an O-ring secured against dislodgement by being, positioned in the internal annular recess, a spilt collar placed over the end cap and the end of the pipe with each half comprising one cylindrical inner surface of substantially the same diameter as the outside diameter of the pipe for mounting to the outer surface of the pipe near the end of the pipe, and a second inner surface having substantially the same



dimensions as the outer surface of the end cap, and a means for securing the split collar to the pipe.

5,850,855
FLEXIBLE COOLANT CONDUIT AND METHOD OF MAKING SAME

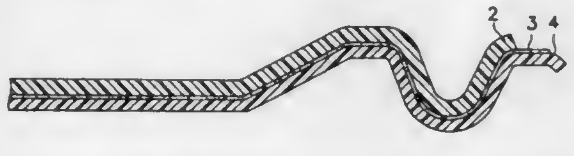
Franz Kerschbaumer, Chur; Wolfgang Pfleger, Tamins, and Georg Stoeppelmann, Bonaduz, all of Switzerland, assignors to Ems-Inventa AG, Switzerland

Continuation-in-part of Ser. No. 119,327, Sep. 9, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 595,763

Claims priority, application Germany, Jan. 9, 1990, 4 000 434.1; Jul. 18, 1995, 295 11 606.4 U

Int. Cl.^{6} F16L *9/18*

U.S. Cl. 138—137 **8 Claims**



1. A flexible conduit for cooling having a high bursting pressure above 8 bar at 100° C. and high hydrolysis resistance comprising an outer layer of a material selected from the group consisting of homopolyamides, copolyamides and mixtures thereof with an excess of amino terminal groups, a non-swelling inner layer made of a material selected from the group consisting of non-halogenated copolyolefins, non-halogenated homopolyolefins and mixtures thereof and a middle layer compatible with the inner and outer layers made of a homopolyolefin or a copolyolefin with grafted functional groups, the layers being coextruded and corrugated during coextrusion.

5,850,856
GASOLINE DISPENSER WITH INTEGRAL, INTERNAL SELF POWERED VAPOR RECOVERY PUMP

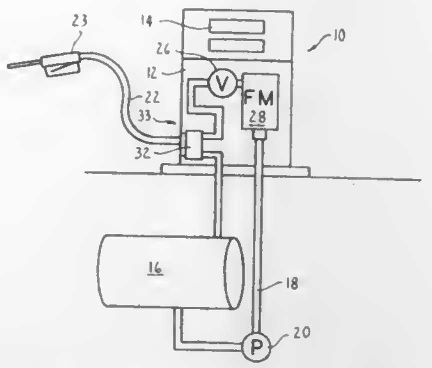
Scott M. Olson, Grand Rapids, Mich., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Oct. 18, 1996, Ser. No. 732,743

Int. Cl.^{6} B65B *31/00*

U.S. Cl. 141—59 **24 Claims**

1. A fuel dispenser for dispensing liquid-state fuel from a storage tank, said dispenser including:
- a dispenser housing having walls, one of said walls being formed with an opening;
- a fuel supply line connected from the storage tank to said dispenser housing;
- a control valve disposed in said dispenser housing and connected to said fuel supply line for regulating fuel flow through said fuel supply line;
- a flow meter disposed in said dispenser housing and connected to said fuel supply line for metering the flow of fuel through said fuel supply line;
- a vapor recovery pump disposed in said dispenser housing and secured to said wall forming said opening so as to be located adjacent said opening, said vapor recovery pump having a pump chamber with a vapor inlet port and a vapor exhaust port, a motor chamber having a liquid inlet port and a liquid outlet port, a pump shaft extending between said motor chamber and said pump chamber, said pump shaft being configured to rotate in response to liquid flow through said motor chamber so as to cause a suction to develop in said pump chamber, wherein said fuel supply line is connected to said liquid inlet port of said motor chamber so as to introduce fuel into said motor chamber and a bulkhead member that defines a vapor passageway that extends to said vapor inlet port of said pump chamber and a fuel passageway that extends from said liquid outlet port of said motor chamber, said bulkhead member being formed with an outwardly extending boss wherein said vapor passageway and said fuel passageway extend from a common bore formed in said boss and said bulkhead member is positioned relative to said wall of said dispenser housing to which said vapor recovery pump is attached so that said boss extends through said opening formed in said wall of said dispenser housing;
- a vapor recovery line extending from said vapor exhaust port of said pump chamber to the storage tank; and
- a two-line fuel hose connected to said common bore of said boss of said vapor recovery pump so that said fuel hose extends away from said opening formed in said wall of said dispenser housing, said fuel hose having a fuel line connected to said fuel passageway in said bulkhead member of said vapor recovery pump through which fuel from said motor chamber is discharged and a vapor line connected to said vapor passageway of said bulkhead member through which vapor is drawn into said pump chamber.



5,850,857
AUTOMATIC PRESSURE CORRECTING VAPOR COLLECTION SYSTEM

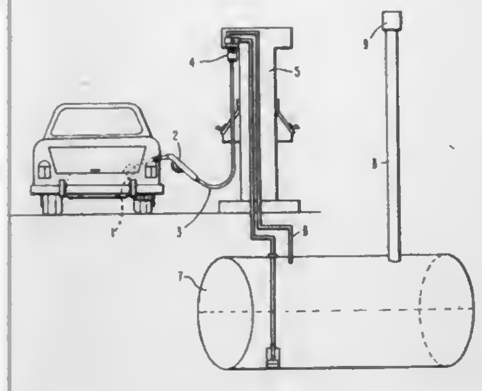
W. Dwain Simpson, 124 Catalpa Rd., Wilton, Conn. 06897-2004

Filed Jul. 21, 1997, Ser. No. 897,289

Int. Cl.^{6} B67D *5/378*

U.S. Cl. 141—59 **16 Claims**

1. A vapor recovery system comprising:
- a fuel dispensing nozzle capable of recovering fuel vapors;
- a fuel dispensing hose connected at one end to said nozzle and designed for delivering fuel to and recovering fuel vapors from said fuel dispensing nozzle;
- a vapor recovery pump driven by a dispensed fuel cooperatively connected to said fuel dispensing hose for controllably collecting recovered fuel vapors;
- a dispensing unit for controlling fuel delivery;
- at least one fuel storage tank containing both fuel and vapor storage space;
- fuel dispensing and vapor recovery lines extending between said dispensing unit and said at least one tank;
- wherein said vapor recovery pump automatically adjusts the ratio of collected fuel vapors to dispensed fuel in response to changes in vapor pressure in said at least one tank in order to maintain vapor pressure in said at least one tank within a certain pre-defined range.



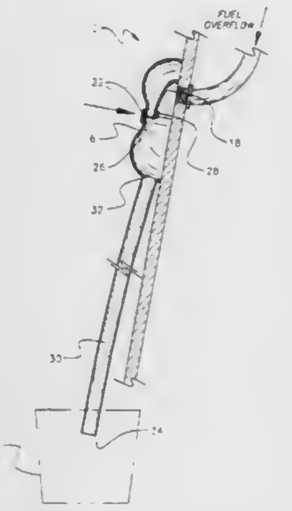
5,850,858
SPILLED FUEL COLLECTOR FOR BOATS

Ronald F. Zeigler, 2979 Meridith Dr., Pensacola, Fla. 32504

Filed Oct. 20, 1997, Ser. No. 954,021

Int. Cl.^{6} B63B *25/05*

U.S. Cl. 141—86 **3 Claims**



2. A new spilled fuel collector for boats for attaching to an overflow vent of a boat to catch accidental spills comprising, in combination:
- a pliable semi-spherical cover having an open upper end and a closed arcuate lower end, the open upper end dimensioned for covering a fuel overflow vent of a boat, the cover having an aperture therethrough;
- an inner hook secured to an inner surface of the closed arcuate lower end of the cover, the inner hook engaging the fuel overflow vent of the boat in an engaged orientation; and
- a length of hose having an open upper end and an open lower end, the open upper end secured to the aperture of the cover, the open lower end positionable within a receptacle for transferring spilled fuel thereto.

5,850,859
COFFEE-MILL DISPENSING DEVICE

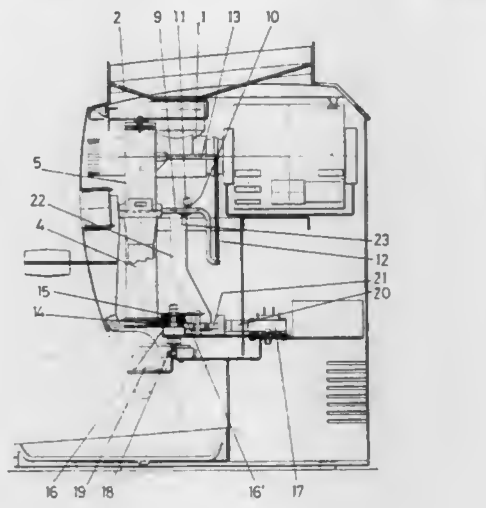
Juan Ignacio Ciaurriz Andueza, Huarte-Plamplona, Spain, assignor to Azkoyen Hosteleria, S.A., Huarte-Pamplona, Spain

Filed Jul. 9, 1997, Ser. No. 890,657

Claims priority, application Spain, Jul. 10, 1996, 9601545

Int. Cl.^{6} B65B *3/04*

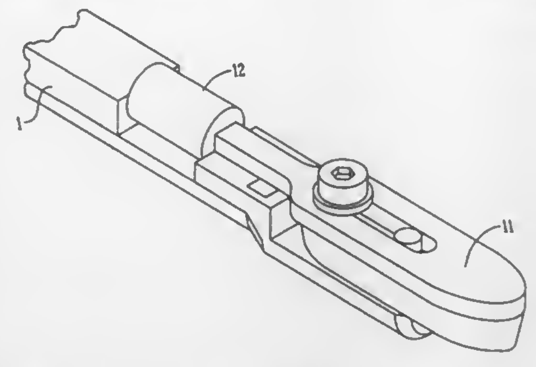
U.S. Cl. 141—361 **3 Claims**



1. A coffee-mill dispensing device, devised to be directly coupled to the outlet of a coffee-mill (**1**) and allow one or two measures of coffee to be directly dispensed onto the respective cup (**19**) of a coffee-maker, two passages (**4—4'**) being established in the actual device, meeting at the top in a neck (**5**) communicating with the actual outlet of the mill, these passages (**4—4'**) receiving the measures of ground coffee being fitted at the bottom with trapdoors (**14—14'**), characterised in that the junction between the passages (**4—4'**) has a hinged trapdoor (**7**) which may be driven to take up two positions at which one of the passages is sealed and coffee may be freely received in the other passage; the bottom of said passages (**4—4'**) being provided to have independent hinged trapdoors (**14—14'**) biased towards a closed position by means of a spring (**16—16'**), and solidly connected to respective stays (**21—21'**) which are linked to arms (**20—20'**) that may be drawn by means of the core of respective electric magnets (**17—17'**), which may be activated by microswitches (**18—18'**) that are activated by the respective cup (**19**) designed to receive the measure of coffee contained in the respective passage (**4—4'**); being particular in that the stays (**21—21'**) each have an upright arm (**22—22'**) fixed thereon which may be moved vertically when the stays (**21—21'**) are duly pulled upon the electric magnets (**17—17'**) being activated, the top end of such upright arms (**22—22'**) impinging upon either of the wheels (**11—11'**) provided in a balance lever (**10**) solidly connected to an extension (**9**) of the pin (**8**) on which the hinged trapdocr (**7**) is mounted, thereby for the stable arrangement of the balance lever (**10**) in either position to bring about the arrangement in either position of the trapdoor (**7**) and hence the sealing of either passage (**4—4'**) and for coffee to be freely received in the opposite passage.

5,850,860
WOOD TURNING TOOL

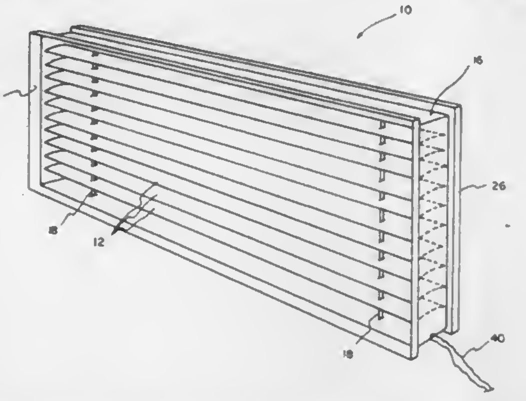
Harry Memelink, 417 Cuba Street Petone, Wellington 6008, New Zealand
PCT No. PCT/NZ95/00073, § 371 Date Jun. 25, 1997, § 102(e) Date Jun. 25, 1997, PCT Pub. No. WO96/05032, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 10, 1995, Ser. No. 776,800
Claims priority, application New Zealand, Aug. 11, 1994, 264224
Int. Cl.⁶ B27C *7/00;* **B27G** *15/00*
U.S. Cl. 142—56 **12 Claims**



1. Cutting means, comprising a support portion, a blade portion, a deflecting portion, and a cover which can be positioned substantially over or across the blade portion to determine a cutting capacity of the cutting means, the blade portion being in the form of at least one closed curve or loop and having a cutting edge extending at least partially around the closed curve or loop, the deflecting portion being integral with and extending from the cover and being capable of extending at least partially into the closed curve or loop when the cutting means is in use, the cutting means being formed such that when it is used to cut an object the deflecting portion is suitable for deflecting cuttings from the object away from an area adjacent the blade portion so as to at least substantially prevent blockage of the blade portion by the cuttings.

5,850,861
ELECTROSTATICALLY POSITIONED BLIND INSERT FOR INSULATED GLASS

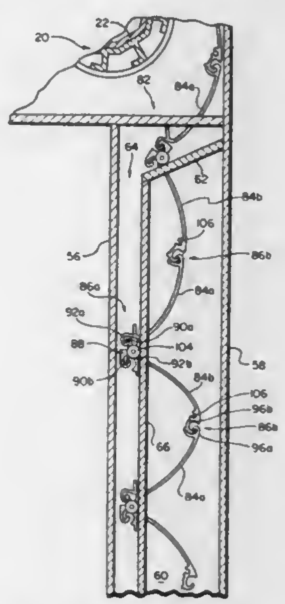
Lawrence M. Silverberg, 113 Canberra Ct., Cary, N.C. 27512
Filed Oct. 10, 1996, Ser. No. 731,144
Int. Cl.⁶ E06B *3/32*
U.S. Cl. 160—107 **8 Claims**



1. An electrostatically controlled blind system comprising:
a plurality of elongated, electroconductive louvers each having a longitudinal axis, each of said louvers having a plurality of apertures formed therein at predetermined locations, said louvers further including pivoting means installed thereon in generally parallel relation to said longitudinal axis at a predetermined offset position in relation thereto;
a plurality of vertically disposed louver supporting means installed within said apertures and being disposed in pivoting engagement with said pivoting means such that said louvers are horizontally arranged in parallel, spaced apart relation, said louvers being supported in an unbalanced condition and biased downwardly about said axis to a closed condition due to gravitational force;
at least one sheet of electroconductive glass positioned in a plane parallel to a plane defined by said longitudinal axes of said louvers and in close proximity thereto, said glass being disposed in electrical connection to said louvers and being electrically grounded; and
a variable electrostatic power source being electrically connected to said louvers such that when an electrostatic charge is applied to said louvers, an opposite electrostatic charge is induced on said glass creating an electrostatic force of attraction between said louvers and said glass enabling said louvers to be rotatably positioned about said axis to an open condition whereby the passage of light therethrough can be regulated.

5,850,862
ROLLING PROTECTIVE SHUTTERS

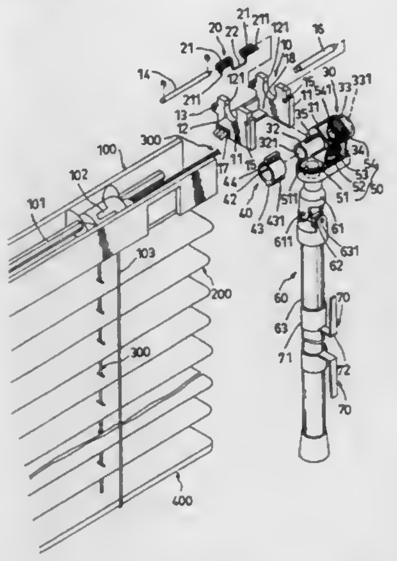
James V. Miller, 893 N. Maryknoll Cir., Glen Ellyn, Ill. 60137
Filed Feb. 20, 1997, Ser. No. 804,100
Int. Cl.⁶ E06B *09/08*
U.S. Cl. 160—133 **30 Claims**



1. A rolling shutter assembly, comprising:
a shutter support member;
a shutter coupled to said shutter support member, said shutter comprising a plurality of shutter members, said shutter members each comprising a slat and a hinge connected to said slat, said shutter members being grouped in a first set and a second set, each of said shutter members in said first and second sets being alternated, each of said shutter members in said first set having a first end portion with a first extension member which extends outwardly from said first end portion;
a pair of shutter tracks each having first and second side walls and an end wall;
means for rolling said shutter from an extended position in which said first end portions of said shutter members are disposed in said shutter tracks to a retracted position in which said shutter is rolled up on said shutter support member;
a pair of guide channels, each of said guide channels being associated with one of said shutter tracks; and
guide means associated with each of said guide channels, said guide means causing said first extension members of said shutter members to be disposed within said guide channels when said shutter is in said extended position.

5,850,863
OPERATING DEVICE FOR A VENETIAN BLIND TO CONTROL RAISING AND LOWERING OF THE SLATS AND TO ADJUST TILTING ANGLE OF THE SLATS

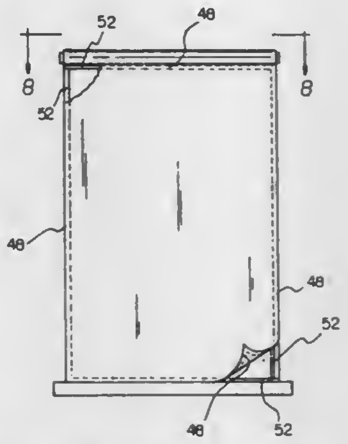
Tai-Long Huang, No. 382, Sec. 1, Yuan-Lu Rd., Fu-Hsing, Hsiang, Chang-Hua Hsien, Taiwan
Continuation-in-part of Ser. No. 844,406, Apr. 18, 1997, Pat. No. 5,749,405. This application Nov. 10, 1997, Ser. No. 966,516
Int. Cl.⁶ E06B *9/30*
U.S. Cl. 160—168.1 R **7 Claims**



1. An operating device for a Venetian blind which includes an elongated top housing, a horizontally disposed shaft journalled in the top housing, a plurality of horizontal slats suspended one above another from the top housing, each of the slats having two opposite longitudinal sides, a bottom rail disposed below the slats, a plurality of pull ropes, each of the pull ropes having a first end which passes through the housing and through the slats and which is mounted to the bottom rail, and a second end which extends out of the housing, a plurality of pairs of tilting cords disposed on the opposite longitudinal sides of the slats and having upper ends secured to the shaft and lower ends mounted on the bottom rail, and plurality of suspending strings disposed below each of the slats and interconnecting the tilting cords, said operating device comprising:
a hollow base adapted to be disposed in the top housing, said hollow base including a pair of side plates which form a receiving space therebetween, and a limiting rod extending transversely between said side plates and disposed at a peripheral portion of said receiving space, said hollow base being adapted to permit extension of the second ends of the pull ropes and the shaft into said receiving space; .
a locking seat mounted pivotally to said side plates and disposed in said receiving space on one side of said limiting rod such that the pull ropes are extendible between said locking seat and said limiting rod,
wherein said hollow base and said locking seat are adapted to permit extension of the shaft of the Venetian blind thereinto;
a biasing member mounted on said hollow base for biasing said locking seat to pivot toward said limiting rod so that said locking seat is adapted to clamp releasably the pull ropes against said limiting rod; and
a rotary tilt control unit mounted within said locking seat, said tilt control unit including a first gear having a first vertical axis, a second gear engaging said first gear and having a second vertical axis parallel to said first vertical axis, a horizontal bevel gear coupled to said second gear and coaxial with said second gear, a vertical bevel gear adapted to be coupled to the shaft of the Venetian blind and engaging said horizontal bevel gear, and an operating rod connected to said first gear, said operating rod being operable to cause axial rotation of said gears so as to result in corresponding axial rotation of the shaft to adjusting tilting angles of the slats, said operating rod being further operable to move said locking seat away from said limiting rod against biasing action of said biasing member so as to release the pull ropes.

5,850,864
INSULATED SEALING WINDOW SHADE

Brian C. Decker, 7 Broadway, New York, N.Y. 10004
Continuation-in-part of Ser. No. 654,071, May 28, 1996, abandoned. This application Apr. 14, 1997, Ser. No. 840,094
Int. Cl.⁶ A47G *5/02*
U.S. Cl. 160—268.1 **1 Claim**



1. An insulated sealing window shade for preventing light and sound from entering through a window comprising, in combination:
a non-transparent insulated shade portion comprised of an interior layer and an exterior layer, the insulated shade portion having an upper edge, a lower edge, and a pair of side edges together defining a periphery of the insulated shade portion, the upper edge being fixedly secured to a cylindrical tube, the cylindrical tube having end portions thereof secured to mounting brackets secured above a window, the mounting brackets each having a pin extending inwardly therefrom with the shade portion positioned between the pins and the window with the shade portion resting on the pins, the shade portion adapted to being situated around the cylindrical tube;
a magnetically responsive material disposed on the periphery of the shade portion, said periphery including the side edges, the bottom edge, and an area adjacent said upper edge between said side edges, the magnetically responsive material comprising metal particles formed within the periphery of the shade; and
a plurality of flexible magnetic strips secured along an upper edge, side edges and a lower edge of a window whereby the magnetically responsive material of the interior layer of the insulated shade portion is coupleable to the plurality of magnetic strips of the window when the insulated shade portion is in an extended orientation.

5,850,865
ROLLING FIRE DOOR WITH DELAYED CLOSING MECHANISM

Chung-Jung Hsieh, 1st Fl., No. 15, Sub-lane 3, Lane 217, Chung-Hsiao E. Rd., Sec. 3, Taipei, Taiwan
Filed Sep. 16, 1997, Ser. No. 931,176
Int. Cl.⁶ A47G *5/02*
U.S. Cl. 160—310 **7 Claims**

1. A rolling fire door with delayed closing mechanism arranged on a casing of a motor for driving a rotor of the rolling door, said delayed closing mechanism comprising:

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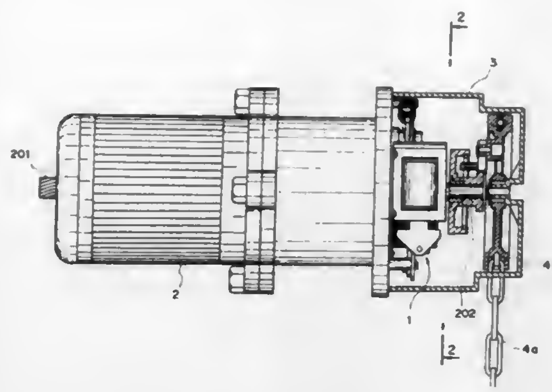


an AC solenoid having a sliding rod with an operating end;

a connecting rod pivotally mounted on said motor casing having a first end pivotally connected to the operating end of said AC solenoid sliding rod;

a brake rod of a braking device which is spring biased for braking of said rotor;

a linearly guided brake actuation rod having a first end pivotally connected to a second end of said connecting rod and a second end facing said brake rod, said actuation rod being spring biased toward said brake rod, said actuation rod having a recess formed on a side thereof;

a latch rod pivotally mounted on said motor casing and having a roller pivotally mounted on a first end thereof, said latch rod being spring biased so that said roller thereof engages the recess formed on the side of said actuation rod;

a DC solenoid having a sliding rod for acting on a second end of said latch rod so that when said DC solenoid is electrically energized the sliding rod causes said latch rod to pivot against the spring bias acting thereon to disengage said latch rod roller from the recess formed on the side of said actuation rod; and

control circuit means controlling said AC solenoid to cut off power thereto when said motor commences turning, electrically energizing said DC solenoid so that said latch rod roller disengages from the recess of said actuation rod permitting the spring bias acting thereon to move said actuation rod against said brake rod to release the braking of said rotor, simultaneously with the release of the braking of said rotor power to said DC solenoid is cut, and said AC solenoid is electrically energized when the rolling door is fully opened or fully closed causing the sliding rod thereof to retract to pivot said connecting rod and causing said actuation rod to move against its spring bias so that the latch rod roller engages the recess of said actuation rod to prevent movement thereof, then the power to said AC solenoid is cut.

5,850,866

HEAT TREATMENT OF METAL CASTINGS AND IN-FURNACE SAND RECLAMATION

Scott P. Crafton, Marietta, Ga., assignor to Consolidated Engineering Company, Inc., Kennesaw, Ga.

Continuation of Ser. No. 419,372, Apr. 10, 1995, Pat. No. 5,565,046, which is a continuation of Ser. No. 283,958, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 272,153, Jul. 8, 1994, abandoned, which is a continuation of Ser. No. 198,879, Feb. 18, 1994, Pat. No. 5,354,038, which is a continuation of Ser. No. 930,193, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 705,626, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 415,135, Sep. 29, 1989, abandoned. This application Sep. 16, 1996, Ser. No. 710,376

Int. Cl.⁶ B22D ***29/00***

U.S. Cl. 164—5 **30 Claims**

1. A method for heat treating a casting with sand core attached thereto and for reclaiming sand from portions of sand core, comprising sand bound by a combustible binder, said method comprising the following steps:

introducing the casting into a furnace;

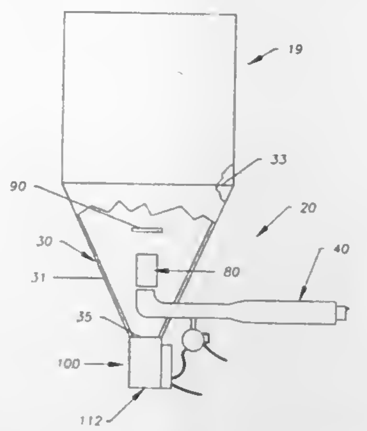
heating the furnace including, at least, the step of loosening portions of sand core from the casting while the casting is in the furnace;

introducing unattached portions of sand core into the furnace, wherein the unattached portions of sand core are not attached to the casting; and

reclaiming, within the furnace, sand of loosened portions of sand core and sand of unattached portions of sand core, wherein said step of reclaiming includes, at least,

collecting the portions of sand core within the furnace, and

fluidizing within the furnace the loosened portions of sand core.



5,850,867

METHOD OF MAKING CORES WITH MOLDING SAND

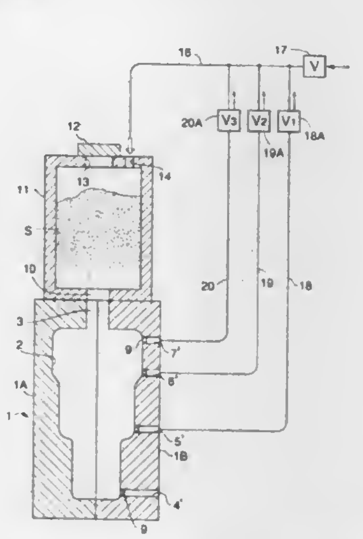
Nagato Uzaki, Toyohashi; Masayoshi Kasazaki; Hisashi Harada, both of Hoi-gun, and Kazuo Sugimoto, Toyokawa, all of Japan, assignors to Sintokogio, Ltd., Nagoya, Japan

Filed Apr. 14, 1997, Ser. No. 843,166

Claims priority, application Japan, Apr. 19, 1996, 8-122496; May 24, 1996, 8-153130

Int. Cl.⁶ B22C ***15/264;15/23***

U.S. Cl. 164—22 **3 Claims**



1. A method of filling a core cavity with molding sand, where the core cavity is defined by a core box, said method comprising the steps of:

preparatorily filling the core cavity with some of the sand by press-contacting a blow head against an upper surface of the core box so that the blow head is aligned with an inlet of the core box, introducing the molding sand into the blow head, and introducing said some of the sand into the core cavity from the blow head,

impulsively press-filling those parts of the core cavity which are the farthest from the inlet by abruptly introducing compressed air into the core cavity via a plurality of openings provided along the core box at appropriate distances therebetween, and

impulsively press-filling other parts of the cavity, by sequentially introducing additional quantities of compressed air via different subsets of the openings, wherein the subsets are selected so as to cause parts of the cavity to be filled in order of decreasing distance from the inlet.

5,850,868

CASTING METHOD WITH IMPROVED RESIN CORE REMOVAL STEP

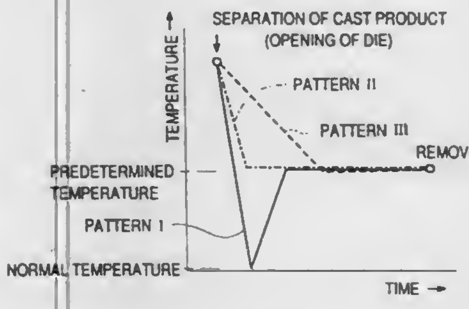
Yuji Okada; Masamichi Okada, both of Toyota; Tsutomu Ishikawa; Takumi Yamamoto, both of Kariya; Tatsuhiko Sawamura, Tokyo-to; Norio Hayashi, Yokkaichi, and Takayuki Ito, Hiratsuka, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota; Aisin Seiki Kabushiki Kaisha, Kariya, and Toshiba Silicon Kabushiki Kaisha, Tokyo, all of Japan

Filed Mar. 1, 1996, Ser. No. 609,673

Claims priority, application Japan, Mar. 3, 1995, 7-044109

Int. Cl.⁶ B22D ***29/00;*** **B22C** ***9/10***

U.S. Cl. 164—132 **4 Claims**



1. A casting method comprising the steps of:

fabricating a resin core;

setting the resin core in a die;

subsequently charging molten metal into the die to form a cast product;

subsequently taking out the cast product from the die by opening the die; and

subsequently removing the resin core from the cast product;

the resin of the core being of such a character as to maintain a mechanical strength satisfying a shape accuracy required for the cast product until solidification of molten metal in contact with the core and be softened when heated beyond the core temperature at which the molten metal in contact with the core was solidified; and

forcibly directly cooling the cast product containing the core down to a predetermined temperature at which the resin core can be removed from the cast product without being broken apart by pulling one of its ends, the forced cooling being executed after taking out the cast product from the die and before removing the resin core from the cast product.

5,850,869

INVERSION CASTING DEVICE WITH CRYSTALLIZER

Fritz-Peter Pleschiutschnigg; Dieter Stalleicken, both of Duisburg; Lothar Parschat, Ratingen; Ingo von Hagen, Krefeld; Ulrich Menne, Hattingen; Tarek El Gammal, Aachen; Peter Lorenz Hamacher, Aachen, and Michael Vonderbank, Aachen, all of Japan, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

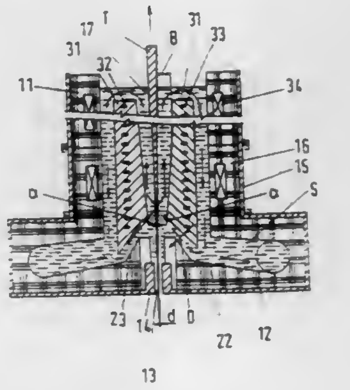
PCT No. PCT/DE95/00786, § 371 Date May 22, 1997, § 102(e) Date May 22, 1997, PCT Pub. No. WO96/02683, PCT Pub. Date Feb. 1, 1996

PCT Filed Jun. 15, 1995, Ser. No. 776,466

Claims priority, application Germany, Jul. 20, 1994, 44 26 705.3

Int. Cl.⁶ B22D ***19/00;11/00***

U.S. Cl. 164—419 **18 Claims**



1. An inversion casting device, comprising:

a crystallizer vessel having a base in which a slit-shaped passage is provided through which a substrate strip is guidable;

a collecting tank arranged to surround horizontally about the crystallizer vessel; and

nozzles arranged in a region of the passage and being in fluid communication with the collecting tank, the nozzles having orifices arranged so that melt flowing out of the orifices from the collecting tank strikes the substrate strip at an angle of inclination in a strip take-off direction of less than 30°.

5,850,870

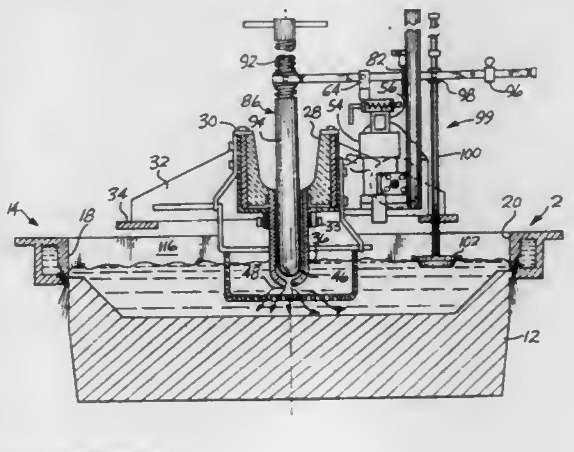
MOLTEN METAL ADMISSION CONTROL IN CASTING

Frank Everton Wagstaff, Media, Pa.; Aaron David Sinden, Latah, and David Alan Salee, Spokane, both of Wash., assignors to Wagstaff Inc., Spokane, Wash.

Continuation of Ser. No. 517,701, Aug. 22, 1995, Pat. No. 5,709,260. This application Jan. 19, 1998, Ser. No. 8,761

Int. Cl.⁶ B22D ***11/10;11/18***

U.S. Cl. 164—450.1 **3 Claims**



1. In combination,

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an elongated trough for supplying molten metal to a series of open ended mold cavities which are spaced apart on vertical axes in a molten metal casting apparatus and disposed so that relatively lower end openings of the respective cavities are coplanar with one another, said trough having means in the bottom thereof defining a series of valve openings which are spaced apart from one another in a line extending along a parallel to the bottom of the trough, so that when in a casting operation, a series of bottom blocks is telescopically engaged in the cavities at the relatively lower end openings thereof to form sumps within the cavities for the temporary retention of molten metal therein, the trough is arranged above the molten metal casting apparatus so that the line of valve openings extends along a parallel to the plane with which the relatively lower end openings of the cavities coincide and the respective valve openings register with relatively upper end openings of the respective cavities, and molten metal is introduced to the trough at one end thereof, the molten metal is admitted to the respective cavities at the valve openings corresponding thereto, to form columns of molten metal upright on the tops of the blocks which escalate up the axes of the cavities at the upper surfaces thereof to partially fill the sumps in a fill stage of the casting operation, and then when the upper surfaces of the respective molten metal columns have risen to a start up elevation above the tops of the blocks at which the columns sufficiently fill the sumps to warrant starting up a run stage of the casting operation, and the blocks are withdrawn relatively downwardly away from the casting apparatus along the axes of the cavities to release the columns for travel along the axes, the respective valve openings continue to admit molten metal to the respective cavities to maintain the upper surfaces of the respective molten metal columns at an operating elevation in which, as the respective molten metal columns cool, the columns also increase their length to form elongated bodies of metal supported upright on the blocks, and

an auxiliary apparatus for controlling the admission of the molten metal to the cavities during the casting operation, comprising:

sets of first and second carrier means which are each arranged in a line extending parallel to the line of valve openings in the trough and each supported so that the respective carrier means therein are reciprocable relatively transverse the line thereof,

sets of valve closure devices and sensor devices which are supported on the sets of first and second carrier means respectively, and are operable to control the admission of molten metal to the respective cavities at the respective valve openings corresponding thereto, and to sense the elevation of the upper surfaces of the respective molten metal columns formed in the respective cavities during the casting operation, and to transmit signals representing the elevations of the respective upper surfaces, respectively,

the set of valve closure devices being suspended from the set of first carrier means so as to be operatively disposed in cooperative engagement with the respective valve openings corresponding thereto, and to be reciprocated in conjunction with the respective first carrier means corresponding thereto between variable positions in relation to the respective valve openings at which the molten metal is admitted to the respective cavities at variable flow rates commensurate with the respective positions,

the set of sensor devices being suspended from the set of second carrier means so as to be operatively spaced above the tops of the blocks forming the respective sumps corresponding thereto, and to generate the respective signals thereof at points spaced above the upper surfaces of the respective molten metal columns formed in the sumps during the fill stage of the casting operation,

prepositioning means operable at the commencement of the fill stage of the casting operation to preposition the set of valve closure devices at positions in which the respective valve closure devices admit the molten metal to the respective sumps corresponding thereto in amounts that are varied commensurate with the distance lying along the line of valve openings between each of the valve openings and a vertical through the one end of the trough so that as the upper surfaces of the respective molten metal columns escalate up the axes of the cavities toward the sensor devices corresponding thereto during an initial phase of the fill stage of the casting operation, the upper surfaces of the respective molten metal columns establish a state of substantial equilibrium with one another at an intermediate elevation between the tops of the blocks and the start-up elevation for the run stage of the casting operation,

control means including a control device operatively interconnectable with each of the respective sensor devices and the respective first and second carrier means corresponding thereto when the upper surfaces of the respective molten metal columns establish a state of substantial equilibrium with one another at the intermediate elevation, to transmit to the respective valve closure devices corresponding thereto, input signals which are both a function of the vertical distance between the line of second carrier means and a reference plane parallel to the plane with which the relatively lower end openings of the cavities coincide, and a function of the vertical distance between the signal generation points of the respective sensor devices and the upper surfaces of the respective molten metal columns corresponding thereto, and

operating means for reciprocating one of the sets of first and second carrier means relatively transverse the line thereof to impose a desired value on the rate at which the upper surfaces of the respective molten metal columns escalate up the axes of the cavities in the direction of the start-up elevation from the intermediate elevation, and reciprocating the other of the sets of first and second carrier means relatively transverse the line thereof so that as the upper surfaces of the respective molten metal columns escalate up the axes of the cavities at the desired value, the elevation of the signal generation points of the respective sensor devices is raised at a rate sufficiently commensurate with the desired value to render the input signals transmitted to the respective valve closure devices by the control device substantially consistent with the desired value.

5,850,871

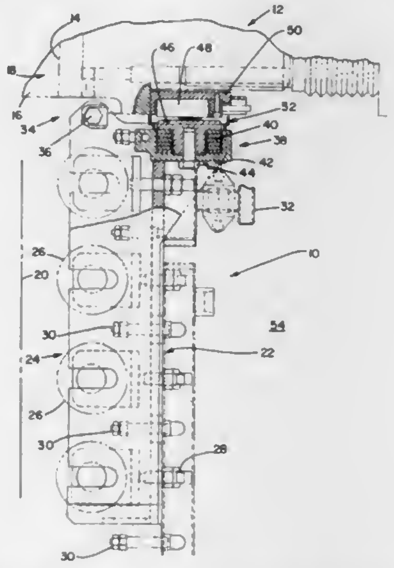
FOOT GUIDE AND CONTROL SYSTEM FOR CONTINUOUS CASTING MACHINE

James Bernard Sears, Jr., Riverview, Mich., assignor to AG Industries, Inc., Coraopolis, Pa.

Filed Apr. 4, 1996, Ser. No. 627,450

Int. Cl.^{6} B22D *11/04;11/16;11/20;11/22*

U.S. Cl. 164—451 **43 Claims**



1. An improved continuous casting mold and foot guide assembly, comprising:

a mold having a casting passage defined therein;

a frame member;

mounting means for mounting said frame member to said mold for relative movement toward and away from a longitudinal axis of the casting passage;

strand support means on said frame member for providing support to a strand of continuously cast material as it emerges from the casting passage; and

biasing means for biasing said frame member toward the axis of the casting passage, wherein all of said biasing means is positioned so as not to occupy space that is behind said frame member, whereby said assembly will be compatible with all models of casting machines and will be less susceptible to degradation as a result of radiant heat and steam that is emitted from the strand during operation.

12. A method of operating a continuous casting machine that has an adjustable width mold that defines a casting passage therein and a foot guide assembly that is proximate to said mold, comprising steps of:

(a) forming a strand within the casting passage of the mold;
(b) guiding the strand with the foot guide assembly after the strand emerges from the mold;
(c) monitoring the relative force that exists between the strand and the foot guide assembly during operation;
(d) analyzing the information obtained in step (c) to determine if a condition exists;
(e) alerting an operator to the condition if it is determined to exist; and
(f) recording the information obtained in step (c) for future reference by the operator and others.

5,850,872

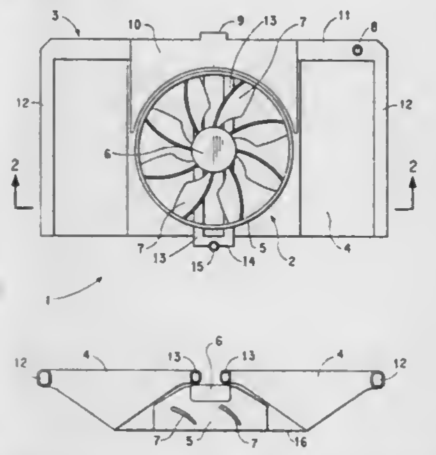
COOLING SYSTEM FOR VEHICLES

Anthony Joseph Cesaroni, Unionville, Canada, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1996, Ser. No. 753,456

Int. Cl.^{6} F01P *7/10*

U.S. Cl. 165—41 **3 Claims**



1. A cooling system for a vehicle, said cooling system having a radiator, a fan, and a motor said fan drawing cooling air through said radiator, said fan being recessed into said radiator such that said motor is substantially cooled by air that has not passed through said radiator;

characterized in that said radiator is an interconnected spaced-apart bi-sectional radiator having two sections with said fan interposed between the two sections, said two sections being on axially opposed sides of the fan, said radiator being shaped so as to feed air through said fan, said fan being located between sections of the radiator and not extending outwardly therefrom, each of the two sections of the radiator having at least three faces, a first face of the section being essentially perpendicular to the direction of air flow into the section, a second face being at an angle back from said first face less than a right angle, and a third face at an angle to said second face, said first face, second and third faces, along with any additional faces, forming a closed shape which is generally triangular, so that the radiator and associated fan occupy less space than would be required if the radiator section were rectangular in shape to obtain equivalent heat transfer with the same area of the two first faces, but leaving an opening between the two first faces for the fan with each section of the radiator having a multiplicity of connected fluid channels for heat exchange which parallel each of the first, second, and third faces.

5,850,873

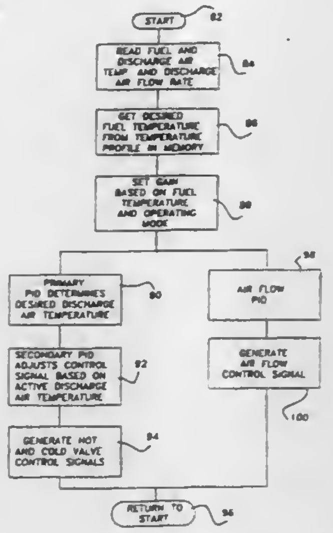
METHOD FOR REDUCING VAPOR GENERATION IN A TEMPERATURE CONTROLLED LIQUID HOLDING TANK

Alex Baoda Liu, Novi, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Sep. 27, 1996, Ser. No. 722,333

Int. Cl.^{6} F25B *29/00;* **F28F** *1/00*

U.S. Cl. 165—255 **6 Claims**


START
82
READ FUEL AND DISCHARGE AIR TEMP AND DISCHARGE AIR FLOW RATE
84
GET DESIRED FUEL TEMPERATURE FROM TEMPERATURE PROFILE IN MEMORY
86
SET GAIN BASED ON FUEL TEMPERATURE AND OPERATING MODE
88
PRIMARY PID DETERMINES DESIRED DISCHARGE AIR TEMPERATURE
90
SECONDARY PID ADJUSTS CONTROL SIGNAL BASED ON ACTIVE DISCHARGE AIR TEMPERATURE
92
GENERATE HOT AND COLD VALVE CONTROL SIGNALS
94
AIR FLOW PID
98
GENERATE AIR FLOW CONTROL SIGNAL
100
RETURN TO START
96

1. A method for reducing vapor generation in a temperature controlled fuel tank in a motor vehicle using an apparatus having a hot and cold fluid sources, a heat exchanger having hot and cold valves and an air blower to force temperature conditioned discharge air flow onto the fuel tank, comprising the steps of:

producing a signal representing an operating mode, said signal having a first state when indicating a first mode of operation and a second state when indicating a second mode of operation;

sensing a fuel temperature in the fuel tank and generating an actual fuel temperature signal;

producing a signal representing a desired fuel temperature;

comparing said actual and desired fuel temperature signals and producing a first error signal from said comparison;

producing a gain signal in response to said operating mode signal and said error signal;

producing a first control signal in response to said gain signal and said first error signal representing the difference between said desired fuel temperature and said actual fuel temperature; and

actuating the heat exchanger by supplying said first control signal to the cold and hot valves.

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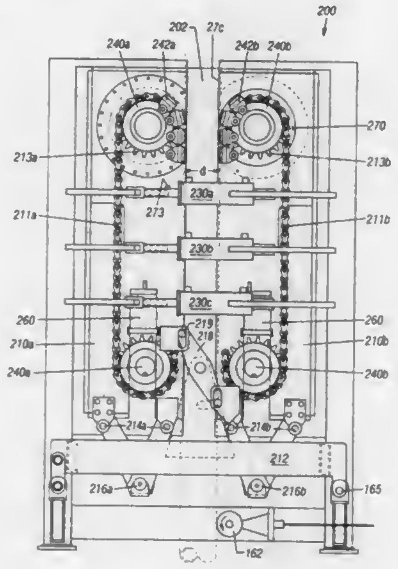
5,850,874
DRILLING SYSTEM WITH ELECTRICALLY CONTROLLED TUBING INJECTION SYSTEM

Philip Burge, 1 Russell Close, Chiswick, London W4 2NU; Peter Fontana, 35 Drayton Court, Drayton Gardens, London SW10; Glenn Leroux, 24 Rodway Road, Roehampton, London, SW15, all of England, and Friedhelm Makhol, Weesener Strasse 38, 20320 Hermannsburg, Germany

Continuation-in-part of Ser. No. 402,117, Mar. 10, 1995, abandoned, Ser. No. 524,984, Sep. 8, 1995, abandoned, Ser. No. 543,683, Oct. 16, 1995, abandoned, and Ser. No. 600,842, Feb. 13, 1996, Pat. No. 5,738,173. This application Apr. 19, 1996, Ser. No. 635,114

Int. Cl.^{6} E21B *14/22*

U.S. Cl. 166—77.3 **29 Claims**



1. A tubing injection apparatus for use in oilfield wellbore operations, comprising:

(a) an injector head moving a tubular member in a substantially vertical direction through an adjustable opening in the injector head;

(b) a ram system coupled to the injector head controlling the opening and providing a predetermined gripping force to the injector head for securely gripping the tubular member; and

(c) an electrical control system controlling the ram system to adjust the opening and to provide the predetermined gripping force to the injector head, the electrical control system including a sensor for determining a parameter relating the operation of the tubing injection system.

5,850,875
METHOD OF DEPLOYING A WELL SCREEN AND ASSOCIATED APPARATUS THEREFOR

Derek J. McCulloch, Banchory, Scotland, and Colby M. Ross, Carrollton, Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Dec. 30, 1996, Ser. No. 777,493

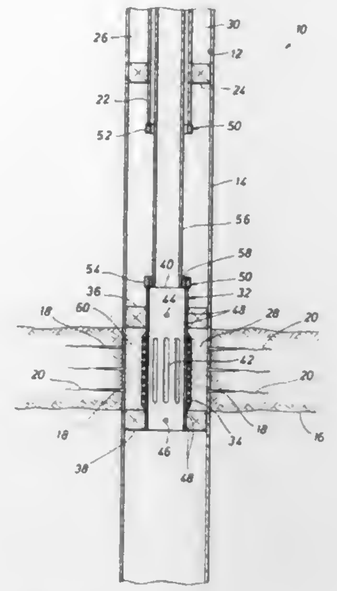
Int. Cl.^{6} E21B *43/12*

U.S. Cl. 166—380 **58 Claims**

1. A method of positioning a screen within a subterranean well, the method comprising the steps of:

disposing the screen at a first axial position within the well;

installing a first string of tubing within the well;



installing a second string of tubing within the first string of tubing; and

attaching the screen to the second string of tubing.

5,850,876
APPARATUS AND SYSTEM FOR THE STORAGE AND SUPPLY OF LIQUID CO_2 AT LOW PRESSURE FOR EXTINGUISHING OF FIRES

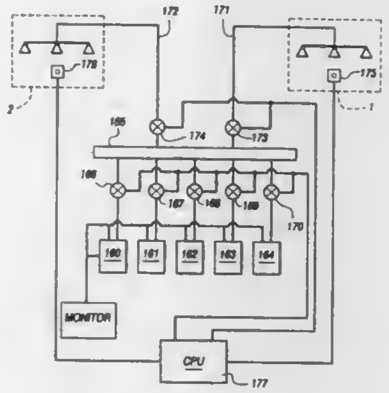
James H. Allison, Brisbane; Ian R. Tronc, Goldcoast, and Peter Dunn, Brisbane, all of Australia, assignors to Pyrozone Pty. Ltd., Queensland, Australia

Continuation of Ser. No. 462,553, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 920,505, Aug. 21, 1992, abandoned. This application Oct. 7, 1996, Ser. No. 725,821

Claims priority, application Australia, Jan. 8, 1990, PJ 8118; Mar. 2, 1990, PK 0262; May 3, 1990, PJ 9933

Int. Cl.^{6} A62C *37/44*

U.S. Cl. 169—61 **8 Claims**



1. A fire extinguishing system for storing and supplying a correct amount of liquid CO_2 at low pressure to at least two risk sites, said system comprising:

two or more low pressure vessels, each pressure vessel of said two or more pressure vessels including a supply conduit for supplying the liquid CO_2, said supply conduit extending into a lower portion of said pressure vessel, inlet means for filling said pressure vessel, and cooling means for cooling the liquid CO_2 stored in said pressure vessel;

a manifold coupled to said two or more pressure vessels, said manifold being in fluid communication with each of said supply conduits;

a conveying conduit for conveying the liquid CO_2 from said manifold to each of said at least two risk sites;

at least one risk site sensor located in each of said at least two risk sites;

one or more discharge nozzles coupled to each of said conveying conduits for discharging the liquid CO_2 conveyed therein;

one or more pressure vessel sensors to sense variations from one or more predetermined operational parameters of said two or more pressure vessels;

two or more valves actuable in response to operation of said at least one risk site sensor at any of said at least two risk sites to release a flow of the liquid CO_2 into respective said conveying conduits, and wherein, in use, any of said two or more valves is selectively operable upon activation of said at least one risk site sensor at any of said at least two risk sites; and

computing means coupled to said risk site sensors and said valves for selective direction to at least one of said at least two risk sites from any one or more of said low pressure vessels the correct amount of the liquid CO_2 for said at least one of said at least two risk sites, said selective direction being controlled by said computing means as a function of risk site volume.

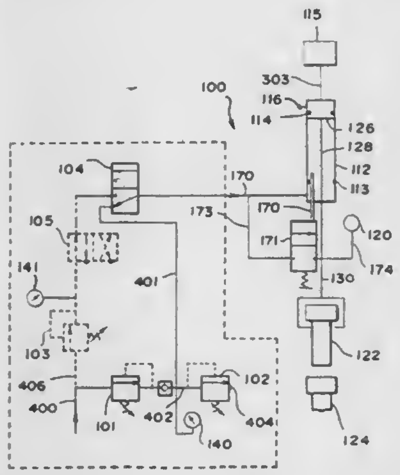
5,850,877
JOINT COMPENSATOR

Stephen L. Albright, Houston, Tex., and Jean Donald Bearb, Church Point, La., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Aug. 23, 1996, Ser. No. 706,983

Int. Cl.^{6} E21B *15/00*

U.S. Cl. 166—77.51 **15 Claims**



1. A joint compensator for compensating for the weight of a first joint and at least one subsequent joint, the first joint to be supported above the at least one subsequent joint, the joint compensator comprising

a body interconnectible between the first joint and a moving apparatus for moving the first joint,

the body including supporting apparatus for supporting the first joint above the at least one subsequent joints and for providing support of the first joint as it moves with respect to the at least one subsequent joint, the supporting apparatus compensating for weight of the first joint as it moves, the supporting apparatus comprising a movable piston movably mounted in a hollow cylinder with an amount of gas above the piston and an amount of gas below the piston, the piston connected to a piston rod, part of which projects from the cylinder for interconnection to a joint to be supported by the joint compensator,

the support apparatus for alternately supporting the first joint and then the at least one subsequent joint, the support apparatus initially adjustable to compensate for the weight of the first joint so that the support apparatus is also thereby adjusted to compensate for weight of the at least one subsequent joint.

5,850,878

Patent Not Issued For This Number

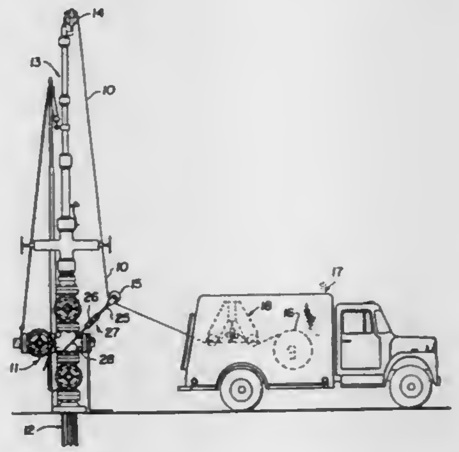
5,850,879
METHOD OF COMMUNICATING DATA THROUGH A SLICKLINE OF OTHER SINGLE CABLE SUSPENSION ELEMENT

Elbert Juan Smith, Garland, Tex., assignor to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Jun. 3, 1997, Ser. No. 868,368

Int. Cl.^{6} E21B *47/01*

U.S. Cl. 166—250.01 **19 Claims**



1. A method of communicating data and control signals between a down hole well tool and surface equipment comprising the steps of:

suspending a well tool in a well by an elongated support member extending between the tool and surface equipment;

anchoring said well tool to a well tubing string at a location within the well where the tool is to be operated;

imposing on said support member tension in excess of that resulting from the weight of said tool and of said support member to establish a reference value tension in said support member;

inducing at a first location on said support member variations in tension from said reference tension in a pattern in accordance with data/control signals to be transmitted; and

detecting said variations in tension at another location on said support member.

5,850,880
COMPOSITION AND METHOD TO CONTROL CEMENT SLURRY LOSS AND VISCOSITY

Larry K. Moran, Sealy, and Landreth L. Moran, Chico, both of Tex., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 639,133, Apr. 26, 1996, Pat. No. 5,728,210, which is a continuation-in-part of Ser. No. 581,090, Dec. 29, 1995, abandoned. This application Nov. 14, 1997, Ser. No. 970,680

Int. Cl.^{6} E21B *33/14*

U.S. Cl. 166—293 **13 Claims**

1. A method of cementing a casing in a wellbore comprising pumping a cement slurry into the annulus between said casing and said wellbore where said cement slurry contains from 2 to 20

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percent by weight, based on the cement solids in said slurry, of a fluid loss additive composition containing, by weight:

(a) 1000 parts of water,

(b) 20 to 200 parts of polyvinyl acetate polymer with at least 70% of the acetate groups converted to alcohol groups,

(c) 0.1 to 100 parts surfactant,

(d) 1.0 to 50 parts of sulfonated melamine polymer, sulfonated vinyl polymer, sulfonated styrene polymer, the common salts of sulfonated melamine polymer, sulfonated vinyl polymer, sulfonated styrene polymer, or combinations thereof.

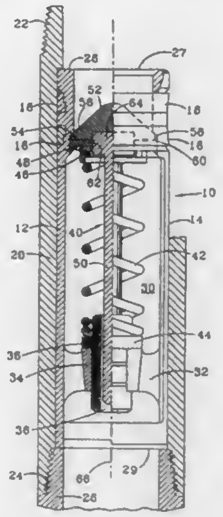
5,850,881
DRILL PIPE FLOAT VALVE AND METHOD OF MANUFACTURE

John E. Rodger, San Antonio, and Randle E. Ford, New Braunfels, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 534,624, Sep. 27, 1995, Pat. No. 5,687,792. This application Jul. 22, 1997, Ser. No. 898,147

Int. Cl.^{6} E21B *33/12*

U.S. Cl. 166—327 **12 Claims**



6. A method of forming a valve element axially movable within a valve body of a float valve positionable downhole for sealing engagement with a float body within a wellbore, the valve body having an external seal for sealing engagement with the float body and an internal annular seat secured to the valve body for sealing engagement with the valve element, the method of forming the valve element comprising:

forming an elongate stem for guiding axial movement of the valve element within the valve body, the elongate stem having a front end portion with a selected first cross-sectional size;

forming a valve member for engagement with the internal annular seat, the valve member having a recess therein of a selected second cross-sectional size less than the first cross-sectional size for receiving the front end portion of the stem;

heating the valve member to a temperature of from 320° F. to 1320° F. higher than that of the stem; and

inserting the front end portion of the stem in the recess of the heated valve member for forming a shrink-fit connection between the stem and the valve member.

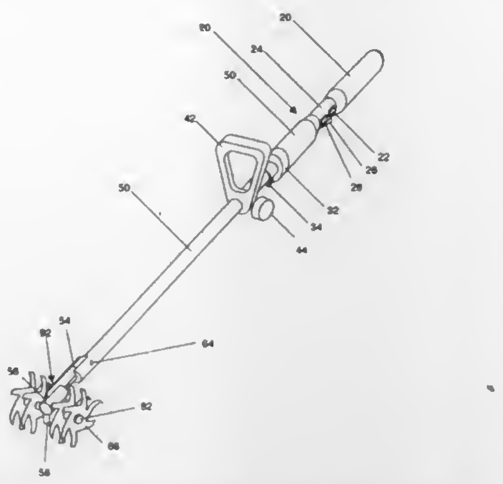
5,850,882
GARDEN POWER TOOL

Cletus H. Link, Rte. 3 Box 108A, Caledonia, Minn. 55921

Filed Mar. 28, 1997, Ser. No. 828,328

Int. Cl.^{6} A01B *33/02*

U.S. Cl. 172—41 **8 Claims**



1. A lightweight, powered hand-held garden tool utilizing rechargeable batteries, comprising:

an elongated handle having first, second and third portions;

said first portion having a power assembly including a rechargeable battery means, a motor housing containing a variable speed, reversing motor means and a hand grip means inter-coupling said motor housing and said rechargeable battery means, said hand grip means containing a switch means for varying the speed and for reversing said motor means;

said second portion having a drive assembly including drive shaft housing containing a drive shaft, said drive assembly of said second portion including means for attaching and detaching a first end thereof from said power assembly of said first portion; and

said third portion having a tool assembly including a gear housing with a gear means engaging said drive assembly at a second end thereof, said tool assembly further including a rotating, wheel-shaped tool means mounted on a short shaft attached transverse to said drive shaft of said second portion by said gear means;

whereby said rotating, wheel-shaped tool means mounted on said short shaft attached to said gear means is caused to rotate by said motor at a speed and direction determined by said switch means actuating said drive shaft.

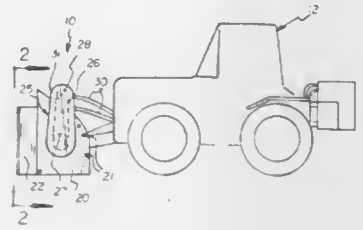
5,850,883
WINDROW AUGER COMPOSTER

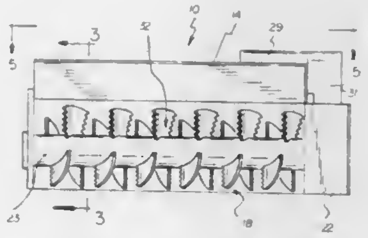
Darrel L Schwartz, HCR 2 Box 275, Dighton, Kans. 67839

Filed May 13, 1997, Ser. No. 855,007

Int. Cl.^{6} A01B *33/00*

U.S. Cl. 172—122 **20 Claims**





1. A windrow composter for use with a vehicle having a blade mounted on a front end thereof, comprising:

a housing adapted for attachment to the blade such that the housing extends upwardly from a top edge of the blade when attached thereto;

an auger assembly supported for rotation by the housing, said auger assembly including a plurality of blade members positioned in spaced relationship with respect to each other along the length of the auger assembly, said blade members being angled relative to a longitudinal axis of the auger assembly such that said plurality of blades are adapted to urge materials contacting said plurality of blades towards one side of said auger when said auger assembly is rotated;

each said blade further having edges adapted for cutting said material contacting said blades when said auger assembly is rotated; and

means for rotating said auger assembly.

5,850,884
MOLING APPARATUS

Albert Alexander Rodger, Aberdeen, and Gavin Stuart Littlejohn, York, both of Great Britain, assignors to Aberdeen University, Aberdeen, Scotland, and The University of Bradford, Bradford

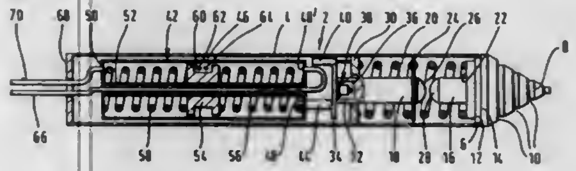
PCT No. PCT/GB95/00908, § 371 Date Jan. 27, 1997, § 102(e) Date Jan. 27, 1997, PCT Pub. No. WO95/29320, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 21, 1995, Ser. No. 727,512

Claims priority, application United Kingdom, Apr. 21, 1994, 9407902

Int. Cl.^{6} B25D *9/00;11/00;* **E21B** *1/00*

U.S. Cl. 173—91 **6 Claims**



1. A moling apparatus comprising:

a housing having a head for penetrating ground;

an anvil disposed in the housing connected to the head;

a hammer disposed in the housing and spaced from the anvil by resilient restraint means; and

a vibrator unit spaced from the hammer and arranged to transfer vibration to the housing and the hammer,

wherein the resilient restraint means and the space between the hammer and the anvil are so dimensioned that in operation in looser ground the hammer does not strike the anvil so that vibration transmitted to the housing causes fluidization of the surrounding ground and penetration of the apparatus,

while in progressively harder ground the braking effect of the ground results in progressive compression of the resilient restraint means which is sufficient to allow the hammer to strike the anvil and drive the apparatus forwardly in a predominantly percussive mode.

5,850,885
METHOD AND APPARATUS FOR A GAME

W. Steve Clark, 5293 Denmans Mountain Rd., and Eric J. Theriot, 5491 Denmans Mountain Rd., both of Belton, Tex. 76513

Filed Dec. 19, 1997, Ser. No. 994,055

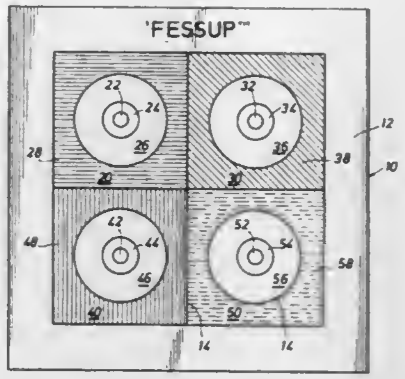
Int. Cl.^{6} A63B *67/00;* **F41J** *3/00*

U.S. Cl. 273—317 **19 Claims**

1. An apparatus for a game comprising:

a plurality of game pieces to be thrown onto a playing surface;

a playing surface for receiving thrown game pieces;



a plurality of target areas arranged on the playing surface, each target area having a plurality of concentrically arranged point areas each having a different point value and being centered about the center of the target area; and

means for identifying each target area with a separate player.

5,850,886
STEERING CONTROL DEVICE FOR VEHICLE HAVING CONTINUOUSLY VARIABLE TRANSMISSION

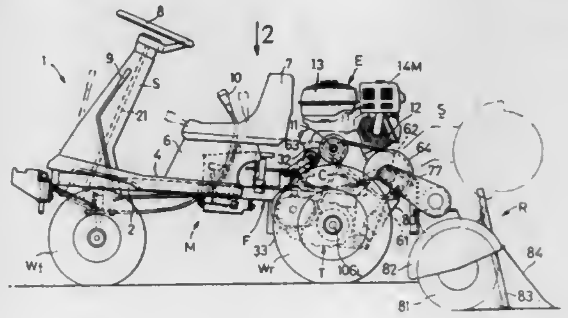
Masakatsu Kouno; Katsuhisa Ichikawa; Masahide Shinokawa, and Nobuo Yamazaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,089

Claims priority, application Japan, Jul. 20, 1995, 7-183772

Int. Cl.^{6} B62D *11/04*

U.S. Cl. 180—6.24 **23 Claims**



1. A steering control device for a vehicle comprising:

a steering wheel;

a pair of hydrostatic continuously variable transmissions each having a hydraulic pump and a hydraulic motor;

left and right driven wheels connected to said pair of hydrostatic continuously variable transmissions and driven independently;

left and right wheels to be steered which are connected to said steering wheel; and

a control means for controlling a transmission ratio of the pair of hydrostatic continuously variable transmissions in accordance with a steering angle of the steering wheel so as to turn the vehicle, wherein when the steering angle of said steering wheel becomes equal to or greater than a first predetermined steering angle of the steering wheel, said transmission ratio is controlled such that an inner wheel speed during turning of the vehicle is decreased and an outer wheel speed during turning of the vehicle is increased, wherein said first predetermined steering angle is one half of a limit steering angle.

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5,850,887
ACCELERATION SLIP CONTROL SYSTEM FOR MOTOR VEHICLE

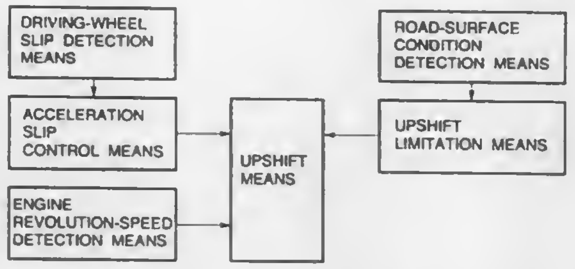
Seiichi Nakashima, Susono, and Kenji Sasahara, Gotenba, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 9, 1996, Ser. No. 762,431

Claims priority, application Japan, Dec. 21, 1995, 7-333112

Int. Cl.^{6} B60T *8/32;8/24;* **B60K** *27/02*

U.S. Cl. 180—197 **10 Claims**


DRIVING-WHEEL SLIP DETECTION MEANS
ACCELERATION SLIP CONTROL MEANS
ENGINE REVOLUTION-SPEED DETECTION MEANS
UPSHIFT MEANS
ROAD-SURFACE CONDITION DETECTION MEANS
UPSHIFT LIMITATION MEANS

1. An acceleration slip control system for a motor vehicle wherein an acceleration slip control is executed when a slip of a driving wheel has been detected, and wherein a transmission is upshifted when an engine revolution speed is greater than a predetermined speed, comprising:

means for detecting a road surface condition after the slip of a driving wheel has been detected; and

means for limiting upshift of the transmission, after the acceleration slip control is executed based on the road surface condition detected after the slip of the driving wheel has been detected.

5,850,888
VARIABLE-RATIO HYDRAULIC STEERING SYSTEM

Erhard Bergmann, Mirow; Manfred Schildmann, and Gerhard Voss, both of Parchim, all of Germany, assignors to Hydraulik Nord GMBG, Parchim, Germany

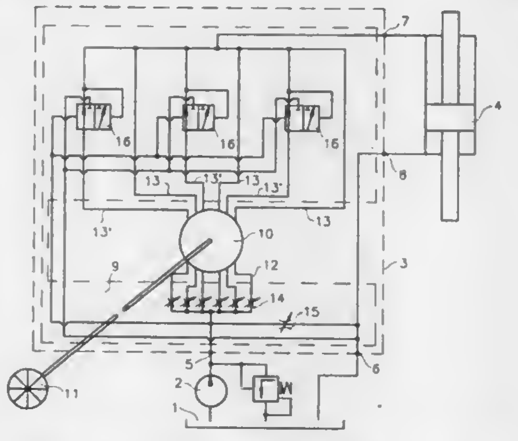
PCT No. PCT/DE95/00246, § 371 Date Sep. 3, 1996, § 102(e) Date Sep. 3, 1996, PCT Pub. No. WO95/23723, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 23, 1995, Ser. No. 702,708

Claims priority, application Germany, Mar. 4, 1994, P 44 07 308.9

Int. Cl.^{6} B62A *5/06*

U.S. Cl. 180—406 **17 Claims**



1. Hydraulic steering device with translation ratio, which comprises cylinder connections, a control valve, and a metering pump, wherein the control valve includes a control piston, controllable by a steering wheel, and a control sleeve, mechanically connected to a rotor of the metering pump, and wherein the control piston and the control sleeve are furnished with channels cooperating and communicating with each other and with the metering pump, and wherein the metering pump has several displacement chambers, of which displacement chambers several are continuously connected to one of the cylinder connections, and the remaining displacement chambers are connected by a switching unit to either one of the cylinder connections or to a discharge connector,

characterized in that a metering pump (**10**) is employed which has exclusively parallel-disposed displacement chambers with first and second lines (**13**, **13'**) of which first lines (**13**). one or several of the first lines (**13**), however at the most one less than the number of lines present, connect the metering pump (**10**) directly to one of the cylinder connections (**7**, **8**), wherein the switching unit (**16**) is coordinated to the remaining second lines (**13'**), and wherein an adjustment unit of the switching unit (**16**), on the one hand, is subjected to the pressure present upstream of the metering pump (**10**), in the position connecting the metering pump (**10**) to one of the cylinder connections (**7**, **8**) and, on the other hand, to the pressure present downstream of the metering pump (**10**), in the position connecting the metering pump (**10**) to the discharge connector (**6**) or to a feed connector (**5**).

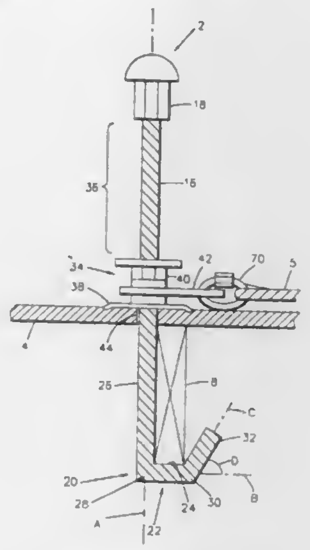
5,850,889
SINGLE POST SAFETY ANCHOR

John Rexroad, 12 Jackson Rd., Killingworth, Conn. 06419, and C. Warren Duncan, 2725 Freemont La., Costa Mesa, Calif. 92626

Continuation of Ser. No. 437,414, May 12, 1995, abandoned. This application Sep. 15, 1997, Ser. No. 932,062

Int. Cl.^{6} A47L *3/04;* **E04G** *1/36*

U.S. Cl. 182—3 **17 Claims**



1. A single post anchor for securing a safety line to a structure comprising:

(a) an elongate member having a first end and an opposite second end extending along a central axis generally coincident with said first and second ends;

(b) engagement means disposed generally at said second end of said elongate member for engaging a surface of a structure;

(c) clamping means associated with said elongate member and cooperating with said engagement means for clamping the anchor to a structure, said clamping means being disposed on said elongate member for movement axially between said first and said second ends of said elongate member for acting against another surface of a structure so as to clamp the anchor to the structure;

(d) a first bearing surface mounted on said elongate member and extending 360 degrees generally concentrically about said central axis, said first bearing surface being a nonthreaded cylindrical surface;

(e) a member having an opening for receiving said elongate member therein, said member defining a second bearing surface at least part of which rotatably engages with said first bearing surface and rotates freely in 360 degrees thereabout with said clamping means clamping said anchor to the structure; and

(f) means for connecting a safety line to said member,

(g) whereby said clamping means movement axially along said elongate member from said first end and towards said second end causes clamping of said elongate member against another surface of a structure without restricting said member from rotation about said elongate member in 360 degrees.

5,850,890
SELF-LOCKING ABSEIL DEVICE

Vincent Couttet, Chamonix Mont Blanc, France, assignor to Alp' Tech, Paris, France

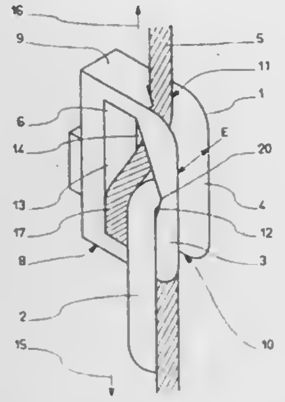
PCT No. PCT/FR95/00543, § 371 Date Oct. 21, 1996, § 102(e) Date Oct. 21, 1996, PCT Pub. No. WO95/28990, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 26, 1995, Ser. No. 732,249

Claims priority, application France, Apr. 27, 1994, 94 05331

Int. Cl.^{6} A47L *3/04*

U.S. Cl. 182—5 **14 Claims**



8. A self-locking abseil device comprising an integral main body (**1**), the main body having:

two generally parallel main flanges (**3**, **4**) separated by a distance,

a longitudinal connecting flange (**6**) joining together two longitudinal sides of the two main flanges (**3**, **4**) and forming a groove (**7**) and defining an entry end (**10**) and an exit end (**11**),

two ring guide openings (**13**, **14**) in respective main flanges (**3**, **4**) and in corresponding relationship to each other, each including at least one oblique edge (**12**) progressively converging with the longitudinal connecting flange (**6**) in the direction towards the entry end (**10**) and as far as a locking end,

wherein the longitudinal connecting flange (**6**) has a concave inner transverse profile with convergent flanks forming at least one dihedron, and

wherein the abseil device further comprises two opposite transverse connecting flanges (**8**, **9**) each joining together two respective transverse sides of the main flanges (**3**, **4**), forming transverse wedging grooves.

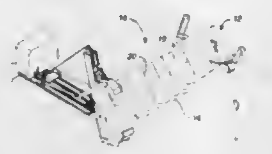
5,850,891
MOTORIZED RACK SYSTEM

Joseph Jeffery Olms; Gerald Thomas Crance, both of Salinas, and Marko Konstantin Lubic, Pebble Beach, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Oct. 30, 1997, Ser. No. 961,566

Int. Cl.^{6} B60R *9/00*

U.S. Cl. 182—127 **29 Claims**



1. A vehicular ladder delivery system, comprising:

a static rack mounted to the roof of a vehicle, wherein the static rack has a pair of upwardly extending ladder grips each of which is located near a respective side rail of a ladder near one end of the ladder;

a pivotable and extendible ladder rack assembly including:

a base member mounted to the roof of a vehicle;

an elongated pivoting member;

a slideable ladder carriage member;

wherein the elongated pivoting member is pivotably mounted to the base and wherein the elongated pivoting member has an inboard ladder grip, which is located at one end of the elongated pivoting member and which is adapted for engagement with one side rail of the ladder near the other end of the ladder;

wherein the slideable ladder carriage member slideably extends from the other end of the elongated pivoting member and wherein the slideable ladder carriage member at its distal end has an outboard ladder grip mounted thereto and also adapted for engaging the other side rail of the ladder near the other end of the ladder;

wherein the pivotable slideable carriage member retracts into the elongated pivoting member such that the respective inboard and outboard ladder grips are spaced to engage the respective side rails of the ladder near the other end of the ladder;

wherein the slideable ladder carriage member is extendible from the pivoting member such that the respective inboard and outboard ladder grips can be spaced further apart than the width of the ladder;

wherein the pivotable and extendible ladder rack assembly has a first locked-down, home position in which the elongated pivoting member is horizontally positioned on top of the vehicle and in which the slideable ladder carriage member is retracted into the pivotable slideable carriage member so that the ladder grip of the pivoting member and the ladder grip of the slideable ladder carriage member hold the ladder in a horizontal position on the roof of the vehicle;

wherein the pivotable and extendible ladder rack assembly has a second fully-tilted, but not extended, position in which the elongated pivoting member is pivoted at an acute angle with respect to the base while the sliding member remains retracted into the pivoting member so that the ladder is held in position between the inboard and outboard ladder grips;

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wherein the pivotable and extendible ladder rack assembly has a third fully-tilted and extended position in which the elongated pivoting member is pivoted to extend at an acute angle with respect to the base and the slideable ladder carriage member is extended outwardly from the pivoting member so that the ladder rests against the outboard ladder grip of the slideable ladder carriage member and the ladder grips are spaced apart to permit removal from and placement on the slideable ladder carriage member of a ladder;

a mechanism for positioning the pivotable and extendible ladder rack assembly in the first locked-down position;

a mechanism for positioning the pivotable and extendible ladder rack assembly in the second fully-tilted, but not extended, position; and

a mechanism for releasing the slideable ladder carriage member such that the pivotable and extendible ladder rack assembly assumes the third fully-tilted and extended position.

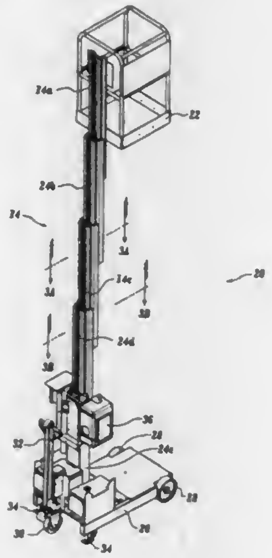
5,850,892
PERSONNEL LIFT WITH ADJUSTABLE SHIM WEAR BLOCKS

Steven D. Citron, Redmond; Ronald A. Teter, Kirkland; John Busuttil; Matthew G. Kraemer, both of Redmond, and Ronald L. Williams, Woodinville, all of Wash., assignors to Genie Industries, Inc., Redmond, Wash.

Filed Jan. 23, 1997, Ser. No. 787,871

Int. Cl.^{6} E04G *1/18*

U.S. Cl. 182—148 **27 Claims**



1. An extendible mast system comprising:

(a) a first column having (1) a first runner having sidewalls and (2) a first track on the side of the column opposite the first runner, the first track having outer sidewalls;

(b) a second column having a second track having outer sidewalls that receive and are adapted to slide along the sidewalls of the first runner;

(c) a third column having a second runner having sidewalls that are received within and adapted to slide within the outer sidewalls of the first track, the first, second, and third columns being aligned front-to-back so that the first column is sandwiched between the second and third columns and translational movement of the first column relative to the third column causes extension of the mast system;

(d) a shim block operatively associated with one of the outer walls of the first track and adapted to slide against the surface of one of the sidewalls of the second runner as the third column is translated relative to the first column, the shim block maintaining contact with and sliding along the surface of the one of the sidewalls of the second runner for a distance greater than the greatest dimension of the shim block during the translational movement of the third column relative to the first column, the contact of the shim block with the outer wall of the second runner substantially preventing movement of at least a portion of the first column relative to at least a portion of the third column during translational movement of the two columns in a first direction that is substantially sideways relative to the front-to-back arrangement of the columns; and

(e) an adjustment mechanism that is capable of moving the shim block toward and away from one of the sidewalls of the second runner, the adjustment mechanism being accessible from the outside of the outer walls of the first track when the mast system is fully assembled.

5,850,893
SELF-LOCKING DESCENDER FOR A ROPE WITH AN OPERATING LEVER

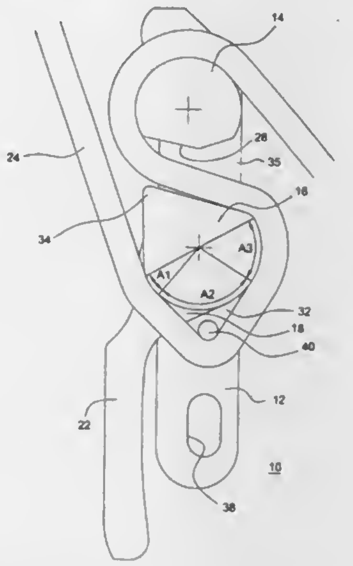
Jean Marc Hede, Le Touvet, and Paul Petzl, Barraux, both of France, assignors to Zedel, Crolles, France

Filed Oct. 7, 1996, Ser. No. 726,477

Claims priority, application France, Nov. 28, 1995, 95 14375

Int. Cl.^{6} A62B *1/20*

U.S. Cl. 182—193 **3 Claims**



1. A self-locking descender for a rope comprising:

a support flange of a stud, and of a pulley shaped as a rotary cam, said pulley being separated from the stud by a gap for passage of the rope;

an operating plate securedly affixed to the pulley and mounted with limited pivoting around a spindle in a plane appreciably parallel to the flange;

an operating handle designed to move the operating plate in a loaded state of the descender between a raised locking position and an unlocking position;

a braking surface arranged on the stud on the same side as the gap for passage of the rope, the rope being pressed against the braking surface by the action of a boss of the pulley, which is driven in rotation by the friction effect of the rope in a locking direction; and

a load-shedding device fastened to the support flange, the load-shedding device facing a lower sector of the pulley opposite the gap, the rope passing over the load-shedding device so as to transfer a part of the friction forces exerted by the rope on the pulley in the direction of the flange, and to reduce the actuating force of manipulating the operating handle to the unlocking position, whereby the rope contacts first and second elementary sectors of the lower sector of the pulley and does not contact an intermediate sector of the lower sector of the pulley to reduce a winding angle of the rope on the pulley.

5,850,894
LADDER, KIT, AND POSITIONING SUPPORT FOR LADDER

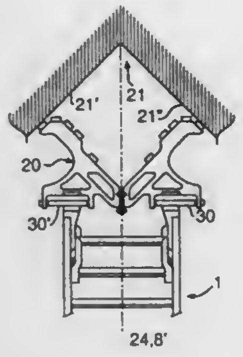
Edwin Busenhart, Feldstrasse 39, CH-9621 Oberhelfenschwil, Switzerland

Continuation of Ser. No. 523,898, Sep. 6, 1995, abandoned, which is a continuation of Ser. No. 185,969, May 18, 1994, abandoned. This application Oct. 14, 1997, Ser. No. 949,823

Claims priority, application Switzerland, Jun. 16, 1992, 1888/92

Int. Cl.^{6} E06C *7/48*

U.S. Cl. 182—214 **9 Claims**



1. A positioning support for attaching to two stiles of a ladder, the support for engaging vertical wall structures with internal corners, external corners, and flat surfaces, the support comprising:

a ladder head assembly having a plane of symmetry and two supporting arms disposed on opposing sides of said plane, each supporting arm having a distal free end spaced from the plane, each distal end having a first, middle planar surface disposed in a plane generally perpendicular relative to the plane of symmetry for mounting an element for engaging a flat wall surface, a second, inwardly-directed planar surface contiguous to the first surface and disposed in a plane at a first angle different from 0° and from 90° relative to the plane of symmetry for mounting an element for engaging a wall surface adjacent an external corner, and a third, outwardly-directed planar surface contiguous to the first surface opposite the second inwardly-directed planar surface and disposed in a plane at a second angle relative to the plane of symmetry different from 0° and from 90° and from said first angle, for mounting an element for engaging a wall surface adjacent an internal corner, the second and third surfaces extending in opposite directions from opposite ends of the middle surface at substantially a same angle with respect to the middle surface; and

elastic wall engaging elements mounted on the first, second, and third surfaces of the supporting arms.

5,850,895
METALLIC AIRCRAFT BRAKE DISK HAVING THERMAL RELIEF SLOTS

John G. Evrard, Canal Fulton, Ohio, assignor to Aircraft Braking Systems Corporation, Akron, Ohio

Filed May 12, 1997, Ser. No. 854,317

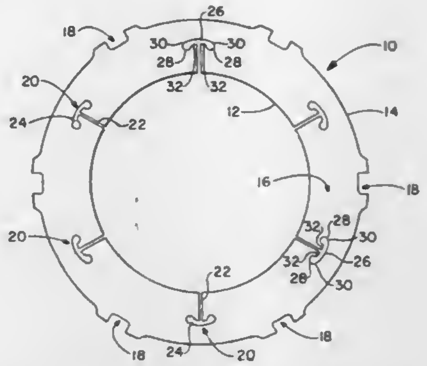
Int. Cl.^{6} F16D *65/78;65/10*

U.S. Cl. 188—264 A **10 Claims**

1. A metallic aircraft brake, comprising:

an annular disk having concentric inner and outer circumferential surfaces;

a plurality of force bearing slots in one of said circumferential surfaces for engaging said disk with a portion of an aircraft; and



a plurality of thermal relief slots extending from one of said circumferential surfaces, said thermal relief slots being anchor shaped for minimizing stress thereat.

5,850,896
SHOCK ABSORBER

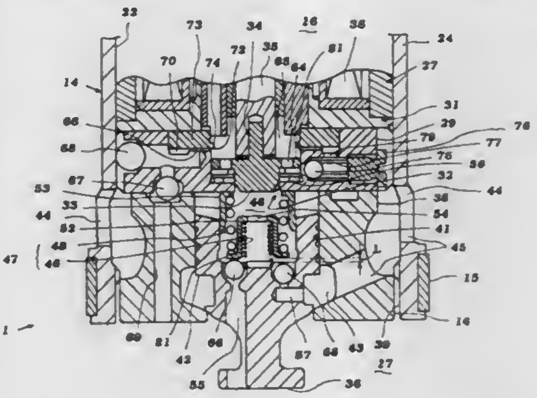
Akira Tanaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 23, 1995, Ser. No. 547,057

Claims priority, application Japan, Oct. 21, 1994, 6-281534; Sep. 29, 1995, 7-275061

Int. Cl.^{6} F16F *5/00*

U.S. Cl. 188—266.2 **18 Claims**



5. An electrically controlled shock absorber comprised of a cylinder assembly, a piston assembly received in said cylinder assembly and dividing said cylinder assembly into a pair of spaced part piston fluid chambers, means defining a flow path between said piston fluid chambers including a pressure responsive control valve for controlling such flow path, said pressure responsive control valve having a control portion subject to pressure in a pilot chamber for urging said pressure responsive control to a closed position, a pilot valve, an electric solenoid for controlling the pressure at which said pilot valve opens for communicating said pilot chamber with a lower pressure area for reducing the pressure in said pilot chamber holding said control valve in its closed position, positive stop means for limiting the opening movement of the pilot valve upon the failure of electric power, said positive stop means being provided in the area between said pilot chamber and said lower pressure area and being formed in part by said pilot valve and by an inclined stop surface engaged by said pilot valve, and a fail safe arrangement for closing the communication of said pilot chamber with said lower pressure area and establishing another path to a low pressure in said pilot chamber and the pressure at which the pressure in said pilot chamber can be relieved through said another path, said piston assembly includes a generally hollow piston member closed at one end by an integral wall and closed at its other end by a subassembly comprised of a lower piston member forming said pressure responsive control valve consisting of a valve seat for communicating said piston chambers with each other and a bore slidably supporting a control

valve element having a portion engageable with said valve seat for controlling the flow therethrough, said control valve element being formed with an integral bore forming in part the pilot chamber and further including passage means for selectively communicating said piston chambers with said pilot chamber including pressure responsive check valve means for permitting only the higher of the pressure in the piston chambers to communicate with the pilot chamber.

5,850,897

POWER TRANSMITTING APPARATUS

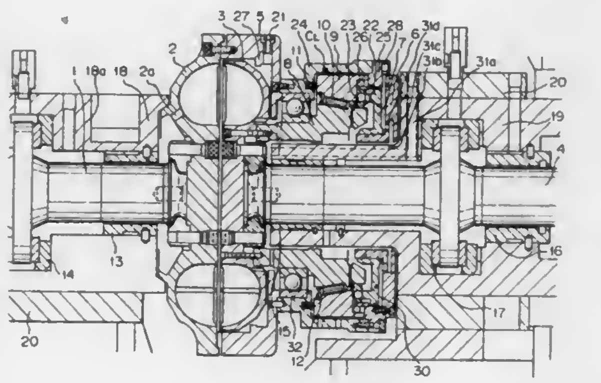
Katsumi Kimura; Michio Otsuka; Hiroshi Ogata; Kazuo Hattori, and Masahiko Ebisui, all of Kanagawa-ken, Japan, asslgnors to Ebara Corporation, Tokyo, Japan

Filed Jun. 11, 1996, Ser. No. 661,546

Claims priority, application Japan, Jun. 12, 1995, 7-169215

Int. Cl.^{6} F16H *45/02;* F16D *41/06*

U.S. Cl. 192—3.3 **8 Claims**



8. A power transmitting apparatus for transmitting power from a driving side to a driven side through at least one of a fluid joint means and a clutch mechanism, said clutch mechanism comprising:

- a rolling bearing clutch including an inner ring, an outer ring and a plurality of rollers interposed between the outer periphery of said inner ring and the inner periphery of said outer ring, said rolling bearing clutch being disposed between the driving side and the driven side for performing ON/OFF operations by allowing the track surfaces of said inner ring and said outer ring to move near to each other or be away from each other, wherein the driving side and the driven side are mechanically connected to each other by shifting said rolling bearing clutch to an ON position; and
- thrusting means for shifting the track surfaces of said inner ring and said outer ring in said rolling bearing clutch to move near to each other,
- wherein said rolling bearing clutch is constructed in such a way that said rollers are inclined with a pre-determined twist angle (β) relative to the center axis of said inner and outer rings, each of the track surfaces of said inner ring and said outer ring exhibits a hyperboloid contour that is a revolving locus scribed when said rollers are turned about the center axis, and when said inner and outer rings are relatively rotated in one direction, said rolling bearing clutch is held in the locked position while it is freely rotatable in the opposite direction, and
- wherein said inner and outer rings are locked by thrusting said inner or outer ring with said thrusting means while said inner and outer rings are relatively rotated in the rolling direction opposite to the locking direction, whereby said rolling bearing clutch is held in the ON position, and said inner and outer rings are freely rotatable by releasing said thrusting means from the thrust position, whereby said rolling bearing clutch is held in the OFF position.

5,850,898

METHOD AND DEVICE FOR THE HYDRAULIC ACTUATION OF A CLUTCH, ESPECIALLY FOR AUTOMOBILES

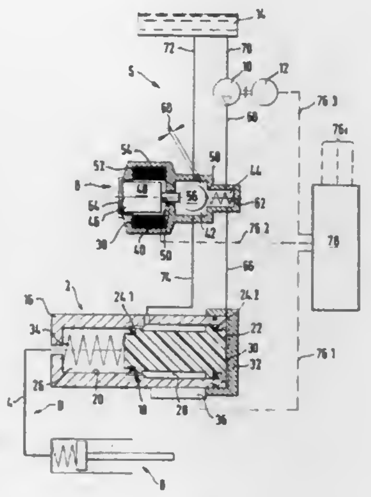
Holger Böhme, Rentweinsdorf; Wilhelm Heubner, Kaltenbrunn; Norbert Oberlack, Höchstadt; Karl Peuker, Ebern, and Herbert Sauer, Junkersdorf, all of Germany, assignors to Fahrzeugtechnik Ebern GmbH, Ebern, Germany

Filed Aug. 28, 1996, Ser. No. 704,466

Claims priority, application Germany, Sep. 15, 1995, 195 34 200.3; Aug. 20, 1996, 196 33 420.9

Int. Cl.^{6} F16D *48/02*

U.S. Cl. 192—54.3 **18 Claims**



1. An improved method for hydraulically actuating of an automobile clutch so that the clutch may be tuned, in an optimum manner, to at least one selected operating characteristic of the automobile; where the clutch is operatively connected with power circuit, which includes a clutch receiver cylinder that is actuable by the application thereto of a working pressure fluid having a preselected pressure; and where the automobile includes an engine, the method comprising the steps of:

- providing a source of working pressure fluid having variable pressure, including the preselected pressure, and including generating a servo pressure fluid in a servo circuit where the pressure of the servo pressure fluid is proportional to a preselected operating characteristic of the automobile; and
- applying working pressure fluid, which has the preselected pressure, to the clutch receiver cylinder for actuating the clutch receiver cylinder in response to generation of the servo pressure fluid in the servo circuit.

11. An improved system for the hydraulic actuation of an automobile clutch such that clutch activation may be tuned, in an optimum manner, to at least one selected operating characteristic of the automobile and where the automobile includes an engine, the system comprising:

- a power circuit;
- a servo circuit operatively connected with the power circuit;
- a clutch receiver cylinder that is in the power circuit, that is operatively connected with the clutch, and that is selectively actuable by the application thereto of a working pressure fluid having a preselected pressure;
- means for providing a source of working pressure fluid having varying pressures, which pressures include the preselected pressure, and including means for generating pressure in a servo pressure fluid in the servo circuit, with the pressure of the servo pressure fluid being proportional to a selected operating characteristic of the automobile; and
- means for applying working pressure fluid, having the preselected pressure, to the clutch receiver cylinder for activation of the clutch receiver cylinder in response to generation of the servo pressure fluid in the servo circuit.

5,850,899

FRICTION CLUTCH FOR A TRANSMISSION OF A MOTOR VEHICLE AND A CLUTCH DISC FOR A FRICTION CLUTCH

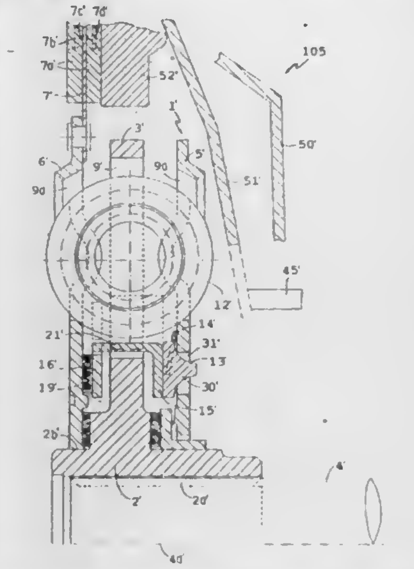
Hans Jürgen Drexl, Schonungen, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Continuation of Ser. No. 319,429, Oct. 6, 1994, abandoned. This application Oct. 25, 1996, Ser. No. 736,642

Claims priority, application Germany, Oct. 8, 1993, 43 34 374.0

Int. Cl.^{6} F16D *13/60;13/16;* B16K *17/02*

U.S. Cl. 192—70.14 **4 Claims**



1. A conventional motor vehicle friction clutch, said friction clutch comprising:

- a housing;
- a clutch disc disposed within said housing, said clutch disc defining an axis of rotation and an axial direction parallel to the axis of rotation;
- a pressure plate disposed within said housing and being movable in the axial direction, said pressure plate for applying an axial force to said clutch disc along the axial direction;
- structure to bias said pressure plate in the axial direction;
- said clutch disc comprising:
  - a hub, said hub comprising an arrangement to engage a transmission shaft;
  - a hub disc disposed concentrically about said hub and extending radially away from said hub;
  - two friction linings disposed adjacent said hub disc;
  - apparatus to support said two friction linings concentrically about said hub and concentrically about the axis of rotation;
  - said two friction linings being attached to said supporting apparatus;
  - said two friction linings being a first friction lining and a second friction lining;
  - said supporting apparatus comprising a friction lining carrier, said friction lining carrier comprising:
    - lining springs to bias said first friction lining and said second friction lining in the axial direction away from one another, said first friction lining and said second friction lining being spaced-apart from one another;
    - said lining springs being configured to define a biasing distance of travel between said first friction lining and said second friction lining upon said first friction lining and said second friction lining being engaged between said pressure plate and a rotating member of an engine;
  - said biasing distance of travel being of a minimum dimension sufficient to compensates solely for thermal deformation in friction areas of said friction clutch at maximum operating temperatures;
  - each of said two friction linings comprising a ring-shaped friction lining having an inside diameter and an outside diameter; and
  - said outside diameter and said inside diameter of each of said two friction linings being dimensioned in relation to one another to minimize thermal deformation in friction areas of said friction clutch upon application of heavy thermal load.

5,850,900

SYNCHRONIZER RING HAVING WOOD CERAMICS LAYER OF FRICTION MEMBER

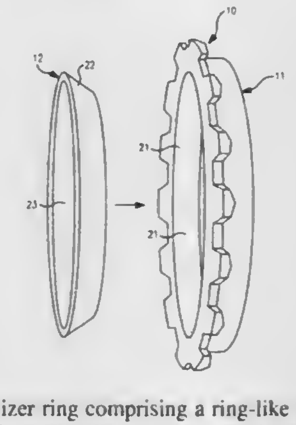
Jin Takahashi, Hokkaido; Kazuo Hokkirigawa, Yamagata ken; Toshihiro Okabe, and Koji Saito, both of Aomori ken, all of Japan, assignors to Functional Wood Material Research Association, Tokyo, Japan

Filed Nov. 19, 1996, Ser. No. 754,975

Claims priority, application Japan, Nov. 20, 1995, 7-323559

Int. Cl.^{6} F16D *69/02*

U.S. Cl. 192—107 M **7 Claims**



1. A synchronizer ring comprising a ring-like structure having a tapered inner circumferential surface and a layer of a friction member formed on said tapered inner circumferential surface of said ring-like structure, wherein said friction member is formed of wood ceramics.

5,850,901

SORTING INSTALLATION, IN PARTICULAR FOR MAIL

Rudolf Schuster, Kirchheim, and Rudolf Brugger, Puchheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

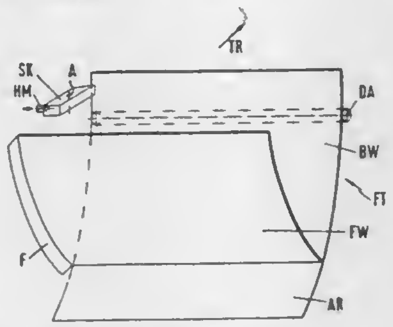
PCT No. PCT/DE94/00784, § 371 Date Feb. 15, 1996, § 102(e) Date Feb. 15, 1996, PCT Pub. No. WO95/02469, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 7, 1994, Ser. No. 581,521

Claims priority, application Germany, Jul. 14, 1993, 43 23 564.6

Int. Cl.^{6} B07C *3/08*

U.S. Cl. 198—370.05 **15 Claims**



1. A sorting installation for mail, comprising:

- a plurality of conveyed item carriers circulating on at least one conveying mechanism for receiving, transporting and controllably delivering conveyed items;

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each conveyed item carrier comprising a fixedly arranged wall part and a movably arranged wall part;
the movably arranged wall part forming in a closed position together with the fixedly arranged wall part a cross-sectionally approximately V-shaped receiving pocket for the conveyed item;
the movably arranged wall part forming in a delivery position together with the fixedly arranged wall part a downwardly open delivery slot for the conveyed items;
one of the two wall parts forming a delivery chute adjoining the delivery slot in a downward direction and sloping counter to a transporting direction and having a curved section for imparting a horizontal velocity to the conveyed items to at least partially compensate for a horizontal velocity of the item carrier in the transport direction; and
the curved section extending substantially below where said fixedly arranged wall part and moveably arranged wall part meet in a closed position at a bottom of the V-shaped receiving pocket.

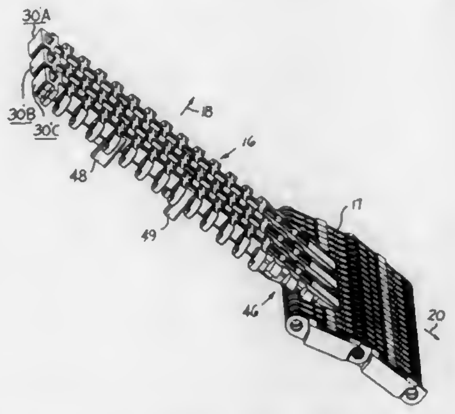
5,850,902
TRANSFERRING ARTICLES FROM A MOVING BELT EDGE ONTO A NORMALLY DISPOSED MOVING CONVEYOR BELT

Timothy J. Hicks, Ponchatoula; David W. Bogle, River Ridge; Scott J. Sirgo, and Christopher G. Greve, both of Covington, all of La., assignors to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 541,032, Oct. 6, 1995. This application Apr. 8, 1997, Ser. No. 838,320

Int. Cl.^{6} B65G ***47/26***

U.S. Cl. 198—457 **40 Claims**



1. In a conveyor belt system for moving articles in transit off a source belt moving in one direction onto a receptacle belt moving in a different direction, the improvement comprising in combination, a modular link source belt disposed for conveyance of articles in a first movement direction on a belt conveying surface, a modular link receptacle belt disposed for receiving articles conveyed on the source belt to move in said different direction on the receptacle belt which presents an entrance ramp tapered upwardly toward an article conveying surface, said entrance ramp being positioned alongside a transfer edge of the source belt for receiving articles discharged from an edge of the source belt, a guard rail system disposed to engage articles conveyed on the source belt for guiding the movement direction of such articles off the edge of the source belt toward the article conveying surface of the receptacle belt, means constructing the source belt with modular belt edge links having a shaped edge ramp configuration on an under side tapered to a thin web surface at the belt edge, said tapered under side being positionable to move dynamically across the entrance ramp with minimal contact to present a small gap width for conveying articles from the source belt to the receptacle belt, and means forming an edge ramp configuration on each source belt modular link with interlocking structural means to engage adjacent link module leading and trailing edges in the source belt thereby providing distribution of weight of transferred articles in transit among a plurality of links along the source belt length for damping dynamic flexing and fluttering of modular link tips individually along the transfer edge of the source belt.

5,850,903
CONVEYOR BELT SUPPORT

Brian William Walters, Prudhoe, England, assignor to Huwood International Limited, Gateshead, England

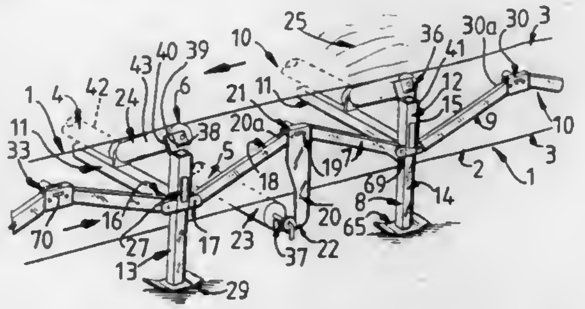
PCT No. PCT/GB95/00475, § 371 Date Sep. 5, 1996, § 102(e) Date Sep. 5, 1996, PCT Pub. No. WO95/23751, PCT Pub. Date Sep. 8, 1995

PCT Filed Mar. 6, 1995, Ser. No. 700,464

Claims priority, application United Kingdom, Mar. 5, 1994, 9404297

Int. Cl.^{6} B65G ***15/26***

U.S. Cl. 198—588 **17 Claims**



1. An endless conveyor belt support structure which is longitudinally extendable between an extended condition for supporting the endless conveyor belt, and a contracted condition, which support structure comprises a plurality of pivotally interconnected support members at opposite sides of the support structure, at least some of said support members being substantially rigidly interconnected by crossmembers to corresponding support members at the opposite side of the support structure, at least some of said support members mounting upper belt run support roller means at an upper edge portion of the support structure and at least some of said support members mounting lower belt run support roller means, said support members being interconnected so as provide for longitudinal extension and contraction of said sides of the support structure in generally concertina-like manner, characterised in that said support structure comprises a plurality of generally vertically extending support members interconnected by generally V-shape arrangements of pivotally connected pairs of link support members in which the V-shape opens out or closes up for extension or contraction of the support structure.

5,850,904
CORNER UNLOADER FOR WAREWASHER

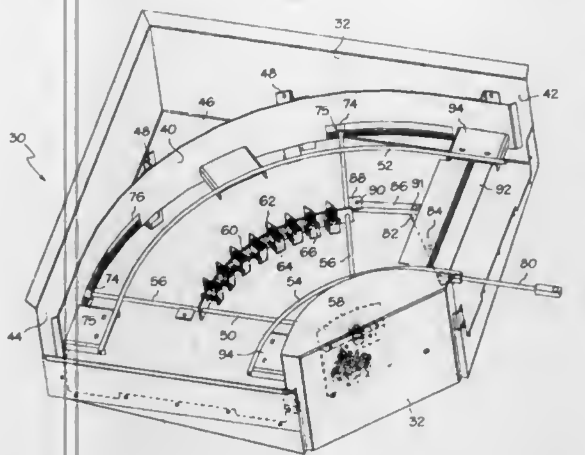
Walter L. DeBrosse, Piqua, and Louis A. Tunney, Troy, both of Ohio, assignors to Premark FEG L.L.C., Wilmington, Del.

Filed May 9, 1997, Ser. No. 853,800

Int. Cl.^{6} B65G ***25/00***

U.S. Cl. 198—744 **8 Claims**

1. A corner unloader for unloading racks of dishes from a warewasher comprising:
a frame defining a corner having an inlet end and a discharge end;
a pivoting carriage mounted within said frame;
said carriage comprising at least two spokes extending from a hub and a bracket interconnecting at least two of said spokes;
at least one pusher element pivotally mounted to said bracket;
a reciprocating drive arm for rotating said carriage about said hub;
wherein movement of said drive arm in a first direction causes the carriage to rotate in a first direction and causes said pusher element to advance any racks received on said carriage from said inlet end toward said discharge end of said unloader and movement of said drive arm in a second direction causes said carriage to rotate in an opposite direction and said pusher element pivots under said racks,
whereby repeated reciprocation of said drive arm causes said carriage to advance racks through said unloader from said inlet end to said discharge end.



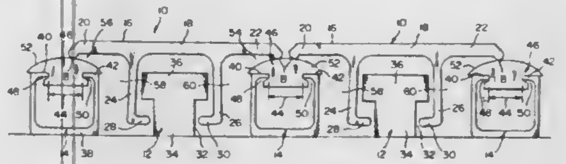
5,850,905
RECIPROCATING SLAT CONVEYORS WITH PRESSURE SEALS

Raymond Keith Foster, P.O. Box 1, Madras, Oreg. 97741

Continuation-in-part of Ser. No. 832,370, Apr. 2, 1997, Pat. No. 5,727,672. This application Jul. 17, 1997, Ser. No. 896,203

Int. Cl.^{6} B65G ***25/00***

U.S. Cl. 198—750.3 **9 Claims**



1. In a reciprocating slat conveyor composed of side-by-side conveyor slats, each having laterally outwardly extending opposite upper side portions, each including a depending, longitudinal support and seal bead with a lower edge that contacts and slides along a longitudinal bearing/seal surface on a longitudinal support beam that is below it, a conveyor structure comprising:
a longitudinal support beam positioned between each adjoining pair of conveyor slats, below adjacent upper side portions of the adjoining conveyor slats;
a longitudinal bearing/seal member on each said support beam, extending along and secured to said support beam; and
a longitudinal tongue-and-groove connection between said support beam and said bearing/seal member comprising longitudinal tongues on one of said support beam and bearing/seal member and longitudinal grooves on the other;
wherein the support beam has a top portion composed of a pair of confronting, laterally inwardly directing flanges defining a longitudinal opening between them, and said longitudinal bearing/seal member having opposite side slots in which the flanges are received, an upper portion that is above the flanges and a lower portion that is below the flanges, and said flanges providing the tongue portions and the slots forming the groove portions of the tongue-and-groove connection.

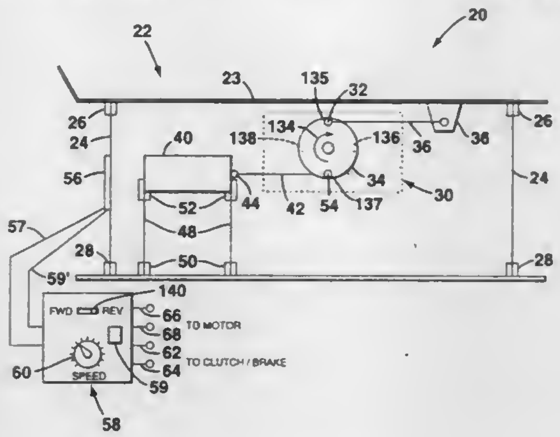
5,850,906
BI-DIRECTIONAL, DIFFERENTIAL MOTION CONVEYOR

Arthur L. Dean, Indiana, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 2, 1996, Ser. No. 691,993

Int. Cl.^{6} B65G ***25/00***

U.S. Cl. 198—750.8 **20 Claims**



1. A differential motion conveyor comprising:
a trough; and
a conveyor drive for reciprocating said trough, said conveyor drive comprising a clutch/brake assembly, said clutch/brake assembly being selectively activated for moving said trough at a first speed in a first direction and selectively deactivated when moving said trough at a second speed in an opposite direction.

5,850,907
GUIDE TRACK FOR ROLLER CHAIN DRIVES

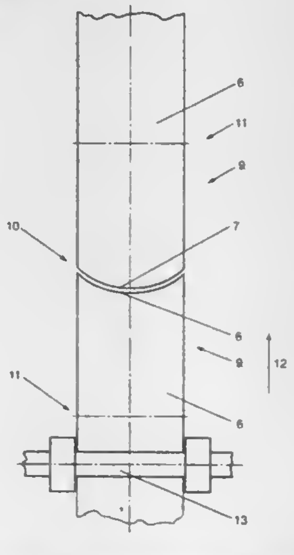
Jurgen Wenzel, Hainburg, and Harald Wolski, Rodgau, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Aug. 31, 1995, Ser. No. 521,840

Claims priority, application Germany, Sep. 3, 1994, 44 31 492.2

Int. Cl.^{6} B65G ***15/60***

U.S. Cl. 198—838 **3 Claims**

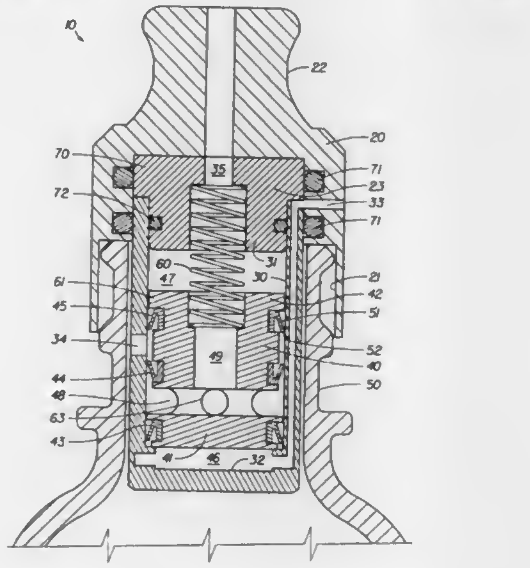


1. A printing machine sheet delivery unit comprising:
a sheet transfer chain for releasably receiving and transferring sheets, said chain including a plurality of laterally spaced rollers moveable in an endless path in a running direction, a

pair of guide tracks each having a plurality of components mounted, said components of each track having a substantially flat running surface disposed in spaced parallel relation to a flat running surface of a component of the opposite track for guiding movement of the chain rollers between the tracks, said components each having upstream and downstream ends disposed in closely spaced apart relation to each other to form gaps in the flat running surfaces of the components which guide movements of the chain rollers, and said upstream and downstream ends of said components of each track having mating substantially concave and convex end faces respectively in relation to the running direction of the chain for defining a substantially chatter free transition joint between respective flat running surfaces of the components without any portions of said concave and convex end faces being overlying relation to each other.

5,850,908
PRESSURE SENSITIVE CAP CLOSURE AND VALVE

Sidney Joseph Jasek, 4427 Morris Dr., Pearland, Tex. 77584
Filed Oct. 29, 1997, Ser. No. 959,760
Int. Cl.^{6} B65D *51/16;25/40*
U.S. Cl. 220—203.23 **10 Claims**



1. A closure apparatus for attachment to a mouth piece of a container, comprising;

a) a cap valve body, comprising a connecting portion providing a means for connecting the apparatus to the mouth piece of the container, an inner cylinder having one end vented to ambient air and the other end open to a dispensing end, said cylinder further having a central fluid delivery port positioned between the ambient and dispensing ends of the cylinder, said delivery port providing a passageway from an interior of the container to the cylinder,

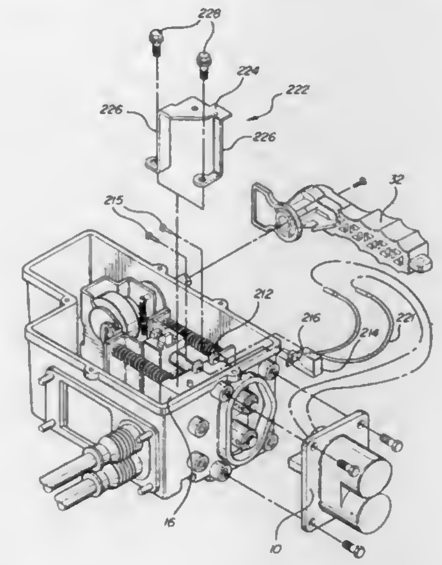
b) a moveable piston disposed within said cylinder and a means biasing piston displacement toward the ambient end of the cylinder, said piston further having a bottom end positioned near the ambient end of the cylinder and a top end positioned near the dispensing end of the cylinder, the piston further having a circumferencially positioned fluid delivery groove area positioned between the bottom and top ends and a fluid delivery passageway traveling between the delivery groove and the top end of the piston,

c) three ring seals positioned on the piston, comprising; one bottom seal positioned near the bottom end of the piston, one top seal positioned near the top end of the piston, and a middle seal positioned between the top and bottom seals, the seals are further positioned on the piston so that when the piston is biased fully toward the ambient end of the cylinder the cylinder delivery port is positioned between the top and middle seals providing no communication between the interior of the container and the dispensing end of the cylinder and when the piston is displaced toward the dispensing end of the cylinder the delivery port is positioned between the middle and bottom seals providing communication between the interior of the container and the dispensing end of the cylinder through the fluid delivery groove, and

d) a means for allowing air to travel from an outside of the container to the interior of the container when air pressure outside the container exceeds pressure inside the container.

5,850,909
SWITCH MECHANISM FOR SERVICE DISCONNECT

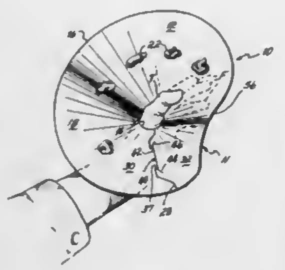
Brian L. Wagner, 7509 Oakland Hills Dr., Ypsilanti, Mich. 48197
Filed Mar. 20, 1997, Ser. No. 821,764
Int. Cl.^{6} H01H *3/40*
U.S. Cl. 200—501 **30 Claims**

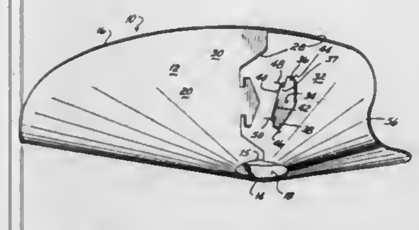


20. A disconnect switch mechanism for an electrical circuit comprising:
a contact mounted for movement between a closed position in which the circuit is closed and an open position in which the circuit is open;
actuator means moveable in a switch open direction and a switch closed direction;
drive means operative in response to movement of the actuator means in a switch closed direction to move the contact from its open to its closed position;
biasing means operative in response to movement of the contact to its closed position to generate a force biasing the contact toward its open position;
detent means operative in response to arrival of the contact at its closed position to prevent movement of the contact to its open position irrespective of the biasing force; and
release means operative in response to movement of the actuator means in a switch open direction to release the detent means to allow the biasing force to move the contact to its open position;
the actuator means including a shaft;
the drive means including a gear mounted on the shaft and a rack driven by the gear;
the detent means including a notch in the rack and a detent member operative to engage the notch in response to movement of the contact to its closed position;
the release means including a cam member carried by the shaft and operative to release the detent from the notch in response to rotation of the shaft.

5,850,910
DISPOSABLE ARTIST PALETTE

James H. Broyles, Loveland, and William D. Broyles, Pleasant Plains, both of Ohio, assignors to Wingate Packaging, Inc., Cincinnati, Ohio
Filed Jan. 16, 1997, Ser. No. 783,449
Int. Cl.^{6} B05C *17/00*
U.S. Cl. 206—1.8 **19 Claims**

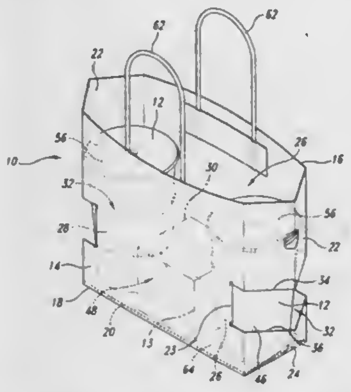




1. An artist's disposable palette comprising a paperboard blank having a peripheral edge and a hole formed centrally therein, a first cut line originating at the hole and terminating at the peripheral edge of the blank to define first and second sections of the paperboard blank which sections adjoin along the cut line, a tab in the first section, said tab being defined by the first cut line, and a second cut line in the second section defining a tab-receiving slit sized to receive the tab of the first section whereby the blank may be formed into a palette by separating the sections along the first cut line and inserting the tab into the tab-receiving slit.

5,850,911
BAG WITH INTEGRAL CUP HOLDERS

Bijan Pakzad, Bellevue, Wash., assignor to Pacific Pier, Inc., Bellevue, Wash.
Filed Sep. 4, 1997, Ser. No. 923,544
Int. Cl.^{6} B65D *71/00*
U.S. Cl. 206—217 **24 Claims**



1. A bag for carrying a selected container and selected other goods, comprising:
a bottom panel;
a plurality of side panels attached to the bottom panel, the side panels in combination with the bottom panel defining an interior space of the bag;
a retaining strap securely positioned within the interior space adjacent to one of the side panels, at least a portion of the retaining strap being spaced apart from the adjacent side panel to define a container-receiving space therebetween sized to retain the selected container therein, the interior space being sized to simultaneously carry the selected other goods therein when the selected container is retained in the container-receiving space; and
a retaining tab attached to the adjacent side panel and extending into the interior space, the retaining tab being positioned to engage the selected container when positioned in the container-receiving space.

11. A bag for carrying a selected container, comprising:
a bottom panel;
a pair of opposing first and second side panels attached to the bottom panel;
a pair of opposing first and second end panels attached to the bottom panel and to the side panels, the bottom panel, the side panels, and the end panels in combination defining an interior space of the bag; and
a retaining strap securely positioned within the interior space adjacent to the opposing first and second side panels and the first end panel, the retaining strap being sized to retain the container in a selected position in the interior space of the bag between the retaining strap and the first end panel, the retaining strap being formed by first and second cuts in the first end panel to separate the retaining strap from a remaining portion of the first end panel, the first and second cuts each having a first cut portion extending a first direction and having a stop cut portion connected to the first cut portion, the stop cut portion extending in a second direction that is different than the first direction and positiooed to prevent the first cut portion from extending past the stop cut portion.

16. A bag for carrying a selected container, comprising:
a bottom panel;
a pair of opposing first and second side panels attached to the bottom panel;
a pair of opposing first and second end panels attached to the bottom panel and to the side panels, the bottom panel, the side panels, and the end panels in combination defining an interior space of the bag;
a retaining strap securely positioned within the interior space adjacent to the opposing first and second side panels and the first end panel, the retaining strap being sized to retain the container in a selected position in the interior space of the bag between the retaining strap and the first end panel; and
a retaining tab attached to the first end panel and extending into the interior space, the retaining tab being positioned to engage the container when positioned in the selected position in the interior space.

18. A bag for carrying a selected container, comprising:
a bottom panel;
first and second side panels attached to the bottom panel and spaced apart from each other;
first and second end panels attached to the bottom panel and spaced apart from each other, the first and second end panels extending between the first and second side panels, the bottom panel, the first and second side panels, and the first and second end panels defining in combination an interior space of the bag; and
the first end panel having first and second cuts formed therein to define an upper portion of the first end panel above the first cut, a lower portion of the first end panel below the second cut, and an intermediate portion of the first end panel between the first and second cuts, the intermediate portion being movable relative to the upper and lower portions between a stored position and a containing position, the intermediate portion being positioned at the upper and lower portions when in the stored position, and the intermediate portion being within the interior space and spaced apart from the upper and lower portions when in the containing position to define a container-receiving space therebetween for retaining the container in the container-receiving space between the intermediate portion and the upper and lower portions, the first and second cuts extending into the first and second side panels.

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5,850,912
HOUSING FOR ACCOMODATING AT LEAST ONE DISC-SHAPED INFORMATION CARRIER

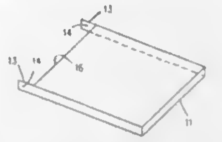
Christa Ganser, Kaltenkirchen; Karen Schrader, Hamburg; Hartmut Van Eupen, Burgdorf-Ehlershausen, and Hartmut Pfeiffer, Kankelau, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

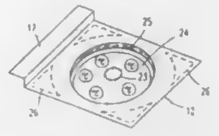
Filed Oct. 30, 1997, Ser. No. 961,415

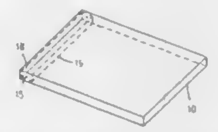
Claims priority, application Germany, Nov. 2, 1996, 196 45 275.9

Int. Cl.^{6} B65D *85/57*

U.S. Cl. 206—307 **13 Claims**







1. A housing for accommodating at least one disc-shaped information carriers, comprising:

a bottom part;
a lid part; and
a support part held by the housing for retaining the information carrier and including a raised side grip which enters a recess of the lid part when the housing is closed, a closed reservoir arranged in at least one hollow space formed in the housing, which reservoir is adapted to fit the hollow space and can be filled with a substance.

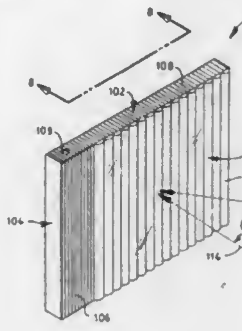
5,850,913
COMPLIANT IMAGE CARRYING PRINTED INSERT

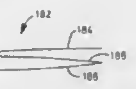
Stephen D. Fantone, Lynnfield, Mass.; Anthony L. Gelardi, Cape Porpoise, and John A. Gelardi, Kennebunkport, both of Me., assignors to Insight, Inc., Lynnfield, Mass.

Division of Ser. No. 338,246, Nov. 14, 1994, Pat. No. 5,588,526, which is a continuation-in-part of Ser. No. 222,632, Apr. 1, 1994, abandoned. This application Dec. 12, 1996, Ser. No. 764,788

Int. Cl.^{6} B65D *85/57*

U.S. Cl. 206—308.1 **5 Claims**





1. A compliant image carrying insert for use with a flat, lenticulated surface to create special visual effects, said compliant insert having preprinted thereon at least two interlaced images for use in providing different observational views along different angular perspectives, said compliant insert comprising a multipaneled sheet having at least three panels with one of said panels carrying said interlaced images over a predetermined image area thereof, said multipaneled sheet being folded so that said predetermined image area faces outwardly therefrom and said compliant insert has a substantially symmetrical bow shape when free standing and exerts reaction forces when compressed so that it tends to flatten out uniformly when placed under loads normal to said predetermined image area such that said predetermined image area will lie substantially uniformly flat against a lenticulated surface when brought into contact therewith, said panels of said multipaneled sheet being of different lengths so that, when folded, at least one of said panels interferes with the crease formed between two others to create said substantially symmetrical bow in said compliant insert thereby making it resilient in a direction substantially normal to said predetermined image area.

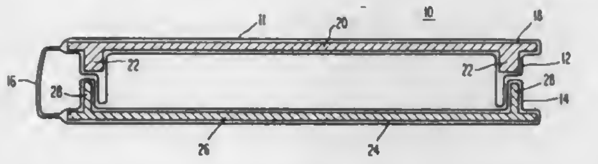
5,850,914
CRUSH RESISTANT CARTRIDGE CASE

Robert S. Patterson, Ogden; Brian R. Schick, Eden, and Edward L. Rich, Ogden, all of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Nov. 8, 1996, Ser. No. 745,809

Int. Cl.^{6} B65D *85/30*

U.S. Cl. 206—308.3 **5 Claims**



1. A crush resistant case for storing a cartridge, comprising a case shell having first and second halves, each half of the case shell comprising a hollow flat portion and a hollow ridge extending around the perimeter of the hollow flat portion, each half of the case shell containing a rigid insert having a flat portion with a rib extending substantially around the perimeter of the flat portion, the flat portion of the rigid insert being disposed within the hollow flat portion of the case shell half and the rib of the rigid insert being disposed within the hollow ridge of the case shell half.

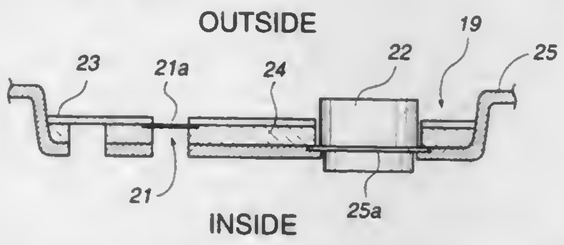
5,850,915
WATER-RESISTANT PORTABLE RECEIVER CASE

Kazuaki Tajima, Yokohama, Japan, assignor to Oi Electric Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 788,824, Jan. 23, 1997, Pat. No. 5,713,466, which is a continuation of Ser. No. 316,129, Sep. 30, 1994. This application Oct. 30, 1997, Ser. No. 961,460

Int. Cl.^{6} B65D *85/38;65/02*

U.S. Cl. 206—320 **9 Claims**



1. A method for assembling a water-tight case for a receiver, wherein the receiver includes an audio alarm, a display, a vibrating transducer, and a control button, the method comprising:

providing a case body having an outside and an inside surface, and defining an audio alarm opening, a display openings, and a control button opening;
positioning a film across the audio alarm opening, wherein the film has a pore size small enough to prevent water from passing therethrough and large enough to allow sound from the alarm to pass therethrough; and
securing the film to one of the inside and the outside of the case, thereby forming a water-tight seal.

5,850,916
TOOL PACKAGE

Barbro Pettersson, Sandviken; Ingemar Berger; Karl-Magnus Andersson, both of Bollnäs; Tord Englund, Alfa, and Bo Wåhlen, Edsbyn, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

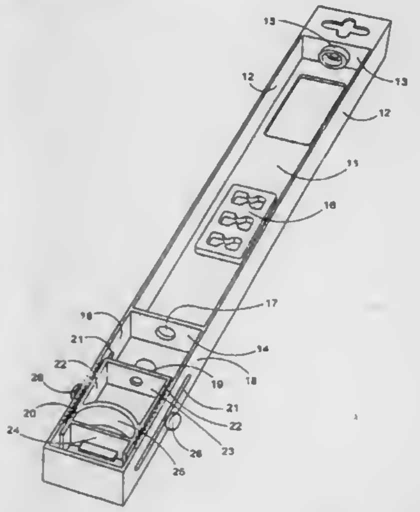
PCT No. PCT/SE96/00263, § 371 Date Dec. 22, 1997, § 102(e) Date Dec. 22, 1997, PCT Pub. No. WO96/26810, PCT Pub. Date Sep. 6, 1996

PCT Filed Feb. 29, 1996, Ser. No. 894,685

Claims priority, application Sweden, Mar. 1, 1995, 9500744

Int. Cl.^{6} A45C *11/26*

U.S. Cl. 206—349 **6 Claims**



1. A package for a tool, comprising an elongated frame with two longitudinal sides, a first cross-bar with a support for one end of the tool, a second cross-bar with a hole through which a second end of the tool can be pushed, two extensions from the longitudinal sides adjacent the second cross-bar, and a separate retainer slidable along the extensions, the retainer being movable only towards the second cross-bar locking the tool between the retainer and the first cross-bar when the tool is placed a first time in the package, and the retainer being movable both toward and away from the second cross-bar after a seal cross-piece being part of the retainer has been broken or removed wherein the tool can be unlocked by moving the retainer away from the second cross-bar.

5,850,917
SYRINGE DOSAGE TRACKING DEVICE WITH COOLING FEATURE

George D. Denton, and Laura M. Denton, both of 1717 Amber Leaf Way, Lodi, Calif. 95242

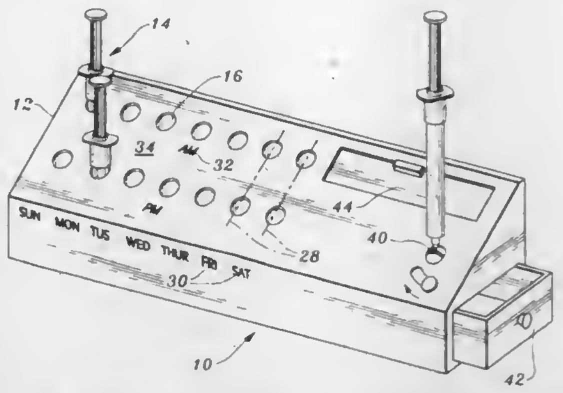
Filed Dec. 23, 1996, Ser. No. 779,967

Int. Cl.^{6} B65D *85/20;85/42;* **F25D** *3/08*

U.S. Cl. 206—366 **1 Claim**

1. A medication syringe holder, the holder comprising:

a) a base member for placing a plurality of syringes in an ordered relation corresponding to a dosage regimen to be delivered in a defined interval of time, said base member having an angled face portion;
b) a plurality of cavities imparted into said angled face portion, said cavities for ordering a corresponding plurality of syringes;



c) indicia means for indicating an interval in time required for the delivery of a syringe dosage, said indicia means being placed upon said angled face portion at a corresponding location near said cavities;
d) severing means for severing a syringe needle from a corresponding syringe body, said severing means being positioned upon said angled face portion;
e) a removable storage means for removably storing a quantity of severed syringe needles within said base member, said removable storage means being in communication with said severing means for purposes of readily accepting a quantity of severed syringe needles;
f) a closeable lid in communication with said base member for enclosing a plurality of syringes located in said cavities; and
g) means for filling said base member with a fluid cooling means for surrounding said cavities within said base member and cooling a quantity of syringes positioned in said cavities.

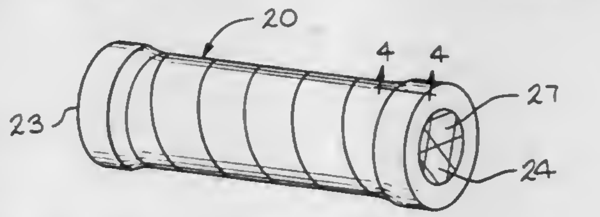
5,850,918
ROLL PACKAGE AND METHOD OF MAKING

David J. Pienta, Lambertville, Mich., assignor to Automatic Handling, Inc., Erie, Mich.

Filed Jun. 19, 1997, Ser. No. 878,736

Int. Cl.^{6} B65B *11/00;* **B65D** *85/671*

U.S. Cl. 206—410 **24 Claims**



1. A package for a roll having a longitudinal axis, a pair of spaced ends and an outer surface extending between the ends and radially spaced from said axis, said package comprising an inner first layer extending over said outer surface of said roll and wrapped on said outer surface in a direction generally parallel to said longitudinal axis, said first layer extending over said spaced ends, a separate second layer positioned over said first layer, said second layer being a cushioned protective layer, said second layer positioned over the outer surface of said first layer adjacent each of said spaced ends in a direction generally perpendicular to said longitudinal axis, and a separate third layer positioned on the outer surface of said package in a direction generally perpendicular to said longitudinal axis, said third layer having a portion forming the outermost surface of said package.

11. A method of making a package for a roll of material having a longitudinal axis, a pair of spaced ends and an outer surface extending between the ends, said package including first, second and third separate layers, said second layer being a separate protective cushion layer, including the steps of:

axially wrapping said roll with the first layer wherein the first layer is applied on the outer surface in a direction generally parallel to such longitudinal axis; and radially wrapping said roll with the second and third layers wherein said second and third layers are applied on the outer surface in a direction generally perpendicular to such longitudinal axis.

16. A package for a roll having a longitudinal axis, a pair of spaced ends and an outer surface extending between the ends and radially spaced from said axis, said package comprising an inner first layer extending over said roll outer surface and wrapped on said outer surface in a direction generally parallel to said longitudinal axis, said first layer extending over said spaced ends, a second layer positioned over said first layer, said second layer positioned over the outer surface of said first layer adjacent each of said spaced ends in a direction generally perpendicular to said longitudinal axis, said second layer being a foam layer, and a third layer positioned on the outer surface of said second layer in a direction generally perpendicular to said longitudinal axis, said third layer having a portion forming the outermost surface of said package.

17. A package for a roll having a longitudinal axis, a pair of spaced ends and an outer surface extending between the ends and radially spaced from said axis, said package comprising an inner first layer extending over said roll outer surface and wrapped on said outer surface in a direction generally parallel to said longitudinal axis, said first layer extending over said spaced ends, a second layer positioned over said first layer, said second layer positioned over the outer surface of said first layer adjacent each of said spaced ends in a direction generally perpendicular to said longitudinal axis, said second layer being a bubble pack layer, and a third layer positioned on the outer surface of said second layer in a direction generally perpendicular to said longitudinal axis, said third layer having a portion forming the outermost surface of said package.

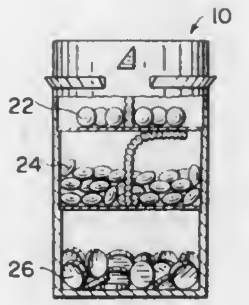
5,850,919
COMPLIANCE CLOSURE

Anna B. Freed, 185 E. 85th St., New York, N.Y. 10028

Filed Jun. 11, 1997, Ser. No. 873,074

Int. Cl.⁶ B65D *85/58*

U.S. Cl. 206—534 **21 Claims**



1. A closure, comprising:
(a) a container having a top, said container having an opening only at said top;
(b) a lid, said lid having a closed and an opened position, wherein in said closed position, said lid covers said top and is rotatable with respect to said top, and in said opened position said lid is spaced apart from said top;
(c) a plurality of indicators disposed on one of said lid and said container; and said container;
(d) a pointer disposed on the other one of said lid and said container, said pointer selectively indicating to the user when to next open said lid and take medication;
(e) multiple units of medication; and
(f) a divider adapted to be removed from said container, said divider being disposed in said container, said divider separating said container into at least two compartments, each of said at least two compartments containing said multiple units of medication, wherein said multiple units of medication contained in the first of said at least two compartments differ from said multiple units of medication contained in the second of said at least two compartments;
the container and divider being formed such that said multiple units of medication in one of said at least two compartments cannot be accessed from said top opening except after removal of said divider from said container.

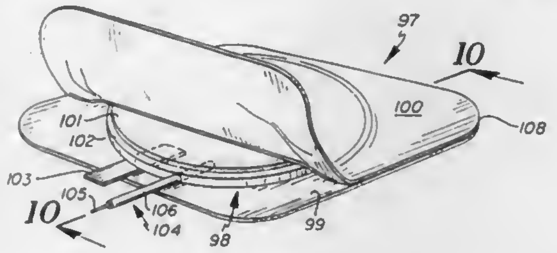
5,850,920
MEDICAL ELECTRODE PACKAGING TECHNOLOGY

Byron L. Gilman, Plymouth, and Karl J. F. Kroll, Maple Grove, both of Minn., assignors to SurVivaLink Corporation, Minneapolis, Minn.

Division of Ser. No. 411,102, Mar. 27, 1995, Pat. No. 5,579,919, which is a division of Ser. No. 950,823, Sep. 24, 1992, Pat. No. 5,402,884. This application Sep. 11, 1996, Ser. No. 712,224

Int. Cl.⁶ A61B *5/0408;5/0424*

U.S. Cl. 206—701 **19 Claims**



1. A packaged medical electrode for use with an electromedical device comprising:
a base layer;
a gel layer disposed on the base layer;
a snap type connector attached to the base layer; and
a package encompassing at least the gel layer, the package comprising first and second contacts disposed at predetermined locations wherein the first contact is electrically connected to the gel layer and the second contact is electrically connected to the snap type connector.

5,850,921
CONTAINER FOR STORAGE DISK

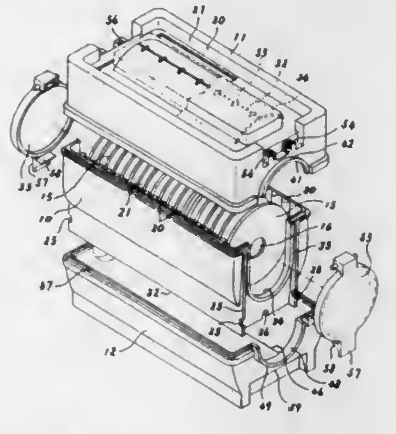
Hirokazu Shindou; Yasuhiro Okamura, both of Kawagoe, and Motoyuki Narisawa, Ichihara, all of Japan, assignors to Hymold Company, Limited, Isezaki, Japan

Filed Sep. 11, 1997, Ser. No. 927,492

Claims priority, application Japan, Mar. 24, 1997, 9-088916

Int. Cl.⁶ B65D *85/48*

U.S. Cl. 206—711 **10 Claims**



1. A container for storage disks comprising:

a disk holder for holding a plurality of storage disks arranged in a row at a predetermined interval so that axes of the storage disks substantially coincide with each other, said disk holder having cut-away portions located at end areas opposite to each other and intersecting the axes of the storage disks,
an outer case for housing said disk holder and being formed of upper and lower cases, said upper and lower cases having cut-away portions near the end areas, respectively, said cut-away portions of the upper and lower cases located at each of the end areas facing each other to form one aperture when the upper and lower cases are joined, and
caps attached to the outer case for closing the apertures formed by the cut-away portions of the upper and lower cases.

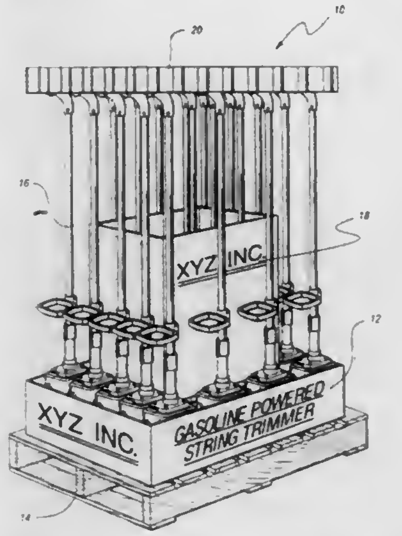
5,850,922
SHIPPING AND RETAIL DISPLAY PALLET PACK

Ronald A. Fraser, Chandler, Ariz., assignor to Ryobl North America, Inc., Easley, S.C.

Filed May 17, 1996, Ser. No. 649,206

Int. Cl.⁶ B65D *85/20*

U.S. Cl. 206—736 **19 Claims**



1. A pallet pack shipping and retail display arrangement comprising:
a base sized to fit on a shipping pallet, said base having a bottom and side walls defining an interior;
a plurality of elongate motorized implements, each having a lower and upper portion, the lower portions of the implements removably retained in the interior of the base;
a top retainer vertically separated from and held above the base solely by engagement with the upper portions of at least some of the implements so to form a predetermined array of the implements extending upwardly from the base during shipment and display.

3. A pallet pack shipping and retail display for a plurality of articles to be shipped and retailed, comprising:
a base sized to fit on a shipping pallet, said base having a bottom and side walls defining an interior;
at least one lower support member disposed in the interior of said base, said lower support member having a plurality of seats for retaining one end of each article to be shipped and displayed;
a plurality of separators disposed in said base dividing the interior thereof into a plurality of compartments, each compartment of said plurality of compartments being associated with a respective one of said plurality of seats;
a top retainer vertically separated from said base, said top retainer having a plurality of retainer cavities equal in number to the number of seats in said lower support member, each retainer cavity engageable with a respective one of the ends of said articles opposite said one end;
at least one lower support member is a plurality of lower support members disposed parallel to each other across said bottom of said base, each lower support member of said plurality of lower support members having a predetermined number of said seats; and
wherein each lower support member comprises a folded preform, said preform having plural leafs, each leaf having a number of cut outs equal to the predetermined number of seats which align with each other when the leafs are folded against each other.

6. A pallet pack shipping and retail display for articles to be shipped and retailed, comprising:
a base sized to fit on a shipping pallet, said base having a bottom and side walls defining an interior;
at least one lower support member disposed in the interior of said base, said lower support member having a plurality of seats for retaining one end of each article to be shipped and displayed;
a plurality of separators disposed in said base dividing the interior thereof into a plurality of compartments, each compartment of said plurality of compartments being associated with a respective one of said plurality of seats;
a top retainer vertically separated from said base, said top retainer having a plurality of retainer cavities equal in number to the number of seats in said lower support member, each retainer cavity engageable with a respective one of the ends of said articles opposite said one end;
at least one lower support member is a plurality of lower support members disposed parallel to each other across said bottom of said base, each lower support member of said plurality of lower support members having a predetermined number of said seats;
said lower support members are disposed parallel to each other in a longitudinal direction, said plurality of separators comprises:
  a longitudinal set of separators disposed between adjacent one of said lower support members;
  a transverse set of separators disposed normal to said longitudinal set of separators;
  said longitudinal set of separators has a first plurality of slots for receiving said transverse separators therein;
  said transverse set of separators has a second plurality of slots for receiving said longitudinal separators therein;
  said first and second sets of slots have a vertical depth selected such that the top edges of said longitudinal set of separators are substantially coplanar with the top edges of said transverse set of separators;
  each separator of said transverse set of separators has tabs provided along its lower edge intermediate said second set of slots and wherein each of said support members has slots for receiving said tabs therein.

7. A pallet pack shipping and retail display for articles to be shipped and retailed, comprising:
a base sized to fit on a shipping pallet, said base having a bottom and side walls defining an interior;
at least one lower support member disposed in the interior of said base, said lower support member having a plurality of seats for retaining one end of each article to be shipped and displayed;
a plurality of separators disposed in said base dividing the interior thereof into a plurality of compartments, each compartment of said plurality of compartments being associated with a respective one of said plurality of seats;
a top retainer vertically separated from said base, said top retainer having a plurality of retainer cavities equal in number to the number of seats in said lower support member, each retainer cavity engageable with a respective one of the ends of said articles opposite said one end;
said plurality of compartments includes at least one interior compartment surrounded by a predetermined number of exterior compartments, said pallet pack further including a separator box separating said at least one interior compartment from said predetermined number of exterior compartments, said separator box having a height intermediate the distance said top retainer is separated from said base.

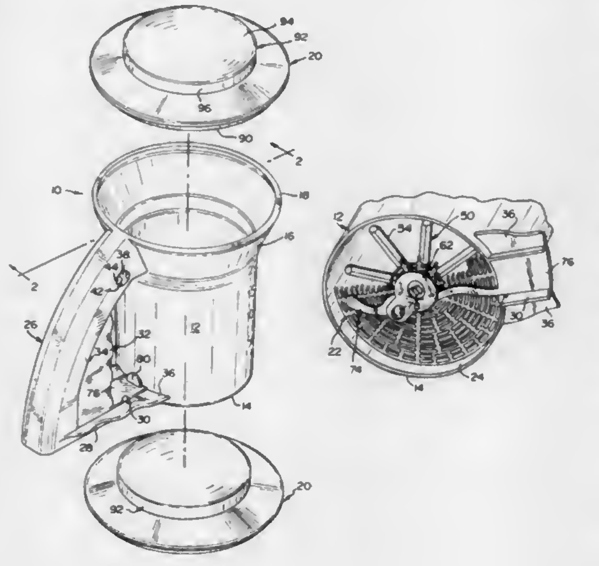
10. A pallet pack shipping and retail display for articles to be shipped and retailed, comprising:
- a base sized to fit on a shipping pallet, said base having a bottom and side walls defining an interior;
- at least one lower support member disposed in the interior of said base, said lower support member having a plurality of seats for retaining one end of each article to be shipped and displayed;
- a plurality of separators disposed in said base dividing the interior thereof into a plurality of compartments, each compartment of said plurality of compartments being associated with a respective one of said plurality of seats;
- a top retainer vertically separated from said base, said top retainer having a plurality of retainer cavities equal in number to the number of seats in said lower support member, each retainer cavity engageable with a respective one of the ends of said articles opposite said one end; and
- said top retainer comprising a set of inverted U-shaped longitudinal members and a set of inverted "U" shaped transverse members disposed transverse to said longitudinal members, at least one of said longitudinal and transverse members having slots provided thereon to receive the other of said longitudinal and transverse members thereacross to form said plurality of retainer cavities.

5,850,923
FLOUR SIFTER
Pieter K. J. DeCoster, and Dimitri M. C. J. Backaert, both of Aalst, Belgium, assignors to Dart Industries Inc., Orlando, Fla.

Filed Aug. 30, 1996, Ser. No. 705,933

Int. Cl.^{6} B07B *1/49;1/24;1/32*

U.S. Cl. 209—417 **7 Claims**



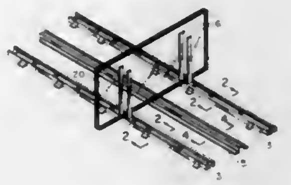
1. A sifter for pulverulent foodstuff, comprising:
- a container having upper and lower ends and an interior for receiving said foodstuff;
- a sifter screen mounted to said lower end of said container in communication with said interior;
- an agitator mounted within said interior in close proximity to said sifter screen and for relative movement thereto, said agitator including a central hub with a peripheral surface and a crank arm extending radially outward from said hub, said crank arm including an elongated slot therein; and
- a drive arm mounted to, and for substantially reciprocating movement between first and second positions with respect to, said container, said drive arm including a pin received within said slot and further including a cam edge engaged with said peripheral surface of said hub, said cam edge causing relative sliding of said pin within said slot during said movement of said drive arm between said first and second positions.

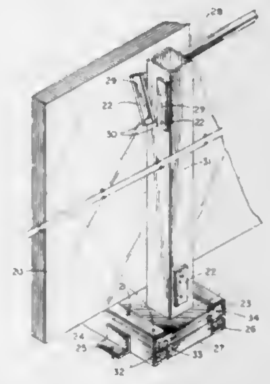
5,850,924
VERTICAL STORAGE RACK SYSTEM
Clifford Lee Borter, 4922 N. Melrose Ave., Tampa, Fla. 33629

Filed Oct. 16, 1995, Ser. No. 509,776

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—41.14 **6 Claims**





1. A vertical storage rack system for handling and storing glass sheets comprising: three horizontal rails secured to a supporting surface of which two rails are outer rails and one rail is a middle rail, a plurality of square vertical post units with cam-shaped bases which lock into the two outer rails with a 90° rotation, locking pins that drop into the cam-shaped bases and rest against the outer rails preventing any further rotation allowing the square vertical post units to be positioned anywhere along the outer rails leaving the tops of the square vertical post units open to allow handling higher sheets of glass and to allow glass loading from the top, where the square vertical post units secure glass sheets in a common plane to form a vertical support, where the outer rails hold the weight of the glass and the middle horizontal rail is utilized in the removal of individual glass sheets to prevent the glass sheets from hitting the support surface as they are removed from the storage system.

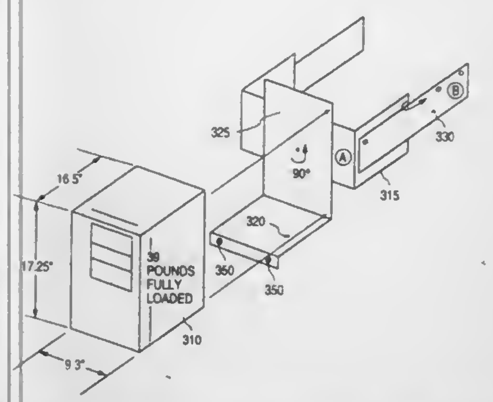
5,850,925
RACK MOUNT MECHANISM FOR MID-TOWER TYPE COMPUTER ENCLOSURE
Jerry D. Gandre, Austin, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Filed Nov. 26, 1996, Ser. No. 756,449

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 211—26 **21 Claims**

1. A rack mount mechanism for a computer enclosure comprising:
- first and second bars fixed in a stationary position;
- a trolley slidably mounted on the first and second bars, the trolley being movable in a direction between a stowed position near one end of the bars and an extended position near an opposite end of the bars; and
- a bracket rotatably coupled to the trolley, the bracket being attachable to the computer enclosure and having an axis of rotation extending in the direction of trolley movement between the stowed and extended positions, and wherein the bracket includes a firstportion for engaging with a bottom of the computer enclosure and a second portion for engaging with a back of the computer enclosure, the first and second portions of the bracket forming an L shape.



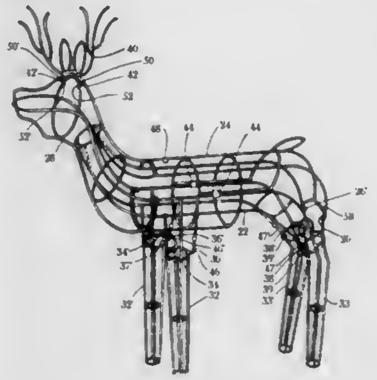
5,850,926
Patent Not Issued For This Number

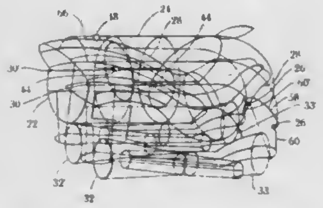
5,850,927
FREE-STANDING COLLAPSIBLE THREE-DIMENSIONAL WIRE FRAMEWORK AND LIGHT SUPPORTING DISPLAY
Wen-Hua Pan, B1, 11F, 126, Sec. 4, Nanking East Road, Taipei, Taiwan

Filed Jun. 29, 1998, Ser. No. 106,693

Int. Cl.^{6} A47F *5/00*

U.S. Cl. 211—181.1 **14 Claims**





1. A collapsible, three-dimensional wire framework and light supporting display comprising:
- a first wire frame assembly defining a first predetermined portion of a figure;
- a second wire frame assembly defining a second predetermined portion of said figure, said second frame assembly hingedly connected to said first frame assembly for movement between a first open position and a second closed position in relationship with said first frame assembly;
- a third wire frame assembly defining a third predetermined portion of said figure, said third frame assembly hingedly connected to said first frame assembly for movement between a first erected position and a second folded position;
- said first and third frame assemblies sized and configured for enabling said first frame assembly to receive said third frame assembly at least partially within said first frame assembly when said third frame assembly is hingedly moved from said first erected position to said second folded position;
- said first, second and third frame assemblies further sized and configured for enabling said second frame assembly to receive said third frame assembly at least partially within said second frame assembly when said second frame assembly is hingedly moved from said first open position to said second closed position while said third frame assembly is in said second folded position and is received at least partially within said first frame assembly; and
- at least one fourth wire frame support assembly defining a fourth predetermined portion of said figure, said fourth frame assembly hingedly connected to said first frame assembly for movement between a first erected position and a second folded position.

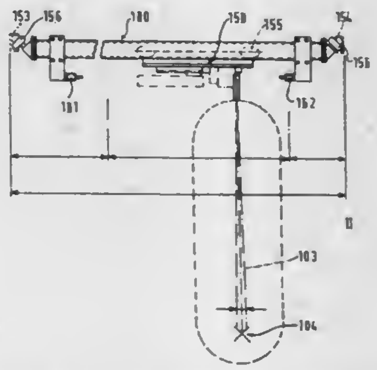
5,850,928
ARRANGEMENT FOR A VERTICAL AND HORIZONTAL GOODS HOIST
Sture Kahlman, and Johan Olsson, both of Bentsfors, Sweden

Continuation-in-part of Ser. No. 781,155, Oct. 31, 1991, Pat. No. 5,350,075. This application Sep. 26, 1994, Ser. No. 312,118

Claims priority, application Sweden, May 2, 1989, 8901579; Jan. 2, 1990, 9000003

Int. Cl.^{6} B66C *13/12*

U.S. Cl. 212—285 **1 Claim**



1. A load hoist arrangement comprising a lifting cable, a manually controllable load device supported by the lifting cable, a first driving means for driving said load device in a horizontal direction, a horizontal movement transmission element, said movement transmission element having a slidable position indicator control which is laterally slidable in reaction to a lateral movement of the lifting cable, a first potentiometer which is actuated by said slidable position indicator control, a transport trolley mounted on said first driving means and having a hoist machinery connected with said lifting cable, said transport trolley movable in at least two opposite horizontal directions, said first driving means including at least two drive motors for driving said trolley in said two opposite horizontal directions, and means for connecting each of said drive motors with said position indicator control, whereby a manual lateral movement in one direction of said lifting cable by an operator actuates said movement transmission element such that said position indicator control transmits a signal to one of said drive motors, causing said one drive motor to drive said trolley in the same direction as the manual lateral movement of said lifting cable, and whereby a manual lateral movement of said lifting cable in an opposite direction to said one direction likewise causes the trolley movement in an opposite direction, said hoist machinery including a second driving means for driving said load device in a vertical direction, a second movement transmission element having a vertical position indicator control which reacts to a vertical movement of a lifting cable handle means, and a second potenti-

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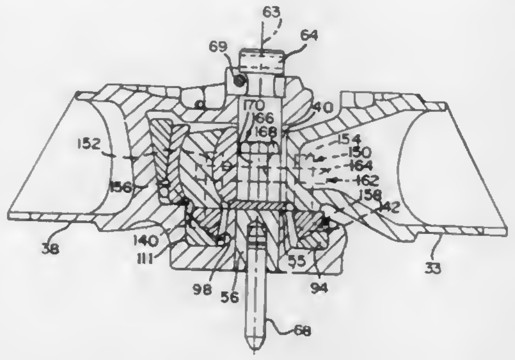
ometer which is actuated by the vertical position indicator control, whereby a manual vertical movement of the lifting cable handle means in one vertical direction by an operator actuates the second movement transmission element such that the vertical position indicator control transmits a signal to the second driving means, whereby the load device is moved in said one vertical direction, and whereby manual vertical movement of the lifting cable handle means in a second vertical direction causes movement of the load device in said second vertical direction.

5,850,929
RING SEAT REMOVAL SYSTEM FOR A RAILCAR ARTICULATED CONNECTOR

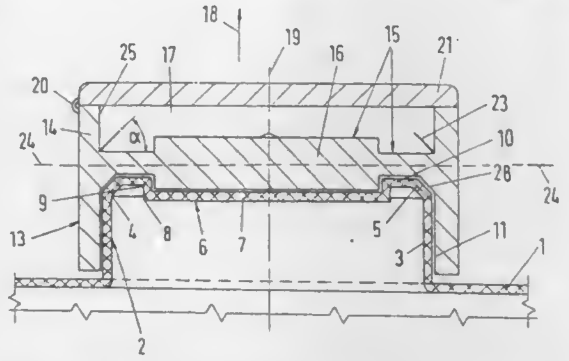
Horst T. Kaufhold, and John J. Steffen, both of Aurora, Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.
Division of Ser. No. 792,808, Jan. 30, 1997, Pat. No. 5,809,898.
This application Apr. 16, 1998, Ser. No. 61,306
Int. Cl.^{6} B23P *19/00*
U.S. Cl. 213—75 R **3 Claims**



1. In an articulated connection for joining adjacent railcars,
said articulated connection having a male connecting member and a female connecting member with an open end, an annular groove with an outer groove wall, a hub with an upper surface generally centrally positioned in said groove, and a ring seat positioned in said groove about said hub,
a ring positioned on said ring seat in said annular groove,
said male connecting member secured to an end of one of the adjacent railcars and the female connecting member secured to an end of the other of said adjacent railcars,
said male member adapted to be received in the open end of said female member to nest on and be supported by said ring on said ring seat in said annular groove while allowing horizontal and vertical movement between said male connecting member and said female connecting member,
a ring seat ejection arrangement for said ring seat in said female connecting member,
said annular groove having a vertical axis through said hub and normal to said floor,
said ring seat having an outer top radiused surface, and undersurface contacting said floor, and an outer perimeter, said ejection means comprising:
at least one ring-seat slot radially outwardly extending from said ring-seat top radiused surface,
a tool assembly having a contact plate, a grasping arm with an upper end and a finger for each said ring-seat slot, and a fixture,
said plate seated on said hub upper surface,
said fixture having an aperture for each said grasping arm and a central throughbore with a threaded sidewall,
each said grasping arm in a fixture aperture moveable to position its respective finger in a radially extending slot and securable in its respective fixture aperture at its upper end,
a bolt with a threaded shaft matable with said throughbore sidewall, said shaft having a lower end to contact said plate and to move said fixture, said arms and said ring seat vertically upward as said bolt is threaded into said throughbore to provide a uniform mechanical force to said ring seat for its removal from said annular groove.

5,850,930
POURING PART OF A PACKAGE AND OPENING DEVICE THEREFORE

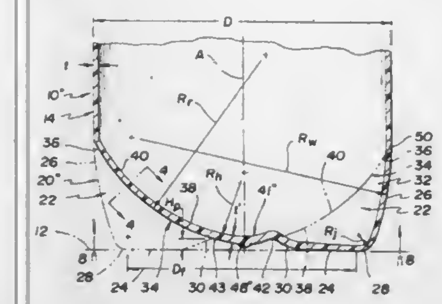
Leif Jönsson, Rydebäck, and Tommy Nilsson, Eslöv, both of Sweden, assignors to Tetra Laval Holdings & finance S.A., Pully, Switzerland
PCT No. PCT/EP94/04031, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/17339, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 3, 1994, Ser. No. 656,231
Claims priority, application Germany, Dec. 20, 1993, 43 43 442.8
Int. Cl.^{6} B65D *51/22*
U.S. Cl. 215—226 **11 Claims**



1. The combination of a pouring part with a device for opening the pouring part attached to a top wall of a package for flowable media and projecting in a raised manner from said top wall, wherein the pouring part comprises a collar (**3**) projecting in a raised manner from said top wall (**1**), and a sealing wall (**6**) attached to an outer end (**4**) of the collar by means of an inwardly directed, at least partly annular surface section (**5**), said opening device comprising a cap (**13**) extending over the pouring part (**2**) and removably fitted to said pouring part (**2**), said cap (**13**) is rotatable over at least 90° in relation to the pouring part (**2**) and has an internal space (**17**) and at least two blades (**23**) projecting into said space (**17**), said blades (**23**) are insertable into sealing wall (**6**) upon rotation of the cap (**13**), wherein the cap (**13**) is rotatable within a plane without an axial displacement, the surface section (**5**) together with the collar (**3**) enclosing in cross section an angle of 5°–60°.

5,850,931
PLASTIC BLOW MOLDED FREESTANDING CONTAINER

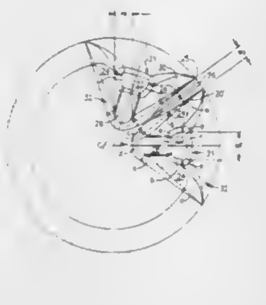
William C. Young, Superior Township, Mich.; Richard C. Darr, Seville, Ohio, and Dale H. Behm, Palm Springs, Calif., assignors to Plastipak Packaging, Inc., Plymouth, Mich.
Continuation of Ser. No. 631,034, Apr. 18, 1996, Pat. No. 5,685,446, which is a continuation of Ser. No. 166,460, Dec. 14, 1993, which is a continuation of Ser. No. 915,072, Jul. 16, 1992, Pat. No. 5,287,978, which is a continuation-in-part of Ser. No. 771,636, Oct. 4, 1991, Pat. No. 5,139,162, which is a continuation of Ser. No. 614,220, Nov. 15, 1990, Pat. No. 5,064,080. This application Jun. 18, 1997, Ser. No. 877,663
Int. Cl.^{6} B65D *1/02;1/42;23/00*
U.S. Cl. 215—375 **18 Claims**

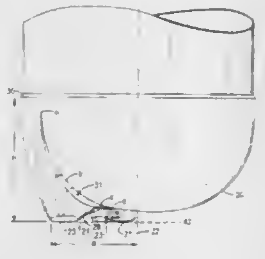


18. In a plastic blow molded container having a central axis A and including a cylindrical body portion that extends vertically about the central axis A with a diameter D and has a nominal wall thickness t, an upper end closure unitary with the upper extremity of the cylindrical body portion and including a dispensing spout, and a freestanding base structure with the cylindrical body portion to close the lower extremity thereof, said freestanding base structure comprising:
a plurality of downwardly projecting hollow legs spaced circumferentially from each other with respect to the body portion; each leg having a lower flat foot coplanar with the feet of the other legs to cooperate therewith in supporting the container in an upright position; each lower flat foot having a truncated wedge shape; the lower flat feet having an outer diameter D_f; each leg also having an outer wall that extends from the outer extremity of the flat foot thereof to the cylindrical body portion; the outer wall of each having a curved shape with a radius of curvature of curvature R_w and including an upper end that is tangent with the adjacent portion of the lower extremity of the cylindrical body portion; the flat foot and the outer wall of each leg having an abruptly curved juction with a radius of curvature R_j less than .05 of the diameter D of the cylindrical body portion; each leg also having an inner connecting portion that is inclined and extends upwardly and inwardly from the inner extremity of the flat foot thereof; and each leg also having a pair of side walls that cooperate with the flat foot, the outer wall and the inner connecting portion to close the leg;
a plurality of curved ribs spaced circumferentially from each other between the downwardly projecting legs and connecting the adlacent side walls of the legs; each rib having an outer upper end that has a circumferential width W_u and extends upwardly for connection to the cylindrical body portion of the container; each rib also having an inner lower end located between the inner connecting portions of the legs on opposite sides thereof and extending downwardly and inwardly toward the central axis A of the container; the inner lower end of each rib having a circumferential width W_l that is larger than the circumferential width W_u of the outer upper end of the rib; each rib also having a curved intermediate portion that extends between the outer and inner lower ends thereof with an outwardly convex shape; the curved intermediate portion of each rib having a circumferential width that tapers from the inner lower end thereof to the outer upper end thereof with an included angle in the range of about 1° to 8°; and each rib having a radius of curvature R_l greater than about 0.6 of the diameter D of the cylindrical body portion and with a center of curvature on the opposite side of the central axis A from the rib;
a generally round hub that is located along the central axis A with the legs and curved ribs extending radially therefrom; said hub having a periphery with a diameter D_h in the range of about 0.15 to 0.25 of the diameter D of the cylindrical body portion; the periphery of the hub also having connections to the upwardly extending inner connecting portions of the legs and to the downwardly extending inner lower ends of the curved ribs; the periphery of the hub being spaced above the plane of the flat feet of the by a height H_p; and the ratio of the diameter D_f over the height H_p being in the range of about 25 to 90;
the inner extremities of the flat feet, the inner connecting portions of the legs, the inner lower ends of the curved ribs, and the hub each having a wall thickness t' that is at least 1.7 times the normal wall thickness t of the cylindrical body portion.

5,850,932
BASE DESIGN FOR ONE PIECE SELF-STANDING BLOW MOLDED PLASTIC CONTAINERS

Martin H. Beck; George F. Rollend, both of Amherst; Robert Caldicott, Nashua, and Dennis C. Connor, Merrimack, all of N.H., assignors to DTL Monofoot Limited Partnership, Amherst, N.H.
Filed Jul. 7, 1997, Ser. No. 889,059
Int. Cl.^{6} B65D *90/12*
U.S. Cl. 215—375 **18 Claims**

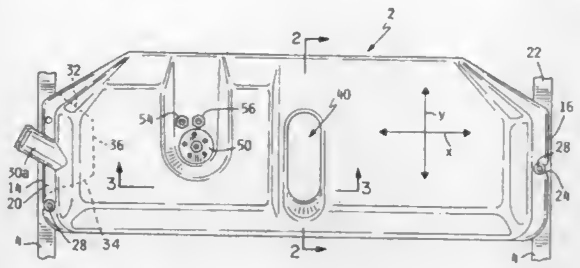




1. A self-standing polyester container for carbonated beverages defining a longitudinal axis and comprising a sidewall portion which is integral with and terminates in a closed base of a petaloid form having an underlying base form with at least three feet depending therefrom and disposed about the longitudinal axis whereby the container is self standing, each said foot being defined by: i) a support pad; ii) a sloping outer wall extending radially outward from said axis and upward from an outer circumferential convex edge of the support pad to the sidewall portion; iii) sloping side walls each extending upward from circumferential convex side edges of the support pad, each of said sloping side walls extending radially from said axis to a transition between each sloping side wall and an associated strap; each strap being disposed between adjacent pairs of feet and extending radially outward from a base area, centered on said longitudinal axis, toward said sidewall portion, the straps and the base area conforming to the underlying base form; iv) a sloping ankle extending inward and upward from an inner circumferential convex edge of the support pad to a junction with the base area; and, v) blending concave curvatures, wherein each of said blending concave curvatures forming the transition of each said sloping side wall and associated strap of each foot, and extending from adjacent a radially outermost extension of the associated strap to a circumferential center of the junction of the associated ankle and the base area, said blending concave curvatures increasing in radius transversely of the curvature from its radially outermost extension to the circumferential center of the junction of the associated ankle and base area at which said blending concave curvatures smoothly joins each other.

5,850,933
MOLDED GAS TANK WITH INTERNAL BAFFLE

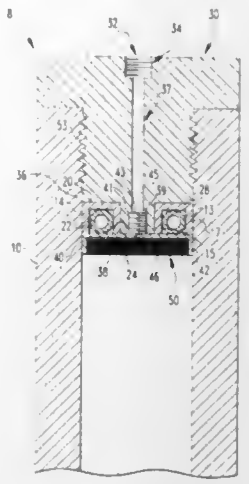
John A. Pazik, Rte. 1, Box 152, Clearwater, Minn. 55320
Continuation of Ser. No. 761,714, Sep. 17, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,858
Int. Cl.^{6} B65D *11/22*
U.S. Cl. 220—563 **15 Claims**



1. A generally rectangular fuel tank for a vehicle, which comprises:
- a tank having a predetermined length along a longitudinal axis and a predetermined width along a transverse axis, the length of the tank being longer than its width, the tank having opposed top and bottom walls connected by opposed front and rear walls and opposed left and right side walls to form an interior, hollow cavity for receiving fuel;
- wherein the tank includes means for mounting the tank in the vehicle such that the longitudinal axis of the tank is disposed transverse to a forward direction of motion of the vehicle such that fuel carried in the tank will slosh between the left and right side walls of the tank during turns of the vehicle;
- wherein the tank is integrally molded out of a plastic material;
- wherein the tank is provided with a single, integrally molded pocket that extends through the depth of the tank between the top and bottom walls of the tank, the pocket being generally at right angles to the longitudinal axis of the tank and positioned approximately midway between the left and right sides of the tank such that the pocket forms a transverse baffle in the tank between the left and right side walls thereof extending all the way between the top and the bottom walls of the tanks, whereby the pocket minimizes sloshing of the fuel between the left and right side walls of the tank during turns of the vehicle; and
- wherein the interior hollow, cavity of the tank is otherwise unobstructed by any other baffle forming walls except for the walls forming the single, integrally molded pocket to maximize the fuel receiving volume of the cavity and promote fuel flow within the cavity to a fuel pick up tube received in the cavity.

5,850,934
PRESSURE VESSEL SEAL WITH SELF-ENERGIZING SEAL

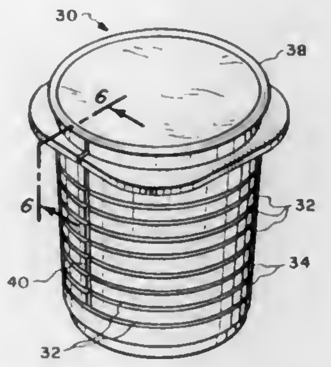
M. Lalith Kumar, 457 Dover Dr., Pittsburgh, Pa. 15238
Continuation of Ser. No. 734,406, Oct. 16, 1996, abandoned, which is a continuation of Ser. No. 175,966, Dec. 30, 1993, abandoned. This application Jul. 21, 1997, Ser. No. 897,879
Int. Cl.^{6} F17G *13/06;* **F16J** *13/00*
U.S. Cl. 220—582 **7 Claims**



1. A pressure vessel device comprising:
- a vessel body having a central axis, a chamber and an open end that communicates with the chamber;
- an end cap which fits over the open end to engage the vessel body and close the open end, said end cap having a seal groove; and
- a self-energizing seal means disposed between and in contact with the end cap and the vessel body in the seal groove for sealing the end cap with the vessel body as pressure increases in the vessel body, said self-energizing seal means having an inner lip and an opposing outer lip, said inner and outer lips in parallel with the central axis, said inner lip contacting the end cap, said outer lip contacting the vessel body, said inner and outer lips being spread apart from each other and against the end cap and vessel body, respectively, as pressure increases in the vessel body, said seal means having a spring disposed between the inner and outer lips to bias the lips against the end cap and vessel body, respectively, said seal means having a seal retainer in contact with the inner and outer lips and the vessel body and the end cap, and a frit in contact with the seal retainer that acts as a flow distributor and retains solids in the chamber.

5,850,935
CONTAINER WITH SHOULDER FLANGE AND REMOVABLE SIDEWALL PORTIONS, AND RELATED METHOD

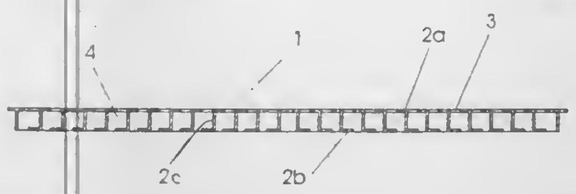
Frano Luburic, Fullerton, and Robert R. Roper, Mission Viejo, both of Calif., assignors to Ropak Corporation, Fullerton, Calif.
Filed Aug. 3, 1994, Ser. No. 285,349
Int. Cl.^{6} B65D *6/08*
U.S. Cl. 220—675 **20 Claims**



1. A container having a base portion and a sidewall portion extending upwardly therefrom when said container is in its normally upright position, said sidewall portion including one or more primary scorelines means for selectively tearing from said sidewall portion corresponding sub-portions of said sidewall portion, said container being nestable with other like containers of the same size, further including shoulder means operatively attached to said sidewall portion and extending outwardly therefrom, to aid in handling the containers, to prevent or restrict rotation or other movement of the containers, to help prevent said container from being tipped over, and to restrict or prevent the flow of gas or liquid or solid from above said shoulder means to below said shoulder means or vice versa.

5,850,936
IMPENETRABLE WALL ELEMENT

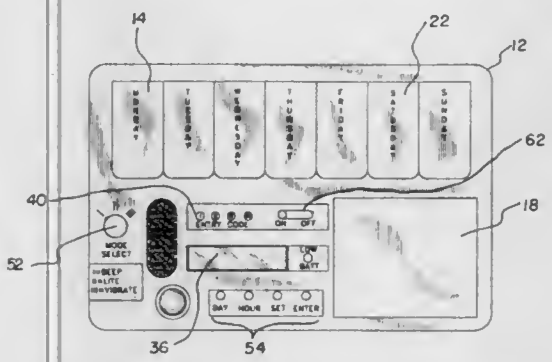
Hans Umiker, Egg, Switzerland, assignor to Schoeller-Plast S.A., Romont, Switzerland
PCT No. PCT/EP96/02206, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/37419, PCT Pub. Date Nov. 28, 1996
PCT Filed May 22, 1996, Ser. No. 776,967
Claims priority, application Germany, May 23, 1995, 195 18 955.8
Int. Cl.^{6} B65D *25/04*
U.S. Cl. 220—676 **12 Claims**



1. An integral wall formation for boxes and containers, said wall formation comprising:
- an outer surface having a plurality of longitudinally extending outer legs wherein adjacent ones of said outer legs define outer apertures therebetween:
- an inner surface having a plurality of longitudinally extending inner legs wherein adjacent ones of said inner legs define inner apertures therebetween, and further wherein at least a majority of said inner apertures are staggered with respect to said outer apertures and in combination form openings in regular arrangement for airing goods stored in the container; and
- at least one crossbar extending across said inner and outer apertures and transversely to and adjoined with said inner legs and said outer legs.

5,850,937
DISPENSER WITH MEANS FOR ALERTING A USER

Stephen J. Rauche, RR#1 Deep River, Ontario, Canada, K0J1P0
Filed Aug. 14, 1997, Ser. No. 911,284
Int. Cl.^{6} G07F *11/62*
U.S. Cl. 221—2 **1 Claim**

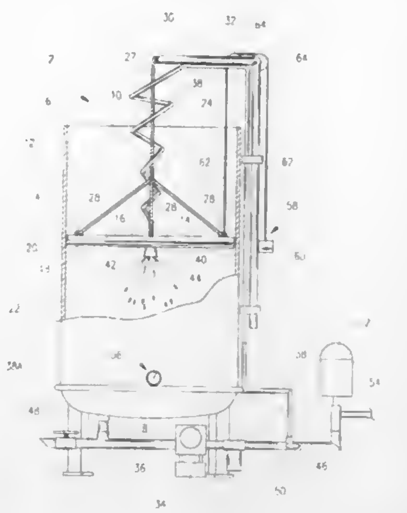


1. A pill dispenser with means for alerting a user comprising, in combination:
- a transparent housing having a top face, a bottom face, and a periphery formed therebetween defining an interior space, the top face having a plurality of compartments formed therein each with a lid hingably coupled adjacent thereto for pivoting between a raised orientation for allowing access to the corresponding compartment and a lowered orientation for precluding access thereto, wherein each lid has indicia situated thereon and is equipped with an arcuate double lip for precluding the lid from being pried open, wherein a medication summary log sheet is situated within the housing and is viewed from an exterior of the transparent housing;
- a mount situated within at least one of the compartments for releasably mounting an inhaler thereon;
- a plurality of solenoids each situated within the housing adjacent to an associated one of the compartments for maintaining the lid in the lowered orientation thereof upon the actuation thereof and further allow the lid to be pivoted to a raised orientation upon the deactuation thereof;
- a real time clock situated within an interior space of the housing for tracking a present time;
- a display situated on the top face of the housing for displaying a plurality of alphanumeric characters;
- a matrix of push buttons for entering a code sequence upon the sequential depression thereof;
- a buzzer situated on the top face of the housing for emitting an audio signal upon the actuation thereof;
- a light situated on the top face of the housing for illuminating upon the actuation thereof;
- vibrator means situated within the interior space of the housing for vibrating the housing upon the actuation thereof;
- a transmitter situated within the interior space of the housing and adapted to transmit via free space an activation signal upon the actuation thereof;
- memory means situated within the interior space of the housing for storing a plurality of medication times, a proper code sequence, and a plurality of box codes associated therewith;
- selector means including a plurality of buttons for allowing the entering and storage of a plurality of medication times within the memory means by a user, wherein the time selector means further allows the storage of a box code with each medication time and the display functions to facilitate said entering of the medication times and box codes; and
- control means situated within the housing and connected to the solenoids, clock, display, push buttons, buzzer, light, vibrator means, transmitter, memory means, and selector means, the control means having a first mode of operation wherein the buzzer is actuated upon the matching of the present time and at least one of the medication times within the memory means, a second mode of operation wherein the light is actuated upon the matching of the present time and at least one of the medication times within the memory means, a third mode of operation wherein the vibrator is actuated upon the matching of the present time and at least one of the medication times within the memory means, and a fourth mode of operation wherein the transmitter is actuated upon the matching of the present time and at least one of the medication times within the memory means, wherein the current mode of operation is selected by way of a dial situated on the top surface of the housing, the control means further adapted effect the continuous actuation of the solenoids except upon the matching of the present time and at least one of the medication times and the receipt of the proper code sequence whereafter the only solenoid that is deactuated is that associated with the compartment which corresponds to the box code that accompanies the medication set time that matches the present time; and
- a portable receiver having a speaker connected thereto for transmitting an audio signal upon the receipt of the activation signal via free space;
- wherein a lower power indication means is included for indicating when a battery is low.

5,850,938
SYSTEM AND METHOD FOR STORING COMPOUNDS

Tony J. Hebert, 1089 Oleste Tauzin Rd., Breaux Bridge, La. 70517
Filed Oct. 11, 1996, Ser. No. 729,403
Int. Cl.^{6} B67D *5/38*
U.S. Cl. 222—51 **13 Claims**

1. A system for storing a compound comprising:
- a container having a first end and a second end, with the first end being open and the second end being closed, said container further having an inner portion and an outer portion;



a ceiling member operatively positioned within the inner portion of said container;

a line having a first end and a second end, with the first end being attached to said ceiling member; and

a swivel boom attached to said second end of said line.

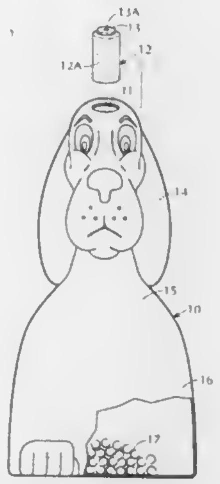
5,850,939
SQUEEZE CANTEEN FOR SOFT DRINK

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Filed Jul. 5, 1995, Ser. No. 498,375

Int. Cl.^{6} B67D *5/00*

U.S. Cl. 222—78 **1 Claim**



1. A squeeze canteen for producing in situ a soft drink and for dispensing this drink comprising:

A. collapsible pouch molded to simulate a character provided with a female socket creating the mouth of the pouch and a charge of flavor crystals deposited in the pouch;

B. a removable male nozzle plug insertable in the socket to seal the pouch after it has been filled with liquid to dissolve the flavor crystals to produce a soft drink, said plug being provided with a normally-closed valve which when opened and the pouch is then squeezed permits the discharge of said soft drink from the nozzle plug; said pouch being formed of synthetic plastic material.

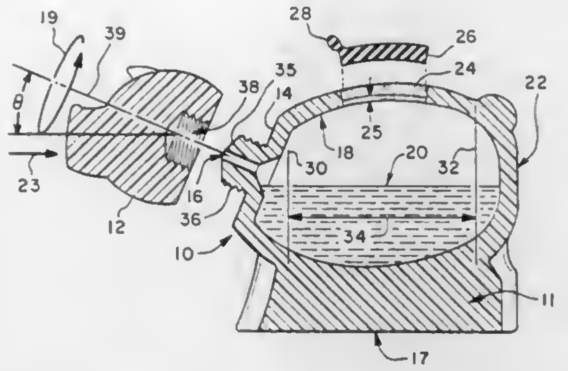
5,850,940
HAND-HOLDABLE, REUSEABLE CONTAINERS HAVING ANIMAL CONFIGURATIONS

Mark A. Sloan; Jack C. Sloan, both of 2552 E. Alameda, Unit 118, Denver, Colo. 80209, and Deanna J. Nervig, 201 Rushmore, Elizabeth, Colo. 80107

Filed Oct. 15, 1996, Ser. No. 729,509

Int. Cl.^{6} B65D *37/00*

U.S. Cl. 222—78 **7 Claims**



1. A hand-holdable container, said container comprising a body that simulates at least some of the anatomical features of an animal and wherein a neck region of said body has a first opening for dispensing an original product from the container and threads for attaching a head to said neck region, and wherein said container is further provided with at least one sealed second opening that is in the form of a slot capable of passing a coin and wherein said second opening is provided with a plug that is compression fitted in said second opening so that said plug can be removed when the original product has been used up and thereby rendering said container suitable for a secondary use.

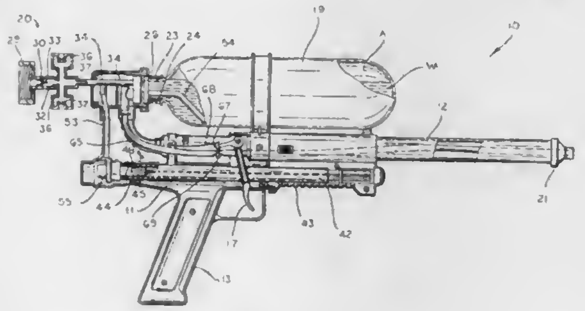
5,850,941
TOY WATER GUN WITH AIR SIPHONING VALVE

Lonnie G. Johnson, Smyrna, and Shane Matthews, Marietta, both of Ga., assignors to Johnson Research & Development Company, Inc., Smyrna, Ga.

Filed Jan. 8, 1997, Ser. No. 780,574

Int. Cl.^{6} A63H *3/18*

U.S. Cl. 222—79 **15 Claims**



1. A toy water gun comprising:

a pressure tank adapted to hold liquid and air;

coupling means for coupling said pressure tank to a remote source of pressurized liquid so as to create a stream of liquid from the remote source to said pressure tank;

mixing means in fluid communication with said pressure tank and said coupling means for drawing air and mixing the air with the stream of liquid from the remote source of pressurized liquid;

conduit means for conveying liquid from said pressure tank to ambience; and

control means for controlling the flow of liquid through said conduit means,

whereby the passage of liquid through the mixing means draws air into the stream of liquid which is then forced into the pressure tank wherein the air within the pressure tank is compressed so as to pressurize the liquid within the pressure tank.

11. A method of pressurizing air within a pressure tank of a toy water gun comprising the steps of:

(a) coupling the pressure tank to a supply of pressurized water;

(b) creating a stream of water from the supply of pressurized water to the pressure tank;

(c) mixing air into the stream of water prior to entering the pressure tank; and

(d) storing the water and air within the pressure tank in a manner so that the air therein pressurizes the water therein.

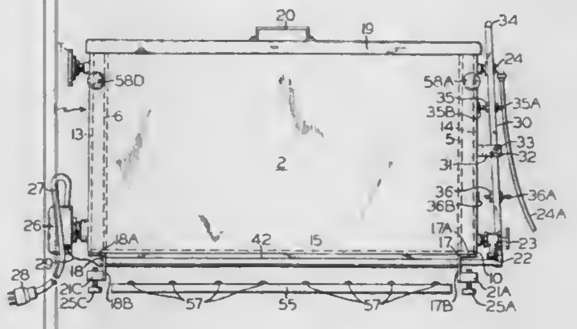
5,850,942
PASTE DEPOSITOR FOR DISPENSING EXACT AMOUNTS OF A SMOOTH FOOD PRODUCT

Maurice R. DeSimone, 4941 Bulltown Rd., Murrysville, Westmoreland County, Pa. 15668, and David C. Golembeski, 509 Cavitt Ave., Trafford, Westmoreland County, Pa. 15085

Filed Oct. 30, 1995, Ser. No. 550,012

Int. Cl.^{6} B67D *5/62*

U.S. Cl. 222—146.5 **15 Claims**



1. A paste-depositing apparatus comprising, a temperature-controlled hopper having an upper open end for receiving a batch of paste material and having a lower dispensing end for depositing said paste material, said lower dispensing end having at least one inlet opening for receiving the paste material from said hopper, a slidable valve member having at least one through hole for allowing the passage of (a predetermined amount of) paste material, (and) at least one outlet opening for releasing said (predetermined amount of) paste material, said slidable valve member is movable between two extreme positions by an operating mechanism, said operating mechanism includes a pivotal lever for moving said slidable valve member between said two extreme positions, said pivotal lever is operated to move said slidable valve member between a paste receiving position and a paste dispensing position, and said pivotal lever is limited to said two extreme positions by a pair of stop members.

5,850,943
UTILITY-POWER OPERATED TAMPER-PROOF PRESSURIZED SPRAY CAN

Clyde L. Tichenor, 905 N. Oak St., Fillmore, Calif. 93015, and Irwin Ginsburgh, 24125 Clearbank La., Newhall, Calif. 91321

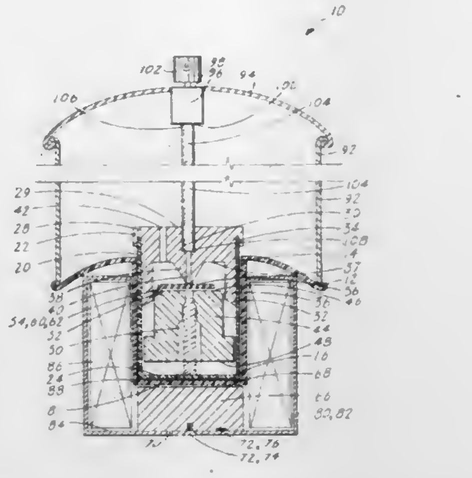
Filed Apr. 22, 1997, Ser. No. 844,892

Int. Cl.^{6} B65B *5/00*

U.S. Cl. 222—153.11 **7 Claims**

4. A utility-power operated tamper-proof pressure spray can comprising:

a) an aerosol spray can having an upper cover and a modified lower cover, wherein the upper cover includes a crimped spray control valve having an upper port and a lower port, where into said upper port is inserted a standard spray head,



and wherein said modified lower cover is comprised of a non-magnetic material having substantially centered a downward extending cavity having a lower surface,

b) a siphon tube having an upper end and a lower end, wherein the upper end is inserted into the lower port on said spray control valve,

c) a non-magnetic cup-type housing having an open upper end and a lower surface that interfaces with the lower surface of said downward extending cavity,

d) an upper fixed armature having an upper surface, an upper cavity that includes a lower surface and that is dimensioned to receive the lower end of said siphon tube, a crimp slot, a lower collar section, a paint entry bore extending from the upper surface of said upper fixed armature to said armature's collar surface, a downward extending valve cone having a paint bore that extends upward and pierces the lower surface of the upper cavity, wherein said upper fixed armature is inserted into the open upper end of said housing with the crimp slot interfacing with the edges of the open upper end of said housing,

e) a moving armature having an upper surface that slidably extends into the lower collar section of said fixed armature, a lower surface, a stepped spring retaining bore, and a crimp slot,

f) a compliant leaf having an upper surface, a lower surface and an articulated end that is attached to the side of the upper surface of said moving armature by an attachment means, wherein the upper surface interfaces with the paint bore on the valve cone of said fixed armature and the lower surface interfaces with the spring retaining bore on said moving armature,

g) a lower fixed armature having an upper surface and a lower surface,

h) a spring having an upper end and a lower end, wherein the upper end of said spring is inserted into the spring retaining bore on said moving armature with the lower end of said spring resting on the lower surface of the cup-type housing wherein said spring maintains said moving armature in an upward position which prevents paint flow,

i) an electric coil assembly comprised of a circular magnetic housing having a bottom surface and that encloses a circular electric coil that is designed to be operated by a utility a-c power source, wherein an inner surface of said coil is dimensioned to fit into and interface with said downward extending cavity, and where on the bottom surface of said housing is attached, by an attachment means, the lower fixed armature with the upper surface of said armature interfacing with the lower surface of said downward extending cavity, wherein said coil induces a magnetic field into only said moving armature and said lower fixed armature, wherein the induced magnetic field causes said moving armature to Overcome the upward bias of said spring and allow said moving armature to move downward, wherein this downward movement causes said compliant leaf to separate from the paint bore on the valve cone of said upper fixed armature which then allows the paint to flow upwards into said spray control valve, whereupon when said spray head is depressed, paint can be sprayed, and wherein if an external permanent magnet is placed adjacent to said cup-type housing the magnet produces magnetic fields which cause said upper fixed armature and said moving armature to lock together to prevent any paint flow.

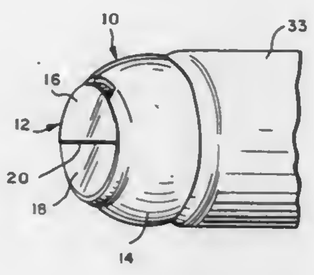
5,850,944
MEASURING CAP WITH PIVOTING DISPENSER

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661, and Gregory S. Burcham, Spruce Pine, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 288,896, Aug. 10, 1994, Pat. No. 5,509,582, and a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Nov. 14, 1995, Ser. No. 557,559

Int. Cl.⁶ B67D ***5/38***

U.S. Cl. 222—158 16 Claims



1. A measuring dispensing cap for a container comprising a peripheral sidewall and a pivotable flip top, said flip top having a push panel portion and a dispensing panel portion separated by a hinge axis, said flip top mounted for pivotal motion about said hinge axis, said peripheral sidewall having an internal weir panel having an edge extending parallel to and substantially vertically aligned with said hinge axis thus establishing a weir opening between said weir edge and said flip top, and defining, in cooperation with at least a portion of said flip top, an open-ended measuring chamber within said cap; and wherein an internal surface is located within said peripheral sidewall and below said push panel portion, and further wherein a spring is interposed between said internal surface and said push panel.

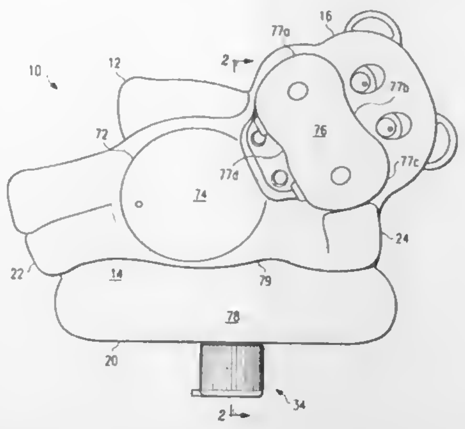
5,850,945
DISPENSER FOR SHAMPOO, LIQUID SOAP OR THE LIKE

Gail B. Frankel, Dallas, Tex., assignor to Kel-Gar, Inc., Dallas, Tex.

Filed Oct. 25, 1996, Ser. No. 740,294

Int. Cl.⁶ B65D ***1/32***

U.S. Cl. 222—212 22 Claims



1. A liquid dispenser, comprising:
a main body portion, said main body portion having front, rear, top, bottom and first and second side walls which collectively define an interior bladder;
said bottom wall of said main body portion having interior and exterior side surfaces and an aperture extending therebetween;
said main body portion having a lip formed by exposing inner side and edge surfaces of a portion of said bottom wall, said lip circumferentially surrounding said aperture;
a fill pipe fixedly attached to said bottom wall and downwardly projecting therefrom, said fill pipe having a sidewall, an interior surface of which defines an interior passageway in fluid communication with said aperture;
said fill pipe being comprised of first, second and third sections, said second section of said fill pipe engaging said lip of said bottom wall and said third section projecting downwardly from said exterior side surface of said bottom wall when said first section of said fill pipe is inserted in said aperture to engage an interior wall which defincs said aperture;
said second section of said fill pipe further comprising a top side surface which engages said exposed inner side surface of said bottom wall and an edge side surface which engages said exposed inner edge surface of said bottom wall when said second section of said fill pipe engages said lip of said bottom wall; and
a closeable valve removably mounted to an exterior surface of said sidewall of said full pipe, said closeable valve having an interior passageway which may be selectively placed in fluid communication with said interior passageway of said fill pipe to provide a exit path for liquid held in said bladder;
wherein access to said fill pipe for filling said interior bladder with liquid is provided by removing said closeable valve and inverting said main body portion.

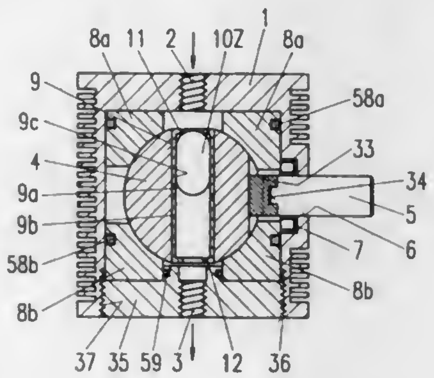
5,850,946
METERING DEVICE

Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland, and Laurence Richard Penn, Northants, Great Britain, assignors to Wilhelm A. Keller, Merlischachen, Switzerland

Continuation-in-part of Ser. No. 317,595, Oct. 3, 1994, Pat. No. 5,547,110. This application Aug. 19, 1996, Ser. No. 699,636

Int. Cl.⁶ G01F ***11/22***

U.S. Cl. 222—219 23 Claims



1. A metering device comprising:
a housing having a material inlet and a material outlet;
at least one rotatable ball member having at least one transverse bore in which a sealess flow metering shuttling member is disposed, the rotatable ball member being captured between two opposed seats disposed in said housing, each seat having at least one passage communicable with one of the material inlet or the material outlet;
means for adjusting the position of at least one of said two seats within said housing; and
wherein the shuttling member is so configured and arranged as to have a specific gravity proximate to that of a material to be metered by said metering device.

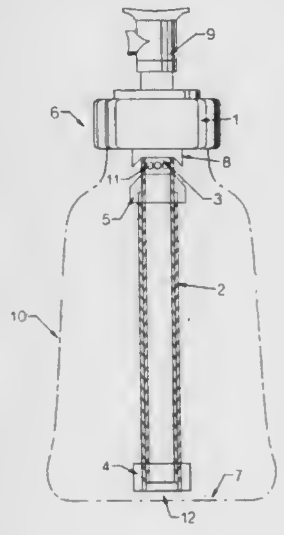
5,850,947
INVERTIBLE AND MULTI-DIRECTIONAL FLUID DELIVERY DEVICE

Phillip S. Kim, 3301 Rodeo Rd., Los Angeles, Calif. 90018

Filed Jul. 15, 1996, Ser. No. 685,592

Int. Cl.⁶ B05B ***9/043***

U.S. Cl. 222—321.4 6 Claims



1. An apparatus for delivery of fluid from within a container when in either an upright or an inverted position, said apparatus comprising:
a container containing a fluid;
a dispenser assembly mounted to the container; and
a tubular device disposed within the container which comprises a buoyant first tube and a perforated second tube, said second tube being coupled to and in fluid communication with the dispenser assembly and being concentrically disposed with the first tube such that said first tube slides freely relative to the second tube, the perforations within the second tube being disposed proximal to the dispenser assembly, the level of fluid within the container and the position of the container causing the first tube to either seal or expose the perforations in the second tube, wherein, when the container is in the upright position, the perforations are sealed by said first tube and fluid is drawn into the second tube at its end distal to the dispenser assembly and when the container is in the inverted position, the perforations are exposed and fluid is drawn into the second tube through the perforations proximal to the dispenser assembly.

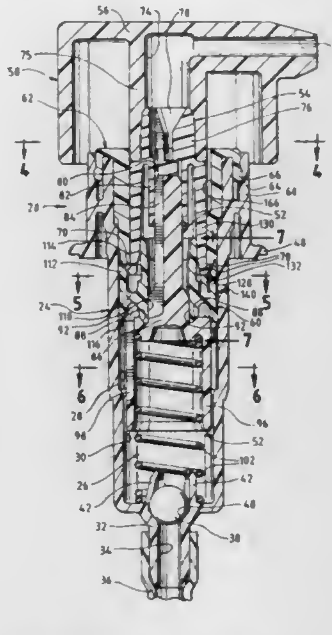
5,850,948
FINGER-OPERABLE PUMP WITH PISTON BIASING POST

Firmin Garcia, Evreux; Jean-Paul LeCoutre, Iton; Daniel Chavigny, Balines, and Denis Croibier, Brezolles, all of France, assignors to Valois S.A., Verneuil-Sur-Avre-Cedex, France

Filed Sep. 13, 1996, Ser. No. 713,945

Int. Cl.⁶ G01F ***11/06***

U.S. Cl. 222—321.9 11 Claims



1. A finger-operable pump comprising:
a pump body defining a chamber and having an inlet opening and outlet opening;
a non-return valve located at said inlet opening;
an actuating plunger projecting from said chamber for reciprocatable movement between an elevated, unactuated, rest position and a lowered, fully actuated position, said plunger having upper and lower plunger portions together defining a discharge passage establishing communication between ambient atmosphere and said chamber, said plunger lower portion defining a valve seat at said discharge passage;
a plunger return spring acting between said pump body and plunger lower portion for biasing said plunger relative to said pump body toward said rest position;
a piston carried by said plunger in said pump chamber in sliding and sealing engagement with said pump body for accommodating movement relative to said plunger between (a) a closed position sealed against said valve seat to occlude said discharge passage, and (b) an open position spaced from said valve seat; and
a piston return spring acting between said piston and plunger upper portion for biasing said piston toward said closed position, said piston return spring including a post which is oriented for being subjected to compressive loading and which is resiliently bendable.

5,850,949
LIQUID CONTAINER APPARATUS HAVING A DRAIN CONDUIT SECURED TO A HANDLE

Claus E. Koerbel, 9750 N. 96th St., Apt. 161, Scottsdale, Ariz. 85258, and Carl E. Walker, 3047 S. 46th St., Phoenix, Ariz. 85044

Filed Apr. 7, 1997, Ser. No. 835,322

Int. Cl.⁶ A47G ***19/14***

U.S. Cl. 222—475 8 Claims

1. Container apparatus comprising in combination:

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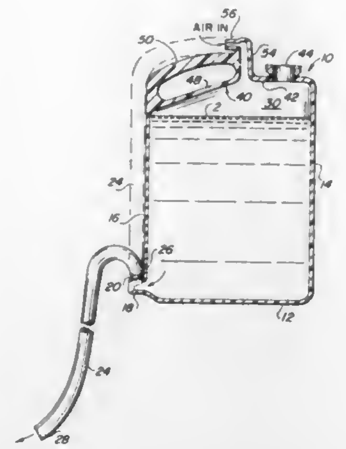


container means for holding a quantity of liquid, including a container having a bottom and a top wall;
a boss extending upwardly from the top wall;
a breather spout on the boss;
a handle secured to the top wall and to the boss; and
a conduit through which the liquid drains secured to the container adjacent to the bottom and disposed on the handle and the breather spout for storage.

5,850,950

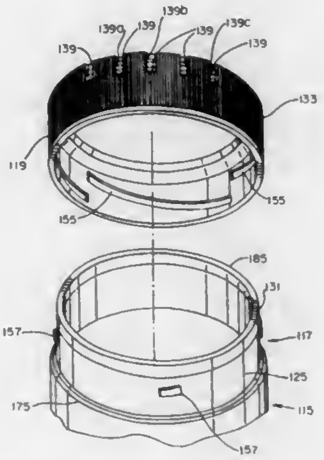
CONTAINER FOR DISPENSING POWDERED GRANULAR OR FLAKED SUBSTANCES

Richard W. Hofmann, Chicago, Ill., assignor to Magenta Corporation, Chicago, Ill.

Filed May 9, 1997, Ser. No. 854,286

Int. Cl.^{6} B65D *41/04;47/00*

U.S. Cl. 222—519 **8 Claims**



1. A container for dispensing granular, flaked or powdered substances comprising:
a container body, said container body having a closed end, and an interior surface defining a container body hollow;
an adapter having an adapter end, an adapter open end opposite said adapter end, an adapter exterior surface and an adapter interior surface, said adapter interior surface defining an adapter hollow, said adapter end connected to said container body, said container body hollow and said adapter hollow forming an interior hollow of said container;
a closure adjustably coupled to said adapter, said closure having a closure wall, a closure open end at one end of said wall, and a closure top opposite said closure open end, said closure wall having a plurality of granular, flaked or powdered substance dispensing apertures, said closure top is over said adapter open end;
means for adjusting said closure relative to said adapter in a first axial direction along an axis of said adapter, and for adjusting said closure relative to said adapter in a second axial direction opposite to said first axial direction, wherein adjustment in said first axial direction causes an increase in an axial length of said container and adjustment in said second axial direction causes a decrease in said axial length of said container and wherein;
said closure is adjustable to an open position in which the plurality of apertures are at least partially unobstructed by said adapter and wherein;
said closure is adjustable to a closed position in which the plurality of apertures are completely obstructed by said adapter and wherein;
the axial length of said container when said closure is in an open position is different than the axial length of said container when said closure is in said closed position.

5,850,951

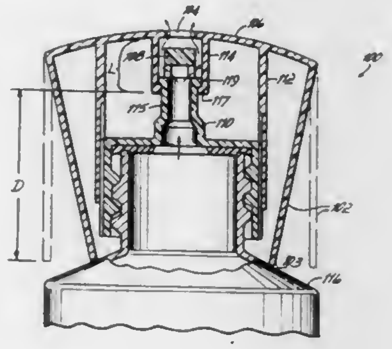
PACKAGE WITH PUSH-PULL DISPENSING CLOSURE

Thomas H. Hayes, Loveland, Ohio, assignor to Anchor Hocking Packaging Company, Lancaster, Ohio

Continuation of Ser. No. 448,797, May 24, 1995, abandoned, which is a division of Ser. No. 316,524, Sep. 30, 1994, abandoned. This application Sep. 20, 1996, Ser. No. 710,741

Int. Cl.^{6} B67D *3/00*

U.S. Cl. 222—525 **3 Claims**



1. A product package comprising a container and a dispenser closure therefor,
said dispenser closure comprising a closure shell which has a top having a dispensing orifice therethrough, an outer skirt joining said top and extending downwardly therefrom to a free lower edge, and an inner skirt joining said top and extending downwardly to a lower edge, said outer skirt's free lower edge spaced downwardly below said inner skirt's lower edge, said closure further comprising a dispenser plug member which is snap-engaged and held captive within the inner skirt of said shell but in relation to which the shell is movable upwardly and downwardly through a limited range of movement to respectively seal and unseal said dispensing orifice,
said container having a mouth which receives said dispenser plug member, and a shoulder below said mouth which slants upwardly and inwardly.
said skirt being pliable and inwardly deformable about its entire circumference by squeezing it with the fingers at any diametrically opposite portions of the lower edge of said skirt to bring said portions into engagement with said shoulder on said container, such squeezing causing said shoulder to cam said closure top upwardly relative to said plug member to thereby unseal said dispensing orifice.

5,850,952

COATED MEANS FOR CONNECTING A CHIP AND A CARD

Werner Morck, Hargesheim, Germany, assignor to Bruno Jesswein Inh. Werner Morck Kunststofftenchnik, Bad Kruznach, Germany

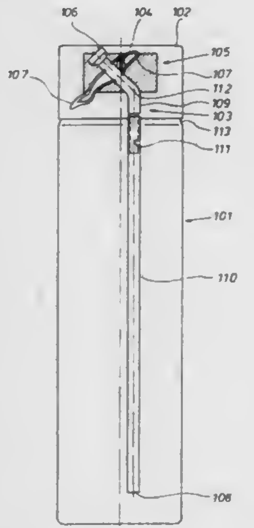
PCT No. PCT/EP95/00062, § 371 Date Oct. 3, 1996, § 102(e) Date Oct. 3, 1996, PCT Pub. No. WO95/19303, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 9, 1995, Ser. No. 669,558

Claims priority, application Germany, Jan. 14, 1994, 44 00 878.3; Mar. 17, 1994, 44 09 120.6; Nov. 28, 1994, 44 42 276.8; Nov. 28, 1994, 44 42 277.6; Nov. 28, 1994, 44 42 278.4

Int. Cl.^{6} B67D *3/00*

U.S. Cl. 222—530 **16 Claims**



1. A container having a snapped-in valve adapter comprising:
an arrow projecting out of the tangential plane of the adapter with one of a plurality of recesses disposed on the circumference of the container, said arrow having flat sides and said arrow cooperating elastically upon engagement and disengagement of said adapter with said recesses; and
an arrowhead pointed in the direction and the opposite direction of said arrow at the end thereof.

5,850,953

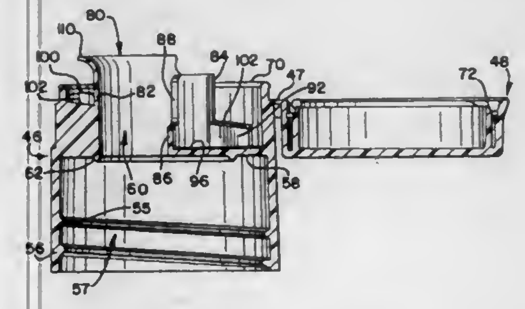
DRIP-FREE DISPENSING STRUCTURE WITH COLLECTING RESERVOIR

Milton R. Dallas, Jr., East Troy, Wis., assignor to AptarGroup, Inc., Crystal Lake, Ill.

Filed Jan. 28, 1997, Ser. No. 789,756

Int. Cl.^{6} B65D *5/72*

U.S. Cl. 222—571 **3 Claims**



1. A drip-free dispensing structure comprising:
a body for extending from a container around an opening, said body having
(a) an inner spout defining a notch;
(b) an outer collar spaced outwardly of, and extending continuously around, said inner spout and opening;
(c) a recessed floor extending between part of said inner spout and outer collar;
(d) an upwardly open notch defined in said inner spout and located between said opening and said recessed floor, said recessed floor intersecting said inner spout below the bottom of said notch; and
(e) a drain-back trough bottom between said outer collar and said inner spout, said trough bottom having a high point and having two, spaced-apart, low points which are each located adjacent, but at a higher elevation than, said recessed floor.

5,850,954

HOLDER ASSEMBLY FOR CELLULAR PHONES

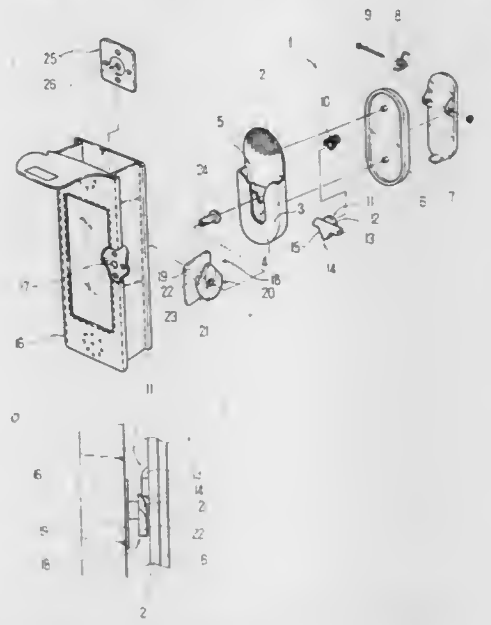
Kim Dong-Joo, Joong-Ang Spring 192-30 Haengdang-dong, Seongdong-ku, Seoul 133-070, Rep. of Korea

Filed Nov. 13, 1997, Ser. No. 969,556

Claims priority, application Rep. of Korea, Sep. 20, 1997, 1997-26277

Int. Cl.^{6} A45F *5/00*

U.S. Cl. 224—197 **3 Claims**



1. A holder assembly for cellular phones, comprising:
a holding button adapted to be attached to one of either a cellular phone or a phone case, said button including:
a base plate adapted for attaching the holding button to one of either the cellular phone or the phone case; and
a button member connected to the center of said base plate, said button member having a pressing part and a wedge part at its outside edge, with both side surfaces of the wedge part converging into the top end of the wedge part;
a holder having a clip adapted to be clipped on a belt and configured for receiving and for detachably holding said button therein so as to hold the cellular phone or the phone case on the belt, said holder having a T-shaped opening in a wall thereof;
a T-shaped snap bolt movably set in the T-shaped opening of the holder and biased by a spring at its back surface, said snap bolt being adapted for selectively holding the button in the holder, said snap bolt including:
a horizontal part curved at its upper front surface, thus having a radius of curvature suitable for allowing said snap bolt to be selectively retracted into the T-shaped opening when the bolt is pressed by the pressing part of the holding button; and
a wedge part integrated with the bottom center of said horizontal part, with both side surfaces of the wedge part

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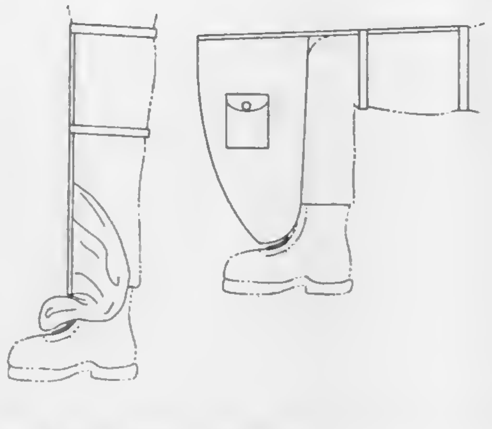
converging into the lower end of the wedge part, said wedge part of the snap bolt being brought into contact with the wedge part of the holding button received in the holder, thus allowing the holding button with the cellular phone or the phone case to be rotatable in either direction.

5,850,955
BOW HOLDER APPARATUS

Thomas Dale Barr, R.D. #1 Box 177C, Dysart, Pa. 16636
Filed Nov. 25, 1997, Ser. No. 978,624
Int. Cl.^{6} A45F *5/00*
U.S. Cl. 224—222 **5 Claims**



2. A bow holder apparatus comprising:

a pouch member having an upper peripheral edge with a pair of extension arms, a lower end portion and a pouch body therebetween, the upper peripheral edge defining an entry way into an interior of the pouch member, the lower end portion having a J-hook projection for engaging a boot lace of an archer; and

a plurality of strap members being fixedly attached to one of the pair of extension arms of the upper peripheral edge for supporting the pouch member about a leg of the archer wherein said plurality of straps being secured about a thigh portion of the archer's leg and the J-hook projection engaging the boot laces proximate an ankle portion of the archer's leg such that the lower end portion of the pouch member is secured proximate the ankle portion of the archer's leg.

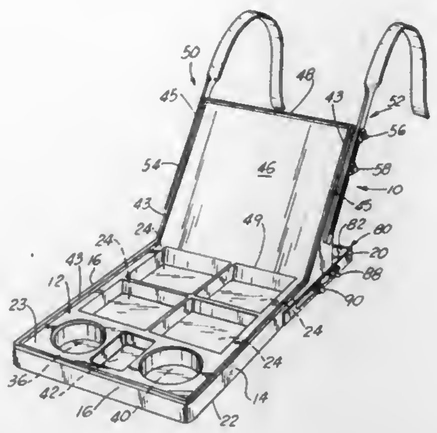
5,850,956
SUPPORTABLE FOOD TRAY WITH BIB

William C. Hayward, Jr., P.O. Box 156, Labadieville, La. 70372
Continuation-in-part of Ser. No. 549,939, Oct. 30, 1995, Pat. No. 5,649,654. This application Dec. 17, 1996, Ser. No. 767,834
Int. Cl.^{6} A45F *5/00*
U.S. Cl. 224—270 **5 Claims**

1. An improved food tray apparatus comprising:

a) a food tray portion having a tray surface constructed of translucent material which has the ability to receive light therethrough, the surface further having a continuous border there around;

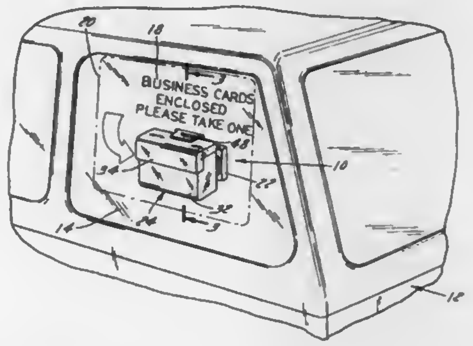
b) a removable ross-member positionable on the tray and extending that least across opposite portions of the border for dividing the tray surface into at least two separate compartments when the removable cross-member is positioned on the tray surface; and



c) a source of light positioned beneath the tray surface so that light rays are able to flow upward through the translucent surface for identifying the location of food thereupon.

5,850,957
VEHICLE BUSINESS CARD DISPENSER

Victor Y. Morris, Milwaukee, Wis., assignor to Vehicle Pockets, Inc., Milwaukee, Wis.
Filed May 17, 1996, Ser. No. 649,312
Int. Cl.^{6} B60R *11/00*
U.S. Cl. 224—277 **19 Claims**



1. In combination:

(A) a vehicle having an external surface; and

(B) a vehicle business card dispenser including

(1) a base;

(2) an adhesive via which said base is fixedly mounted on said exterior surface of of said vehicle; and

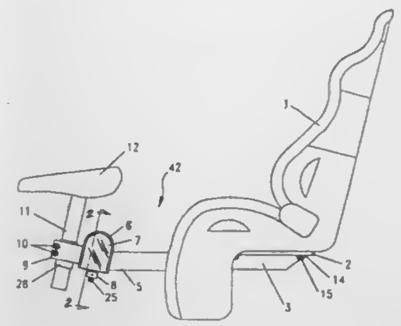
(3) a business card holder detachably mounted on said base, said business card holder including

a rigid box formed from a plurality of immovably interconnected walls including a front wall and a rear wall, said box being detachably mounted on said base and having an upwardly-facing opening formed therein between said front wall and said rear wall for the insertion and removal of business cards; and

a lid movable 1) from a first position covering said opening and overlapping at least a portion of said front wall of said box 2) to a second position rendering said opening accessible for insertion and removal of business cards.

5,850,958
CUSHIONING BABY CHAIR BASE FOR BICYCLES

Alain Belanger, 4335, Rue Brebeuf #4, Montreal, Canada, H2J3K6, and Hugo Marsolais, 362 Rue Lulli, Laval-Des-Rapides, Laval, Canada, H7N5N7
Filed Jan. 14, 1997, Ser. No. 783,208
Int. Cl.^{6} B62J *1/02*
U.S. Cl. 224—415 **19 Claims**



1. An adaptor for mounting a baby chair on a bicycle, said adaptor comprising:

a substantially elongated supporting structure, said supporting structure defining a longitudinal axis, a supporting structure first end, a supporting structure second end;

said supporting structure defining a bending channel extending transversely relative to said longitudinal axis, said bending channel defining a supporting structure bending segment, said bending channel also defining a first spacing segment extending from said supporting structure first end to said bending segment, said bending channel further defining a second spacing segment extending from said supporting structure second end to said bending segment, said bending channel being configured and sized so as to allow a relative bending movement between said first and second spacing segments about said bending segment;

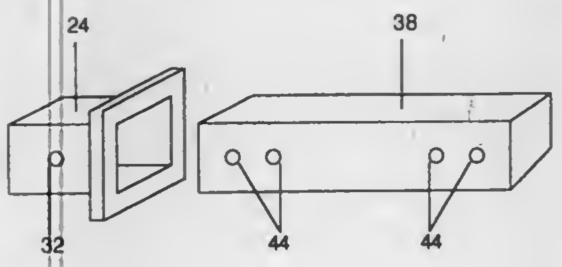
a cushioning means for cushioning said bending movement about said bending segment, said cushioning means being retained within said bending channel;

a first fixing means for fixing said supporting structure to said bicycle, said first fixing means being positioned adjacent said supporting structure first end;

a second fixing means for fixing said baby chair to said supporting structure, said second fixing means being positioned adjacent said supporting structure second end.

5,850,959
MULTIFARIOUS, VEHICLE CARGO CARRIER SYSTEM

Thomas S. Miller, 4 Shadow Wood La., Sandy, Utah 84092, assignor to Thomas S. Miller, Salt Lake City, Utah
Filed Apr. 14, 1994, Ser. No. 227,666
Int. Cl.^{6} B60R *9/10;9/12*
U.S. Cl. 224—535 **6 Claims**



1. A cargo carrier system adapted for use on the rear of a vehicle, said system comprising:

a vehicle attachment means having first and second ends wherein one of said ends is adapted to be secured to the vehicle;

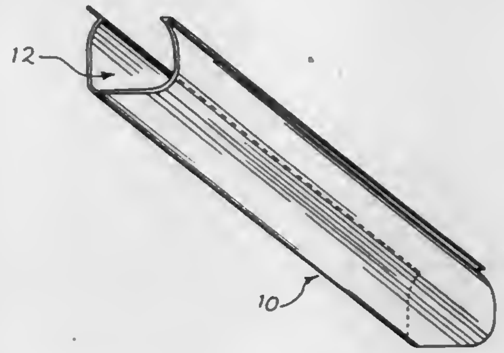
an elongate, vertically extending support means having a lower end having means for pivotally attaching said support means to the other of said ends of said vehicle attachment means and an upper end;

a carrier means for holding cargo wherein said carrier means is pivotally attached to said upper end of said support means, said carrier means comprising a first member having opposite first and second ends substantially transversely aligned with said upper end of said support means and support members having first ends respectively attached to each said end of said first member and extending rearwardly from the vehicle toward distal second ends thereof wherein said support members are adapted to support cargo, and said first member further having a security hole positioned between said opposite ends; and

a security means for inhibiting unauthorized removal of the cargo, said security means comprising a first security element having opposing ends, each of said opposing ends of said first element having at least one hole therein adapted to receive a respective one of said second ends of said support members, a second security element having a first end secured to said first security element and a second end wherein said first and second elements are substantially transversely aligned, said second end of said second element adapted to be received in said security hole of said first member and having a locking means associated therewith whereby attachment of said security means to said carrier means supporting cargo inhibits unauthorized removal of the cargo.

5,850,960
WRAPPING PAPER HOUSING AND CUTTING APPARATUS

Charles E. Cadwell, 159 Paramount Dr., Wood Dale, Ill. 60191
Continuation of Ser. No. 599,681, Feb. 12, 1996, abandoned. This application Jun. 17, 1997, Ser. No. 876,689
Int. Cl.^{6} B26F *3/02*
U.S. Cl. 225—58 **19 Claims**



1. An apparatus for use with a roll of paper, said apparatus comprising:

a housing having a cross-section including an internal shape and an external shape, said internal shape adapted to partially enclose an outer surface of said roll, said length of said housing having a length that is about equal to the length of the roll and said housing is substantially longer than a diameter of said roll, said housing having an opening extending longitudinally for the length of said housing to allow a leading edge of said paper to be unrolled through said opening; and

said internal shape of said housing terminating in a first cutting member disposed along a first side of the opening of said housing to linearly sever a section of paper from said roll in a first cutting operation, wherein a first end of said first cutting member is in direct contact with the outer surface of said roll before, during, and after said first cutting operation, and

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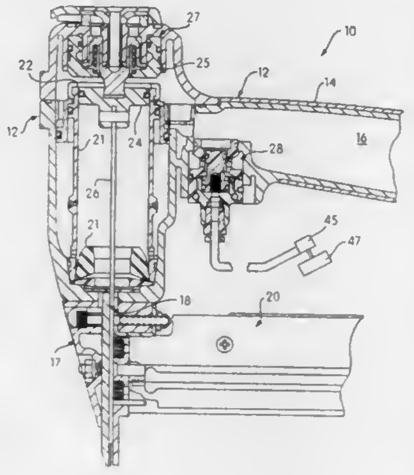
wherein a second end of said first cutting member extends outwardly from said opening of said housing;
and wherein said housing and said first cutting member are integrally formed with no relative movement between said housing and said first cutting member at any time, including before, during, or after said first cutting operation;
and wherein the internal shape of said housing has a diameter substantially equal to the diameter of said roll to maintain said roll in its initial tightly wound state.

5,850,961
QUICK EXHAUST REMOTE TRIGGER VALVE FOR FASTENER DRIVING TOOL

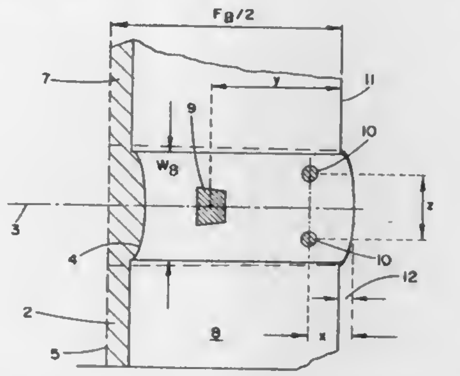
Phillip M. Braun, Exeter, and David Smith, Warwick, both of R.I., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.
Filed Jan. 7, 1997, Ser. No. 777,015
Int. Cl.^{6} B25C *1/04*
U.S. Cl. 227—130 **9 Claims**



1. A remotely actuated fastener driving tool comprising:
a housing defining a fastener drive track and having a portion defining a reservoir chamber for storing supply air under pressure;
a fastener driving element carried by the housing for movement within the drive track through successive cycles of operation, each of which includes a fastener driving stroke and a return stoke;
a drive piston operatively connected with the fastener driving element for movement therewith;
a pilot pressure operated main valve movable from a normally closed position into an opened position allowing supply air to be communicated with the drive piston to initiate and effect the movement of the drive piston and fastener driving element through the fastener driving stroke thereof;
a magazine assembly carried by the housing for receiving a supply of fasteners and feeding successive fasteners into the drive track in a position to be driven into a work piece during successive fastener driving strokes of the fastener driving element; and
valve structure carried by the housing, said valve structure including a valve member constructed and arranged to move from a normal, inoperative position into an operative position to initiate the movement of the main valve from its closed position to its opened position, said valve structure being constructed and arranged to be fluidly coupled to a remotely located source of air under pressure such that when air pressure is applied to said valve structure, said valve member is biased to the inoperative position thereof in sealing relation with an exhaust path defined in said valve structure, and when said air pressure is relieved from said valve structure, the valve member moves to the operative position thereof thereby opening the exhaust path permitting pilot pressure associated with the main valve to exhaust through the exhaust path initiating the fastener driving stroke.

5,850,962
CASTING MOLD FOR FUSION WELDING OF TWO WORKPIECES

Frank Kuster, Ratingen; Gerhard Skreba, and Michael Steinhorst, both of Essen, all of Germany, assignors to Elektro-Thermit GmbH, Essen, Germany
Filed May 20, 1997, Ser. No. 859,176
Claims priority, application Germany, May 21, 1996, 196 20 374.0
Int. Cl.^{6} B23K *23/00*
U.S. Cl. 228—33 **14 Claims**

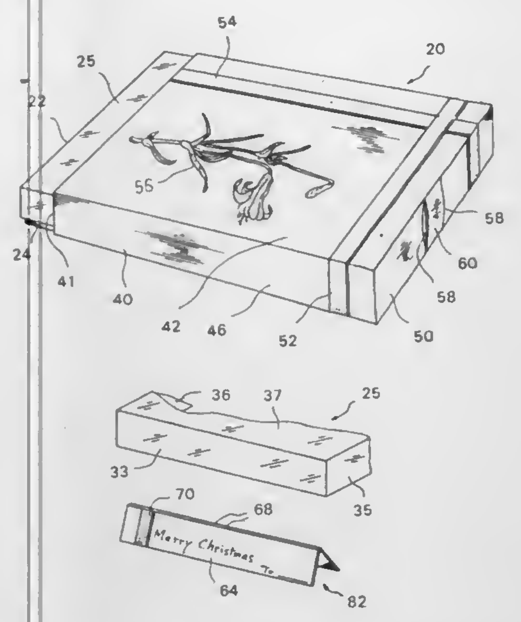


1. A casting mold for the fusion welding of two rail ends (**1**,**2**), comprising mold walls which are matched to the rail profile, cover the welded joint and are composed of a refractory material, the casting area otherwise being bounded by the end faces of the rail ends (**1**,**2**), a system of risers (**9**) having the respective cross-sectional area A and air vents (**10**) having the respective cross-sectional area B being incorporated in the mold walls, the risers (**9**), the air vents (**10**), the weld joint and the weld bead (**4**), which has a width W_B, extending symmetrically with respect to a vertical transverse center plane (**3**), and the risers (**9**) and the air vents (**10**) furthermore being arranged symmetrically with respect to a vertical longitudinal center plane (**5**) of the rail ends (**1**, **2**), wherein
the centroid of the cross-sectional area A of the at least one riser (**9**), which is on one side of the longitudinal center plane (**5**), is arranged at a distance y from the side edge (**11**) of the rail foot (**8**), which distance y is defined as a function of the width F_B of the rail foot (**8**),
the cross-sectional area B, which is located on one side of the longitudinal center plane (**5**), of the at least one air vent (**10**) is
selected as a function of the cross-sectional area A of the riser (**9**),
the value y being in a range from 0.0025 F_B to 0.4000 F_B, and the value B/2 being in a range from 0.05 A to 20.00 A.

5,850,963
REUSABLE GIFT WRAPPING ASSEMBLY

Cherng Chang, P.O. Box 693, Miamisburg, Ohio 45343
Continuation of Ser. No. 366,628, Jan. 3, 1995, abandoned.
This application May 9, 1997, Ser. No. 853,987
Int. Cl.^{6} B65D *25/34*
U.S. Cl. 229—116.5 **38 Claims**

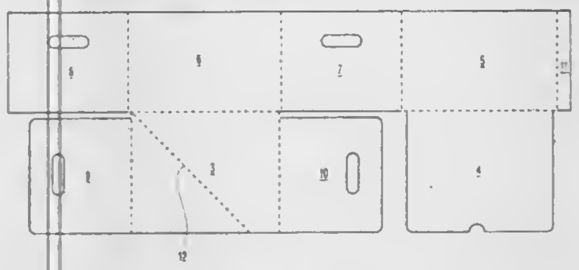
1. A gift wrapping assembly comprising a box with a front end side, a back end side opposing and in parallel with said front end side, and four other sides for containing a gift item, the improvement wherein
I. said gift wrapping assembly further comprises:
(A) front end wrapping means removably engagable with said front end side of said box for wrapping said front end side of said box, and



(B) a rectilinear bag having
(a) four side walls slidably engagable with said four other sides of said box for wrapping said four other sides of said box, and
(b) a bottom wall movable along with said four side walls for wrapping said back end side of said box, and
II. said box includes:
(i) a box body having at least one side wall and
(ii) a box lid for covering said box body, and
III. said front end wrapping means include a card foldable into two halves for straddling along said side wall and resting between said box body and said box lid.

5,850,964
CARTON CONSTRUCTION

W. John Rosenbaum, Indianapolis, and Mark A. Bendit, Avon, both of Ind., assignors to ACCO Brands, Inc., Lincolnshire, Ill.
Filed Dec. 29, 1997, Ser. No. 998,779
Int. Cl.^{6} B65Q *5/10*
U.S. Cl. 229—117.16 **11 Claims**



1. A unitary carton blank comprising:
a) an open ended body including a plurality of panel sections foldably connected together for forming said body, said panel sections including:
i) a bottom panel section,
ii) a pair of side panel sections, and
iii) a pair of end panel sections:
b) said bottom panel section includes at least one bottom panel;
c) each of said pair of side panel section includes a side panel;
d) each of said end panel sections includes no more than two end panels;
e) each of said panels includes a top edge, a bottom edge, a left side edge and a right side edge;
f) one of said side panels has the right side edge of one of said end panels foldably connected to the left side edge thereof;
g) said one end panel has the right side edge of the other of said side panels foldably connected to the left side edge thereof:
h) said other of said side panels has its bottom edge foldably connected to the top edge of said bottom panel and the right side edge of a second end panel foldably connected to the left side edge thereof;
i) said bottom panel has a third end panel foldably connected, to one side edge thereof;
j) said bottom panel includes a single diagonal fold line formed therein and extending diagonally from the bottom edge to the top edge thereof; and
k) the remaining panels are free of any fold lines.

5,850,965
REINFORCED CONTAINER

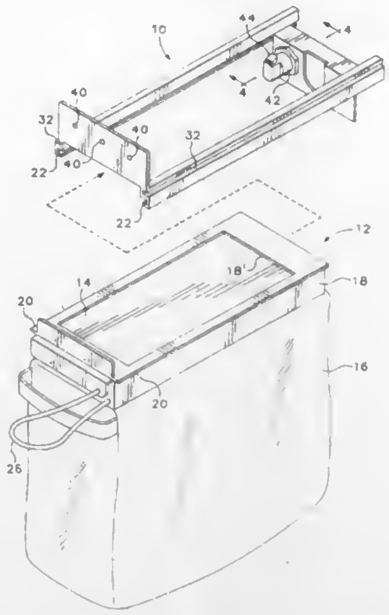
Derek W. Boyls, Austin, and John W. Bridges, Pflugerville, both of Tex., assignors to Dell USA, L.P., Round Rock, Tex.
Filed Jun. 17, 1997, Ser. No. 877,693
Int. Cl.^{6} B65D *5/28*
U.S. Cl. 229—191 **35 Claims**

1. A container comprising:
a first side panel having an interior side;
a second side panel;
a first support integrally connected to a first edge of the first side panel, the first support integrally connected to a first edge of the second side panel. the first edge of the first side panel and the first edge of the second side panel positioned to form a first edge of the container;
a first flap;
a second support integrally connected to a second edge of the first side panel, the first support integrally connected to a first edge of the first flap, the second edge of the first side panel and the first edge of the first flap positioned to form a second edge of the container;
wherein the first edge of the first side panel and the second edge of the first side panel are adjacent edges;
wherein an end of at least a portion of the first support is mitered and an end of at least a portion of the second support is mitered such that the at least the portions of the first and second supports fit against the interior side of the first side panel and the mitered end of the at least the portion of the first support is adjacent to the mitered end of the at least the portion of the second support.

5,850,966
DEPOSIT RETRIEVAL AND TRANSPORT SECURITY APPARATUS

Buzz L. Siler, Lake Oswego, Oreg., and Roger H. Pierce, Vancouver, Wash., assignors to SafePak, Inc., Portland, Oreg.
Filed Jul. 16, 1996, Ser. No. 682,053
Int. Cl.^{6} G07B *15/00*
U.S. Cl. 232—15 **3 Claims**

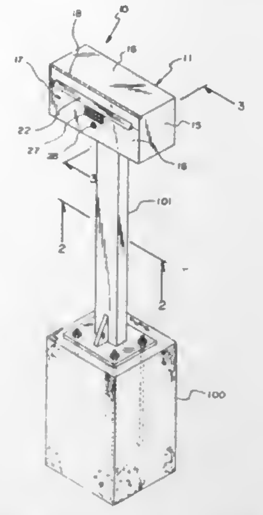
1. In an automatic teller machine having depository apparatus securely attached to the machine and including a fixed receptacle support for removably supporting a receptacle for collecting deposits from the depository apparatus, a deposit containment and transporting apparatus for replacing the removable receptacle of the machine for securing deposits against access during their retrieval and transport to an authorized deposit-receiving and processing center, the deposit containment and transporting apparatus comprising:
a) a chassis member configured for mounting on and secure, locked attachment to the receptacle support of the depository apparatus of an automatic teller machine in replacement of the removable receptacle of the machine, the chassis member having an opening therethrough for the free passage of deposits from the depository apparatus.



b) a deposit collecting and transporting container member.
c) interengaging connector components on the chassis member and container member for releasably securing the container member to the chassis member for receiving deposits from the depository apparatus,
d) container locking means releasably interengaging the chassis member and container member for releasably locking the container member to the chassis member in the deposit-receiving position of the container member,
e) a container lid member for removably closing the open end of the container member,
f) interengaging connector components on the container lid member and container member configured to allow movement of the container lid member between container-opening and container-closing positions,
g) interengaging lid locking means on the lid member and container member for automatically locking the lid member in said container closing position for securing the contents of the container member against removal,
h) container lock release means on the container lid member operable by movement of the lid member to a second position still closing the container member but engaging and releasing said container locking means to allow removal of the container member from the chassis member with the lid member securely locked in closed position, and
i) lid unlocking means operable at the authorized deposit-receiving and processing center for unlocking the lid member from said container member to allow opening of the container member and retrieval of the deposits contained therein.

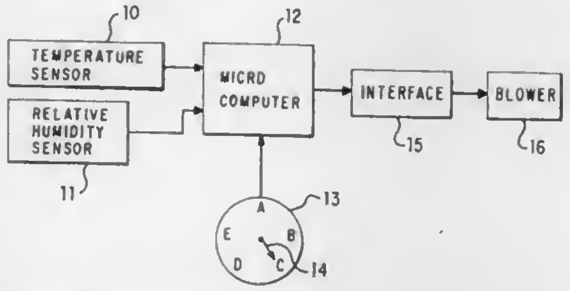
5,850,967
SECURITY MAILBOX
J. La Nell White, 3418 Lansing Ave., Knoxville, Tenn. 37914
Filed Feb. 26, 1998, Ser. No. 31,427
Int. Cl.^{6} B65D *91/00*
U.S. Cl. 232—17 **6 Claims**

1. A security mailbox comprising:
a housing comprising;
  a bottom wall;
  a movable side wall, releasably attached to the bottom wall, comprising:
    a first surface on the movable side wall;
    a second surface on the movable side wall;
    an insertion port in the movable side wall;
    a moisture barrier, attached to the first surface, adjacent the insertion port; and



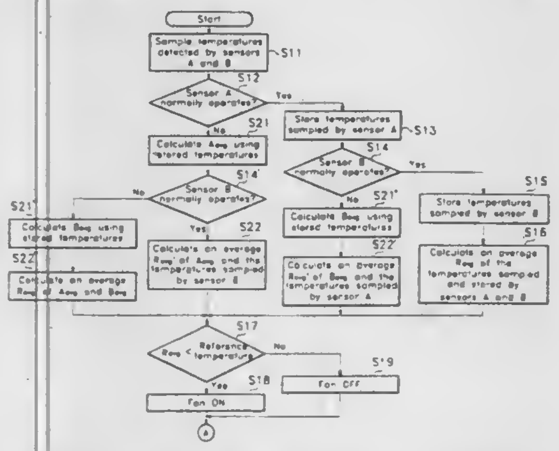
    a security barrier, attached to the second surface, adjacent the insertion port;
    a keypad lock port extending through the movable sidewall;
    a key lock port extending through the movable side wall; and
  a lock member attached to the second surface locking the movable side wall to the bottom wall, the lock member comprising:
  a key actuated locking mechanism on the first surface and extending through the key lock port; and
  the key actuated locking mechanism selectively locking the movable side wall to the bottom wall.

5,850,968
AIR CONDITIONER WITH SELECTED RANGES OF RELATIVE HUMIDITY AND TEMPERATURE
Teppo K. Jokinen, 1214 Lucerne Ave., Lake Worth, Fla. 33460
Filed Jul. 14, 1997, Ser. No. 892,128
Int. Cl.^{6} F24F *5/00*
U.S. Cl. 236—44 C **14 Claims**



8. An improved air handling system comprising:
a relative humidity sensor;
a temperature sensor;
a controller;
a blower;
a coil with fins;
a coil without fins;
said blower when on causing air to flow over said coil with fins and said coil without fins through said blower;
said relative humidity sensor and said temperature sensor connected to said controller;
said controller having stored data that includes a series of different ranges of relative humidity and temperature, said different ranges constituting different zones of relative humidity and temperature;
said controller responding to said relative humidity sensor, said temperature sensor, and said stored data to provide an output signal indicative of the variation of said temperature and said relative humidity compared to a selected range of relative humidity and temperature;
said controller having output signals to control said blower to turn said blower on and off;
whereby when the temperature sensed by said temperature sensor and the relative humidity sensed by said relative humidity sensor are outside said selected range said blower is turned on.

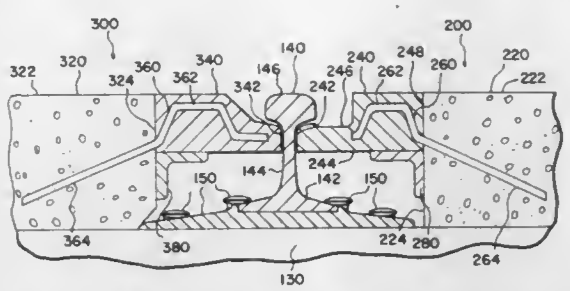
5,850,969
METHOD FOR CONTROLLING TEMPERATURE IN A REFRIGERATOR WHEN A TEMPERATURE SENSOR OPERATES ABNORMALLY
Eui-kyung Hong; Jae-in Kim, and Seong-wook Jung, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Aug. 22, 1997, Ser. No. 916,289
Claims priority, application Rep. of Korea, Aug. 23, 1996, 1996-35143
Int. Cl.^{6} G01K *3/00;* F24F *7/00*
U.S. Cl. 236—49.3 **5 Claims**


Start
Sample temperatures detected by sensors A and B
S11
S12
Sensor A normally operates?
Yes
No
Store temperatures sampled by sensor A
S13
S21
Calculate Aeq using stored temperatures
S14
Sensor B normally operates?
Yes
S14'
Sensor B normally operates?
No
Yes
S15
Store temperatures sampled by sensor B
S21'
Calculate Beq using stored temperatures
S21'
Calculate Beq using stored temperatures
S22
Calculate an average Req' of Aeq and the temperatures sampled by sensor B
S22'
Calculate an average Req' of Beq and the temperatures sampled by sensor A
S16
Calculate an average Req of the temperatures sampled and stored by sensors A and B
S22'
Calculate an average Req of Aeq and Beq
S17
Req < Reference temperature
No
Yes
S18
Fan ON
S19
Fan OFF
A

1. A method for controlling a temperature in a compartment of a refrigerator, which compartment includes at least two sensors for sensing respective temperatures therein; the method comprising the steps of:
A) detecting respective temperatures in the compartment by means of said sensors;
B) determining whether said sensors are operating normally;
C) storing said detected temperatures of sensors operating normally;
D) calculating an average of temperature values associated with all of said sensors, wherein the temperature value associated with an abnormally operating one of said sensors is determined on the basis of temperatures detected thereby and stored prior to an abnormal operation thereof;
E) comparing the average calculated in step D with a reference temperature; and
F) operating a fan of said compartment according to the comparison in step E.

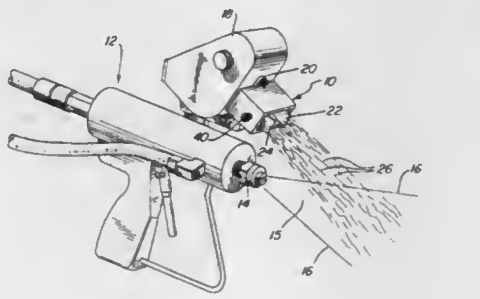
5,850,970
PREFABRICATED EMBEDDED RAILWAY TRACK SYSTEM
William K. Hull, 1705 Jamestown, and Thomas A. Hogue, 702 Williamsburg, both of Ennis, Tex. 75119
Division of Ser. No. 471,844, Jun. 6, 1995, Pat. No. 5,655,711. This application Apr. 17, 1997, Ser. No. 839,850
Int. Cl.^{6} E01B *2/00*
U.S. Cl. 238—8 **3 Claims**

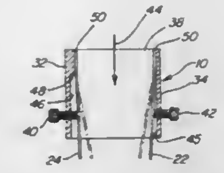
1. A system for embedding a railway track comprising:
a reinforcing member having a first section and a second section:



an insert having the first section of said reinforcing member secured therein, wherein the first section of said
reinforcing member provides structural rigidity to said insert;
a panel member having the second section of said reinforcing member secured therein, wherein the second section of said reinforcing member provides structural rigidity to said panel member;
wherein said reinforcing member secures said insert with said panel member; and
a support bracket formed of angle iron with a first surface secured to said panel member and a second surface secured to a lower surface of said insert, wherein said support bracket provides support to said lower surface of said insert.

5,850,971
ADJUSTABLE CHOPPER DIVERTER FOR A SPRAY GUN
Gary L. Smith, 1760 Monrovia Ave., Unit C-1, Costa Mesa, Calif. 92627
Filed Mar. 28, 1997, Ser. No. 828,315
Int. Cl.^{6} F23D *11/16*
U.S. Cl. 239—420 **3 Claims**





1. A chopper diverter for chopped, short segments of fiberglass sprayed into a fan spray pattern emitted by a spray gun, comprising, in combination:
the spray gun having a nozzle which ejects a pair of components which are mixed in a fan spray pattern outside of the nozzle;
a chopper assembly on the spray gun;
the chopper diverter having a rectangular body with a pair of side walls secured to the chopper assembly, adjacent the nozzle, to spray a plurality of chopped, short fiberglass segments into the fan spray patter; the rectangular body being entirely made from a hardened metal;
means for securing the chopper diverter on the chopper assembly;
a pair of adjustable resilient plates held within an interior through passage formed in the chopper diverter for adjusting the flow of chopped, short fiberglass segments through the chopper diverter and into the fan spray pattern of the mixed components and

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a pair of cooperating adjusting screws passing through openings in wall portions of the chopper diverter.

5,850,972

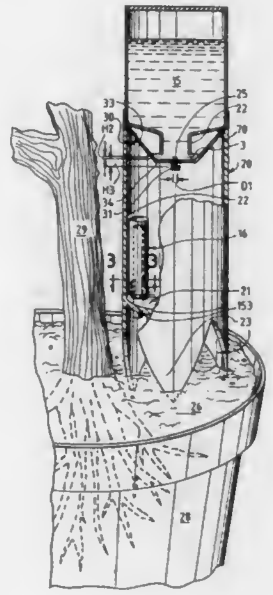
LIQUID DISPENSER AND METHOD

Daniel N. Campau, Grand Rapids, Mich., assignor to Flow-Rite Controls, Ltd., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 441,482, May 15, 1995, Pat. No. 5,634,592, which is a continuation-in-part of Ser. No. 231,742, Apr. 7, 1994, Pat. No. 5,542,605. This application Aug. 6, 1996, Ser. No. 692,510

Int. Cl.^{6} A24F *25/00*

U.S. Cl. 239—44 **7 Claims**



1. An automatic liquid dispensing apparatus for the dispensing of a controlled volume of liquid, comprising:

a reservoir adapted to hold a dispensable liquid, thereby defining a liquid level within the reservoir;

a hydrophillic restrictor positioned inside a flow regulator, said restrictor adapted to dispense the liquid at microflow rates into the reservoir;

a dispensing tube positioned within the reservoir, the dispensing tube having an open upper end and terminating at a lower end in a dispensing nozzle positioned below the reservoir;

a dome positioned within the reservoir and at least partially enclosing the dispensing tube, the dome having a top portion positioned sufficiently above a top portion of the dispensing tube to permit the passage of an air bubble between the dispensing tube and the dome during dispensing;

at least one air/liquid intake port positioned above the dispensing nozzle when the reservoir is oriented to dispense the liquid, the at least one intake port being in fluid communication with the upper end of the dispensing tube and with the reservoir;

wherein the liquid level within the reservoir and the liquid level within the dispensing tube are initially at the same start level, and as dispensing occurs the liquid level within the reservoir drops while the liquid level within the dispensing tube remains at the start level, until the liquid level within the reservoir has dropped sufficiently to allow air to enter the intake port.

5,850,973

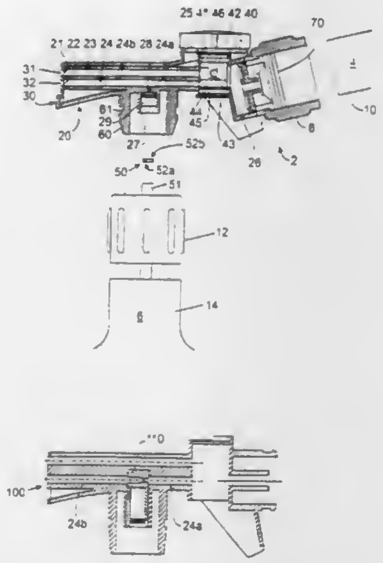
DOUBLE BARREL SPRAYER FOR SELECTIVE SPRAYING OF WATER OR DILUTED PRODUCT AND USE THEREOF

Lance Liljeqvist, Wilton, and Edward Kozlowski, Southport, both of Conn., assignors to Armor All Products Corporation, Aliso Viejo, Calif.

Continuation-in-part of Ser. No. 511,142, Aug. 4, 1995, Pat. No. 5,595,345, and Ser. No. 451,922, May 26, 1995, abandoned. This application May 21, 1996, Ser. No. 651,952

Int. Cl.^{6} B05B *9/00*

U.S. Cl. 239—312 **20 Claims**



1. A portable sprayer for applying a diluted product to a surface to be treated, comprising:

a housing having first and second inlets, first and second outlets, a mixing chamber and a valve member;

the first inlet supplying water to the sprayer;

the second inlet supplying a concentrated liquid product to the sprayer;

the mixing chamber being in fluid communication with the first and second inlets such that water is mixed with the concentrated liquid product to form a diluted product by feeding water through the first inlet and feeding the concentrated liquid product through the second inlet, the mixing chamber being located in an insert supported in a recess in the housing;

the first outlet spraying rinsing water from the sprayer to allow removal of diluted product from a surface to be treated;

the second outlet spraying the diluted product from the sprayer onto a surface to be treated; and

the valve member being operable to selectively feed the diluted product to the second outlet or feed rinsing water to the first outlet.

5,850,974

DEVICE TO PRODUCE AN ADJUSTABLE FLUID JET

Werner Kettl, Neusäss, and Josef Ottl, Diedorf, both of Germany, assignors to Grafotec GmbH, Diedorf, Germany

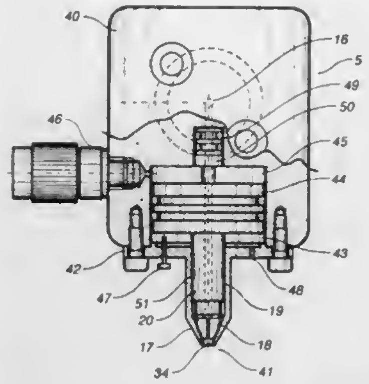
Filed Apr. 14, 1997, Ser. No. 843,284

Claims priority, application Germany, May 2, 1996, 196 17 479.1

Int. Cl.^{6} B05B *15/00*

U.S. Cl. 239—546 **4 Claims**

1. A device for producing an adjustable fluid jet, for an application of a fluid onto a substratum, the device being fitted with a jet head carrying a jet having an opening at one end of a flow path to be supplied with the fluid, the opening is fitted with an elastic element having a through recess connected to the flow path, the elastic element is positioned between a jet tube and a mating thrust bolt that are adjustable in relation to each other, a control device arranged on the jet head, the jet tube tapers toward an end and receives the elastic element, the control device comprising a piston arrangement with a through bore communicating with the through recess of the elastic elements, said thrust bolt entering the jet tube in a fixed manner at the jet head, a following control piston that is controlled by pressure from a pressure chamber, the pressure chamber is supplied with a pressure medium on an opposite side of the control piston from the thrust bolt, and a sealing plug that projects from an opposite side of the thrust bolt, said sealing plug being in a sealing relationship with an opening that communicates with the pressure chamber and is supplied with the fluid, said sealing plug having a smaller diameter than said opening, said jet tube comprising a flange sealing a cylinder chamber within the jet head, said cylinder chamber receiving said control piston therein.



5,850,975

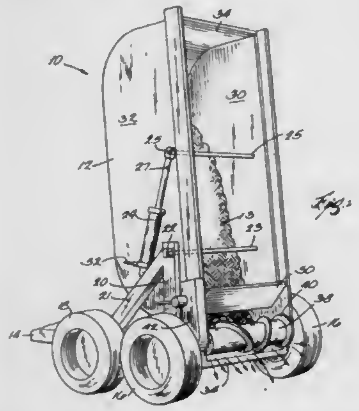
MATERIAL SPREADER

Lloyd Bauer, N 5610 Rich Lake Rd., Ogdensburg, Wis. 54962

Filed Apr. 1, 1996, Ser. No. 625,124

Int. Cl.^{6} A01C *3/06*

U.S. Cl. 239—657 **7 Claims**



1. A material spreader adapted to be towed behind a tractor comprising

a chassis mounted on wheels, at least one pair of wheels being positioned toward the rear of said chassis,

a material-containing box with an open top and having front, rear and side walls each having a height and upper and lower edges, said box being provided for transporting and dispensing materials out of the rear of said box, said box being pivotable from a horizontal position to a substantially vertical position,

at least one rotatably driven beater mounted to the rear of said box, said box being devoid of any material moving mechanism except for said beater,

a vertical support member extending upwardly from each side of said chassis adjacent to said pair of wheels to an upper end adjacent to said upper edge, each said vertical support member being provided with a pivot point adjacent to said upper end for pivotally supporting said material containing box at an elevated location on said box spaced above said rear axle, said box being pivotally supported at a location elevated above said lower side edges and spaced forwardly from the rear of said box a distance at least equal to the height of said box, and

controllable means for raising the forward end of said box about said pivot support.

5,850,976

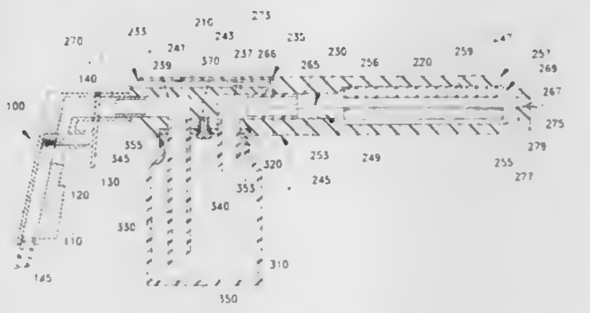
POWDER COATING APPLICATION GUN AND METHOD FOR USING THE SAME

Mark Alan Robidoux, Coatesville, Pa., assignor to The Eastwood Company, Malvern, Pa.

Filed Oct. 23, 1997, Ser. No. 956,508

Int. Cl.^{6} B05B *7/06*

U.S. Cl. 239—698 **29 Claims**



1. A gun for spraying a powder onto a work piece to form a coating, said gun comprising:

means for manipulating said gun and for controlling a flow of air from a pressurized source through said gun;

a container disposed in fluid communication with said means for manipulating and controlling, wherein said powder is held and fluidized by the flow of air from said pressurized source;

means defining a flow path through said gun, having an internal surface and an open end, said powder container being releasably fastened to said gun in fluid communication with said flow path, and said internal surface frictionally imparting a net electrical charge of a first polarity to a first portion of said powder when said first portion of said powder contacts said surface during said spraying; and,

a plurality of discrete members disposed within said flow path and capable of imparting a net electrical charge of a second polarity to a second portion of said powder when said second portion of said powder contacts said members during said spraying.

5,850,977

METHOD AND APPARATUS FOR COMMINUTING SOLID PARTICLES

Ernest Csendes, 514 Marquette St., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 423,326, Apr. 17, 1995, Pat. No. 5,695,130. This application Dec. 3, 1997, Ser. No. 984,312

Int. Cl.^{6} B02C *19/12;23/24*

U.S. Cl. 241—17 **12 Claims**

11. A method for comminuting solid particles comprising the steps of:

feeding said particles in a gas stream into a vessel;

driving said particles and said gas stream upwardly so that they are suspended in said vessel;

comminuting said particles in a vortex zone formed in said vessel;

feeding the comminuted particles to a cyclone to separate said particles from said gas stream;

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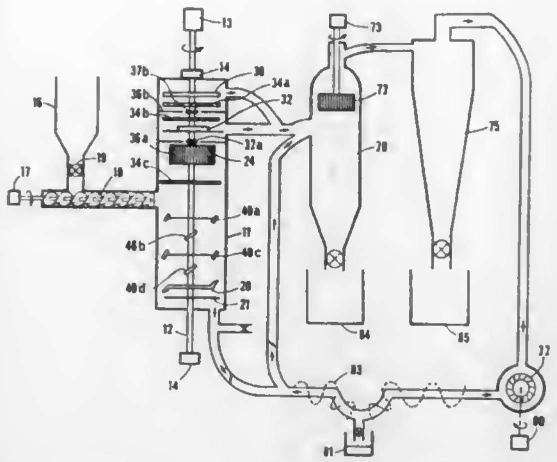


recycling the gas stream from said cyclone back to said vessel; and

removing moisture from said gas stream during said recycling.

5,850,978

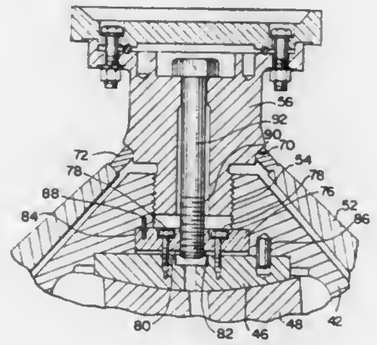
SELF TIGHTENING MANTLE RETENTION ASSEMBLY FOR GYRATORY CONICAL CRUSHERS

Charles R. Jacobson, Greendale, Wis., assignor to Nordberg, Incorporated, Wis.

Filed Jun. 28, 1996, Ser. No. 672,627

Int. Cl.^{6} B02C *2/04*

U.S. Cl. 241—215 21 Claims



1. A self tightening mantle retention assembly for a conical crusher having a crusher bowl, said self tightening mantle retention assembly comprising:

a frustoconically shaped head member having a first threaded aperture formed therein and a second threaded aperture associated therewith;

a frustoconically shaped mantle supported on the head member and adapted to gyrate within the crusher bowl;

a locking bolt having an externally threaded portion engaged in said first threaded aperture of said head member, and a cylindrical ridge for applying a force to an upper edge of said mantle, such that engagement of said locking bolt externally threaded portion in said first threaded aperture applies a force to secure said mantle to said head member; and

a central bolt having a head at one end and being threaded at the other end, said central bolt passing through a hole in said locking bolt with said threads of said central bolt being engaged in said second threaded aperture of said head member, whereby tightening of said central bolt, with said central bolt head engaging said locking bolt, creates a compressive force between said head member and said locking bolt, the threads of said first and second apertures and the threads of said locking bolt and of said central bolt being in a direction, such that the rotational force applied to said head by the material being crushed is in a direction to tighten the engagement of said threaded portion of said locking bolt in said first threaded aperture, and said threads of said central bolt in said second threaded aperture.

5,850,979

FISHING REEL OF DOUBLE BEARING TYPE HAVING IMPROVED BALANCE AND ERGONOMIC PROPERTIES

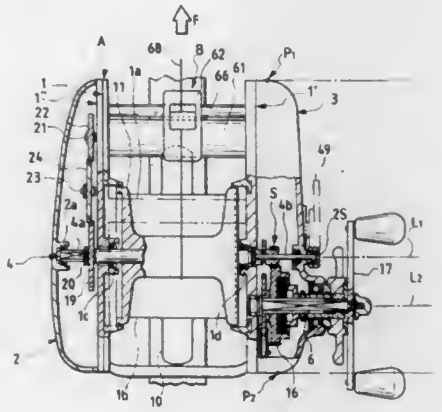
Tomohiro Murayama; Nobuyuki Yamaguchi; Toshiro Ono, all of Tokyo, and Shinichi Asano, Chiba, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,454

Claims priority, application Japan, Aug. 23, 1994, 6-221171; Oct. 3, 1994, 6-238984; Oct. 5, 1994, 6-266289; Mar. 31, 1995, 7-075671

Int. Cl.^{6} A01K *89/015*

U.S. Cl. 242—279 32 Claims



1. A double bearing type fishing reel, comprising:

a spool arranged between first and second side plates of a reel main body and rotatable about a first axis for receiving a fishline around said spool,

said fishline being delivered from said spool in a fishline play-out direction,

said first side plate defining first and second ends,

said first end being a first farthest point of said first side plate from said first axis in said fishline play-out direction, and

said second end being a second farthest point of said first side plate from said first axis in a direction opposite to said fishline play-out direction;

a handle arranged on said first side plate and rotatable about a second axis,

said handle being linked with said spool to rotate said spool to wind said fishline around said spool, and

said second axis is located within a space defined longitudinally between said first axis and said second end and

a fishline parallel winding device for winding said fishline uniformly around said spool, wherein said fishline parallel winding device has a drive element which converts a rotational motion input from said handle into a reciprocating motion and wherein said drive element is substantially located between said first and second side plates.

5,850,980

TAPE CASSETTE

Osamu Koizumi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

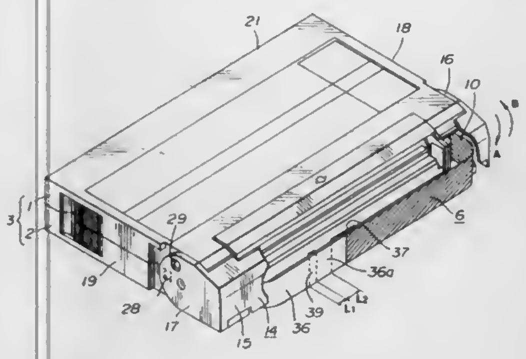
PCT No. PCT/JP95/02001, § 371 Date Jun. 1, 1996, § 102(e) Date Jun. 1, 1996, PCT Pub. No. WO96/10823, PCT Pub. Date Apr. 11, 1996

PCT Filed Sep. 29, 1995, Ser. No. 649,636

Claims priority, application Japan, Sep. 30, 1994, 6-261593

Int. Cl.^{6} G11B *23/087*

U.S. Cl. 242—344 6 Claims



1. A tape cassette comprising:

a cassette body having side walls thereof,

a pair of tape reels rotatable supported in said cassette body, and

a tape member comprised of a magnetic tape having leader tape portions connected at the end portions thereof by means of a connection tape with said leader tape being fixed respectively to said tape reels wherein

said cassette body comprises:

a light emitting element hole positioned between said pair of tape reels into which a light emitting element is inserted, and

light transmission holes positioned with respect to said light emitting element to allow light from the light emitting element facing the interior of said cassette body to pass therethrough when said tape member is interposed therebetween, said light transmission holes being provided in one of said side walls orthogonal to the travelling direction of the tape member travelling between said pair of tape reels, and wherein

said tape member including at least one discrete tape information display area having a leading end portion and a trailing end portion thereof connected to one of the leader tape portions and none of said discrete tape information display area between said leading end portion and said trailing end portion thereof is covered by said connection tape and the entirety of said discrete tape information display area is spaced from said connection tape by a predetermined distance, said at least one discrete tape information display area being positioned between a point of intersection of a line connecting said light emitting element hole and one of said light transmission holes and said one leader tape portion and an end portion of said connection tape when the tape member is completely wound around one of the pair of tape reels.

5,850,981

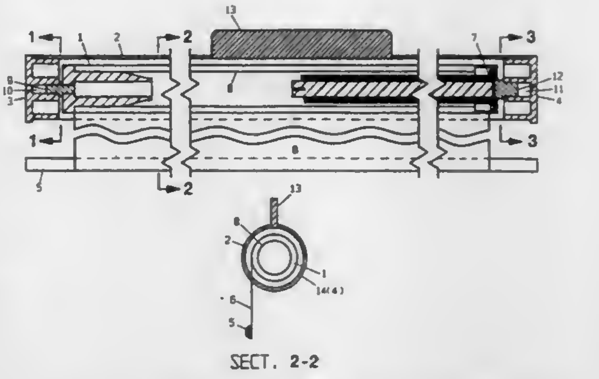
HOUSING FOR A RETRACTABLE ROAD MAP

Bryan T. Beausoleil, 123 Settlers La., Torrington, Conn. 06790

Continuation-in-part of Ser. No. 94,693, Jul. 22, 1993, abandoned. This application Jan. 3, 1995, Ser. No. 368,019

Int. Cl.^{6} G65H *75/30;* G09F *11/18*

U.S. Cl. 242—385.1 5 Claims



1. A spring-loaded map winding device for housing and winding a road map or chart comprising,

a tubular housing having an opening extending axially the entire length of the housing,

a spring-loaded roller shaft assembly positioned within the tubular housing,

said road map or chart having one end attached to said spring-loaded roller shaft assembly and an opposite end attached to a magnifying stiffener rod located outside of said tubular housing,

said spring-loaded roller shaft assembly resiliently urging said road map or chart to wind around said spring-loaded roller shaft assembly,

a mechanism for holding said road map or chart extended at a desired length from said tubular housing,

end caps attached to the axial ends of the tubular housing, said end caps having respective cylindrical portions extending inside the tubular housing and delimiting the length of the opening into the interior of the tubular housing,

said magnifying stiffener rod having a length longer than the delimited opening to prevent said rod from being retracted inside said tubular housing, and being made of an optically clear acrylic plastic material and having, in cross-section, a parabolic shape on one side and a flat bottom surface on the other side.

5,850,982

DEVICE FOR THE WIND UP OF A KNITTED MATERIAL WEB

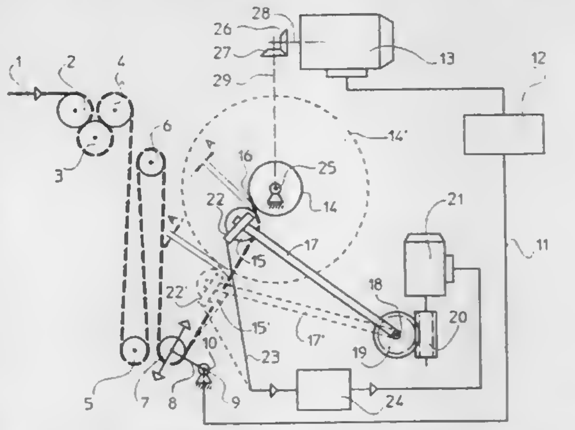
Karl-Heinz Roth, Naila, and Rudi Wirth, Schwarzenbach/Wald, both of Germany, assignors to Liba Maschinen Fabrik GmbH, Naila, Germany

Filed May 9, 1997, Ser. No. 853,988

Claims priority, application Germany, May 22, 1996, 196 20 670.7

Int. Cl.^{6} B65H *23/198*

U.S. Cl. 242—413.5 7 Claims



1. Device for winding up a knitted material web which is being delivered from a warp knitting machine to a material roll by way of a shaft drive.

wherein the rotational speed of the shaft drive is regulated in response to a sensor which senses the tension of the material web;

and wherein spreader roller is arranged adjacent to the material roll and maintained an approximately constant distance from the material roll by shifting the spreader roller along a radial guide;

and wherein the spreader roller is driven by a drive means such that the spreader roller maintains a rotational speed which substantially exceeds the delivery speed of the web.

5,850,983

TRAVERSING YARN GUIDE FOR WINDING MACHINES WITH REVERSING SCREWTHREAD SHAFT HAVING AN ENDLESS SCREWTHREAD GROOVE

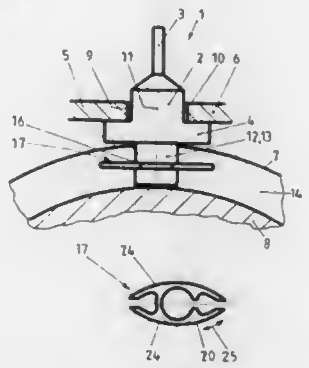
Winfried Pöppinghaus, Bad Sooden-Allendorf, Germany, assignor to Georg Sahm GmbH & Co. KG, Eschwege, Germany

Filed Oct. 2, 1997, Ser. No. 944,931

Claims priority, application Germany, Oct. 15, 1996, 196 424 739.26

Int. Cl.⁶ B65H *54/28*

U.S. Cl. 242—483.7 **15 Claims**



1. A traversing yarn guide for a winding machine with a reversing screwthread shaft having an endless screwthread groove and with first and second guide rail means for the yarn guide, comprising a main body adapted to be rectilinearly reciprocably guided on the guide rail means,

a yarn guide carried on the main body,

a guide projection on the main body adapted to project into the screwthread groove of the reversing screwthread shaft, the guide projection on the main body being in the form of an at least substantially cylindrical pin having an outside surface and arranged at least substantially co-axially with respect to the axis of the main body and adapted with slight clearance to the cross-sectional shape of the screwthread groove,

a groove in the outside surface of the pin, and

a shuttle means mounted pivotably on the main body and adapted to engage into the screwthread groove of the reversing screwthread shaft, the shuttle means being of a substantially smaller height in comparison with the height of the screwthread groove and mounted pivotably in the outside groove in the pin.

5,850,984

MACHINE FOR CONTINUOUSLY UNWINDING BOBBINS COMPRISING AT LEAST ONE MEANS FOR SIMULTANEOUSLY UNWINDING TWO SIDE-BY-SIDE OR COAXIAL BOBBINS

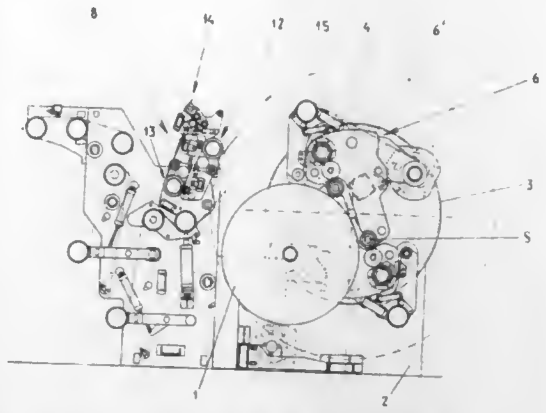
Claude Kleitz, Strasbourg, France, assignor to Monomatic, Societe Anonyme, Strasbourg, France

Filed Mar. 11, 1997, Ser. No. 816,041

Claims priority, application France, Mar. 11, 1996, 96 03189

Int. Cl.⁶ B65H *19/18*

U.S. Cl. 242—555.5 **19 Claims**



1. Unrolling machine permitting simultaneous unrolling, continuously, of two coaxial bobbins (1), comprising a frame (2) on which are guided in rotation two plates or discs (3) parallel to each other and connected by means of shafts (4 and 5) for the support and guidance of lateral bobbin-carrying arms (6) for the support and driving of bobbins (1) and an intermediate bobbin-carrying arm (7) for the simultaneous unrolling of two coaxial bobbins (1), said frame (2) being moreover provided with a device (8) for cutting and interconnecting ending strips and new bobbins, wherein the intermediate bobbin-carrying arm (7) comprises a first part (37) and a second part (38) articulated to one another, and is retractable to a non-use position and wherein the device (8) for cutting and connecting between ending strips and new bobbins comprises means (12) for the individual application of two ending strips, independently of each other, onto two new coaxial bobbins (1) and for application (13) of a single strip of greater width to a new single bobbin (1), as well as means (14) for selectively cutting and connecting one of two strips individually and independently and a single strip of greater width.

5,850,985

ATTACHMENT STRUCTURE ONTO TAPE REEL OF TAPE BODY, ATTACHMENT METHOD THEREOF, DEFORMING APPARATUS FOR THE TAPE BODY, AND TAPE CASSETTE

Shintaro Higuchi; Shinichi Abe; Hiroyuki Honma; Hiroshi Sekimukai, and Masanori Abe, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

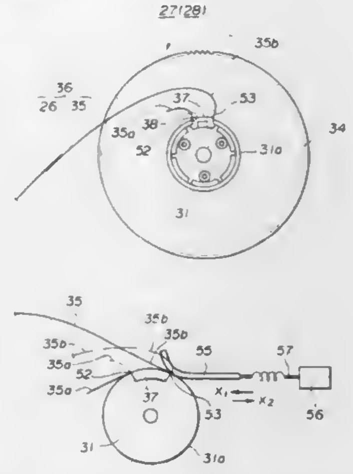
PCT No. PCT/JP96/00062, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/22601, PCT Pub. Date Jul. 25, 1996

PCT Filed Jan. 17, 1996, Ser. No. 704,717

Claims priority, application Japan, Jan. 17, 1995, 7-004771; Apr. 28, 1995, 7-105209

Int. Cl.⁶ B65H *19/28;* **G11B** *23/087*

U.S. Cl. 242—586.2 **8 Claims**



1. An attachment structure onto a tape reel of a tape body comprising magnetic tape including a leader tape at an end portion thereof, said attachment structure comprising:

a tape reel provided with a reel hub of a generally cylindrical shape which is provided at a central portion of the tape reel and a clamp member fitted into a recessed portion provided at an outer circumferential portion of the reel hub with said clamp member clamping the leader tape into said recessed portion whereby first and second leader portions of the leader tape extend from said recessed portion and are deformed onto the outer circumferential surface of the reel hub in a winding direction such that both the first and second leader portions are closely confined to the outer circumferential surface of the reel hub.

5,850,986

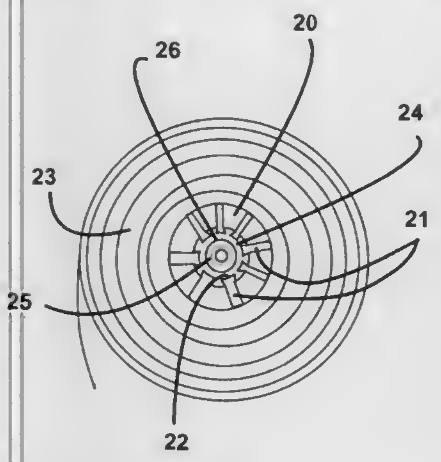
REUSABLE PAPER-ROLL CORE-CHUCK WITH INTERCHANGEABLE FINS

James E. Alexander, Jr., Box 464A, Greenfield Rd., Greenfield, Me. 04423

Filed Jul. 31, 1997, Ser. No. 904,146

Int. Cl.⁶ B65H *18/04*

U.S. Cl. 242—596.7 **20 Claims**



1. A core-chuck device comprising:

a) a central-hub having an outer-surface and an inner-surface; said outer surface including a plurality of longitudinally oriented channels, said channels being substantially parallel to a rotational axis of said central hub;

b) a support-sleeve, wherein said inner-surface is capable of receiving said support-sleeve; and

c) a plurality of interchangeable-fins, each having a longitudinally oriented protrusion, each said protrusion being tightly engageable with each of said channels;

wherein said core-chuck device can be held tightly within a core upon engagement of said plurality of interchangeable-fins with said central-hub.

5,850,987

RADIOSONDE BALLOON LAUNCHING SYSTEM

Giuseppe Aurilio, Arlington, Mass.; James M. Berrigan, Merrimack, N.H., and Albert G. Hurd, Bedford, Mass., assignors to Visidyne, Inc., Burlington, Mass.

Division of Ser. No. 700,238, Aug. 20, 1996. This application Jul. 31, 1998, Ser. No. 127,190

Int. Cl.⁶ B64B *1/58*

U.S. Cl. 244—1 TD **17 Claims**

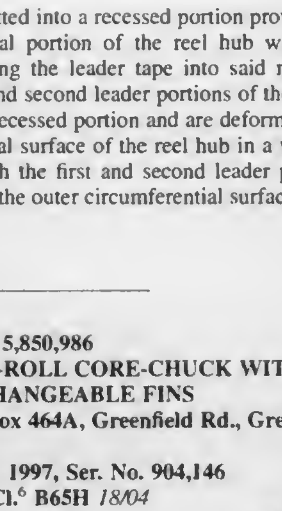
1. A radiosonde balloon launching system comprising:

a silo for housing an array of radiosonde balloon modules and for shielding radiosonde balloons during inflation;

base means for containing radiosonde balloon inflation and launch apparatus;

a telescopic pole in said base means;

means for loading a balloon module on said telescopic pole before balloon inflation and unloading that module after balloon launch; and



means for extending said telescopic pole after a balloon is inflated and retracting said pole after that balloon is launched.

5,850,988

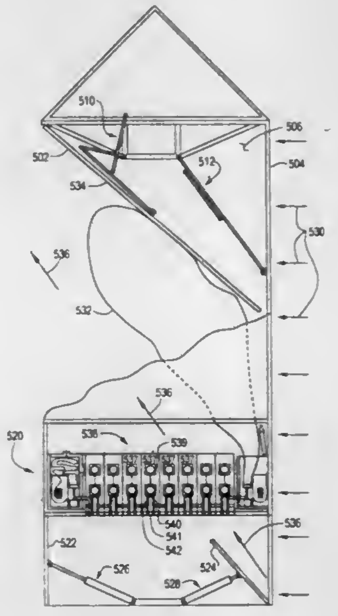
RADIOSONDE BALLOON LAUNCHING SYSTEM

Giuseppe Aurilio, Arlington, Mass.; James M. Berrigan, Merrimack, N.H., and Albert G. Hurd, Bedford, Mass., assignors to Visidyne, Inc., Burlington, Mass.

Filed Aug. 20, 1996, Ser. No. 700,238

Int. Cl.⁶ B64B *1/58*

U.S. Cl. 244—31 **32 Claims**



1. A radiosonde balloon launching system comprising:

a silo for housing an array of radiosonde balloon modules and for sheltering radiosonde balloons during inflation;

base means for containing radiosonde balloon inflation and launch apparatus, wherein said radiosonde balloon inflation and launch apparatus includes a microprocessor for controlling the inflation and launch of said radiosonde balloons; and

said silo including means for shielding said radiosonde balloons until they are ready to be launched, wherein said means for shielding includes at least one, side mounted door hingedly attached to said silo for launching said radiosonde balloon therethrough.

5,850,989

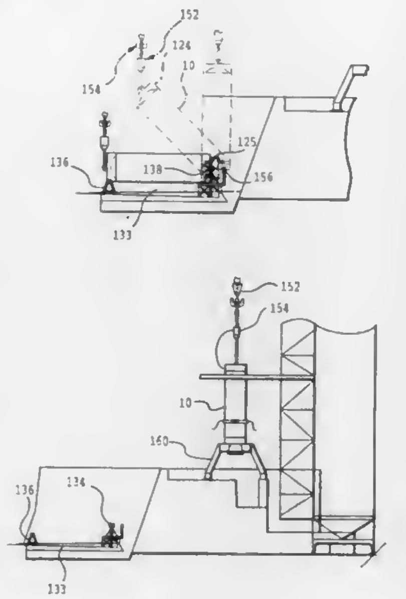
METHOD AND SYSTEM FOR RAPIDLY ASSEMBLING A LAUNCH VEHICLE

Howard D. Trudeau, Cupertino; David L. Sutphin, Saratoga; Donald E. Damon, Danville; Ernest R. Bedegrew; Filamon T. Cabrera, both of Santa Cruz; Douglas B. Pereyda, Los Gatos; Robert J. MacDonald, San Jose; Daniel H. Hada; Frank C. Havens, both of Cupertino, all of Calif.; Allan R. Tomasek, Georgetown, Tex.; Lee O. Taylor, and Larry W. Edwards, both of Austin, Tex., assignors to Lockheed Martin Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 198,818, Feb. 18, 1994, Pat. No. 5,529,264. This application Aug. 4, 1995, Ser. No. 511,345

Int. Cl.^{6} B64F *1/04;1/10;1/12;* **F41F** *3/04*

U.S. Cl. 244—63 **28 Claims**



1. A method for rapidly assembling a solid-fuel rocket motor launch vehicle vertically comprising the steps of:
- receiving a first-stage rocket motor positioned horizontally, said receiving the first-stage rocket motor step comprising the step of receiving at least a base portion of the first-stage rocket motor on a breakover stand, the breakover stand having a pivot engaged with the base portion of the first-stage rocket motor;
- rotating, about and relative to the pivot of the breakover stand, the first-stage rocket motor to a vertical position;
- positioning the first-stage rocket motor on and above-ground launch platform;
- receiving a shroud positioned horizontally;
- rotating the shroud to a vertical position;
- assembling the shroud with a payload assembly to form a shroud assembly; and
- positioning the shroud assembly on the first-stage rocket motor.

5,850,990

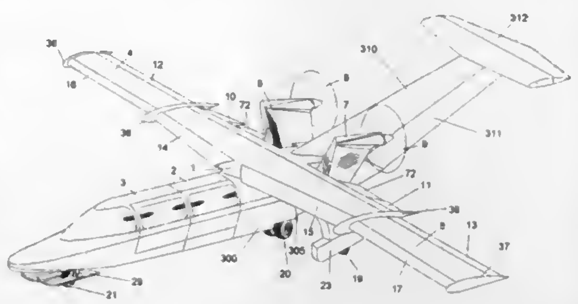
MULTI-PURPOSE AIRCRAFT

David E. Gevers, P.O. Box 430, Brownsburg, Ind. 46112

Division of Ser. No. 112,877, Aug. 26, 1993, Pat. No. 5,645,250. This application Mar. 6, 1997, Ser. No. 812,823

Int. Cl.^{6} B64C *25/52;35/00*

U.S. Cl. 244—105 **19 Claims**



1. An aircraft capable of takeoff from and landing on either snow or a hard surface, comprising:
- a wing structure;
- a fuselage;
- a forward landing gear assembly moveable relative to said fuselage during flight from a first position substantially retracted within said fuselage to a second position substantially extended from said fuselage, said forward landing gear assembly comprising a steerable forward wheel assembly and a steerable forward ski assembly,
- said forward landing gear assembly further comprising a forward landing gear actuator assembly operable by the aircraft's pilot during flight which selectively deploys said steerable wheel assembly or said steerable ski assembly to said extended second position for landing;
- a main landing gear assembly moveable relative to said fuselage during flight from a first position substantially retracted within said fuselage to a second position substantially extended from said fuselage, said main landing gear assembly comprising a main wheel gear assembly and a main ski gear assembly including a pair of skis,
- said main landing gear assembly further comprising a main landing gear actuator assembly operable by the aircraft's pilot during flight which selectively deploys said main wheel gear assembly or said main ski gear assembly to said extended second position for landing.

5,850,991

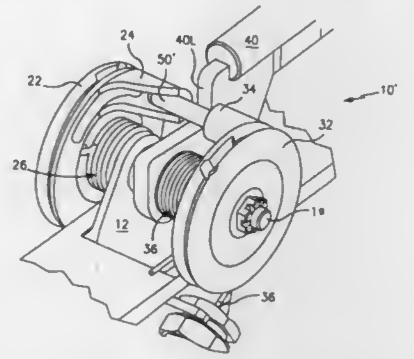
MECHANICAL EMERGENCY DUAL-RELEASE MECHANISM FOR AN EXTERNAL CARGO HOOK SYSTEM

Barton J. Hainsworth, and Marc R. Poland, both of Shelton, Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Oct. 2, 1997, Ser. No. 942,764

Int. Cl.^{6} B64D *01/08;09/00;01/12*

U.S. Cl. 244—137.1 **10 Claims**



1. A mechanical emergency dual-release mechanism for use in combination with a helicopter external cargo hook system that includes a cargo hook assembly that is operative to jettison an externally-attached cargo, comprising:
- a pulley axle;
- a cockpit pulley assembly mounted in rotatable combination with said pulley axle;
- a cabin pulley assembly mounted in rotatable combination with said pulley axle, said cabin pulley assembly being functionally interconnected to the cargo hook assembly and operative in response to a mechanical stimulus generated by means of said cockpit pulley assembly or said cabin pulley assembly to activate the cargo hook assembly to jettison the externally-attached cargo; and
- displacement transfer means for operatively interconnecting said cockpit pulley assembly and said cabin pulley assembly.

5,850,992

METHOD FOR CONTROLLING THE PITCH ATTITUDE OF A SATELLITE BY MEANS OF SOLAR RADIATION PRESSURE

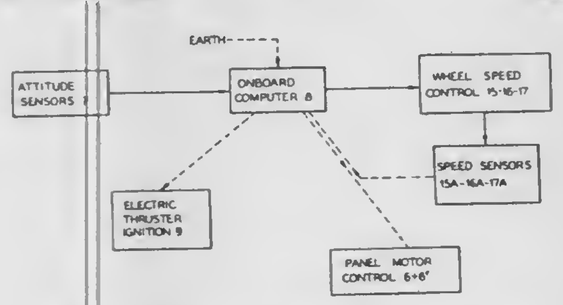
Patrick Flament, Le Cannet; Michel Perdu, Frejus; Jean Portier, Cannes, and Pierre Brunet, Siagne, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Division of Ser. No. 523,367, Sep. 5, 1995, Pat. No. 5,626,315, which is a continuation of Ser. No. 225,892, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 916,153, Jul. 24, 1992, Pat. No. 5,312,073. This application Jan. 7, 1997, Ser. No. 779,509

Claims priority, application France, Nov. 30, 1990, 9015050

Int. Cl.^{6} B64G *1/24*

U.S. Cl. 244—168 **3 Claims**


EARTH
ATTITUDE SENSORS 7
ONBOARD COMPUTER 8
WHEEL SPEED CONTROL 15-16-17
SPEED SENSORS 15A-16A-17A
ELECTRIC THRUSTER IGNITION 9
PANEL MOTOR CONTROL 6+6'

1. A method of controlling the attitude of a satellite relative to a predetermined axis thereof, said satellite comprising:
- a satellite body;
- at least one planar surface member exposed to solar radiation pressure, said at least one planar surface member having a central axis extending in a first direction away from said satellite body, said first direction being substantially coaxial with said predetermined axis;
- an attitude measuring device adapted to measure an attitude error angle about said predetermined axis; and
- a computer connected to said attitude measuring device and adapted to determine from the attitude error anile the value of an attitude correction torque to be applied about said predetermined axis, said method comprising the step of:
- tilting said central axis of said at least one planar surface member relative to said predetermined axis such that said central axis of said at least one planar surface member is tilted away from said predetermined axis substantially transversely to said solar radiation pressure so as to generate a torque about said predetermined axis substantially equal to said value of said attitude correction torque.

5,850,993

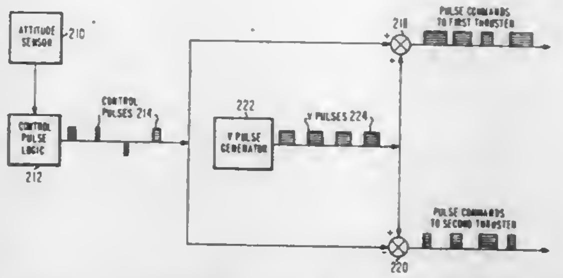
SPACECRAFT THRUSTER OPERATION FOR IMPROVED ORBITAL MANEUVER ACCURACY

Carl Henry Hubert, Cranbury, N.J., assignor to Martin Marietta Corp., East Windsor, N.J.

Filed Aug. 25, 1995, Ser. No. 519,441

Int. Cl.^{6} B64G *1/26*

U.S. Cl. 244—169 **2 Claims**



1. A spacecraft, comprising:
- a body defining a center of mass:
- attitude sensing means coupled to said body, for generating attitude error signals representative of deviation of said body from a particular attitude;
- a plurality of thrusters mounted on said body, with mutually parallel thrust components in a particular direction, said thrusters being arranged in pairs, with the thrusters in each pair producing substantially opposed torques about said center of mass;
- velocity change control means coupled to said plurality of thrusters, for generating signals commanding firing of the thrusters of at least one of said pairs of thrusters, said firing being performed in pulses having a nominal on-durations during each firing cycle, for a particular total firing time duration, for thereby effecting a desired velocity change (ΔV) in said particular direction; and
- thruster control means coupled to said attitude control means and to said pair of thrusters, for causing said on-pulse durations of said thrusters of said pair to be controlled in a differential manner, with a first thruster of said pair being fired for a duration greater than nominal by a selected amount during each said firing cycle, and a second thruster of said pair being fired for a duration less than nominal by said selected amount during the corresponding firing cycle, said selected amount of differential control during each firing cycle being in response to said attitude error signals, to vary said torque about said center of mass, while maintaining constant ΔV.

5,850,994

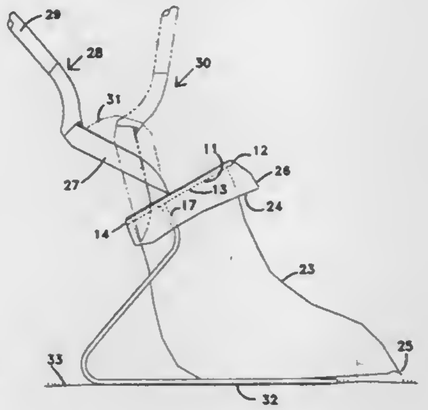
SANDBAG HOLDING FRAME

Kenneth M. Wilson, 10673 Foix Ave., Norwalk, Calif. 90650

Filed Apr. 5, 1996, Ser. No. 644,603

Int. Cl.^{6} A63B *55/04*

U.S. Cl. 248—97 **9 Claims**



1. A frame designed to rest on the ground for holding a sandbag for facilitating the filling of said sandbag by one person, said frame having a front, a back and a right side and a left side, said frame comprising:
- a generally rectangular support member fabricated from an elongated material, said generally rectangular support member having a top near the back of the frame but forward thereof, a right side, a bottom near the front of said frame and a left side, a line formed between said top and bottom as viewed from the left side of said member forming an angle of

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between 15 and 45 degrees with respect to the horizontal when the frame is supported with its bottom resting on a horizontal surface;

at least two support arms affixed to said generally rectangular support member; and

a base adapted to rest on a ground surface, said base lying affixed to said at least two support arms so that when the base is resting on the ground surface, the bottom of said rectangular support member is above the ground surface, whereby the frame may be supported by said base on the ground and the generally rectangular support member being positioned so that it is angled to the front of the frame with its bottom adapted to be above the ground and available for affixing the open end of said sandbag therearound said support arms being affixed to said generally rectangular support member so that said bottom of said generally rectangular support member cannot touch said base.

5,850,995
CLOCK STAND

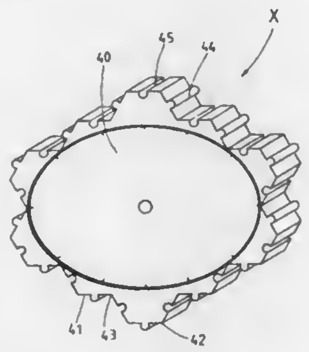
Mei-Yen Lin, 308, Section 3, Chung Yang Road, Long Chin Hsiang, Taichung Hsien, Taiwan

Filed Sep. 10, 1997, Ser. No. 926,791

Claims priority, application China, Mar. 12, 1997, 85217578A01

Int. Cl.^{6} A47F *7/00*

U.S. Cl. 248—116 **4 Claims**



1. An apparatus comprising:

a clock;

a base body supporting said clock, said base body being formed of a plurality of base sides which are equal in length to one another, said plurality of base sides being arranged continuously to form a plurality of positive or negative equipotential angles of 120 degrees, said base sides being provided respectively with a projected shaft member; and

a base block having a recessed seat engageable with said projected shaft member of said base body.

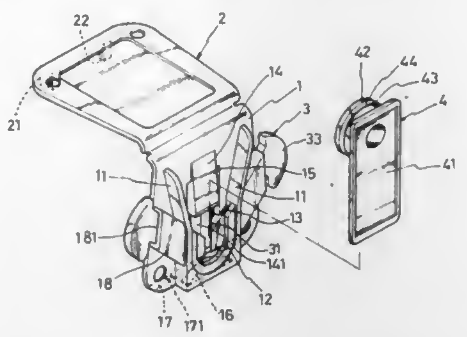
5,850,996
MOBILE TELEPHONE HANGING DEVICE

Ying-Ping Liang, Taipei Hsien, Taiwan, assignor to Two Thousand and One Technology, Inc., Taipei, Taiwan

Filed Mar. 5, 1996, Ser. No. 611,492

Int. Cl.^{6} B65D *25/52*

U.S. Cl. 248—221.11 **7 Claims**



1. A mobile telephone hanging device comprising:

an integrally formed base plate, said base plate comprising a front side, two symmetrical bevel ribs raised from said front side, a smoothly curved connecting rib connected between said bevel ribs in parallel to said front side and defining with said front side a receiving chamber receiving a rounded hanging rod of a mobile telephone permitting the rounded hanging rod of the mobile telephone to be forced into engagement with said smoothly curved connecting rib, an opening in the middle between said bevel ribs, an elongated movable plate hinged to the periphery of said opening and projecting downward toward said receiving chamber stopping the rounded hanging rod of the mobile telephone into engagement with said smoothly curved connecting rib, two extension strips respectively extending from said elongated movable plate and sloping downwardly outwards and projecting into said receiving chamber, an upwardly arched rib disposed in said receiving chamber and spaced between said front side and said smoothly curved connecting rib supporting the rounded hanging rod of the mobile telephone in said receiving chamber, two bottom lugs bilaterally disposed at a bottom side thereof and defining a respective pin hole, and two sloping push rod holder portions symmetrically disposed at two opposite sides and defining a respective receiving hole;

a clamping plate having a top side connected to said base plate, a bottom side terminating in an upright stop wall, and two plug pins bilaterally disposed adjacent to said upright stop wall for fitting into the pin holes of the bottom lugs of said base plate to secure said base plate to the user's belt; and

two push rods respectively inserted into the receiving holes of the sloping push rod holder portions of said base plate, each of said push rods having a handle at an outer end thereof for pushing by hand, a stop edge in the middle engaged with the periphery of the opening of said base plate, and a beveled tip at an inner end stopped against one of the extension strips of said base plate, said push rods pulling said extension strips downwards to move said elongated movable plate toward said opening permitting the rounded hanging rod of the mobile telephone to be disconnected from said base plate, when they are respectively pushed inwards.

5,850,997
ARTICULABLE PROJECTING PLUG

John B. Rosen, Eugene, Oreg., assignor to Rosen Product Development, Inc., Eugene, Oreg.

Continuation of Ser. No. 636,172, Apr. 22, 1996, Pat. No. 5,611,513, which is a continuation of Ser. No. 173,799, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 829,728, Jan. 31, 1992, Pat. No. 5,271,590. This application Feb. 12, 1997, Ser. No. 799,617

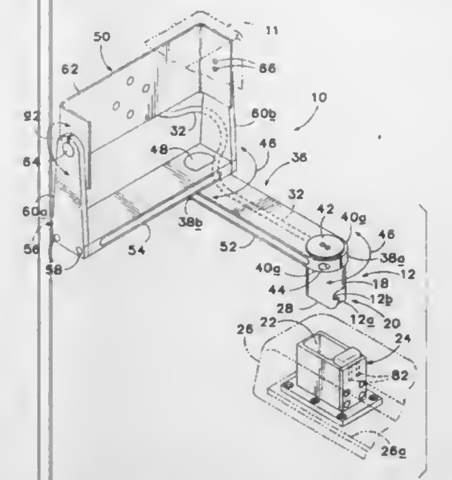
Int. Cl.^{6} F16B *17/00*

U.S. Cl. 248—222.11 **13 Claims**

1. An articulable projecting plug comprising:

elongate projecting structure having first and second ends, the second end of the projecting structure being pivotally connected to a housing/support structure for supporting an electronic device;

a mechanical connector arrangement including joining structure and a tubular receptacle, the joining structure being pivotally mounted on the first end of the projecting structure and having a protruding exterior which mates with a hollow interior of the receptacle to provide structural support for the projecting structure; and



an electrical connector arrangement including a first part operatively connected to the receptacle and a second part operatively connected to the joining structure such that mating of the joining structure and the receptacle of the mechanical connector arrangement effects mating of the first and second parts of the electrical connector arrangement.

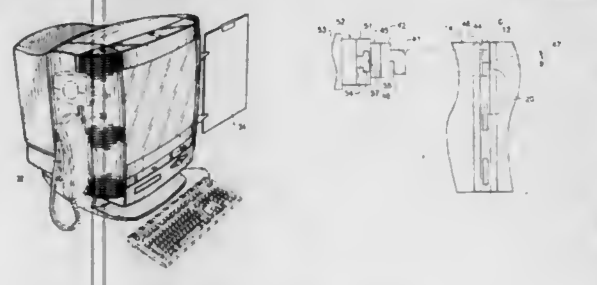
5,850,998
METHOD AND APPARATUS FOR MOUNTING AN ACCESSORY ON AN APPLIANCE

Timothy J. Parsey, Palo Alto; Daniel J. Coster, San Francisco; Elizabeth B. Swan, Woodside; David V. Hoenig, Los Gatos; John J. O'Brien, and Susanne M. Pierce, both of San Francisco, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 2, 1996, Ser. No. 627,835

Int. Cl.^{6} A47B *96/06*

U.S. Cl. 248—223.21 **4 Claims**



1. A mounting mechanism system comprising:

an appliance,

a first connection component having a channel wedge portion for use in conjunction with said appliance,

an accessory,

a second connection component connected to said accessory, said second connection component having a raised wedge portion suitable for securable connection to said first connection component such that said accessory is securably connected for use in conjunction with said appliance,

wherein said first connection component comprises a plurality of slots arranged in a line regularly spaced,

wherein said second connection component comprises a hook to fit in a first slot of said plurality of slots.

5,850,999
LIGHT COVER QUICK AND SAFE RELEASE DEVICE

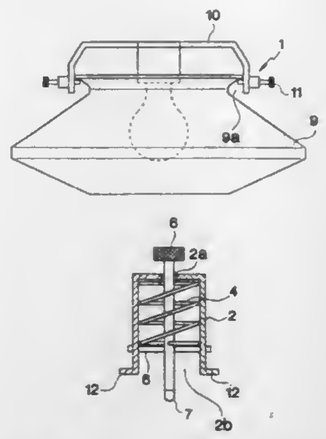
Robert Eugene Gross, 22525 Adams Dr., Robertsdale, Ala. 36567-6156

Filed Aug. 13, 1996, Ser. No. 689,671

Int. Cl.^{6} B42F *13/00*

U.S. Cl. 248—342 **8 Claims**

1. A light with a light cover retained on a light fixture by a retaining device, wherein said retaining device comprises:



a housing having an open bottom and a partially open top and sides,

securing means for attaching said housing to the light fixture attached adjacent said open bottom,

a rod extending through said partially open top, and through said open bottom,

resilient means surrounding said rod for biasing said rod toward said open bottom,

means on said rod to prevent said rod from being disengaged from said housing by said resilient means,

means on said side of said housing for holding said rod in a first and second position,

in said first position said rod projects from said open bottom, and

in said second position said rod is retracted into said housing.

5,851,000
EXTERNAL REAR VIEW MIRROR FOR MOTOR VEHICLES

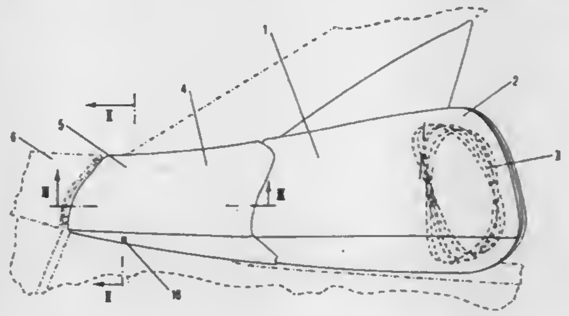
Bernhard Mittelhäuser, Am Krähenberg 3, D-30900 Wedemark; Dietmar Leder, Barsinghausen, and Jan Schubert, Wedemark, all of Germany, assignors to Bernhard Mittelhäuser, Wedemark, Germany

Filed Aug. 16, 1996, Ser. No. 689,994

Claims priority, application Germany, Aug. 16, 1995, 195 30 043.2

Int. Cl.^{6} A47G *1/24*

U.S. Cl. 248—479 **9 Claims**



1. An external rear view mirror for a motor vehicle, including a housing that conforms to a streamlined shape of said vehicle and that is adapted to accommodate an adjustable mirror body, whereby said housing has a forward end, as viewed in a forward direction of travel of said vehicle, that merges with a part of said vehicle, said housing further comprising:

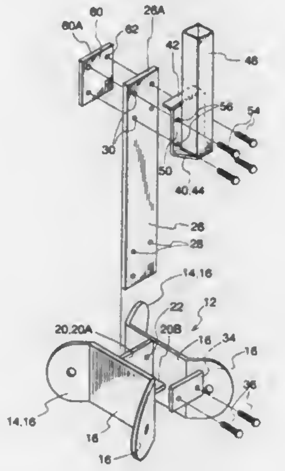
a base that is mounted to said vehicle; and

a forward section at said forward end of said housing, wherein said forward section is adjustable relative to said base and to said vehicle when said base is mounted on said vehicle, wherein said forward section is provided with an outer shell, and merely said outer shell is adjustable, wherein when viewed in said forward direction of travel of said vehicle, said base of said housing is provided with a forward portion on which said outer shell is adjustably disposed, and is also provided with a rear portion for adjustably carrying a portion of said mirror that accommodates said mirror body, and wherein said adjustability of said forward section is effected by pivoting about a transverse axis, said forward section being pivotable about an eccentric shaft that is externally rotatable and that is engaged in a manner that is practically free of play by legs of a prong.

5,851,001
DEFLECTABLE MOUNTING FOR UPRIGHT MAST

Grant D. Dicke, and Jeffrey A. Williams, both of Downers Grove, Ill., assignors to Dicke Tool Company, Downers Grove, Ill.

Filed Aug. 15, 1997, Ser. No. 912,901
Int. Cl.^{6} F16M *13/00*
U.S. Cl. 248—519 **7 Claims**

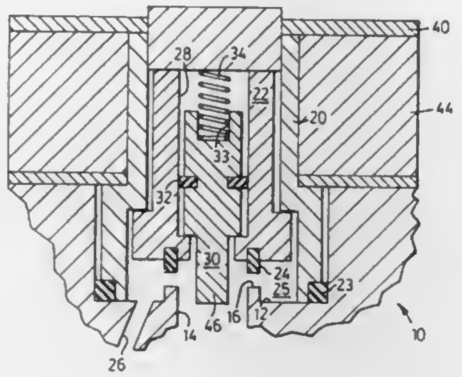


1. A sign stand assembly, comprising:
a spring strip of composite spring material extending in a generally vertical direction and having top and bottom ends with top and bottom edges, respectively;
a base member including a pair of opposed clamping members cooperating to provide a shielding for the bottom edge of the spring strip and to define a slot for receiving the bottom end of the spring strip with a compressive engagement;
a mounting member-carrying a mast member and having a vertically extending mounting wall and a top wall, the mounting wall and the top wall cooperating to provide a shielding for the top edge of the spring strip;
a backing member having a vertically extending backing wall;
the mounting member further comprising a backing wall cooperating with the mounting wall to define a slot therebetween for receiving the top end of the spring strip with a compressive engagement;
first clamping means drawing said clamping members together to compressively engage the bottom end of the spring strip so as to shield the bottom edge of the spring strip from contact and so as to mount the spring strip to the base member;
second clamping means drawing said mounting wall and said backing wall together to compressively engage the top end of the spring strip so as to shield the top edge of the spring strip from contact and so as to mount the mounting member to the spring strip; and
said first and said second clamping means being fixedly attached to the spring strip at a fixed spacing from each other,
so that an unrestrained portion of the spring strip extends between the mounting member and the base member and is free to flex with loads applied to the mast member.

5,851,002
TRI-STABLE SOLENOID-OPERATED VALVE

Stephen Carter, Ontario, Canada, assignor to Ortech Corporation, Mississauga, Canada

Filed Aug. 6, 1996, Ser. No. 692,693
Int. Cl.^{6} F16K *31/06*
U.S. Cl. 251—121 **6 Claims**

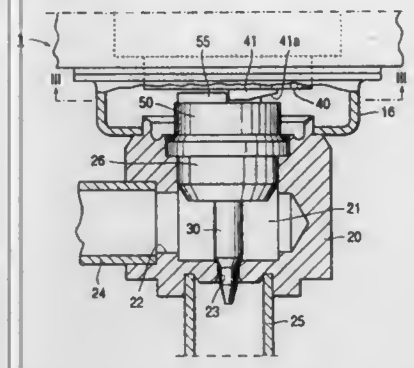


1. A tri-stable solenoid-operated valve, comprising:
a) body means defining an internal chamber,
b) an outlet passageway leading away from the chamber,
c) a valve seat surrounding the outlet passageway,
d) a primary piston mounted within the chamber for reciprocating movement toward and away from said valve seat, between a first and a second position,
e) closure means supported by said primary piston, the closure means being adapted to close against said valve seat when the primary piston is at its first position, and to be spaced away from the valve seat when the primary piston is at its second position,
f) an inlet passageway opening into said chamber such that it is denied communication with said outlet passageway when the primary piston is at its first position, and is in communication with said outlet passageway when the primary piston is at its second position,
g) a secondary piston mounted to the primary piston for reciprocating movement with respect thereto between a first and a second position, the secondary piston having a portion which projects into the outlet passageway to cause the outlet passageway to be occluded to a predetermined degree when the primary piston is at its second position and the secondary piston is at its first position; said portion of said secondary piston causing the outlet passageway to be occluded to a degree less than said predetermined degree when both the primary and secondary pistons are at their respective second positions,
h) biasing means urging both said pistons toward their respective first positions,
i) solenoid means which, when energized to a first predetermined level, overcomes said biassing means to move both pistons to their respective second positions, and which, when energized to a second predetermined level lower than said first predetermined level, partly overcomes said biassing means to move only the primary piston to its second position, whereby the lower energization of said solenoid causes the valve seat to be opened to a degree intermediate between closure and that achieved by the first level of energization.

5,851,003
MOTOR OPERATED VALVE

Tetsuya Aoki; Tadashi Hasegawa, and Tomoari Obuchi, all of Tokyo, Japan, assignors to Fujikoki Corporation, Tokyo, Japan

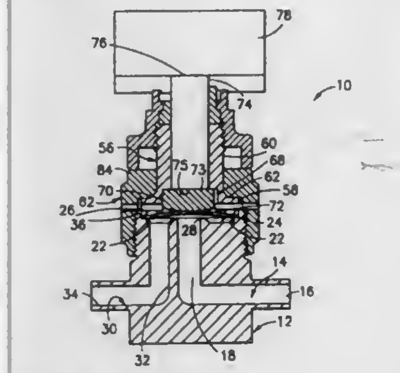
Filed Nov. 4, 1996, Ser. No. 740,901
Claims priority, application Japan, May 31, 1996, 8-139013
Int. Cl.^{6} F16K *51/00*
U.S. Cl. 251—288 **3 Claims**



1. A motor operated valve comprising a valve body having a fluid entrance, a shaft which opens or closes the aforementioned fluid entrance, a motor which drives the shaft, a moving side stopper which rotates by the rotation of the aforementioned shaft, and a fixed side stopper which is hit by the aforementioned moving side stopper, and where a clearance slope to avoid hitting is provided at least on one of the two sides, the aforementioned moving side stopper or the fixed side stopper.

5,851,004
HIGH PRESSURE ACTUATED METAL SEATED DIAPHRAGM VALVE

Jing-Chau Wu, Morris Plains; Patrick P. Barber, Kinnelon, and Lewis L. Aldridge, Toy Hills Township, all of N.J., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 731,517, Oct. 16, 1996, Pat. No. 5,730,423. This application Jul. 7, 1997, Ser. No. 888,583
Int. Cl.^{6} F16K *7/17*
U.S. Cl. 251—331 **16 Claims**

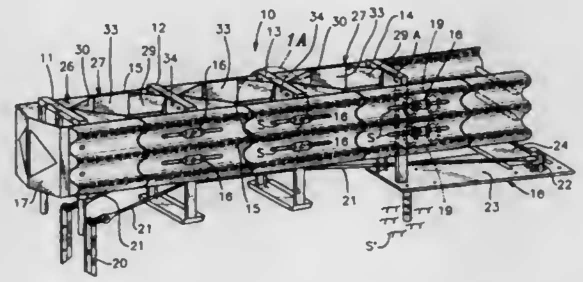


1. A diaphragm valve, comprising:
a metallic valve housing with an open-sided valve chamber, an inlet passage extending through said valve housing to said valve chamber and an outlet passage extending through said valve housing from said valve chamber, said valve housing being formed to include a toroidal sealing bead in said valve chamber and surrounding said inlet passage;
a metallic diaphragm secured to said valve housing to substantially enclose said open-sided valve chamber, said diaphragm including a dished central portion having, in an unbiased condition, an initially concave face in juxtaposed relationship to said toroidal sealing bead and being spaced from said toroidal sealing bead for permitting fluid flow into said inlet passage, through said valve chamber and out of said outlet passage, said diaphragm, in an unbiased condition, further having an initially convex face facing away from said valve chamber;
a valve stem disposed externally of said valve chamber and being selectively movable along an axis toward and away from said diaphragm; and
a diaphragm actuator button disposed between said valve stem and said diaphragm, said diaphragm actuator button being movable with said valve stem along said axis and being slidably movable relative to said valve stem in directions transverse to said axis, said diaphragm actuator button having a convex face engaged with the initially convex face of said central portion of said diaphragm for selectively deflecting said metallic diaphragm into tight sealing engagement with said toroidal sealing bead in response to movement of said valve stem toward said valve housing for interrupting fluid flow into and out of said valve chamber, whereby said slidable movement of said diaphragm actuator button transverse to said axis of said valve stem enables the diaphragm actuator button to float into coaxial alignment with the central portion of the diaphragm for achieving substantial uniform application of forces between the diaphragm and the toroidal sealing bead.

5,851,005
ENERGY ABSORPTION APPARATUS

Franz M. Muller, Via Scheiwiller, 1, Milano 20133, Italy, and Marco Anghileri, Via Zuretti, 47, Milano 20125, Italy

Filed Apr. 15, 1997, Ser. No. 843,392
Int. Cl.^{6} E10F *15/04*
U.S. Cl. 256—13.1 **7 Claims**

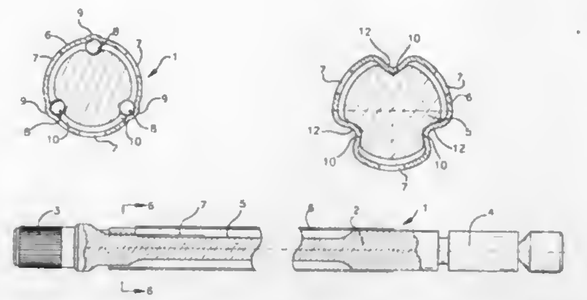


1. An energy absorption barrier for rigid road side obstacles to dissipate kinetic energy imparted by a vehicle impact comprises; a ductile metal plate having a hexagon polygon shape, said hexagon polygon shape having two identical pairs of equal length intersecting elements defining oppositely disposed aligned vertexes interconnected by spaced parallel identical intermediate portions therebetween, wherein said metal plate is positioned within said energy absorption barrier so as to be compressed under impact on at least one vertex of said hexagon polygon, and means for mounting said metal plate within said energy absorption barrier.

5,851,006
TORSIONAL ELEMENT FOR STEERING VALVES AND SPRING CHARACTERISTIC IMPROVING PROCESS

Robert Spillner, and Lars Hampe, both of Düsseldorf, Germany, assignors to TRW Fahrwerksysteme GmbH & Co. KG, Dusseldorf, Germany
PCT No. PCT/EP96/02614, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO97/00189, PCT Pub. Date Jan. 3, 1997
PCT Filed Jun. 18, 1996, Ser. No. 776,883
Claims priority, application Germany, Jun. 12, 1995, 195 21 567.2
Int. Cl.^{6} B62D *5/06;* F16D *3/72*
U.S. Cl. 267—273 **3 Claims**

1. A torsion element for a steering valve, said torsion element comprising:



a torsionally elastic rod member having axially opposite first and second end areas which are rotatable relative to one another, said rod member having a circumferentially spaced plurality of radially and axially extending indentations adjacent said second end area; and

a generally tubular, torsionally stiff sleeve member encircling said rod member, said sleeve member having axially opposite first and second end portions, said first end portion being fixedly attached to said first end area of said rod member,

said second end portion of said sleeve member including a circumferentially spaced plurality of radially and axially extending grooves which align with and radially overlie said plurality of indentations in said rod member in a neutral steering condition,

said second end portion of said sleeve member further including a circumferentially spaced plurality of radial slots which extend axially in parallel with said plurality of grooves in said second end portion, said plurality of slots being circumferentially spaced between said plurality of grooves,

said plurality of grooves in said sleeve member cooperating with said plurality of indentations in said rod member to exert a radially directed centering force on said rod member upon rotation of one of said end areas of said rod member from the neutral steering condition, the magnitude of the centering force being preset by said plurality of slots in said sleeve member.

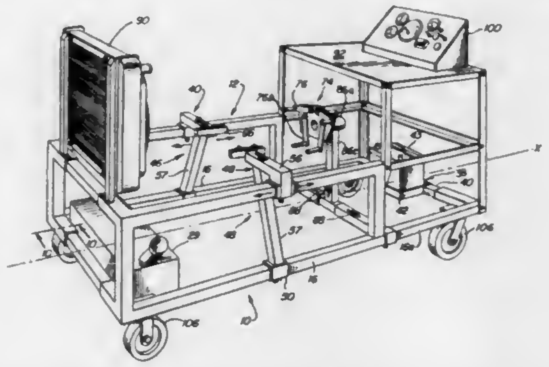
5,851,007
ENGINE TEST STAND KIT

Kenneth R. Swartzlander, 450 Harding Rd., Corona, Calif. 91719, and Dean A. Woodruff, 6947 Mesada St., Alta Loma, Calif. 91701

Filed Nov. 21, 1996, Ser. No. 753,187

Int. Cl.^{6} B23Q *3/00*

U.S. Cl. 269—17 **23 Claims**



1. In a universal engine test stand kit adapted for easy assembly into an engine test stand for supporting an internal combustion engine during tests and having a longitudinal axis, a front end and a rear end, the combination comprising:

a) a pair of side frame members, each side frame member defining a rectangular section lying in a substantially vertical plane parallel to the longitudinal axis in the assembled condition, each side frame member including an upper and a lower horizontal piece joined together by end pieces, each side frame member further including first, second and third tubular lateral stubs extending inwardly and generally at right angles to a plane defined by the side frame member;

b) a pair of forward engine support assemblies adapted to support the front section of an engine during tests, each forward support assembly being slidably mounted on each of the upper and lower tubular pieces of a respective side frame member, whereby the forward engine support assemblies can be moved longitudinally along the side frame members to accommodate different sizes of engines;

c) a tubular crosspiece adapted to be telescopically received in each of the tubular lateral stubs of the side frame members whereby an open parallelepiped frame section is formed in the assembled condition; and

d) a rearward engine support assembly adapted to be mounted on one of the upper and lower pieces of each of the side frame members, the rearward engine support bracket being arranged to move longitudinally relative to the side frame members in the assembled condition for accommodating different sizes of engines.

5,851,008
PAPER HANDLING APPARATUS

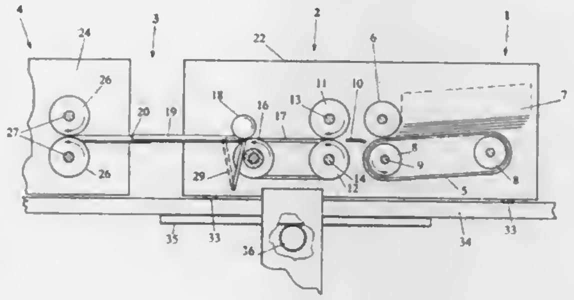
Heros Dilanchian, Lane Cove; Miro Mackiewicz, Ryde, and Christopher Malouf, Chatswood, all of Australia, assignors to Intelmail Australia Ptd. Ltd., Australia

Filed Oct. 11, 1996, Ser. No. 730,702

Claims priority, application Australia, Oct. 12, 1995, PN5961

Int. Cl.^{6} B65H *5/22*

U.S. Cl. 271—4.07 **23 Claims**



1. A paper handling apparatus, comprising a feeder device adapted to feed single sheets of paper from a stack, an accumulator for holding one or more sheets fed from said feeder device, and an ejector for removing said one or more sheets from said accumulator for subsequent processing, the paper being supported by the accumulator and removed by the ejector without coming into contact with a belt, the feeder device being moveable linearly with respect to the ejector so as to vary the size of the accumulator.

5,851,009
METHOD AND DEVICE FOR DECELERATING OR ACCELERATING AND/OR FOR DEFLECTING CONVEYED PRINTED PRODUCTS

Dieter Siebenmann, Russikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Dec. 2, 1996, Ser. No. 759,037

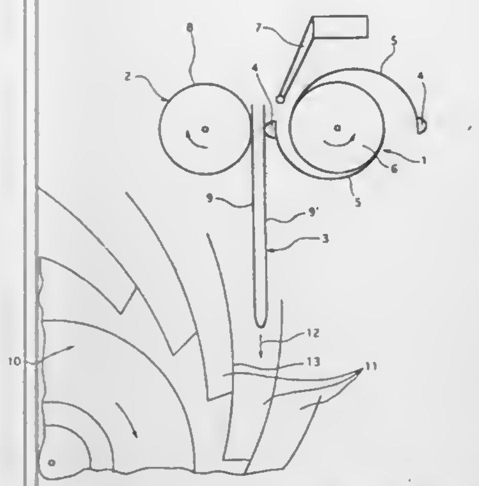
Claims priority, application Switzerland, Dec. 5, 1995, 03433/95

Int. Cl.^{6} A65H *5/34*

U.S. Cl. 271—270 **14 Claims**

1. A method for selectively accelerating or decelerating printed products being conveyed in a conveying direction parallel to main surfaces of the products, each of the products having two generally parallel main surfaces, the method comprising the steps of:

providing a counter element having a contact area,



conveying the products in a product stream past the counter element such that the contact area of the counter element is substantially parallel with one main surface of each product being conveyed past the counter element,

providing at least one spring mounted contact element, and

acting on a second main surface of a product being conveyed past the counter element with the at least one spring mounted contact element, the step of acting including

abruptly moving the contact element against the second main surface of the product, thereby pressing the product with a sudden clamping force between the contact element and the contact area of the counter element, and moving the contact element substantially parallel with the conveying direction substantially maintaining the clamping force on the product between the contact element and at least part of the contact area.

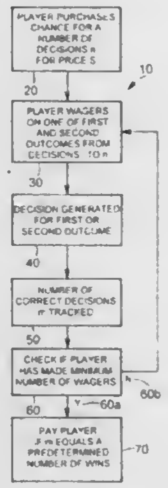
5,851,010
METHOD OF PLAYING A GAME

Isadore Feinberg, 1717 St. Georges Rd., Dresher, Pa. 19025

Filed Nov. 25, 1997, Ser. No. 980,880

Int. Cl.^{6} A63F *1/00*

U.S. Cl. 273—274 **15 Claims**


PLAYER PURCHASES CHANCE FOR A NUMBER OF DECISIONS n FOR PRICE S
20
10
PLAYER WAGERS ON ONE OF FIRST AND SECOND OUTCOMES FROM DECISIONS 1 TO n
30
DECISION GENERATED FOR FIRST OR SECOND OUTCOME
40
NUMBER OF CORRECT DECISIONS m TRACKED
50
CHECK IF PLAYER HAS MADE MINIMUM NUMBER OF WAGERS
N
60b
60
Y
60a
PAY PLAYER IF m EQUALS A PREDETERMINED NUMBER OF WINS
70

1. A method of playing a game comprising:

(a) using a gaming device for generating one of a first outcome and a second outcome for gaming decisions;

(b) selling a chance to a player for a price s for playing a number of decisions n of the gaming device, where n is greater than 1;

(c) the player selecting and wagering on one of the first and second outcomes separately for each of the number of decisions n;

(d) generating a series of n decisions with the gaming device from one of the first and second outcomes;

(e) tracking a correct number of decisions m made by the player out of the number of decisions n purchased by the player; and

(f) paying the player having a predetermined correct number of decisions an amount based on a binomial distribution.

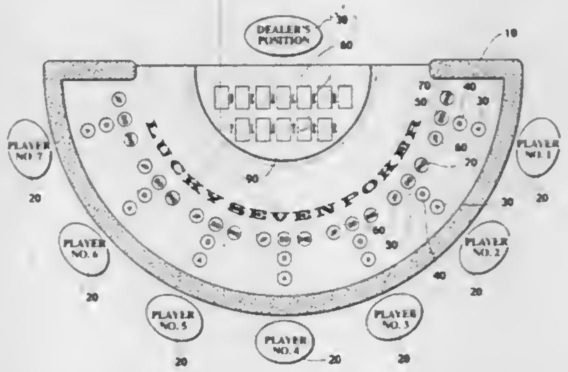
5,851,011
MULTI-DECK POKER PROGRESSIVE WAGERING SYSTEM WITH MULTIPLE WINNERS AND INCLUDING JACKPOT, BUST, AND INSURANCE OPTIONS

A. W. Lott, 12120 E. 24th St., Tulsa, Okla. 74129

Filed Oct. 31, 1997, Ser. No. 962,307

Int. Cl.^{6} A63F *1/00*

U.S. Cl. 273—292 **25 Claims**



23. A method of playing a card game, wherein at least two conventional decks of fifty-two playing cards have been shuffled together to form a single game deck, comprising the steps of:

(a) at least one player initiating the card game;

(b) dealing five playing cards from said game deck, thereby forming a player hand, said five playing cards being dealt face-up;

(c) determining whether said player hand contains two or more cards of a same suit and rank, said two or more cards of a same suit and rank, if present, indicating a bust in said player hand;

(d) dealing seven playing cards from said game deck to form a dealer hand, said seven playing cards being dealt face-up;

(e) selecting five cards from said dealer hand to form a best possible dealer poker hand which does not contain two matching cards of a same suit and rank, if that is possible;

(f) determining whether said best possible dealer poker hand contains two or more matching cards of a same suit and rank, said two or more cards of a same suit and rank, if present, indicating a bust in said best possible dealer poker hand;

(g) determining a winner between said player hand and said best possible dealer poker hand according to the following rules, if said player hand contains a bust or said best possible dealer poker hand contains a bust,

(g1) declaring a player hand loss if said player hand contains a bust,

(g2) declaring a player hand win if said player hand does not contain a bust and said best possible dealer poker hand contains a bust, and, if neither said player hand nor said best possible dealer poker hand contains a bust,

(g3) declaring a player hand win if said player hand contains a higher ranking poker hand than said best possible dealer poker hand,

(g4) declaring a player hand loss if said best possible dealer poker hand contains a higher ranking poker hand than said player hand, and

(g5) declaring a push if neither said player hand nor said best possible dealer poker hand contains a higher ranking poker hand.

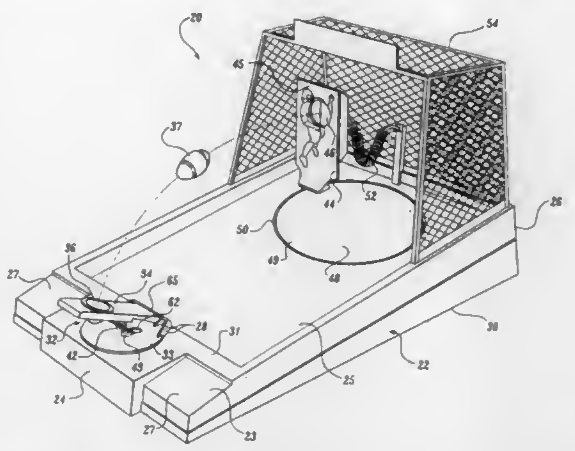
5,851,012
BALL GAME APPARATUS WITH SPIN IMPARTING CATAPULT

Michael Langieri, Jr., Long Meadow, and Stephen M. Langieri, Springfield, both of Mass., assignors to Rare Toys and Games, Inc., Enfield, Conn.

Filed Jul. 1, 1997, Ser. No. 886,200

Int. Cl.⁶ A63F *7/20*

U.S. Cl. 273—317.1 **24 Claims**



18. A game apparatus for propelling a game projectile towards a target, comprising:
- a base;
- a catapult mounted on the base;
- a projectile holder rotatably carried on the catapult lever for receiving and at least partially circumscribing a projectile, the projectile holder having a central axis that is aligned with a central axis of the received projectile;
- means for rapidly advancing the catapult away from the base; and
- means for rotating the projectile holder during advancement of the catapult so that the projectile is propelled from the catapult with an axial spinning motion.

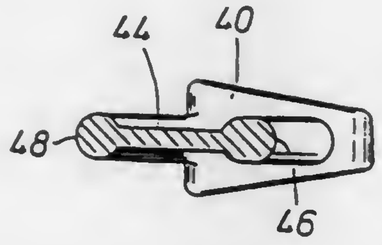
5,851,013
BLOWOUT PREVENTER PACKING ELEMENT WITH METALLIC INSERTS

Stephen P. Simons, Kingwood, Tex., assignor to Hydril Company, Houston, Tex.

Filed Jul. 3, 1997, Ser. No. 887,884

Int. Cl.⁶ E21B *33/06*

U.S. Cl. 277—327 **3 Claims**



1. Metallic inserts for use in an annular blowout preventer packing element having an elastomeric body disposed about a longitudinal axis, the body carrying the inserts in respective radial planes extending from the center of the preventer and adapted to be compressively displaced inwardly towards the axis, each of the inserts comprising:
- upper and lower flanges; and
- a web element extending between said flanges, said web element including leading and trailing edges each having outer arcuate surfaces that are substantially semicircular for distributing the loads applied to a bond line between the insert and the elastomeric body during the operation of the packing element, and
- a central rib extending between the edges, the rib being thinner than the edges, whereby said web element exhibits a substantially dumbbell shaped cross section for efficient reinforcement of the elastomeric body,
- the shape of said web element increasing the volume of the elastomeric body and decreasing the volume of the metallic inserts in the packing element to reduce the loads applied to the bond line.

5,851,014
SLIDE RING SEAL ASSEMBLY FOR THE RUNNING GEARS OF TRACK-LAYING VEHICLES

Erwin Germann, Aichach; Lothar Neureuter, Friedberg; Hans-Henning Zutz, Wermelskirchen, and Hans-Jürgen Veutgen, Burscheid, all of Germany, assignors to A E Goetze GmbH, Burscheid, Germany

Filed Jul. 15, 1996, Ser. No. 679,924

Claims priority, application Germany, Jul. 15, 1995, 195 25 863.0

Int. Cl.⁶ F16J *15/34*

U.S. Cl. 277—406 **3 Claims**

1. In a slide ring seal assembly having slide rings comprised of a casting material for running gears of track-laying vehicles and construction machinery, the improvement comprising:
- slide rings comprised of a gray cast iron alloy having a pearlitic matrix structure having lamellar separation of graphite therein, having a hardness value of at least 110 HRB, and being comprised of:
- 2.99 weight percent of carbon;
- 4.61 weight percent of silicon;
- 0.77 weight percent of manganese;
- 0.53 weight percent of phosphorus;
- 0.039 weight percent of sulfur;
- 1.7 weight percent of chromium;
- 0.81 weight percent of vanadium;
- 1.86 weight percent of copper; and
- iron as remainder.

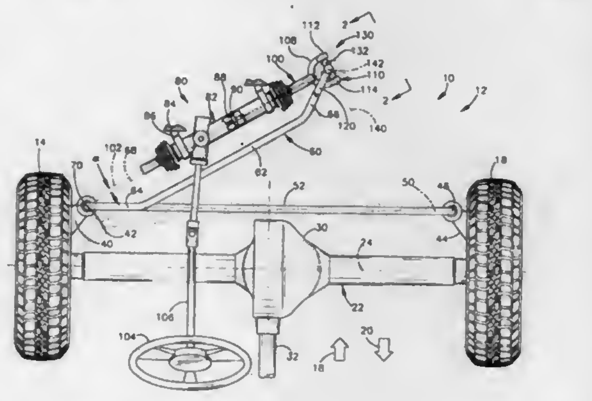
5,851,015
RACK AND PINION STEERING SYSTEM FOR FOUR WHEEL DRIVE VEHICLE

Edwin G. Klosterhaus, Livonia, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 21, 1997, Ser. No. 823,000

Int. Cl.⁶ B62D *7/16*

U.S. Cl. 280—93.51 **10 Claims**



1. An apparatus comprising:
- first and second steerable drive wheels of a vehicle;
- an axle assembly interconnecting said first and second steerable wheels of the vehicle;
- first and second steering arms associated with said first and second steering wheels, respectively, for receiving steering force for effecting turning movement of said first and second steerable wheels, a steering linkage axis extending between said first and second steering arms;
- a rack and pinion steering gear assembly including an elongate rack having a longitudinal axis and extending axially through a rack housing, said rack being movable axially in said housing, a first end portion of said rack projecting axially from said rack housing;
- a drag link structurally connected between said first end portion of said rack and one of said first and second steering arms for transmitting steering force to said one steering arm;
- a second steering link for transmitting steering force from said drag link to the other one of said first and second steering arms; and
- a Hooke joint interconnecting said drag link and said first end portion of said rack.

5,851,016
REAR WHEEL SUSPENSION

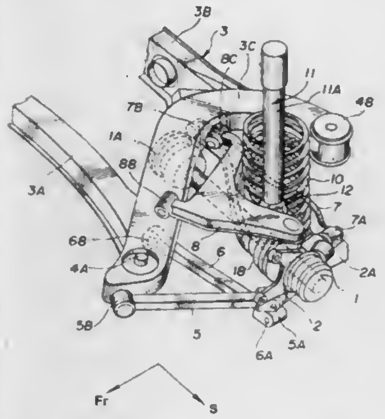
Kenji Kawagoe, Yokosuka; Takuya Murakami, Fujisawa; Masaharu Satou, Tokyo; Takaaki Uno, Atsugi; Hideo Aimoto, Zama; Tamiyoshi Kasahara, Fujisawa, and Hiroshi Nagaoka, Machida, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 13, 1996, Ser. No. 713,764

Claims priority, application Japan, Sep. 13, 1995, 7-235615

Int. Cl.⁶ B60G *3/20*

U.S. Cl. 280—124.148 **9 Claims**



1. A wheel suspension for rear wheels of an automotive vehicle having a vehicle body, comprising:
- an axle housing rotatably carrying each of the rear wheels and having a wheel center;
- a radius rod extending forwardly and inwardly, as viewed in a normal forward driving direction of the vehicle, and having a first articulation point on said axle housing at a position lower than said wheel center;
- a front lateral link extending generally transversely with respect to the vehicle body, as viewed in the normal forward driving direction of the vehicle, and having a second articulation point on said axle housing at a position lower than said wheel center;
- a rear lateral link extending generally transversely and disposed rearwardly of said front lateral link, as viewed in the normal forward driving direction, and having a third articulation point on said axle housing at a position lower than said wheel center;
- an upper arm articulated to said axle housing at a portion higher than said wheel center;
- a spring disposed on said rear lateral link for bearing weight of the vehicle body;
- a shock absorber, with a shock absorber longitudinal axis, having a fourth articulation point on said axle housing which is located at a lower end portion of said shock absorber, said shock absorber having an upper end portion for connection to the vehicle body;
- said shock absorber being so arranged as to provide an arrangement wherein, viewing said axle housing in a transverse direction with respect to the normal forward driving direction of the vehicle, said shock absorber longitudinal axis passes through a predetermined limited area about said wheel center; and
- means so constructed and arranged as to provide an arrangement wherein
  - loading said axle housing at said portion where said upper arm is articulated to said axle housing in a rearward direction with respect to the normal forward driving direction causes said upper arm to position said portion inwardly with respect to the vehicle body, and
  - loading said axle housing at said portion where said upper arm is articulated to said axle housing in the normal forward driving direction causes said upper arm to position said portion outwardly with respect to the vehicle body.

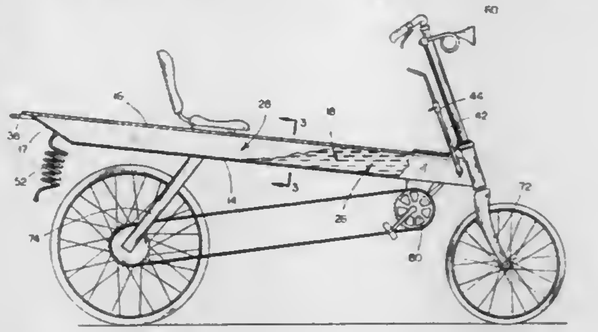
5,851,017
BICYCLE STORAGE FRAME

Tom Eden, 5116 Pine St., Omaha, Nebr. 68106

Filed Nov. 1, 1996, Ser. No. 742,804

Int. Cl.⁶ B62K *19/40*

U.S. Cl. 280—201 **13 Claims**



1. A bicycle storage frame for storing fluids comprising:
- at least one hollow, fluid-tight frame section having an enclosing wall structure forming an internal fluid chamber;
- at least one liquid fill opening formed in said wall structure accessing said internal fluid chamber;
- at least one gas fill valve extending through said wall structure accessing said internal fluid chamber;
- at least one liquid release valve extending through said wall structure accessing said internal fluid chamber;
- at least one gas release valve extending through said wall structure accessing said internal fluid chamber; and
- gas transfer means connected to said gas release valve externally of said wall structure for transferring gas from within said frame section to an item to be inflated.

5,851,018
CAMBER ADJUSTMENT ASSEMBLY FOR A WHEELCHAIR

Neal J. Curran, Lakewood; Wally Radjenovic, Parma, both of Ohio, and Christopher J. Peterson, Tierra Verde, Fla., assignors to Invacare Corporation, Elyria, Ohio

Filed Nov. 12, 1996, Ser. No. 745,646

Int. Cl.⁶ A61G *5/00*

U.S. Cl. 280—250.1 **23 Claims**

1. A wheeled apparatus for transporting a single user comprising:

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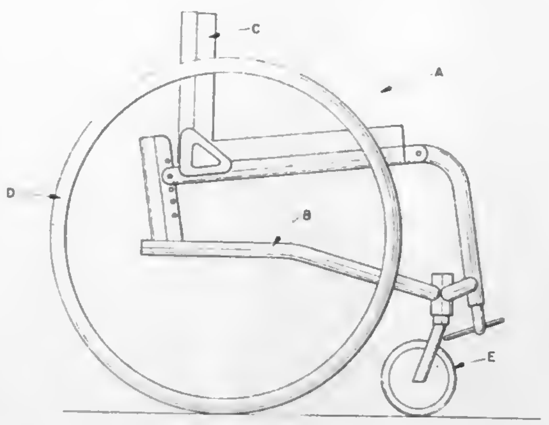


a frame;
a seat mounted on the frame;
at least one small diameter wheel extending from the frame;
first and second enlarged diameter wheels rotatably mounted to the frame by first and second axles, respectively, and disposed on opposite sides of the seat; and
a camber adjustment assembly secured to the frame including first and second camber members each including first and second recesses disposed at different angles that receive the first and second axles therein, respectively, the camber adjustment assembly selectively altering the camber of the enlarged diameter wheels by repositioning the first and second camber members so that the axles are selectively removed from one of the first and second angled recesses and inserted in the other of the first and second angled recesses.

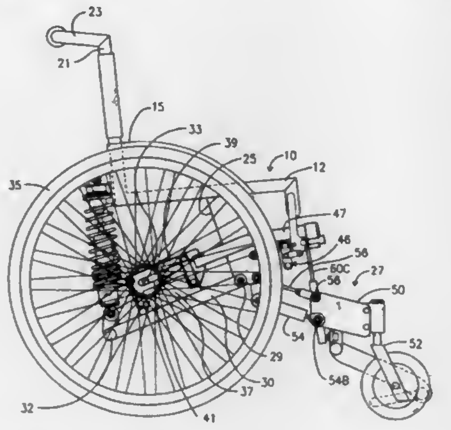
5,851,019
WHEEL CHAIR WITH INDEPENDENT SUSPENSION

Robert Gill, St. Petersburg, and John Hudson, Largo, both of Fla., assignors to Caribbean Billing International, Ltd, Nassau, Bahamas

Division of Ser. No. 977,955, Nov. 25, 1997, Pat. No. 5,855,387, which is a continuation-in-part of Ser. No. 848,893, May 1, 1997, abandoned. This application Jun. 3, 1998, Ser. No. 89,801

Int. Cl.^{6} B62M *1/14*

U.S. Cl. 280—286 **9 Claims**



1. A wheel chair comprising
a) a seat and back carrying frame having
  (1) a pair of spaced longitudinally extending side rails,
  (2) a front and a back cross member extending laterally between and connecting said side rails
b) a separate front and a rear wheel carrying suspension for said frame, with said frame having laterally spaced frame connecting means thereon for separately connecting said suspensions to said frame,
c) said front suspension including
  (1) a pair of laterally spaced castor wheels including mounting means thereon,
  (2) a laterally extending floating beam member with two end including laterally spaced mounting means thereon mounting said castor wheels thereto,
  (3) a first pair of link control arms connecting said mounting means on one of the ends of said floating beam member to said frame connecting means that is on the same lateral side of said frame and a second pair of link control arms connecting said mounting means on the end of said beam member opposite to said one end thereof to said frame connecting means on the same lateral end of said frame,
  (4) the connection between said control arms and said mounting means and said connecting means including pivoting connecting means,
  (5) a plurality of laterally spaced front spring shocks connected to said front cross member and to said floating beam member to allow for relative movement between said floating beam member and said frame,
d) said rear suspension including
  (1) a swing arm having a pair of longitudinally extending side members interconnected at their rearward end and including means pivotally mounting the same for pivoting in a vertical direction relative to said frame connecting means,
  (2) a pair of rear wheel chair wheels
  (3) wheel connecting means connecting said wheels to said swing arm in a laterally spaced relationship, and
  (4) a rear shock absorber connected between said back cross member and said swing arm.

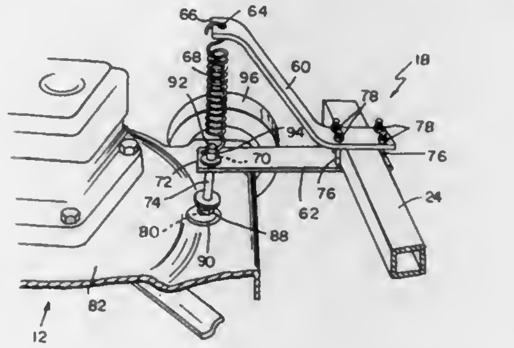
5,851,020
GANG HITCH FOR MOWER

Lawrence A. Godwin, 8119 Frontage Rd., Fairland, Ind. 46126, and Richard D. Conard, Indianapolis, Ind., assignors to Lawrence A. Godwin, Fairland, Ind.

Filed Apr. 14, 1995, Ser. No. 422,714

Int. Cl.^{6} B60D *1/50*

U.S. Cl. 280—413 **14 Claims**



1. An assembly comprising a mower and a hitch assembly, the hitch assembly including a tool bar, a first hitch member for mounting on the tool bar, a pivot pin for attachment to the mower so as to extended from the mower for engagement by the hitch member, and a spring for exerting a lifting force between the pin and the hitch member to transfer a portion of the weight of the mower to the hitch assembly.

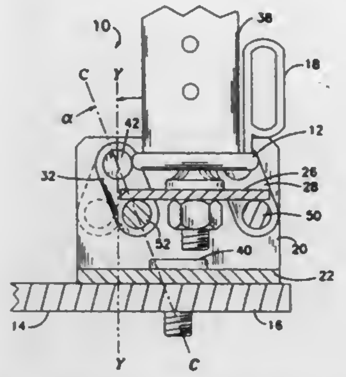
5,851,021
SHOCK ABSORBING TRAILER HITCH

Arnie Van Kley, Rock Valley, Iowa, assignor to Dethmers Manufacturing Company, Inc., Boyden, Iowa

Filed Nov. 4, 1996, Ser. No. 742,658

Int. Cl.^{6} B60D *1/00*

U.S. Cl. 280—438.1 **18 Claims**



1. A shock absorbing hitch for connecting a trailer to a towing vehicle which reduces shocks that can be transmitted between the trailer and the towing vehicle particularly during starting and stopping, wherein the towing vehicle can pull the trailer in a generally forward direction and push the trailer in a generally rearward direction, and wherein the trailer is provided with hitch attachment means at a forward portion of the trailer for releasable operable connection to the shock absorbing hitch, the shock absorbing hitch comprising:
  a mounting base for attachment to a rearward section of the towing vehicle;
  a plate having hitching means for releasable operable connection with the hitch attachment means; and
  swing means operably connected between said plate and the mounting base to allow said plate to move forward and rearward with respect to the mounting base, said swing means connected to said plate such that said hitching means remains at a constant angular orientation relative to the mounting base as said plate swings forward and rearward, said swing means further connected to said plate such that when said mounting base is attached to said rear section of the towing vehicle said plate has a central position wherein said plate is at a lowest level, and wherein as said plate moves forward or rearward from said central position said plate moves to a higher level.

5,851,022
AIR BAG PAD WITH DECORATIVE DEVICE

Tadashi Yamamoto, Aichi-ken; Chisato Masuya, Gifu, and Norinari Nagata, Aichi-ken, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

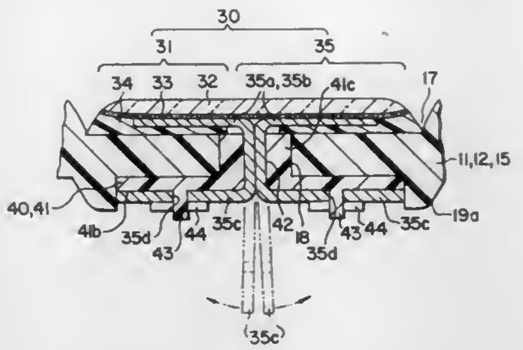
Filed Mar. 29, 1996, Ser. No. 623,794

Claims priority, application Japan, Mar. 31, 1995, 7-076427; Dec. 27, 1995, 7-340455

Int. Cl.^{6} B60R *21/20*

U.S. Cl. 280—728.3 **4 Claims**

3. A pad covering an air bag in an air bag device, the pad comprising:
  a main body having a size and a configuration sufficient to cover the air bag and being provided with a tear line, a recessed area formed in an exterior surface thereof and being spaced away from said tear line, and a first through hole formed in said recessed area and extending from said exterior surface of said main body to an interior surface thereof;
  a backing portion arranged on said interior surface of said main body and having a second through hole formed therethrough, said first and second through holes being aligned with one another;
  a decorative member comprising a decorative plate portion and a support post extending from a surface of said plate portion,



  wherein said decorative member is arranged so that said plate portion is received in said recessed area and said support post is inserted into said first and second through holes, said support post being fixed to said backing portion;
  wherein said interior surface of said main portion and said backing portion are provided with mutually engaging first and second engaging portions, respectively; and
  wherein said interior surface of said main body includes a ridge portion substantially surrounding said backing portion.

5,851,023
AIR BAG DEVICE FOR PASSENGER SEAT

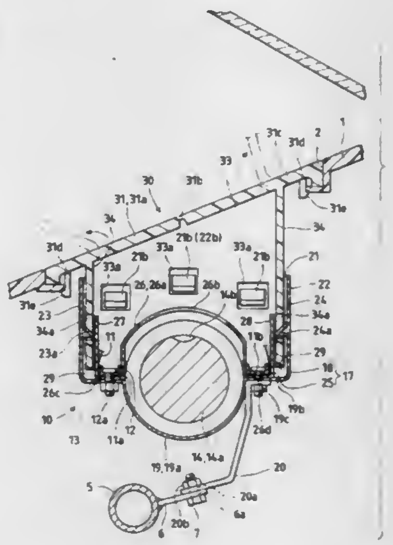
Norinari Nagata, Ama-gun, and Yuji Kuriyama, Seki, both of Japan, assignors to Toyoda Tosei Co., Ltd., Aichi-ken, Japan

Filed Nov. 26, 1996, Ser. No. 756,379

Claims priority, application Japan, Nov. 27, 1995, 7-307584

Int. Cl.^{6} B60R *21/20;21/16*

U.S. Cl. 280—728.3 **7 Claims**



1. An air bag device disposed in an opening of an instrument panel of a vehicle, said air bag device comprising:
  an air bag;
  door member having a cover body for opening and covering the opening of the instrument panel and a side wall portion extending downwardly from an outer circumferential edge of said cover body, said door member opening upon inflation of said air bag, and said side wall portion having lock holes;
  an outer housing disposed adjacent to the opening of the instrument panel;
  an inner housing disposed inside of said outer housing so as to form a slot portion between said outer housing and said inner housing, said side wall portion of said door member being inserted and disposed into said slot portion;
  a retainer connected with said inner and outer housing;

pawl portions being formed on one of said inner housing and said outer housing so as to be lockable into said lock holes of said side wall portion; and

lock legs disposed on the outer circumferential edge of said cover body and extended downwardly for locking onto an inner circumferential edge of the opening of the instrument panel.

5,851,024
SUPPLEMENTAL RESTRAINT SIDE AIR BAG APPARATUS FOR VEHICLE

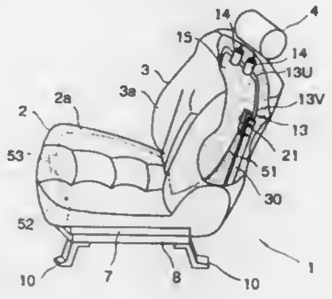
Kenji Satani; Yoshiyuki Iwamoto, and Kazuhiro Matsuhashi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 14, 1997, Ser. No. 897,981

Claims priority, application Japan, Jul. 12, 1996, 8-183312

Int. Cl.^{6} B60R *21/32*

U.S. Cl. 280—730.2 **14 Claims**



1. A side air bag apparatus installed as a supplemental restraint system installed within a seat of a vehicle, which comprises:

an air bag unit installed within a side section of the seat close to a vehicle door and comprising an air bag unit housing having an opening directed in a specified direction, an air bag folded within said air bag unit housing and an inflator having an explosive and firing means for firing said explosive to produce and blow gas into said air bag to inflate, expand and thrust out said air bag through said opening of said air bag unit housing upon an occurrence of a lateral collision of the vehicle;

a firing control device disposed separately from the seat for generating a firing signal in response to said lateral collision; and

a harness partly extending in a transverse direction of the vehicle from said air bag unit toward a center of the vehicle within the seat for transmitting said firing signal to said firing means from said firing control device.

5,851,025
AIR BAG DEACTIVATION BUCKLE

Martin G. Gamboa, 2016 C.N. Perry Ave., Calexico, Calif. 92231

Filed Dec. 20, 1996, Ser. No. 770,338

Int. Cl.^{6} B60R *21/32*

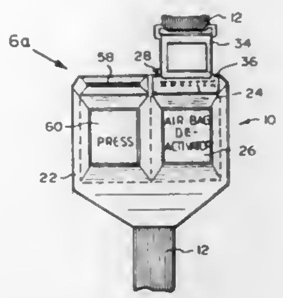
U.S. Cl. 280—735 **15 Claims**

9. An air bag deactivation buckle on a seat belt for holding an infant in an infant seat securely in a seat of a motor vehicle comprising:

a) a frame attached to a first end of the seat belt, said frame having a slot therein;

b) a push button lock mechanism in said frame;

c) means for covering said slot in said frame in a releasable manner, wherein said covering means includes a safety cover sized to block said slot and a hinge connecting said safety cover to said frame, so that said safety cover must be moved to expose said slot in said frame before said tongue can be inserted into said slot;



d) means in said frame for deactivating an air bag in the motor vehicle; and

e) a tongue attached to a second end of the seat belt, so that when said tongue is inserted into said slot in said frame after said covering means exposes said slot, said tongue will engage with said push button lock mechanism and said air bag deactivating means, to prevent inflation of the air bag in case of a collision and eliminate endangerment to the infant in the infant seat.

5,851,026
METHOD AND INSTALLATION FOR DETECTING CERTAIN PARAMETERS CONCERNING AN AUXILIARY CHILD SEAT WITH A VIEW TO CONTROLLING THE OPERATION OF THE AIRBAGS OF A VEHICLE

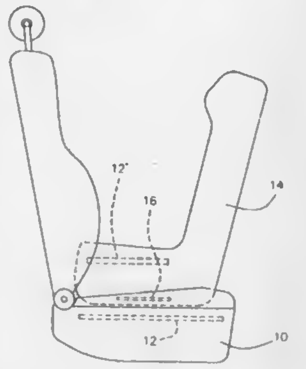
Aloyse Schoos, and Michel Witte, both of Bertrange, Luxembourg, assignors to I.E.E. International Electronics & Engineering, Treves, Luxembourg

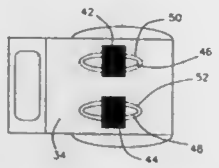
Continuation-in-part of Ser. No. 543,631, Oct. 16, 1995, Pat. No. 5,618,056. This application Mar. 26, 1997, Ser. No. 829,702

Claims priority, application Luxembourg, Oct. 17, 1994, 88547; Feb. 15, 1995, 88588

Int. Cl.^{6} B60R *21/22:21/32*

U.S. Cl. 280—735 **63 Claims**





13. A system for detecting certain parameters concerning an auxiliary child seat placed on a passenger seat of a motor vehicle equipped with an airbag protection system, said parameters being used to adapt the deployment of the airbag protection system associated with said passenger seat to specific circumstances determined by these parameters, comprising:

at least one electromagnetic induction emitter circuit and at least one electromagnetic induction receiver circuit, said at least one electromagnetic induction emitter circuit and said at least one electromagnetic induction receiver circuit being incorporated into the passenger seat of the vehicle which is protected by the airbag protection system;

at least one resonant circuit incorporated into a base of said child seat and positioned, when the child seat is placed on the passenger seat, to influence an electromagnetic coupling between said at least one electromagnetic induction emitter circuit and said at least one electromagnetic induction receiver circuit so as to cause said at least one electromagnetic induction receiver circuit to deliver a signal representing at least one of the parameters;

wherein the system comprises at least two electromagnetic induction emitter circuits or at least two electromagnetic induction receiver circuits or at least two resonant circuits, the arrangement of said at least one electromagnetic induction emitter circuit and said at least one electromagnetic induction receiver circuit in the passenger seat and the arrangement of said at least one resonant circuit in the child seat being in such a way that;

presence of the child seat is detectable irrespective of orientation, and

orientation of the child seat is detectable when the child seat is present.

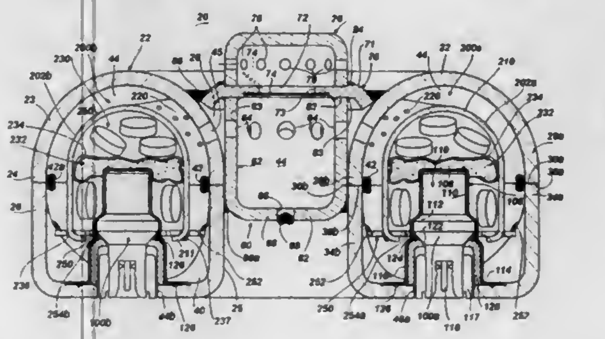
5,851,027
VARIABLE OUTPUT DRIVER SIDE HYBRID INFLATOR

Michael DiGiacomo; Stephen Gold, both of Warrenton, Va.; Richard Husband, Farragut, Tenn.; Robert Bishop, Sterling Heights, Mich.; Chester Copperthite, Manassas, Va., and Charles Woods, East Camden, Ark., assignors to Bendix-Atlantic Inflator Company, Knoxville, Tenn.

Filed Sep. 9, 1996, Ser. No. 711,028

Int. Cl.^{6} B60R *21/16*

U.S. Cl. 280—736 **19 Claims**



1. An inflator device (**20**) for use in inflating an air bag or air cushion comprising:

a pressure vessel (**22**) defining an enclosed volume (**44**) containing stored inflation gas, said pressure vessel comprising a toroidal pressure vessel portion (**23**) having circular inner wall and outer wall portions, the inner wall portions defining an annular space (**25**), and reinforcing means (**60**, **62**, **60'**) secured to at least an exterior of the inner wall portion about the annular space for reinforcing the pressure vessel in relation to internal pressure forces;

pyrotechnic means (**200***a,b* or **310**) in said toroidal pressure vessel portion for heating said stored inflation gas within the pressure vessel to a pressure level to open a rupturable disk to permit said stored inflation gas to exit the inflator device.

5,851,028
INFLATOR WITH FLOW DIVERTER AND HEAT SINK

Robert L. Thibodeau, Knoxville, Tenn., assignor to Bendix-Atlantic Inflator Company, Knoxville, Tenn.

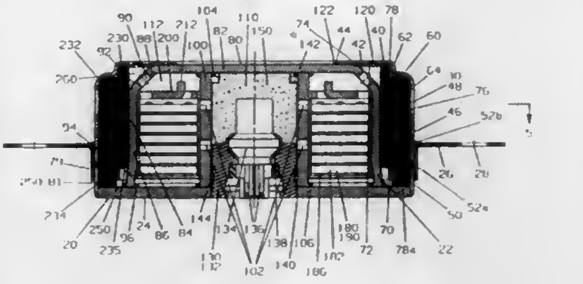
Filed Dec. 20, 1996, Ser. No. 771,078

Int. Cl.^{6} B60R *21/26*

U.S. Cl. 280—736 **11 Claims**

1. An inflator (**20**) having a body (**22**) including a first combustion chamber (**110**) and a second combustion chamber (**112**) and a plurality of exit orifices (**90**); a quantity of first propellant (**150**) within the first combustion chamber and a quantity of second propellant (**180**) within the second combustion chamber (**112**), the second propellant producing inflation gas as it combusts;

separating means (**100**) for separating the first and second combustion chambers and for directing products of combustion



produced upon the burning of the first propellant radially into the second combustion chamber;

the body (**22**) proximate the second combustion chamber (**112**) including a plurality of control orifices (**90**);

flow diverter means (**70**) for causing inflation gas to abruptly change its flow direction between the control orifices and the exit orifices (**30**);

heat sink means (**230**) and (**234**) for changing the physical state of at least one gaseous component of the inflation gas to a liquid and a solid prior to this component exiting the exit orifices.

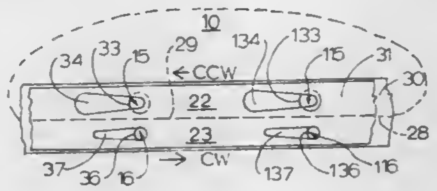
5,851,029
GAS PRESSURE RESTRAINT, SENSING AND RELEASE SYSTEMS

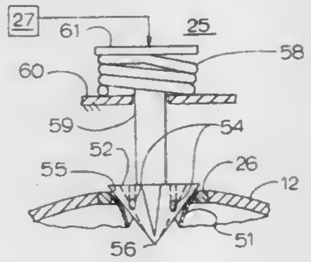
Barney Klinger, 28020 Avenue Stanford, Valencia, Calif. 91355-1105, and Robert William Reynolds, Los Angeles, Calif., assignors to Barney Klinger, Santa Barbara, Calif.

Filed Mar. 24, 1998, Ser. No. 2,621

Int. Cl.^{6} B60R *21/26*

U.S. Cl. 280—736 **20 Claims**





1. In apparatus for discharging gas from a bottle of compressed gas,

the improvement comprising in combination:

a compressed gas release having a compressed gas outlet on said bottle;

said compressed gas outlet having a closed position and an alternative open position; and

a shuttle having a first position spaced from said compressed gas outlet before and after opening of said compressed gas outlet and having a second position at said compressed gas outlet;

said shuttle including a temporary compressed gas flow restriction at said compressed gas outlet in said alternative open position of said compressed gas outlet.

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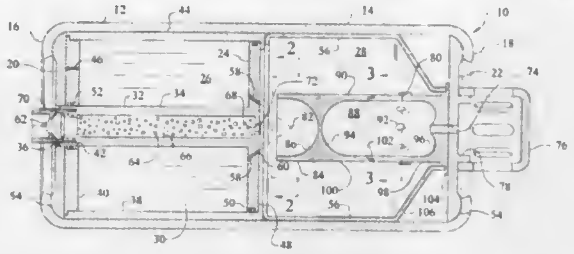
5,851,030
REGENERATIVE MONOPROPELLANT AIRBAG INFLATOR

Darrin L. Johnson, Fountain Hills, Ariz.; Bradley D. Harris, Farmington, and Donald R. Lauritzen, Hyrum, both of Utah, assignors to Autoliv ASP, Inc., Ogden, Utah

Filed Dec. 3, 1996, Ser. No. 759,995

Int. Cl.^{6} B60R *21/28;21/26;* **C06D** *5/00*

U.S. Cl. 280—741 **15 Claims**



1. A regenerative monopropellant airbag inflator, comprising:

a housing having a longitudinal axis and defining an interior, said interior including at least one exit port extending through said housing;

an piston within said interior, said piston dividing said interior into a fuel supply chamber and a combustion chamber, said exit port communicating with said combustion chamber, and said piston being mounted for movement along said longitudinal axis;

a quantity of fluid monopropellant housed within said fuel supply chamber;

an initiator operatively associated with said combustion chamber;

a plurality of injection ports extending through said piston for flow of said fluid monopropellant from said fuel supply chamber to said combustion chamber, said injection ports being oriented to focus said fluid monopropellant to a localized area within said combustion chamber; and

an isolation cup mounted within said combustion chamber, said isolation cup including a concavity facing said piston, and wherein said localized area is located within said concavity.

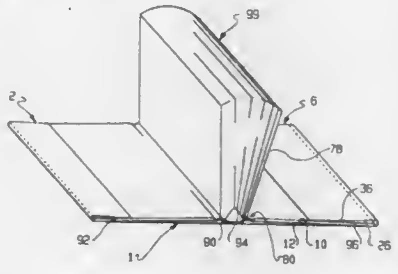
5,851,031
FOLD-OUT BOOK JACKET

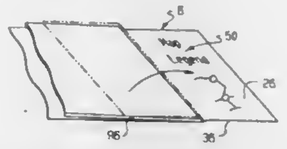
J. Geoffrey Golson, New York, N.Y., assignor to Simon & Schuster, Inc., New York, N.Y.

Filed Oct. 11, 1996, Ser. No. 730,521

Int. Cl.^{6} B42D *3/04*

U.S. Cl. 281—19.1 **18 Claims**





1. A book jacket of flexible, foldable sheet material for covering the exterior binding of a book, comprising at least one flap foldable relative to the edge of the book binding cover, said flap having informative indicia provided on its interior surface such that by folding out said flap, the informative indicia are visible to a user of the book and are juxtaposed with pages of the book when opened, allowing the user to view the informative indica concurrently with the pages of the book.

5,851,032
COMPOSITE IMAGE ARRANGEMENT

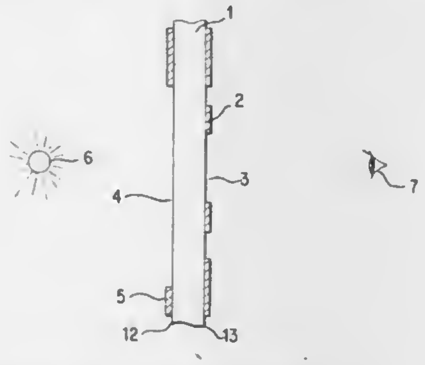
Ian Macdonald Green, London, United Kingdom, assignor to Central Research Laboratories Limited, United Kingdom

PCT No. PCT/GB94/02150, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09731, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 4, 1994, Ser. No. 619,551

Int. Cl.^{6} B42D *15/00*

U.S. Cl. 283—72 **13 Claims**



1. A composite image arrangement comprising:

a light transmissive lamina;

a first pattern arranged on a first side of said lamina, said first pattern comprising a first plurality of visually contrasting regions which, viewed in isolation using normal vision, appears substantially random; and

a second pattern arranged substantially parallel to the first pattern on a second side of said lamina, said second pattern being aligned in a predetermined relationship to said first pattern and held in a fixed position relative to said first pattern, and said second pattern comprising a second plurality of visually contrasting regions which viewed in isolation using normal vision, appears substantially random; wherein

the visually contrasting regions of at least one pattern comprise relatively more and relatively less light transmissive regions; and

arrangement of said first and second pluralities of visually contrasting regions in said first and second patterns is such that when the patterns are aligned with one another in said predetermined relationship, and are viewed together in transmission through the at least one pattern within a predetermined range of angles with respect to a predetermined direction relative to a normal to a surface of the lamina, an image is produced which appears to be non-random using normal vision.

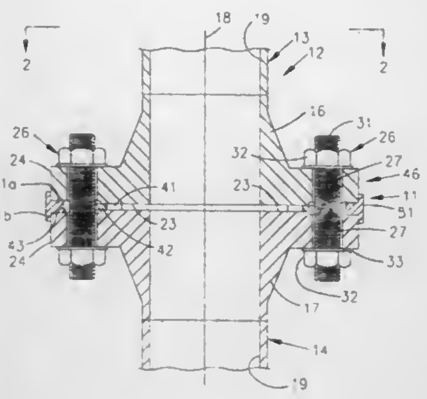
5,851,033
CORROSION LIMITING DEVICE

E. Stephen Hunt, Arlington, Va., and John M. Jenco, Charlotte, N.C., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 30, 1997, Ser. No. 846,709

Int. Cl.^{6} F16L *55/00*

U.S. Cl. 285—13 **20 Claims**



1. A corrosion limiting device for use in an environment with a piping system carrying a fluid and having a connection formed from first and second components, a seal carried by the components for forming a fluid-tight seal between the components, the components forming a groove external of the seal, comprising an elongate member having first and second end portions and a length sufficient to extend around the groove, at least a portion of the elongate member being adapted to seat within the groove for aligning the elongate member on the components and means for fastening together the first and second end portions of the elongate member when the elongate member is extending around the groove, the elongate member providing at least one opening between the groove and the environment for permitting any fluid which has leaked from the seal to pass into the environment so as to inhibit the accumulation of any such fluid within the groove, the elongate member having sufficient circumferential continuity for limiting the ingress of oxygen from the environment into the groove and thus inhibiting corrosion of the connection.

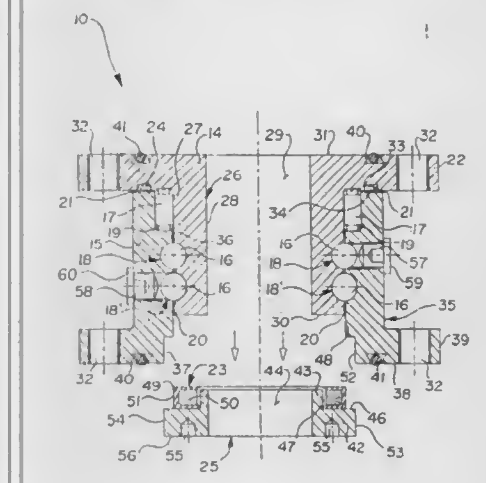
5,851,034
PIPE SWIVEL JOINT WITH REMOVABLE PLUG FOR MAIN SEAL REPLACEMENT

Jayesh Shah, Owings Mills, Md., assignor to Assen Exports Inc., Owings Mills, Md.

Filed Mar. 22, 1996, Ser. No. 620,990

Int. Cl.^{6} F16L *55/00;27/08*

U.S. Cl. 285—16 **7 Claims**



1. A swivel joint, comprising:

a female conduit element

a male conduit element rotatably engaging the female conduit element, wherein a clearance exists therebetween,

a main seal, and

a removable plug within the female conduit element maintaining the main seal in proper position for bridging said clearance between the female and male conduit elements, such that the plug is removed to replace the main seal, and such that the plug is installed back in place once the main seal has been replaced,

wherein the male conduit element includes a generally cylindrical inner member having a first passage portion extending axially therethrough;

wherein the female conduit element includes a generally cylindrical outer member having first and second internal bores extending axially therethrough a first length and a second length thereof, respectively, the second internal bore being of a larger diameter than the first internal bore,

wherein the plug includes a generally cylindrical body and an annular elevated portion integral therewith, a second passage portion extending axially therethrough, wherein the generally cylindrical body has a first outer surface, and wherein the annular elevated portion has a second outer surface;

wherein the first internal bore of the female conduit element receives the inner member of the male conduit element and the second internal bore of the female element receives the general cylindrical body of the plug, and wherein said first passage portion in the male conduit element is in communication with said second passage portion in the plug, thereby defining a continuous passage for a media to be transported through said swivel joint,

wherein at least one bearing element is provided between the inner member of the male conduit element and the outer member of the female conduit element for rotatable engagement therebetween,

wherein said clearance is formed between the outer surface of the inner member of the male conduit element and said first internal bore of the female conduit element,

wherein the inner member of the male conduit element has a proximal end,

wherein the cylindrical body of the plug has an upper surface, and

wherein the main seal is supported by the removable plug in tight sealing engagement between the upper surface of the cylindrical body of the plug and the proximal end of the inner member of the male conduit element, and between the second outer surface of the annular elevated portion of the cylindrical body of the plug and the first internal bore within the outer member of the female conduit element, such that the main seal prevents the media transported through the swivel joint from entering said clearance, thereby preventing the bearing element from being contaminated by the media being transported through the swivel joint.

5,851,035
SELF-LOCKING UNION FOR PIPES

Jean-Pierre Marc, Nangis, and Bernard Barré, Alfortville, both of France, assignors to JPB Systeme, Brie Comte Robert, France

PCT No. PCT/FR94/01136, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/09317, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 28, 1994, Ser. No. 619,563

Claims priority, application France, Sep. 29, 1993, 93 11612

Int. Cl.^{6} F16L *55/00*

U.S. Cl. 285—86 **21 Claims**

1. A device for mechanically locking a coupling between a first pipe and a second pipe, each pipe terminating with a mutually-cooperating sealing conformation, the sealing conformations together forming a seal, the first pipe having a thread positioned before its respective sealing conformation and the second pipe having a rotary nut for cooperating with the thread of the first pipe, a support member permanently fixed to the first pipe against relative movement thereto, the device comprising:

a locking member longitudinally mobile with respect to the first pipe;

a return means for biassing said locking member from a withdrawn position for releasing the nut and towards a locking position in which, when the two pipes are coupled, a locking portion of said locking member cooperates with a complementary portion of the nut; and

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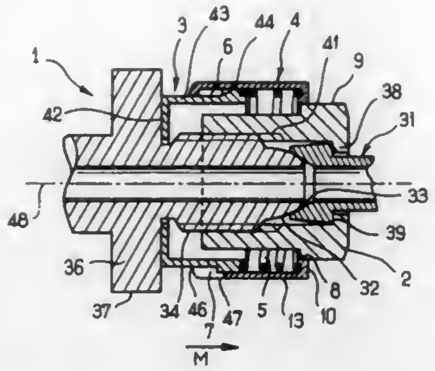
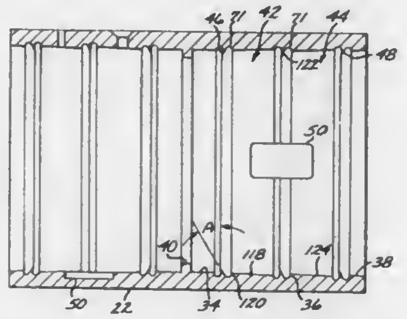


engagement means for preventing the locking member from rotating in a direction of unscrewing the nut with respect to the first pipe when said locking member is in the locking position, said engagement means retaining said locking member with respect to the support member and extending around the thread of the first pipe, with a sufficient radial distance between the support member and the thread to allow the nut to cooperate with the thread.

5,851,036
PERMANENT FITTING FOR FLUID-TIGHT CONNECTIONS

Frank W. Vanesky, 1841 Goldenrod La., Vista, Calif. 92083
Continuation-in-part of Ser. No. 573,959, Dec. 14, 1995, Pat. No. 5,685,577. This application Dec. 13, 1996, Ser. No. 767,251
Int. Cl.⁶ F16L *47/02*
U.S. Cl. 285—294.1 **20 Claims**



1. A connector structure to be used with a pipe of a pipe nominal diameter, comprising a hollow body having an external surface and including at least a first coupling, the first coupling including

first internal land;

a second internal land;

a third internal land;

a fourth internal land positioned between the first internal land and the second internal land, wherein the first internal land, the second internal land, the third internal land, and the fourth internal land are collinear and of a diameter sufficiently larger than the pipe nominal diameter to permit the pipe to be slipped into the hollow body, and wherein each of the internal lands is tapered inwardly with increasing distance from an end of the first coupling,

a first circumferential seal located at the first internal land, wherein the first circumferential seal comprises a circumferential extending flap;

a second circumferential seal located at the second internal land, wherein the second circumferential seal comprises a circumferentially extending flap;

a circumferentially extending internal first cement flow volume lying between the fourth internal land and the second internal and;

a third circumferential seal located between the first cement flow volume and the second internal land, wherein the third circumferential seal comprises a circumferentially extending flap;

a circumferentially extending internal second cement flow volume lying between the second land and the third land;

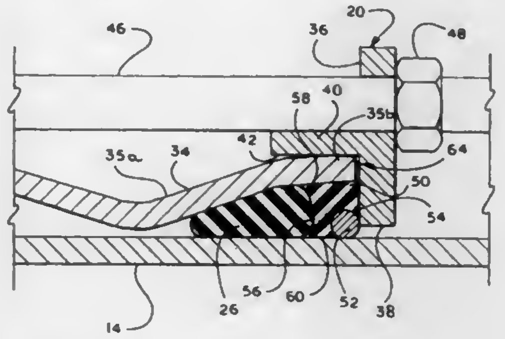
a gate channel through the second land communicating between the first cement flow volume and the second cement flow volume at a gate channel circumferential location;

an injection port communicating between the first cement flow volume and the external surface at a port circumferential location, the port circumferential location being circumferentially remote from the gate channel circumferential location; and

a vent port communicating between the second cement flow volume and the external surface at about the port circumferential location.

5,851,037
PIPE COUPLING WITH GASKET POSITIONER

Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075
Filed Apr. 17, 1997, Ser. No. 843,869
Int. Cl.⁶ F16L *17/02*
U.S. Cl. 285—342 **22 Claims**



17. A follower for use with a pipe coupling for sealing a leak location in a pipe or pipeline by compressing annular gasket members between a tubular middle ring and the pipe or pipeline around the leak location when the follower is engaged with an annular end of the tubular middle ring, the follower comprising:

an annular radially-extending portion having an annular central opening for receiving the pipe or pipe line;

an annular axially extending seat which extends from the radially extending portion and fits over the edge of the tubular middle ring when the follower is engaged with the tubular middle ring; and

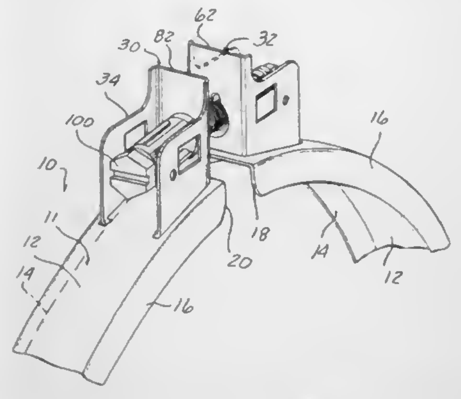
an annular elastomeric gasket positioner bonded to and protruding from the radially-extending portion of the follower and positioned so that the annular elastomeric gasket positioner extends to define a space having as the boundaries, the interior surface of the middle ring, the end of the middle ring, and the exterior of the pipe or pipeline, and engages an adjacent one of the annular gasket members when the follower is engaged with the tubular middle ring about the pipe or pipeline.

5,851,038
SEALING RING

Darrell Robinson, Highland Township, and Allen V. Pruehs, Howell, both of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.
Filed Dec. 20, 1996, Ser. No. 770,661
Int. Cl.⁶ B65D *45/30;45/32;* **A44B** *1/04*
U.S. Cl. 292—256.67 **73 Claims**

1. A sealing ring comprising:

an annular band having first and second spaced ends;



first and second housings respectively mountable on the first and second ends of the annular band, each of the first and second housings having two side walls;

a threaded fastener having opposed first and second ends, the second end threadingly engagable with the first housing;

means, formed on the second housing, for rotatably supporting the fastener on the second housing;

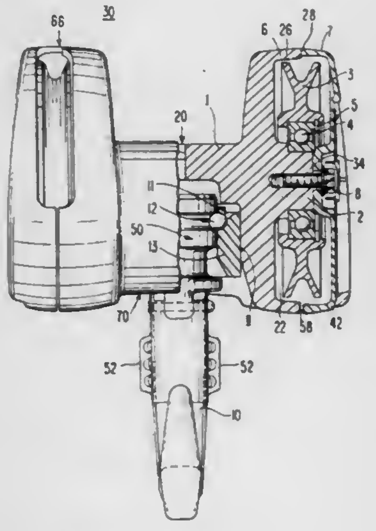
an aperture formed in each of the side walls of the second housing;

a plurality of circumferentially spaced, radially intersecting apertures formed in the first end of the fastener; and

seal means, insertable through one aperture in at least one of the side walls of the second housing and a selected one of the intersecting slots in the first end of the fastener at one of a plurality of rotated positions of the fastener, for sealingly joining the first and second ends of the annular band.

5,851,039
LOWER BLOCK APPARATUS

Alfred Fänger, Wetter; Udo Gersemsky, Herdecke, and Klaus-Jürgen Winter, Wetter, all of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
Filed Jan. 16, 1997, Ser. No. 783,438
Claims priority, application Germany, Jan. 18, 1996, 196 02 931.7
Int. Cl.⁶ B66C *1/34;* **B66D** *3/06*
U.S. Cl. 394—82.1 **7 Claims**



1. A lower block apparatus comprising:

a connecting element having a bottom portion with a recess defined therein;

two journals disposed on opposite lateral ends of said connecting element, wherein said connecting element and said two journals comprise one unitary formed piece;

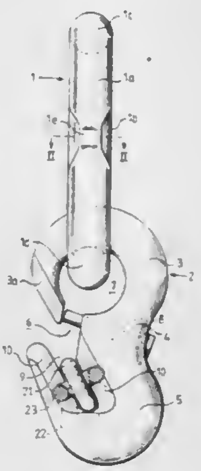
two pulleys, one of said two pulleys being supported on each of said two journals;

an axial bearing disposed and axially secured in said recess; and

a load hook supported by said axial bearing for rotation about a substantially vertical axis.

5,851,040
CHAIN COUPLING ASSEMBLY

Lars Fredriksson, Åkersberga, Sweden, assignor to Frenolink Forvaltnings AB, Sweden
Filed Dec. 20, 1996, Ser. No. 771,038
Claims priority, application Sweden, Dec. 22, 1995, 9504633
Int. Cl.⁶ B66C *1/14*
U.S. Cl. 294—82.11 **7 Claims**



1. A chain coupling assembly for coupling a hoisting means to a respective hoisting chain, said chain coupling assembly comprising:

a closed ring member for coupling to said hoisting means;

a unitary chain coupling member having a hook portion for direct connection to said closed ring member and having a chain grabbing portion for direct coupling to said respective hoisting chain; and

at least one portion of said closed ring member having a flattened, non-circular cross-section and said hook portion of said unitary chain coupling member having an insertion opening facing generally towards said chain grabbing portion and being dimensioned to snugly receive said at least one portion of said closed ring member upon insertion of said closed ring member into said hook portion;

wherein said chain grabbing portion of said unitary chain coupling has a recess for accommodating and holding a link of said hoisting chain in a well-defined position enabling said hoisting chain to be shortened and lengthened.

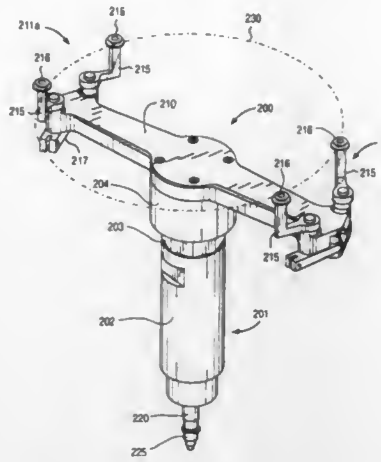
5,851,041
WAFER HOLDER WITH SPINDLE ASSEMBLY AND WAFER HOLDER ACTUATOR

Donald E. Anderson, Morgan Hill, Calif., and James H. Hammar, Santa Cruz, Calif., assignors to OnTrak Systems, Inc., San Jose, Calif.
Filed Jun. 26, 1996, Ser. No. 670,648
Int. Cl.⁶ B25J *15/10;* **B25B** *5/14*
U.S. Cl. 294—106 **34 Claims**

1. A substrate holder comprising:

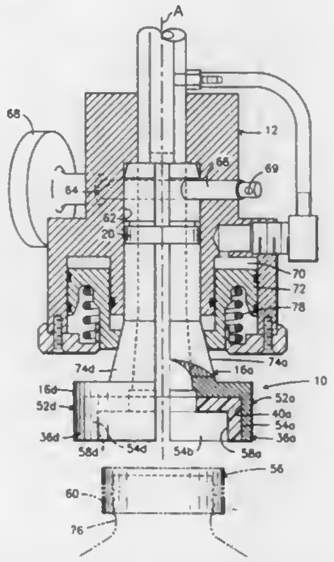
a shaft, wherein said shaft moves in a vertical motion;

an arm positioning member coupled to said shaft, wherein said arm positioning member moves in a rotational motion when said shaft moves in said vertical motion;



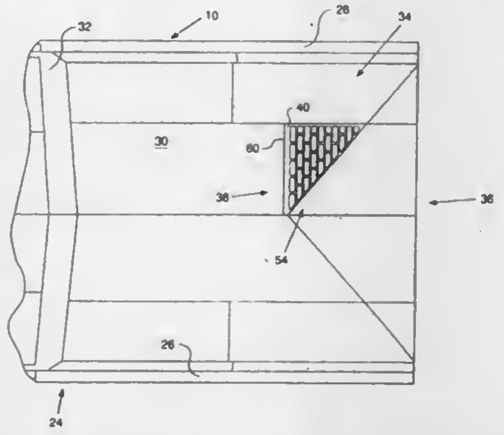
an arm coupled to said arm positioning member at a first position of said arm, wherein said arm moves in a substantially horizontal motion when said arm positioning member moves in said rotational motion;
a substrate holding member coupled to said arm at a second position of said arm, wherein said horizontal motion of said arm moves said substrate holding member between an open and a closed position; and
an actuator coupled to said shaft, wherein said actuator moves said shaft in said vertical motion, and wherein said actuator comprises:
 a first cylinder, said first cylinder engaging a spring; and
 a second cylinder, said second cylinder disengaging said first cylinder from said spring.

5,851,042
COLLET FOR GRIPPING CONTAINER CAPS
Geza E. Bankuty, 6204 29th St. E., Brandenton, Fla., and Nicholas J. Perazzo, 4216 74th Terrace E., Sarasota, Fla. 34243
Filed Jan. 9, 1997, Ser. No. 780,273
Int. Cl.^{6} B25J *15/10*
U.S. Cl. 294—106 **7 Claims**



1. A collet for gripping the exterior surface of generally cylindrical threaded caps for rotation of the caps onto threaded open ends of containers, comprising:
a plug having a first end surface, a second end surface and at least one side extending therebetween;
a plurality of rigid segments, each segment of said plurality of segments having a first end, a second end, a first side and a second side, said second side proximal said second end being sized and configured to engage a portion of the exterior side of a threaded cap, said plurality of segments being mounted in series about said at least one side of said plug such that said second side of each said segment pivotally engages said plug for movement of said second end of each said segment between an open position, defined as when said second end of each segment is spaced apart from a cap that is receivable between said plurality of segments, and a closed position, defined as when said second end of each said segment engages a cap when inserted between said plurality of segments;
a means for biasing said segments from said closed position to said open position; and
a band extending about said segments of said collet said band engaging said second side of each said segment such that each said segment is held in engagement with said plug.

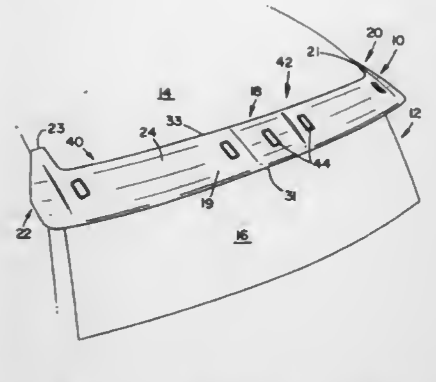
5,851,043
LINER FOR A WORK MACHINE BODY
Theodore A. Moutrey, Taylorville; Jack W. Kelsheimer, Dalton City, both of Ill., and Rick J. Reynolds, Casper, Wyo., assignors to Caterpillar Inc., Peoria, Ill.
Filed Nov. 25, 1997, Ser. No. 978,327
Int. Cl.^{6} B52D *33/02*
U.S. Cl. 296—39.2 **14 Claims**



1. A prefabricated liner for a high wear portion of the body of a work machine, said body being positionable in a substantially upright position in which load :material is ejected from the body, comprising:
a plate having top and bottom surfaces, a plurality of openings, and being of substantially the same size as the high wear portion of said work machine body, said openings passing through said plate from said top surface to said bottom surface and being arranged in a preselected pattern, said openings causing said load material to tumble rather than slide across the top surface of said plate when said material is ejected from said body, said bottom surface being of a configuration sufficient for resting on said work machine body for said plate to support loads in said work machine body.

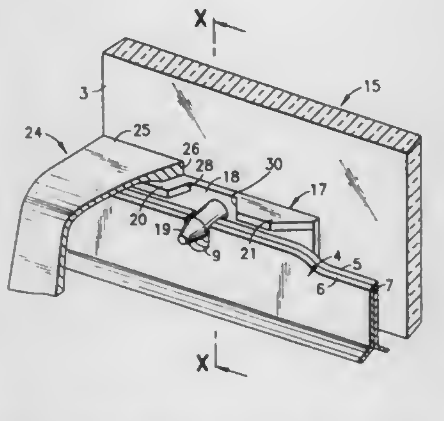
5,851,044
WINDSHIELD VISOR FOR MOTOR VEHICLES
David Lund, 3723 145th Ave. NW., Andover, Minn. 55304
Filed Oct. 16, 1996, Ser. No. 729,364
Int. Cl.^{6} B60J *3/00*
U.S. Cl. 296—95.1 **14 Claims**

1. Windshield visor for motor vehicles having windshield, roof, and driver and passenger side door frames, said visor comprising:



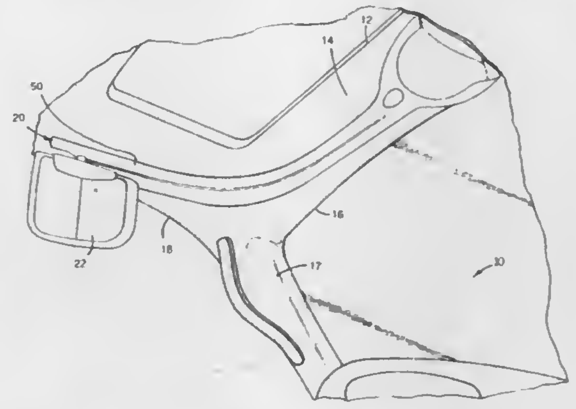
a forward wing for providing shading from sun light and shielding from precipitation, the forward wing having left and right wing tips, top and bottom surfaces, and leading and trailing edges;
a first mounting plate connected to the left wing tip of said forward wing, the first mounting plate being constructed and arranged to attach to a motor vehicle's driver side door frame;
a second mounting plate connected to the right wing tip of said forward wing, the second mounting plate being attached to a motor vehicle's passenger side door frame.

5,851,045
WINDOW FRAME ATTACHMENT STRUCTURE FOR A WINDOW
Kazushige Muramatsu, Shizuoka-Ken, Japan, assignor to Suzuki Motor Corporation, Japan
Filed Dec. 3, 1996, Ser. No. 759,969
Claims priority, application Japan, Jan. 29, 1996, 8-012702
Int. Cl.^{6} B60J *1/02*
U.S. Cl. 296—96.21 **12 Claims**



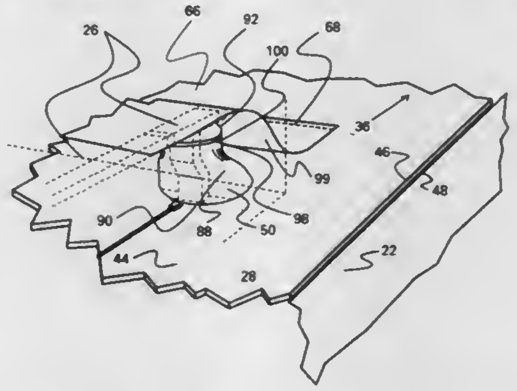
1. A window frame attachment structure for a vehicle comprising:
a window frame;
said window frame including a member having a cut-out in an upper edge thereof;
a positioning member fixedly mounted on a surface of a window;
an inwardly directed projection on said positioning member;
at least one rib on said positioning member;
said at least one rib being located above said projection;
said at least one rib having an upper surface extending inward, generally parallel to said projection;
an interior trim in said vehicle; and
said interior trim being fittable over said positioning member to rest on said at least one rib, whereby said positioning member supports said trim.

5,851,046
TRACK VISOR
Jesse Kalkman, and Patrick W. Binish, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed Aug. 29, 1997, Ser. No. 920,586
Int. Cl.^{6} B60J *3/02*
U.S. Cl. 296—97.11 **20 Claims**



1. A track visor for a vehicle comprising:
a track for mounting to a vehicle roof and extending above a portion of a windshield and a side window of the vehicle, said track including a curved, non-planar section and first and second engaging surfaces;
a visor body; and
a guide assembly coupled to the visor body and having at least one wheel for rollingly engaging said first engaging surface and another wheel for rollingly engaging said second engaging surface, wherein said guide assembly is movable along the track to position the visor body at selected locations.

5,851,047
FIFTH WHEEL ADAPTABLE TONNEAU COVER FOR PICKUP
Robert M. Adams, and Shirley R. Adams, both of 14264 S. Banff La., Arizona City, Ariz. 85223
Filed Apr. 2, 1997, Ser. No. 832,420
Int. Cl.^{6} B60P *7/04*
U.S. Cl. 296—100.18 **8 Claims**



1. A fifth wheel adaptable tonneau cover for attaching to a pickup truck bed having a fifth wheel trailer hitch mounted therein, said tonneau cover comprising:
a flexible sheet material dimensioned to cover said truck bed, said sheet material having an opening positioned over said trailer hitch;
a flap formed from a flexible material having a bottom side that faces said truck bed, said flap being attached to said sheet material and configured to cover said opening; and
a sleeve attached to said bottom side of said flap, said sleeve having a top side and a bottom side, where said bottom side of

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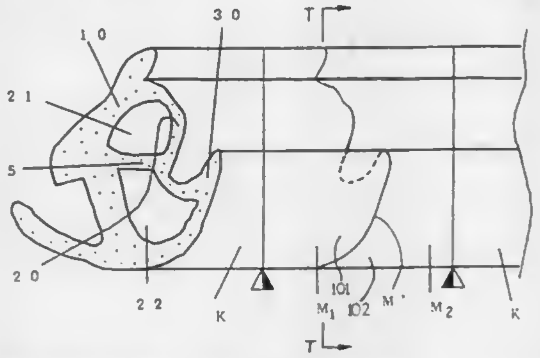
said sleeve is attached to said sheet material at said opening and said top side of said sleeve forms a sleeve opening, said sleeve having a fastener, said fastener constricting said sleeve opening.

5,851,048
WEATHER STRIP

Yasuyuki Fujita, and Satoshi Inoue, both of Hiroshima, Japan, assignors to Nishikawa Rubber Co., Ltd., Hiroshima, Japan
Filed Oct. 5, 1995, Ser. No. 539,247
Claims priority, application Japan, Oct. 6, 1994, 6-270661; Nov. 18, 1994, 6-309748; Nov. 21, 1994, 6-312520
Int. Cl.^{6} B60J *7/12;* **E06B** *7/16*
U.S. Cl. 296—107.04 **4 Claims**

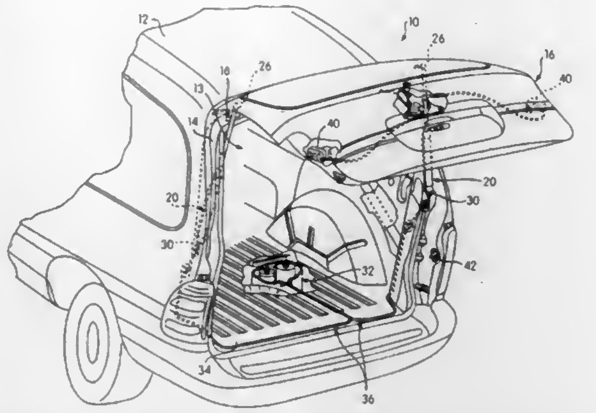


2. A weatherstrip for a vehicle, comprising:
an elongate extrusion portion providing a weather seal substantially around a roof of the vehicle and having two ends, and
first and second mold portions respectively joined to said two ends of said extrusion portion, said first and second mold portions respectively having first and second engagement means for joining said first and second mold portions to an adjacent mold portion, said first engagement means having a saw-toothed configuration on a surface of said first mold portion for contacting against the adjacent mold portion to maintain a sealing force between said first mold portion and the adjacent mold portion, said second engagement means having a saw-toothed configuration on a surface of said second mold portion for contacting against the adjacent mold portion to maintain a sealing force between said second mold portion and the adjacent mold portion.

5,851,049
METHOD FOR OPERATING A HYDRAULIC CLOSURE SYSTEM FOR A MOTOR VEHICLE

Eric D. Squire, Belleville; Maciej Bigoszewski, Royal Oak, and Gareth J. Selfe, Farmington Hills, all of Mich., assignors to Atoma International Inc., Newmarket, Canada
Filed Oct. 4, 1996, Ser. No. 726,353
Int. Cl.^{6} B60J *5/00*
U.S. Cl. 296—146.4 **7 Claims**

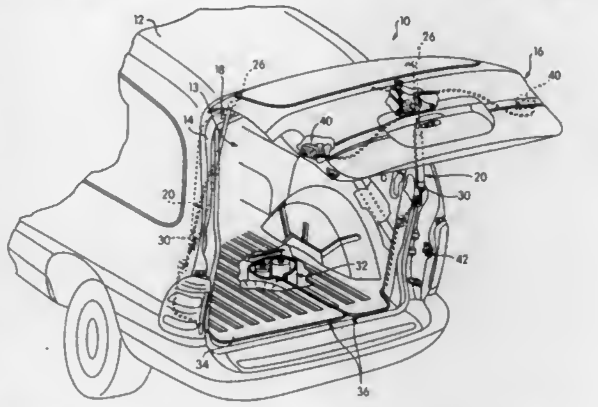
6. A method of operating a hydraulic closure system for a motor vehicle, which closure system includes a) a closure pivotally mounted on a closure opening frame defining a closure opening of the motor vehicle body, said closure capable of being latched in a closed position in which said closure closes the closure opening, said closure being moveable when unlatched from said closed position towards an opened position in which said closure is oriented to permit access through the closure opening, and b) a hydraulic fluid system constructed and arranged to store energy and to release said stored energy to effect movement of said closure from said closed position to said opened position when said closure is unlatched, said method comprising the steps of:
utilizing energy stored energy in said hydraulic closure system to move said closure from said closed position to said opened position when said closure is unlatched;



increasing the amount of energy stored in said hydraulic closure system if the amount of energy stored is less than a prescribed range of energy, thus maintaining the amount of energy stored in said hydraulic closure system within said prescribed range of energy; and
decreasing the amount of energy stored in said hydraulic closure system if the amount of energy stored is more than a prescribed range of energy, thus maintaining the amount of energy within said prescribed range of energy;

5,851,050
HYDRAULIC CLOSURE SYSTEM FOR A MOTOR VEHICLE

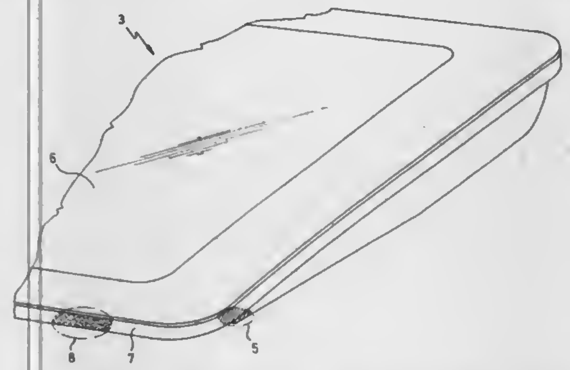
Eric D. Squire, Belleville; Maciej Bigoszewski, Royal Oak, and Gareth J. Selfe, Farmington Hills, all of Mich., assignors to Atoma International Inc., Ontario, Canada
Filed Oct. 4, 1996, Ser. No. 726,354
Int. Cl.^{6} B60J *5/10*
U.S. Cl. 296—146.4 **68 Claims**



23. A hydraulic closure system for use in a motor vehicle and constructed and arranged to cooperate with a closure opening defined by an opening frame of the motor vehicle body, said system comprising:
a closure constructed and arranged to be pivotally mounted on the opening frame for movement between a closed position in which said closure closes the closure opening and an opened position in which said closure is oriented to permit access through the closure opening;
a latching structure constructed and arranged to latch said closure in said closed position and to unlatch said closure to permit said closure to move from said closed position to said opened position;
at least one hydraulic actuator assembly being coupled at one end thereof to said closure and coupled at an opposite end thereof to said opening frame, said at least one hydraulic actuator assembly including a cylinder and a piston rod assembly, said piston rod assembly including a piston and a rod member connected to said piston, said piston being moveable within said cylinder in slidably sealed relation with inner walls of said cylinder, said rod member extending outwardly from a rod extension end of said cylinder,
said piston rod assembly being moveable between an extended condition in which said rod member has a relatively large extent thereof extending outwardly from said rod extension end of said cylinder so as to create a distance between said one end and said opposite end of said at least one hydraulic actuator assembly sufficient to maintain said closure in said opened position and a contracted condition in which said rod member has a relatively smaller extent thereof extending outwardly from the rod extension end of said cylinder in comparison with said extended condition to create a distance between said one end and said opposite end of said at least one hydraulic actuator assembly that enables said closure to be disposed in said closed position;
an automated closure opening system constructed and arranged to effect automatic movement of said closure from said closed position to said opened position when said latching structure is unlatched, said automated closure opening system comprising a biased energy storage system constructed and arranged to store energy therein and apply a biasing force to said at least one hydraulic actuator assembly sufficient to move said closure from said closed position to said opened position and maintain said closure in said opened position when said energy stored therein is expended, and wherein said biased energy storage system expends said stored energy to move said closure from said closed position to said opened position when permitted to do so by unlatching of said latching structure; and
a motorized hydraulic pump constructed and arranged to effect automated closing of said closure by creating hydraulic fluid flow with respect to said cylinder to force said piston away from said rod extension end of said cylinder and move said at least one hydraulic actuator assembly from said extended condition to said contracted condition and said closure from said opened position to said closed position,
said motorized hydraulic pump being activated to effect said closing of said closure in response to manually generated movement of said closure from said opened position toward said closed position.

5,851,051
COVER OF A SLIDING-LIFTING ROOF OR LIFTING ROOF, AND A TOOL FOR ITS MANUFACTURE

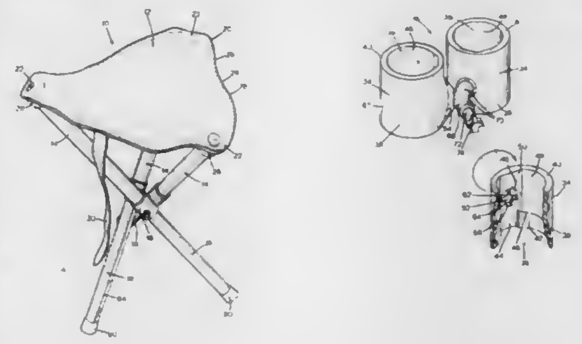
Horst Schmidhuber, Schondorf, and Christoph Noga, Lünen, both of Germany, assignors to Webasto Systemkomponenten GmbH, Stockdorf, Germany
Filed Jun. 10, 1996, Ser. No. 660,767
Claims priority, application Germany, Jun. 10, 1995, 195 21 279.7
Int. Cl.^{6} B60J *7/04*
U.S. Cl. 296—216.06 **4 Claims**



1. A cover of a vehicle roof for selectively closing, or at least partially exposing a roof opening provided in a rigid vehicle roof which has an edge seal at least in an area of a front edge of the opening; wherein the cover has a frame made of a synthetic material and which extends at least along a front edge thereof, the synthetic material of the frame being textured, at at least a front edge area of the frame, so as to have a surface roughness which forms a means for reducing noises, in use of the cover, upon pivoting of the cover away from the edge seal.

5,851,052
FOLDABLE STOOL

Mats Gustafsson, Hamngatan 53A, S-531 34 Lidköping, Sweden
Filed Oct. 22, 1997, Ser. No. 955,943
Int. Cl.^{6} A47C *4/28*
U.S. Cl. 297—16.2 **18 Claims**



1. A foldable stool, comprising:
a seat;
upper legs attached to the seat;
leg holders each having a longitudinal opening defined therethrough, each leg holder defining a first lateral opening having an asymmetrical shape, a portion of the upper legs being inserted into the longitudinal openings;
a connector having asymmetrically shaped extensions extending outwardly from the connector into the leg holders, the connector pivotally joining the upper legs together by means of the extensions, the asymmetrically shaped extensions being insertable into the asymmetrically shaped first lateral openings when the leg holders are turned into a first position to permit insertion of the extensions into the first lateral openings, the leg holders being rotatable into a second position to pivotally attached the leg holders to the connector, the second position being different from the first position; and
lower legs being insertable into the longitudinal openings of the leg holders.

5,851,053
HANGING CHAIR

David H. Crawford, 5708 Table Top Ct., Boulder, Colo. 80301
Filed Sep. 19, 1997, Ser. No. 933,805
Int. Cl.^{6} A47D *13/10*
U.S. Cl. 297—273 **22 Claims**

1. A hanging chair for suspending from an overhead support comprising:
a flexible panel having an edge and first, second, third and fourth attachment points;
wherein said first and second attachment points are separated by a first distance;
wherein said third and fourth attachment points are separated by a second distance;
wherein said first and third attachment points are separated by a third distance;

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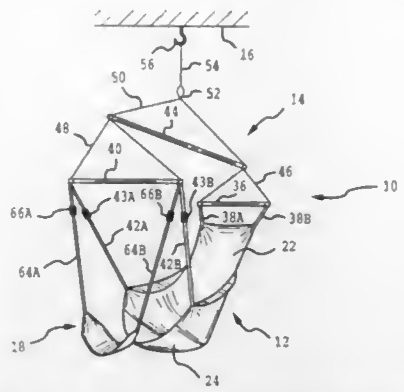


wherein said second and fourth attachment points are separated by a fourth distance that is substantially equal to said third distance;
wherein both said third and fourth distances are greater than both said first and second distances;
wherein said flexible panel has a longitudinal line that extends through a first longitudinal point located substantially midway between said first and second attachment points and a second longitudinal point located substantially midway between said third and fourth attachment points;
wherein said flexible panel includes a back portion that extends from said first and second attachment points towards said third and fourth attachment points;
wherein said flexible panel includes a seat portion that extends from said third and fourth attachment points towards said first and second attachment points;
wherein said back portion is of a sufficient length to support the torso of a user;
wherein said seat portion is of a sufficient length, when a user is seated normally and the user's legs are parallel to one another, to support the thighs of the user but not the feet of the user;
wherein said longitudinal line, when said flexible panel is suspended from the overhead support, defines a first plane that is perpendicular to the ground;
wherein said back portion, when said flexible panel is suspended from the overhead support, lies roughly in a second plane that is perpendicular to said first plane;
wherein said seat portion, when said flexible panel is suspended from the overhead support, lies roughly in a third plane that is perpendicular to said first plane;
wherein an angle between said second and third planes along said longitudinal line is less than 180 degrees;
wherein, when a user is seated normally and the user's legs are parallel to one another, the user's feet extend past a portion of said edge that is located between said third and fourth attachment points and can hang freely;
a longitudinal support member for use in suspending said flexible member above the ground;
wherein said longitudinal support member, when said flexible panel is suspended from the overhead support, is separated from the ground;
wherein said longitudinal support member, when said flexible panel is suspended from the overhead support, lies substantially in said first plane defined by said longitudinal line of said flexible member;
first means for connecting said first, second, third and fourth attachment points of said flexible panel to said longitudinal support member;
wherein said first means, when said flexible panel is suspended from the overhead support, is separated from the ground; and
a second means for attaching said longitudinal support member to the overhead support;
wherein said second means, when said flexible panel is suspended form the overhead support, is separated from the ground;
wherein said longitudinal support member, first means and second means, when said flexible panel is suspended from an overhead support, collectively bear substantially all of the weight of the user;
wherein said second means includes means for adjusting the angle of both said longitudinal support member and said flexible panel member relative to the ground so that a user can recline in the chair at a desired angle.

5,851,054

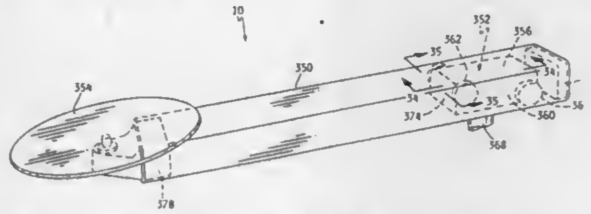
ERGONOMIC ARM SUPPORT

Jeffrey D. Bergsten, Brooklyn Park, and Donald A. Bergsten, Eden Prairie, both of Minn., assignors to Industrial Ergonomics, Inc., St. Louis Park, Minn.

Continuation of Ser. No. 482,807, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 326,825, Oct. 20, 1994, Pat. No. 5,597,207, which is a continuation-in-part of Ser. No. 141,196, Oct. 21, 1993, Pat. No. 5,369,805, which is a continuation-in-part of Ser. No. 755,432, Sep. 5, 1991, Pat. No. 5,281,001. This application Oct. 16, 1997, Ser. No. 951,851

Int. Cl.^{6} A47C *7/54*

U.S. Cl. 297—411.35 **27 Claims**



12. An arm support connectable to an object, comprising:
(a) a base connectable to said object;
(b) an armrest for engaging at least a portion of an arm; and
(c) an extension means comprising:
i) an elongate shroud connected to said armrest; and,
ii) pillow block between said base and said armrest for connection and extension of said armrest relative to said base,
said elongate shroud being slidable relative to said pillow block, said elongate shroud substantially covering and surrounding said pillow block, said pillow block having a roller bearing means for engaging said elongate shroud for reducing friction between said elongate shroud and said pillow block,
whereby a wide range of fluid motion is provided for the arm supported by the arm support,
said pillow block being engaged to said base, said pillow block being vertically adjustable relative to said object,
whereby said arm support and said shroud are provided with slidable motion relative to said object.

5,851,055

INFLATABLE PASSENGER-SIZE ADJUSTABLE TORSO BELT SYSTEM INCLUDING ENCLOSURE MOUNT AND METHOD OF PASSENGER RESTRAINT

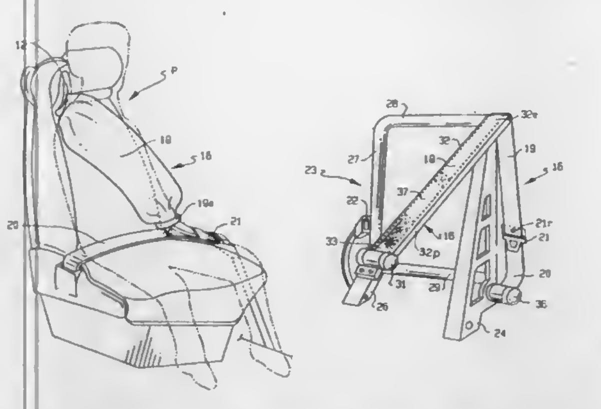
Donald J. Lewis, Scottsdale, Ariz., assignor to Universal Propulsion Company, Inc., Phoenix, Ariz.

Filed Mar. 13, 1997, Ser. No. 815,658

Int. Cl.^{6} B60R *22/28*

U.S. Cl. 297—483 **23 Claims**

1. A vehicle including a vehicle passenger restraint system to protect both a large seated passenger and a small seated passenger upon deceleration of a crash comprising:
a) a tandem inflatable belt band arrangement having three anchor means including a lap belt section with two ends anchored and a inflatable torso section fixed in length upon buckling up having two ends with one end anchored to a reel deceleration-locked third anchor means and one end secured to the lap belt section; said fixed length inflatable torso section fixed in length after a selected length has unreeled from said third reel anchor means upon buckling-up said torso section in turn comprising two portions:
i) a first inflatable portion adapted to be positioned across and adjacent to the passenger torso which portion is longer for a larger passenger and shorter for a small passenger; and



ii) a second inflatable portion restrained from substantial inflation:
b) a second inflatable portion confinement means for restraining the second inflatable portion from substantial inflation and leaving the first inflatable portion free to inflate, said confinement means having an exit port through which the inflatable belt band arrangement passes; and
c) inflator means for producing and introducing gases of a selected volume into the second inflatable portion which gases flow through such second inflatable portion out said exit port of the confinement means and into such first inflatable portion
whereby the (1) length of the first inflatable portion is upon buckling-up and deceleration of a crash longer for a large passenger and (2) the length of the first inflatable portion is shorter for a small passenger thus the inflator means supplying more gases to the inflatable first portion for the large passenger and supplying less gases to said inflatable first portion for the small passenger.

5,851,056

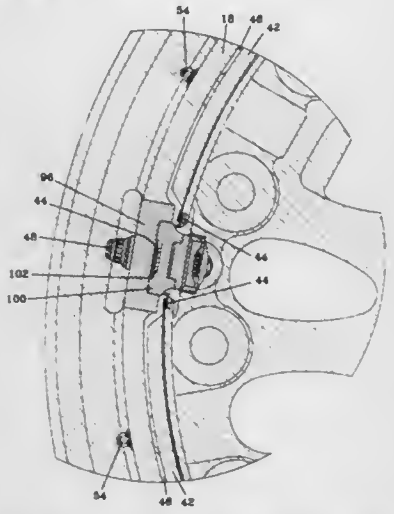
AIRCRAFT BRAKE HEAT SHIELD HAVING EASILY REMOVED HEAT SHIELD SECTIONS

Robert William Hyde, Stow, Ohio, assignor to The B. F. Goodrich Company, Richfield, Ohio

Filed Jun. 3, 1996, Ser. No. 656,750

Int. Cl.^{6} F16D *65/84*

U.S. Cl. 301—6.91 **22 Claims**



1. An aircraft wheel and heat shield assembly, comprising:
a wheel having a hub and a tube well concentric with said hub, and a web interconnecting said hub and said tube well;
a plurality of torque bars fixed to said wheel generally parallel to the axis of rotation of said wheel and spaced from said tube well; and,
a heat shield attached to said wheel concentric with said tube well and having a plurality of heat shield sections disposed between adjacent torque bars and spaced from said tube well, and a plurality of elongate heat shield carriers fixed to said wheel generally parallel to the axis of rotation of said wheel and spaced from said tube well, said heat shield carriers superposing said torque bars and engaging said plurality of heat shield sections said heat shield and said tube well defining an annular space therebetween.

5,851,057

VEHICLE BRAKE CONTROL UNIT

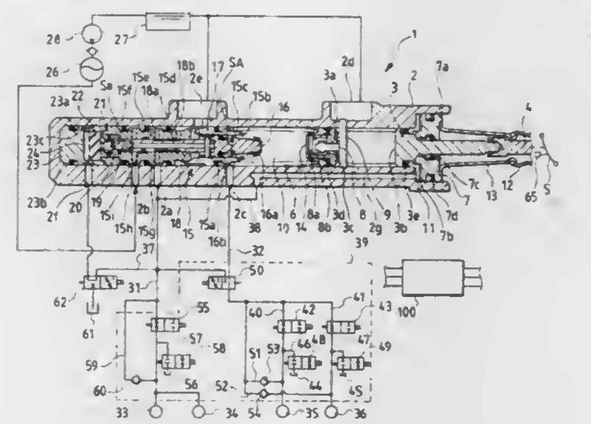
Tadashi Terazawa, and Michiharu Nishii, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 26, 1996, Ser. No. 670,429

Claims priority, application Japan, Jul. 13, 1995, 7-177108

Int. Cl.^{6} B60T *13/66*

U.S. Cl. 303—155 **3 Claims**



1. A vehicle brake control unit comprising:
a pressure source for generating a pressure independently of operation of a brake operating member;
braking booster means for adjusting the pressure from said pressure source according to a force applied to the brake operating member to apply an adjusted pressure to wheel brakes;
emergency-braking-operation detecting means for detecting an emergency braking operation; and
brake pressure change-over means for communicating said pressure source with the wheel brake when said emergency-braking-operation detecting means detects an emergency braking operation, said brake pressure change-over means being in fluid communication with the pressure source via the braking booster means;
said braking booster means comprising: a cylinder body into which the pressure is led from said pressure source; a regulator pressure chamber formed in said cylinder body; a spool member provided in said cylinder body, said spool member being moved axially to adjust the pressure of said pressure source upon receiving a brake operating force on one side through and the pressure in said regulator pressure chamber on the other side thereof; and a regulator port formed in said cylinder body, to which the adjusted pressure adjusted by said spool member is led, said regulator port being communicable with said wheel brakes; and
wherein said brake pressure change-over means comprises a change-over valve which is provided between said regulator port and said regulator pressure chamber, and which selectively takes a first position to communicate said regulator pressure chamber with said regulator port and a second position to communicate said regulator pressure chamber with the outside and to isolate said regulator pressure chamber and said regulator port from each other.

5,851,058

TENSIONER FOR TRACK OF TRACKED VEHICLE

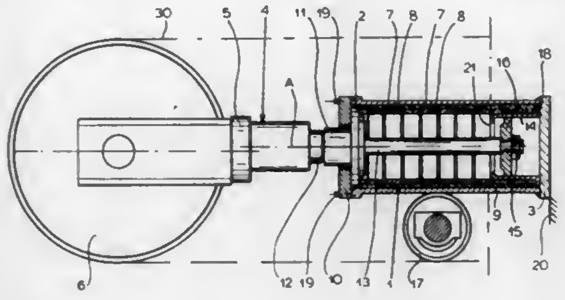
Holger Humbek, Bochum, and Heinz-Dieter Kramer, Iserlohn, both of Germany, assignors to Intertractor Aktiengesellschaft, Gevelsberg, Germany

Filed Oct. 11, 1996, Ser. No. 728,952

Claims priority, application Germany, Oct. 13, 1995, 195 38 222.6

Int. Cl.^{6} B62D *55/30*

U.S. Cl. 305—146 **8 Claims**



1. In combination with

a frame;

an idler wheel displaceable relative to the frame; and

a flexible endless element spanned over the idler wheel, a tensioning device comprising:

an inner end plate mounted on the frame;

a sleeve having inner and outer ends and fixed at its inner end to the inner end plate and extending along an axis toward the idler wheel;

a cover plate at the outer sleeve end;

an axially compressible stack of inner and outer spring rings closely surrounded by the sleeve, wholly received between the inner and outer sleeve ends, forming an annular friction spring, and having an inner end and an outer end;

an outer end plate bearing axially toward the inner end plate directly on the outer end of the annular friction spring;

an inner stem extending axially through the spring and having an outer end fixed to the outer end plate and an inner end adjacent the inner end plate;

a guide on the inner end of the inner stem, the inner end of the spring bearing axially directly on the guide;

means including a nut threaded on the inner stem and axially outwardly engageable with the guide for effectively shortening the inner stem and thereby prestressing the spring;

means including a plurality of axially extending bolts securing the cover plate to the outer sleeve end and precompressing the annular friction spring axially between the end plates; and

a hydraulic unit braced axially between the outer end plate and the idler wheel.

5,851,059

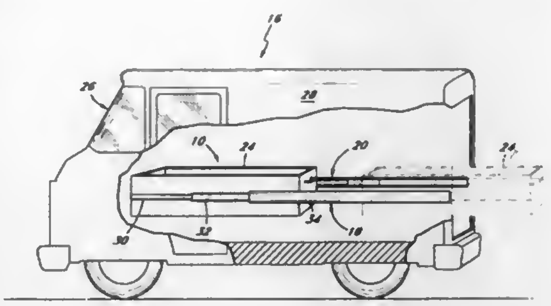
TWO-WAY EXTENDED TRAVEL SLIDE SUSPENSION

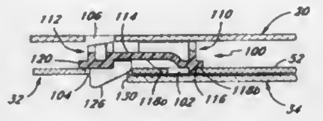
Paul Cirocco, Yorba Linda, Calif., assignor to Jonathan Manufacturing Corporation, Fullerton, Calif.

Filed Mar. 4, 1997, Ser. No. 812,938

Int. Cl.^{6} A47B *88/00*

U.S. Cl. 312—334.11 **38 Claims**





1. An assembly comprising:

an outer segment fixable to a surrounding frame;

a middle segment slidable with respect to the outer segment;

an inner segment slidable with respect to the middle segment;

an interlock positioned generally between the middle segment and the inner segment, the interlock including at least a first portion movable toward and away from said inner segment, said first portion being movable between a first position in which the inner segment and the middle segment are locked to move together in a first direction and second direction, and a second position in which the inner segment is free to move with respect to the middle segment in said first direction and said second direction, wherein said interlock further comprises a second portion fixed with respect to one of said inner segment and said middle segment, wherein said interlock comprises a single piece, wherein said first portion is cantilevered with respect to said second portion and said interlock is resilient, wherein said first portion defines a camming surface which cooperates with one of said outer segment and said inner segment to move said interlock between one of said first position and said second position and said second position and said first position, wherein said inner segment defines a first edge which defines a first aperture within which said first portion is located when said interlock is in said first position.

5,851,060

PROJECTIVE DISPLAY DEVICE

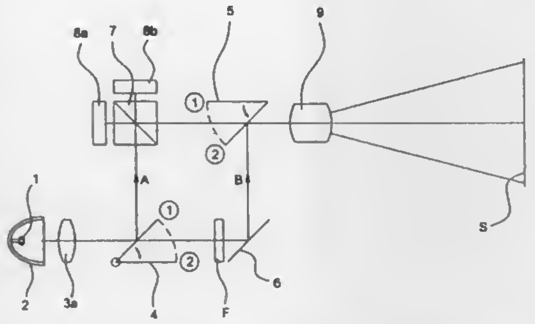
Takayuki Uchiyama, and Atsushi Kawahara, both of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 713,966

Claims priority, application Japan, Sep. 13, 1995, 7-235686; Sep. 13, 1995, 7-235687

Int. Cl.^{6} G03B *21/14*

U.S. Cl. 353—94 **24 Claims**



8. A projector that projects video information and film information, comprising:

a projector housing;

a video optical system located in the housing and projecting an image from video information;

a film optical system located in the housing and projecting an image from a film;

a switching device located in the housing and switching between projecting an image from said video information using said video optical system and projecting an image from said film using said film optical system; and

at least one movable mirror, said switching device moving said at least one movable mirror between first and second positions, respectively, to cause the image to be selectively projected using either of the video optical system and the film optical system.

5,851,061

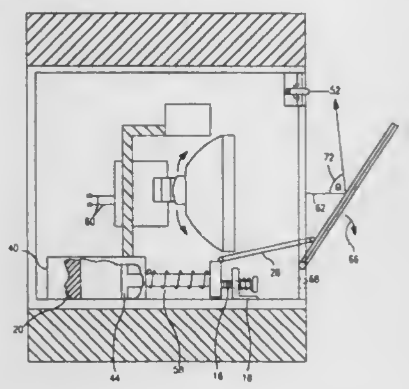
RECESSED EMERGENCY LIGHTING WITH MOVABLE MIRROR

William Hegarty, 213 Columbia La., Stevensville, Md. 21666, assignor to William Hegarty, Stevensville, Md.

Filed Mar. 5, 1997, Ser. No. 811,870

Int. Cl.^{6} F21V *19/04*

U.S. Cl. 362—20 **15 Claims**



1. A lighting apparatus, comprising:

a fixed mounting element of a structure and a housing recessed in the mounting element, the mounting element being one of a floor, a wall and a ceiling;

a panel having a mirrored reflective surface on a rear face thereof, the panel being movably mounted on the housing so as to be movable between a covering position over an opening into the housing and an open position pivoted outwardly relative to the housing, the panel being substantially reflective;

means for pivoting the panel between the covering position and the open position;

a lamp disposed in the housing internally of said panel and for directing an illumination beam toward the panel; and,

controlling means coupled between a source of electric power and said means for pivoting the panel, and between the source of electric power and the lamp, the controlling means being operable to concurrently activate the lamp and move the panel to the open position, such that light from the lamp is directed and diffused by the panel, outwardly from the recessed housing and in an area adjacent to the mounting element around the recessed housing.

5,851,062

PRISM SHEET FOR SURFACE LIGHT SOURCE

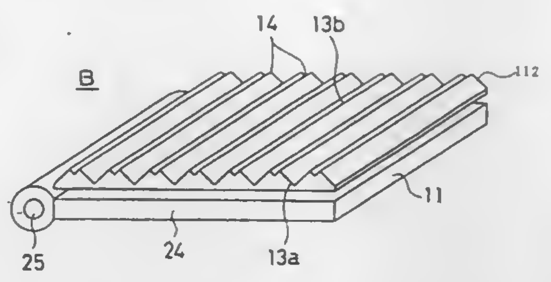
Masayuki Shinohara; Yutato Okuno, and Shigeru Aoyama, all of Kyoto, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Aug. 9, 1996, Ser. No. 694,695

Claims priority, application Japan, Aug. 11, 1995, 7-227296

Int. Cl.^{6} F21V *5/02*

U.S. Cl. 362—31 **10 Claims**



1. A surface-type prism sheet having a shape of a periodic pattern for use with a surface light source, each periodic pattern comprising:

a plurality of surfaces extending to one direction,

wherein a cross section of said each periodic pattern has at least four surface slopes extending to an orthogonal direction with respect to adjacent surface slopes of said each periodic pattern, each of said at least four surface slopes faces opposite to said adjacent surface slopes of said each periodic pattern,

wherein said at least four surface slopes of said each periodic pattern include two distal surfaces having first cross sectional widths and two proximal surfaces having second cross sectional widths different from said first cross sectional widths, and

wherein said first cross sectional width is longer than said second cross sectional width.

5,851,063

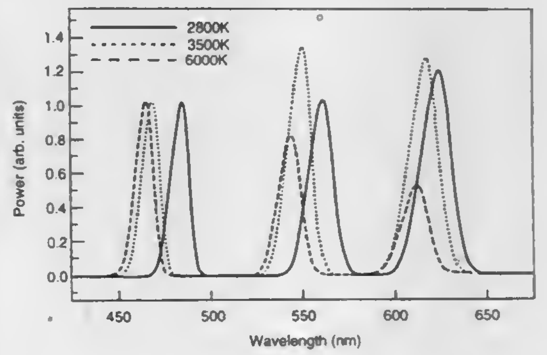
LIGHT-EMITTING DIODE WHITE LIGHT SOURCE

Douglas Allen Doughty, Charlton; Anil Raj Duggal, and Yung Sheng Liu, both of Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 28, 1996, Ser. No. 736,843

Int. Cl.^{6} F21V *9/00*

U.S. Cl. 362—231 **11 Claims**



1. A general illumination system, comprising:

at least three light-emitting diodes, each light-emitting diode providing visible light at a preselected wavelength for optimizing color rendition index for the system for general illumination applications, each preselected wavelength being defined by a predetermined chromaticity and a maximized color rendition index at the predetermined chromaticity, the predetermined chromaticity being proximate the locus of points in chromaticity space corresponding to blackbody sources.

5,851,064

INTEGRATED WARNING LIGHT AND REAR-VIEW MIRROR

Harold W. Lyons, Killingworth, Conn., assignor to Whelen Engineering Company, Inc., Chester, Conn.

Division of Ser. No. 556,735, Nov. 7, 1995, Pat. No. 5,660,457. This application Nov. 5, 1996, Ser. No. 743,993

Int. Cl.^{6} B60Q *1/26*

U.S. Cl. 362—494 **3 Claims**

1. A method of signalling the presence of an emergency vehicle, the vehicle having a forwardly facing front end which defines a plane and oppositely disposed lateral sides which extend rearwardly from said front end, said method comprising the steps of:

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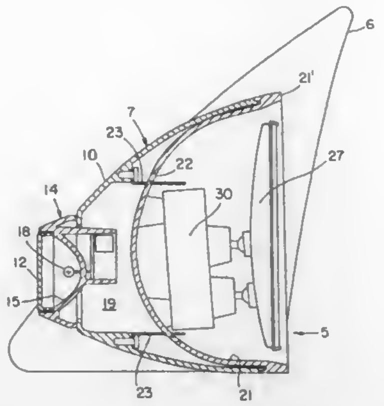


integrating a high intensity, wide-angle warning light with each one of a pair of non-adjustable position rear-view mirror assemblies, each of the warning lights including a reflector, the rear-view mirror assemblies each having a peripheral region which extends about a rearwardly facing opening thereof, each of the rear-view mirror assemblies further having a mirror which is viewed through the rearwardly facing opening of the rear-view mirror assembly, each of said steps of integration including:

providing a support for a warning light, the support defining a housing having an access opening at a first end thereof and an oppositely disposed second end;

engaging the second end of the support with the peripheral region of one of the rear-view mirror assemblies, the warning light support being smoothly tapered from the first end thereof to the second end thereof to thereby define an aerodynamic three-dimensional shape having a minimum cross-sectional area at the first end, the support projecting forwardly from the peripheral region of the mirror assembly toward said plane and terminating at the first end of the support whereby the support forms an aerodynamically shaped extension of the engaged mirror assembly; and

affixing the warning light to the first end of the support, the step of affixing including partially recessing the warning light reflector in the housing defined by the support by extending the reflector through the access opening at the first end of the support defined housing, the step of affixing positioning the warning light such that the reflector faces generally in the direction of said plane;

mounting one of the integrated mirror assemblies and warning lights on each of the lateral sides of the vehicle; and

causing the warning lights to periodically provide pulses of high intensity light.

5,851,065

APPARATUS FOR RECYCLING RESIN SCRAP

Sadao Ikeda, Toyota; Makoto Kito, Aichi-ken; Yoshio Taguchi, Nagoya; Atsushi Tanaka, Aichi-ken; Shigeki Inoue, Hiroshima; Naoyuki Murata, Hiroshima; Shinichi Ninomiya, Hiroshima, and Yoshitaka Kimura, Hiroshima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; The Japan Steel Works, Ltd., and Kabushiki Kaisha Toyota Chuo Kenkyusho, all of Japan

Division of Ser. No. 330,524, Oct. 28, 1994, Pat. No. 5,539,004. This application Apr. 16, 1996, Ser. No. 633,189

Claims priority, application Japan, Oct. 29, 1993, 5-272662

Int. Cl.⁶ B29B *7/48;7/88*

U.S. Cl. 366—76.6 **8 Claims**

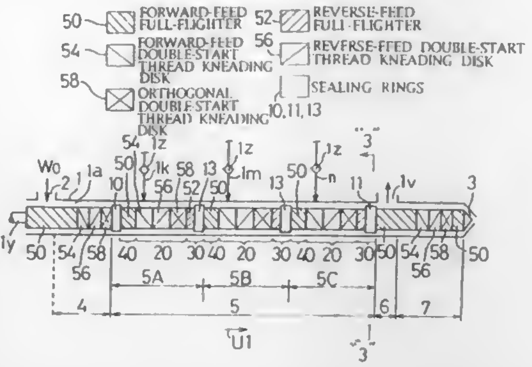
1. An apparatus for recycling resin scrap, the apparatus having an upstream side and a downstream side and comprising:

a cylinder having opposite first and second ends and an intermediate portion therebetween, the cylinder including an inlet port for supplying resin material, comprising thermosetting resin and thermoplastic resin, disposed at the first end, an outlet port for discharging recycled resin composition disposed at the second end, a passage in the cylinder connecting the inlet port and the outlet port, a supply port for supplying a hydrolyzing agent to the passage disposed at the intermediate portion, and degassing means for discharging vapors from the passage to outside the cylinder disposed downstream with respect to the supply port;

delivering means disposed in the passage of the cylinder for delivering the resin material through the passage, and including a plurality of delivering members, kneading members and resistors;

thereby defining a melting region, a hydrolysis region, and a degassing region in the passage of the cylinder in this order from the upstream side to the downstream side;

said apparatus further including means for maintaining a pressure of 10 to 100 kgf/cm² in the hydrolysis region during the recycling of the resin scrap which means includes one of the resistors positioned at each of an upstream side and a downstream side of the hydrolysis region, and that portion of the cylinder along the hydrolysis region being free of a vent for discharging vapors to the outside of the cylinder.


50 FORWARD-FEED FULL-FLIGHTER
52 REVERSE-FEED FULL-FLIGHTER
54 FORWARD-FEED DOUBLE-START THREAD KNEADING DISK
56 REVERSE-FEED DOUBLE-START THREAD KNEADING DISK
58 ORTHOGONAL DOUBLE-START THREAD KNEADING DISK
SEALING RINGS
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Wo
1a
1k
1m
1z
1v
1y
5A
5B
5C
U1
3

5,851,066

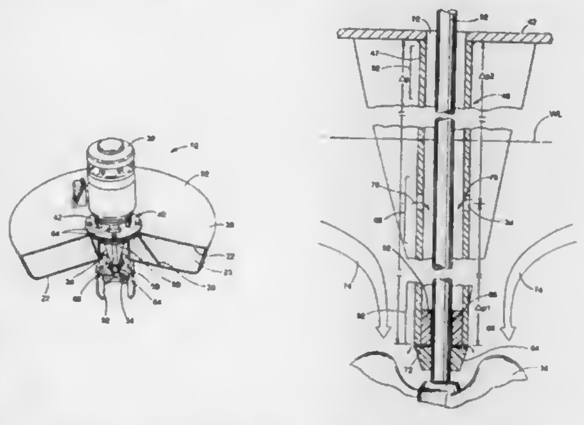
FLOATING MIXER

Frank Nocifora, Rockford, and Charles E. Kruse, Roscoe, both of Ill., assignors to Aerators, Inc., Roscoe, Ill.

Filed Aug. 28, 1997, Ser. No. 924,074

Int. Cl.⁶ B01F *5/10;5/12*

U.S. Cl. 366—270 **20 Claims**



1. A floating mixer for use in a body of liquid comprising:

a float having a central passage therethrough and defining a water line when the mixer is floating in a body of liquid,

a motor carried by the float and having an elongated drive shaft which extends through the central passage in the float and below the water line,

a motor base carried by the float and supporting a shaft enclosure which surrounds the shaft and extends from an upper end at the motor base through an intermediate region at the water line to a lower region having an open end through which the drive shaft projects,

a propeller attached to the drive shaft below the water line such that when the motor drives the propeller a low pressure zone is created which extends to the open end of the shaft enclosure, and

at least one pressure relief aperture in the shaft enclosure positioned below the water line so that the low pressure zone causes liquid flow through the pressure relief aperture and the lower region of the shaft enclosure which eliminates any substantial pressure differential which would tend to draw air through the upper end of the shaft enclosure into the low pressure zone.

5,851,067

STATIC MIXER WITH A BUNDLE OF CHAMBERED STRINGS

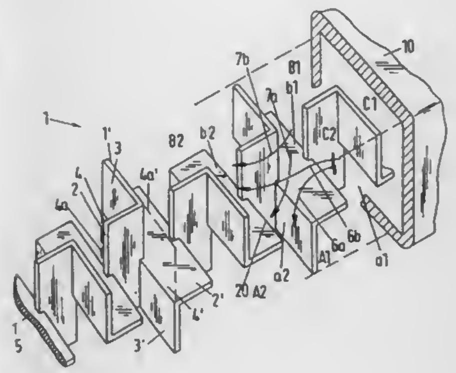
Markus Fleischli; Rolf Heusser, and Felix Streiff, all of Winterthur, Switzerland, assignors to Sulzer Chemtech AG, Winterthur, Switzerland

Filed Jun. 9, 1997, Ser. No. 871,317

Claims priority, application European Pat. Off., Jul. 5, 1996, 96810441

Int. Cl.⁶ B01F *5/06*

U.S. Cl. 366—337 **15 Claims**



1. A static mixer comprising:

a bundle of chambered strings arranged in a tube and oriented in a direction of the tube, the chambered strings comprising a plurality of chambers each extending in the direction of the tube between two closed ends, the plurality of chambers including a plurality of mixing-active chambers and a plurality of re-layering chambers, each mixing-active chamber including first and second mutually adjacent side walls having four alternately disposed passages each providing communication with one of first and second neighboring mixing-active chambers downstream thereof and first and second neighboring mixing-active chambers upstream thereof, the plurality of mixing-active chambers being arranged into at least two sections spaced along the direction of the tube by the re-layering chambers, the re-layering chambers each having first, second and third lateral passages providing communication with neighboring chambers.

5,851,068

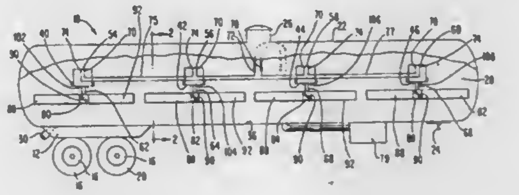
INTERMODAL TRANSPORTATION OF SEDIMENTARY SUBSTANCES

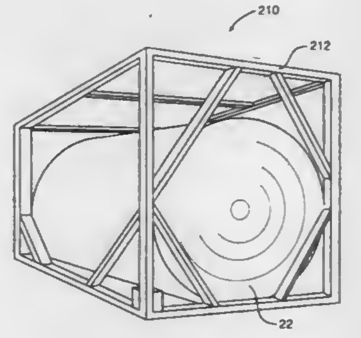
Robert M. Rumph, Sumter, S.C., assignor to The Maitland Co., Sumter, S.C.

Continuation-in-part of Ser. No. 378,799, Jan. 30, 1995, Pat. No. 5,626,423, which is a continuation-in-part of Ser. No. 294,495, Aug. 23, 1994, Pat. No. 5,385,402, which is a continuation of Ser. No. 175,726, Dec. 30, 1993, Pat. No. 5,340,213, which is a continuation of Ser. No. 939,424, Sep. 4, 1992, Pat. No. 5,275,487, which is a continuation of Ser. No. 622,104, Dec. 4, 1990, abandoned. This application May 2, 1997, Ser. No. 850,148

Int. Cl.⁶ B01F *13/06*

U.S. Cl. 366—348 **1 Claim**





1. An intermodal method of transporting a substance having solid and liquid constituents, the method comprising the steps of:

loading an intermodal pressure vessel onto an over-land intermodal carrier, the intermodal pressure vessel having a plurality of agitators located at therein, at least one of said plurality of agitators including an electric motor located entirely within the pressure vessel and being capable of operation within the pressure vessel when pressurized;

conveying the substance into the intermodal pressure vessel;

transporting via over-land intermodal carrier the intermodal pressure vessel to a shipping port;

loading the intermodal pressure vessel from the over-land intermodal carrier onto a ship for overseas transportation;

permitting, during transportation, at least some of the solids to settle and form a sediment on a floor portion of the intermodal pressure vessel;

activating said at least one electric motor, using an electric power source on at least one of the over-land carrier and the ship, to thereby cause the sediment to mix with the liquid.

5,851,069

MULTIPLE COMPARTMENT BAGS

Gerard A. Davoren, 3217 Tania Crescent, Burington Ontario, Canada, L7M 3N3

Continuation-in-part of Ser. No. 584,455, Jan. 11, 1996, abandoned. This application Aug. 11, 1997, Ser. No. 907,956

Int. Cl.⁶ B65D *30/22*

U.S. Cl. 383—38 **14 Claims**

1. A multiple compartment bag comprising:

a first backing sheet part having top, bottom and side edges;

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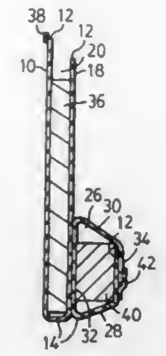


a second cover sheet part having top, bottom and side edges overlying the first sheet part with its bottom and side edges registering with the corresponding bottom and side edges of the first sheet part;

a third compartment forming sheet part having top, bottom and side edges, of shorter length than the second sheet part, and overlying the second sheet part, with its side edges registering with the corresponding side edges of the second sheet part;

a fourth closure sheet part having top, bottom and side edges, of shorter length than the second sheet part, overlying the second sheet part and overlying to a substantial depth the top edge and an immediately adjacent top portion of the third sheet part, with its side edges registering with the corresponding side edges of the second and third sheet parts;

a fifth connecting sheet part having top, bottom and side edges and of shorter length than the second sheet part, connected at its top and bottom edges to the third and fourth sheet parts to connect the two parts together, and extending parallel to the adjacent portion of the second sheet part with its side edges registering with the corresponding side edges of the second, third and fourth sheet parts;

all of the registering side edges being sealed together to form a first compartment for reception and retention of a relatively large flat first article between the first and second sheet parts having an opening to its interior at its top end, and to form a second compartment for reception and retention of a relatively smaller bulky second article between the third, fourth and fifth sheet parts, the second compartment having a labyrinthine opening for insertion of the second article into its interior between the fourth sheet part bottom edge and the overlaid third sheet part top edge portion;

and wherein the length of the immediately adjacent top portion of the third sheet part overlaid by the fourth closure sheet part is between 30% and 70% of the total length of the second compartment, whereby the labyrinthine opening remains sufficiently closed to retain the bulky second article in the second compartment with extensive bulging of the second compartment by the article therein.

5,851,070
SEALS FOR PLASTIC BAGS

David V. Dobreski, and Steve P. Long, both of Fairport, N.Y., assignors to Tenneco Packaging Inc., Evanston, Ill.

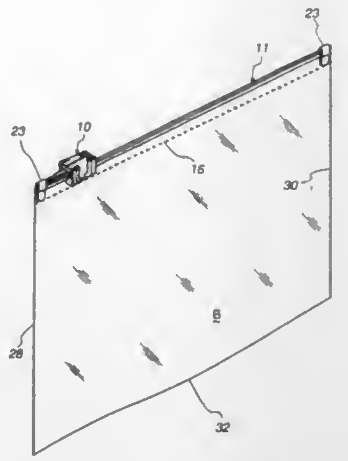
Filed Dec. 5, 1996, Ser. No. 759,616

Int. Cl.^{6} B65D *33/16*

U.S. Cl. 383—63 **45 Claims**

1. A plastic bag comprising:

first and second body panels each having a top, a bottom, and first and second opposing sides, said first and second panels being joined to each other along their respective bottoms, their respective first opposing sides, and their respective second opposing sides, wherein at least one of said first and second panels comprises at least two co-extruded polymeric film layers, a first layer made from a first resin, said first resin made in the presence of a single site catalyst, said first resin having a polydispersity of from about 1 to about 4, a melt index of from about 0.2 to about 20 g/10 min., and a melt flow ratio (I_{20}/I_2) of from about 12 to about 35, a second layer comprising a low density polyethylene.



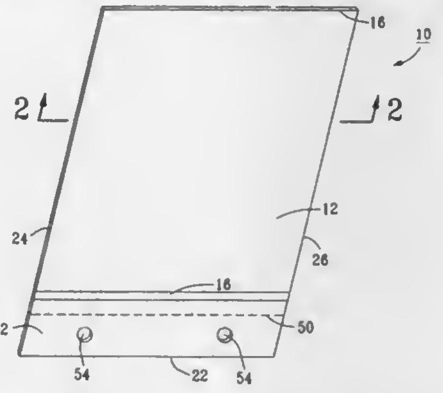
5,851,071
PLASTIC BAG WITH PERMANENT SEALING ZIPPER

Pat Arnell, Calgary, Canada, assignor to Rayton Packaging, Inc., Calgary, Canada

Filed Sep. 11, 1997, Ser. No. 927,072

Int. Cl.^{6} B65D *33/24;33/34*

U.S. Cl. 383—63 **11 Claims**



1. A plastic bag comprising:

(a) a front wall and a rear wall, both walls being comprised of a flexible thermoplastic material and having a top edge, a bottom edge, a first side edge and an opposed second side edge, the first side edge of the front wall being attached to the first side edge of the rear wall and the second side edge of the front wall being attached to the second side edge of the rear wall so that the front wall and the rear wall are disposed opposite to one another and cooperate to define an interior bag compartment;

(b) a plastic top zipper disposed along the top edges of the front and rear walls so as to alternatively seal and unseal the top edges of the front and rear walls;

(c) a first longitudinal groove disposed proximate to the bottom edge of either the front wall or the rear wall, the first longitudinal groove being disposed so as to face the opposite wall; and

(d) a first longitudinal tongue disposed proximate to the bottom edge of the wall opposite the wall having the longitudinal groove;

wherein the first longitudinal tongue has a bulbous upper portion and wherein the first longitudinal groove has an expanded lower portion so that the first longitudinal tongue fits snugly within the first longitudinal groove; and

wherein the bulbous portion of the first longitudinal tongue has at least one barb edge and wherein the first longitudinal groove has at least one corresponding barb receiving space, so that, when the first longitudinal tongue is disposed within the first longitudinal groove, the barb edge on the first longitudinal tongue mates with the barb receiving space in the first longitudinal groove, thereby preventing the first longitudinal tongue from being removed from the first longitudinal groove;

whereby the bottom edges of the front and rear walls can be permanently sealed.

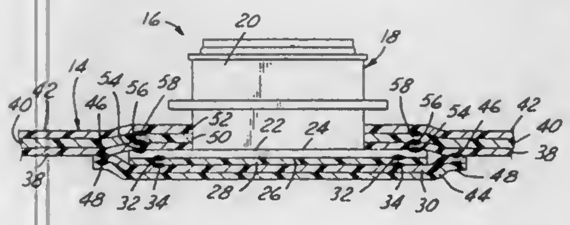
5,851,072
SPOUT CONSTRUCTION FOR BULK BOX LIQUID LINER

Lee LaFleur, Mainstee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed Nov. 26, 1996, Ser. No. 756,990

Int. Cl.^{6} B65D *33/36*

U.S. Cl. 383—66 **15 Claims**



1. A container having an upright orientation in use with a side wall and a bottom end, a flexible and collapsible liquid impervious liner adapted to be received in the container and complementary thereto and having side, top and bottom walls and fill and discharge openings through which liquid contents are respectively entered and discharged, said liner comprising a tubular blank of a flexible and liquid impervious plastic sheet material, said tubular blank having a spout fitment in one of the said openings in one of said walls, said one wall comprises a plurality of plies of said flexible plastic sheet material, said fitment comprising a self-supporting rigid spout having a generally cylindrical tube extending through said liner opening and being openable at opposite ends thereof, one of said tube ends being disposed interiorly of said one liner wall and the other of said tube ends being disposed exteriorly of said one liner wall, said spout also having an external rigid flange base adjacent said one interiorly disposed tube end and extending radially outwardly in encircling relation to said tube, said spout being permanently affixed and sealed at said one end to said liner by a separate and circumferentially continuous first annular heat seal formed in a first annular weld zone between a first surface of said flange base facing toward said other tube end and an interior surface of said liner and encompassing said opening of said liner; a first backing piece of flexible and liquid impervious plastic sheet material overlying a second surface of said flange base disposed on the opposite side of said flange base from said first flange surface, said backing piece being constructed and arranged to radially encompass said one tube end and to have a marginal portion protruding radially outwardly beyond the peripheral edge of said flange base and overlying said liner interior surface, a second separate and circumferentially continuous annular heat seal formed between said backing piece and said flange base second surface in a second annular weld zone and spaced radially inwardly from said first seal in said first weld zone, and a third separate and circumferentially continuous annular heat seal formed between said backing piece marginal portion and said liner interior surface in a third annular weld zone and spaced radially outwardly from said first weld zone and spaced from both said first and second seals.

5,851,073
BALL LINEAR GUIDE

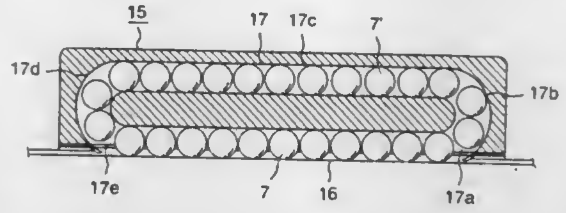
Mitsuo Takeuchi, Iwaki, Japan, assignor to Takeuchi Precision Works Co., Ltd., Iwaki, Japan

Filed Jul. 18, 1997, Ser. No. 897,038

Claims priority, application Japan, Jul. 23, 1996, 8-193248

Int. Cl.^{6} F16C *29/06*

U.S. Cl. 384—45 **9 Claims**



1. In a ball linear guide comprising a ball-cyclic-running path composed of a loaded ball groove and a non-loaded ball groove, wherein said loaded ball groove is constituted by a dovetail groove formed in a side surface portion, facing a running surface of a raceway base, of a ball linear guide main body; and said non-loaded ball hole is formed into a tunnel-shape in said ball linear guide main body with both ends of said loaded ball groove being taken as inlet and outlet of said non-loaded ball hole,

the improvement wherein

said ball linear guide main body is of a single structure including: a dovetail groove having at both ends thereof an inlet and an outlet for balls; and a tunnel-like non-loaded ball hole being continuous to said dovetail groove with said inlet and said outlet being as both ends thereof.

5,851,074
ROLLING BEARING UNIT WITH ROTATING SPEED DETECTOR

Junshi Sakamoto, Fujisawa, Japan, assignor to NSK, Ltd., Tokyo, Japan

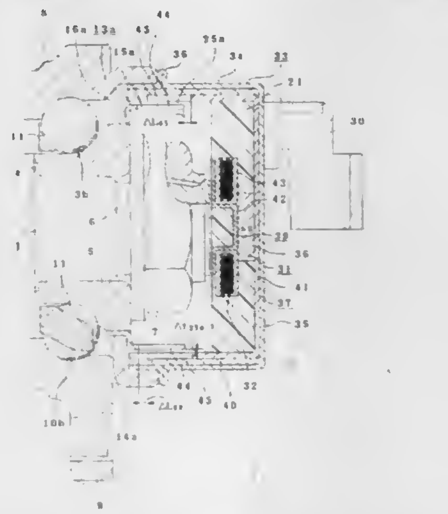
Continuation of Ser. No. 554,792, Nov. 7, 1995, abandoned.

This application Nov. 19, 1997, Ser. No. 974,151

Claims priority, application Japan, Nov. 7, 1994, 6-272614

Int. Cl.^{6} F16C *19/28*

U.S. Cl. 384—448 **12 Claims**



1. A rolling bearing unit with rotating speed detector comprising a non-rotating outer ring member having an opening end and an inner peripheral face formed with an outer raceway, a rotating inner ring member made of a magnetic material and having an end face and an outer peripheral face formed with an inner raceway, a plurality of rolling bodies provided between the outer raceway and the inner raceway, a cover securely fitted over the opening end of

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the outer ring member, an annular sensor supported inside the cover, and a rotating tone wheel made of a magnetic material and supported by the inner ring member,

the cover comprising a cylinder portion and a bottom plate portion, the cylinder portion having an end opening portion and a base end portion securely fitted over the opening end of the outer ring member, and the bottom plate portion adapted to cover the end opening portion of the cylinder portion,

the sensor comprising a magnetic pole piece having a central portion and supported by the bottom plate portion in a coaxial relationship with the inner ring member, a permanent magnet axially magnetized for magnetic flux and having a first end face in magnetic orientation close to the central portion of the pole piece and a second end face in magnetic orientation magnetically connected to the end face of the inner ring member so as to provide a closed magnetic circuit loop of lowest magnetic resistance, and a coil enclosed by said closed magnetic circuit loop and having a smaller diameter than the tone wheel, the tone wheel having a first cutout section with a plurality of first cutouts circumferentially formed with a pitch, and the pole piece having a second cutout section with a plurality of second cutouts with the same pitch to that of the first cutouts.

5,851,075

INK JET PRINTER

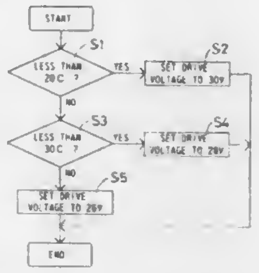
Koji Imai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

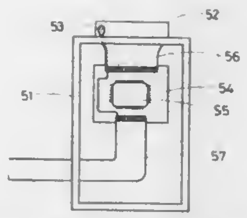
Filed Oct. 22, 1996, Ser. No. 731,919

Claims priority, application Japan, Nov. 7, 1995, 7-314719

Int. Cl.^{6} B41J *2/365*

U.S. Cl. 400—120.14 **13 Claims**





1. An ink jet printer having a carriage, an ink jet head installed on the carriage, a thermistor for detecting temperature of the ink head and a controller for controlling a drive voltage to drive the ink jet head, the ink jet printer further comprising:

a flexible cable for connecting the thermistor arranged at the carriage side and the controller; and

a temperature determining device connected between the thermistor and the flexible cable for converting an analog voltage value output from the thermistor into a digital signal before an analog data of the analog voltage value is transmitted to the flexible cable, thereafter the digital signal being transmitted to the controller through the flexible cable, the temperature determining device having at least a predetermined value set therein

corresponding to a predetermined temperature, the temperature determining device judging whether the analog voltage value representing the temperature of the ink jet head exceeds the predetermined value, the temperature determining device outputting a pulse signal with one polarity when judged that the analog voltage value is less than the predetermined value and outputting the pulse signal with the opposite polarity when judged that the analog voltage value exceeds the predetermined value.

5,851,076

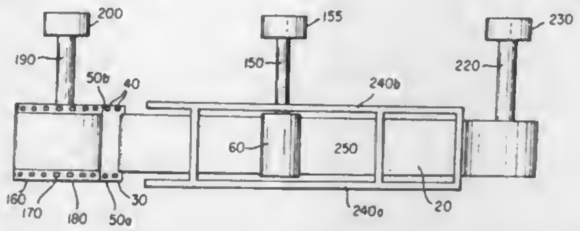
PRINTER ADAPTED TO GUIDE A DYE DONOR THEREIN AND METHOD THEREFOR

Young No, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1997, Ser. No. 956,996

Int. Cl.^{6} B41J *33/32*

U.S. Cl. 400—248 **14 Claims**



1. A printer adapted to guide a dye donor therein, the dye donor having a sprocket hole, comprising:

(a) a print head for activating the dye donor;

(b) a spool associated with said print head for wrapping the dye donor therearound, said spool having a sprocket to engage the sprocket hole; and

(c) a guide member associated with said spool for guiding the dye donor to said spool, said guide member including a pair of spaced-apart parallel rails, each of said rails defining a passage therein for guiding the dye donor therealong.

5,851,077

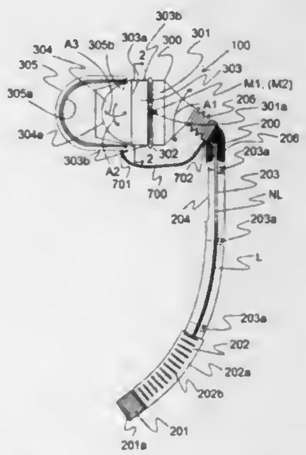
INDUSTRIAL GRADE SUNSCREEN LOTION APPLICATOR APPARATUS AND METHOD OF SELF-USE ON A BACKSIDE

Pamela L. Trejo, 5050 N. La Cholla #47, Tucson, Ariz. 85705

Filed Nov. 4, 1996, Ser. No. 740,876

Int. Cl.^{6} A45D *34/00;34/04*

U.S. Cl. 401—6 **16 Claims**



1. A personal use lotion applicator apparatus, said apparatus comprising:

a geometrically shaped, elongated container body, said container body comprising

a contoured portion,

a belt loop carriage facilitating portion that facilitates said apparatus being carried on a construction worker's tool belt in a manner similar to other tools carried on said construction worker's tool belt, and

an upper gripping element that facilitates insertion and extraction of said apparatus into and from a belt loop provided on said construction worker's tool belt, and a lower gripping element for firmly grasping said apparatus during use;

a lotion applicator head member; and

a valve member interdisposed between said container body and said lotion applicator head member,

wherein said belt loop carriage facilitating portion comprises a notch-like indent portion formed at an upper portion of said container body, wherein said lotion applicator head member comprises a reservoir portion mechanically coupled to said valve member, a lotion dispensing mechanism mechanically coupled to said reservoir portion, a cover member for said lotion dispensing mechanism, and a retainer member attached at one end to said cover member and attached at another end to said container body, and wherein said container body comprises a handle for said apparatus and said contoured portion comprises an elongated, substantially C-shaped portion dimensioned to span a sufficient distance, such that said lotion applicator apparatus is suitable for self-manipulation for reaching a major portion of a backside of a person using said apparatus.

5,851,078

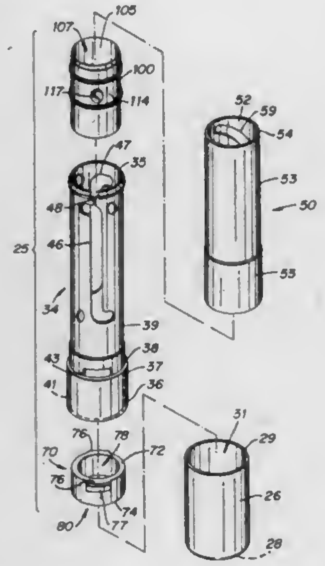
MECHANISM FOR EXTENDING AND RETRACTING A COSMETIC POMADE

Clark F. Bow, Dandridge, and Robert J. Epley, Knoxville, both of Tenn., assignors to Anchor Advanced Products, Inc., Knoxville, Tenn.

Filed Dec. 17, 1996, Ser. No. 767,943

Int. Cl.^{6} A45D *40/04:40/12*

U.S. Cl. 401—78 **17 Claims**



1. A mechanism for extending and retracting a cosmetic pomade, the mechanism comprising:

a base having a first end, a shelf, at least two apertures positioned near the shelf, a middle portion having a plurality of slots, and a second end;

means for holding the cosmetic pomade, wherein said means for holding the cosmetic pomade is positioned within the base and has means for engaging the slots in the base;

a spiral guide member having an outer surface, an inner surface with a track, and a substantially smooth portion, wherein said spiral guide member is positioned coaxially with the base; and

a flexible insert positioned within the base and having a main body and at least two radially projecting tabs for engaging the substantially smooth portion of the spiral guide member, each radially projecting tab extending through one of the apertures positioned near the shelf of the base;

wherein the tabs and the main body of the insert are compressed by the substantially smooth portion of the spiral guide member.

5,851,079

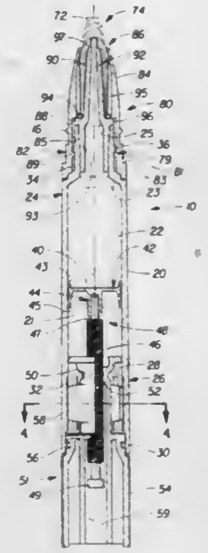
SIMPLIFIED UNDIRECTIONAL TWIST-UP DISPENSING DEVICE WITH INCREMENTAL DOSING

Richard L. Horstman, Cincinnati, Ohio; Reuben E. Oder, Union, Ky.; Robert L. Prosise, Cincinnati, Ohio; Kathleen A. Pieper, White Hall, Md.; Genevieve R. Smith, Fairfield; Robert S. Dirksing, Cincinnati, both of Ohio, and Susan B. Baggott, Owings Mills, Md., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 25, 1996, Ser. No. 738,129

Int. Cl.^{6} A46B *11/02;* **A45D** *40/06*

U.S. Cl. 401—174 **17 Claims**



1. A twist-up dispensing device for dispensing a product, said dispensing device comprising:

a) a hollow housing defining a chamber having an open dispensing end and an actuating end, said actuating end having an interior surface, said interior surface is cylindrical and includes a lip and at least one detent; and

b) a piston located within said chamber, said piston being limited to translational movement within said chamber, said piston having a top side facing said dispensing end of said housing and having a threaded rod extending therefrom opposite said top side, a variable volume portion of said chamber formed between said chamber and said top side of said piston, said variable volume portion for storing said product; and

c) a hand wheel including a grip portion and an actuator, said hand wheel being a single integral component unitarily formed from a plastic material, said actuator having a threaded aperture therethrough, said threaded aperture being concentric in said actuator, said actuator engaging said interior surface at said actuating end of said housing and being adapted to rotate with respect to said housing in only one direction, said actuator includes a groove engaged with said lip such that said actuator is rotatable but cannot move axially relative to said interior surface, said actuator also having at least one resilient arm extending outwardly and engaging said detent such that said actuator is rotatable in an advancing direction but not in an opposite direction, said threaded rod engaging said threaded aperture such that advancement of said piston toward said dispensing end occurs when said actuator is rotated, thereby causing said product to be dispensed and achieving incremental dosing of said product.

5,851,080
CARTRIDGE-TYPE LIQUID APPLICATOR

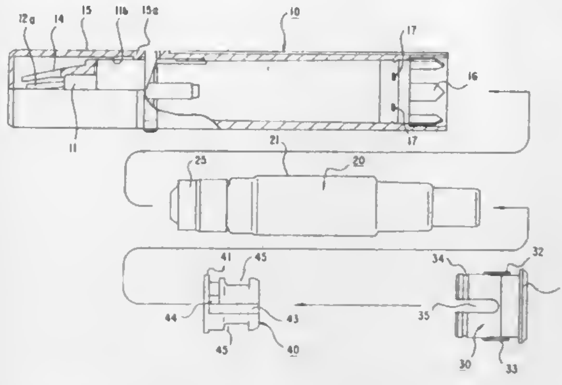
Nobuyuki Nakajima, Takasaki, and Toru Nagai, Tamamura-machi, both of Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 555,140, Nov. 8, 1995, abandoned. This application Sep. 16, 1996, Ser. No. 714,522

Claims priority, application Japan, Nov. 21, 1994, 6-312792

Int. Cl.^{6} A46B *11/04*

U.S. Cl. 401—279 **5 Claims**



1. A cartridge-type liquid applicator of comprising:

a cylindrical applicator body having an inside surface and an opening at a rearward end of said cylindrical applicator body;

a liquid containing cartridge-type tank accommodated within said cylindrical applicator body;

a soaker body means, attached to said cylindrical applicator body at a forward end of said cylindrical applicator body, for applying said liquid in said cartridge-type tank;

a cylindrical tail plug detachably fitted to said inside surface of said cylindrical applicator body at said opening at said rearward end of said cylindrical applicator body, said cylindrical tail plug comprising:

- a cylindrical body portion;
- a flange portion integrally formed in an end portion of said body portion;
- an inside through-hole having a flange side end opening and an opposite side end opening;
- a first engagement means, comprising a guide portion and any one of a protrusion and a recess portion, for snap-on engagement;
- a second engagement means formed at an area where said cylindrical applicator body contacts said cylindrical tail plug, wherein second engagement means is engagable with said first engagement means;
- slits in a periphery of said cylindrical body portion, wherein said slits are formed so as to be parallel to an axis of said cylindrical tail plug, extending from said opposite side end opening to an intermediate portion of said cylindrical body portion; and
- an engaging lug in said inside through-hole surface of said cylindrical tail plug;

a knocking rod arranged within said cylindrical tail plug, wherein said knocking rod has an L-shaped groove formed at a periphery thereof, said L-shaped groove having a circumferential section and an axial section and said L-shaped groove being engagable with said engaging lug of said cylindrical tail plug for permitting a circumferential slide and an axial pressing action to lock said cylindrical tail plug and to force said liquid containing cartridge-type tank accommodated within said cylindrical applicator body forwardly through said cylindrical applicator body.

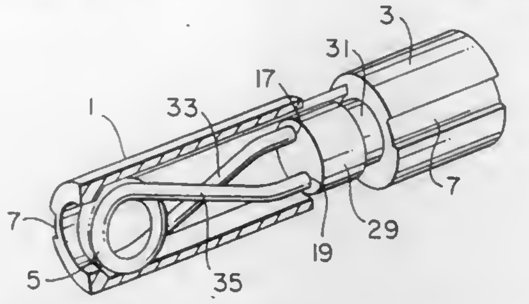
5,851,081
BI-STABLE SPRING LOADED PIVOTING JOINT

Edward T. Rude, Columbia, Md., assignor to TorqMaster, Inc., Stamford, Conn.

Filed Mar. 20, 1997, Ser. No. 821,248

Int. Cl.^{6} F16C *11/04*

U.S. Cl. 403—91 **19 Claims**



17. A pivot joint assembly comprising:

first and second housing elements co-axially rotatable with respect to one another;

a substantially hairpin-shaped spring having a first closed end defined by at least a single half turn, and a pair of legs extending into opposite free ends;

wherein said closed end of said spring is held substantially irrotatably by at least one internal groove and wherein said free ends of said spring are engaged to said second housing element;

wherein said spring is designed to urge selective rotation of said housing elements between two different stable yet opposite rotational extremes in which said legs of said spring are crossed when said housing elements have been urged to either of said opposite stable positions.

5,851,082
AXIAL BALL-AND-SOCKET JOINT FOR LINKAGES IN MOTOR VEHICLES

Norbert Schmudde, Osnabruck, and Martin Wellerding, Damme, both of Germany, assignors to Lemförder Metallwaren AG, Stemwede-Dielingen, Germany

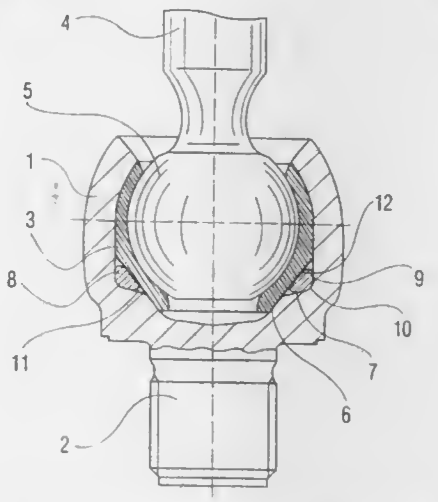
PCT No. PCT/EP96/02364, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO96/41961, PCT Pub. Date Dec. 27, 1996

PCT Filed May 31, 1996, Ser. No. 776,068

Claims priority, application Germany, Jun. 10, 1995, 295 09 566.0

Int. Cl.^{6} F16C *11/00*

U.S. Cl. 403—133 **9 Claims**



1. An axial ball-and-socket joint for linkages in motor vehicles, comprising:

a metallic housing, which is open on one side and which has a fastening pin opposite the open side of the housing; said fastening pin having a longitudinal axis;

a bearing shell made of plastic disposed in said housing:

a metallic joint ball, which is mounted in said housing in said bearing shell, said joint ball being provided at an end of a ball pivot, said ball pivot projecting from the open side of said housing and being positionable coaxially with the fastening pins, said joint ball being held in said housing by material deformation; and

a rubber buffer having selected elastic characteristics, said bearing shell having a bearing shell oblique surface with respect to said longitudinal axis, said bearing shell oblique surface having a constant angle, said bearing shell oblique surface being supported, on a side of said housing with said fastening pin, against an oblique surface on said housing and said bearing shell oblique surface being supported against said buffer, said buffer being inserted between said bearing shell and a radial support surface provided on said housing.

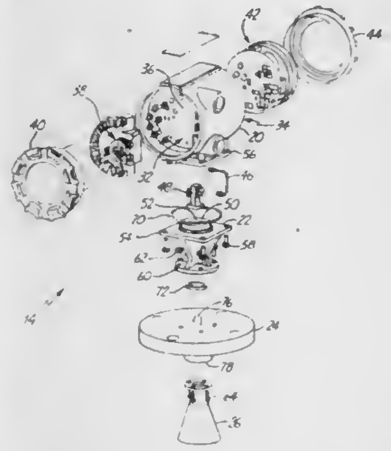
5,851,083
MICROWAVE LEVEL GAUGE HAVING AN ADAPTER WITH A THERMAL BARRIER

Donald F. Palan, Chaska, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 4, 1996, Ser. No. 726,145

Int. Cl.^{6} H01P *1/04*

U.S. Cl. 403—337 **22 Claims**



1. A microwave level gauge adapter for coupling between an electronics housing and a process connecting flange, the adapter comprising:

a first, process connecting end for coupling to the process connecting flange and a second, electronics connecting end for coupling to the electronics housing;

a length from the first end to the second end;

a hub;

a section of reduced cross-sectional area along the length of the adapter between the first and second ends, which defines a thermal transfer restriction that restricts heat transfer from the first end to the second end;

a plurality of heat dissipating fins extending radially outward from the hub and having a surface area which increases from the thermal transfer restriction toward the second end; and

a waveguide extending through the hub, from the first end to the second end.

5,851,084
ROTOR FIXTURE

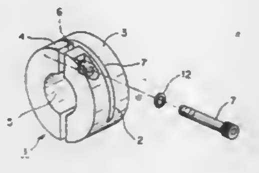
Takahiro Nishikawa, Osaka, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

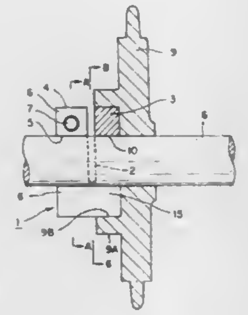
Filed Nov. 12, 1996, Ser. No. 747,959

Claims priority, application Japan, Dec. 13, 1995, 7-324739; May 10, 1996, 8-116799

Int. Cl.^{6} F16D *1/08*

U.S. Cl. 403—344 **17 Claims**





1. For mounting a rotor on a shaft with an outer peripheral shaft surface, said rotor having a central hole surrounding the outer peripheral shaft surface, a rotor fixture provided with an elastically deformable, cylindrical diameter expanding deformation section having a side portion and a peripheral section surface to be engaged with the central hole of the rotor, and a through hole through which the shaft is to be inserted, and having a radial diameter expanding slit extending to said through hole formed by notching on one place of said peripheral section surface, and

an elastically deformable diameter contracting deformation section having a side portion and a squeezing hole to be engaged with said shaft and being split to two sections by a splitting slit extending across said squeezing hole approximately in the diametral direction,

wherein said diameter contracting deformation section is disposed adjacent to said diameter expanding deformation section, said side portions of said two sections are combined near the diameter expanding slit of said diameter expanding deformation section so as to be deformed integrally therewith, and

said two sections are linked to each other by a squeezing bolt inserted through said diameter contracting deformation section across said splitting slit in regard to said squeezing hole on the side opposite to the side portion which is connected with said diameter expanding deformation section.

5,851,085
METHOD AND APPARATUS FOR SPRAYING A TACK MATERIAL FROM A PAVING MACHINE HAVING A GRAVITY FEED HOPPER

Thomas R. Campbell, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 389,257, Feb. 16, 1995, Pat. No. 5,533,828, and Ser. No. 314,348, Sep. 29, 1994, Pat. No. 5,615,973. This application Dec. 30, 1996, Ser. No. 777,774

Int. Cl.^{6} E01C *19/18*

U.S. Cl. 404—75 **20 Claims**

1. A paving machine comprising:

(A) a chassis having a rear end portion:

(B) a distributing auger mounted on said rear end portion of said chassis and extending transversely across said chassis;

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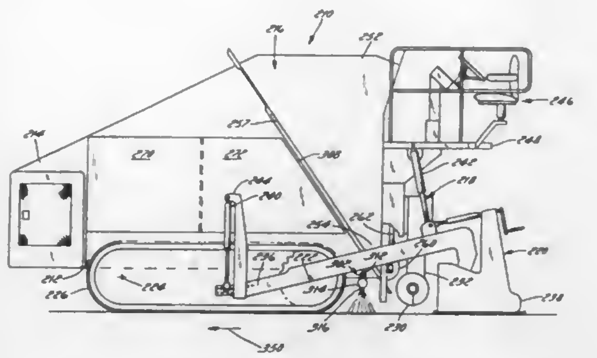


(C) a gravity feed hopper mounted on said rear end portion of said chassis;

(D) discharge means, having an inlet communicating with said gravity feed hopper and an outlet located directly above said distributing auger, for discharging paving materials directly on top of said distributing auger, wherein said gravity feed hopper feeds all paving materials stored therein to said discharge means without employing any internal conveyors and without the aid of any external conveyors;

(E) a screed which is mounted on said chassis behind said distributing auger and which works paving materials into a mat, wherein said distributing auger is located between said gravity feed hopper and said screed;

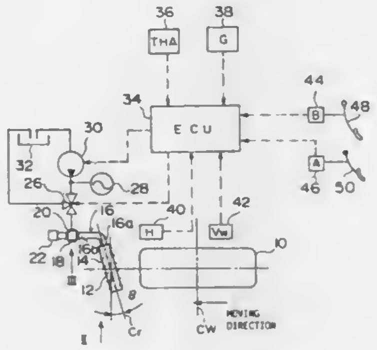
(F) a storage tank which is mounted on said chassis in front of said gravity feed hopper and which stores a tack material; and

(G) a tack material spray assembly which receives tack material from said storage tank and which sprays tack material onto a surface to be paved at a location in front of said discharge opening.

5,851,086
ROAD SURFACE CONDITION CHANGING APPARATUS PROVIDED ON A VEHICLE

Ryoichi Kurasako, Gotenba, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 18, 1996, Ser. No. 751,675
Claims priority, application Japan, Dec. 25, 1995, 7-337457
Int. Cl.⁶ E01H *4/00*
U.S. Cl. 404—94 **10 Claims**



10. A road surface condition changing apparatus for a vehicle, comprising:

a cylinder member provided in front of a wheel of said vehicle, said cylinder member being rotatable about a rotational axis corresponding to a longitudinal center of said cylinder member and adapted to be pressed against a road surface; and

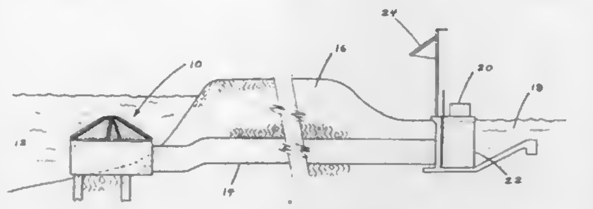
a support mechanism for supporting said cylinder member so that the rotational axis of said cylinder member is parallel to the road surface and is inclined with respect to the rotational axis of said wheel,

wherein said cylinder member includes water absorbing material wound on an outer surface of said cylinder member.

5,851,087
SELF-CLEANING INTAKE SCREEN

Russell M. Berry, III, 2153 Alamos, Clovis, Calif. 93611

Filed Nov. 7, 1996, Ser. No. 745,077
Int. Cl.⁶ B01D *33/06*
U.S. Cl. 405—127 **5 Claims**



1. A self-cleaning intake screen for preventing debris, fish, and other wildlife from being transferred from a waterway, comprising:

a conical support structure having a circular base, a cap plate, and a plurality of support studs extending therebetween;

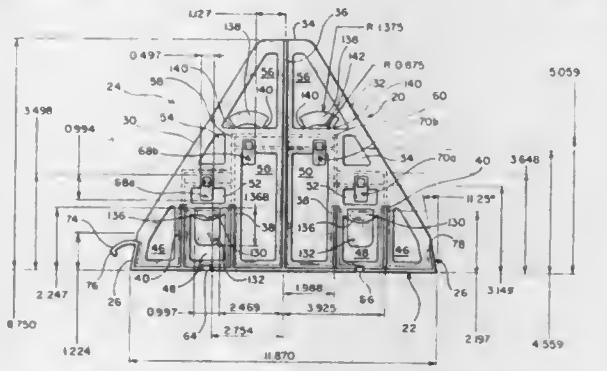
a screen extending between said base and said cap plate and affixed to said support studs; and

a screen sweeping assembly secured to said cap plate, wherein said screen sweeping assembly comprises a motor operably connected to a sweeper hub, and a plurality of elongate screen sweepers pivotably attached to said sweeper hub.

5,851,088
MODULAR RETAINING WALL BLOCK SYSTEM INCLUDING WALL BLOCKS HAVING REPLACEABLE DUAL PURPOSE FACING PANELS AND REMOVABLE SPACING TABS

Robert Anderson, Alpharetta; Gale Sanders, Peachtree City, both of Ga., and Robert Freund, Waynesville, Ohio, assignors to The Tensar Corporation, Atlanta, Ga.

Filed Aug. 4, 1997, Ser. No. 905,741
Int. Cl.⁶ E02D *3/02;5/18;29/00*
U.S. Cl. 405—284 **52 Claims**



1. A wall block system to be used for forming a retaining wall including a plurality of wall blocks, each wall block comprising:

a wall block frame and a separate facing panel;

said wall block frame including a front member having front and rear surfaces and a top and a bottom, and a bottom member having upper and lower surfaces and extending generally perpendicularly from the bottom of said rear surface of said front member,

said facing panel including a front member having front and rear surfaces and a top and a bottom, said front surface adapted to define part of the face of the retaining wall incorporating said wall block, and a top member having upper and lower surfaces and extending generally perpendicularly from the top of said rear surface of said front member,

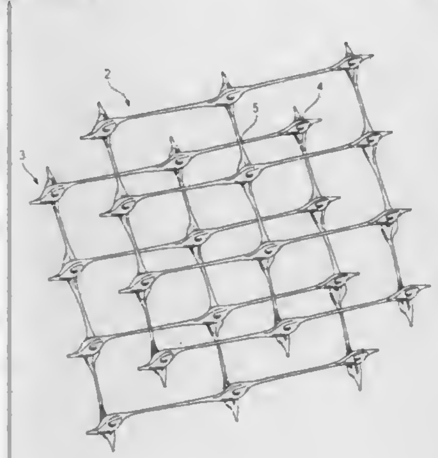
at least one groove extending from the top toward the bottom of said front member of said wall block frame;

at least one tongue extending from the rear surface of said front member of said facing panel dimensioned to be slidably received in said groove to secure said facing panel to said wall block frame with said front member of said facing panel overlying the front surface of said front member of said wall block frame, and said top member of said facing panel overlying the top of said front member of said wall block frame and extending generally parallel to said bottom member of said wall block frame, whereby when said wall block frame and said facing panel are secured together to form one of said plurality of wall blocks, said facing panels adapted to conceal said wall block frames in the retaining wall formed from a plurality of said wall blocks.

5,851,089
COMPOSITE REINFORCED STRUCTURE INCLUDING AN INTEGRATED MULTI-LAYER GEOGRID AND METHOD OF CONSTRUCTING THE SAME

Mario Beretta, Sirtori LC, Italy, assignor to Tenax Spa, Vigano LC, Italy

Filed Oct. 7, 1996, Ser. No. 727,346
Int. Cl.⁶ E02D *17/20;* E01C *21/00;* C09K *17/00*
U.S. Cl. 405—259.1 **50 Claims**



1. A composite reinforced structure, comprising:

a mass of particulate material; and

a geogrid, said geogrid having an upper surface and a lower surface and comprising a plurality of layers of mesh structure, wherein each said layer is rigidly bonded to contiguous ones of the other layers of mesh structure at discrete points along each said layer in at least one direction, each said layer of mesh structure comprising substantially parallel oriented strands interconnected by substantially parallel transverse strands, said oriented strands and said transverse strands defining therebetween a plurality of mesh openings, each said layer having its respective mesh openings overlaying one or more mesh openings of the other layers;

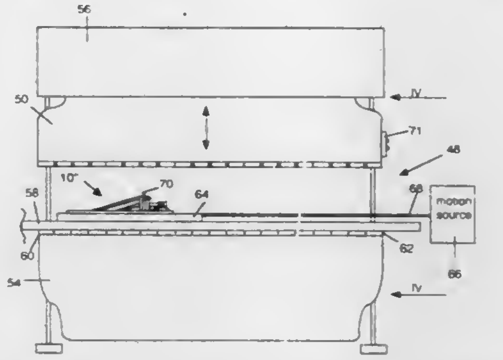
wherein said geogrid is embedded in said mass of particulate material, such that a first portion of said mass of particulate material is above said geogrid, a second portion of said mass of particulate material is below said geogrid, and a third portion of said mass of particulate material is contained within said plurality of mesh openings defined by said geogrid, so that said mass of particulate material is in direct contact with said upper and lower surfaces of said geogrid and with portions of said geogrid defining said plurality of mesh openings;

whereby said geogrid distributes tensile stress to all of said portions of said mass of particulate material.

5,851,090
RECONDITIONING PLANING TOOL

Douglas S. Weir, P.O. Box 1084, Huntley, Ill. 60142

Filed Jun. 6, 1995, Ser. No. 466,369
Int. Cl.⁶ B23D *1/08*
U.S. Cl. 409—293 **19 Claims**



1. In combination, a reconditioning planing device in association with a machine to be reconditioned, the combination comprising the following:

a first, movable horizontal upper surface on the machine, the machine including a second surface beneath and substantially parallel to the first surface and from which the first, movable surface can be retracted;

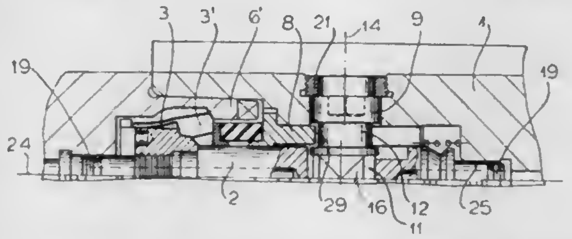
the planing device including a base slidably connected to the second surface and seated in an interspace formed between the first and second surfaces; and

planing means, including a stationary planing tool and connected to the base, for planing the first, movable surface, the planing means in operation being movable in a direction transverse to the normal direction of movement of the first, movable surface.

5,851,091
TOOL MOUNT WITH EJECTOR

Klaus-Dieter Klement, St.Mauri-Strasse 1, D-52428 Jülich, Germany

Filed Jan. 14, 1997, Ser. No. 783,259
Claims priority, application Germany, Feb. 28, 1996, 296 03 602 U
Int. Cl.⁶ B23B *31/02*
U.S. Cl. 409—232 **10 Claims**



1. A tool mount for a tool holder having a tubular collar with an inwardly projecting rim, the mount comprising:

a shaft centered on an axis and formed with

- an axially centered main bore having an outer end formed as
  - a seat complementarily engageable around the collar and
- a transverse bore crossing the main bore;

an actuating bolt in the main bore having a head engaged in the collar in the seat and formed with a transverse bore aligned with the shaft transverse bore;

a retaining element engageable between the bolt head and the holder rim, the bolt being axially displaceable between an inner position pressing the retaining element radially outward into locking engagement with the holder rim and an outer position with the retaining element retracted radially inward out of locking engagement with the holder rim;

an ejector sleeve axially displaceable on the bolt in the bore and axially outwardly engageable with the holder collar in the seat; and

a setting rod rotatable in the transverse bores about a transverse axis perpendicular to the main axis and formed with
  a locking cam eccentric to the transverse axis and engageable with the bolt to displace same between its positions and
  an ejector cam eccentric to the transverse axis and engageable with the ejector sleeve to displace same outwardly against the holder collar on displacement of the bolt into the outer position.

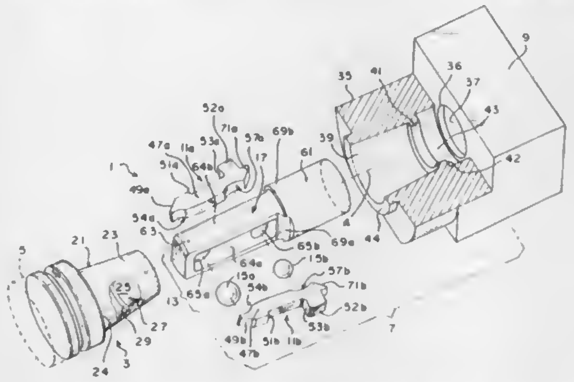
5,851,092

Patent Not Issued For This Number

5,851,093
COUPLING SYSTEM FOR MACHINE TOOLS

Robert A. Erickson, Raleigh, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Filed Aug. 7, 1997, Ser. No. 908,652
Int. Cl.^{6} B23C *1/00*
U.S. Cl. 409—234 **20 Claims**

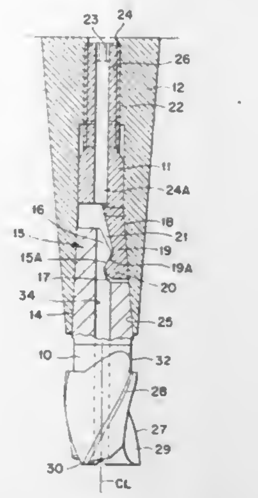


1. A coupling system for lockably coupling machine tool components, comprising:
  (a) a male coupling having a recess at a distal end that includes ledge surfaces;
  (b) a female coupling having an axis, and an opening disposed along said axis for receiving the distal end of said male coupling;
  (c) a pair of opposing jaw members having proximal ends movably mounted within said opening in said female coupling, and distal ends having lock surfaces for engaging said ledge surfaces of said male coupling when said jaw members are moved apart to mate said male and female couplings, both of said jaw members having opposing inner surfaces, and
  (d) a drive train for moving said jaw members apart including first and second drive spheres, and means for simultaneously moving said first and second drive spheres into and out of wedging engagement with said inner surfaces of said proximal and distal ends of said opposing jaw members.

5,851,094
TOOL FOR CHIP REMOVAL

Bengt Strand, and Karl-Erik Berglöw, both of Fagersta, Sweden, assignors to Seco Tools AB, Fagersta, Sweden

Filed Nov. 26, 1997, Ser. No. 979,113
Claims priority, application Sweden, Dec. 3, 1996, 9604445-8
Int. Cl.^{6} B23C *5/28;* **B23B** *51/06*
U.S. Cl. 409—234 **13 Claims**

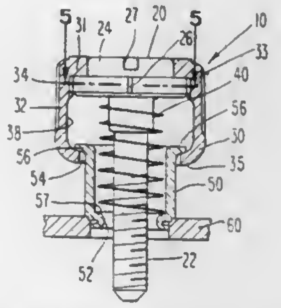


1. A milling tool for rotary chip removal machining comprising a shank defining an axis of rotation, a cutting head mounted in the shank and projecting forwardly therefrom along the axis, and a retention element for retaining the cutting head within the shank; a rear mounting portion of the cutting head being asymmetrical with respect to the axis and intersected by the axis, the rear mounting portion including a generally forwardly facing surface; the retention element mounted in the shank and including a front retaining portion asymmetrical with respect to the axis, the front retaining portion including a generally rearwardly facing surface engaging the generally forwardly facing surface of the cutting head; the cutting head including a cutting edge formed at a front end thereof; a rear channel extending axially through the retention element; a front channel extending axially through the cutting head and adapted to conduct a flushing medium to the front end, the channel extending through the rear mounting portion of the cutting head and intersecting the generally forwardly facing surface thereof.

5,851,095
CAPTIVE SCREW

Thomas J. Ellis, Wilmington, Del.; Edward A. McCormack, Chadds Ford, and Harry L. Dickerson, Downingtown, both of Pa., assignors to Southco, Inc., Concordville, Pa.

Filed Apr. 14, 1998, Ser. No. 59,577
Int. Cl.^{6} F16B *21/18;39/00*
U.S. Cl. 411—353 **17 Claims**

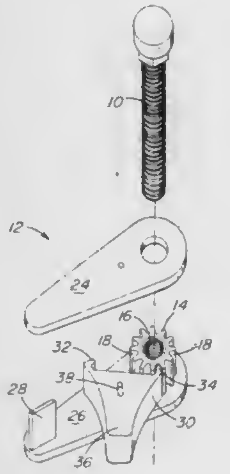


1. A captive screw attachable to a panel, for attaching the panel to a surface, the surface having a threaded hole, the captive screw comprising:
  a) a screw having a head portion and a threaded shaft, said head portion having a top surface, a flat, annular bottom surface, and a plurality of integral protrusions extending at least partially therebetween;
  b) means to facilitate rotation of the threaded shaft;
  c) a thin-walled, cylindrical, hollow knob comprising a first end having an annular top surface, a second end, and an inner surface;
  d) means to rigidly secure the head portion of the screw to the inner surface of the knob, said means comprising the plurality of protrusions providing a press-fit to the inner surface of the knob when the screw head is inserted through the second end of the hollow knob; and
  e) a hollow ferrule having a first end and a second end through which the threaded shaft slides, the ferrule having a panel attachment means at the first end to secure the captive screw to the panel, and a threaded shaft captivation means, said threaded shaft captivation means adjacent the second end, wherein the second end of the ferrule is slidably and rotatably attached to the knob such that when the threaded shaft is in a retracted position, the threaded shaft captivation means prevents the ferrule and the knob from separating and when the threaded shaft is in an extended position, the flat, annular bottom surface of the head portion of the screw is in contact with the second end of the ferrule.

5,851,096
RACHETED NUT ASSEMBLY

Raymond F. Lackner, 4741 Baldwin Manor Rd., Pittsburgh, Pa. 15227

Filed Apr. 22, 1997, Ser. No. 847,665
Int. Cl.^{6} F16B *37/08;23/00*
U.S. Cl. 411—432 **9 Claims**



1. A ratcheted nut assembly comprising:

an internally threaded nut having a plurality of radially extending teeth formed on the outer circumference of said nut;

an elongated housing rotatably receiving said nut and formed from two spaced apart segments with said internally threaded nut rotatably positioned between said segments and said segments supporting said nut;

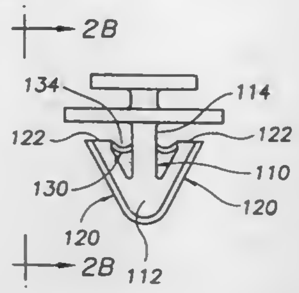
a ratchet member pivotally secured to said elongated housing, said ratchet member being freely pivotable relative to said housing and having two pawls that alternately cooperate with said radially extending teeth on said nut to rotate said nut in one of two directions whereby said nut may be tightened or loosened depending upon the pivoted position of said ratchet member;

said ratchet member being hand-held by an operator of said ratcheted nut assembly to the desired pivoted position relative to said housing to tighten or loosen said nut as the operator desires.

5,851,097
ARTICLE WITH TETHERED PRONG FASTENER

David A. Shereyk, Homewood, and Thomas A. Benoit, Bourbonnais, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 3, 1997, Ser. No. 868,284
Int. Cl.^{6} F16B *19/00*
U.S. Cl. 411—508 **18 Claims**



1. An article having a prong fastener, comprising:

a substantially transversely extending base member;

a first stem protruding substantially axially from and substantially perpendicular to said substantially transversely extending base member, and having a base portion, connected to said substantially transversely extending base member of said article, and a distal end portion;

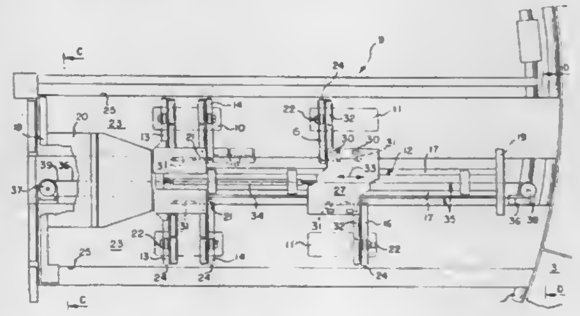
a first resilient arm flexibly connected at a first end portion thereof to said distal end portion of said first stem and extending divergently outwardly away from said first stem such that a second distal end portion of said first resilient arm extends toward said base portion of said first stem whereby said first resilient arm and said second distal end portion thereof are flexibly movable toward and away from said first stem, said first resilient arm also comprising a side surface portion facing said first stem; and

a first flexible tether member fixedly connected to said surface portion of first resilient arm and a first axially extending side surface portion of said first stem whereby said first flexible tether member limits outward deflection of said first resilient arm away from said first stem.

5,851,098
SYSTEM FOR ACCOMMODATING TEMPORARILY STORING AND OUTPUT OF MOVABLE OBJECTS

Günter Buckenauer, Baldham; Roland Peiz, and Hans Beutler, both of München, all of Germany, assignors to Maurer Sohne GmbH & Co. KG, Munich, Germany

Continuation of Ser. No. 617,883, Mar. 19, 1996, abandoned.
This application Nov. 13, 1997, Ser. No. 969,549
Claims priority, application European Pat. Off., Sep. 16, 1994, PCTEP9403113
Int. Cl.^{6} E04H *6/00*
U.S. Cl. 414—263 **30 Claims**



1. A system for receiving, temporarily storing, and outputting vehicles, the system comprising:

a helical running rail;

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a plurality of parking platforms spaced in an elevational manner adjacent to said helical rail, said parking platforms are supported by a plurality of beam structures outside said helical rail;

a tender rotatably supported on a central frame structure within said helical running rail;

a vehicle support structure extending from said tender, said vehicle support structure contacts said helical rail, said vehicle support structure further includes:

  at least two running face platforms slidably mounted to said helical rail and rotatably mounted to said central frame structure;

  a transmitter device supported by at least one of said two running face platforms and said parking platforms, said transmitter device includes:

    an adjustable carrier frame;

    a first set of wheel carrier arms, said first set of wheel carrier arms includes two stationary arms and two pivotable arms, said first set of wheel carrier arms are mounted to said carrier frame;

    first means for pivoting said pivotable arms of said first set of wheel carrier arms in extended and retracted positions;

    a polygonal shaped sledge having corners, said sledge is mounted to said carrier frame;

    a second set of wheel carrier arms, said second set of wheel carrier arms include two pivotable arms mounted to said sledge at diagonally spaced pivot points;

    second means for pivoting said second set of said of wheel carrier arms in extended and retracted positions which are relatively opposite to each other, each wheel carrier arm including a beam supporting a plurality of wheel support rollers spaced and running rolls;

    wheel base means for adjusting a distance between said sledge relative to said first set of wheel carrier arms; and

  means for moving said transmitter device across said running face platforms and said parking platforms, said first and second set of wheel carrier arms elevate the wheels of a vehicle in the extended positions so that the wheels of the vehicle are spaced from said running face platforms while the wheels contact said wheel support rollers, and said running rolls contact at least one of said running face platforms and said parking platforms for automated parking of a vehicle.

5,851,099

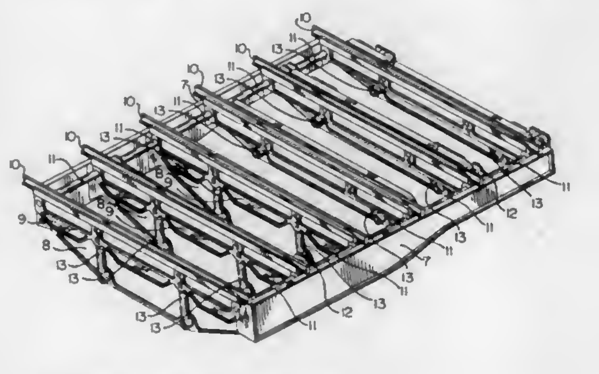
ADJUSTABLE CARGO PLATFORM ASSEMBLY

Anibal Garcia, Mira Loma, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Aug. 23, 1996, Ser. No. 702,822

Int. Cl.^{6} B65G *65/00*

U.S. Cl. 414—398 20 Claims



1. A cargo ramp assembly comprising:

a. a cargo ramp capable of movement about a transverse axis at one end of said cargo ramp;

b. a platform frame, having a longitudinal axis, rotatably mounted at one end to said cargo ramp, said platform frame adapted to rotate about said transverse axis independent of the movement of said cargo ramp;

c. a roll frame movably mounted to said platform frame and adapted to move relative to the longitudinal axis of said platform frame; and

d. at least one lateral frame member mounted to said roll frame adapted for lateral motion relative to said roll frame in a direction parallel to the transverse axis.

5,851,100

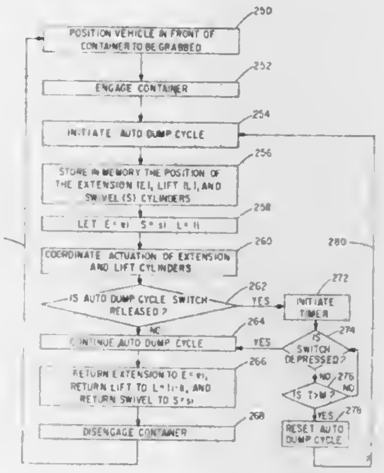
AUTO CYCLE SWIVEL MOUNTED CONTAINER HANDLING SYSTEM

Calvin J. Brandt, Delano, Minn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Filed Apr. 11, 1997, Ser. No. 843,024

Int. Cl.^{6} B65F *3/04*

U.S. Cl. 414—408 15 Claims


250
POSITION VEHICLE IN FRONT OF CONTAINER TO BE GRABBED
252
ENGAGE CONTAINER
254
INITIATE AUTO DUMP CYCLE
256
STORE IN MEMORY THE POSITION OF THE EXTENSION (E), LIFT (L), AND SWIVEL (S) CYLINDERS
258
LET E=ei S=si L=li
270
260
COORDINATE ACTUATION OF EXTENSION AND LIFT CYLINDERS
280
262
IS AUTO DUMP CYCLE SWITCH RELEASED ?
YES
272
INITIATE TIMER
NO
264
CONTINUE AUTO DUMP CYCLE
YES
274
IS SWITCH DEPRESSED ?
266
RETURN EXTENSION TO E=ei, RETURN LIFT TO L=li, AND RETURN SWIVEL TO S=si
NO
275
NO
IS T>M ?
YES
276
268
DISENGAGE CONTAINER
RESET AUTO DUMP CYCLE

1. A lift and dump mechanism to automatically lift, dump and return a container of interest to an original location comprising:

a) a frame;

b) carrying mechanism for carrying the container between pick-up, dump, and release locations;

c) swivel mount mechanism attached between said frame and said carrying mechanism for swiveling said carrying mechanism fore and aft relative to said frame, said swivel mount mechanism having a first position sensor coupled thereto for generating a signal representative of a rotational position of said swivel mount mechanism relative to the frame;

d) reach mechanism pivotally attached to said swivel mount mechanism for extending the carrying mechanism towards and away from the frame, said reach mechanism having a second position sensor coupled thereto for generating a signal representative of a position of said reach mechanism relative to the frame;

e) lift mechanism pivotally attached between said reach mechanism and said carrying mechanism for lifting the container between the pick-up, dump, and release locations, said lift mechanism having a third position sensor coupled thereto for generating a signal representative of a position of said lift mechanism relative to the reach mechanism;

f) a control system for controlling the position of said swivel system, said reach mechanism, said carrying mechanism and said lift mechanism, said control system being electrically coupled to said first, second and third position sensors, said swivel mount mechanism, said reach mechanism, said carrying mechanism, and said lift mechanism; and

g) wherein said control system includes:

  (1) a memory programmed to store values related to signals from said position sensors indicative of at least one coincident position of said swivel mount mechanism, said reach mechanism and said lift mechanism at said pick-up location;

  (2) control device to reposition said swivel mount mechanism, said reach mechanism and said lift mechanism at said release location, said release location being at a height greater than that of said pick-up location.

5,851,101

WORKING UNIT OF CONSTRUCTION EQUIPMENT WITH ATTACHMENT SELF LEVELING FUNCTION

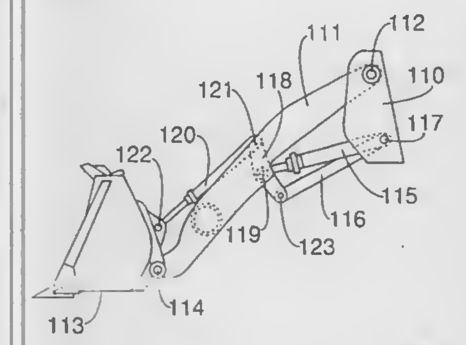
Kee Young Kim, Anyang, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 565,264, Nov. 30, 1995, Pat. No. 5,688,101. This application Nov. 15, 1997, Ser. No. 971,477

Claims priority, application Rep. of Korea, Apr. 29, 1995, 95-10519; Apr. 29, 1995, 95-10520

Int. Cl.^{6} E02F *3/34*

U.S. Cl. 414—713 4 Claims



1. A working unit of construction equipment comprising an arm pivoted to an equipment's frame and an attachment pivoted to said arm, further comprising an attachment self leveling linkage including:

a first telescopic means pivoted to said frame at one end thereof and pivoted to a predetermined portion of said arm at the other end thereof;

a first link pivoted to a pivot joint between said frame and said first telescopic means at one end thereof;

a second link pivoted, at one end thereof, to the other end of said first link and pivoted, at the center thereof, to the predetermined portion of said arm together with the other end of said first telescopic means; and

a second telescopic means pivoted to the other end of said second link at one end thereof and pivoted to said attachment at the other end thereof, thereby allowing the attachment to maintain its initial angle relative to a reference surface in accordance with a telescopic motion of said first telescopic means.

5,851,102

DEVICE AND METHOD FOR POSITIONING A NOTCHED WAFER

Takashi Okawa, Fujioka, and Shigeharu Iizuka, deceased, late of Hadano, both of Japan, by Kazumi Iizuka, Toshiki Iizuka, legal representatives, assignors to Hitachi Electronics Engineering Co., Ltd., Japan

Filed Sep. 16, 1997, Ser. No. 931,549

Claims priority, application Japan, Sep. 17, 1996, 8-266695

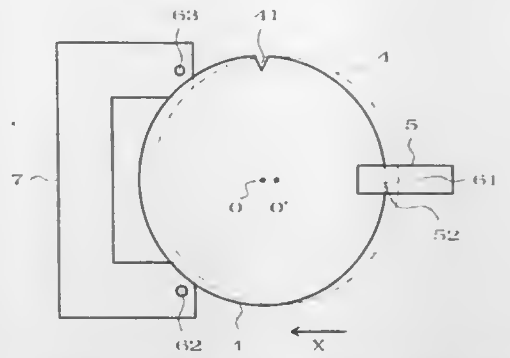
Int. Cl.^{6} B65G *47/24*

U.S. Cl. 414—783 6 Claims

1. A notched wafer positioning device comprising:

a rotary stage rotatable with a wafer placed thereon, said wafer having a V-shaped notch formed in a predetermined location of an outer periphery thereof;

at least three positioning pins provided outwardly of the outer periphery of the wafer placed on said rotary stage and movable into contact with the wafer;



a detector for monitoring the outer periphery of the wafer that is rotated by rotation of said rotary stage, so as to detect an angular position of the V-shaped notch of the wafer on said rotary stage and eccentricity of the wafer relative to a rotational center of said rotary stage; and

a controller for positioning the V-shaped notch of the wafer at a location corresponding to a predetermined one of said positioning pins on the basis of the angular position of the V-shaped notch detected by said detector and for moving each of said positioning pins into contact with the wafer on the basis of the eccentricity of the wafer detected by said detector so that a center of the wafer lies at the rotational center of said rotary stage.

5,851,103

TURBOMACHINERY WITH VARIABLE ANGLE FLUID GUIDING DEVICES

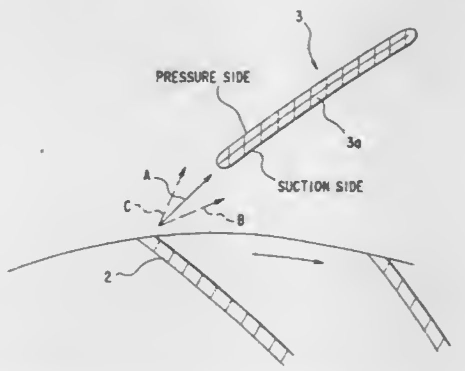
Hideomi Harada, and Kazuo Takei, both of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 442,585, May 17, 1995, Pat. No. 5,618,160. This application Nov. 22, 1996, Ser. No. 755,475

Claims priority, application Japan, May 23, 1994, 6-132559; May 27, 1994, 6-138082

Int. Cl.^{6} F04D *27/02*

U.S. Cl. 415—17 26 Claims



1. A turbomachinery having variable angle flow guiding means comprising:

an impeller for providing energy to a fluid medium;

a diffuser vane assembly having variable angle vanes provided on a diffuser for increasing a fluid pressure of said fluid medium, said diffuser vane assembly receiving said fluid medium output from said impeller;

a rotation device for driving said diffuser vanes;

a flow rate detection device for detecting inlet flow rates;

a rotation device controller for operating said rotation device so as to position said diffuser vanes at an operating angle corresponding to a detected flow rate by said flow rate detection device, said operating angle being determined so as to minimize instability of flow within said turbomachinery.

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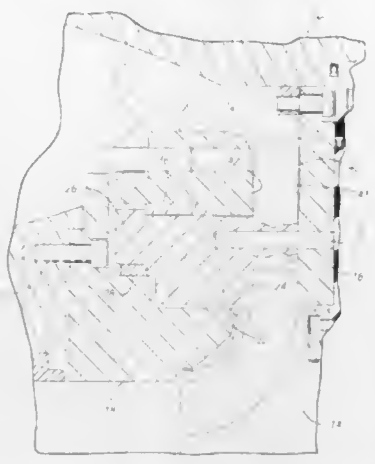
5,851,104

NOZZLE ADJUSTING MECHANISM

Robin M. Dakin, Los Angeles, and Behrooz Ershaghi, Irvine, both of Calif., assignors to Atlas Copco Rotoflow, Inc., Gardena, Calif.

Filed Dec. 15, 1997, Ser. No. 990,358
Int. Cl.⁶ F01B *25/02*
U.S. Cl. 415—150 **22 Claims**



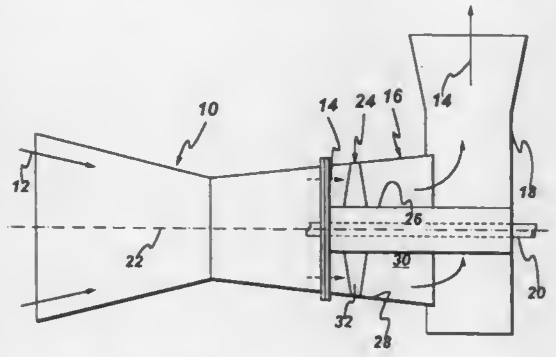
1. A nozzle adjustment mechanism for a radial inflow turbine having a housing, an annular inlet in the housing and primary vanes in the inlet pivotally mounted relative to the housing, comprising
   an adjusting ring on a first side of the primary vanes and rotatably mounted in the housing;
   a clamping ring on the first side of the primary vanes and axially slidably mounted in the housing;
   a sealing piston ring between the clamping ring and the housing.

5,851,105

TAPERED STRUT FRAME

Thomas Frank Fric, Schenectady, and Michael Lewis James, Charlton, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 496,144, Jun. 28, 1995, abandoned.
This application Apr. 11, 1997, Ser. No. 837,031
Int. Cl.⁶ F04D *29/44*
U.S. Cl. 415—208.1 **10 Claims**



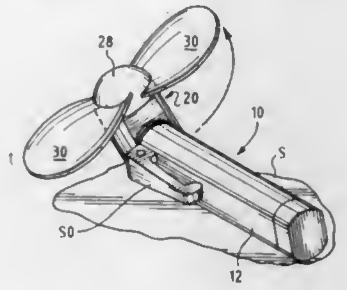
1. A frame comprising:
an inner wall;
an outer wall spaced from said inner wall to define a flow channel therebetween for channeling a fluid: and
a plurality of struts having a circular cross section disposed in said channel and having roots and tips at opposite span wise ends thereof fixedly joined to said inner and outer walls, respectively, and having leading and trailing edges defining a chord therebetween and said struts being longitudinally tapered effecting a truncated cone to vary said chord in length between said roots and said tips to vary vortex shedding of said fluid from said struts, said struts each having a respective longitudinal axis extending between said root and said trip.

5,851,106

PORTABLE FAN DEVICE

Gregory A. Steiner, Lombard, and Terry Arnieri, Addison, both of Ill., assignors to Innovatio Design Enterprises, inc.ve, Addison, Ill.

Filed Feb. 17, 1998, Ser. No. 24,729
Int. Cl.⁶ B63H *1/00;* **A47C** *7/74;* **F04B** *17/00*
U.S. Cl. 416—63 **13 Claims**



1. A portable fan device adapted for seatment on an underlying flat surface comprising,
   an elongate body portion having a top end and a bottom end and having a central horizontal axis along the length of said elongate body portion,
   said elongate body portion forming an elongate chamber,
   a fan device mounted on the top end of said elongate body portion,
   said fan device having an off position and a fan activation position associated therewith,
   stop means associated with said elongate body portion, said stop means adapted to maintain said elongate body portion in a rest position when said body portion is positioned on an underlying flat surface, along the horizontal axis of said elongate body portion,
   said fan device including a central hub and at least a pair of fan blades mounted to said hub and adapted for rotational movement when in the fan activation position,
   said fan device being positioned at an angle spaced from said central horizontal axis a distance sufficient to allow fan blade rotation when said elongate body portion is maintained by said stop means in a rest position on an underlying flat support surface,
   said elongate chamber accommodating electrical power means for providing energy to said fan device,
   and on/off switch means interposed between said fan device and said electrical power means to accommodate a fan off position and a fan activation position.

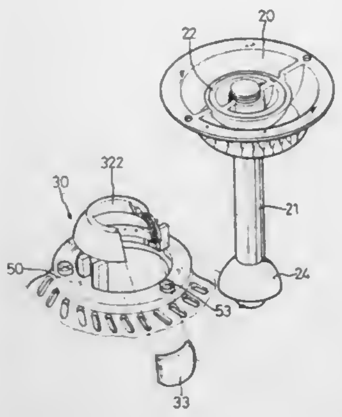
5,851,107

SUSPENSION ASSEMBLIES FOR CEILING FANS

Yuh Shyong Wang, Taichung Hsien, Taiwan, assignor to Sen Kun HSU, Taichung Hsien, Taiwan

Filed Jun. 30, 1997, Ser. No. 885,264
Int. Cl.⁶ I04D *29/64*
U.S. Cl. 416—244 R **17 Claims**

1. A suspension assembly for ceiling fans, comprising:
an upper supporting member (**20**) adapted to be securely attached to a ceiling, the upper supporting member (**20**) including a bowl-like section (**204'**) defined in a lower portion thereof, the bowl-like section (**204'**) including a first through hole (**205'**) defined in a bottom thereof, a bowl-like upper suspension member (**22**) being securely retained in the bowl-like section (**204'**),



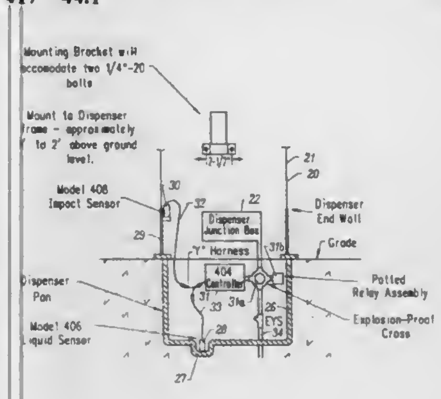
a suspension rod (**21**) including an upper end and a lower end, the upper end of the suspension rod extending through the first through hole and securely attached to the upper suspension member (**22**),
a suspension seat (**30**) securely mounted to the lower end of the suspension rod and including an inverted bowl-like seat (**32**) which has a second through hole (**326**) extending along a longitudinal axis thereof, an inverted bowl-like lower suspension member (**24**) being securely received in the bowl-like seat (**32**), the lower end of the suspension rod extending through the second through hole and securely attached to the lower suspension member, and
a connecting member (**40**) having an upper side securely connected to the suspension seat and a lower side adapted to be securely attached to a motor for driving a ceiling fan.

5,851,108

ELECTRONIC CONTROL SENSOR SYSTEMS

Mark Clymer, Mystic, and Glenn Graves, Oakdale, both of Conn., assignors to Beaudreau Electronics, Inc., Waterford, Conn.

Filed Jan. 17, 1995, Ser. No. 372,962
Int. Cl.⁶ F04B *49/06*
U.S. Cl. 417—44.1 **6 Claims**



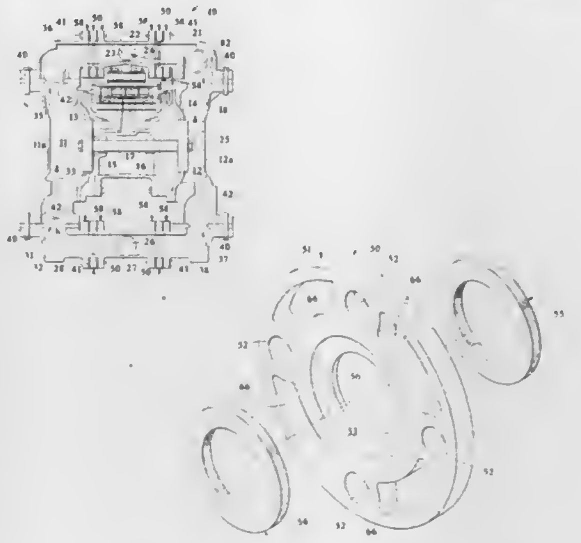
1. A system, comprising:
a gasoline dispenser for pumping gasoline to a vehicle, the gasoline dispenser including a housing containing electrical components;
an electrical power supply line providing power to the electrical components in the gasoline dispenser;
a motion sensor that is mechanically attached to the gasoline dispenser housing, the motion sensor having an output producing a first electrical signal upon detecting a predetermined quantity of motion of the gasoline dispenser housing; and
a controller connected to the output of the motion sensor and the electrical power supply line, the controller when receiving the first signal causing power to substantially stop flowing in the electrical power supply line.

5,851,109

SPACER AND SHIM ASSEMBLY FOR FLUID POWERED DIAPHRAGM PUMPS

Steven M. Reynolds, Lucas, Ohio, assignor to Warren Rupp, Inc., Mansfield, Ohio

Filed Jan. 22, 1997, Ser. No. 786,904
Int. Cl.⁶ F04B *43/06*
U.S. Cl. 417—395 **14 Claims**



1. A combination spacer and shim assembly for attachment between first and second fluid communicating parts of a pump. the assembly comprising:
   an annular spacer plate comprising an outer periphery for attachment between the two fluid communicating parts of the pump assembly, the spacer plate further comprising a first side and a second side, the spacer plate being fabricated from an injection molded material,
   the first side of the spacer plate comprising a first annular recessed area at an inner periphery thereof for removably accommodating a first annular seal, the second side of the spacer plate comprising a second annular recessed area at an inner periphery thereof for removably accommodating a second annular seal,
   the first seal providing a sealing engagement between the annular spacer plate and the first fluid communicating part of the pump, the second seal providing a sealing engagement between the annular spacer plate and the second fluid communicating part of the pump,
   the first and second seals being fabricated from an elastomer material,
   the first seal removably engaging the annular spacer plate and the first fluid communicating part, the second seal removably engaging the annular spacer plate and the second fluid communicating part,
   the first seal further comprises at least one outwardly protruding lip, the lip of the first seal engaging the first fluid communicating part of the pump and providing a seal between the annular spacer plate and the first fluid communicating part of the pump.

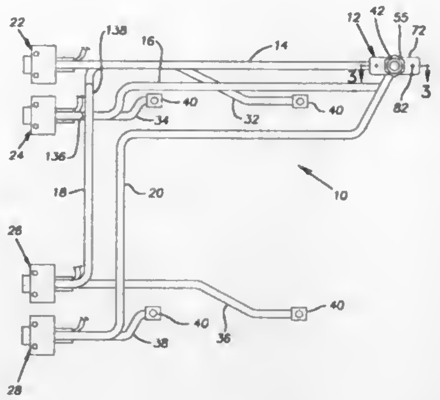
5,851,110

BURNER BOX WITHOUT MANIFOLD RETURN

Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Tubular Systems, Inc., Mansfield, Ohio

Continuation-in-part of Ser. No. 707,638, Sep. 5, 1996. This application Jun. 17, 1997, Ser. No. 877,365
Int. Cl.⁶ F23Q *9/00*
U.S. Cl. 431—278 **26 Claims**

1. A tube assembly for a gas range having burners, said tube assembly comprising:



a manifold block adapted for connection to a source of gas and formed of a lightweight material. said block has a polygonally-shaped outer-side surface;

valve assemblies adapted to regulate flow of gas from said manifold block to the burners;

supply tubes each having a first end connected to said polygonally-shaped outer-side surface of said manifold block and a second end connected to an inlet of an associated one of said valve assemblies;

burner orifices adapted to control flow of gas to the burners; and

burners tubes each having a first end connected to an outlet of one of said valve assemblies and a second end connected to an associated one of said burner orifices.

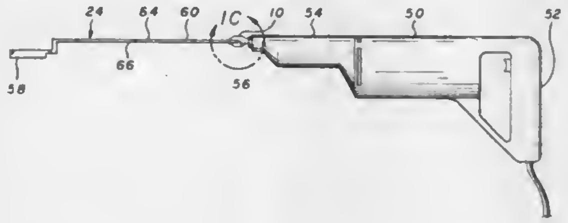
5,851,111
EQUINE DENTAL FLOAT ADAPTER

Raymond D. Long, 715 Greenbrae Dr., Sparks, Nev. 89431, and Scott Greene, P.O Box 5780, Sparks, Nev. 89432

Continuation-in-part of Ser. No. 566,112, Dec. 1, 1995, abandoned. This application Jun. 23, 1997, Ser. No. 881,174

Int. Cl.⁶ A61D *5/00*

U.S. Cl. 433—1 **15 Claims**



1. An equine dental float system for floating horses' teeth, the system comprising:

(A) a hand held saw for producing a reciprocating motion. said saw having an attachment device for attaching objects to said saw, said attachment device having a slot for receiving the objects. said slot being substantially vertical when said saw is held in a preferred orientation;

(B) a float for floating horses' teeth, said float having a shaft with a rectangular cross section and a lateral axis; and

(C) an adapter for attaching said float to said attachment device and, said adapter having a second end adapted to be inserted into said slot of said attachment device wherein said lateral axis of said shaft is substantially horizontal when said second end is held in said attachment device said saw is held in the preferred orientation.

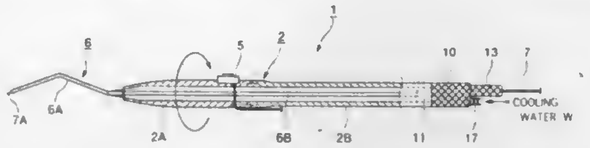
5,851,112
DENTAL HANDPIECE

Norio Daikuzono, Cincinnati, Ohio, and Hidetoshi Motoori, Tokyo, Japan, assignors to S.L.T. Japan Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1997, Ser. No. 903,792

Int. Cl.⁶ A61C *1/00*

U.S. Cl. 433—29 **3 Claims**



1. A dental handpiece having a laser irradiation switch on a hand grip portion and a bent guide tube through which an optical fiber for introducing laser light to its distal end is inserted, characterized in that

said laser irradiation switch can be rotated around the longitudinal axis of the handpiece together with a holder member which is fitted on the outer periphery of the hand grip and a part of the hand grip holder.

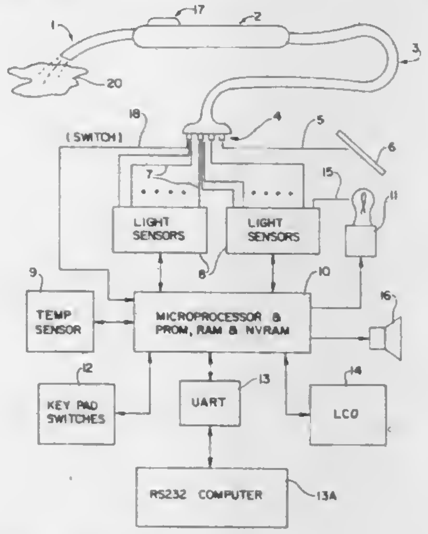
5,851,113
APPARATUS AND METHOD FOR MEASURING THE COLOR OF TEETH

Wayne D. Jung; Russell W. Jung, both of Morton Grove, and Alan R. Loudermilk, Chicago, all of Ill., assignors to LJ Laboratories, L.L.C., Chicago, Ill.

Continuation of Ser. No. 582,054, Jan. 2, 1996, Pat. No. 5,759,030. This application Aug. 12, 1997, Ser. No. 909,991

Int. Cl.⁶ A61C *1/00*

U.S. Cl. 433—29 **123 Claims**



1. A method, comprising the steps of:

positioning a probe in proximity to a dental object, wherein the probe provides light to a surface of the dental object from one or more light sources, and receives light from the dental object through a plurality of light receivers, wherein light from the light receivers is coupled to one or more optical sensors;

taking a plurality of measurements with the one or more optical sensors; and

determining at least a peak intensity of received light based on the measurements as the probe is a distance away from the surface of the dental object, and determining at least an intensity of light as the probe is at or about the surface of the dental object, wherein translucence data and color data are generated based on at least the peak intensity and the intensity.

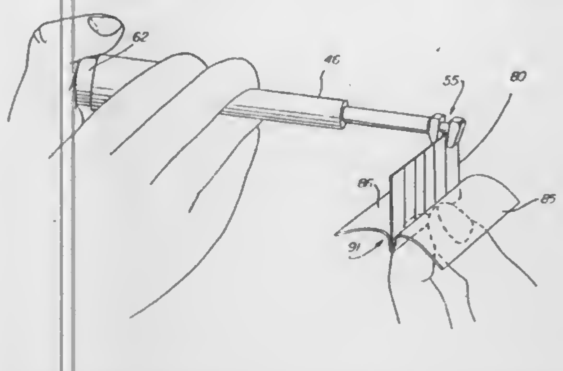
5,851,114
TECHNIQUE FOR POSITIONING DENTAL CROWNS AND INLAYS

Robert L. Lee, 22937 Grand Terrace Rd., Grand Terrace, Calif. 92324

Continuation of Ser. No. 196,420, Feb. 15, 1994, Pat. No. 5,525,059, which is a continuation-in-part of Ser. No. 836,065, Feb. 12, 1992, Pat. No. 5,320,533. This application Apr. 17, 1996, Ser. No. 633,899

Int. Cl.⁶ A61C *19/04*

U.S. Cl. 433—68 **10 Claims**



1. A test ribbon packet for the testing of the fit of tooth crowns for permanent placement in a patient's mouth, the packet comprising a plurality of thin, flat short plastic ribbons positioned in a side-by-side relation, each ribbon having a top and bottom surface, and a protective covering sheet in contact with each top and bottom surface of each ribbon.

5,851,115
METHOD AND ARRANGEMENT FOR COLLECTING DATA FOR PRODUCTION OF REPLACEMENT DENTAL PARTS FOR THE HUMAN BODY

Lennart Carlsson, Molndal, and Anders Lie, Bohus, both of Sweden, assignors to Nobel Biocare AB, Gothenburg, Sweden

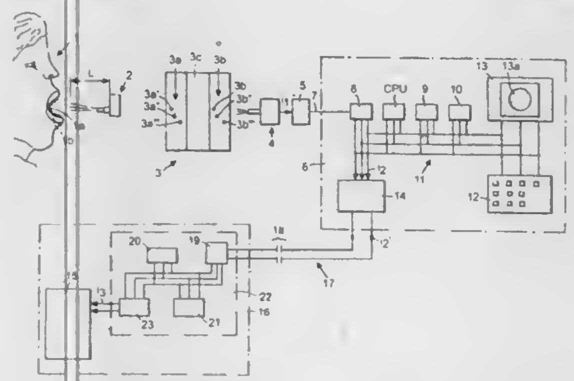
PCT No. PCT/SE94/01142, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO95/15731, PCT Pub. Date Jun. 15, 1995

PCT Filed Nov. 29, 1994, Ser. No. 495,620

Claims priority, application Sweden, Dec. 6, 1993, 9304042

Int. Cl.⁶ A61C *5/00*

U.S. Cl. 433—215 **11 Claims**



1. An apparatus for collecting control data for production of replacement dental parts for the human body comprising:

(a) means for imaging at least one of a body area and replacement part with a single imaging device arranged to take simultaneous pictures of the body area from different angles during one exposure;

(b) means for developing the pictures and scanning them with a reading device;

(c) means for generating digitized data of at least one of the imaged body area and replacement part to be applied in the area from the reading device:

(d) means for transmitting the digitized data to computer equipment which automatically reproduces the body area and replacement part;

(e) means for calculating spacial relations data of surfaces of at least one of the body area and replacement part with a photogrammetric computer program; and

(f) means for using above data as control data in making and fitting the replacement part.

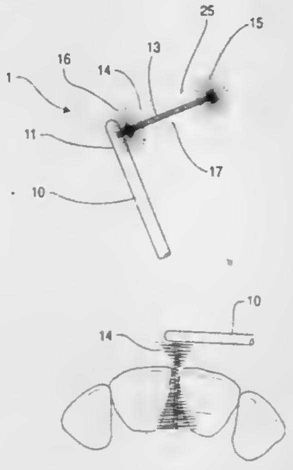
5,851,116
INTERPROXIMAL CLEANER AND METHOD OF USE

Brian S. Margolis, 43 Grove St., Cold Spring Harbor, N.Y. 11724

Filed Mar. 10, 1997, Ser. No. 813,285

Int. Cl.⁶ A61C *15/00;* A46B *3/18;9/04*

U.S. Cl. 433—216 **11 Claims**



1. An interproximal brush apparatus comprising:

an elongated stem portion having opposing first and second ends and a longitudinal axis extending between said first and second ends, at least one of said first and second ends releasably receiving an interproximal cleansing portion at a substantially perpendicular angle to the longitudinal axis of said elongated stem; said interproximal cleansing portion having a longitudinal axis and an hourglass shape extending 360° along the longitudinal axis of said interproximal cleansing portion; said interproximal cleansing portion having a continuous resilient foam material surface and a dentally acceptable abrasive.

4. A method of cleansing interproximal spaces in mammals, comprising:

inserting the interproximal cleansing portion of an interproximal brush apparatus of claim 1 between adjacent teeth whereby debris is dislodged from the interproximal spaces.

5,851,117
BUILDING BLOCK TRAINING SYSTEMS AND TRAINING METHODS

Keith A. Alsheimer, Groton, and Andrianne H. Fitzgerald, Marlborough, both of Mass., assignors to The Butcher Company, Marlborough, Mass.

Filed Apr. 23, 1997, Ser. No. 839,053

Int. Cl.⁶ G09B *19/00*

U.S. Cl. 434—219 **9 Claims**

1. A method of a trainer teaching a cleaner the method comprising:

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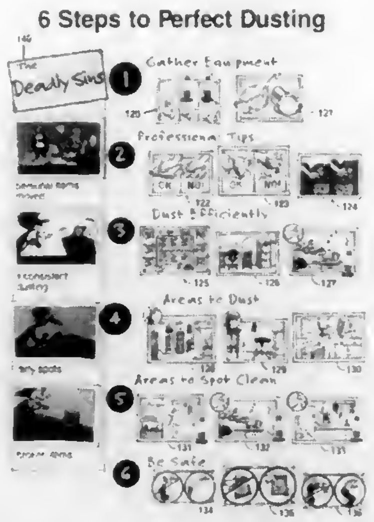


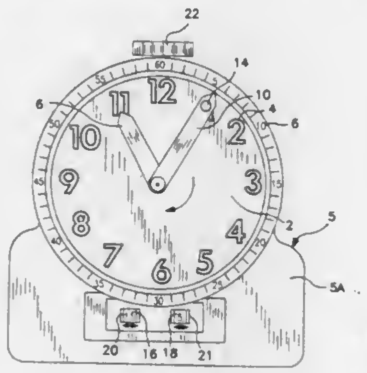
(a) providing a training system for use in on the job training of worker whose job functions include the cleaning of a facility, the training system comprising a plurality of sections, each training system section containing instructions for cleaning a typical facility, each training system section limited in instructions to a specific physical job function to be performed in the facility, and each training system section containing illustrations of what is to be done and illustrations of what is not to be skipped and what is to be avoided in performing the cleaning job functions;
(b) in the facility, the trainer showing the cleaner a document of a section of the training system, the document pictorially indicating what the cleaner is to do in each step of a specific job function;
(c) the trainer telling the cleaner about each step pictorially depicted in the document;
(d) the trainer showing the cleaner how to perform each step pictorially depicted in the document; and
(e) the trainer having the cleaner perform the step in the presence of the trainer while the trainer coaches and the trainer having the cleaner tell the trainer about the step while referring to the document.

5,851,118
DIGITAL AND ANALOG TEACHING CLOCK

Richard M. Woldenberg, Highland Park, Ill., and Yuen Po Man, Tai Po, Hong Kong, assignors to Learning Resources, Inc., Vernon Hills, Ill.

Filed Sep. 13, 1996, Ser. No. 713,993
Int. Cl.^{6} G09B *19/12*

U.S. Cl. 434—304 **18 Claims**

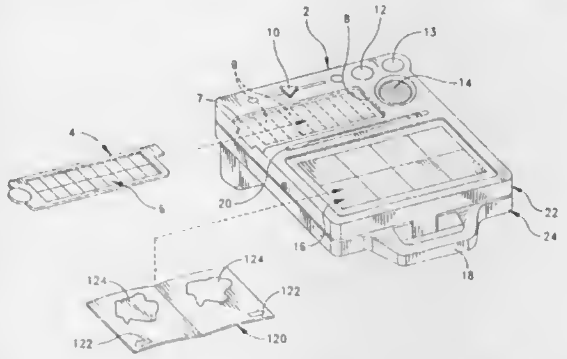


1. A teaching clock comprising:
an analog clock face having numeric indicia of hour and minute disposed about its periphery;
an hour hand and a minute hand pivotally mounted and substantially centrally disposed proximate to the analog clock face;
a digital time display disposed adjacent to said analog clock face, wherein said digital time display includes a disk-shaped, digital minute indicator having a numeric minute display and a disk-shaped, digital hour indicator having a numeric hour display, each of said digital indicators having an axis of rotation substantially perpendicular to said analog clock face; and
means responsive to movement of said minute hand for conforming a time displayed by said digital time display to a time indicated by said hour hand and said minute hand.

5,851,119
INTERACTIVE STORY BOOK AND METHODS FOR OPERATING THE SAME

Henry D. Sharpe, III, Saunderstown; Ralph A. Beckman, Providence; Stephen A. Schwartz, Providence; Stanley O. Thompson, Providence, and Dan R. Morrissey, Foster, all of R.I., assignors to Stephen A. Schwartz and Design Lab, LLC
Division of Ser. No. 373,386, Jan. 17, 1995, Pat. No. 5,636,995. This application Oct. 7, 1996, Ser. No. 726,611
Int. Cl.^{6} G09B *5/00*

U.S. Cl. 434—317 **5 Claims**



1. A method of operating an interactive electronic story book apparatus comprising the steps of:
providing a story book including a plurality of pages having graphic characters depicted thereon;
providing a touch sensitive graphics area;
overlying said story book on said touch sensitive graphics area;
providing a plurality of speech phrases in a memory device associated with said touch sensitive graphics area, said speech phrases being associated with predetermined characters on predetermined pages of said story book;
opening said story book to one of said plurality of pages;
associating a predetermined group of speech phrases with said open page of said story book;
assigning said speech phrases to predetermined areas on said touch sensitive graphics area which correspond with the location of said characters on said open page of said story book; and
selectively outputting said speech phrases responsive to touch input derived from said predetermined area of said touch sensitive graphics area.

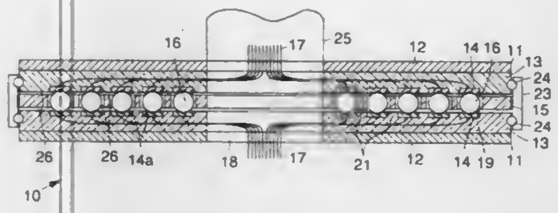
5,851,120
ROTARY CONDUIT/BALL CONNECTOR

Mohi Sobhani, Encino, Calif., assignor to Raytheon Company, El Segundo, Calif.

Filed Feb. 27, 1997, Ser. No. 806,363
Int. Cl.^{6} H01R *39/22*

U.S. Cl. 439—17 **7 Claims**

1. A rotary connector comprising:



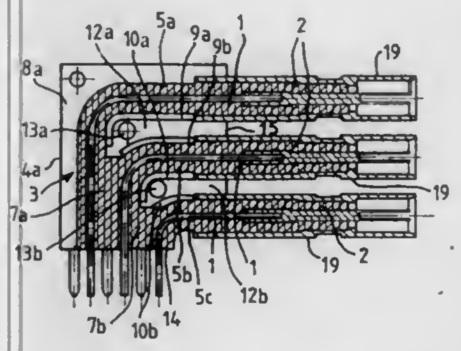
first and second printed wiring boards that each comprise a dielectric layer having a metal backing layer, and a plurality of concentric conductive conduits disposed adjacent one surface of the dielectric layer, and wherein the conduits of the respective printed wiring boards face each other;
a plurality of electrical conductors coupled to selected ones of the conduits;
a nonmetallic spacer disposed between the respective printed wiring boards having pluralities of openings therein that are aligned with the respective conduits of the printed wiring boards;
a plurality of conductive balls disposed in a selected plurality of openings of the nonmetallic spacer that contact opposed conduits of the respective printed wiring boards;
a sealing member for sealing the rotary connector; and
nonconductive lubricant disposed within the rotary connector that lubricates the conductive balls and conduits.

5,851,121
MINIATURE SHIELDED CONNECTOR WITH ELBOW CONTACT SHAFTS

Jacky Thenaisie, Le Mans, and Jacques-Henri Heulot, Cergy, both of France, assignors to Framatome Connectors International, Courbevoie, France

Filed Mar. 31, 1997, Ser. No. 829,109
Claims priority, application France, Apr. 1, 1996, 96/04057
Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—63 **10 Claims**



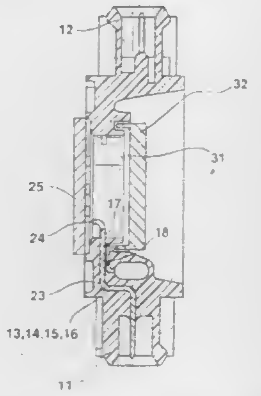
1. A connector having a series of metal contact shafts (**1**) spaced and bent into an elbow, embedded in an electrically insulating material (**2**), which is itself surrounded by a metal shielding (**3**), characterized in that the shielding (**3**) is made up of two superposed metal blocks (**4***a*, **4***b*) having elbow channels (**5***a*, **5***b*, **5***c*; **6***a*, **6***b*, **6***c*) on their contacting faces, these channels taking up the shafts (**1**) surrounded by the electrically insulating material (**2**), these channels being formed in such a way that the shielding (**3**) directly between the shafts (**1**) is interrupted in one rectilinear part of the elbow formed by the channels, this interrupting of shielding placing the insulating material (**2**) surrounding the contact shafts (**1**) in contact with the shielding (**3**) without creating any empty space in zones (**7***a*, **7***b*) where the shielding is interrupted.

5,851,122
MULTIPOLE, PLASTIC CONNECTOR HOUSING

Elmar Huber, Pfullingen; Peter-Rene Koch, Wannweil, and Wolfgang Woernle, Gomaringen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 19, 1996, Ser. No. 684,028
Claims priority, application Germany, Aug. 30, 1995, 2 95 13876.9
Int. Cl.^{6} H01R *13/66*

U.S. Cl. 439—620 **3 Claims**



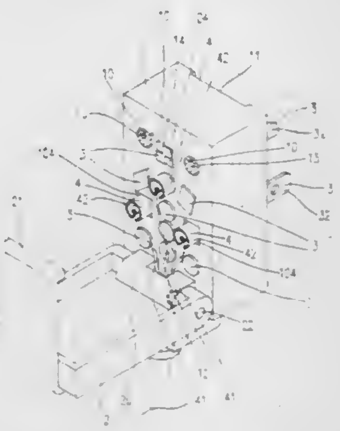
1. A plastic multipole connector housing made by an injection molding operation using an injection mold, the housing comprising:
a clip part:
a plurality of contact insertion parts; and
a plurality of capacitors, each of the plurality of capacitors being connected to a respective one of the plurality of contact insertion parts and being secured in the clip part;
wherein the clip part, the contact insertion parts and the capacitors are together arranged in the injection mold and are together embedded with plastic of the connector housing.

5,851,123
MULTIPLE SOCKET-COMPATIBLE PLUG

Chin Wen Chou, 4th Fl., No. 42, Alley 30, Lane 284, Wu Hsing Street, Taipei, Taiwan

Filed Dec. 30, 1996, Ser. No. 775,240
Int. Cl.^{6} H01R *29/00*

U.S. Cl. 439—172 **16 Claims**



1. A multiple socket compatible plug comprising:
a plug body with a plurality of holes;
plural plug pins respectively insertable into selected ones of said plurality of holes; and
a medium having at least two conducting tubes mounted into said respectively selected ones of said plurality of holes for urging selected ones of the plurality of plug pins beyond the respectively selected ones of said plurality of holes.

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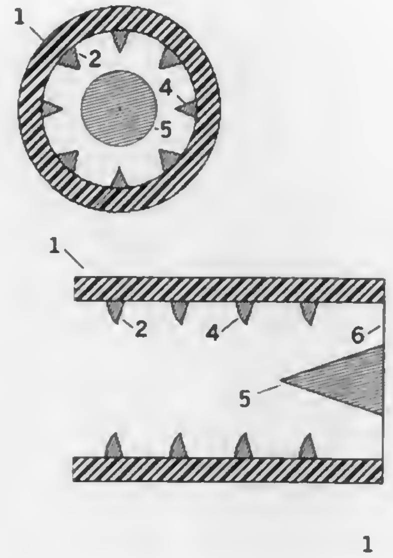
5,851,124
LOCKING WIRE CONNECTOR

Bruce Lynn Young, 944 S. Spruce, Casper, Wyo. 82601, and Katherine Marie Young, P.O. Drawer 41450, Tucson, Ariz. 85717-1450

Filed Sep. 11, 1996, Ser. No. 711,008
Int. Cl.^{6} H01R *4/24*

U.S. Cl. 439—427 **1 Claim**



1. An electrical connector for connecting cut un-stripped wires, comprising:

a plurality of plastic cylindrical outer housings, each of said housings having a plurality of symmetric rings of teeth on an inside surface thereof, said teeth of each said ring are spaced apart and curved inward into a same direction of wire insertion for providing smooth passage of the inserted wire;

a retaining wall disposed in each of said housings; and

an electrical terminal secured in said retaining wall, wherein the terminal comprises a tapered pin for piercing into the end of said wire, characterized in that the tapered pin longitudinally penetrates into the end of the cut un-stripped wire, forcing the end to swell and make firm contact with the inward curving teeth, which will resist slippage or removal of the wire, wherein the tapered pins are electrically connected to each other so as to electrically interconnect the wires.

5,851,125
MECHANISM FOR ARRANGING DIFFERENT I/O PORT CONNECTORS

Sung-Liu Hsu; Chun-Chu Wang, and Chang-Hua Yin, all of 930 W. Maude Ave., Sunnyvale, Calif. 94086

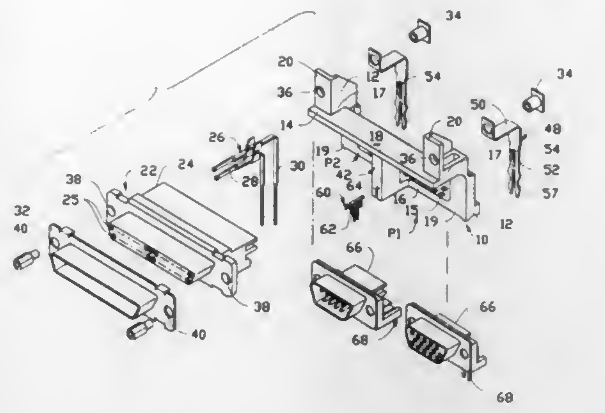
Continuation of Ser. No. 651,565, May 22, 1996. This application Apr. 6, 1998, Ser. No. 56,150
Int. Cl.^{6} H01R *13/60*

U.S. Cl. 439—541.5 **10 Claims**

1. A bracket for use with two-level connectors for mounting on a circuit board, comprising:

a spacer bar respectively integrally formed with a pair of spaced side stands each which form thereon an upper portion for securement with a first connector and a lower portion adjacent to the spacer bar, and said spacer bar including a plurality of through holes therein for alignment of contact tails of said first connector;

a space positioned below the upper portions of the side stands and between the lower portions of the side stands to receive at least a second connector therein without any securement with the bracket;



a partition bar integrally extending toward the space and spaced apart from either of the side stands to provide stability of the whole bracket on the circuit board.

5,851,126

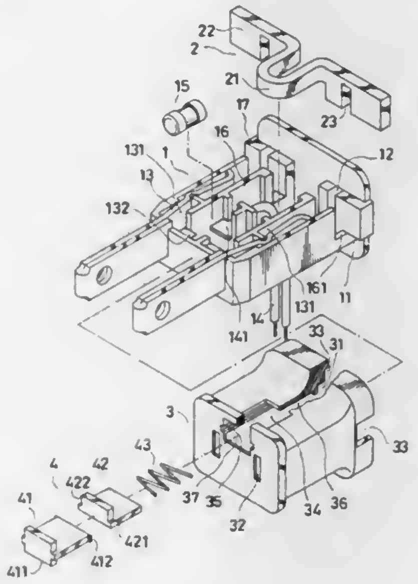
Patent Not Issued For This Number

5,851,127
CHRISTMAS LAMP PLUG

Shun-Feng Huang, No. 13, Lane 84, Nei Hu Road, Hsin-Chu City, Taiwan

Filed Feb. 4, 1997, Ser. No. 794,444
Int. Cl.^{6} H01R *13/68*

U.S. Cl. 439—622 **1 Claim**



1. A Christmas lamp plug comprising:

a body having a rear vertical wall, with two vertical slots formed in said rear vertical wall in parallel relationship, and two metal blades disposed in two parallel elongated spaced facing toward said rear vertical slots, each of said two metal blades having a projecting plate extending inwardly to contact one end of a fuse, said body having (a) two open divided spaces on two opposing sides thereof, (b) two lateral openings formed through opposing sides thereof and in respective open communication with said two open spaces, and (c) a projecting block facing a respective one of said two lateral openings in said rear vertical wall;

a housing having an inner hollow space for receiving said body therein, said housing having two slots formed in a front vertical wall thereof for said metal blades to extend therethrough, and an upper opening in a front portion of an upper wall of said housing for insertion of said fuse into said body, said housing having a front opening for a movable shield of a shield unit to move in and out, said housing having two opposing openings formed in a rear vertical peripheral wall for receiving said two projecting blocks of said body therein, said inner hollow space having two longitudinal side walls, each of said longitudinal side walls having a longitudinal guide groove formed therein, said housing having an upper space communicating with said inner hollow space and located in correspondence with said front opening;

a compressible rod having an intermediate U-shaped elastic portion disposed in said body, said compressible rod having two side press portions extending from said intermediate U-shaped elastic portion, each said side press portion having a vertical slot formed therein and open to an edge thereof, each said side press portion extending through a respective one of said lateral openings of said body and extending therefrom;

said shield unit consisting of said movable shield, an elastic shield and a spring in an upper space of said housing with two sides of said elastic shield disposed in said two longitudinal grooves of said housing, said movable shield having a front vertical wall and two opposing projections at a rear side and located longitudinally in front of said elastic shield for closing said upper opening of said housing, said elastic shield having a front vertical wall and two opposing projections at two bottom sides of said front vertical wall to contact said two opposing projections of said movable shield; and

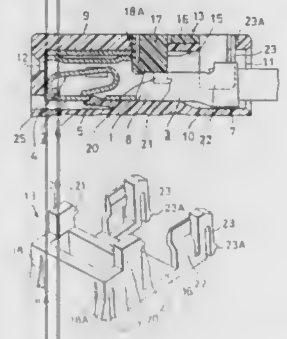
said elastic shield being displaced by a bias force of said spring and closing said upper opening of said housing responsive to said movable shield being removed from said front vertical wall through said front opening of said housing.

5,851,128
ELECTRICAL CONNECTOR

Hiroyuki Nakata, and Kazuhiko Hattori, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Jan. 19, 1996, Ser. No. 588,719
Claims priority, application Japan, Jan. 19, 1995, 7-026138
Int. Cl.^{6} H01R *13/514*

U.S. Cl. 439—752 **4 Claims**



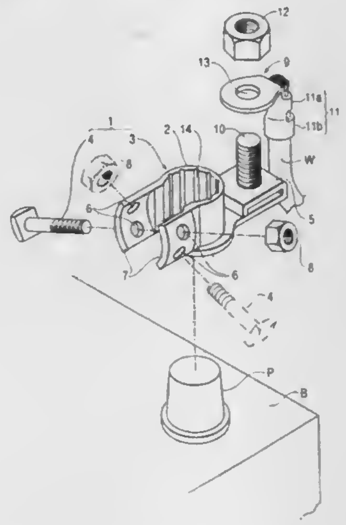
1. An electrical connector comprising a housing having a cavity defined by an interior wall and a transverse opening extending through a sidewall of the housing to communicate with the cavity, a terminal mounted within the cavity, said terminal including a front connector portion for making electrical contact with another connector and a rear wire connection portion having a certain length for connecting to an electrical wire, said connector portion having a width about the same as said cavity and said wire connection portion having a smaller width than the connector portion, and a one-piece retainer received in said transverse opening so as to be at least partially mounted within the cavity following the mounting of said terminal in said cavity, said retainer including at least one lock member for securing the retainer within the housing, opposed support portions defining a width dimension which is about the same as the width of said connector portion, said support portions being flexed during installation in said cavity to firmly press against opposing sides of the rear wire connection portion and the interior wall of the cavity for eliminating play of the terminal in said cavity in a transverse direction, said support portions having engagement faces which engage at least most of the length of the rear wire connection member, and a stop portion to prevent removal of said terminal from said cavity.

5,851,129
BATTERY TERMINAL

Hideki Matsunaga; Takao Hata, and Nori Inoue, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 21, 1997, Ser. No. 915,935
Claims priority, application Japan, Aug. 21, 1996, 8-220087
Int. Cl.^{6} H01R *4/42*

U.S. Cl. 439—764 **8 Claims**



1. A battery terminal comprising a clamp for substantially encircling a battery post, the clamp having protruding arms facing each other and adapted to be drawn together to tighten the clamp about the post, the clamp having an axis coincident in use with the axis of symmetry of said post, and further including a bridging screw between said arms, said screw being operable to tighten or loosen the clamp, wherein the bridging screw acts at an acute angle to a plane perpendicular in all directions to said axis, said clamp being provided with at least two alternative orientations for said screw relative to said arms, and the orientations being substantially symmetrical about said plane, whereby the screw can be oriented upwardly on either side of the clamp.

5,851,130
WATERCRAFT INTAKE DEBRIS CLEANER

Ralph Wainwright, 1147 Jacksonville Rd., Bordentown, N.J. 08505

Filed Dec. 17, 1997, Ser. No. 992,138
Int. Cl.^{6} B63H *11/01*

U.S. Cl. 440—46 **3 Claims**

1. A watercraft intake debris cleaner comprising, in combination:

a watercraft having a vertically oriented outlet opening formed in a rear face thereof with a water propulsion mechanism mounted therein, a horizontally oriented inlet opening with a rectangular configuration formed in a bottom face of the watercraft, and a channel interconnecting the inlet and the outlet for allowing fluidic communication therebetween;

a stationary plate mounted in the inlet of the watercraft in coplanar relationship with the bottom face thereof, the station-

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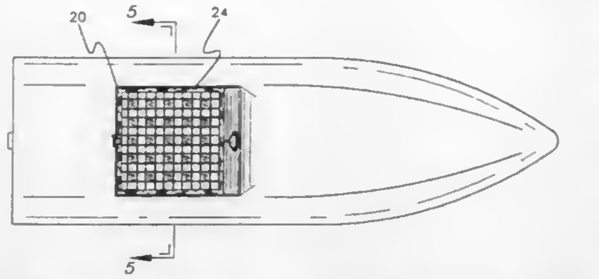
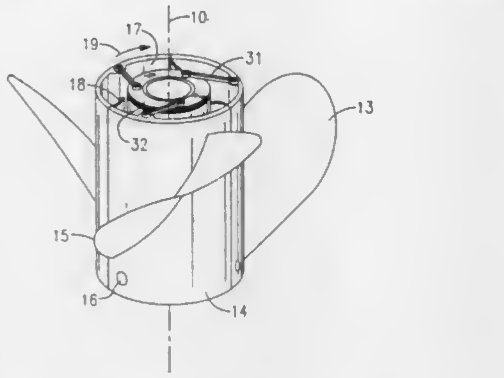


ary plate having a matrix of a square cut outs formed therein and a pair of inverted L-shaped guides formed along side edges of the stationary plate and extended upwardly therefrom into the channel of the watercraft, wherein the guides reside in parallel relationship with a longitudinal axis of the watercraft;
a reciprocating plate having a shape and size similar to that of the stationary plate with a matrix of square cut outs formed therein, the reciprocating plate being slidably situated between the guides of the stationary plate in abutment with the reciprocating plate, the reciprocating plate having a tab mounted on a top frontal edge thereof with an aperture formed therein along an axis perpendicular to the longitudinal axis of the watercraft; and
a drive assembly including a drive arm having a first end pivotally coupled to the aperture of the tab of the reciprocating plate and extending through an enlarged opening formed in the channel of the watercraft such that a second end thereof extends within an interior space of the watercraft with an elastomeric bushing formed within the enlarged opening about the drive arm, the drive assembly further including a motor having a radial member mounted to a rotor thereof and further pivotally connected to the second end of the drive arm for moving the reciprocating plate frontward and backward in a reciprocating manner upon the actuation thereof.

5,851,131
SELF-ADJUSTING VARIABLE PITCH PROPELLER

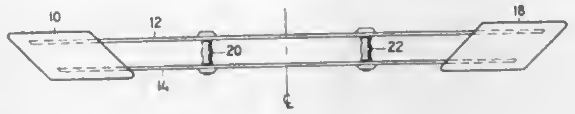
Robert M. Bergeron, Alton, N.H., assignor to Land and Sea, Inc., North Salem, N.H.
Filed Jun. 16, 1997, Ser. No. 876,663
Int. Cl.^{6} B63H *3/00*
U.S. Cl. 440—50 **16 Claims**



1. A self-adjusting variable pitch propeller having:
a support means defining a propeller rotation axis and a blade assembly supported by said support means for rotation thereby about said axis, said assembly comprising:
  a) a blade;
  b) a pivotal means pivotally securing said blade to said support means; and
  c) a control means connecting said blade to said support means, said control means being spaced from said pivotal means for adjustably controlling the pitch of said blade at least in part as a function of opposed hydrodynamic and centrifugal forces acting on the blade.

5,851,132
KAYAK PADDLE WITH ROTATING HANDLES

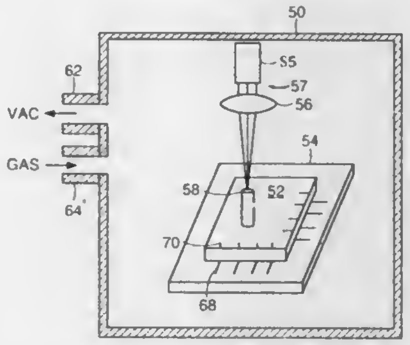
Lawrence E. Merrill, 26 Columbla St., Bangor, Me. 04401
Filed Dec. 13, 1997, Ser. No. 990,204
Int. Cl.^{6} B63H *16/04*
U.S. Cl. 440—101 **2 Claims**



1. An integrally constructed kayak paddle comprising:
(a) a first paddle blade shaped with an acute angle or small radius at the lower interior corner thereof for assuring that water will collect at the lower interior corner and fall off from the corner instead of running down the shaft;
(b) a second paddle blade shaped with an acute angle or small radius at the lower interior corner thereof for assuring that water will collect at the lower interior corner and fall off from the corner instead of running down the shaft, oriented in the same plane;
(c) an upper shaft connecting the first paddle blade and the second paddle blade;
(d) a lower shaft connecting the first paddle blade and the second paddle blade;
(e) a handle to be held in the left hand of the paddler which runs between and is connected to the upper shaft and lower shaft perpendicular to the axes of the shafts and resides on an axle which allows it to rotate in place as the paddle is used;
(f) a handle to be held in the right hand of the paddler which runs between and is connected to the upper shaft and lower shaft perpendicular to the axes of the shafts and resides on an axle which allows it to rotate in place as the paddle is used.

5,851,133
FED SPACER FIBERS GROWN BY LASER DRIVE CVD

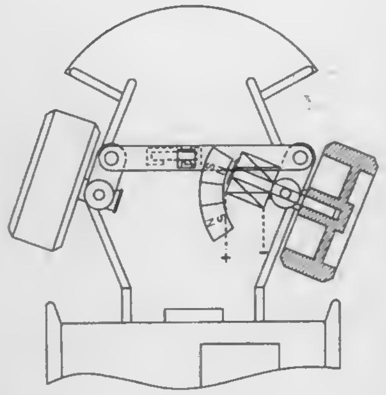
James J. Hofmann, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.
Filed Dec. 24, 1996, Ser. No. 773,022
Int. Cl.^{6} H01J *31/00*
U.S. Cl. 445—24 **8 Claims**



1. A process comprising the steps of:
introducing a number of different gases into an evacuated chamber;
directing energy with an energy source to a spot on a substrate to cause the gases to form a solid;
moving the energy source relative to the substrate to form a spacer extending away from the substrate; and
assembling together the substrate with the spacer and a parallel plate in a vacuum sealed package such that the spacer is perpendicular to the substrate and the parallel plate.

5,851,134
DIRECTIONAL CONTROL DEVICE FOR A MODEL VEHICLE

Shun Pui Chiu, Kowloon, Hong Kong, assignor to Ngai Keung Metal & Plastic Mfy Ltd., Hong Kong, and Europlay Holding GmbH, Germany
Filed Jan. 22, 1997, Ser. No. 787,219
Int. Cl.^{6} A63H *17/36;33/26*
U.S. Cl. 446—468 **9 Claims**

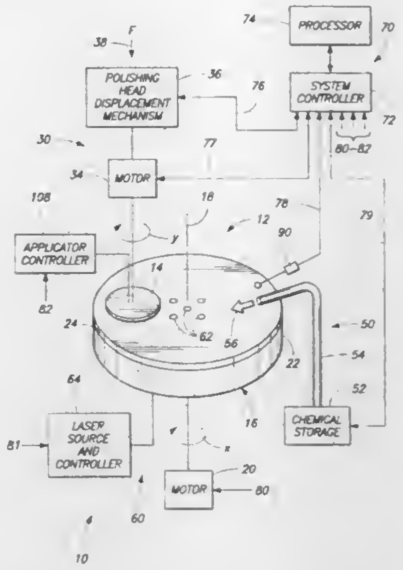


1. A steering control mechanism for a model vehicle having first and second wheels mounted on either side of a vehicle chassis, each said wheel being mounted to said chassis through a wheel shaft, and each said wheel shaft being rotatably mounted on said chassis through a shaft support whereby each said wheel shaft may rotate about an axis perpendicular to said shaft, wherein an electromagnetic coil is wound around at least one said wheel shaft on the side of said shaft support that is opposite said wheel, and wherein permanent magnet means are provided on said chassis adjacent said one wheel shaft and arranged such that opposite poles of said permanent magnet means face said electromagnetic coil and are disposed on either side of said wheel shaft when said wheel shaft is in a neutral position corresponding to straight line movement of said vehicle, and control means for selectively applying current to energise said coil.

5,851,135
SYSTEM FOR REAL-TIME CONTROL OF SEMICONDUCTOR WAFER POLISHING

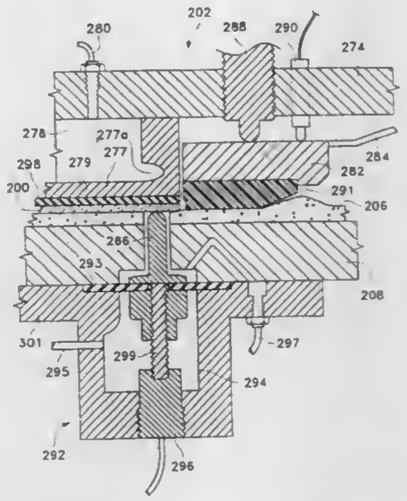
Gurtej S. Sandhu, and Trung Tri Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 547,529, Oct. 24, 1995, Pat. No. 5,700,180, which is a continuation-in-part of Ser. No. 112,759, Aug. 25, 1993, Pat. No. 5,486,129. This application Aug. 7, 1997, Ser. No. 907,389
Int. Cl.^{6} B24B *49/02;49/12;49/14*
U.S. Cl. 451—5 **19 Claims**

1. A system for polishing a semiconductor wafer, the system comprising:
a wafer polishing assembly for polishing a face of a semiconductor wafer at a polishing rate and a polishing uniformity, the wafer polishing assembly including a platen subassembly defining a polishing area, a polishing head shaft, and a polishing head supported by the polishing head shaft for rotation relative to the polishing head shaft, the polishing head being configured to support a semiconductor wafer, and to hold a face of the semiconductor wafer in contact with the platen subassembly, the wafer polishing assembly further including a polishing head displacement mechanism supporting the polishing head shaft relative to the platen subassembly and configured to translate the polishing head shaft relative to the platen subassembly along a polishing path which is variable between a linear polishing path and a non-linear polishing path, to cause the polishing head to polish the wafer face; and
a controller configured to adjust the polishing path during polishing of the wafer.



5,851,136
APPARATUS FOR CHEMICAL MECHANICAL POLISHING

Lawrence L. Lee, Mountain View, Calif., assignor to Obsidian, Inc., Fremont, Calif.
Division of Ser. No. 443,956, May 18, 1995. This application Jul. 25, 1997, Ser. No. 900,812
Int. Cl.^{6} B24B *49/04*
U.S. Cl. 451—9 **15 Claims**



1. An apparatus for polishing a substrate comprising:
a table having an upper surface;
a medium fixedly attached to said upper surface;
a platen having a face adapted to contact a back surface of the substrate, said face of said platen oriented substantially parallel to said upper surface of said table;
a ring peripherally oriented about an outer edge of said platen, said ring having a lower surface adapted to contact said medium; and
a sensor mounted to said table, said sensor having a protruding member which protrudes above said upper surface of said table, said sensor dimensioned and configured to measure a distance, in a direction perpendicular to said upper surface of said table, between a front side of the substrate and said lower surface of said ring.

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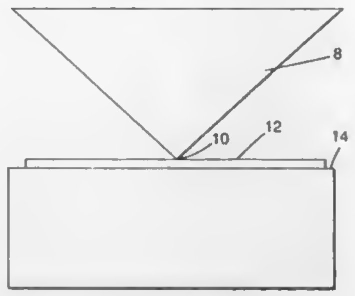
5,851,137
COATER DIE EDGE FINISHING METHOD

Aparna V. Bhave, Woodbury; William B. Kolb, St. Paul; Thomas M. Milbourn, Mahtomedi; Lawrence B. Wallace, Newport, and Robert A. Yapel, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 462,807, Jun. 5, 1995. This application Jun. 9, 1997, Ser. No. 871,460

Int. Cl.⁶ B24B *1/00*

U.S. Cl. 451—28 **13 Claims**



1. A method of microfinishing the edge of a coating die used for coating a liquid on a substrate comprising, after the die is machined, the step of polishing only the edge to finish the edge of the die to a smoother finish than the rest of the die thereby to reduce the incidence of undesirable streaking defects in the coating wherein the polishing step comprises:

lapping the die edge by traversing the die edge along its length with lapping film by creating relative motion between the die edge and the lapping film while polishing to a degree sufficient to minimize streak formation without overpolishing and rounding the die edge;

during lapping, wetting the edge with oil; and

varying the angle of attack of the die edge to the lapping film to allow a complete polish of the edge.

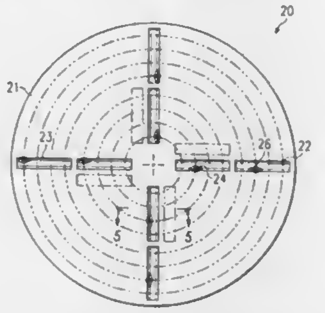
5,851,138
POLISHING PAD CONDITIONING SYSTEM AND METHOD

Eugene O. Hempel, Jr., Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1997, Ser. No. 906,584

Int. Cl.⁶ B24B *53/00*

U.S. Cl. 451—56 **17 Claims**



1. A system for conditioning a polishing pad in a chemical-mechanical polishing process, comprising:

a conditioning device for conditioning the polishing pad, the conditioning device having a conditioning side facing the polishing pad; and

a plurality of removable inserts, each insert having a tip comprising a conditioning material, the plurality of inserts inserted into the conditioning device on the conditioning side, the plurality of insert tips operable to contact the polishing pad during the chemical-mechanical polishing process to condition the polishing pad, thereby enhancing the uniformity of a wafer polished by the polishing pad wherein, the conditioning material comprises titanium nitride.

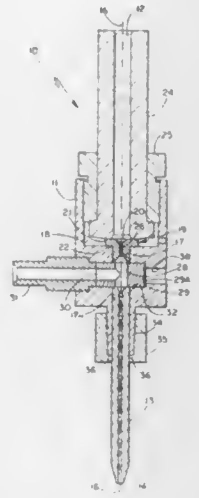
5,851,139
CUTTING HEAD FOR A WATER JET CUTTING ASSEMBLY

Jian Xu, Plymouth, Minn., assignor to Jet Edge Division of TC/American Monorail, Inc., Minneapolis, Minn.

Filed Feb. 4, 1997, Ser. No. 794,815

Int. Cl.⁶ B24C *5/04;* **B05B** *7/04*

U.S. Cl. 451—102 **5 Claims**



1. A cutting head for a water jet cutting assembly comprising, in combination:

(a) an elongated body having a central axis, a main bore coaxial with said central axis, a counterbore having a flat annular surface at the base thereof, an inlet adjacent said counterbore along with an outlet disposed in opposed relationship to said inlet, and a mixing chamber interposed between said inlet and outlet;

(b) a jeweled orifice assembly including a mounting shoulder mounted upon said flat annular surface, said jeweled orifice assembly comprising a cylindrical body with a flanged head and a jewel receiving cavity within said flanged head and positioned coaxially with said main bore for mounting a jeweled orifice adjacent said inlet, a flow channel formed within said jeweled orifice assembly and extending from said assembly toward said outlet and arranged coaxially with said main bore;

(c) the flanged head of said jeweled orifice assembly having an undersurface in planar mating relationship with said flat annular surface;

(d) an inlet adaptor positioned coaxially within said counterbore and having a flanged forward head disposed in opposed relationship to said jeweled orifice assembly and with the said flanged forward head having a planar surface in mating contact with the outer surface of the flanged head of said jeweled orifice assembly;

(e) the bore within said body adjacent said outlet having a nozzle member retained therewithin, the nozzle member having a bore formed concentrically therethrough for receiving a flow of water from the bore of said jeweled orifice assembly, and means for retaining said nozzle member coaxially within said main bore, said retaining means including mating conically configured threaded surfaces.

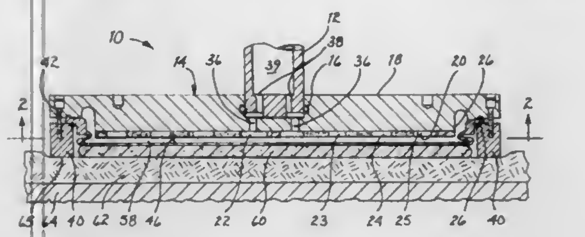
5,851,140
SEMICONDUCTOR WAFER POLISHING APPARATUS WITH A FLEXIBLE CARRIER PLATE

Chris E. Barns, Portland, Oreg.; Malek Charif, Tempe, Ariz.; Kenneth D. Lefton, Beaverton, Oreg., and Fred E. Mitchel, Phoenix, Ariz., assignors to Integrated Process Equipment Corp., Phoenix, Ariz.

Filed Feb. 13, 1997, Ser. No. 800,941

Int. Cl.⁶ B24B *5/00*

U.S. Cl. 451—288 **19 Claims**



1. A carrier head for an apparatus which polishes a surface of a semiconductor wafer, wherein the carrier head comprises:

a rigid plate having a major surface;

a wafer carrier membrane of soft, flexible material with a wafer contact section for contacting the semiconductor wafer, the wafer carrier membrane connected to the rigid plate and extending across at least a portion of the major surface thereby defining a cavity therebetween, said wafer carrier membrane having a plurality of apertures through the wafer contact section;

a retaining ring secured to the rigid plate around the wafer contact section of the wafer carrier membrane; and

a fluid conduit by which a source of a vacuum and a source of pressurized fluid are alternately connected to the cavity.

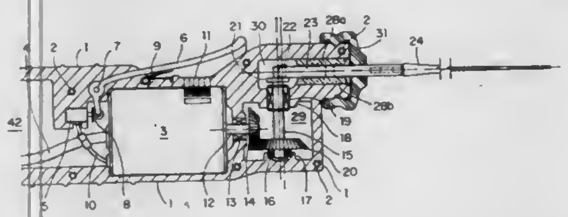
5,851,141
ELONGATED ORBITAL POWER SANDER

Ronald W. Elmore, 1442 Wildwood Lakes Blvd. # C 103, Naples, Fla. 34104

Filed Dec. 9, 1996, Ser. No. 762,525

Int. Cl.⁶ B24B *23/00;27/08*

U.S. Cl. 451—357 **14 Claims**



1. An elongated power sander having a hand held housing extending in a longitudinal direction and having a top and a bottom including an electric motor placed therein, a driven shaft mounted within said housing transverse to the longitudinal direction of the housing, said driven shaft having two ends means for driving said shaft at one of its ends by said motor in the bottom of said housing, a driven support element placed in the top of said housing and means for driving said support element in an orbital manner by the other of its ends of said driven shaft, said support element has an end that extends to the outside of said housing and means for separably attaching a sanding blade to said support element at said end that is outside of said housing, said sanding blade extends in the same linear direction as said support element.

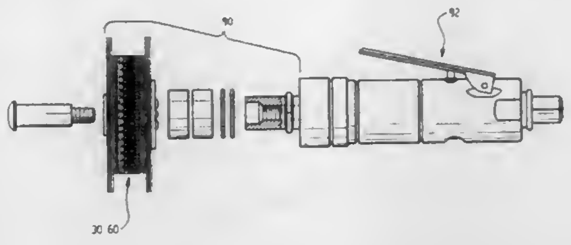
5,851,142
COMBINED GRINDING AND POLISHING TOOL

David W. Bullock, Medina, Ohio, assignor to Unisand Incorporated, Medina, Ohio

Filed Mar. 26, 1997, Ser. No. 824,392

Int. Cl.⁶ B24D *13/02*

U.S. Cl. 451—508 **20 Claims**



1. A surface finishing tool, comprising:

a first substantially planar layer of non-woven material having a first surface and a second surface;

a second substantially planer layer of abrasive material positioned adjacent the first surface;

a third substantially planar layer of abrasive material positioned adjacent the second surface; and

a binder securing central portions of the first, second, and third substantially planar layers together thereby leaving radial end portions of the first, second, and third substantially planar layers free to conform to the contours of a workpiece to be finished.

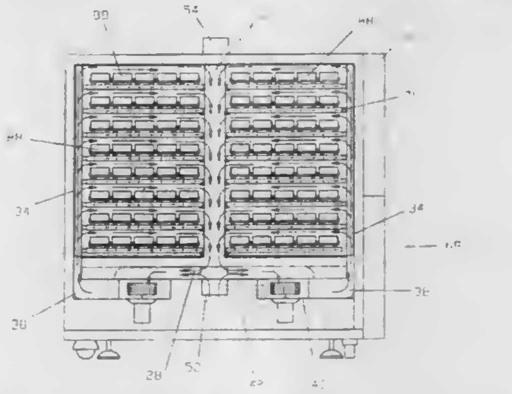
5,851,143
DISK DRIVE TEST CHAMBER

Lotfizadeh S. Hamid, Fremont, Calif., assignor to Thermal Industries, San Jose, Calif.

Filed May 10, 1996, Ser. No. 644,534

Int. Cl.⁶ B08B *15/02*

U.S. Cl. 454—57 **8 Claims**



1. A device for testing disk drives comprising:

a test bay having a right side, a left side, a ceiling and a floor, the test bay being adapted for housing a plurality of shelves for holding a plurality of disk drives in the test bay, and the test bay being maintainable in a predetermined temperature range;

at least one heater located below the test bay for heating the test bay;

a left air duct and a right air duct positioned on the right and left sides of the test bay for supplying air in an upward direction, the left and right air ducts having air duct covers;

at least one pump for pumping air up the left and right air ducts;

a central air duct located in the center of the test, the central air duct extending from the floor of the test bay to the ceiling of the test bay and separating the test bay into a right half and a left half, the central air duct being for returning the supply of the air in a downward direction toward the pump, the central air duct having at least one central air duct cover;

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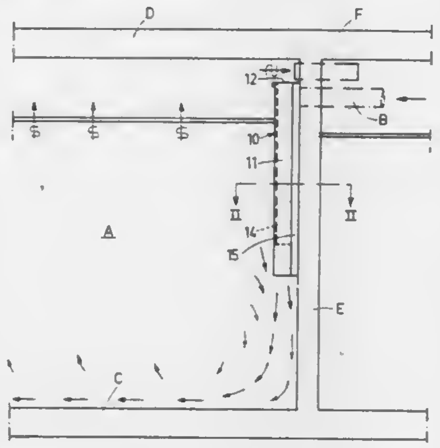
the left air duct, the right air duct and the central air duct each having a hollow interior with a plurality of turning vanes positioned in the hollow interior for balancing the air flow to various regions of the test bay;
a front lower panel positioned below the test bay and including at least one air intake vent;
a motorized damper positioned below the test bay for drawing in air through the air intake vent;
an exhaust fan positioned on the test bay for expelling air from inside the test bay; and
perforations in the air duct covers of the left and right air ducts and equivalent perforations in the central air duct cover for balancing air flow to various regions inside the test bay.

5,851,144
METHOD AND DEVICE FOR SUPPLYING AIR TO A VENTILATED SPACE

Bernt Nyström, Stockholm, Sweden, assignor to Air Innovation Sweden AB, Stockholm, Sweden
Continuation of Ser. No. 532,609, Oct. 12, 1995, abandoned. This application May 19, 1997, Ser. No. 858,827
Claims priority, application Sweden, Apr. 14, 1993, 9301225
Int. Cl.^{6} F24F *13/06*
U.S. Cl. 454—306 **9 Claims**

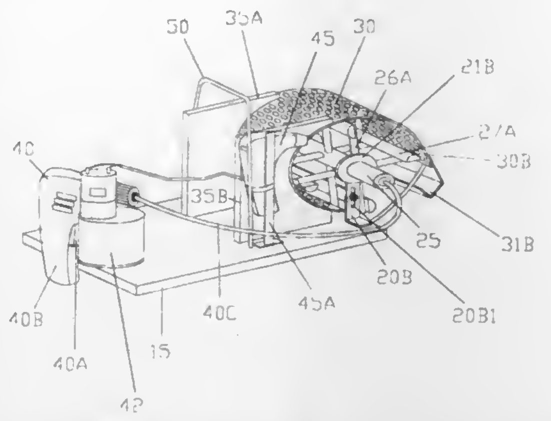


1. A method for introducing supply air into a ventilated space, in which the supply air is conveyed from a source of supply air by way of a terminal device opening into the ventilated space, comprising the step of discharging substantially all the supply air from the supply air terminal device downwardly along and against an upstanding surface which defines the ventilated space under the Coanda effect.

5,851,145
HAND PORTABLE GRAIN THRESHING DEVICE

Lester J. Lohse, 1006 2nd Ave. E., Williston, N. Dak. 58801
Filed Apr. 21, 1997, Ser. No. 844,560
Int. Cl.^{6} A01F *05/00*
U.S. Cl. 460—61 **19 Claims**

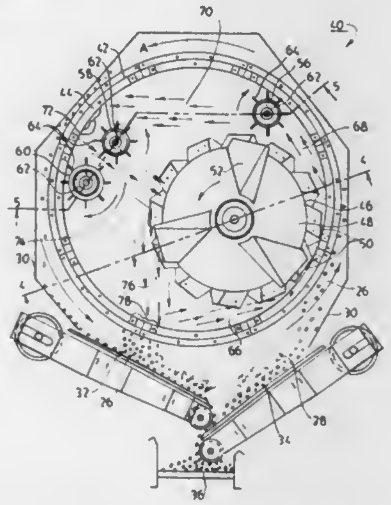
1. A hand portable grain threshing device comprising:
a base having a front edge;
a reel including a plurality of radially-extending arms and a plurality of elongate paddle members and being rotatably mounted upon said base for severing stems of crop plants and for assisting in the collecting of grain heads;
a means for supporting said reel upon said base;
a mesh screen being archingly disposed over said reel and further having a first edge and a second edge;
an actuator connected to said reel for rotating said reel at selected speeds;
a means for collecting grain heads being attached to said screen; and



a blower unit disposed above said base, for blowing chaff out of said hand portable grain threshing device and for generally assisting collecting of grain heads.

5,851,146
SYSTEM FOR THRESHING PODDED PRODUCE

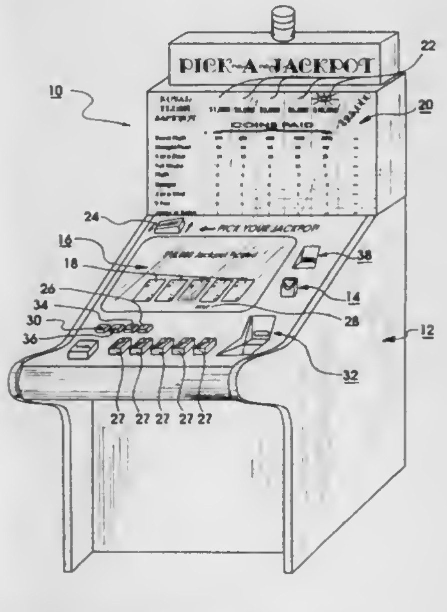
Cristopher M. Schloesser, Watertown, Wis., assignor to Byron Enterprises, Inc., Byron, N.Y.
Filed Jun. 4, 1997, Ser. No. 869,017
Int. Cl.^{6} A01F *11/00*
U.S. Cl. 460—142 **29 Claims**



1. A system for threshing podded produce to open the pods, remove the seeds from the pods, and separate the seeds from the empty pods and vines, comprising:
a) a cylindrical screen having a generally horizontal axis and being rotatable about said axis, said screen being receivable of said podded produce;
b) an elongate main beater disposed for rotation within said screen and having an axis disposed parallel with said screen axis and below a horizontal plane including said screen axis, said main beater having a generally cylindrical body and a plurality of individual paddles extending therefrom being discontinuous longitudinally of said beater body, the tips of said individual paddles being disposed in close proximity to said screen, said main beater being rotatable in the same direction as said screen to propel the tips of said paddles at a first linear tip speed to collect and thrust upwards along the inner surface of said screen said vined produce entering said screen;
c) a first satellite beater disposed for rotation within said screen generally above said main beater,, said first satellite beater having a generally cylindrical body and a plurality of longitudinal blades extending radially therefrom, the tips of said blades being disposed in close proximity to said screen, said first satellite beater being rotatable in a direction opposite to the rotation direction of said screen and said main beater to propel the tips of said blades at a second linear speed substantially equal to said first linear tip speed, said first satellite beater being cooperable with said main beater to discharge a stream of said vined produce against a first region of said rotating screen;
d) a second satellite beater disposed for rotation within said screen, said second satellite beater having a generally cylindrical body and a plurality of longitudinal blades extending radially therefrom, the tips of said blades being spaced apart from said screen, said second satellite beater being rotatable in the same direction as said screen to propel the tips of said blades at a third linear speed; and
e) a third satellite beater disposed for rotation within said screen, said third satellite beater having a generally cylindrical body and a plurality of longitudinal blades extending radially therefrom, the tips of said blades being disposed in close proximity to said screen, said third satellite beater being rotatable in a direction opposite to the rotation direction of said screen and said second satellite beater to propel the tips of said blades at a fourth linear speed substantially equal to said third linear tip speed, said third satellite beater being cooperable with said second satellite beater to collect vined produce from said first sieving region of said screen and to discharge said vined produce against said main beater and thence against a second region of said rotating screen.

5,851,147
PLAYER-SELECTED VARIABLE JACKPOT GAMING METHOD AND DEVICE

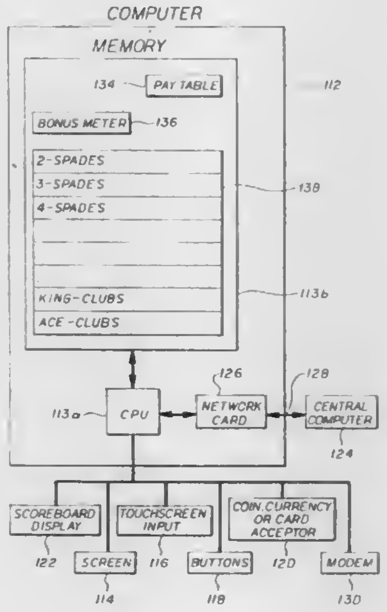
Bob Stupak, 1213 S. Las Vegas Blvd., Las Vegas, Nev. 89104, and David Sklansky, 618 E. Carson St., Las Vegas, Nev. 89101
Filed Sep. 17, 1996, Ser. No. 717,383
Int. Cl.^{6} A63F *1/00*
U.S. Cl. 463—13 **9 Claims**



1. A gaming device comprising:
(a) means for accepting a wager from a player;
(b) means for displaying a multiplicity of alternative jackpots;
(c) means responsive to said player's input for selecting from among said multiplicity of said jackpots;
(d) means for indicating the jackpot selected by the player;
(e) means for storing a pay-out schedule of one or more winning outcomes associated with the selected jackpot in memory storage means;
(f) means for randomly selecting an outcome for the game;
(g) means for comparing the selected outcome with the payout schedule of winning outcomes to determine if the selected outcome is a winning outcome;
(h) means for awarding a prize for obtaining a winning outcome;
(i) means for determining said prize to be awarded including at least one algorithm which iteratively tests said resulting pay-out schedule against optimum characteristics stored in said memory storage means to choose the most optimal pay-out schedule.

5,851,148
GAME WITH BONUS DISPLAY

Chris T. Brune, and Robert A. Luciano, Jr., both of Reno, Nev., assignors to International Game Technology, Reno, Nev.
Filed Sep. 30, 1996, Ser. No. 723,136
Int. Cl.^{6} A63F *9/00*
U.S. Cl. 463—25 **28 Claims**



1. Apparatus for playing series of games, each series having a plurality of games, comprising:
a computer configured to display indications of simulated gaming pieces;
an input device for receiving gaming input from a player and providing said input to said computer;
said computer configured to control a display to provide an indication, to said player, of progress towards a multi-game goal, wherein, in at least one of said series, reaching said multi-game goal requires playing at least two games in said at least one of said series,
wherein said computer calculates, during or after at least some of said series of games, a credit total potentially available to said player, and wherein a multi-game prize based on said credits is awarded said player when said multi-game goal is reached;
said credit total and said indication of progress being reset to beginning credit and initial progress values, respectively, when said prize is awarded to said player.

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5,851,149
DISTRIBUTED GAMING SYSTEM

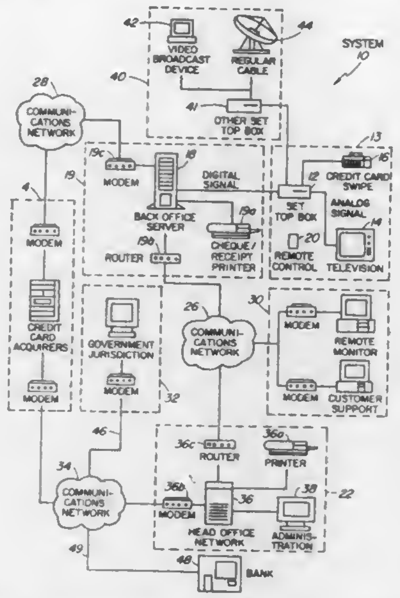
John Xidos, Sidney River; Ross MacDougall, Halifax; David Carrigan, Bedford; Gary Hammond, Lower Sackville; Pamela Little, Eastern Passage, and Bruce Reid, Bedford, all of Canada, assignors to Tech Link International Entertainment Ltd., Sidney River, Canada

Filed Aug. 4, 1995, Ser. No. 511,877

Claims priority, application Canada, May 25, 1995, 2150215

Int. Cl.^{6} A63F *9/24*

U.S. Cl. 463—42 **95 Claims**



1. A gaming system enabling users to participate in gaming at a plurality of remote gaming sites comprising:

a central network control center (NCC) operatively connected to a plurality of gaming locations through a wide area network (WAN), each gaming location including a back office server, the back office server operatively connected through a local area network (LAN) with a plurality of video gaming equipment in remote gaming sites, the video gaming equipment including a set-top box operatively connected to a payment device, video display means, user interface means and the back office server, the video gaming equipment enabling video gaming at each remote gaming site, wherein the back-office server includes means for receiving, securing and storing gaming transaction data during video gaming, the central network control center including means for playing a jackpot.

5,851,150
FLEXIBLE COUPLING WITH RECTANGULAR FLEX FRAME AND UNIFORM STIFFNESS

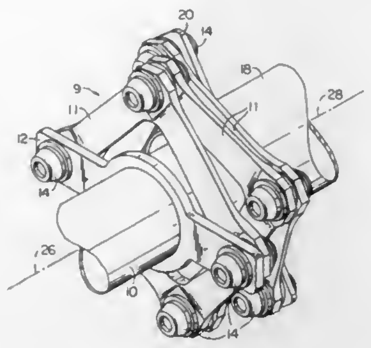
Robert J. Mayerjak, Torrington, Conn., assignor to Kamatics Corporation, Bloomfield, Conn.

Filed Mar. 12, 1993, Ser. No. 30,806

Int. Cl.^{6} F16D *3/62*

U.S. Cl. 464—69 **20 Claims**

1. A flexible coupling for connecting driving and driven rotary members the rotational axes of which may be slightly misaligned relative to one another, said coupling comprising a first connecting means for connecting said coupling to said driving member, a second connecting means for connecting said coupling to said driven member, and at least one rectangular flex frame connected between said first connecting means and said second connecting means, said at least one flex frame having four legs consisting of two short legs generally identical and parallel to each other and two long legs longer than said short legs which long legs are generally identical and parallel to each other and generally perpendicular to said short legs, said legs of said at least one flex frame having cross sections of such dimensions that the stiffness of said coupling with respect to a bending moment applied between said first connecting means and said second connecting means in a plane containing said rotational axes of said driving and driven members is substantially uniform for all angles of said plane about said rotational axis of said driving member.



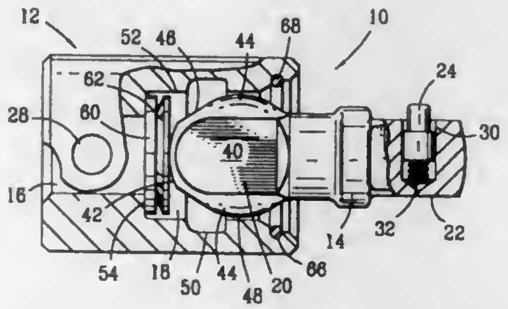
5,851,151
PINLESS IMPACT UNIVERSAL JOINT

Ronald W. Reynolds, Carrollton, Tex., assignor to Stanley Mechanics Tools, Carollton, Tex.

Continuation of Ser. No. 409,314, Mar. 23, 1995, abandoned. This application Mar. 21, 1997, Ser. No. 822,914

Int. Cl.^{6} F16D *3/00*

U.S. Cl. 464—106 **23 Claims**



1. A universal joint for use with an impact wrench to co-rotationally couple a driver to a fastener member for transferring impact-type rotational forces therebetween, the universal joint comprising:

a driving member having first and second ends, and having a driver receiving member disposed at said first end for engaging a drive piece of the driver, and further having a ball member receiving cavity having a base disposed at said second end;

a driven member having first and a second ends, and having a ball member disposed at said first end;

said ball member having a head and said ball member disposed in said ball receiving cavity and co-rotationally coupled with said ball receiving cavity for transferring rotational forces therebetween;

a polymer member having a first portion with a wear resistant surface disposed adjacent to said head of said ball member, and a second resilient portion disposed between said first portion and said base of said ball receiving cavity wherein said polymer member exerts a preload force against said head of said ball member in response to being compressed between said head of said ball member and said base of said cavity; and

an engagement device disposed on said second end of said driven member for engaging a fastening member.

5,851,152
DRIVE SHAFT WITH REINFORCED PLASTIC TUBE AND A JOINT-CONNECTING BODY CONNECTED NONROTATABLY ENDWISE

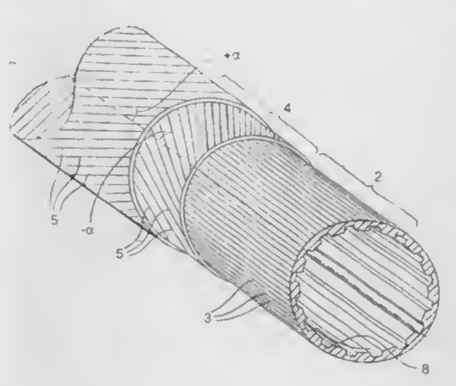
Karl-Heinz Ilzhöfer, Kirchheim; Bertold Ediger, Backnang; Hartmut Albers, Stuttgart; Dittmar Wieland, Oppenweiler, and Dieter Kandert, Wiernsheim, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Apr. 1, 1997, Ser. No. 829,957

Claims priority, application Germany, Apr. 6, 1996, 196 13 857.4

Int. Cl.^{6} F16C *3/00*

U.S. Cl. 464—181 **20 Claims**



1. Motor vehicle drive shaft comprising:

an inner tube layer formed with axially aligned fibers, radial inner surfaces of said inner tube layer including axially extending spline structure,

a first double layer surrounding the inner tube layer and formed of respective symmetrically oppositely inclined fibers,

thermosetting plastic material embedding the inner tube layer and first double layer,

and a splined pin part inserted into and axially fixed to the inner tube layer.

5,851,153
METHOD FOR STEEL PIN MANUFACTURE

Don T. Van Allman, Palatine, Ill.; James H. Syvarth, Lexington, Ky.; William M. Heflin, Paris, and Ronnie L. Mc Connell, Mount Olivet, both of Ky., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 20, 1994, Ser. No. 262,475

Int. Cl.^{6} B21G *3/16*

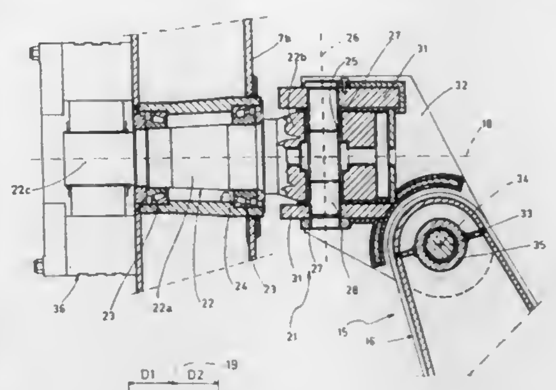
U.S. Cl. 470—40 **22 Claims**

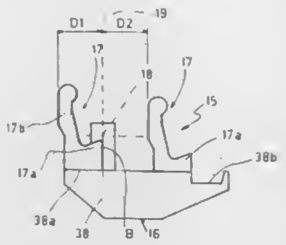
1. A method of manufacturing a steel pin, comprising the steps of:

forming a steel pin from a length of steel wire such that said steel pin has a substantially cylindrical shank;

forming a substantially sharp point upon one end of said substantially cylindrical shank such that said substantially sharp end of said steel pin has surface imperfections; and

reshaping said substantially sharp point end of said steel pin so that said surface imperfections of said substantially sharp point end of said steel pin are eliminated and a substantially sharp point end of said steel pin, without said surface imperfections, is achieved.





5,851,154
PERFECTED AMUSEMENT RIDE

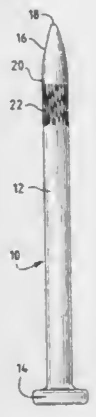
Alfeo Moser, Via Oberdan, 23, and Claudio Soriani, Via Oberdan, 21, both of 45037 Melara, Italy

Filed Nov. 24, 1995, Ser. No. 562,447

Claims priority, application Italy, Nov. 29, 1994, B094A0529

Int. Cl.^{6} A63G *1/24*

U.S. Cl. 472—44 **16 Claims**



1. An amusement ride, comprising:

two upwardly extending and substantially parallel vertical uprights;

two arms fitted to respective said uprights;

drives for rotating said arms about a first horizontal axis;

a passenger car axially attached to free ends of said arms and rotatable about a second axis extending between said arms in the axis of attachment of said car to said arms;

wherein said car comprises:

- a supporting structure; and
- a front and a rear row of seats facing crosswise to said second axis, wherein each said row comprises a seat portion having a backrest with a headrest; and
- wherein the radial distance between said second axis and the headrests of the seats of said rear row is less than the radial distance between said second axis and the headrests of the seats of said front row.

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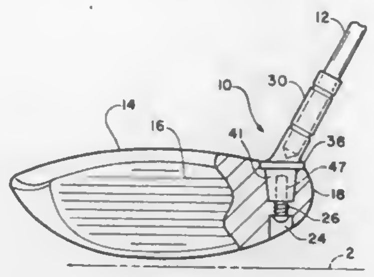
5,851,155
HOSEL CONSTRUCTION AND METHOD OF MAKING THE SAME

Donald C. Wood, and David W. Means, both of Carlsbad, Calif., assignors to Zevo Golf Co., Inc., Temecula, Calif.

Filed Sep. 4, 1997, Ser. No. 923,546
Int. Cl.^{6} A63B *53/02*
U.S. Cl. 473—246 **9 Claims**



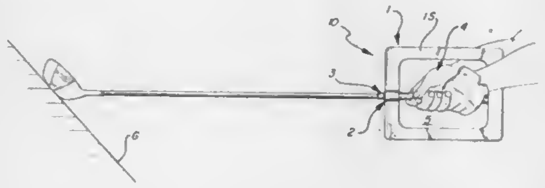
1. A hosel construction for connecting a shaft to a club head having a generally upwardly directed opening and a club face, comprising:

a plug member adapted to be received in the opening;
a neck member extending generally angularly relative to said plug member for engaging the shaft;
said neck member extending in a generally tranverse dimension to position the shaft at a desired lie angle relative to the club head; and
said neck member extending in a generally longitudinal dimension to position the club face at a desired longitudinal angle;
wherein said plug member is connected integrally to said neck member; and
wherein a reveal is disposed about the opening, further including a boss portion disposed about an upper end of said plug member to engage the reveal.

5,851,156
GOLF SWING TRAINING DEVICE AND METHOD

Orville J. Schwark, Jr., 6044 Westmoor, Shelby Township, Mich. 48316

Filed Dec. 26, 1996, Ser. No. 773,139
Int. Cl.^{6} A63B *69/36*
U.S. Cl. 473—201 **12 Claims**



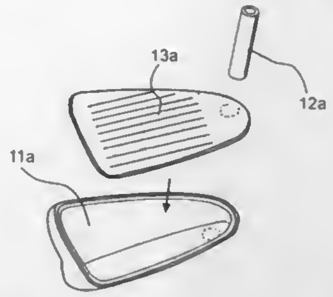
1. A device for use as an aid in perfecting a golf swing, said device enabling a golfer to determine an instantaneous position of the golfer's hands throughout the swing, said device for attaching to a golf club having a golf club grip, said device comprising:

a planar member having an opening, said opening of said planar member for surrounding the golf club grip such that the golfer's hands are positioned within said opening of said planar member when the golfer holds the golf club, said planar member having an edge visible to the golfer when said planar member is in position on the golf club grip; and
means for removably attaching said planar member on the golf club grip, said removable attaching means being attached to said planar member.

5,851,157
IRON CLUB FOR GOLF

Hiroichi Koide; Sadatsugu Shimizu, both of Sanjo, and Ikuo Nakazawa, Nagaoka, all of Japan, assignors to BMGA Co., Ltd., Niigata-ken, Japan

Filed May 24, 1996, Ser. No. 653,240
Int. Cl.^{6} A63B *53/02;53/04*
U.S. Cl. 473—305 **8 Claims**

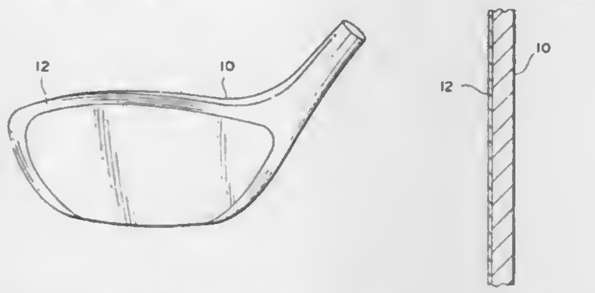


1. A club of the iron type comprising a hosel, a shaft and a head, with a predetermined shape including a face, wherein the hosel projects directly from the face and the shaft is supported in a shaft hole formed in the hosel, wherein the face is substantially planar and wherein the hosel intersects the face to an extent of at least about 270 degrees about a periphery of the hosel, and wherein the shaft has an axis which, when extended downwardly, intersects the face.

5,851,158
COATING FOR SPORTS IMPLEMENTS

Thomas L. Winrow, 35 LaCanosa Blvd., Santa Rosa Beach, Fla. 32459; Martin E. Lohrman, 58072 Diener Dr., Goshen, Ind. 46526, and James B.C. Wu, 11450 Patty Ann Dr., St. Louis, Mo. 63146

Filed Apr. 3, 1997, Ser. No. 833,038
Int. Cl.^{6} A63B *53/04*
U.S. Cl. 473—330 **5 Claims**



1. A golf club head having a surface which improves the hardness, striking and wear characteristics of the golf club head, comprising:

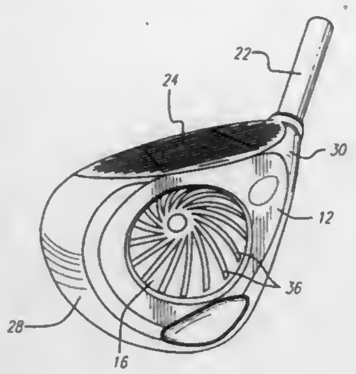
a golf club head having a coating of approximately 0.001" to 0.005" per layer formed by a powder applied to the golf club head by a high velocity thermal spray process; and
wherein the powder is chosen from the group consisting of carbides, borides, nitrides, and oxides, and the powder is applied at a speed over approximately 1800 feet per minute to form a coating with high bond strength.

5,851,159
METAL WOOD TYPE GOLF CLUB HEAD

Bruce D. Burrows, 24844 Anza Dr., Valencia, Calif. 91355

Filed Jan. 7, 1997, Ser. No. 797,303
Int. Cl.^{6} A63B *53/04*
U.S. Cl. 473—345 **14 Claims**

10. A golf club head, comprising:

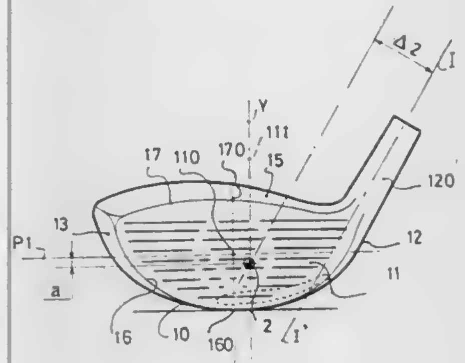


a metal head formed from assembled first and second head members to define, when assembled, a sole plate, a front wall and a rear wall and a heel segment and a toe segment generally upstanding from said sole plate and having upper margins thereof joined to a cap plate to define a hollow enclosed head construction;
said sole plate having a dome element formed generally centrally therein to define a downwardly open cavity, said sole plate circumscribing said cavity at the front, rear, heel and toe sides thereof:
said cavity having an opening size extending at least about one-fifth to about one-half the maximum heel-to-toe dimension of said front wall of the club head, and said cavity having a depth extending at least about one-fifth to about one-half the maximum height of said front wall of the club head.

5,851,160
METALWOOD GOLF CLUB HEAD

Richard L. Rugge, Encinitas; Jean Hue, Carlsbad; Richard S. Wahlin, San Diego, and David L. Rose, Cardiff, all of Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.

Filed Apr. 9, 1997, Ser. No. 840,077
Int. Cl.^{6} A63B *53/04*
U.S. Cl. 473—349 **15 Claims**



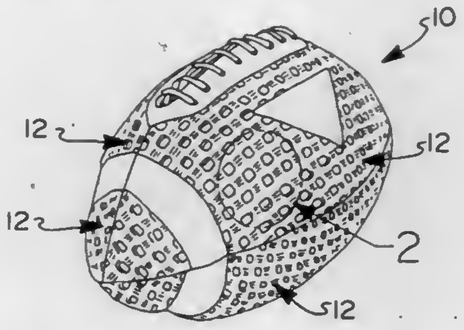
1. An oversized metalwood type golf club head comprising:

a hollow body having an inner cavity delimited by a sole portion, an impact face with a center, a heel portion having an opening defining a shaft axis for the introduction of a shaft, a toe portion, a face portion and a crown portion linking said impact face, said toe portion, said heel portion and said rear face portion;
a weight pad being located along the sole portion said head having a center of gravity located generally closer to said heel portion than said toe portion, 0.5 to 4 mm beneath a horizontal plane passing through the center of the impact face, 27 to 33 mm from said shaft axis and 11 to 17 mm from a plane including said shaft axis and parallel to a horizontal line tangent to the impact face; and
wherein said head has a total volume greater than or equal to 250 cc and a moment of inertia with respect to a vertical axis extending through the center of gravity which is greater than or equal to 300 Kg.mm^2.

5,851,161
GRIPPABLE SURFACE FOR THROWABLE OBJECTS

Mark S. Sassak, 1340 Linden St., Plymouth, Mich. 48170

Filed Jul. 15, 1997, Ser. No. 893,076
Int. Cl.^{6} A63B *43/00;59/00*
U.S. Cl. 473—596 **17 Claims**



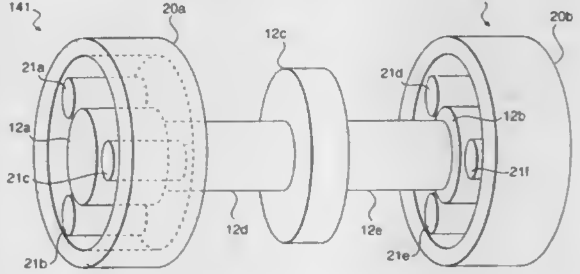
1. A recreational object having a grippable surface attached thereto to facilitate grasping of said object; said recreational object comprising:

a mesh panel having an inner surface, an outer surface, a plurality of openings and a plurality of connecting portions adjacent each one of said openings;
said inner surface of said mesh panel including an adhesive layer adapted to be secured to an outer surface of said recreational object upon the application of heat to said mesh panel for a minimum predetermined time period while said mesh panel is in contact with said outer surface of said recreational object;
said mesh panel being formed from polyvinylchloride (PVC) and
said connecting portions each having a plurality of raised portions formed thereon which generally circumscribe said openings to further enhance gripping of said recreational object.

5,851,162
SYSTEM AND APPARATUS FOR A MULTIPLE INPUT AND DUAL OUTPUT ELECTRIC DIFFERENTIAL MOTOR TRANSMISSION DEVICE

David Tether, P.O. Box 314, Benedict, Md. 20612

Filed Nov. 19, 1996, Ser. No. 751,982
Int. Cl.^{6} F16H *48/30*
U.S. Cl. 475—150 **14 Claims**



1. A multiple input, dual output differential motor transmission device, comprising:

a sun gear device having first and second sun gears fixedly connected to each other whereby said first and second sun gears rotate together along a common axis of rotation;

first and second ring gear devices having first and second ring gears, respectively; and

first and second sets of planetary gears, said first set being inter-engaged between said first sun and ring gears and said second set being inter-engaged between said second sun and ring gears, wherein

said first sun and ring gears are concentrically and independently rotatable relative to each other with said first set of planetary gears inter-engaged therebetween, and

said second sun and ring gears are concentrically and independently rotatable relative to each other with said second set of planetary gears inter-engaged therebetween, whereby

rotation of at least one of said first ring gear, said second ring gear, and said first and second sun gear together generates at least one of rotational and revolving movement of a corresponding one of said first and second sets of planetary gears, and further wherein

said sun gear device further includes a sun gear motor operatively connected said first and second sun gears,

each of said ring gear devices includes first and second ring gear motors, respectively, and

each of said first and second sets of planetary gears includes a mounting element on which a corresponding one of said first and second sets is rotatably mounted, whereby revolving movement of at least one of said first and second sets of planetary gears generates rotational movement in a corresponding mounting element.

5,851,163

PLANETARY ROLLER TYPE POWER TRANSMISSION DEVICE

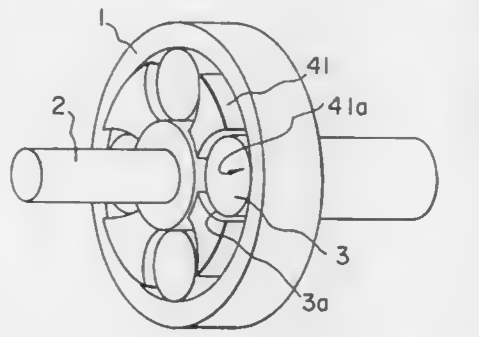
Tatsuo Kawase; Takashi Nozaki; Tomoaki Makino, and Satoshl Utsunomiya, all of Iwata, Japan, assignors to NTN Corporation, Osaka-fu, Japan

Filed Mar. 27, 1997, Ser. No. 825,056

Claims priority, application Japan, Mar. 29, 1996, 8-076156; Mar. 29, 1996, 8-077344; Mar. 29, 1996, 8-077355; Jul. 18, 1996, 8-189677

Int. Cl.⁶ F16H *13/08*

U.S. Cl. 475—183 **6 Claims**



1. A planetary roller type power transmission device transmitting power between a sun shaft and a carrier via rotations of planetary rollers, comprising:

a fixing wheel;

the sun shaft being coaxially inserted into said fixing wheel; the plurality of planetary rollers disposed between an inner circumferential surface of said fixing wheel and an outer circumferential surface of said sun shaft; and

the carrier having pockets for rollably retaining said planetary rollers, each of the pockets having a first pocket surface being slidably contact with an outer circumferential surface of the planetary roller and a second pocket surface opposed to said first pocket surface in the circumferential direction

wherein said carrier is provided with a friction force decreasing means for decreasing the friction force at at least one of the contacting area of the outer circumferential surface of the planetary rollers with the outer circumferential surface of the sun shaft and the contacting area of the outer circumferential surface of the planetary rollers with the first pocket surface of the carrier,

wherein said friction force decreasing means is a surface treatment of a low friction material and is applied to at least one of the first pocket surface and the second pocket surface of the carrier.

5,851,164

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION OF MULTIPLE CLUTCH TYPE

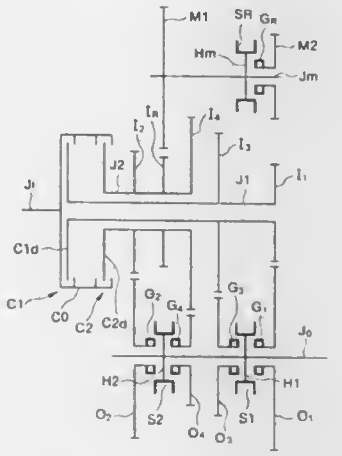
Ryoji Habuchi, Okazaki; Kojiro Kuramochi, Numazu; Masafumi Kinoshita, and Akiharu Abe, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 11, 1997, Ser. No. 835,643

Claims priority, application Japan, Apr. 16, 1996, 8-093917

Int. Cl.⁶ F16H *61/12*

U.S. Cl. 477—127 **1 Claim**



1. A hydraulic control system for an automatic transmission of multiple clutch type having at least two power transmission shafts each of which transmits power from a driving source to driving wheels, as well as clutches each of which connects or disconnects the corresponding power transmission shaft on the power transmission path, and being further furnished on said power transmission shafts with a plurality of speed change gears, as well as changeover elements which serve to select any of the plurality of speed change gears and to render the selected gear capable of transmitting the power, wherein said changeover elements are selectively brought into engagement by operating hydraulic actuators, thereby to attain a plurality of gear shift stages, comprising:

a solenoid valve;

a shift valve including a spool valvule whose position is switched-over by said solenoid valve so as to invert supply and cutoff of working oil for said hydraulic actuator, and thereby selectively cause at least one of said changeover elements to select one of the plurality of speed change gears and render the selected gear capable of transmitting the power;

said shift valve being formed with a clutch-oil-pressure supply port which is supplied with a clutch oil pressure of said clutch, so as to hold the switchover position of said spool valvule by said clutch oil pressure even when said solenoid valve has failed.

5,851,165

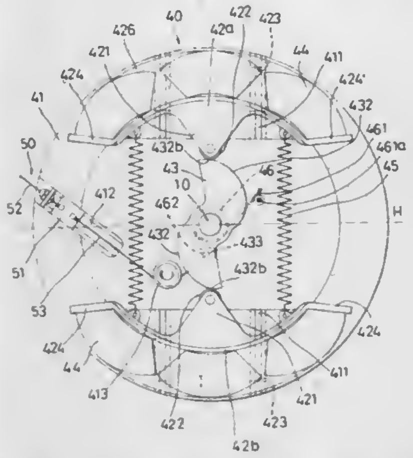
WHEEL-TYPE RESISTANCE DEVICE FOR A BICYCLE EXERCISER

Mike Wei, No. 229, Lane 75, Sec. 3, Kang-Ning Rd., Nei-Hu Dist., Taipei City, and Sheng-Jung Wu, No. 64, Alley 60, Lane 632, Sec. 3, Chang-Hsin Rd., Ho-Mei Chen, Chang-Hua Hsien, both of Taiwan

Filed Jun. 3, 1998, Ser. No. 89,852

Int. Cl.⁶ A63B *22/06;* B60L *7/00*

U.S. Cl. 482—63 **10 Claims**



1. A wheel-type resistance device for providing a resisting force to a bicycle exerciser which includes an axle defining an axial direction, and a hub member mounted rotatably on the axle and driven to rotate by a pedaling action of a user, said wheel-type resistance device comprising:

a flywheel having left and right end walls, said flywheel being adapted to be mounted rotatably on the axle such that said left end wall is proximate to and is rotated together with the hub member around the axle, and such that said right end wall is distal to the hub member, said right end wall having an accommodation chamber therein indented axially and leftward so as to form a dragging force generating wall which is spaced apart from said right end wall in the axial direction and which has a first circumferential portion extending in a radial direction relative to the axle;

a plurality of magnetically attractive members angularly provided on said first circumferential portion;

a dragging force adjusting member adapted to be mounted on the axle and having a right major surface and a left major surface which is spaced apart from and opposing said dragging force generating wall and which is provided with a second circumferential portion that is registered with said first circumferential portion;

upper and lower magnetic members disposed movably on said second circumferential portion and defining respectively upper and lower magnetic zones with upper and lower leading and tailing ends respectively, said upper leading and tailing ends being diametrically opposite to said lower tailing and leading ends respectively so that said upper and lower magnetic members are spaced apart from and are in symmetry with each other relative to a horizontal line that is transverse to the axial direction;

a cam mechanism including a cam member adapted to be mounted rotatably on the axle and having a pair of cam surfaces disposed diametrically opposite to each other, and a pair of cam followers disposed respectively on said upper and lower magnetic members and engaged movably and respectively by said cam surfaces such that a counterclockwise angular displacement of said cam member will impart linear movements of said upper and lower magnetic members towards the horizontal line along a transverse direction relative to the horizontal line;

a first biasing member disposed to bias said cam followers to engage movably and respectively said cam surfaces; and

a tensioning member having a proximate end fixed at said cam member and a distal end mounted on said dragging force adjusting member such that a pulling force applied on said tensioning member will result in a clockwise angular displacement of said cam member for counteracting biasing action of said first biasing member to retain each of said cam surfaces at a first angular position, where said cam followers are lifted to a farthest position relative to the horizontal line, and where overlapping area of said upper and lower magnetic members with said second circumferential portion is largest; and

a second biasing member disposed to bias against the pulling force applied on said tensioning member so as to place said tensioning member in a tense state when said tensioning member counteracts the biasing action of said first biasing member;

whereby, a decrease in the pulling force applied on said tensioning member will result in the counterclockwise angular displacement of said cam member, thereby decreasing the overlapping area of said upper and lower magnetic members with said second circumferential portion.

5,851,166

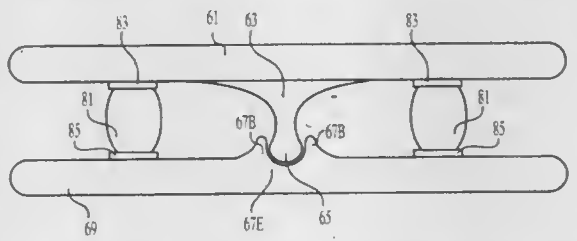
LOWER EXTREMITY REHABILITATION AND TONING EXERCISE APPARATUS AND METHOD

Peter S. Bernardson, 339 Berger St., Emmaus, Pa. 18049-2307

Filed Jul. 31, 1995, Ser. No. 509,206

Int. Cl.⁶ A63B *23/04*

U.S. Cl. 482—79 **24 Claims**



8. An apparatus for exercising the lower extremities comprising:

(a) a ground plane contact and support means,

(b) a pair of foot pedals having a pivoting arrangement facilitating forward and backward rocking about an axis disposed in a location within one of the ground plane contact and support means and the pair of foot pedals,

(c) the assumable angle of the foot pedals allowed by the pivoting arrangement being variable between an assumed maximum backwardly rocked angle of the foot of a normally supple seated individual and the maximum forwardly rocked angle of the foot of such individual; and,

(d) the pivoting arrangement of the foot pedals comprising:

(i) a pivot extension support extending from one of the ground plane contact and support means and the foot pedals, at one end of which pivot extension support there is a transverse at least semi-cylindrical pivot member;

(ii) a semicircular pivot groove adapted for receiving the semi-cylindrical pivot member in the opposite of one of the ground plane contact and support means and the foot pedals;

(e) whereby the foot pedals are pivotable about the axis which extends longitudinally through the semi-cylindrical pivot member and pivot groove with a rocking motion.

5,851,167

EXERCISER

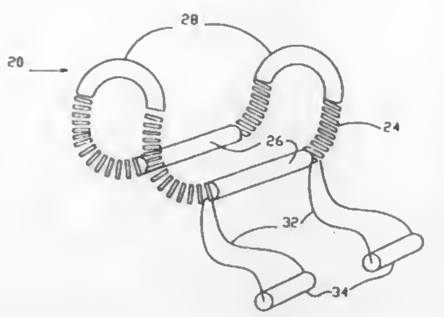
Tianfu Li, 27165 Colleen Ct., Dearborn Hts, Mich. 48127

Filed May 21, 1997, Ser. No. 859,859

Int. Cl.⁶ A63B *21/02*

U.S. Cl. 482—122 **16 Claims**

1. An exercise device, comprising:



an elastic ring providing flexible resistance to force applied to the ring by a user, said ring defining a length having a saddle-like contour; and

a first pair of laterally opposed grips covering a first portion of the ring length.

5,851,168
ROLL FOR A ROLLING MECHANISM

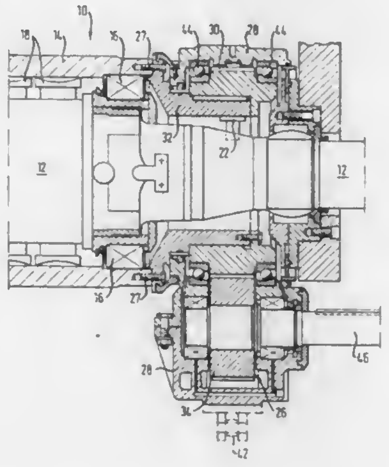
Josef Schneid, Vogt, and Herbert Brandiser, Mochenwangen, both of Germany, assignors to Voith Sulzer Finishing GmbH, Germany

Filed Jan. 23, 1997, Ser. No. 786,882

Claims priority, application Germany, Feb. 1, 1996, 196 03 651.8

Int. Cl.^{6} B21B *13/02*

U.S. Cl. 492—7 **19 Claims**



1. Roll for a rolling mechanism, comprising:

a carrier;

a roll jacket surrounding the carrier and rotatably journalled on the carrier by at least two coaxial bearings, said roll jacket being driven at one end by a transmission which is received in a transmission housing and which is rotatably journalled on at least one of the roll jacket and an extension of the roll jacket, and which is also rotationally fixed relative to at least one of the carrier and the roll frame;

at least one of an inner hydrostatic support element and an inner hydrodynamic support element by which the roll jacket is additionally supported on the carrier; and

at least one device provided for force generation on at least one side of a zone bounded by the bearings and comprising at least one of an outer hydrostatic support element and an outer hydrodynamic support element arranged axially outside of the zone bounded by the bearings;

wherein said force generation device comprises at least one outer support element supported on said carrier and which is one of axially arranged between the axially outer transmission housing and the bearing, and radially arranged between the transmission housing and the carrier.

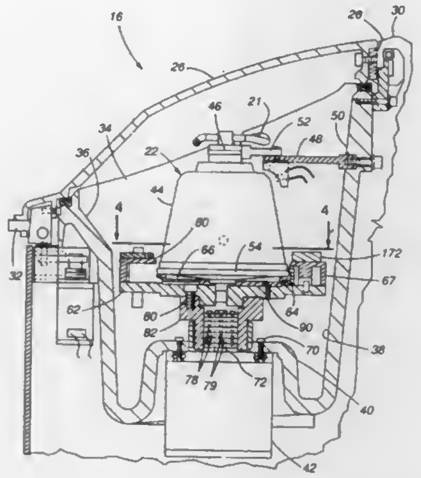
5,851,169
ROTARY PLATE AND BOWL CLAMP FOR BLOOD CENTRIFUGE

Henry Meresz, Coloma, Wis.; Wayne P. Griffin, Cranberry Township, Pa.; Clark M. Hill, Denver, Colo., and Richard Matt, San Jose, Calif., assignors to Medtronic Electromedics, Inc., Parker, Colo.

Filed Jan. 28, 1997, Ser. No. 790,076

Int. Cl.^{6} B04B *7/06*

U.S. Cl. 494—12 **17 Claims**



1. A system for securing an object of substantially circular cross-section to a rotating plate wherein said object includes a cap around a lower perimeter of larger diameter than the remainder of the object, comprising in combination a split ring collar operatively secured to said rotating plate, said collar being of substantially circular configuration and having two spaced ends and a radially inwardly opening channel adapted to releasably receive said cap, said collar having enough flexibility to be retracted by moving said ends into closely adjacent relationship to reduce the effective circumference of the collar and thereby grip the cap of said object, and a clamp assembly including a lock mounted on said rotating plate, said clamp assembly being operatively connected to said ends of the split collar and being operative to selectively retract said collar to secure said object to said rotating plate.

5,851,170
CENTRIFUGE WITH CAM SELECTABLE ROTATIONAL ANGLES AND METHOD FOR UNLOADING SAME

Gary Wayne Howell, Elkton, Md., assignor to Dade Behring Inc., Deerfield, Ill.

Filed Apr. 30, 1996, Ser. No. 641,310

Int. Cl.^{6} B04B *5/02*

U.S. Cl. 494—20 **9 Claims**

1. A centrifuge having a selectable angle bucket type rotor, the rotor having upper and lower faces, the centrifuge comprising:

a drive shaft having an axis, the shaft adapted for mounting and rotating the rotor;

drive means for rotating said drive shaft;

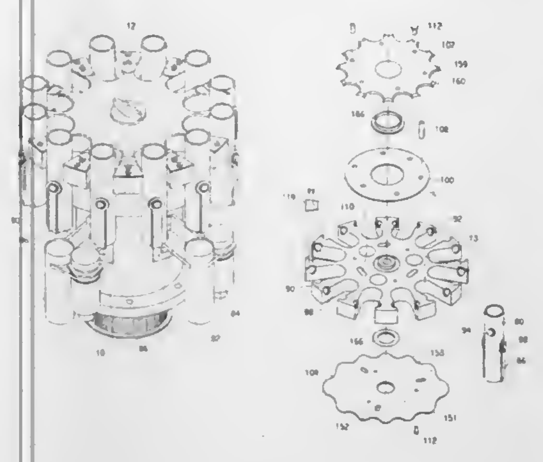
at least one bucket adapted to carry a tube, the bucket being pivotably mounted on the periphery of the rotor;

upper and lower cams adjacent the respective upper and lower faces of the rotor and linked to move in unison,

the lower cam having at least one peripheral drive protuberance; and,

the upper cam having at least one peripheral restraining protuberance;

so that the drive and restraining protuberances engage said at least one bucket whereby the bucket is pivoted at a fixed angle with respect to the axis of the shaft when the rotor is rotated by said drive means in a first direction relative to the cams through a predetermined angular distance.



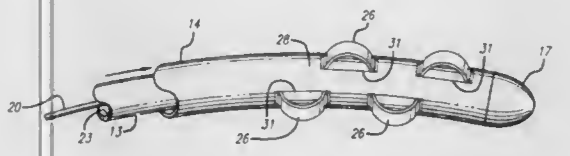
5,851,171
CATHETER ASSEMBLY FOR CENTERING A RADIATION SOURCE WITHIN A BODY LUMEN

Jonathan G. Gasson, Cupertino, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Nov. 4, 1997, Ser. No. 963,883

Int. Cl.^{6} A61M *25/10;* **A61N** *5/00*

U.S. Cl. 600—3 **12 Claims**



1. A radiation centering catheter assembly for maintaining the patency of a body lumen for a period of time sufficient to permit delivery of a radiation dose to the body lumen while permitting blood perfusion, comprising:

an elongated catheter body having a proximal end and a distal end, the elongated catheter body having an inner tubular member with an uninterrupted surface which extends coaxially within an outer tubular member and having the distal ends of the inner and outer tubular members connected together;

a radiation source;

a radiation source lumen at least partially containing the radiation source, extending through at least a portion of the elongated catheter body for receiving the radiation source which emits radioactive particles into the body lumen; and

an expandable region having an uninterrupted surface except for a plurality of slits disposed radially and staggered longitudinally, and located near the distal end of the elongated catheter body, the expandable region adapted to be expanded, upon application of a force on the outer tubular member, into contact with a portion of the body lumen and center at least the expandable region of the catheter body within the body lumen so that blood flow past and over the expandable region is not inhibited.

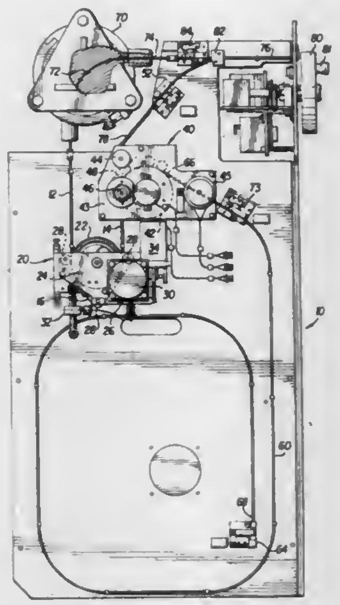
5,851,172
AFTERLOADER WITH ACTIVE FORCE FEEDBACK

Kenneth M. Bueche, Friendswood; Richard T. Thornton, League City, and Anthony J. Bradshaw, Missouri City, all of Tex., assignors to Omnitron International, Inc., Houston, Tex.

Filed May 8, 1995, Ser. No. 436,075

Int. Cl.^{6} A61N *5/00*

U.S. Cl. 600—7 **41 Claims**



1. An apparatus for advancing a radioactive source into and out of a catheter implanted in the body of a patient comprising:

a housing adapted to receive an end of said catheter;

an elongate lead adapted to support the radioactive source at an end thereof;

means mounted to said housing for storing said elongate lead;

a drive mechanism mounted to said housing for advancing said elongate lead into said catheter;

a force sensor for detecting force required to advance said elongate lead into said catheter and for generating an output signal indicative of said force;

an encoder for determining displacement of said elongate lead and for generating an output signal indicative of said displacement; and

an electronic control system comprising circuit means responsive to the signals from said force sensor and from said encoder for controlling advancement of said elongate lead into and out of said catheter.

5,851,173
SELF SECURING BRACHY TUBE CAP

Harold Dugan, Milton, N.Y., assignor to Marlene H. Dugan, Milton, N.Y.

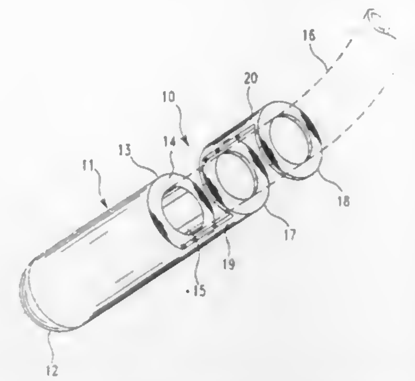
Filed Mar. 17, 1997, Ser. No. 819,603

Int. Cl.^{6} A61N *5/00*

U.S. Cl. 600—7 **2 Claims**

1. A soft plastic Brachy tube cap comprising:

a tubular body with an internal base sized so that the end of a Brachy tube fits snugly within: and



a pair of spaced locking rings integral with the tubular body and adapted to fit about the Brachy tube.

5,851,174

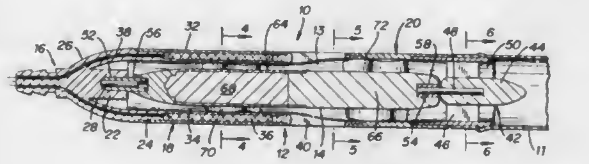
CARDIAC SUPPORT DEVICE

Robert Jarvik, 124 W. 60 St., New York, N.Y. 10023, and Daniel E. Alesl, Sherman, Conn., assignors to Robert Jarvik, New York, N.Y., and United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 17, 1996, Ser. No. 714,898

Int. Cl.^{6} A61M *1/10*

U.S. Cl. 600—16 **24 Claims**



1. An apparatus for pumping blood, which comprises:

a) an elongated housing adapted to be at least partially positioned within the heart of a patient, the elongated housing including an outer wall having first and second ends and defining a longitudinal axis, the elongated housing having at least a first inlet port for permitting blood to enter the elongated housing through the first end of the elongated housing and at least a second inlet port defined in the outer wall of the elongated housing and being axially displaced from the first inlet port for permitting blood to enter through the outer wall, the second end of the elongated housing being open to define an axial outlet opening to permit the blood to exit the elongated housing;

b) a rotating member supported for rotational movement within the elongated housing and rotatable to impart pumping energy to the blood entering through the first and second inlet ports to direct the blood through the outlet opening of the elongated housing; and

c) a motor unit contained within the elongated housing for imparting rotational movement to the rotating member.

5,851,175

SEXUAL ASSISTANCE DEVICE

William Kenneth Nickell, P.O. Box 745, Calvert City, Ky. 42029

Filed Nov. 24, 1997, Ser. No. 977,506

Int. Cl.^{6} A61F *5/00*

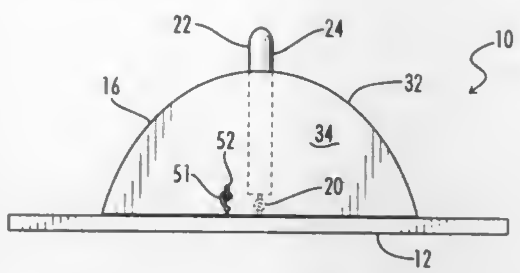
U.S. Cl. 600—38 **14 Claims**

9. A sexual device comprising:

a. a base;

b. a hinge attached to said base;

c. a box-like platform attached to said base by said hinge, said platform having a top portion and a bottom portion contacting



said base, said box-like platform having a seat supported by two ends and two sides, said seat having a slot; and

d. an elongated member attached to said base by a pivot and received by said slot.

5,851,176

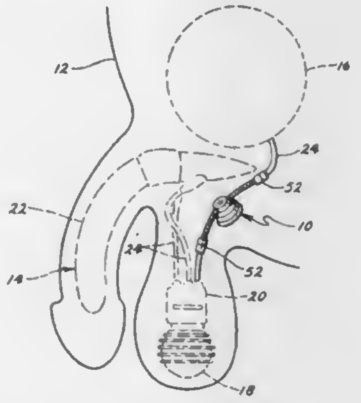
PRESSURE-RESPONSIVE LOCKOUT VALVE AND METHOD OF USE

Steven N. Willard, Minneapolis, Minn., assignor to Mentor Corporation, Santa Barbara, Calif.

Filed Jul. 29, 1996, Ser. No. 681,859

Int. Cl.^{6} A61F *2/26*

U.S. Cl. 600—40 **44 Claims**



1. In a prosthesis having a reservoir, a pump, an inflatable component, and an inflation fluid, said pump being selectively actuated by a user to inflate the inflatable component with said inflation fluid supplied from said reservoir, the improvement comprising:

a fluid pressure-responsive lockout valve disposed between and operatively connected to both the reservoir and the inflatable component in fluid communication therewith to prevent inadvertent auto-inflation of the inflatable component, said fluid pressure-responsive lockout valve including an inlet port, an outlet port, a valve member, a valve seat, a valve body defining an interior chamber in fluid communication with the outlet port, and a diaphragm, wherein the valve member includes a poppet, and the valve seat defines an aperture, said valve member being movable between a closed position in sealing contact with said valve seat and an open position, said inlet port connected in fluid communication with the reservoir and said outlet port connected in fluid communication with the pump, such that when the pump is selectively actuated by the user to produce a negative internal fluid pressure at said outlet port, the diaphragm flexes inwardly into the interior chamber causing the diaphragm to contact the poppet and open the aperture, thereby permitting the inflation fluid to flow from the reservoir through said fluid pressure responsive lockout valve to the inflatable component.

5,851,177

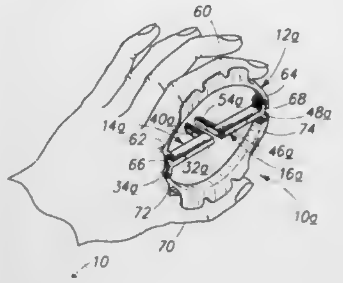
OTOSCOPE AND RHINOSCOPE DEVICE

Craig S. Koch, 6176 Reservoir Ct., Granite Bay, Calif. 95746

Filed Apr. 21, 1998, Ser. No. 63,854

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 600—206 **8 Claims**



1. An improved otoscope and rhinoscope device, said device comprising, in combination:

a) a resilient, flexible deformable ring with elastic memory having a front end, a rear end and an annular sidewall, said ring being adapted to be held between the thumb and forefinger of a caregiver, said ring defining a central cavity extending from said rear end to said front end; and,

b) a spaced pair of spreaders secured to opposite sides of said ring and disposed in said central cavity at about the longitudinal midline thereof, each said spreader comprising a transversely extending support bar having a free end and an opposite end secured to said sidewall, each said support bar bearing a spreader blade projecting forwardly from said free end to a position in front of said ring, said two spreader blades being spaced laterally from each other at about said midline,

whereby compressing said ring vertically between said thumb and forefinger ovals said ring and increases the spacing between said spreader blades for widening the field of view through an ear canal or nostril of a patient into which said spreader blades are inserted and whereby terminating said compression moves said spreader blades toward each other for easy withdrawal from an ear canal or nostril and returns said ring to its original shape for reuse.

5,851,178

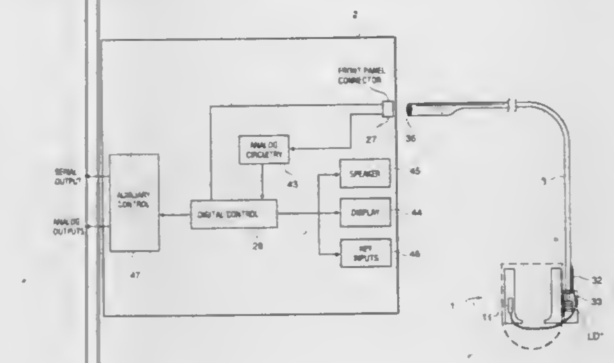
INSTRUMENTED LASER DIODE PROBE CONNECTOR

Kurt Albert Aronow, Lafayette, Colo., assignor to Ohmeda Inc., Liberty Corner, N.J.

Filed Jun. 2, 1995, Ser. No. 458,485

Int. Cl.^{6} A61B *5/14*

U.S. Cl. 600—323 **27 Claims**



1. Apparatus for illuminating tissue of a subject to measure light absorption of said tissue by a measurement system, comprising:

an interconnector cable wherein said interconnector cable comprises:

a first connector segment having an opening in one side thereof;

at least two laser diode light sources, mounted in said first connector segment, for generating at least two beams of light of different wavelengths for application to said tissue through said opening;

a plurality of electrical conductors electrically interconnected between said at least two laser diode light sources and said measurement system;

a probe wherein said probe comprises:

a second connector segment, removably interconnectable with said first connector segment, for interfacing said interconnector cable with said probe;

wherein said second connector segment includes an optical port for transmitting said at least two beams of light to said tissue wherein said optical port is located substantially adjacent said opening of said first connector segment when said first connector segment is removably interconnected with said second connector segment; and

attachment means connected to said second connector segment adapted for removably attaching said probe to said subject.

5,851,179

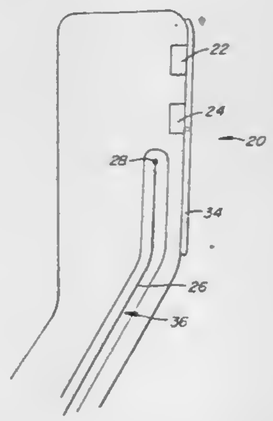
PULSE OXIMETER SENSOR WITH ARTICULATING HEAD

Carl Ritson, San Jose; Paul Mannheimer, Danville; Mitchell Levinson, Pleasanton, and James R. Casciani, Cupertino, all of Calif., assignors to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Filed Oct. 10, 1996, Ser. No. 728,658

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 600—338 **11 Claims**



1. A perinatal pulse oximeter sensor for application to a fetus comprising:

a sensor head having a fetus engaging surface for engagement with said fetus;

light emitting means connected to said sensor head for emitting light of at least two wavelengths directed at said fetus;

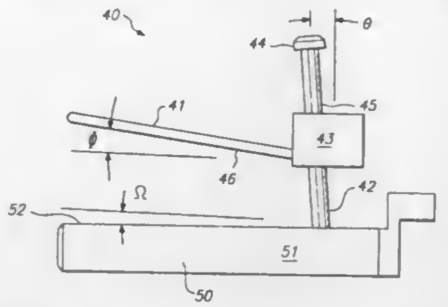
light detecting means mounted in said sensor head for collecting light to be detected;

an articulating arm coupled to said sensor head for placement of said sensor head on said fetus; and

means, connected to said articulating arm, for remotely controlling a degree of articulation over a plurality of angles and for providing a pressure on said sensor head.

5,851,180
TRACTION-INDUCING COMPRESSION ASSEMBLY FOR ENHANCED TISSUE IMAGING

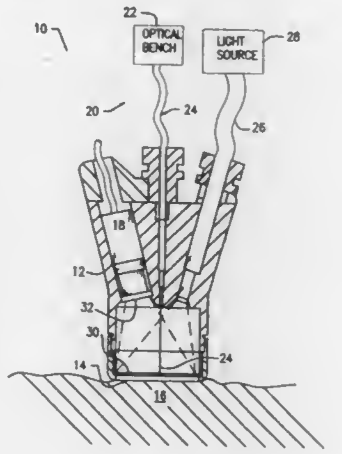
Peter Andrew Crosby, Greenwood Village, Colo., and Ascher Shmulewitz, Mercer Island, Wash., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jul. 12, 1996, Ser. No. 680,560
Int. Cl.^{6} A61B *06/04*
U.S. Cl. 600—407 **20 Claims**



11. Apparatus for imaging biological tissue comprising an imaging system that provides a visualization of an internal structure of the biological tissue and a compression assembly comprising a first compression surface having a fixed first proximal edge, a second compression surface having a second proximal edge, and means for positioning the first compression surface substantially opposite and spaced apart from the second compression surface to define an imaging field, the improvement comprising:
means for moving included within the means for positioning for moving the first compression surface relative to the second compression surface so that the first proximal edge moves rearwardly of the second proximal edge as the first compression surface is moved towards the second compression surface.

5,851,181
APPARATUS FOR SIMULTANEOUSLY VIEWING AND SPECTRALLY ANALYZING A PORTION OF SKIN

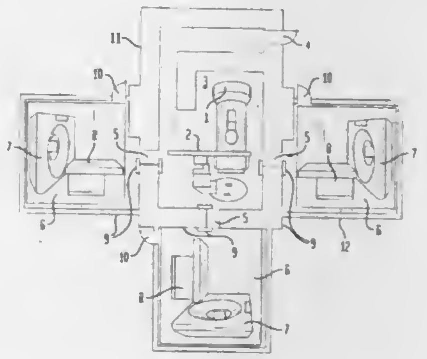
Eli T. Talmor, Haita, Israel, assignor to ESC Medical Systems Ltd., Yokneam, Israel
Filed Aug. 30, 1996, Ser. No. 708,080
Int. Cl.^{6} A61B *5/00*
U.S. Cl. 600—407 **5 Claims**



1. A spectral monitoring apparatus comprising:
a housing having an opening adapted to be disposed adjacent to a portion of a treatment site;
a camera coupled to the housing to view the opening; and
a spectrometer optically coupled to the housing and disposed to sense radiation entering the housing at the opening;
wherein the spectrometer includes an optical bench disposed remotely from the housing and coupled to a first end of an optical fiber, wherein a second end of the optical fiber is coupled to the housing and disposed such that it receives radiation entering the housing through the opening;
the spectral monitoring apparatus further comprising a window coupled to the housing and disposed across the opening;
wherein the second end of the optical fiber is coupled to the window such that the second end is disposed in a field of view of the camera.

5,851,182
MEGAVOLTAGE RADIATION THERAPY MACHINE COMBINED TO DIAGNOSTIC IMAGING DEVICES FOR COST EFFICIENT CONVENTIONAL AND 3D CONFORMAL RADIATION THERAPY WITH ON-LINE ISODOSE PORT AND DIAGNOSTIC RADIOLOGY

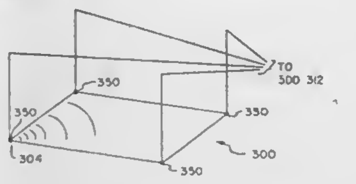
Velayudhan Sahadevan, 200 Granville Ave., Beckley, W. Va. 25802
Filed Sep. 11, 1996, Ser. No. 712,623
Int. Cl.^{6} A61B *5/05*
U.S. Cl. 600—407 **43 Claims**

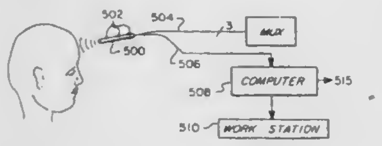


1. An improved patient handling system for use with a radiation therapy device and medical imaging device, comprising:
a first chamber having a radiation therapy device; a second chamber having a medical imaging device; and a first wall dividing said first chamber and said second chamber and having means defining a hole in said first wall for providing communication between said first chamber and said second chamber;
said first wall further having radiation shielding means including an open position allowing communication between said first and second chambers and a closed position for selectively covering said first wall hole defining means to seal said second chamber from radiation from the radiation therapy device in said first chamber;
a cradle located on the medical imaging device for receiving a table top insert and having means defining a groove on said cradle;
a cradle located on the radiation therapy device for receiving said table top insert and having means defining a groove on said cradle;
said table top insert having a patient securing means for securing a patient in a fixed position on said table top insert and having a lower surface for securing rollers to said lower surface and wherein said rollers are sized to fit within said groove of the medical imaging device and said groove of the radiation therapy device;
said means defining said hole in said first wall being sized and positioned such that said table can be rolled on said rollers from said medical imaging device cradle to said radiation therapy device cradle without changing the position of the patient.

5,851,183
SYSTEM FOR INDICATING THE POSITION OF A SURGICAL PROBE WITHIN A HEAD ON AN IMAGE OF THE HEAD

Richard D. Bucholz, St. Louis, Mo., assignor to St. Louis University, St. Louis, Mo.
Continuation of Ser. No. 858,980, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 600,753, Oct. 19, 1990, abandoned. This application Oct. 16, 1995, Ser. No. 543,516
Int. Cl.^{6} A61B *6/00*
U.S. Cl. 600—425 **14 Claims**

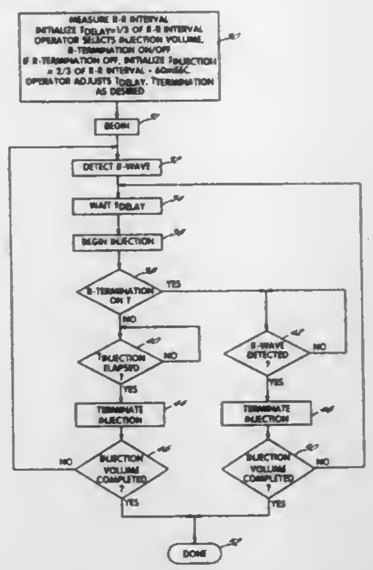




1. A system for use with a part of a body of a patient, said system comprising:
an ultrasound probe adapted to be positioned adjacent to and scanning the body part;
means, responsive to the ultrasound probe, for generating an ultrasound image of the body part corresponding to the position of the ultrasound probe;
means for determining the position of the ultrasound probe relative to the body part, wherein the determining means comprises:
an array positioned in communication with the ultrasound probe;
first means for determining the position of the ultrasound probe relatively to the array;
second means for determining the position of the body part relative to the array; and
means for translating the position of the ultrasound probe as determined by the first means into a coordinate system corresponding to the position of the body part as determined by the second means;
means for scanning the body part to create scanned images thereof; and
means, responsive to the scanning means, for generating a scanned image of the body part corresponding to the determined position of the ultrasound probe relative to the body part whereby the ultrasound image of the body part corresponds to and may be compared with the scanned image of the body part.

5,851,184
ELECTROCARDIOGRAPH CONTROL OF FLUID INJECTION

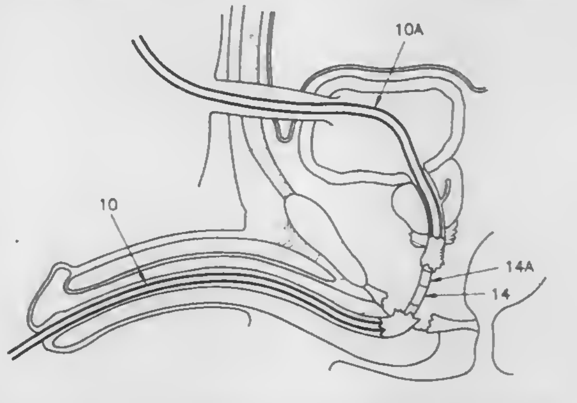
James H. Goethel, Cincinnati, Ohio, assignor to Liebel-Florsheim Company, Cincinnatti, Ohio
Filed Nov. 22, 1996, Ser. No. 754,893
Int. Cl.^{6} A61B *6/00*
U.S. Cl. 600—431 **4 Claims**


MEASURE R-R INTERVAL
INITIALIZE T_{DELAY}=1/3 OF R-R INTERVAL
OPERATOR SELECTS INJECTION VOLUME,
R-TERMINATION ON/OFF
IF R-TERMINATION OFF, INITIALIZE $T_{INJECTION}$
= 2/3 OF R-R INTERVAL - 60mSEC
OPERATOR ADJUSTS T_{DELAY}, $T_{TERMINATION}$
AS DESIRED
BEGIN
DETECT R-WAVE
WAIT T_{DELAY}
BEGIN INJECTION
R-TERMINATION ON ?
YES
NO
$T_{INJECTION}$ ELAPSED ?
NO
YES
TERMINATE INJECTION
INJECTION VOLUME COMPLETED ?
NO
YES
R-WAVE DETECTED ?
NO
YES
TERMINATE INJECTION
INJECTION VOLUME COMPLETED ?
NO
YES
DONE

1. A method for performing injection of contrast media into a patient in synchrony with said patient's heart rhythm, comprising
selecting a predetermined total volume of contrast media to be injected into said patient,
detecting an electrocardiograph of said patient's heart rhythm;
detecting an R-wave in said electrocardiograph;
initiating injection of contrast media into said patient a predetermined delay time after detecting said R-wave;
terminating injection of contrast media into said patient upon detection of an R-wave; and
repeating said detecting, initiating and terminating steps until said predetermined total volume of contrast media has been injected into said patient regardless of a number of repetitions of said detecting, initiating and terminating steps.

5,851,185
APPARATUS FOR ALIGNMENT OF TUBULAR ORGANS

Mark I. Berns, Northbrook, Ill., assignor to Cabot Technology Corporation, Wilmington, Del.
Filed Jul. 2, 1997, Ser. No. 886,438
Int. Cl.^{6} A61B *5/00*
U.S. Cl. 600—434 **22 Claims**



1. An apparatus for aligning a disrupted tubular organ, said apparatus comprising:
an elongated member adapted for insertion into one body entrance, into said disrupted tubular organ, and toward a disrupted region of said disrupted tubular organ, said elongated member comprising an elongated body and a magnetically attractable element mounted adjacent to a distal end portion of said elongated body;
a complementary elongated member adapted for insertion into a different body entrance, into said disrupted tubular organ and toward said disrupted region, said complementary elongated member comprising an elongated body and means for applying a magnetic field sufficient to magnetically attract said magnetically attractable element, said means being mounted adjacent to a distal end portion of said elongated body of said complementary elongated member;
wherein at least one of said elongated bodies is comprised of a tubular portion defining a passage along an axis through which a guide element may be inserted; and

wherein said magnetically attractable elements of said elongated members are guideable toward one another until they are magnetically attracted to each other and thereby attach to each other while disposed along a substantially common axis to align said tubular organ to an orientation substantially along said axis.

5,851,186

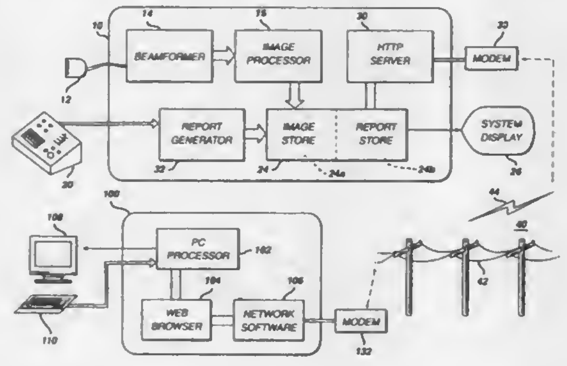
ULTRASONIC DIAGNOSTIC IMAGING SYSTEM WITH UNIVERSAL ACCESS TO DIAGNOSTIC INFORMATION AND IMAGES

Michael A. Wood, Bothell; Pascal Roncalez, Bellevue; Lauren S. Pflugrath, Seattle, and Jacques Souquet, Issaquah, all of Wash., assignors to ATL Ultrasound, Inc., Bothell, Wash.

Division of Ser. No. 919,360, Oct. 25, 1996, Pat. No. 5,715,823, which is a continuation-in-part of Ser. No. 607,894, Feb. 27, 1996, Pat. No. 5,603,323. This application Feb. 4, 1998, Ser. No. 18,411

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 600—437 **30 Claims**



1. A method of electronically acquiring a diagnostic ultrasound image over a communications network from an ultrasound system having a server by means of a computer, comprising the steps of:

a. establishing an electronic communications link between said ultrasound system and said computer over said network; and

b. operating said computer to cause said ultrasound system server to transmit an ultrasound image over said network for display on said computer.

5,851,187

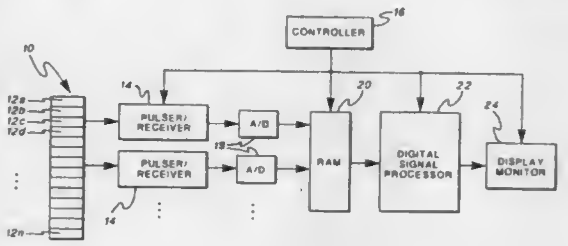
METHOD AND APPARATUS FOR ULTRASONIC BEAMFORMING WITH SPATIALLY ENCODED TRANSMITS

Lewis Jones Thomas, III, Mitaka, Japan; Richard Yung Chiao, Clifton Park, and Seth David Silverstein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1997, Ser. No. 943,081

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 600—447 **16 Claims**



1. A system for imaging ultrasound scatterers, comprising:

an ultrasound transducer array for transmitting ultrasound waves and detecting ultrasound echoes reflected by said ultrasound scatterers, said transducer array comprising a multiplicity of transducer elements;

pulser/receiver means coupled to said transducer array for pulsing M transducer elements of said multiplicity of transducer elements, for M transmit events, with signals which are spatially encoded with an invertible code provided by an invertible encoding matrix, and for receiving signals from N transducer elements of said multiplicity in response to ultrasound echoes following each of said M transmit events;

analog-to-digital conversion means coupled to said pulser/receiver means for converting each of said received signals into a respective digital signal;

means for decoding M×N digital signals by employing the inverse of said encoding matrix to form a decoded data set and for forming a beamformed data set from said decoded data set; and

a display monitor for displaying an image which is a function of said beamformed data set.

5,851,188

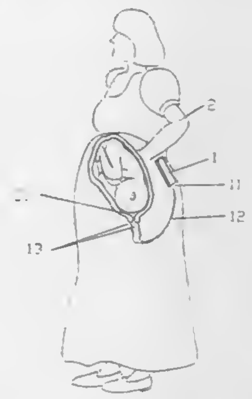
DEVICE FOR HOLDING MEDICAL INSTRUMENTATION SENSORS AT AND UPON THE CERVIX OS OF A HUMAN FEMALE, PARTICULARLY FOR HOLDING THE ULTRASONIC TRANSDUCERS OF AN ULTRASONIC TRANSIT TIME, REAL-TIME, CERVICAL EFFACEMENT AND DILATATION MONITOR

Kelli M. Bullard; Michael Harrison, both of c/o UCSF Fetal Treatment Center 1661 Health Sciences W. 3rd & Parnassus, San Francisco, Calif. 94143; W. Scott Kemper, 3334 Buena Vista St., San Diego, Calif. 92109, and Michael P. Guberek, 426 Jolina Way, Encinitas, Calif. 92024

Continuation-in-part of Ser. No. 322,613, Oct. 12, 1994, Pat. No. 5,438,996. This application Aug. 8, 1995, Ser. No. 512,333

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 600—448 **14 Claims**



1. A device for holding and retaining one or more medical instrumentation probes at and in contact with the cervix os of a human female, the device comprising:

a flexible ring means, having a shape retentive memory and exerting a force so as to assume and to maintain a predetermined closed-loop geometric shape, for, when inserted at the top of the vaginal canal and about the cervix os, holding, by its shape-retentive force, position inside and at the top of the vaginal canal and circumferentially around the cervix os; and

an annulus-shaped flexible elastic membrane connected at its outer circumference to the flexible ring means so as to enshroud the cervix Os while presenting a central aperture at the cervical opening through which aperture bodily fluids may be emitted and digital examination of the cervix os may transpire, the membrane being suitably strong so as to hold one or more medical instrumentation probes as are capable of being affixed anywhere upon its surface including at the rim of the central aperture.

5,851,189

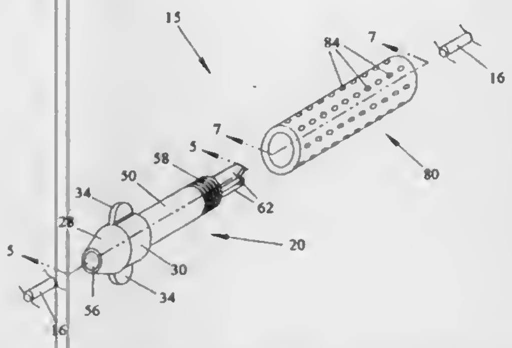
TORQUE DEVICE FOR ANGIOPLASTY GUIDEWIRE

Simon John Forber, Minneapolis, Minn., assignor to B. Braun Medical, Inc., Bethlehem, Pa.

Filed May 24, 1996, Ser. No. 651,789

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 600—585 **20 Claims**



1. A device for steering a guidewire having a diameter within the commercially available range of 0.009 to 0.038 inches, comprising:

(a) a spindle having a body section having external threads, an axial bore in said body section for receiving said guidewire, and two fingers extending from one end of said body section;

(b) a cap having an axial bore for receiving said spindle, said bore having internal threads cooperating with said external threads of said spindle, said bore having a tapered portion adapted for engaging and closing said fingers of said spindle when said spindle and said cap are screwed together;

(c) said spindle and said cap screwing together to advance said fingers along said tapered portion and to rotate and close said fingers of said spindle around said guidewire, and further screwing apart to retract said fingers along said tapered portion and to rotate and open said fingers; and

(d) said rotating fingers being diametrically opposed and having a form to securely grip any of said commercially available guidewires in between said fingers.

5,851,190

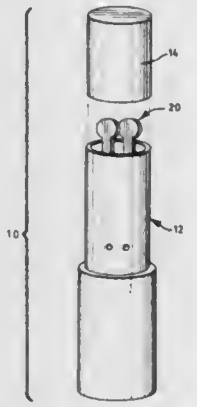
INSTRUMENT FOR MEASURING SALIVA VISCOELASTICITY TO DETERMINE FEMALE FERTILE PERIOD

Harold J. Kosasky, 25 Boylston St., Chestnut Hill, Mass. 02167

Continuation-in-part of Ser. No. 589,138, Jan. 19, 1996, which is a continuation-in-part of Ser. No. 524,741, Sep. 7, 1995, Pat. No. 5,640,968. This application Jan. 23, 1998, Ser. No. 12,476

Int. Cl.^{6} A61B *10/00*

U.S. Cl. 600—551 **16 Claims**



1. An instrument for determining female fertile period by measuring the viscoelasticity of saliva, said device comprising:

(a) an elongated sheath having a length along an axis and an opening at one extremity, said sheath including a barrel, a piston that reciprocates axially within said barrel, and a rotating control for moving said piston axially within said barrel;

(b) an escapement including a pair of elongated arms disposed approximately parallel to said axis, said arms having inner extremities remote from said opening and attached to said piston, and outer extremities in the vicinity of said opening, said outer extremities having mating surfaces;

(c) said escapement including a spring bias urging separation of said mating surfaces from each other;

(d) said arms being mounted for relative movement of said mating surfaces among first relational positions at which said mating surfaces are separated, second relational positions at which said mating surfaces are in contact, and third relational positions at which said mating surfaces are free to separate under said spring bias;

(e) said piston axial motion optionally placing said mating surfaces into said first relational positions, said second relational positions, and said third relational positions;

(f) at least one of said mating surfaces being free to collect said saliva when said mating surfaces are in said first relational positions;

(g) said mating surfaces being constrained to compress said saliva therebetween when said mating surfaces are in said second relational positions; and

(h) a timer for measuring the time elapsed for separation of said surfaces when said surfaces are in said third relational positions.

5,851,191

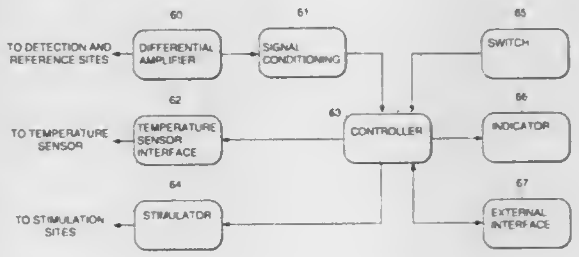
APPARATUS AND METHODS FOR ASSESSMENT OF NEUROMUSCULAR FUNCTION

Shai N. Gozani, Brookline, Mass., assignor to NeuroMetrix, Inc., Cambridge, Mass.

Filed Jul. 1, 1997, Ser. No. 886,861

Int. Cl.^{6} A61B *5/05*

U.S. Cl. 600—554 **23 Claims**



1. An apparatus for assessing a physiological function in an arm and a hand of an individual, comprising:

(a) a stimulator for producing a stimulus and for applying said stimulus proximal to a wrist of an individual, whereby application of said stimulus stimulates a nerve that traverses said wrist;

(b) a detector for detecting proximal to a wrist of an individual a myoelectric potential, whereby said myoelectric potential is generated by a muscle in a hand of said individual in response to said stimulus, said muscle being in communication with said nerve; and

(c) a controller for evaluating physiological function in response to said stimulus and said myoelectric potential.

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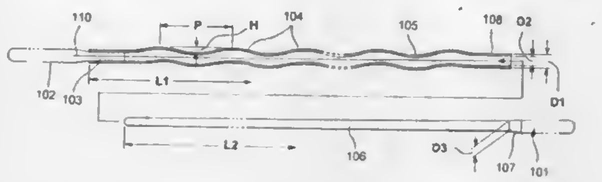
5,851,192
CONNECTING STRUCTURE OF THE GUIDE WIRE USED FOR MEDICAL TREATMENT

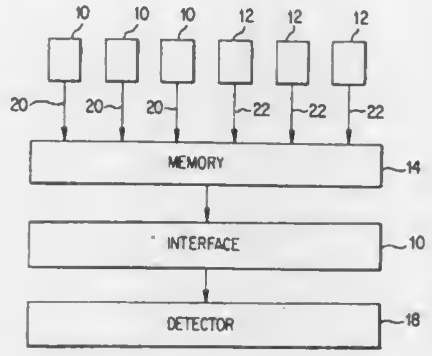
Seiji Shimura, Komaki, and Tomihisa Kato, Anjo, both of Japan, assignors to Asahi Intecc Co., Ltd., Seto, Japan
Filed Jun. 24, 1997, Ser. No. 881,645
Int. Cl.⁶ A61M *25/00*
U.S. Cl. 600—585 **5 Claims**



1. A connecting structure of the guide wire used for medical treatment consisting of a corrugated tube attached to a main guide wire or an extension wire and a straight bar part formed at the end of said extension wire of said main guide wire wherein said straight bar part is inserted into said corrugated tube to fix elastic deformation resistance produced by both of said corrugated tube and said straight bar part.

5,851,193
METHOD AND DEVICE FOR THE SIMULTANEOUS ANALYSIS OF AMBULATORILY RECORDED MOVEMENTS OF AN INDIVIDUAL'S DIFFERENT BODY PARTS

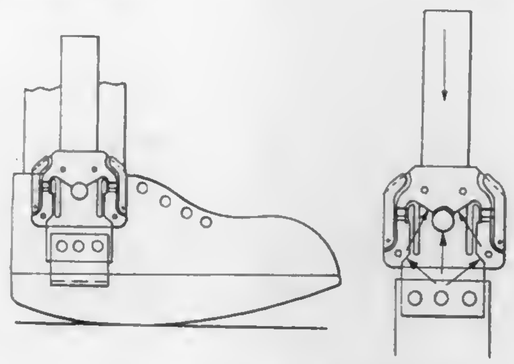
Harri Arikka, Haritunkatu 11 as 1, FIN-20740 Turku; Juha Markkula, Rykmentintie 64 J 131, FIN-20880 Turku, and Hannu Lauerma, Karjakuja 41 as 4, FIN-20540 Turku, all of Finland
PCT No. PCT/FI95/00425, § 371 Date Feb. 11, 1997, § 102(e) Date Feb. 11, 1997, PCT Pub. No. WO96/04848, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 11, 1995, Ser. No. 776,930
Claims priority, application Finland, Aug. 15, 1994, 943741
Int. Cl.⁶ A61B *5/10*
U.S. Cl. 600—595 **12 Claims**



1. Method for analysis of movements of several different parts of an individual's body recorded by ambulatory measurement comprising registering the movements of several different parts of an individual's body by an accelerometer attached to each body part to be monitored, storing a signal from each accelerometer into memory, retrieving the signals registered by the accelerometers from the memory and synchronously conducting the signals retrieved from the memory to a detector thereby enabling simultaneous monitoring of the movements of the different body parts.

5,851,194
QUICK RELEASE MECHANISM FOR ORTHOPEDIC LIMB BRACE

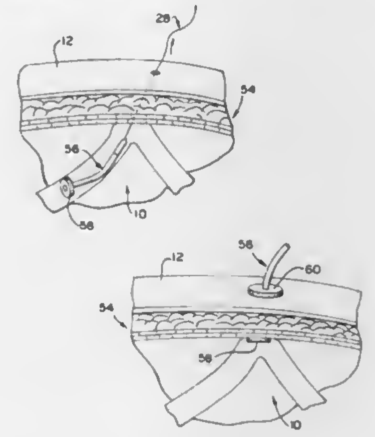
Richard A. Fratrick, 737 W. Glendale Ave., Glendale, Wis. 53209
Filed Jul. 17, 1995, Ser. No. 503,197
Int. Cl.⁶ A61F *5/00*
U.S. Cl. 602—28 **40 Claims**



1. A quick release mechanism for an orthopedic support member, comprising:
a clip;
a clip frame for selectively and removably receiving said clip;
means for preventing relative movement between said clip and said clip frame when said clip is received in said clip frame;
at least one means for locking said clip to said clip frame located on one of said clip and said clip frame, wherein said means for locking is distinct from said means for preventing relative movement; and
a means for associating one of said clip and said clip frame with said orthopedic support member.

5,851,195
DIRECT PERCUTANEOUS ENDOSCOPIC JEJUNOSTOMY METHOD AND APPARATUS

Inderbir S. Gill, 151 Todds Rd. Saddlebrook Apartments #396, Lexington, Ky. 40509
Filed May 17, 1995, Ser. No. 443,149
Int. Cl.⁶ A61M *31/00*
U.S. Cl. 604—49 **16 Claims**

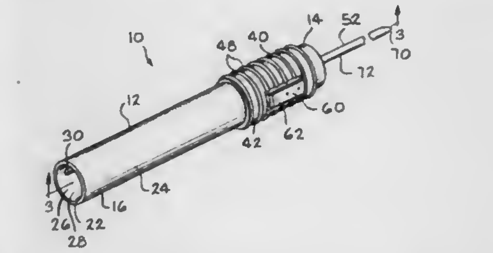


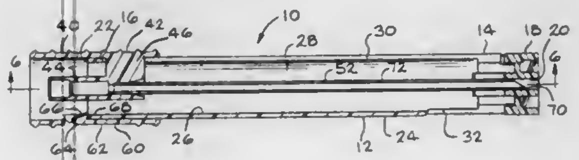
1. A method of forming direct percutaneous access of the small bowel and intubating the same with a percutaneous access catheter comprising the steps of:
advancing an elongated probe through the esophagus and into the small bowel, said elongated probe having a proximal end and a distal end, said elongated probe having a length such that when said distal end of the probe is within the small bowel said proximal end of the probe extends out from the mouth;

penetrating the small bowel wall with said distal end of said probe from within the small bowel;
advancing said distal end of the probe through the small bowel wall toward an adjacent abdominal wall;
penetrating the adjacent abdominal wall with said distal end of the probe to form a tract through the small bowel wall and the adjacent abdominal wall;
securing a catheter to said proximal end of the probe, the catheter having a proximal end and a distal end and being secured to said probe by the catheter proximal end; and,
pulling said distal end of the probe such that said probe passes through the small bowel wall and abdominal wall, and the percutaneous access catheter extends from within the small bowel to outside the patient through the abdominal wall.

5,851,196
NEEDLE PROTECTOR

Jeffery D. Arnett, Ypsilanti, Mich., assignor to Vadus, Inc., Toledo, Ohio
Continuation of Ser. No. 692,074, Aug. 7, 1996, abandoned. This application Sep. 23, 1997, Ser. No. 935,523
Int. Cl.⁶ A61M *5/00*
U.S. Cl. 604—110 **6 Claims**

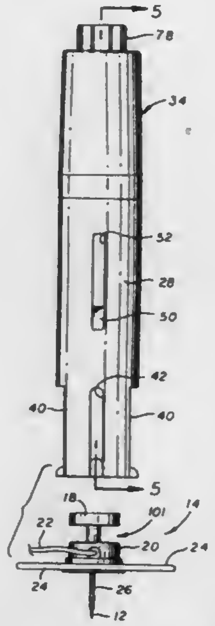




1. A needle protector, comprising:
a body having a first end and a second end, said body having a continuous wall defining a channel extending substantially between said first and second ends, said continuous wall defining a recess having a recess edge adjacent to said first end opposite said channel, said continuous wall defining an edge adjacent to said second end;
a needle hub movably mounted on said body, said needle hub having an external portion, an internal portion and a tracking member extending between said external and internal portions, said tracking member positioned in said channel, said external portion including a single locking arm having an elongated flexible member extending longitudinally from said external portion and an inwardly projecting locking member including a chamfer and a locking edge, and wherein said external portion further including a plurality of circumferentially extending gripping members to prevent slippage of a user's fingers during use and movement of the needle hub; and
a needle mounted on said internal portion of said needle hub, whereby movement of said needle hub from said first end to said second end results in corresponding movement of said needle into said body until said locking edge of said locking arm irreversibly engages said end edge of said second end thereby preventing movement of said needle from said body;
wherein said external portion circumferentially surrounds said body and said locking arm is located within said recess when said needle hub is at said first end of said body.

5,851,197
INJECTOR FOR A SUBCUTANEOUS INFUSION SET

April A. Marano, Los Angeles; Jeffrey F. Field, Northridge, and Jeffery V. Funderburk, Granadá Hills, all of Calif., assignors to Minimed Inc., Sylmar, Calif.
Filed Feb. 5, 1997, Ser. No. 795,968
Int. Cl.⁶ A61M *5/20*
U.S. Cl. 604—135 **24 Claims**



1. An injector for transcutaneously placing a medical needle through the skin of a patient, comprising:
a barrel having an elongated bore formed therein;
a plunger slidably received within said barrel for movement between an advanced position and a retracted position, said plunger including means for receiving and supporting the medical needle in a position for transcutaneous placement upon movement of said plunger from said retracted position to said advanced position;
spring means for urging said plunger toward said advanced position; and
trigger means for releasibly retaining said plunger in said retracted position, said trigger means being operable to release said plunger for spring-loaded movement with a controlled force and speed toward said advanced position;
said means for receiving and supporting the medical needle including safety retainer means for retaining the medical needle on said plunger when said plunger is moved from said retracted position to said advanced position, said retainer means permitting separation of the medical needle from said plunger when said plunger is in the advanced position.

5,851,198
GAS PRESSURED NEEDLE-LESS INJECTION DEVICE AND METHOD

Thomas P. Castellano, Reno, Nev., and Robert Schumacher, Beverly Hills, Calif., assignors to Visionary Medical Products Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 541,470, Oct. 10, 1995, abandoned. This application Oct. 9, 1996, Ser. No. 727,911
Int. Cl.⁶ A61M *5/30*
U.S. Cl. 604—68 **20 Claims**

1. A needle-less injector suitable for injecting liquid medication through a skin surface of a patient, the needle-less injector comprising:
a housing containing the liquid medication, wherein the housing includes an injection end with an orifice and a trigger portion opposite the injection end, wherein the injection end is stationary and fixed relative to the housing;

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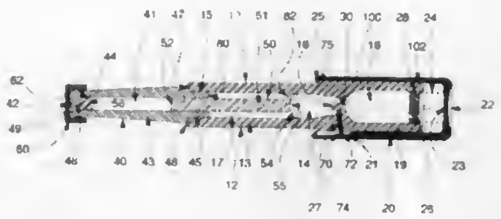
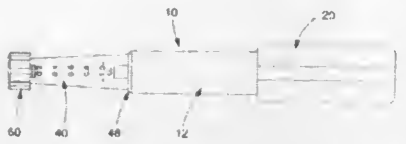




- a driver that forces the medication out of the orifice of the injection end of the housing at a sufficient speed to pierce the skin surface of the patient;
- an at least partially external resistance sensitive trigger operatively coupled to the driver and the trigger portion of the housing, wherein movement of the resistance sensitive trigger activates the driver to force the liquid medication out of the orifice of the injection end of the housing upon application of a predetermined amount of pressure to the resistance sensitive trigger to move the resistance sensitive trigger relative to the housing towards the injection end and the skin surface and that is opposed by a predetermined amount of resistance from the skin surface of the patient resulting from the injection end of the housing having contact with the skin surface of the patient such that only the forced out liquid medication will pierce the skin surface of the patient, and wherein the resistance sensitive trigger moves closer towards the skin surface during an injection while the injection end and the housing remain substantially stationary relative to the skin surface, and wherein the resistance sensitive trigger is operatively decoupled from the driver after the injection.

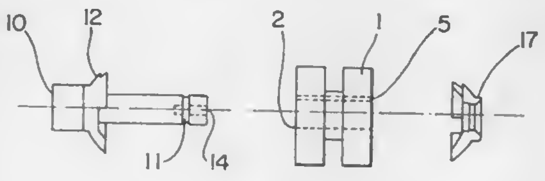
5,851,199
OTOLOGICAL DRAIN TUBE

Sidney A. Peerless, 3131 Harvey Ave., Cincinati, Ohio 45229, and Joseph C. Burge, 1 Rabbits Run, Palm Beach Gardens, Fla. 33418

Filed Oct. 14, 1997, Ser. No. 949,466

Int. Cl.⁶ A61M ***5/00***

U.S. Cl. 604—8 **11 Claims**



1. An otological drain tube which is capable of being implanted in the ear drum to vent the differential pressure that can build up across the ear drum as the result of blocked eustachian tubes, a buildup of internal liquid pressure in the inner ear due to illness, or a change in atmospheric pressure, the otological tube comprising: a central body, a cap-plug which consists of a first end cap and an integrally molded plug body; a second end cap, and a means for permanently securing the elements together when assembled, wherein the assembly of these elements creates a plurality of lumens within the central body, wherein the cross-sectional area of each lumen is equal to 0.00001257 to 0.0000196 square inches, and further having the first and second end caps containing therein integral support posts which are positioned to prevent the end caps from closing against the central body when pressure is applied to the end cap outer face, the first and second end caps further preventing particulate matter from entering the otological drain tube without impeding the flow of air or liquid therethrough, the otological drain tube being manufactured of plastic material which is inexpensively molded, sterilized, and plated with a protective metal coating.

5,851,200
SYRINGE, ITS SEALING STRUCTURE AND SEALING METHOD AND SLIDING VALVE FOR SYRINGE

Tetsuro Higashikawa, and Hirokazu Suzuki, both of Tokyo, Japan, assignors to Tetsuro Higashikawa, Tokyo, Japan

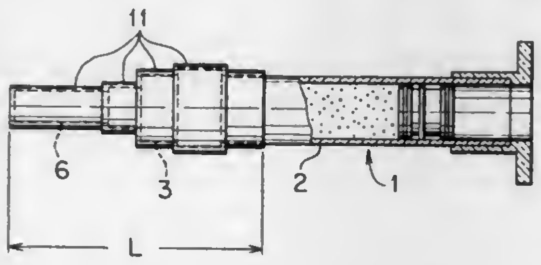
PCT No. PCT/JP95/02728, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO97/05916, PCT Pub. Date Feb. 20, 1997

PCT Filed Dec. 27, 1995, Ser. No. 765,902

Claims priority, application Japan, Aug. 9, 1995, 7-203352; Aug. 17, 1995, 7-209410

Int. Cl.⁶ A61M ***5/00***

U.S. Cl. 604—199 **16 Claims**



1. A method of sealing a syringe to prevent post sterilization intrusion of water vapor and/or bacteria into the interior of the syringe, comprising the steps of:

- immersing at least a portion of a syringe including a portion of a barrel and a cap which is seated on the end of the barrel and which covers a syringe needle connection portion, in a liquefied synthetic resin;
- lifting the syringe out of the liquefied resin; and
- allowing a coating of resin on the surface of the syringe to harden and form a hermetic paint-like film over the exterior of the barrel to cover and hermetically seal at least a portion of the syringe barrel and a cap which covers a syringe needle connection portion against the intrusion of water vapor and bacteria.

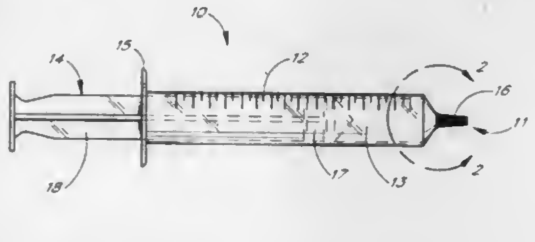
5,851,201
LUER CONNECTOR

Philip L. Ritger, Huntington Beach, and Miguel Leon, Whittier, both of Calif., assignors to Acacia Laboratories, Inc., Santa Ana, Calif.

Filed Jan. 19, 1996, Ser. No. 587,739

Int. Cl.⁶ A61M ***5/00***

U.S. Cl. 604—240 **10 Claims**



1. A syringe, comprising:

- a hollow barrel with an open proximal end and a conical distal tip;
- a plunger assembly inserted into the open proximal end, the plunger assembly and the hollow barrel defining an internal variable volume chamber for retaining fluid:

wherein the exterior surface of the tip is provided with a non-coated texture, such that the force required to disengage the tip from a conically-shaped female fitment when a fluid is present between the tip and the fitment is equal to or greater than the force required to disengage the tip and the fitment when the tip and the fitment are dry. and the force required to disengage the tip from the female fitment in the dry state does not exceed the force required to disengage an identically dimensioned coated tip from the female fitment in the dry state.

5,851,202
DRIP CHAMBER HEAD

Per-Olov Carlsson, Sosdala, Sweden, assignor to Gambro AB, Sweden

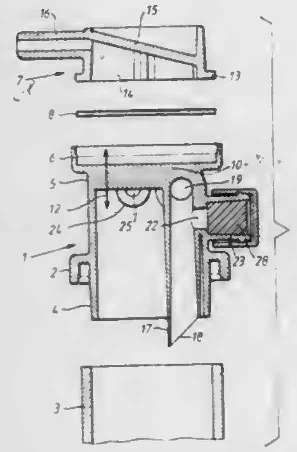
PCT No. PCT/SE95/00797, § 371 Date Mar. 31, 1997, § 102(e) Date Mar. 31, 1997, PCT Pub. No. WO96/04944, PCT Pub. Date Feb. 22, 1996

PCT Filed Jun. 28, 1995, Ser. No. 750,927

Claims priority, application Sweden, Aug. 15, 1994, 9402721

Int. Cl.⁶ A61M ***5/00***

U.S. Cl. 604—247 **11 Claims**



1. A drip chamber head for attachment to a drip chamber, said drip chamber head comprising a vertically arranged body portion having an upper portion and a lower portion, first connection means for connecting said body portion to a supply of blood and a drip member disposed within said body portion and including an upper portion and a depending lower portion, said upper portion of said drip member being in communication with said first connecting means whereby said blood may be supplied to said drip chamber through said first connecting means and said drip member, thereby providing said blood at an adjustable level within said drip chamber with an air filled region thereabove, second connecting means disposed at said upper portion of said body portion communicating with said air filled region of said drip chamber, a cap disposed at said upper portion of said body portion for closing off said lower body portion, and an air permeable filter disposed at said upper portion of said body portion between said cap and said lower body portion above said adjustable level of said blood within said drip chamber whereby the air pressure within said air filled region of said drip chamber can be sensed through said second connecting means.

5,851,203
NEURO-MICROCATHETER

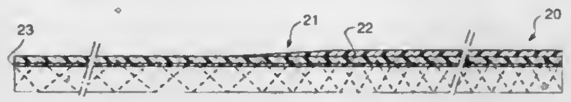
Johannes Gerardus Maria van Muiden, Peize, Netherlands, assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 313,740, Sep. 22, 1994, abandoned. This application Jul. 14, 1997, Ser. No. 892,562

Claims priority, application Netherlands, Sep. 22, 1993, 93.01642

Int. Cl.⁶ A61M ***25/00***

U.S. Cl. 604—282 **14 Claims**



1. A neuro-microcatheter especially adapted for use in the small blood vessels of the brain, said neuro-microcatheter comprising a generally tubular body including a proximal portion, a transition portion and a distal portion and having at least one lumen therein extending from a distal end of said tubular body to a proximal end of said tubular body to which a connecting member can be connected, said lumen having a constant diameter over substantially its entire length and being coated over substantially its entire length with a low friction material, said tubular body comprising a relatively stiff layer of material in said proximal portion and a relatively flexible layer in said distal portion, said tubular body having in said transition portion an outer diameter which decreases continuously and gradually, over a substantial portion of its length, in the direction from said proximal end of said tubular body toward said distal end of said tubular body, said stiff layer of material extending from said proximal portion into said transition portion where it has a wall thickness which decreases as it extends into said transition portion and reduces to zero toward said distal end of said tubular body, said flexible layer of material extending the substantial length of said tubular body and having a wall thickness which is substantially constant over substantially the entire length of said tubular body, said transition portion increasing in flexibility in the direction from said proximal end of said tubular body toward said distal end of said tubular body, a reinforcing layer in a said flexible layer, braided or wound, of threads or filaments situated within said tubular body, and said transition portion having a length between at least 5 centimeters and approximately 1 meter.

5,851,204
DISPOSABLE ABSORBENT ARTICLE

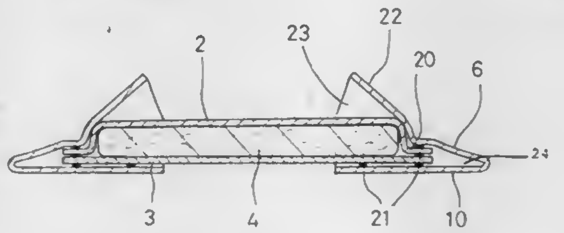
Satoshi Mizutani, Kawanoe, Japan, assignor to Uni-Charm Corporation, Ehime-ken, Japan

Continuation of Ser. No. 437,744, May 9, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 747,706

Claims priority, application Japan, May 10, 1994, 6-096600

Int. Cl.⁶ A61F ***13/15***

U.S. Cl. 604—385.2 **5 Claims**



1. A disposable sanitary napkin capable of placement within a garment, comprising:

- a liquid-permeable topsheet;
- a liquid-impermeable backsheet;
- a liquid-absorbent core disposed between said topsheet and backsheet;
- a pair of side flaps formed separate from the topsheet and backsheet and extending along transversely opposite side

edges of said core, wherein the side flaps are attached to the topsheet and the backsheet; and

each of said side flaps comprising a longitudinally extending strip of soft, stretchable and liquid resistant sheet material bonded to an upper surface of said topsheet along a first side of said strip and which first side includes an intermediate portion and a free edge portion both of which portions extend inwardly from an associated side edge of the core to overlap the core when the napkin is in a flat position, each side flap including a folded portion formed outward from said side edge of said core and including a second side of said strip extending back inward from the folded portion into bonded attachment with said backsheet.

5,851,205

DISPOSABLE UNDERGARMENT HAVING A TAPE FASTENER

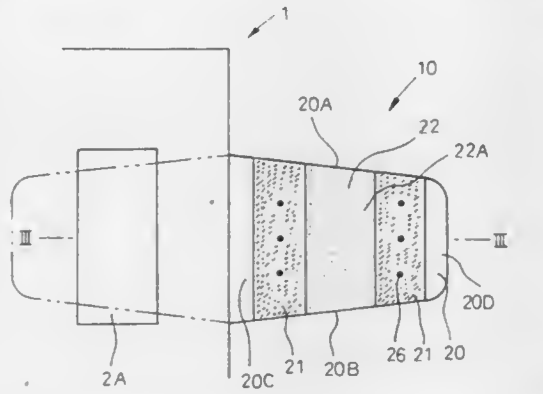
Kenichi Hisada; Tsutomu Kido, both of Ehime-ken, and Yoshitaka Mishima, Kagawa-ken, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Jul. 24, 1996, Ser. No. 686,624

Claims priority, application Japan, Jul. 28, 1995, 7-193580

Int. Cl.^{6} A61F *13/16*

U.S. Cl. 604—390 **9 Claims**



1. In a disposable undergarment having a front waist region and a rear waist region and at least one tape fastener connected to secure the regions together during use, the improvement comprising:

said tape fastener including a relatively soft base panel member extending laterally outward from a transverse side edge of said rear waist region and having a base end and a free end, inner and outer surfaces and upper and lower edges, and at least two relatively rigid fastening panel members having a plurality of one hook elements and loop elements provided at longitudinally spaced apart locations on the inner surface between the upper and lower edges of said base panel member, and an adhesive region provided on the inner surface of said base panel member between said fastening panel members;

said fastening panel members being fixedly bonded to the inner surface of said base panel member; and

a fastening region having a plurality of the other of said hook elements and loop elements provided on an outer surface of said front waist region to be releasably engaged with said fastening panel members, wherein said fastening panel members are arranged such that, even if one of the spaced apart fastening panel members is inadvertently disengaged from said fastening region with a disengaging force, the other one of said fastening panel members is unaffected by the disengaging force to thereby remain in fastening contact with said fastening region, and wherein said adhesive region is provided between said fastening panel members to enable a soiled said disposable undergarment to be rolled up and remain in a rolled condition with said adhesive regions.

5,851,206

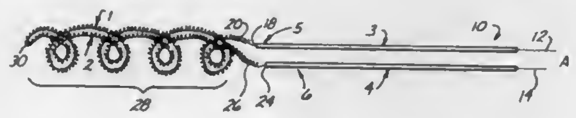
METHOD AND APPARATUS FOR ENDOVASCULAR THERMAL THROMBOSIS AND THERMAL CANCER TREATMENT

Guido Guglielmi, Santa Monica, and Cheng Ji, Los Angeles, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 311,508, Sep. 23, 1994, Pat. No. 5,540,680, which is a continuation-in-part of Ser. No. 840,211, Feb. 24, 1992, Pat. No. 5,354,295, which is a continuation-in-part of Ser. No. 492,717, Mar. 13, 1990, Pat. No. 5,122,136. This application Jun. 30, 1995, Ser. No. 497,294

Int. Cl.^{6} A61B *17/39*

U.S. Cl. 606—28 **19 Claims**



1. An endovascular device for use within a vascular system comprising:

at least one delivery wire having a first resistance; and

at least one detachable heating coil having a second resistance coupled to said delivery wire, said first resistance being less than said second resistance, wherein said delivery wire and heating coil are both electrically insulated to permit endovascular disposition of said delivery wire and heating coil into said vascular system for the purpose of delivering heat to a fluid within said vascular system at a predetermined location, substantially all of said heat being generated by electrical current flowing flowing within said heating coil rather than within said delivery wire,

whereby endovascular thermal treatment is provided within said vascular system.

5,851,207

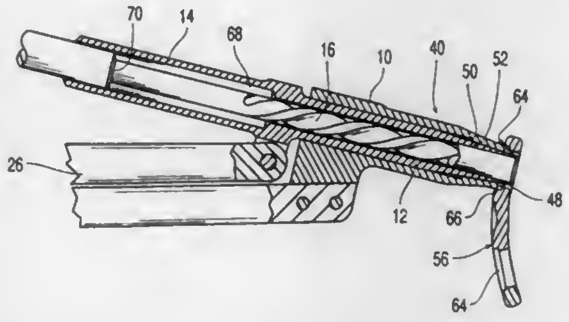
FREELY SEPARABLE SURGICAL DRILL GUIDE AND PLATE

Morris Daniel Cesarone, Philadelphia, Pa., assignor to Synthes (U.S.A.), Paoli, Pa.

Filed Jul. 1, 1997, Ser. No. 886,547

Int. Cl.^{6} A16B *17/80*

U.S. Cl. 606—69 **21 Claims**



1. Instrumentation for osteofixation comprising:

a bone plate with plate hole for receiving a bone fastener and having an inner wall; and

a surgical drill guide comprising guide member, for guiding a drill bit, and a hollow collet disposed substantially coaxially with the guide member and having a radially expandable forward end with a radially expandable neck and an outwardly projecting rim disposed forward of the neck, the rim being configured and dimensioned such that it is freely extractable through the plate hole in a contracted collet position and impassable through the plate hole in an expanded collet position, the neck being configured and dimensioned for pressing outwardly against an inner wall of the plate hole in the expanded collet position for releasibly securing the drill guide to the plate.

5,851,208

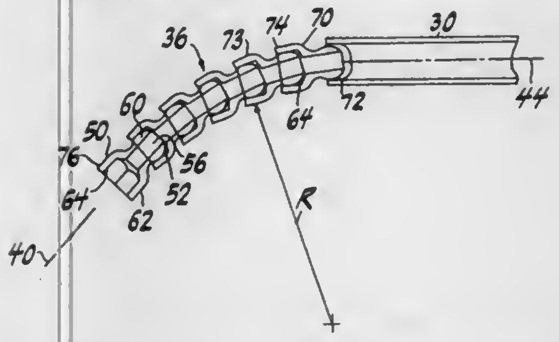
ROTATABLE SURGICAL BURR

A. Frank Trott, Largo, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Oct. 15, 1996, Ser. No. 732,539

Int. Cl.^{6} A61B *17/56*

U.S. Cl. 606—80 **3 Claims**



1. A method of producing a rotatable surgical cutter for use with a surgical instrument comprising the steps of:

providing an elongated tubular inner member having a proximal end, a distal end, an interior lumen and a hub at said proximal end for attaching said inner member to a source of rotation within the surgical instrument;

providing an elongated tubular outer member having a proximal end, a distal end and a hub at said proximal end for attaching said outer member to the surgical instrument;

attaching to the distal end of said outer member a cutting element rotatable relative to said outer member and having a distal end and a proximal end;

attaching to the distal end of said inner member a cannulated flexible coupling means for transmitting motion of said inner member to said cutting element, said flexible coupling means having a proximal end, irremovably attached to said distal end of said inner member, and a distal end for engaging the proximal end of said cutting element; and

selectively engaging the distal end of said flexible coupling means with the proximal end of said cutting element.

5,851,209

BONE CERCLAGE TOOL

Frederick J. Kummer, and Kenneth Koval, both of New York, N.Y., assignors to Hospital for Joint Diseases, New York, N.Y.

Filed Jan. 16, 1996, Ser. No. 586,228

Int. Cl.^{6} A61B *17/56*

U.S. Cl. 606—103 **12 Claims**

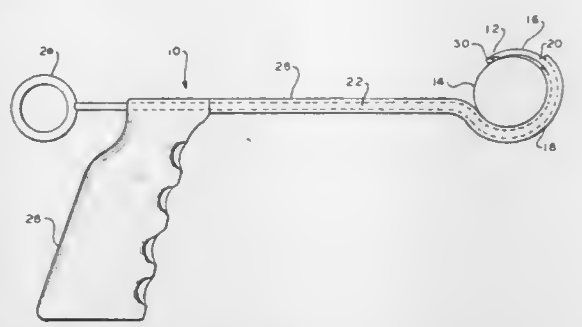
1. A bone cerclage tool consisting essentially of:

(a) a tubular housing member having a proximate end and a distal end and being formed of a material selected to alone enable at least said distal end to be bendable to a variety of curvatures, said distal end having an exit opening formed therein;

(b) a resilient member having an inner end and an outer end contained within the distal end of said tubular housing;

(c) means to attach an orthopedic surgical device to the outer end of said resilient member;

(d) means within said tubular housing for advancing and retracting said resilient member such that said resilient member is capable of being guided circumferentially bout a bone; and,



(e) means to grip said tubular housing at its proximate end.

5,851,210

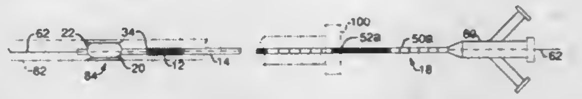
STENT DELIVERY SYSTEM AND METHOD

Richard Torossian, 1 Blueberry Rd., Windham, N.H. 03087

Filed Mar. 21, 1997, Ser. No. 822,162

Int. Cl.^{6} A61F *11/00*

U.S. Cl. 606—108 **21 Claims**



1. A stent delivery system, for delivering a stent to a target region in a vessel, said stent delivery system comprising:

a delivery catheter having a distal end and a proximal end, wherein said distal end of said delivery catheter is adapted to extend through said vessel to said target region in said vessel;

at least one dilation balloon disposed on said delivery catheter proximate to said distal end of said delivery catheter, for pre-dilating said target region of said vessel, said dilation balloon having a leading end and a trailing end;

a stent deployment mechanism disposed on said delivery catheter proximate to said dilation balloon, for deploying a stent to said target region of said vessel that has been pre-dilated by said dilation balloon, said stent deployment mechanism having a leading end and trailing end, wherein said leading end of said stent deployment mechanism is disposed at a predetermined distance from said leading end of said dilation balloon; and

said delivery catheter including at least one set of markers disposed proximate to said proximal end of said delivery catheter, wherein said at least one set of markers provides an indication of said predetermined distance between said leading end of said stent delivery mechanism and said leading end of said dilation balloon, for gauging movement of said dilation balloon and said stent delivery mechanism into alignment with said target region in said vessel.

5,851,211

SUTURE NEEDLE HOLDER METHOD AND APPARATUS

Jamil Al Khoury, 1038 Craig Dr., San Jose, Calif. 95129

Filed Apr. 22, 1997, Ser. No. 841,422

Int. Cl.^{6} A61B *17/04*

U.S. Cl. 606—147 **9 Claims**

1. A clamping means for use in surgical applications, comprising:

an elongated holder having a first clamping member extending from one extremity thereof, said holder having means forming a first camming surface;

pivot means disposed proximate said camming surface; and

an elongated member pivotably attached to said holder by said pivot means and having a portion at one end thereof forming a second clamping member for rotation into facing relationship with said first clamping member and the opposite extremity thereof forming a handle for facilitating rotation of

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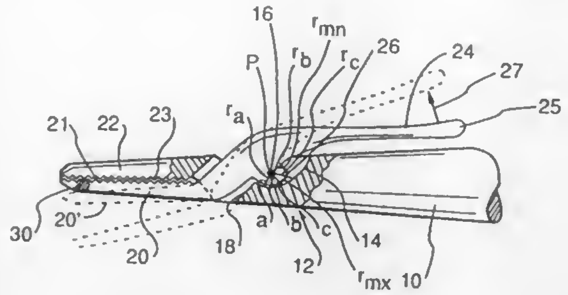
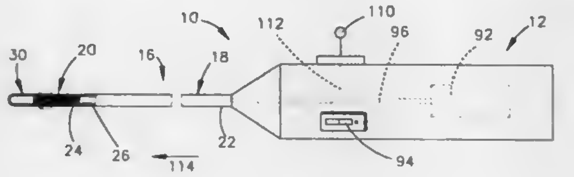


said second clamping member about said pivot means, said elongated member further including a camming means for frictionally engaging said camming surface as said second clamping member is rotated towards said first clamping member thereby locking said second clamping member relative to said first clamping member whereby a surgical needle may be clampingly engaged between said first and second clamping members.

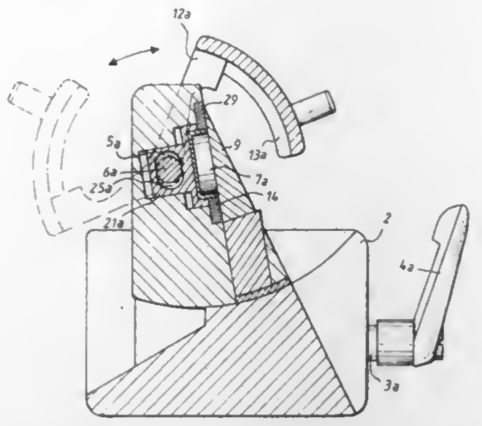
5,851,212
SURGICAL INSTRUMENT
Christopher T. Zlrps, Milton, and Newton E. Mack, Somerville, both of Mass., assignors to Endius Incorporated, Plainville, Mass.
Filed Jun. 11, 1997, Ser. No. 872,832
Int. Cl.^{6} A61B *17/32*
U.S. Cl. 606—167 **19 Claims**



11. A surgical instrument comprising:
a handle;
a rigid stem section extending from said handle, said rigid stem section defining a longitudinal axis of said surgical instrument; and
a flexible stem section extending from said rigid stem section;
said flexible stem section comprising a bendable outer tubular member and a bendable inner tubular member slidably and concentrically disposed within said outer tubular member, said outer tubular member having a neutral axis of bending, said inner tubular member having a neutral axis of bending spaced apart from the neutral axis of bending of said outer tubular member;
said flexible stem section being movable between a plurality of orientations relative to said axis in response to relative sliding movement between said inner and outer tubular members.

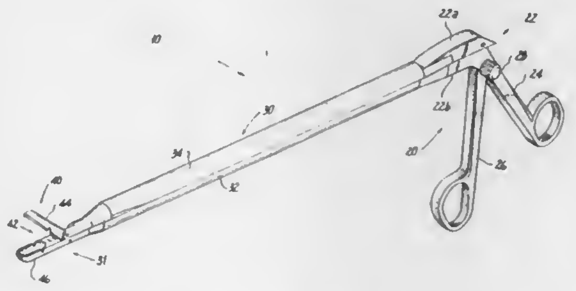
5,851,213
KNIFE HOLDER FOR A MICROTOME
Manfred Berleth, Eppelhelm, and Hans Heid, Bammental, both of Germany, assignors to Carl-Zeiss-Stiftung, Germany
Filed Sep. 29, 1997, Ser. No. 939,634
Claims priority, application Germany, Sep. 30, 1996, 19640045.7
Int. Cl.^{6} A61B *17/32*
U.S. Cl. 606—167 **10 Clalms**

1. A knife holder for holding a knife or a blade holder for a blade of a microtome, comprising:
at least one actuating lever (**12***a*, **12***b*) that is arranged, upon actuation, to fasten said knife or blade holder,



wherein said actuating lever (**12***a*, **12***b*) includes an extension (**13***a*, **13***b*) that extends at least partially over a cutting edge (**29**) of said knife or said blade.

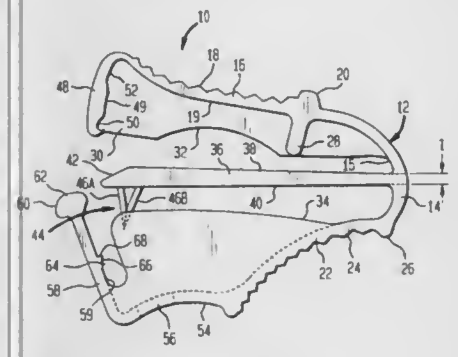
5,851,214
SURGICAL INSTRUMENT USEFUL FOR ENDOSCOPIC PROCEDURES
Scott W. Larsen; Christopher McDonnell, both of Newtown, and Scott W. Reed, Shelton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 320,478, Oct. 7, 1994, abandoned. This application Sep. 16, 1996, Ser. No. 713,091
Int. Cl.^{6} A61B *17/32*
U.S. Cl. 606—170 **24 Claims**



1. An endoscopic surgical instrument adapted to be readily disassembled to facilitate sterilization of component parts, which comprises:
a handle including a frame and an actuating grip moveable relative to the frame, the actuating grip being detachably mounted to the frame;
an elongated endoscopic portion extending from the handle and defining a longitudinal axis, the endoscopic portion including a first stationary portion and a second movable portion detachably mounted to the first stationary portion, the endoscopic portion having an outer arcuate dimension defined by arcuate outer surfaces of the first stationary portion and the second moveable portion;
connecting means for operatively connecting the first and second portions such that in an operative mode the second movable portion is in mounting engagement with the first stationary portion and is adapted for longitudinal linear movement relative to the first stationary portion between a first proximal position and a second distal position in response to movement of the actuating grip, in a non-operative mode with the actuating grip removed from the frame, the second movable portion is in mounting engagement with the first stationary portion and is further longitudinally moveable relative to the first stationary portion to a release position, and at the release position the second movable portion is capable of being detached from the first stationary portion to permit disassembly of the endoscopic portion, the first stationary portion and

the second movable portion having cooperating inner contacting surfaces correspondingly configured and dimensioned such that during longitudinal linear movement of the second movable portion between the first proximal position and the second distal position egress of gas through the endoscopic portion is minimized, the connecting means associated with the inner contacting surfaces of the first stationary portion and the second moveable portion, and being contained within the outer arcuate dimension of the endoscopic portion; and
a tool mechanism operatively associated with a distal end portion of the endoscopic portion and movable in response to movement of the second movable portion.

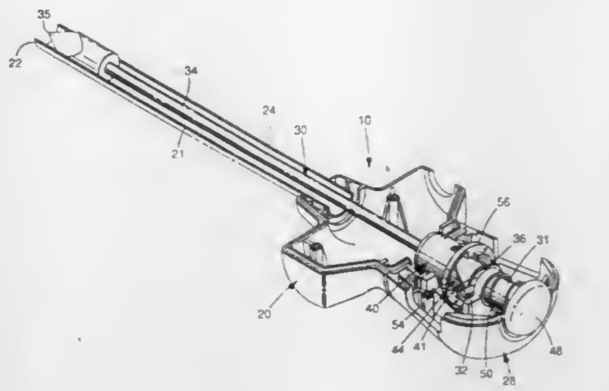
5,851,215
LOW COST DISPOSABLE LANCET
James A. Mawhirt, Brooklyn, N.Y.; Anthony F. Kuklo, Jr., Bridgewater, N.J.; Donald Foggia, Ocean, N.J., and Donald W. Allen, Point Pleasant, N.J., assignors to International Technidyne Corporation, Edison, N.J.
Filed Sep. 24, 1996, Ser. No. 718,773
Int. Cl.^{6} A61B *17/14*
U.S. Cl. 606—181 **23 Claims**



1. A safety lancet device, comprising:
a first arm member;
a second arm member slidably engaging along said first arm from a first position to a second position when said lancet device is compressed to operate by a user; and
a pivotally coupled beam member having a cutting blade disposed at an end thereof, said end of said beam member engaging said second arm member in said first position and disengaging said second arm in said second position, wherein said beam member resiliently deflects in a first direction as said second arm moves from said first position to said second position thereby causing a buildup of a biasing force in said beam member, said biasing force causing said beam member to accelerate said cutting blade through an aperture in said lancet device to incise the user's skin when said beam member disengages said second arm in said second position.

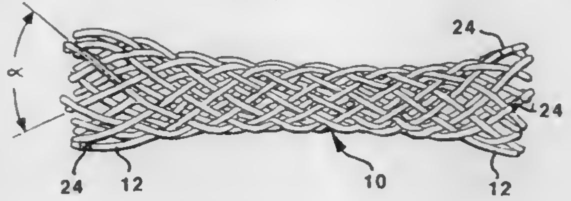
5,851,216
TROCAR
John J. Allen, Mendota Heights, Minn., assignor to Origin Medsystems, Menlo Park, Calif.
Continuation of Ser. No. 689,239, Aug. 6, 1996, abandoned, which is a continuation of Ser. No. 547,906, Oct. 25, 1995, abandoned, which is a continuation of Ser. No. 242,376, May 13, 1994, abandoned, which is a continuation of Ser. No. 48,274, Apr. 14, 1993, Pat. No. 5,346,459. This application Mar. 17, 1997, Ser. No. 818,875
Int. Cl.^{6} A61B *17/34*
U.S. Cl. 606—185 **13 Claims**

1. A trocar for placement in the lumen of a cannula to facilitate inserting the cannula through the wall of a body cavity, the trocar comprising:



a handle.
an elongate obturator having a proximal portion and a distal portion with a cutting surface for piercing the wall of the body cavity.
means mounting at least one of said proximal and distal portions for relative rotational movement, including a clutch having a first friction clutch surface on the proximal portion of the obturator and having a second friction clutch surface on the distal portion of the obturator.
retracting means for retracting said obturator proximally relative to the cannula as at least one of the proximal and distal portions rotate after the cutting surface has at least partially penetrated through the wall of the body cavity, wherein said retracting means comprises axial biasing means for axially biasing said obturator proximally toward a retracted position in substantially the direction of elongation of the obturator, and rotational biasing means for biasing at least one of said proximal an distal portions of the obturator to rotate relative to the other of said proximal and distal portions of the obturator.

5,851,217
INTRALUMENAL DRUG ELUTING PROSTHESIS
Rodney G. Wolff, Minnetonka Beach, and Vincent W. Hull, Ham Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 171,361, Dec. 21, 1993, Pat. No. 5,545,208, which is a continuation-in-part of Ser. No. 815,560, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 486,580, Feb. 28, 1990, abandoned. This application Apr. 27, 1995, Ser. No. 430,046
Int. Cl.^{6} A61F *2/06*
U.S. Cl. 606—191 **73 Claims**



1. A device for local intralumenal administration of drugs comprising:
(a) a catheter having proximal and distal ends;
(b) a first body in the form of an open-ended, radially expandable, self-supporting tubular structure, said first tubular body mounted on the catheter at the distal end thereof;
(c) a second body having a polymer with a drug compounded therein, the second body in the form of an open-ended, radially expandable tubular structure having an interior surface and an exterior surface, at least a portion of the polymer exposed at the exterior surface thereof, said second tubular body mounted on the catheter at the distal end thereof;

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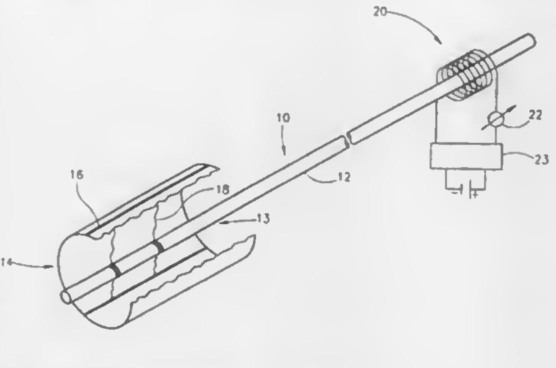
(d) means at the proximal end of the catheter for radially expanding the first and second tubular bodies to bring the self-supporting structure of the first tubular body into coaxial supporting contact with the interior surface of the second tubular body such that the polymer exposed at the exterior surface of the second tubular body contacts an interior portion of the body lumen to be treated.

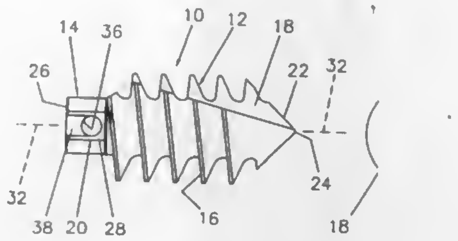
5,851,218
ANNULAR CATHETER METHOD OF ASSEMBLING AND METHOD OF USING THE SAME
Shlomo Lev, 25 Ahronowitz Street, Holon, Israel
Filed Jan. 2, 1997, Ser. No. 778,329
Claims priority, application Israel, Sep. 3, 1996, 119189
Int. Cl.^{6} A61M *29/00*
U.S. Cl. 606—198 **31 Claims**



1. A catheter, comprising:
(a) an element for transferring a magnetic force;
(b) at least one adjustable ring attached to said element such that at least a portion of said element is substantially within said at least one adjustable ring, said at least one adjustable ring being substantially continuous and said at least one adjustable ring featuring an inner surface, said at least one adjustable ring being alternately dilatable and collapsible in a substantially continuous manner, such that a distance between said inner surface of said at least one adjustable ring and said element is substantially continuously alterable within a range defined between a maximum distance, wherein said at least one adjustable ring is fully dilated, and a minimum distance, wherein said at least one adjustable ring is fully collapsed, said at least one adjustable ring being magnetizable, such that said distance between said inner surface of said at least one adjustable ring and said element is determined according to an amount of said magnetic force transferred by said element, and said at least one adjustable ring being capable of forming a fluid passageway; and
(c) a magnetization unit being connected to said element, said magnetization unit being located near a portion of said at least one adjustable ring, said magnetization unit determining said amount of said magnetic force transferred by said element.

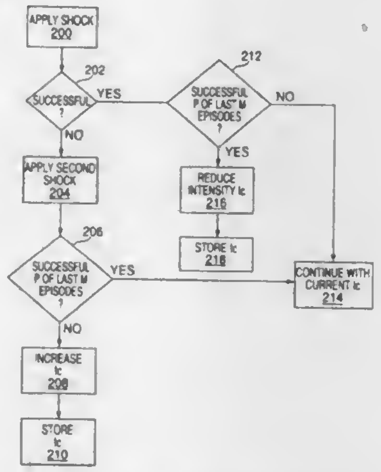
5,851,219
SUTURE ANCHOR ASSEMBLY
E. Marlowe Goble; Alan Chervitz; David P. Luman, and Kenneth L. Jensen, all of Logan, Utah, assignors to Mitek Surgical Products, Inc., Westwood, Mass.
Continuation of Ser. No. 393,553, Feb. 23, 1995, abandoned. This application Oct. 30, 1997, Ser. No. 960,936
Int. Cl.^{6} A61B *17/04*
U.S. Cl. 606—232 **7 Claims**

1. A suture anchor comprising:
a head portion having
a generally conically-shaped and pointed distal end portion with opposed flutes cut therethrough; and



screw threads extending from a proximal end of said conically-shaped distal end portion and substantially throughout an entire remainder of said head portion;
said flutes each cutting through said remainder of said head portion and interrupting opposed portions of said screw threads;
said flutes each cutting through said head portion inwardly removed from distal-most of said threads; and
said flutes each cutting through a plurality of proximal-most of said threads between inner and outer diameters of said plurality of proximal-most threads;
bottoms of said flutes diverging outwardly from said pointed distal end as said flutes extend proximally; and
a connector portion extending proximally from said head portion, said connector portion comprising
a plurality of planar sides extending throughout the length of said connector portion and terminating at an anchor proximal end surface, and defining the entire side surface of said connector portion;
said connector portion defining a bore therethrough extending from one of said planar sides to an opposed one of said planar sides, said bore being adapted to receive a suture therethrough; and
opposed channels extending from said anchor proximal end surface, through said one planar side and said opposed one of said planar sides, respectively, to respective opposite ends of said bore, said channels being adapted to receive the suture such that the suture does not extend outwardly beyond said one planar side and said opposed one planar side.

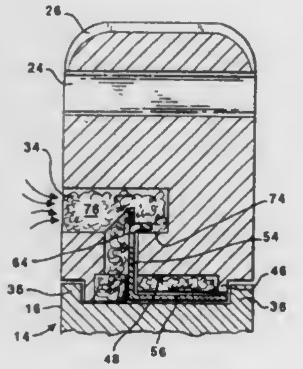
5,851,220
SYSTEM AND METHOD FOR AUTOMATIC ADJUSTMENT OF SHOCK PARAMETERS
Anthony J. Murphy, Dulwich Hill, Australia, assignor to Pacesetter, Inc., Sylmar, Calif.
Filed Nov. 25, 1997, Ser. No. 978,248
Int. Cl.^{6} A61N *1/39*
U.S. Cl. 607—5 **16 Claims**



1. An implantable defibrillator device comprising:

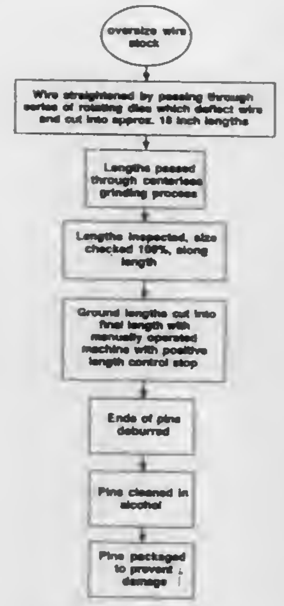
a defibrillation shock generator for generating defibrillation shocks, said defibrillation shocks having an intensity, said intensity being defined by a command;
a sensor for sensing if a plurality of defibrillation shocks for different fibrillation episodes were successful and generating a corresponding success rate;
a controller for generating said command, said controller being adapted to adjust said intensity based on said success rate.

5,851,221
ATTACHMENT APPARATUS AND METHOD FOR AN IMPLANTABLE MEDICAL DEVICE
Eric M. Rieder, Alton; Frank Gonzalez, Brampton; Randal C. Schulhauser, Brulington, all of Canada, and Bryan Zart, Shakopee, Minn., assignors to Medtronic Inc., Minneapolis, Minn.
Filed Aug. 1, 1997, Ser. No. 905,093
Int. Cl.^{6} A61N *1/375*
U.S. Cl. 607—93 **28 Claims**



1. A method of making an implantable medical device, comprising the steps of:
providing an hermetically sealed enclosure having an enclosure attachment surface disposed thereon;
providing a pre-formed module having a module attachment surface disposed thereon;
forming a retention structure extending away from the enclosure attachment surface into proximity with a portion of the pre-formed header module when the enclosure attachment surface and the module attachment surface of the pre-formed header module are aligned with respect to one another, the retention structure comprising a bendable member that may be bent from an initial position to allow the pre-formed header module to be seated with respect to the hermetically sealed enclosure in a retention position;
forming a bend engaging portion of the pre-formed header module;
aligning and firmly seating the module attachment surface against the enclosure attachment surface such that bendable member of the retention structure extending away from the enclosure surface is brought into proximity with the bend engaging portion of the pre-formed header module; and
applying a bending force to the bendable member to bend it into engagement with the bend engaging portion of the pre-formed header module to attach the pre-formed header module attachment surface to the enclosure attachment surface.

5,851,222
IMPLANTABLE MEDICAL DEVICE
William J. Taylor, Anonka; John D. Wright, Wyoming; Joseph F. Lessar, Coon Rapids, and Gary F. LaBree, Forest Lake, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 846,772, Apr. 30, 1997. This application Feb. 11, 1998, Ser. No. 23,015
Int. Cl.^{6} A61N *1/375*
U.S. Cl. 607—36 **6 Claims**


oversize wire stock
Wire straightened by passing through series of rotating dies which deflect wire and cut into approx. 18 inch lengths
Lengths passed through centerless grinding process
Lengths inspected, size checked 100%, along length
Ground lengths cut into final length with manually operated machine with positive length control stop
Ends of pins deburred
Pins cleaned in alcohol
Pins packaged to prevent damage

1. A method of making a pin for a feedthrough in an implantable medical device, comprising of the steps of:
(a) selecting over-size medical grade wire;
(b) straightening the wire by passing the wire through at least one rotating die;
(c) cutting the wire to form a wire of desired length;
(d) centerless grinding the wire of desired length to remove at least one of an anomaly and a defect from the surface thereof, and
(e) cutting the wire to form a pin having a final length suitable for use in the feedthrough, the pin having first and second ends.

5,851,223
COMBINATION NON-INTRUSIVE ANALGESIC NEUROAUGMENTIVE SYSTEM AND METHOD TRIPLE-MODULATED GIGATENS WITH OPTIONAL BIPOLAR SPIKE
Saul Liss, Hawthorne; Bernard Liss, Glen Rock, both of N.J.; C. Norman Shealy, Fair Grove, Mo.; Grigoriy S. Litvinov, and Valeri Lobarey, both of Kiev, Ukraine, assignors to Medi Consultants, Inc., Paterson, N.J.
Continuation-in-part of Ser. No. 227,014, Apr. 13, 1994, Pat. No. 5,571,149, which is a continuation-in-part of Ser. No. 82,131, Jun. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,873, May 4, 1992, abandoned, which is a continuation of Ser. No. 703,610, May 21, 1991, Pat. No. 5,109,847. This application Feb. 16, 1995, Ser. No. 389,499
Int. Cl.^{6} A61N *1/18*
U.S. Cl. 607—46 **17 Claims**

1. In combination, in a system for the treatment of certain neural responsive conditions, said system comprising:
A. means for generating a carrier frequency in the range of between 1 KHz and 300 GHz;
B. means for modulating said carrier at a frequency between 0.01 and 199 KHz; and

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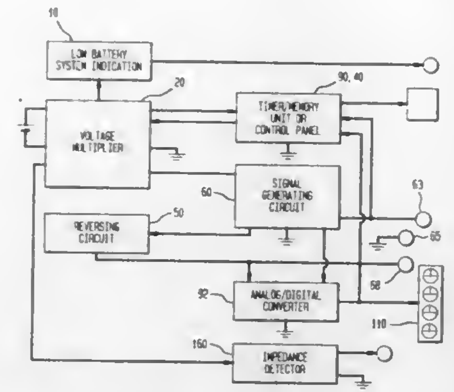


C. means for further modulating the carrier at a frequency in the range between 0.1 and 300 KHz; to produce a combined waveform;
D. means for further modulating the carrier frequency by generating a millimeter waveform in the GHz frequency range and modulating said carrier therewith to provide a gigahertz-modulated combined waveform; and
E. electrodes for applying said gigahertz-modulated combined waveform to a patient in need thereof.

5,851,224

Patent Not Issued For This Number

5,851,225

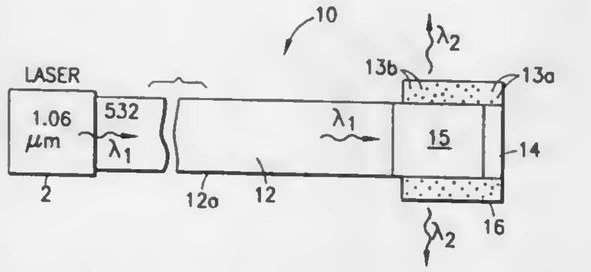
PHOTOEMITTING CATHETERS AND OTHER STRUCTURES SUITABLE FOR USE IN PHOTO-DYNAMIC THERAPY AND OTHER APPLICATIONS

Nabil M Lawandy, Providence, R.I., assignor to Spectra Science Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 401,356, Mar. 9, 1995, Pat. No. 5,625,456, which is a division of Ser. No. 210,710, Mar. 18, 1994, Pat. No. 5,448,582. This application Nov. 13, 1996, Ser. No. 748,380

Int. Cl.^{6} A61N *5/01*

U.S. Cl. 607—88 **11 Claims**



1. A method for performing photo-dynamic therapy (PDT), comprising the steps of:
treating a tissue of interest with at least one photo-sensitive therapeutic compound that responds to light having wavelengths within a predetermined band of wavelengths;
providing a structure that is positioned such that light generated in the structure will irradiate the tissue of interest, the structure comprising a gain medium that comprises a substance for generating a stimulated light emission that includes a selected wavelength, the structure further comprising a plurality of scattering sites for scattering the stimulated light emission to provide a narrow band emission at the selected wavelength;
generating excitation light at a location remote from the tissue of interest;
transmitting the excitation light to the structure;
in response to the transmitted excitation light, generating light in the structure, the light being generated to have the selected wavelength within the predetermined band of wavelengths; and
irradiating the tissue of interest and the therapeutic compound with the light having the selected wavelength in the predetermined band of wavelengths.

5,851,226

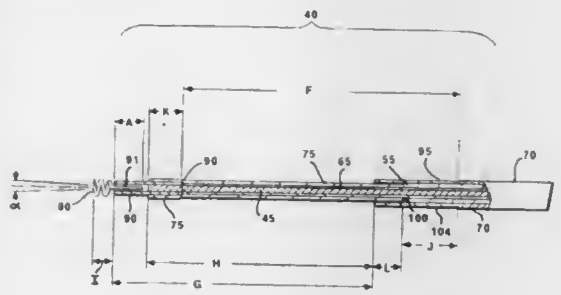
TEMPORARY TRANSVENOUS ENDOCARDIAL LEAD

Frank L. Skubitz, Andover; Gerald M. Herman, Fridley, and Terrell M. Williams, Brooklyn Park, all of Minn., assignors to Medtronic, Inc.

Filed Oct. 22, 1996, Ser. No. 734,915

Int. Cl.^{6} A61N *1/36*

U.S. Cl. 607—126 **123 Claims**



1. A temporary active fixation endocardial pacing lead having distal and proximal ends, comprising:
(a) a malleable, resilient lead body having a maximum diameter less than about 3.5 French and distal and proximal ends, the lead body comprising:
  (i) coaxial inner and outer electrical conductors, the outer conductor having an outer surface, electrically insulative material being disposed between the conductors, the inner conductor comprising at least one wire, the outer conductor comprising a plurality of wires capable of transferring sufficient torque from the proximal end of the lead body to the distal end of the lead body to permit screwable affixation of the distal end of the lead in endocardial tissue;
  (ii) an outer sheath formed of biocompatible and electrically insulative material, the sheath extending over and covering at least portions of the outer surface;
(b) first and second electrical connectors attached, respectively, to the proximal ends of the inner and outer electrical conductors;
(c) a helical screw-in retainer for active fixation in endocardial or myocardial tissue, the retainer being formed of biocompatible material, at least a portion of the retainer defining a tip electrode, the tip electrode being electrically and mechanically connected to the distal end of one of the inner and outer electrical conductors, the retainer having a diameter not exceeding about 4 French, the tip electrode having a surface area less than or equal to ten square millimeters;
(d) a ring electrode disposed between the retainer and the distal end of the lead body, the ring electrode being formed of biocompatible material and electrically connected to the distal end of the electrical conductor not attached to the retainer, the ratio of the surface area of the ring electrode to the surface area of the tip electrode being greater than or equal to 2:1, and
(e) a malleable, resilient tube-shaped guide catheter having a maximum outside diameter not exceeding about 6 French and formed of biocompatible material, the guide catheter having distal and proximal ends and inner and outer surfaces, the guide catheter sheathing and extending over at least a portion of the lead body, the inner surface of the guide catheter having a diameter sufficient to accept the lead body therewithin.

5,851,227

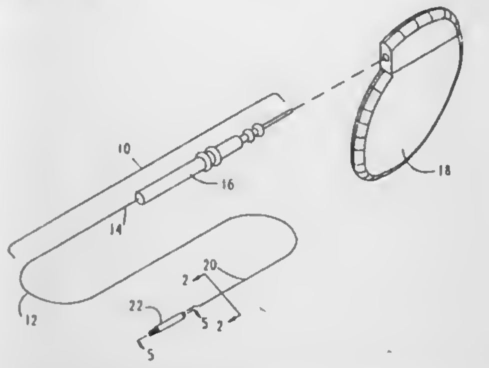
CARDIAC PACEMAKER CABLE LEAD

Paul R. Spehr, Lake Jackson, Tex., assignor to Sulzer Intermedics Inc., Angleton, Tex.

Filed Jul. 30, 1997, Ser. No. 903,363

Int. Cl.^{6} A61N *1/05*

U.S. Cl. 607—126 **19 Claims**



1. A lead assembly, comprising:
a tubular electrode housing having a proximal end, a fixation mechanism, a first electrode and a second electrode:
a lead body having a first end coupled to the proximal end of the tubular electrode housing, a second end, a first noncoiled conductor cable coupled to the first electrode, a second noncoiled conductor cable disposed in parallel relation to the first noncoiled conductor cable and coupled to the second electrode, and an insulative sleeve coating the first and second noncoiled conductor cables; and
a connector having a distal end coupled to the lead body for coupling to a cardiac stimulator.

5,851,228

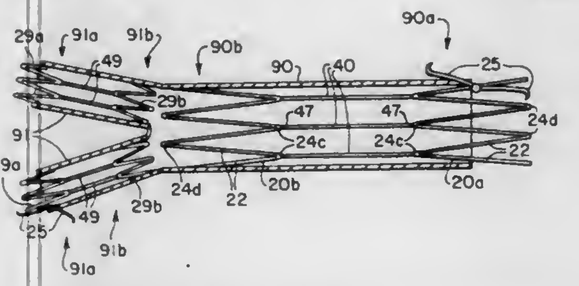
IMPLANTABLE INTRALUMINAL PROSTHESIS

Orlando S. Pinheiro, Harrison, N.J., assignor to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 456,783, Jun. 1, 1995, abandoned. This application Aug. 22, 1996, Ser. No. 701,539

Int. Cl.^{6} A61F *2/06*

U.S. Cl. 623—1 **17 Claims**



1. An implantable assembly comprising:
an elongate, generally tubular compressible bifurcated graft having an inner surface and including a first open end portion, an opposed second end portion, a first tubular leg and a second tubular leg, said first tubular leg and said second tubular leg extending from said second end portion and having leg open ends;
a first pair of resiliently compressible, radially expandable, generally tubular stents positioned within said tubular graft at spaced apart locations, one stent of said first pair being positioned adjacent said first open end portion and the other stent of said first pair being positioned adjacent said second end portion;
a first plurality of struts extending between and interconnecting said first pair of stents;
a second pair of spaced apart, resiliently compressible, radially expandable, generally tubular stents positioned within said first tubular leg, one stent of said second pair being located adjacent said leg open end of said first tubular leg;
a second plurality of struts extending between and interconnecting said second pair of stents;
a third pair of spaced apart, resiliently compressible, radially expandable, generally tubular stents positioned within said second tubular leg, one stent of said third pair being located adjacent said leg open end of said second tubular leg; and
a third plurality of struts extending between and interconnecting said third pair of stents;
said first, second and third plurality of struts being radially spaced about said inner surface of said graft and being positioned for contact therewith to provide internal support to said graft when in a compressed state and to further provide radial support along said length of said graft after radial expansion of said stents.

5,851,229

BIORESORBABLE SEALANTS FOR POROUS VASCULAR GRAFTS

David J. Lentz, Randolph; Gary L. Loomis, Morristown; Antonio Moroni, Morris Plains, and Jennifer DePreker, Rochelle Park, all of N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.

Filed Sep. 13, 1996, Ser. No. 713,801

Int. Cl.^{6} A61F *2/06;2/04*

U.S. Cl. 623—1 **19 Claims**

1. An implantable liquid-tight tubular prosthesis comprising:
inner and outer porous walls, said walls having a porosity which is conducive to tissue ingrowth, said walls further being impregnated with a hydrogel comprising in combination at least two polysaccharides which interact to form a stable bioresorbable liquid tight sealant throughout said tubular prosthesis.

5,851,230

VASCULAR GRAFT WITH A HEPARIN-CONTAINING COLLAGEN SEALANT

Kevin Weadock, Somerset; David J. Lentz, Randolph, and Jack Tant, Wayne, all of N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 289,792, Aug. 12, 1994, abandoned. This application Oct. 18, 1996, Ser. No. 733,544

Int. Cl.^{6} A61F *2/02*

U.S. Cl. 623—1 **10 Claims**

1. A synthetic vascular prosthesis comprising:
a collagen-heparin dispersion at alkaline pH within a range from about 9 to about 11;
said dispersion being applied to said prosthesis to effectuate sealing and impart enhanced anti-thrombogenic property thereto;
wherein the collagen applied to said prothesis is crosslinked.

5,851,231

INTRALUMENAL DRUG ELUTING PROSTHESIS

Rodney G. Wolff, Minnetonka Beach, and Vincent W. Hull, Ham Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 429,966, Apr. 27, 1995, which is a division of Ser. No. 171,361, Dec. 21, 1993, Pat. No. 5,545,208, which is a continuation-in-part of Ser. No. 815,560, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 486,580, Feb. 28, 1990, abandoned. This application Dec. 4, 1996, Ser. No. 759,197

Int. Cl.^{6} A61F *2/06*

U.S. Cl. 623—1 **9 Claims**

1. A device for local intralumenal administration of drugs comprising:

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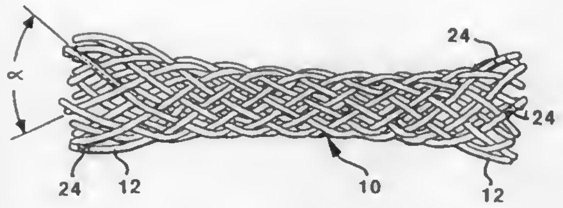


(a) a body including a plurality of support elements forming a open-ended, radially expandable, self-supporting tubular structure having an interior surface and an exterior surface, the tubular structure including as support elements a plurality of helical elements, each of which is wound in a helix configuration along a center line of the tubular body as a common axis, said helical elements wound in opposing helical directions such that the tubular body is variable in radial diameter under axial movement of opposite ends of the body relative to each other;

(b) a flexible, polymeric filament attached to the support elements of the body, at least a portion of the filament exposed at an exterior surface of the tubular body;

(c) a drug compounded into the polymeric filament such that the drug is delivered to the body lumen when the tubular body is radially expanded into contact with the portion of the body lumen to be treated; and

(d) a radially expandable stent of malleable metal in supporting contact with the tubular structure.

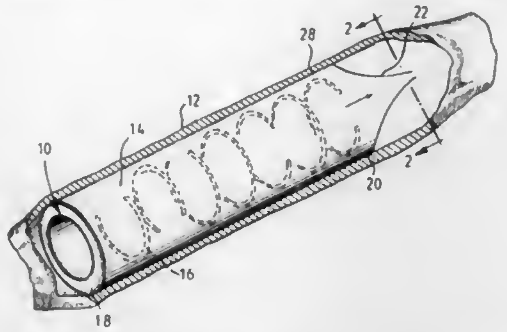
5,851,232
VENOUS STENT

William A. Lois, 2233 E. 65th St., Brooklyn, N.Y. 11234

Filed Mar. 15, 1997, Ser. No. 820,639

Int. Cl.^{6} A61F *2/06*

U.S. Cl. 623—1 **17 Claims**



1. A stent assembly for placement in a body lumen including an inner wall, said stent assembly comprising:

a) a cylindrical shell including an outer wall; and

b) a plurality of circular coils embedded within said shell, said assembly being changeable from a first unexpanded state for placement of said stent assembly within the body lumen to a second expanded state in which said outer wall of said cylindrical shell contacts the inner wall of the body lumen and said plurality of coils are each expanded to be substantially C-shaped in form for holding the body lumen open, wherein each of said plurality of coils are formed from cut rings, the cut in each of said plurality of coils forming first and second ends, said first and second ends being separated to form a gap therebetween, said plurality of gaps being staggered to cover a 360 degree rotation about said cylindrical shell when said stent assembly is in said second expanded state.

5,851,233
BLEACHING PROCESS COMPRISING USE OF A PHENOL OXIDIZING ENZYME, A HYDROGEN PEROXIDE SOURCE AND AN ENHANCING AGENT

Anders Hjelholt Pedersen, Lyngby, and Jesper Vallentin Kierulff, Valby, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK95/00418, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/12846, PCT Pub. Date May 2, 1996

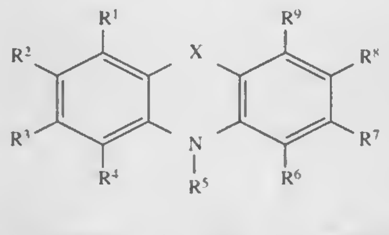
PCT Filed Oct. 18, 1995, Ser. No. 849,048

Claims priority, application Denmark, Oct. 20, 1994, 1216/94; Jul. 7, 1995, 803/95

Int. Cl.^{6} C11D *3/386;* **D06P** *3/02*

U.S. Cl. 8—102 **22 Claims**

1. A process for providing a bleached look in the colour density of the surface of dyed fabric, the process comprising contacting, in an aqueous medium, a dyed fabric with a phenol oxidizing enzyme system and an enhancing agent of the following formula:



in which X represents (—O—) or (—S—), and the substituent groups R^1–R^9, which are identical or different, independently represent any of the following radicals: hydrogen, halogen, hydroxy, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, sulfamoyl, nitro, amino, phenyl, C_1–C_{14}-alkyl, C_1–C_5-alkoxy, carbonyl-C_1–C_5-alkyl, aryl-C_1–C_5-alkyl; in which said carbamoyl, sulfamoyl and amino are unsubstituted or substituted once or twice with a substituent group R^{10}; in which said phenyl is unsubstituted or substituted with one or more substituent groups R^{10}; in which said C_1–C_{14}-alkyl, C_1–C_5-alkoxy, carbonyl-C_1–C_5-alkyl, and aryl-C_1–C_5-alkyl groups are saturated or unsaturated, branched or unbranched, and are unsubstituted or substituted with one or more substituent groups R^{10};

which substituent group R^{10} represents any of the following radicals: halogen, hydroxy, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, sulfamoyl, nitro, amino, phenyl, aminoalkyl, piperidino, piperazinyl, pyrrolidino, C_1–C_5-alkyl, C_1–C_5-alkoxy; in which said carbamoyl, sulfamoyl and amino is unsubstituted or substituted once or twice with hydroxy, C_1–C_5-alkyl, C_1–C_5-alkoxy; and in which said phenyl is substituted with one or more of the following radicals: halogen, hydroxy, amino, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, and sulfamoyl; and which said C_1–C_5-alkyl, and C_1–C_5-alkoxy are saturated or unsaturated, branched or unbranched, and is substituted once or twice with any of the following radicals: halogen, hydroxy, amino, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, and sulfamoyl;

or in which two of the substituent groups in R^1–R^9 form a group —B—, in which B represents any of the following groups: ($-CHR^{10}-N{=}N-$), ($-CH{=}CH-)_n$, ($-CH{=}N-$), or ($-N{=}CR^{10}-NR^{11}-$), in which groups n represents an integer of from 1 to 3, R^{10} is a substituent group as defined above and R^{11} is defined as R^{10}.

5,851,234
PROCESS FOR WET WASHING WOOL FABRIC

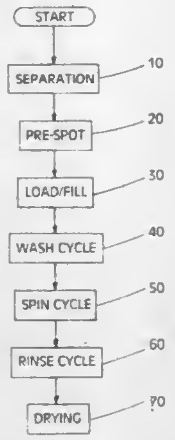
Ted Eugene Huneycutt, Norwood, N.C., assignor to Elite Textiles, Ltd., Albemarle, N.C.

Filed Mar. 13, 1997, Ser. No. 816,485

Int. Cl.^{6} D06L *1/12;1/16*

U.S. Cl. 8—137 **12 Claims**

1. A process for wet washing wool articles comprising:



a) washing the articles in an aqueous solution using a bi-directional intermittent agitation wash cycle;

b) tumble drying the articles to a moisture level of about 15% to about 20%; and

c) static drying the articles without mechanical action until substantially all of the remaining moisture in the articles is removed.

5,851,235
DETERGENT COMPOSITION COMPRISING AN AMYLASE ENZYME AND A NONIONIC POLYSACCHARIDE ETHER

Gerard Marcel Baillely; Nour-Eddine Guedira, and Robin Gibson Hall, all of Newcastle upon Tyne, Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US96/01646, § 371 Date Jul. 16, 1997, § 102(e) Date Jul. 16, 1997, PCT Pub. No. WO96/25478, PCT Pub. Date Aug. 22, 1996

PCT Filed Feb. 6, 1996, Ser. No. 875,012

Claims priority, application United Kingdom, Feb. 15, 1995, 9502914

Int. Cl.^{6} C11D *3/386;3/22;3/395*

U.S. Cl. 8—137 **13 Claims**

1. A detergent composition comprising:

a) 1% to 80% by weight, of a detersive surfactant;

b) from 0.01% to 10% by weight, of a nonionic polysaccharide ether which is a methyl cellulose ether having a molecular weight of 110,000 to 130,000; and

c) an amylase enzyme in an amount wherein the activity of said amylase enzyme is at least 0.001 Kilo Novo Units or at least 0.01 Fungal Alpha Amylase Units per gram of composition;

d) 5% to 30% of a percarbonate bleach.

5,851,236
AQUEOUS, CONCENTRATED POLYCARBOXYLIC ACID SODIUM SALT SOLUTIONS, THEIR PRODUCTION AND USE

Bernard Danner, and Francis Palacin, both of Riedisheim, France, assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Filed Aug. 14, 1997, Ser. No. 911,506

Claims priority, application European Pat. Off., Aug. 15, 1996, 968105445

Int. Cl.^{6} D06P *1/52;5/08;* **C08K** *5/17*

U.S. Cl. 8—137 **17 Claims**

1. Aqueous, homogeneous 20 to 60%, by weight, solution (L) of a mixture of

(A) copolymers of (x) (meth)acrylic acid with (y) maleic acid or maleic acid anhydride in the molar ratio (x)/(y) =0.7/1 to 7/1, with an average molecular weight M_w in the range of from 500 to 500,000, as free acids and/or sodium salts and

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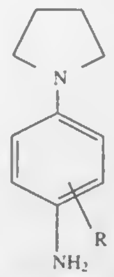
(B) Nitrilotriacetic acid as free acid and/or sodium salt, in which the weight ratio (A)/(B) is in the range of from 1/1 to 1/10, at least 25% of the total carboxy groups, in (A) and (B), are present as sodium salt and the pH of (L) is in the range of from 5 to 11.

5,851,237
OXIDATIVE HAIR DYE COMPOSITIONS AND METHODS CONTAINING 1—(4-AMINOPHENYL) PYRROLIDINES
James S. Anderson, 1 Summit La., Bethel, Conn. 06801, and Michael Y. M. Wong, 226 Adams Rd., Easton, Conn. 06612
Filed Jul. 14, 1997, Ser. No. 892,339
Int. Cl.^{6} A61K *7/13*

U.S. Cl. 8—409 **30 Claims**

1. In a composition for the oxidative coloring of hair, said composition containing a primary dye intermediate, a coupling compound, a cosmetically acceptable oxidizing agent selected from the group consisting of hydrogen peroxide, urea peroxide, melamine peroxide, perborates, and percarbonates, and a cosmetically acceptable vehicle, wherein said primary dye intermediate and said coupling compound form an oxidative hair dye in the presence of said cosmetically acceptable oxidizing agent, the improvement which comprises said primary dye intermediate is a 1-(4-aminophenyl) pyrrolidine, or a cosmetically acceptable salt thereof, having formula I:

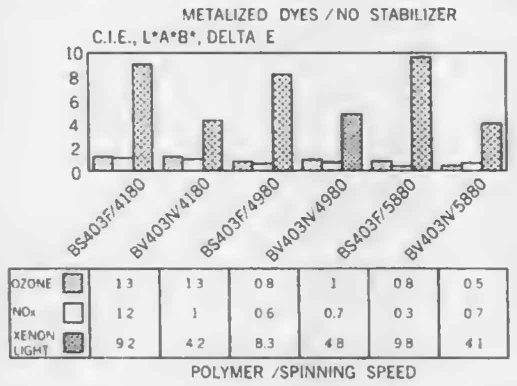


I:

wherein R is selected from the group consisting of hydrogen, C_1–C_6 alkyl and C_1–C_5 mono or polyhydroxyalkyl.

5,851,238
PHOTOCHEMICALLY STABILIZED POLYAMIDE COMPOSITIONS
Dean R. Gadoury, Asheville, and Bobby J. Bailey, Candler, both of N.C., assignors to BASF Corporation, Mt. Olive, N.J.
Filed Jul. 31, 1996, Ser. No. 690,692
Int. Cl.^{6} D06P *3/06*

U.S. Cl. 8—442 **12 Claims**



	BS403F/4180	BV403N/4180	BS403F/4980	BV403N/4980	BS403F/5880	BV403N/5880
OZONE ▨	1.3	1.3	0.8	1	0.8	0.5
NOx ☐	1.2	1	0.6	0.7	0.3	0.7
XENON LIGHT ▩	9.2	4.2	8.3	4.8	9.8	4.1

1. A photochemically stabilized nylon article comprising an article shaped from a polymer formed by hydrolytically polymerizing epsilon-caprolactam in the presence of water and at least one hindered piperidine derivative selected from the group consisting of:

3 amino-2,2',6,6'-tetramethylpiperidine;
4 amino-2,2',6,6'-tetramethylpiperidine;
4-(aminoalkyl)-2,2',6,6'-tetramethylpiperidine;
4-(aminoaryl)-2,2',6,6'-tetramethylpiperidine;
3-(aminoalkyl)-2,2',6,6'-tetramethylpiperidine;
3-(aminoaryl)-2,2',6,6'-tetramethylpiperidine;
2,2',6,6'-tetramethyl-4-piperidinealkylcarboxylic acid;
2,2',6,6'-tetramethyl-4-piperidinearylcarboxylic acid;
2,2',6,6'-tetramethyl-3-piperidinealkylcarboxylic acid; and
2,2',6,6'-tetramethyl-3-piperidinearylcarboxylic acid; and dyed with at least one metalized acid or with at least one nonmetalized acid dyestuff.

5,851,239
SPIN DYEING PROCESS WITH DYEING SALTS
Andreas Von Der Eltz, Frankfurt am Main, and Andreas Schrell, Kriftel, both of Germany, assignors to Dystar Textilfarben GmbH & Co., Germany
PCT No. PCT/EP96/02082, § 371 Date Nov. 21, 1997, § 102(e) Date Nov. 21, 1997, PCT Pub. No. WO96/37643, PCT Pub. Date Nov. 28, 1996
PCT Filed May 15, 1996, Ser. No. 952,769
Claims priority, application Germany, May 24, 1995, 195 19 024.6
Int. Cl.^{6} D06F *2/16;* **C08L** *1/24;* **D06P** *1/50;3/66*

U.S. Cl. 8—538 **12 Claims**

1. A process for preparing colored regenerated-cellulose fiber, which comprises adding a drysalt formulation comprising a cationized polysaccharide and an anionic dye to a viscose dope, an alkali cellulose or a cellulose solution and spinning fiber by a viscose spinning process or from the cellulose solution.

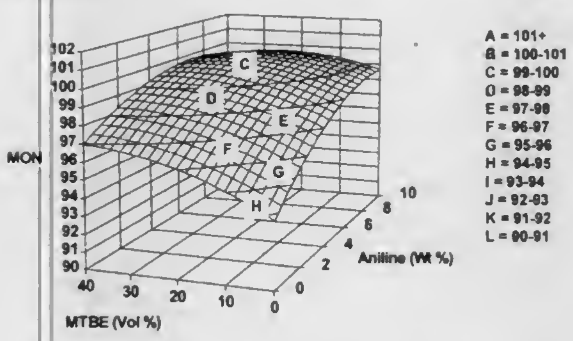
5,851,240
PROCESS FOR DYEING CELLULOSIC TEXTILE FIBRE MATERIALS
Alex Känzig, Therwil, Switzerland; Katharina Fritzsche, Weil am Rhein, Germany, and Peter Scheibli, Bottmingen, Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.
PCT No. PCT/EP95/05151, § 371 Date Jun. 11, 1997, § 102(e) Date Jun. 11, 1997, PCT Pub. No. WO96/21767, PCT Pub. Date Jul. 18, 1996
PCT Filed Dec. 29, 1995, Ser. No. 860,761
Claims priority, application Switzerland, Jan. 12, 1995, 92/95
Int. Cl.^{6} D06P *1/66;1/56;3/66*

U.S. Cl. 8—541 **8 Claims**

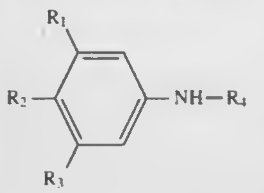
1. A process for dyeing and finishing cellulosic textile fibre material in one step, which process comprises applying to said textile fibre material by pad dyeing methods a liquor comprising
- (A) at least one reactive dye suitable for dyeing cellulosic materials,
- (B) a crosslinking agent for improving creasing and shrinkage, wherein the crosslinking agent is a glyoxalurea derivative, a melamine/formaldehyde condensate which may be partially or completely etherified, or a N-methylolurea compound which may be partially or completely etherified,
- (C) a crosslinking catalyst for anticrease and antishrinking finish, wherein the crosslinking catalyst is an inorganic acid, a Lewis acid, an ammonium salt or the hydrohalide of an organic amine, and
- (D) choline and subsequently fixing the dye on the textile fibre material.

5,851,241
HIGH OCTANE UNLEADED AVIATION GASOLINES
William M. Studzinski, Wappingers Falls; Joseph N. Valentine, Newburgh; Peter Dorn, Lagrangeville, all of N.Y.; Teddy G. Campbell, Brookfield, and Peter M. Liiva, Greenwich, both of Conn., assignors to Texaco Inc., White Plains, N.Y.
Filed May 14, 1997, Ser. No. 856,019
Int. Cl.^{6} C10L *1/18;1/22;1/30*

U.S. Cl. 44—359 **39 Claims**



1. An unleaded aviation fuel composition comprising:
(1) a wide boiling range alkylate basefuel having a boiling range from about 85° F.±10° F. to about 400° F.±15° F. and
(2) a substantially positive or synergistic combination of
  (a) an alkyl tertiary butyl ether, and
  (b) an aromatic amine having the formula



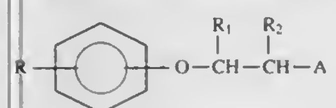
wherein R_1, R_2, R_3 and R_4 are hydrogen or a C_1–C_5 alkyl group,

wherein the alkyl tertiary butyl ether is 0.1 to 40 vol % of the composition and the aromatic amine is 0.1 to 10 wt % of the composition.

5,851,242
FUEL ADDITIVE COMPOSITIONS CONTAINING POLYALKYLPHENOXY-AMINOALKANES AND POLY (OXYALKYLENE) AMINES
Richard E. Cherpeck, Cotati; Jack E. Morris, El Cerrito, and Majid R. Ahmadi, Pinole, all of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.
Continuation-in-part of Ser. No. 645,992, May 14, 1996, Pat. No. 5,669,939. This application Apr. 30, 1997, Ser. No. 846,717
Int. Cl.^{6} C10L *1/22*

U.S. Cl. 44—425 **78 Claims**

1. A fuel additive composition comprising:
(a) a polyalkylphenoxyaminoalkane compound of the formula:



or a fuel-soluble salt thereof, wherein R is a polyalkyl group having an average molecular weight in the range of about 600 to 5,000;
R_1 and R_2 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and
A is amino, N-alkyl amino having about 1 to about 20 carbon atoms in the alkyl group, N,N-dialkyl amino having about 1 to about 20 carbon atoms in each alkyl group, or a polyamine moiety having about 2 to about 12 amine nitrogen atoms and about 2 to about 40 carbon atoms; and
(b) a poly(oxyalkylene) amine having at least one basic nitrogen atom and a sufficient number of oxyalkylene units to render the poly(oxyalkylene) amine soluble in hydrocarbons boiling in the gasoline or diesel fuel range.

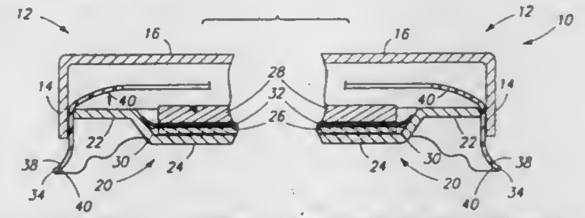
5,851,243
RADIOGRAPHIC ELEMENTS CAPABLE OF RAPID ACCESS PROCESSING MODIFIED TO REDUCE RED LIGHT TRANSMISSION
Robert E. Dickerson, Hamlin, and Rickey J. Seyler, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 30, 1997, Ser. No. 847,280
Int. Cl.^{6} G03C *1/10;5/16*

U.S. Cl. 430—517 **13 Claims**

1. A radiographic element capable of producing a maximum density of at least 3.0 when imagewise exposed by X-radiation stimulated intensifying screen emission of green light and processed in less than 45 seconds, said element being comprised of
a transparent film support having first and second major faces,
a fully forehardened hydrophilic colloid layer unit coated on each major face of the support, at least one of the layer units including radiation-sensitive silver halide grains,
one or a combination of magenta dyes, including a dye for spectrally sensitizing the radiation-sensitive silver halide grains to green light, said dyes leaving a residual density at 505 nm of greater than 0.1 when the element is processed in less than 45 seconds, and
a blue dye that increases neutral density in minimum density areas after imagewise exposure and processing,
WHEREIN, transmission of red light through the radiographic element when imagewise exposed and processed in less than 45 seconds to produce a viewable image is reduced by the incorporation in at least one of the hydrophilic colloid layers of at least one ionic linear condensation polymer containing a cyan phthalocyanine dye.

5,851,244
METHODS OF FORMING THIN PROFILE BATTERIES AND METHODS OF PROVIDING SEALING GASKETS BETWEEN BATTERY TERMINAL HOUSING MEMBERS
Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.
Continuation of Ser. No. 649,925, May 16, 1996, Pat. No. 5,662,718, which is a continuation of Ser. No. 348,543, Dec. 1, 1994, abandoned. This application Jul. 3, 1997, Ser. No. 888,353
Int. Cl.^{6} H01M *6/02*

U.S. Cl. 29—623.2 **2 Claims**



1. A method of forming a thin profile battery defined by a thickness which is less than a maximum linear dimension of its anode, comprising the following steps:
providing a conductive first terminal housing member having a surrounding peripheral portion;
providing a conductive second terminal housing member having a surrounding peripheral portion;
providing a gasket in an intermediate position between the first and second terminal housing members, the gasket being circular and having a radial extent which extends outwardly

beyond the surrounding peripheral portions of the first and second terminal housing members; and

moving at least one of the first and second terminal housing members in the direction of the other to force the radial extent of the gasket to be received within the first terminal housing member and to bend the gasket.

5,851,245
METHOD FOR PRODUCING SUPERHEAVY OIL EMULSION FUEL AND FUEL PRODUCED THEREBY

Noboru Moriyama, Wakayama; Akio Hiraki; Toshimitsu Ichinose, both of Nagasaki, and Koichi Sakamoto, Tokyo, all of Japan, assignors to Kao Corporation, and Mitsubishi Heavy Industries, Ltd., both of Tokyo, Japan

Filed May 23, 1997, Ser. No. 863,017

Claims priority, application Japan, May 23, 1996, 8-153184

Int. Cl.^{6} C10L *1/32*

U.S. Cl. 44—301 **12 Claims**

1. A method for producing a superheavy oil emulsion fuel comprising the steps of:

(i) preparing a liquid mixture comprising a superheavy oil, water, one or more nonionic surfactants having an HLB (hydrophilic-lipophilic balance) of 13 to 19, and optionally one or more stabilizers, and then agitating the resulting liquid mixture with a high shear rate of 1000/sec to 60000/sec, to give an oil-in-water (O/W) type emulsion fuel having a superheavy oil concentration of from 74 to 82% by weight, wherein said nonionic surfactants are contained in an amount of from 0.1 to 0.8% by weight of the emulsion fuel obtained in step (i), and wherein said stabilizers, when added, are contained in an amount of from 0.001 to 0.5% by weight of the emulsion fuel obtained in step (i); and

(ii) adding at least one ionic dispersant, and optionally water, to the emulsion fuel obtained in step (i), and then blending and agitating the resulting liquid mixture with a shear rate of 10/sec to 10000/sec, to give an oil-in-water (O/W) type emulsion fuel having a superheavy oil concentration of from 68 to 79% by weight, wherein said at least one ionic dispersant added in step (ii) is added in an amount of from 0.01 to 0.5% by weight of the emulsion fuel obtained in step (ii).

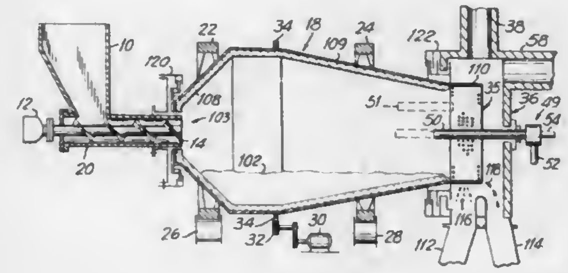
5,851,246
APPARATUS FOR GASIFYING ORGANIC MATERIALS

Norman G. Bishop, Houston, Tex., and Ricardo Viramontes-Brown, Garza Garcia, Mexico, assignors to Hylsa, S.A. de C.V., Monterrey, Mexico, and GTS Duratek, Inc., Columbia, Md.

Continuation-in-part of Ser. No. 158,195, Nov. 24, 1993, Pat. No. 5,425,792, which is a continuation of Ser. No. 879,608, May 7, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,371

Int. Cl.^{6} C10B *1/10*

U.S. Cl. 48—122 **19 Claims**



1. Apparatus for gasifying a charge containing significant amounts of organic materials to produce a synthesis gas, said apparatus comprising:

(a) a rotary reactor having a substantially horizontal axis of rotation with a refractory lining and with respective openings only at a charge end and at an opposing discharge end;

(b) a reactor charging device operative to feed the organic material containing charge through the opening at the charge end of the reactor in a manner to atmospherically seal the latter opening;

(c) a reactor-rotating drive for tumbling materials charged within said rotary reactor whereby such materials are mixed and caused to move, by effect of such tumbling action and by the volumetric displacement in the bed of added materials charged into said reactor, from said charge end to said discharge end;

(d) at least one flame-projecting continuous burner having a fuel supply and an oxygen-containing gas supply and any such burner being located at and directed into said reactor, only through its discharge opening, to above the bed formed of any of such materials charged therein and being capable of producing heat sufficient to pyrolyse and gasify organic materials present inside said reactor by combustion of supplied fuel with supplied oxygen-containing gas; and

(e) reactor seals substantially isolating the interior of said reactor.

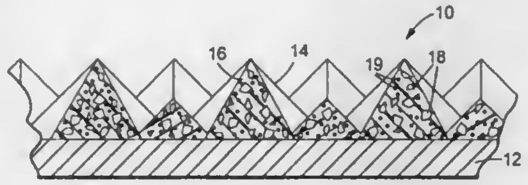
5,851,247
STRUCTURED ABRASIVE ARTICLE ADAPTED TO ABRADE A MILD STEEL WORKPIECE

William Lee Stoetzel, Lakeland; Eric George Larson, Lake Elmo, and Jeff W. Nelson, Bayport, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 803,791, Feb. 24, 1997, abandoned. This application Sep. 24, 1997, Ser. No. 936,441

Int. Cl.^{6} B24D *3/34*

U.S. Cl. 51—295 **14 Claims**



1. An abrasive article comprising precisely shaped abrasive composites adhered to a major surface of a backing, wherein the precisely shaped abrasive composites consist essentially of:

a binder;

abrasive particles;

water-insoluble metal silicate particles; and

a coupling agent;

wherein the abrasive composites provide an enhanced cut rate for a mild steel workpiece in the absence of a grinding aid.

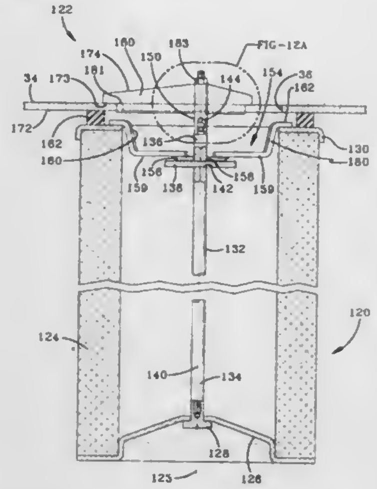
5,851,248
FILTER CARTRIDGE ASSEMBLY FOR POWDER COATING BOOTH AND COLLECTION SYSTEM

Timothy E. Wilson, Amherst; Donald Leonard Urig, Elyria; Michael A. Reighard, Avon Lake; David L. Ray, North Olmsted; Dean A. Koch, Amherst; Jeffrey R. Shutic, Wakeman; Christopher Hart Chandler, North Ridgeville; Robert J. Holland, Avon, all of Ohio, and Andreas Kress, Hoesbach-Bhf., Germany, assignors to Nordson Corporation, Westlake, Ohio

Continuation of Ser. No. 136,348, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 955,574, Oct. 2, 1992, abandoned. This application Dec. 5, 1995, Ser. No. 567,189

Int. Cl.^{6} B01D *39/00;35/30*

U.S. Cl. 55—357 **12 Claims**



1. A filter cartridge mount assembly, comprising:

a hollow filter cartridge having a bottom plate secured to a bottom end of said filter cartridge and a top end cap secured to a top end of said filter cartridge, said bottom plate having an internally threaded boss;

a tie rod extending through said filter cartridge and threadably engaged at one end to said threaded boss and at an opposite end to a support assembly, the tie rod having a handle extending therethrough within the filter cartridge; and

said support assembly being above the top end of said filter cartridge and supported in an opening through a top wall of a powder collector whereby said filter cartridge is secured against said top wall of said powder collector.

5,851,249
PARTICULATE TRAP FOR A DIESEL ENGINE

Yoshimitu Henda, Numazu; Kiyoshi Kobashi, Mishima; Yoshimasa Watanabe, Sunto-gun; Yasushi Araki, Susono; Youichi Nagai, and Syunsuke Ban, both of Itami, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Sumitomo Electric Industries, Ltd., Osaka, both of Japan

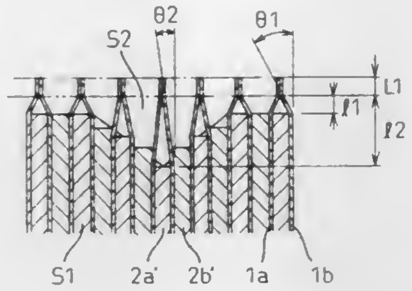
Filed Jul. 23, 1997, Ser. No. 898,861

Claims priority, application Japan, Jul. 25, 1996, 8-196456

Int. Cl.^{6} B01D *29/07;46/00*

U.S. Cl. 55—486 **8 Claims**

1. A particulate trap for a diesel engine, wherein at least two nonwoven sheets made of heat-durable metallic fibers and at least two corrugated plates made of heat-durable metal having a width smaller than that of said nonwoven sheets are alternately overlaid in the thicknesswise direction with each other in a spiral manner, and one surface of one of said nonwoven sheets and one surface of the other of said nonwoven sheets are in close contact and are continuously welded to each other along the upstream edges thereof as seen from the flowing direction of the exhaust gas so that a first space closed along the upstream edges and opened along the downstream edges is formed between said nonwoven sheets via one of said corrugated plates, and the other surface of said one nonwoven sheet and the other surface of said other nonwoven sheet are in close contact and are continuously welded to each other along the downstream edges thereof as seen from the flowing direction of the exhaust gas so that a second space closed along the downstream edges and opened along the upstream edges is formed between said nonwoven sheets via the other of said corrugated plates, characterized in that the difference in width between said nonwoven sheet and said corrugated plate is larger in a central zone of said particulate trap than in the circumferential zone thereof.



5,851,250
FILTER ELEMENT FOR AIR CLEANER

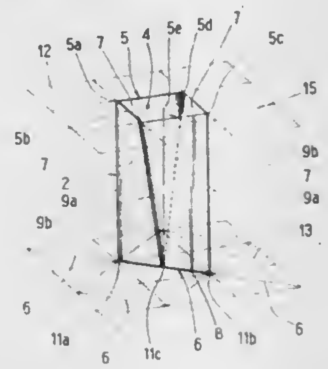
Hiromichi Sugie; Tsuyoshi Minari; Yasunari Arai; Yukihisa Horikoh; Kouji Kume, and Hirotsugu Kojima, all of Kariya, Japan, assignors to Toyoda Boshoku Corporation & Denso Corporation, Aichi, Japan

Filed Jan. 2, 1997, Ser. No. 778,030

Claims priority, application Japan, Jan. 12, 1996, 8-003938

Int. Cl.^{6} B01D *39/16*

U.S. Cl. 055—523 **13 Claims**



1. A filter element for an air cleaner, comprising a filter medium having a plurality of basic pocket shaped filter units, with each filter unit having an opening edge defining a regular polygon, a closed edge, and a plurality of filtration walls arranged therebetween, with the filtration walls defining a plurality of generally vertical edges having opposed ends, with one end of each generally vertical edge interconnected to said opening edge and the other end of each generally vertical edge converging toward and interconnecting with said closed edge, said filter units arranged into a honeycomb structure, and said filter medium being integrally formed of a porous sintered material produced by sintering powdered synthetic resin.

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5,851,251

MANUFACTURING METHODS OF OPTICAL DISC AND BLANK MASTER

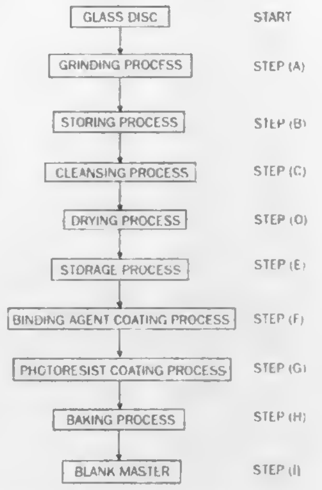
Tetsuya Kondo, Yokohama, and Takeyoshi Suetsuna, Fujisawa, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 28, 1997, Ser. No. 787,770

Claims priority, application Japan, May 17, 1996, 8-148325

Int. Cl.^{6} C03C *19/00*

U.S. Cl. 65—23 **2 Claims**



1. A manufacturing method of a blank master of an optical disc having a jitter of less than 8% including at least the steps of grinding a glass disc, cleansing the ground disc, drying the cleansed disc, coating a binding agent on the dried disc, coating a photoresist on the binding agent coated disc, and baking the photoresist coated disc, wherein the step of the coating of the photoresist is performed after the step of grinding the glass disc within about 24 hours.

5,851,252

METHOD OF FORMING MOLD RELEASE FILM AND MAKING A GLASS OPTICAL ELEMENT

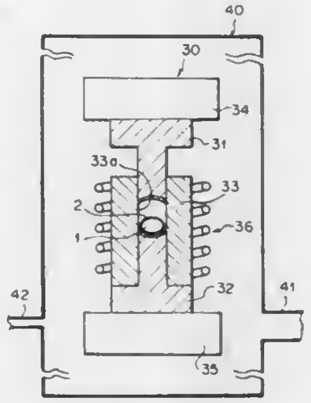
Yasuhiko Sato, and Hiroaki Fujita, both of Omiya, Japan, assignors to Fuji Photo Optical Co. Ltd., Omiya, Japan

Filed Feb. 11, 1997, Ser. No. 798,270

Claims priority, application Japan, Apr. 23, 1996, 8-127945

Int. Cl.^{6} C03B *11/00;40/00;* C03L *17/00*

U.S. Cl. 65—24 **4 Claims**



1. A method of making an optical element by press molding, said method comprising the steps of:

ashing a glass blank in an oxygen plasma, said glass blank being used as a molding material;

forming a carbon film with a thickness of less than 10 angstroms on the surface of said glass blank; and

press molding in a mold said glass blank after forming the carbon film.

5,851,253

METHOD OF MANUFACTURING QUARTZ GLASS FOR A LAMP VESSEL

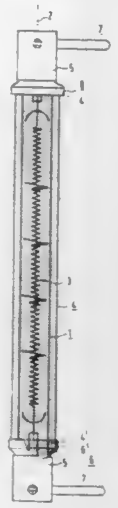
Robert J. Pet, Winschoten, and Josephus J. Timmermans, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1996, Ser. No. 734,008

Claims priority, application European Pat. Off., Oct. 18, 1995, 95202812

Int. Cl.^{6} C03B *5/00;* C03C *3/06*

U.S. Cl. 65—32.1 **5 Claims**



1. A method of manufacturing quartz glass doped with Sm^{II} oxide, said method comprising

providing a mixture of SiO_2 containing 1 to 3% Sm_2O_3 by weight, up to 3% Al_2O_3 by weight, and TiO, wherein the molar ratio of Al/Sm is at least approximately 2, and the molar ratio of Sm/Ti lies within the range of 2 to 8,

heating the mixture so that it melts to form a quartz glass and so that Tio is converted to TiO_2 and Sm_2O_3 is converted to SmO in an amount sufficient to impart an orange red to dark red color in the glass.

5,851,254

METHOD FOR MOLDING VITREOUS OPTICAL ELEMENTS

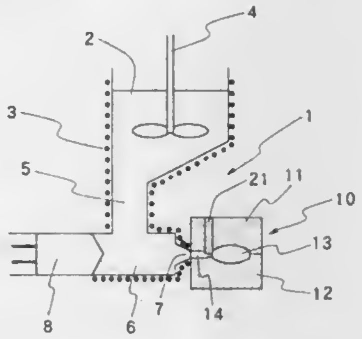
Masaaki Fukuda, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Sep. 2, 1997, Ser. No. 921,794

Claims priority, application Japan, Sep. 3, 1996, 8-250879

Int. Cl.^{6} C03B *33/10*

U.S. Cl. 65—35 **5 Claims**



1. In a method for molding optical glass elements by the use of a mold assembly including a mold cavity with transfer surfaces in the shape of optical surfaces to be formed on a molded optical element, a molten glass injection port disconnectibly connected to a glass injection nozzle, a sprue communicating said molten glass injection port with said mold cavity through a gate, a movable gate-forming member inserted into said mold assembly to form at least part of said gate, and a vibration generating means for applying vibrations to said gate-forming member, comprising the steps of:

injecting molten glass material into said mold cavity through said injection port and gate;

cooling molten glass material in said mold cavity to a solidified state; and

vibrating said solidified glass material in said mold cavity through said gate-forming member to make a gate cut by concentration of stresses at boundary regions between said gate and said mold cavity.

5,851,255

METHOD FOR MANUFACTURING LENS WITH LENS BARREL

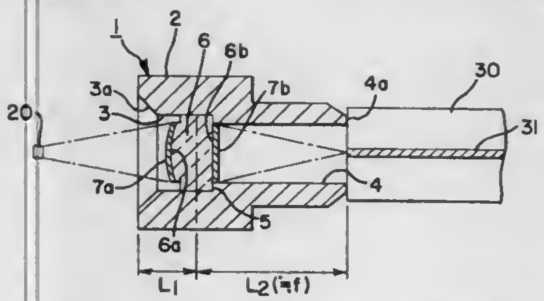
Motohiko Ohtsuki, and Kimihiro Kikuchi, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1997, Ser. No. 815,877

Claims priority, application Japan, Mar. 18, 1996, 8-87111

Int. Cl.^{6} C03B *11/00;* B29D *11/00;* G02B *7/02*

U.S. Cl. 65—60.1 **2 Claims**



1. A method for manufacturing a lens with a lens barrel, comprising the steps of forming a first optical function coating on one side of a lens material, inserting said lens material into a lens barrel so that said one side coated with the first optical function coating will face a long lens barrel side, then press molding lens surfaces by heating said lens material over its softening point, and subsequently forming a second optical function coating on a lens surface facing a short lens barrel side.

5,851,256

METHOD FOR REDUCING NOX EMISSIONS FROM A REGENERATIVE GLASS FURNACE

Richard Quirk, Ormskirk; David Alan Bird, Nr. Ormskirk; Ian Nigel William Shulver, Southport, and Robin Maxwell McIntosh, Newburgh, all of United Kingdom, assignors to Pilkington Glass Limited, St. Helens, United Kingdom

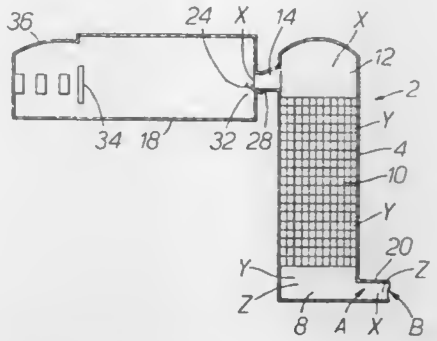
Division of Ser. No. 153,990, Nov. 18, 1993, Pat. No. 5,573,568. This application Jul. 25, 1996, Ser. No. 686,369

Claims priority, application United Kingdom, Nov. 27, 1992, 9224852; May 25, 1993, 9310720

Int. Cl.^{6} C03B *5/235*

U.S. Cl. 65—134.6 **12 Claims**

1. A method of operating a regenerative glass furnace for melting glass for the manufacture of shaped glass articles so as to minimize emission of NOx in waste gases leaving the furnace, the furnace including a melting chamber and including sealed regenerators which act as heat exchangers, the method comprising melting glass in the melting chamber, to which fuel and combustion air are supplied, under substoichiometric conditions, such that waste gases leaving the melting chamber and entering the sealed regenerators contain combustible material available to react with NOx in the waste gases, and supplying additional fuel to the waste gases as the gases leave the melting chamber and enter the sealed regenerators, and thereafter reacting said combustible material with sufficient air to ensure that the waste gases leaving the furnace through the regenerators and exiting to atmosphere contain permissible levels of combustible material and contain permissible levels of NOx.



5,851,257

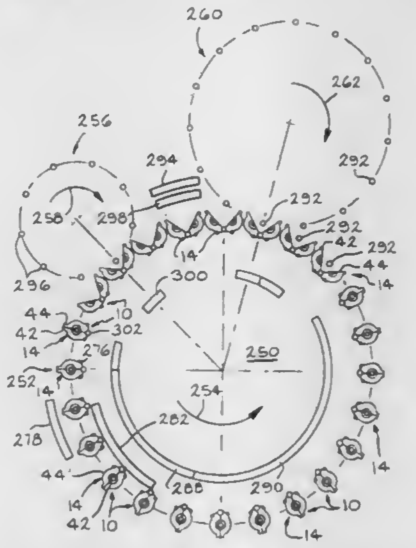
APPARATUS AND METHOD FOR PRESSING OF GLASS ARTICLES AT A HIGH CAVITY RATE

Herbert C. Kroh, LaSalle, and David E. Crots, Ottawa Lake, both of Mich., assignors to Libbey Glass Inc., Toledo

Filed Jun. 26, 1996, Ser. No. 670,973

Int. Cl.^{6} C03B *11/16*

U.S. Cl. 65—320 **16 Claims**



9. A method for using a machine for pressing a plurality of glass articles at a high cavity rate, including the steps of:

(a) rotating a carriage to which a plurality of individually controllable apparatus for pressing glass articles is attached, each of said apparatus including fluid control means for individually controlling actuation of each said apparatus, a frame, a mold having first and second mold halves mounted on said frame, said mold halves defining a cavity for receiving a glass gob, said mold halves being movable between open and closed positions, at least one fluid actuatable mold operating cylinder being in operative communication with said fluid control means, said mold operating cylinder being operatively connected to said mold halves for opening and closing said mold halves, at least one fluid actuable mold cracking cylinder being in operative communication with said fluid control means, said mold cracking cylinder being operatively connected to said mold halves for cracking said mold halves, a plunger movably mounted on said frame in alignment with said cavity, and at least one fluid actuatable plunger cylinder being in operative communication with said fluid control means, said mold cylinder being operatively connected to said plunger for moving said plunger;

(b) actuating said mold operating cylinder by said fluid control means to close said mold;

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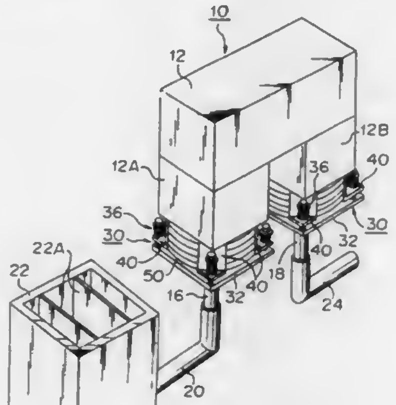
(c) placing said glass gob adjacent said cavity;
(d) actuating said plunger cylinder by said fluid control means to move said plunger to contact and press said glass gob into said cavity to form said glass article;
(e) actuating said plunger cylinder by said fluid control means to withdraw said plunger from said cavity;
(f) actuating said mold cracking cylinder by said fluid control means to crack said mold halves to cool said mold; and
(g) actuating said mold operating cylinder by said fluid control means to open said mold halves to remove said glass article from said cavity.

5,851,258
BACKUP STRUCTURE FOR A PIPE FOR FEEDING A MOLTEN SUBSTANCE OF HIGH TEMPERATURE

Hiroshi Ando, Yokohama; Fumiaki Saito, Aichi; Chikao Tanaka; Shinji Takeshita, both of Yokohama; Koji Hirasawa, Takasago; Sei Nagano, Yokohama; Hajime Ito, Yokohama, and Shinji Yamamura, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 16, 1996, Ser. No. 698,863
Claims priority, application Japan, Aug. 21, 1995, 7-211739
Int. Cl.^{6} C03B *5/28*
U.S. Cl. 65—329 **11 Claims**



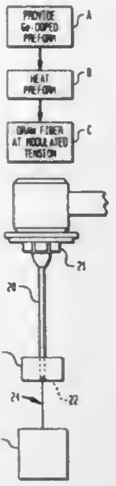
1. A backup structure for a pipe for feeding a molten substance of high temperature which comprises a pipe for feeding a molten substance of high temperature and a thermal insulation material surrounding the pipe wherein the pipe is provided with a plurality of projections on its outer periphery at predetermined intervals, and each of the projections is held at its both sides by the thermal insulation material, wherein said thermal insulation material comprises a plurality of stacked bricks, and wherein each projection acts as a boundary for adjacent bricks.

5,851,259
METHOD FOR MAKING GE-DOPED OPTICAL FIBERS HAVING REDUCED BRILLOUIN SCATTERING

Jane Bilecky Clayton, Suwanee, Ga.; Lars Erik Eskildsen, Fair Haven, N.J.; Per Bang Hansen, Bradley Beach, N.J.; Clifford Headley, North Plainfield, N.J., and William Alfred Reed, Summit, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 30, 1996, Ser. No. 741,495
Int. Cl.^{6} C03B *37/027*
U.S. Cl. 65—377 **5 Claims**

1. A method for making Ge-doped optical fiber having reduced Brillouin scattering loss comprising the steps of:
providing a glass optical fiber preform having a Ge-doped core;
heating a region of said preform to permit drawing a fiber therefrom;



drawing a fiber from said preform with a draw tension modulated with length, said draw tension modulated between a low of 10–50 g and a high of 150–250 g.

5,851,260
SUSPENSION FERTILIZER SUITABLE FOR IRRIGATION FERTILIZATION, AND A PROCESS FOR ITS PREPARATION

Hannu Äijälä, and Thomas Ahlnäs, both of Helsinki, Finland, assignors to Kemira Agro Oy, Helsinki, Finland

PCT No. PCT/FI95/00218, § 371 Date Dec. 26, 1996, § 102(e) Date Dec. 26, 1996, PCT Pub. No. WO95/28369, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 13, 1995, Ser. No. 727,604
Claims priority, application Finland, Apr. 15, 1994, 941759
Int. Cl.^{6} C05G *5/00*
U.S. Cl. 71—28 **12 Claims**

1. A stable aqueous fertilizer suspension suitable for drip irrigation, consisting essentially of:
(i) 5–55% by weight water; and
(ii) 45–95% by weight of one or more plant-nutrient containing substance, wherein:
said one or more plant-nutrient containing substance is based on at least one cation selected from a group consisting of NH_4^+, K^+, Ca^{2+} and Mg^{2+}; on at least one anion selected from a group consisting of NO_3^-, Cl^-, SO_4^{2-}, phosphates and polyphosphates; on urea; or on a combination thereof; and
said one or more plant-nutrient containing substance contains water-insoluble solid particles, having a particle size of less than 50 µm, and the suspension having a pH within the range of 2 to less than 7.

11. A process for preparing an aqueous fertilizer suspension consisting essentially of:
(i) mixing one or more plant-nutrient containing substance with water to form a suspension containing water-insoluble solid particles;
(ii) adding a sufficient amount of an acid or a base to adjust the pH of the suspension to a value within the range 2–7;
(iii) when necessary, milling the suspension to adjust the particle size of the solid particles to, in the main, within the range 100–1000 µm; and
(iv) further milling the suspension in a pearl mill to form a suspension in which the particle size of the solid particles is less than 50 µm;
wherein said suspension consists essentially of:
(i) 5–55% by weight water; and
(ii) 45–95% by weight of one or more plant-nutrient containing substance, wherein:
said one or more plant-nutrient containing substance is based on at least one cation selected from a group consisting of NH_4^+, K^+, Ca^{2+} and Mg^{2+}; on at least one anion selected

from a group consisting of NO_3^-, Cl^-, SO_4^{2-}, phosphates and polyphosphates; on urea; or on a combination thereof; and
said one or more plant-nutrient containing substance contains water-insoluble solid particles, having a particle size of less than 50 µm, and the suspension having a pH within the range 2–7.

5,851,261
PROCESS FOR THE PRODUCTION OF POLYUREA ENCAPSULATED FERTILIZER PARTICLES AND THE ENCAPSULATED FERTILIZER PARTICLES PRODUCED BY THIS PROCESS

Peter H. Markusch, McMurray, Pa., and Robert L. Cline, Paden City, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1996, Ser. No. 777,426
Int. Cl.^{6} C05G *5/00*
U.S. Cl. 71—64.07 **7 Claims**

1. A process for producing encapsulated, slow release, fertilizer particles comprising:
1) applying a) an isocyanate-reactive component which contains at least two amine groups, to fertilizer particles containing at least one water soluble plant nutrient, to form amine coated fertilizer particles,
2) applying b) an organic polyisocyanate component onto the amine coated fertilizer particles from step 1) to yield polyurea encapsulated fertilizer particles,
and, optionally,
3) repeating steps 1) through 2) as many times as necessary, wherein the encapsulated fertilizer particles from step 2) are substituted for the fertilizer particles in step 1) above,
so as to form encapsulated fertilizer particles which contain from about 0.5% to about 15% by weight of polyurea, based on the total weight of the encapsulated fertilizer particles.

5. A process for producing encapsulated, slow release, fertilizer particles comprising:
1) applying b) an organic polyisocyanate component onto fertilizer particles containing at least one water soluble plant nutrient, to form isocyanate coated fertilizer particles,
2) applying a) a gaseous isocyanate-reactive component which contains at least two amine groups, onto the isocyanate coated fertilizer particles from step 1) by contacting the isocyanate coated fertilizer particles with a volatilized amine group containing isocyanate-reactive compound to yield polyurea encapsulated fertilizer particles,
and, optionally,
3) repeating steps 1) through 2) as many times as necessary, wherein the encapsulated fertilizer particles from step 2) are substituted for the fertilizer particles in step 1) above,
so as to form encapsulated fertilizer particles which contain from about 0.5% to about 15% by weight of polyurea, based on the total weight of the encapsulated fertilizer particles.

6. A process for producing encapsulated, slow release, fertilizer particles comprising:
1) sparsely applying a) water to fertilizer particles containing at least one water soluble plant nutrient, to form water coated fertilizer particles,
immediately followed by:
2) applying b) an organic aromatic diisocyanate component which contains isocyanate-groups onto the water coated fertilizer particles from step 1) to yield polyurea encapsulated fertilizer particles,
and, optionally,
3) repeating steps 1) through 2) as many times as necessary, wherein the encapsulated fertilizer particles from step 2) are substituted for the fertilizer particles in step 1) above,
so as to form encapsulated fertilizer particles which contain from about 0.5% to about 15% by weight of polyurea, based on the total weight of the encapsulated fertilizer particles.

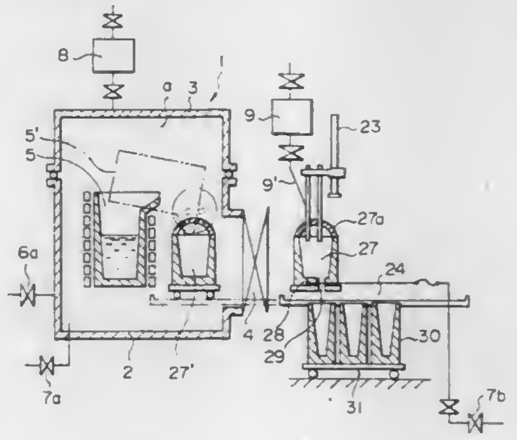
7. A process for producing encapsulated, slow release, fertilizer particles comprising:
1) applying b) an organic aromatic diisocyanate component which contains isocyanate-groups to fertilizer particles containing at least one water soluble plant nutrient, to form isocyanate coated fertilizer particles,
immediately followed by:
2) applying a) water onto the water isocyanate coated fertilizer particles from step 1) to yield polyurea encapsulated fertilizer particles,
and, optionally,
3) repeating steps 1) through 2) as many times as necessary, wherein the encapsulated fertilizer particles from step 2) are substituted for the fertilizer particles in step 1) above,
so as to form encapsulated fertilizer particles which contain from about 0.5% to about 15% by weight of polyurea, based on the total weight of the encapsulated fertilizer particles.

5,851,262
METHOD OF REFINING MOLTEN METAL

Takashi Mukai, Yonago, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

PCT No. PCT/JP94/02298, § 371 Date Jul. 24, 1996, § 102(e) Date Jul. 24, 1996, PCT Pub. No. WO96/17093, PCT Pub. Date Jun. 6, 1996

PCT Filed Dec. 28, 1994, Ser. No. 682,597
Claims priority, application Japan, Nov. 25, 1994, 6-291148; Nov. 25, 1994, 6-291151; Nov. 25, 1994, 6-291152; Nov. 28, 1994, 6-292519
Int. Cl.^{6} C21C *7/00*
U.S. Cl. 75—10.22 **15 Claims**



1. A method of refining molten metal, which method comprises the steps of refining a molten metal by reduced-pressure-refining (RPR) under vacuum or a low oxygen partial pressure atmosphere in a vessel provided with heating means, adding a flux mainly comprising any combination of CaO and CaF_2, CaO and Al_2O_3, or CaO, CaF_2 and Al_2O_3 into the refined molten metal substantially, without slag, and subsequently heating the molten metal by means of inert gas plasma to re-refine the refined molten metal.

5,851,263

PROCESS FOR SMELTING STEEL IN AN ELECTRIC ARC FURNACE, AND ELECTRIC ARC FURNACE FOR ITS IMPLEMENTATION

Thierry Bernet, Noumea; Philippe Destannes, and Jean-Luc Roth, both of Metz, all of France, assignors to Usinor Sacilor, Puteaux, France

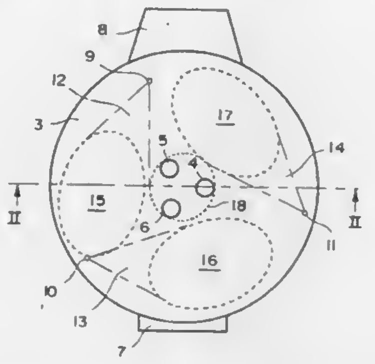
PCT No. PCT/FR96/00365, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/28573, PCT Pub. Date Sep. 19, 1996

PCT Filed Mar. 8, 1996, Ser. No. 732,327

Claims priority, application France, Mar. 14, 1995, 95 02918

Int. Cl.^{6} C21C *5/52;* F27B *3/22*

U.S. Cl. 75—10.41 **9 Claims**



1. A process for smelting steel in an electric arc furnace comprising a vessel containing a bath of molten steel having an upper surface, a roof resting on top of said vessel and a single roof electrode or a plurality of roof electrodes disposed within a circle, comprising the step of blasting an oxygenic gas in the form of gas jets into the vessel toward the upper surface of the bath such that said jets impact as large a fraction as possible of said surface except for said electrode and the circle, wherein said jets are blasted in from an upper part of the furnace and have a shallow depth of penetration into said bath of molten steel to avoid splashing of said steel and decarburization of said steel.

5,851,264

METHOD AND AGGLOMERATES FOR PRODUCTION OF FESI

Ola Schiefloe Raaness, Trondheim, Norway, assignor to Sinvent AS, Trondheim, Norway

PCT No. PCT/NO94/00149, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/08005, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 9, 1996, Ser. No. 605,132

Claims priority, application Norway, Sep. 13, 1993, 933264

Int. Cl.^{6} C22C *33/04;35/00*

U.S. Cl. 75—320 **12 Claims**

1. In a method for production of ferrosilicon in an electric reduction furnace by the reaction of iron-containing, silica-containing and carbonaceous materials,

the improvement comprising supplying the furnace, with iron-containing and carbonaceous materials in the form of agglomerates consisting essentially of a substantially homogeneous mixture of iron or a reducible iron compound and the carbonaceous material, having a weight ratio of carbon to iron of 0.2:1 to 1.5:1 after reaction in the furnace.

5,851,265

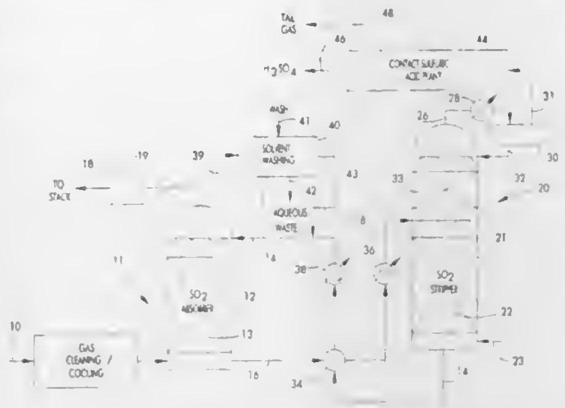
SELECTIVE REMOVAL AND RECOVERY OF SULFUR DIOXIDE FROM EFFLUENT GASES USING ORGANIC PHOSPHOROUS SOLVENTS

Brian M. Burmaster, Chesterfield, and Donald R. McAlister, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 3, 1996, Ser. No. 707,344

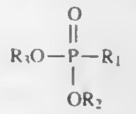
Int. Cl.^{6} B01D *47/06;47/14*

U.S. Cl. 95—159 **30 Claims**



1. A process for selectively removing and recovering sulfur dioxide from a sulfur dioxide-containing source gas comprising the steps of:

contacting a process feed gas stream comprising said source gas with a liquid solvent for selective absorption of sulfur dioxide in a sulfur dioxide absorber, thereby transferring sulfur dioxide from said process feed gas stream to said solvent and producing an exhaust gas from which sulfur dioxide has been substantially removed and a sulfur dioxide-rich solvent, said liquid solvent comprising at least one substantially water immiscible organic phosphonate diester of the formula



$$R_3O-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OR_2}{|}}{P}}-R_1$$

wherein R^1, R^2 and R^3 are independently aryl or C_1 to C_8 alkyl, said organic phosphonate diester having a vapor pressure less than about 1 Pa at 25° C., the solubility of water in said organic phosphonate diester being less than about 10 weight percent at 25° C.;

stripping sulfur dioxide from said rich solvent in a sulfur dioxide stripper to produce a lean solvent and a sulfur dioxide-enriched stripper gas, the ratio of the concentration of sulfur dioxide in said stripper gas to the concentration of sulfur dioxide in said source gas being greater than about 1.1; and recycling said lean solvent to said sulfur dioxide absorber for further selective absorption of sulfur dioxide from said source gas.

5,851,266

HYBRID SOLID ELECTROLYTE IONIC CONDUCTOR SYSTEMS FOR PURIFYING INERT GASES

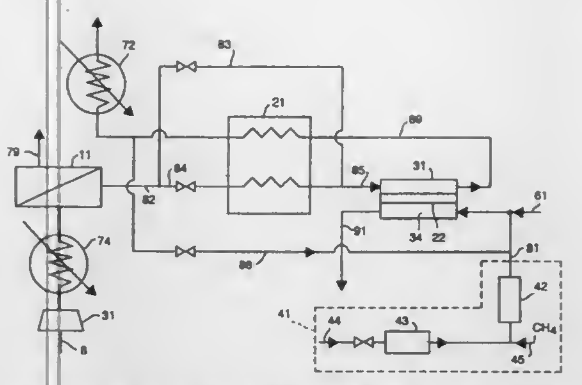
Ravi Prasad, East Amherst, and Christian Friedrich Gottzmann, Clarence, both of N.Y., assignors to Praxair Technology,Inc., Danbury, Conn.

Filed Jun. 23, 1997, Ser. No. 880,879

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 95—54 **20 Claims**

1. A process for removing oxygen from a feed gas stream containing elemental oxygen and at least one other gas to produce an oxygen-depleted retentate gas stream, the process comprising:



supplying the feed gas stream to a bulk oxygen separation system for removing oxygen to produce an oxygen-depleted crude product gas stream and a first permeate effluent stream;

supplying the oxygen-depleted crude product gas stream to a separator including a primary ion transport module having a primary ion transport membrane with a retentate side and a permeate side, to produce a second permeate effluent stream and the oxygen-depleted retentate gas stream; and

adding a reactive purge gas to react with a portion of the oxygen permeating through the primary ion transport membrane and purge the permeate side of the primary ion transport membrane, thereby enhancing the efficiency of the process.

5,851,267

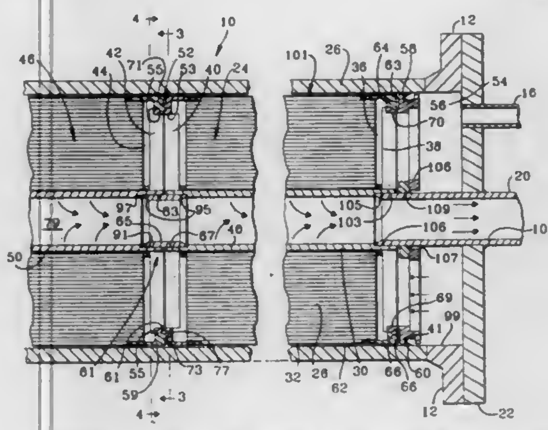
SEAL ARRANGEMENT FOR RAPID INTERCONNECTION OR AXIALLY ARRANGED SEPARATION ELEMENTS

A. William Schwartz, Upland, Calif., assignor to UOP LLC, Des Plaines, Ill.

Filed Jan. 28, 1997, Ser. No. 789,975

Int. Cl.^{6} B01D *53/22*

U.S. Cl. 96—7 **35 Claims**



1. A separation element for joining adjacent separation elements into a string of multiple elements in an elongated separation module, said separation element comprising:

a permeable separation body;

a permeate channel in communication with a first side of said separation body for collecting separated permeate;

a permeate passage in communication with said permeate channel for communicating said permeate channel with one side of the element;

a retantate channel on a second side of said permeable separation body for distributing feed to said body and conducting retantate from said body;

a retantate passage communicating said retantate channel with at least one end of said element;

a retantate connection at one end of said element communicating with said retantate passage;

a permeate connection at said one end of said element communicating with said permeate passage;

a first seal structure located about said retantate connection for providing sealing of the element with an adjacent element and a second seal structure located about said permeate connection, at least one of said first and second seal structures establishing a slidable seal between adjacent elements for permitting relative movement between elements while adjacent elements are engaged across at least one of said seal structures; and,

an axial restraint for engaging adjacent elements and maintaining the adjacent element in sealed contact about said first and second seal structures.

5,851,268

CANISTER

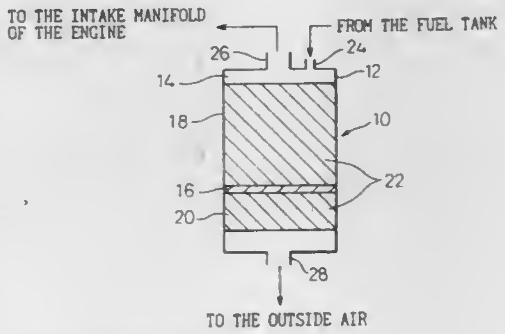
Yoshihiko Hyodo, Susono, and Takaaki Itoh, Mishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 19, 1997, Ser. No. 803,057

Claims priority, application Japan, Feb. 20, 1996, 8-032116

Int. Cl.^{6} B01D *53/04*

U.S. Cl. 96—131 **6 Claims**



1. A canister comprising:

a casing having an interior therein;

a separator for separating said interior into first and second interior sections, said first interior section containing an absorbent and having a fuel vapor inlet and a fuel vapor outlet, said second interior section containing an absorbent and having an opening to outside air, said separator being formed of a flexible filtering material having a plurality of fuel vapor channels extending therethrough, wherein the flexible filtering material is compressed to elongate said fuel vapor channels.

5,851,269

AIR DESICCANT CANISTER FOR AN AIR BRAKE SYSTEM

Claude Strope, Kearney, Nebr., assignor to Baldwin Filters, Inc., Kearney, Nebr.

Filed May 2, 1997, Ser. No. 850,633

Int. Cl.^{6} B01D *53/02*

U.S. Cl. 96—144 **19 Claims**

1. A spin-on air desiccant filter for an air brake system, comprising:

an outer shell having an open end, a closed end and a cylindrical sidewall;

an inner shell disposed within the outer shell having an open end, a closed end, and a cylindrical side wall, a particulate desiccant substantially filling the inner shell;

a baffle plate having a disk and a cylinder integrally formed with and projecting from the disk, the baffle plate being slidably fit within the inner shell open end such that the cylinder divides the desiccant into two flow paths, an outer annular flow path and an inner cylindrical flow path, the two flow paths being of roughly equivalent size, the disk having formed therein apertures in communication with the inner flow path and apertures in communication with the outer flow path;

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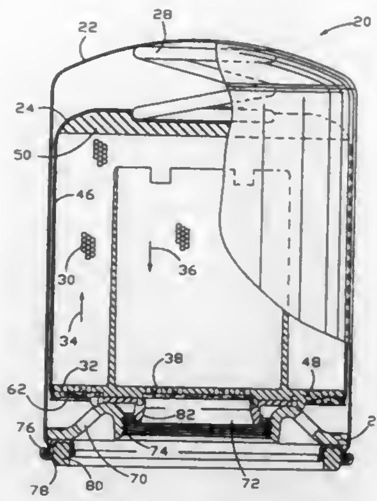


a baseplate connected to the outer shell open end and cooperating with a spring provided between the inner shell closed end and outer shell closed end to capture the inner shell therebetween in floating disposition, the spring moving the inner shell relative to the baffle plate in proportion to the relative compaction of the particulate desiccant, the baseplate having apertures in communication with the apertures of the baffle plate and an internally threaded inner aperture whereby the canister threadably attachs to the air braking system.

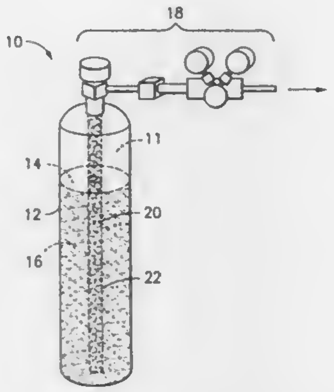
5,851,270
LOW PRESSURE GAS SOURCE AND DISPENSING APPARATUS WITH ENHANCED DIFFUSIVE/ EXTRACTIVE MEANS

W. Karl Olander, New Milford, Conn., assignor to Advanced Technology Materials, Inc., Danbury, Conn.

Filed May 20, 1997, Ser. No. 859,173

Int. Cl.^{6} B01D *53/04*

U.S. Cl. 96—144 **20 Claims**



1. A gas storage and dispensing system, comprising:
a vessel defining an interior volume therewithin for containing a bed of adsorbent material having affinity for a gas to be stored at an interior gas pressure not exceeding about one atmosphere and selectively dispensed from the vessel;
a gas adsorbed on the bed of adsorbent material at an interior gas pressure not exceeding about one atmosphere;
means for selectively establishing gas flow communication for discharge of said gas from the vessel; and
means disposed in the interior volume of the vessel for reducing the resistance to flow of gas from the adsorbent material bed during establishment of said gas flow communication for discharge of gas from the vessel.

5,851,271
DEVICE FOR FILTERING AND HUMIDIFYING AN AIR FLOW

Fernando A. Baptista, Rua Pádua Correla, P-4400 Vila Nova de Gaia, Portugal, and João M. Pereira Dias Baptista, Avenida Padre Sá Pereira, P-4740, Portugal

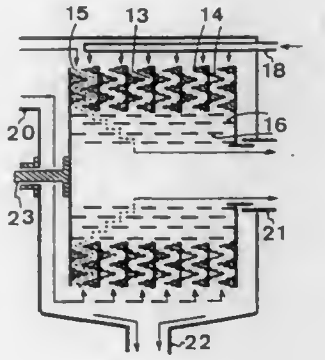
PCT No. PCT/PT94/00007, § 371 Date Aug. 2, 1996, § 102(e) Date Aug. 2, 1996, PCT Pub. No. WO95/04587, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 2, 1994, Ser. No. 682,632

Claims priority, application Portugal, Aug. 6, 1993, 101332

Int. Cl.^{6} B01D *47/16;47/18*

U.S. Cl. 96—286 **6 Claims**



1. An air filtering and humidifying device comprising;
an outer casing having an air inlet and an air outlet;
a water projector extending into the outer casing;
a rotatable, reticulated filter element having an inner and outer surface inside the outer casing;
the filter element comprising a first cylinder, the first cylinder made from a series of axially spaced continous bands circular, each band formed by concentric elements joined together;
each element extending radially inwardly and adjoining elements having a different axial direction.

5,851,272
NON-OIL ORGANIC SPRAY WAX COMPOSITIONS

Stephen J. Vicenzi, Edgerton, Wis., assignor to Vitech International, Inc., Janesville, Wis.

Filed Feb. 14, 1997, Ser. No. 799,145

Int. Cl.^{6} C09G *1/04*

U.S. Cl. 106—11 **27 Claims**

1. An automobile spray wax composition, comprising:
an aromatic hydrocarbon having at least one of two linear C_8–C_{20} alkyl substituents; and
an emulsifier.

5,851,273
DYE SET FOR IMPROVED INK-JET PRINT QUALITY

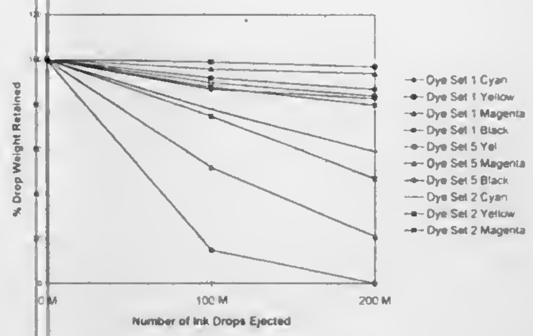
Peter C. Morris, San Diego, Calif.; David H. Donovan, Barcelona, Spain; Gregg A. Lane, San Diego, Calif., and Larrie A. Deardurff, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 810,568, Mar. 3, 1997. This application Jul. 2, 1997, Ser. No. 887,164

Int. Cl.^{6} C09D *11/02*

U.S. Cl. 106—31.27 **27 Claims**

1. An ink set for ink-jet printing, comprising:
a yellow ink comprising Direct Yellow 132;



a magenta ink comprising Magenta 377; and
a cyan ink comprising Direct Blue 199.

5,851,274
INK JET INK COMPOSITIONS AND PROCESSES FOR HIGH RESOLUTION AND HIGH SPEED PRINTING

John Wei-Ping Lin, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

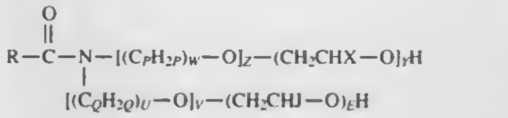
Filed Jan. 13, 1997, Ser. No. 782,237

Int. Cl.^{6} C09D *11/02*

U.S. Cl. 106—31.43 **28 Claims**

1. An ink jet ink composition which is suitable for high resolution ink jet printing, comprising water, a colorant a hydroxyamide derivative which has at least two hydroxyl groups and at least one amide group or a reaction product of oxyalkylene and said hydroxyamide derivative, and a sulfur-containing humectant selected from the group consisting of sulfoxide, sulfone, and thiol derivatives.

wherein said hydroxyamide derivative is represented by the following formula:



$$\begin{array}{l} \quad\ \ \mathrm{O} \\ \quad\ \ \| \\ \mathrm{R{-}C{-}N{-}[(C_PH_{2P})_W{-}O]_Z{-}(CH_2CHX{-}O]_YH} \\ \qquad\quad | \\ \qquad\quad \mathrm{[(C_QH_{2Q})_U{-}O]_V{-}(CH_2CHJ{-}O)_EH} \end{array}$$

wherein R is independently selected from the group consisting of H, C_nH_{2n+1}, Cyclic C_nH_{2n-1}, C_6H_5, C_5H_4N, OC_nH_{2n+1} and substituted or unsubstituted aromatic groups and heterocyclic groups having from three to twenty carbon atoms wherein n is from one to forty; J and X are independently selected from the group consisting of H and CkH_{2k+1} wherein k is from zero to twenty; Q and P are independently from two to twenty; U and W are independently from one to twenty; Y and Z are independently from zero to forty where Y+Z must be one or greater than one; V and E are independently from zero to forty where V+E must be one or greater than one.

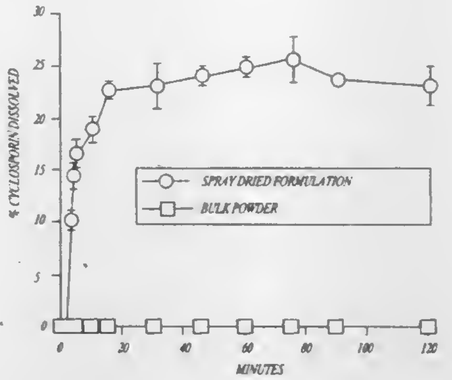
5,851,275
WATER SOLUBLE PHARMACEUTICAL COATING AND METHOD FOR PRODUCING COATED PHARMACEUTICALS

Gordon L. Amidon, and John R. Crison, both of Ann Arbor, Mich., assignors to Port Systems, L.L.C., Ann Arbor, Mich.

Division of Ser. No. 594,814, Jan. 31, 1996, Pat. No. 5,686,133. This application Jan. 27, 1997, Ser. No. 790,737

Int. Cl.^{6} C08H *1/00;* **C08L** *89/00*

U.S. Cl. 106—148.1 **5 Claims**



1. A pharmaceutical excipient coating for increasing the dissolution rate of water-insoluble pharmaceutical ingredients, said coating consisting essentially of gelatin and lecithin in a non-bilayer form.

5,851,276
CRUMB RUBBER MODIFIED ASPHALT WITH IMPROVED SETTLING PROPERTIES

G. Mohammed Memon, Sterling, Va., assignor to The United States of America as represented by the Secretary of Transportation, Washington, D.C.

Continuation of Ser. No. 662,750, Jun. 10, 1996, abandoned. This application Sep. 3, 1997, Ser. No. 922,605

Int. Cl.^{6} C09D *195/00*

U.S. Cl. 106—281.1 **10 Claims**

1. An improved asphalt comprising asphalt and crumb rubber particles, said crumb rubber particles having been treated to produce enhanced carboxylic sites on their surfaces before being added to the asphalt.

6. An improved asphalt comprising a polymer modified asphalt and crumb rubber particles, said crumb rubber particles having been treated to produce enhanced carboxylic sites on their surfaces before being added to the asphalt.

5,851,277
PREPARATION WHOSE COLORING DEPENDS ON THE VIEWING ANGLE

Christoph Müller-Rees, Pullach, and Annemarie Huber, Haiming, both of Germany, assignors to Wacker-Chemie GmbH, Germany

Filed Jul. 8, 1997, Ser. No. 889,343

Claims priority, application Germany, Jul. 23, 1996, 196 29 761.2

Int. Cl.^{6} A61K *47/30;* **C09K** *19/02*

U.S. Cl. 106—287.35 **9 Claims**

1. A cosmetic or pharmaceutical preparation comprising pigments whose coloring depends on the viewing angle and additives selected from the group consisting of additives acceptable for use in cosmetic and pharmaceutical preparations, wherein the pigments comprise at least one oriented crosslinked substance having a liquid-crystalline structure with a chiral phase, are plateletlike in form, have a thickness of 1–20 μm, and a particle diameter of 5–500 μm.

5,851,278

METHOD OF NONHAZARDOUS REMOVAL OF PAINT CONTAINING HEAVY METALS AND COATING PREPARATION FOR PERFORMING THE SAME

Robert R. Stanforth, Singapore, Singapore, and Paul V. Knopp, Cross Plains, Wis., assignors to RMT, Inc., Madison, Wis.

Division of Ser. No. 635,516, Apr. 22, 1996, Pat. No. 5,637,355. This application Jun. 9, 1997, Ser. No. 871,044

Int. Cl.^{6} A62D *3/00*

U.S. Cl. 106—287.25 **2 Claims**

1. A coating preparation which when applied to paint containing heavy metal renders said paint nonhazardous wherein said coating preparation comprises about 5% to about 50% by weight of a phosphate compound selected from the group consisting of triple super phosphate, calcium phosphate, single super phosphate, trisodium phosphate and phosphoric acid; about 5% to about 30% by weight of a buffering compound; and a carrier for said phosphate compound which enables a layer of said phosphate compound to remain on the surface of said paint for a sufficient time to react with said heavy metal to form a stable nonhazardous heavy metal-phosphate compound.

5,851,279

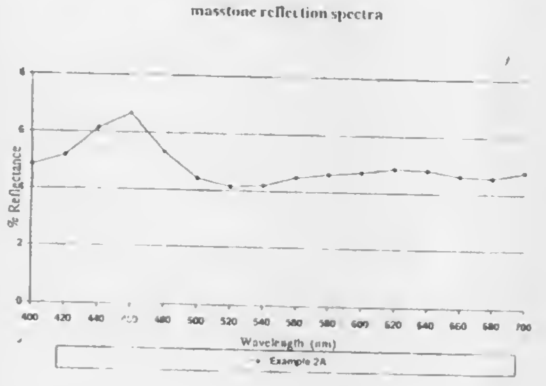
COPPER PHTHALOCYANINE PIGMENT

Fridolin Bäbler, Hockessin, Del., assignor to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Feb. 27, 1997, Ser. No. 806,489

Int. Cl.^{6} C09C *67/50*

U.S. Cl. 106—410 **16 Claims**



1. A copper phthalocyanine pigment which is not platelet-shaped, wherein at least 95 percent of the pigment particles have a particle size in the range from 0.1 micrometers to 9 micrometers and at least 50 percent of the particles have a particle size in the range from 0.8 to 2.5 micrometers and which is characterized by a 10/90 tint reflection spectrum, which is measured from a panel coated to complete hide with a basecoat/clearcoat paint system, having a broad peak extending from 400 to 700 nm with a maximum at 460 nm±10 nm, a negative slope extending from 480 nm to 700 nm which becomes less negative as the wavelength increases and a reflection at 700 nm that is at least 25 percent of the reflection at 460 nm.

5,851,280

REACTION OF CARBON BLACK WITH DIAZONIUM SALTS, RESULTANT CARBON BLACK PRODUCTS AND THEIR USES

James A. Belmont, Acton; Robert M. Amici, Berlin, and Collin P. Galloway, Chelmsford, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 356,660, Dec. 15, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,525

Int. Cl.^{6} C09D *11/02*

U.S. Cl. 106—472 **53 Claims**

1. A process for preparing a carbon black product having an organic group attached to the carbon black comprising the step of:

reacting at least one diazonium salt with a carbon black in the absence of an externally applied electric current sufficient to reduce the diazonium salt.

5,851,281

WASTE MATERIAL COMPOSITES AND METHOD OF MANUFACTURE

Geneci Borges Alves, Santa Catarina, Brazil, assignor to K & H, Inc., Kennesaw, Ga.

Filed Jun. 17, 1997, Ser. No. 877,767

Int. Cl.^{6} C04B *18/04*

U.S. Cl. 106—697 **119 Claims**

1. A process for manufacturing a liquid chemical binder, comprising the steps of:

(a) Mixing water and formaldehyde (CH_2O) to form a water-formaldehyde solution;

(b) Mixing acetic acid ($HC_2H_3O_2$) and the water-formaldehyde solution to form an acid solution;

(c) Mixing and dissolving caustic soda (NaOH) into the acid solution to form a neutralized solution;

(d) Mixing and reacting ammonium carbonate ($(N_2H_4)_2CO_3$) into the neutralized solution to form an ammonium solution;

(e) Mixing the ammonium solution and an iodine solution to form a base solution; and,

(f) Mixing and reacting sodium hyposulfite (NaH_2SO_3) into the base solution to form the liquid chemical binder.

5,851,282

PORTLAND CEMENT CLINKER AND USE THEREOF

Ivan Odler, 16 Olde Village Dr., Winchester, Mass. 01890

PCT No. PCT/DE95/01621, § 371 Date Jul. 18, 1997, § 102(e) Date Jul. 18, 1997, PCT Pub. No. WO96/15996, PCT Pub. Date May 30, 1996

PCT Filed Nov. 17, 1995, Ser. No. 849,641

Claims priority, application United Kingdom, Nov. 23, 1994, P 44 41 614.8

Int. Cl.^{6} C04B *7/04;11/00*

U.S. Cl. 106—733 **11 Claims**

1. A Portland cement clinker, free of $C_4A_3\bar{S}$, having the following proportions of clinker phases, in % by wt.:

—C_3S: 40 to 80

—C_4AF:<20

—C_2S:<30

—C_3A:<20

and a SO_3content from 1.0 to 3.0% by wt., based on the clinker, obtained by burning a mixture of raw materials containing CaO, SiO_2, Al_2O_3, Fe_2O_3, and an additive containing SO_3 at a temperature from 1200° centigrade to 1350° centigrade.

5,851,283

METHOD AND APPARATUS FOR PRODUCTION OF SINGLE CRYSTAL

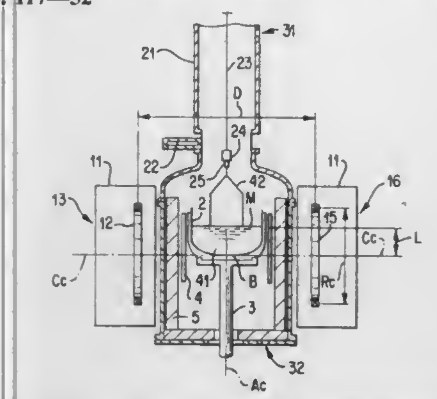
Ryouji Hoshi; Masashi Sonokawa; Izumi Fusegawa, and Tomohiko Ohta, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1996, Ser. No. 770,499

Claims priority, application Japan, Dec. 29, 1995, 7-353914

Int. Cl.^{6} C30B *15/22*

U.S. Cl. 117—32 **10 Claims**



1. A single crystal production method for pulling a single crystal from a raw material melt contained in a crucible based on a horizontal magnetic field applied CZ method, in which the crucible is provided within a pulling chamber, a heater surrounds the crucible, coils comprising electromagnets in magnetic field applying device are disposed outside the pulling chamber as coaxially opposed to each other with the crucible disposed therebetween, so that the single crystal is pulled while a horizontal magnetic field is applied to the melt within the crucible; wherein, when B denotes a vertical position of a bottom surface of the melt within the crucible and L denotes the depth of the melt at the time of starting the crystal pulling operation, a vertical position of a coil central axis of the electromagnets at the time of starting the crystal pulling operation is controlled to be a proper value included in a range of from $\{B-(1/3)\times L\}$ to $\{B+(1/3)\times L\}$.

5,851,284

PROCESS FOR PRODUCING GARNET SINGLE CRYSTAL

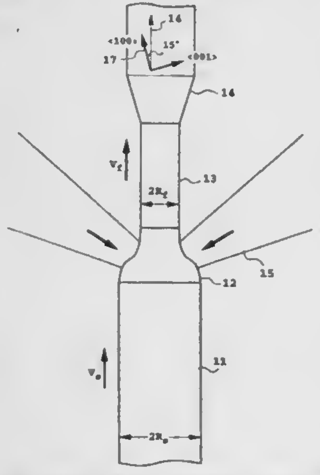
Shigeo Ishibashi, Zama; Itaru Yokohama, Isehara; Yuzo Ishida, Tokyo, and Kazunori Naganuma, Isehara, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 18, 1996, Ser. No. 751,700

Claims priority, application Japan, Nov. 21, 1995, 7-302879

Int. Cl.^{6} C30B *15/36*

U.S. Cl. 117—35 **12 Claims**



1. A process for producing a single crystal having a garnet structure comprising: bringing a seed crystal into contact with a melt of a crystal having a garnet structure, and pulling said seed crystal upward to grow a single crystal,

wherein the pull-up direction of said seed crystal is set in a direction falling within a specific range apart from a direction crystalloaraphically equivalent to a <100> orientation of said seed crystal at an angle of at least 10°, from a direction crystalloqraphically equivalent to a <110> orientation thereof at an angle of at least 20° and from a direction crystalloqraphically equivalent to a <211> orientation thereof at an angle of at least 20°.

5,851,285

MANUFACTURE OF TRANSITION METAL CARBIDE, NITRIDE, AND CARBONITRIDE WHISKERS CONTAINING TWO OR MORE TRANSITION METALS

Mats Johnsson, Hägersten; Niklas Ahlén, Tullinge; Mats Nygren, Bromma; Magnus Ekelund, Järna, and Gunnar Brandt, Solna, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Continuation-in-part of Ser. No. 504,779, Jul. 20, 1995. This application Dec. 20, 1996, Ser. No. 770,849

Claims priority, application Sweden, Apr. 4, 1996, 9601335-4

Int. Cl.^{6} C30B *21/06*

U.S. Cl. 117—87 **8 Claims**

1. A method of producing whiskers in large volumes having an overall composition of $(Me_{1-X-Y}Me'_XMe''_Y \ldots \text{etc.})C_{1-Z}N_Z$ with Me, Me' and Me" equal to different transition metals such as Ti, Ta, Nb, Zr, and Hf respectively comprising mixing a carbon source, a mixture of two or more transition metal oxides, hydroxides or alkali oxide compounds, at least one of the alkali, alkali earth halogenide containing salts LiCl, NaCl, KCl, $CaCl_2$, $MgCl_2$, LiF, NaF or RF in an alkali-alkali earth-halogenide/transition metal molar ratio 0.1-3, and at least one of a Ni-containing and Co-containing catalyst thereof in a (Ni+Co)/transition metal molar ratio 0.005-0.5 and heating the mixture to 1000°–1800° C. for 0.5–15 hours, at 10 mbar–50 bar pressure in an inert or non-oxidizing atmosphere.

5,851,286

CRYSTAL PULLING APPARATUS

Atsushi Ozaki, Annaka, Japan; Masahiko Urano, Takasaki, Japan; Isamu Harada, Annaka, Japan; Tomohiro Kakegawa, Tomioka, Japan, and Hideki Nakano, Sawa, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1996, Ser. No. 763,888

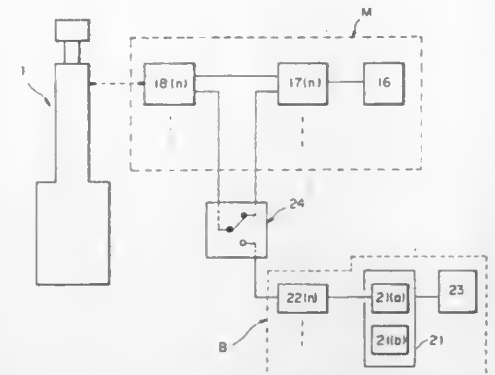
Claims priority, application Japan, Dec. 27, 1995, 7-351277

Int. Cl.^{6} C30B *35/00*

U.S. Cl. 117—201 **4 Claims**

1. A crystal pulling apparatus in which a seed crystal is contacted to a melt of a material and is then pulled so as to grow a single crystal, said crystal pulling apparatus comprising:

a main controller for performing heating control so as to heat the melt, the main controller being included in a main system; and



a backup system for maintaining a heating state of the melt when it becomes impossible for said main controller to maintain the heating state.

5,851,287
SEED CRYSTAL HOLDER

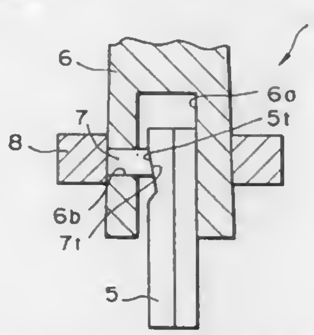
Satoshi Soeta, Takefu, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1997, Ser. No. 804,146

Claims priority, application Japan, Mar. 1, 1996, 8-071189

Int. Cl.^{6} C30B *35/00*

U.S. Cl. 117—208 **17 Claims**



1. A seed crystal holder used to grow a single crystal by a pulling method, comprising:
- a holder body with a seed crystal insertion bore having a rectangular cross-section into which a seed crystal is inserted; and
- pressing means for pressing said seed crystal toward at least two inner surfaces of said seed crystal insertion bore so as to hold said seed crystal.

5,851,288
APPARATUS FOR MARKING A CONTINUOUS SUBSTRATE

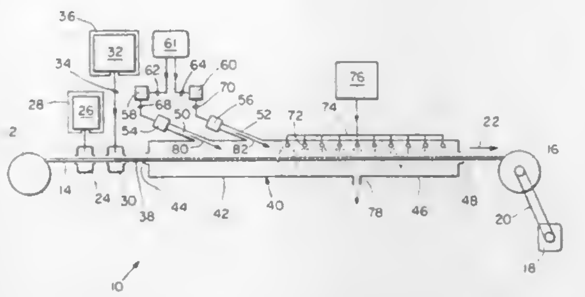
Robert R. Garand, Carver; John L. Banda, Norwell, and Charles Pike, Halifax, all of Mass., assignors to Gem Gravure Company, Inc., West Hanover, Mass.

Division of Ser. No. 777,078, Oct. 16, 1991, Pat. No. 5,228,918, which is a continuation-in-part of Ser. No. 605,235, Oct. 29, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 986,771

Int. Cl.^{6} B05C *11/00;13/00;13/02*

U.S. Cl. 118—65 **14 Claims**

1. A system for marking a continuous substrate, comprising:
- a) an elongate housing, having an inlet end and an outlet end, for housing the continuous substrate as the continuous substrate is directed through the housing from the inlet end to the outlet end;
- b) an elongate heater disposed within the elongate housing and extending from the inlet end to the outlet end of the elongate housing;



- c) an outlet tube disposed proximate to the elongate heater and substantially parallel to the elongate heater within the elongate housing, the outlet tube having a gas inlet at a first end and defining a plurality of gas outlets disposed along a substantial portion of the length of the outlet tube; whereby a significant portion of gas directed through the gas inlet into the outlet tube is heated by the elongate heater, while being conducted through the outlet tube, and is then discharged from the outlet tube through the gas outlets toward the continuous substrate in the housing, thereby passing across the continuous substrate and heating the aqueous-based ink in an amount sufficient to cause a pigment of the aqueous-based ink to bond to the continuous substrate and thereby mark the continuous substrate.

5,851,289
APPLICATOR

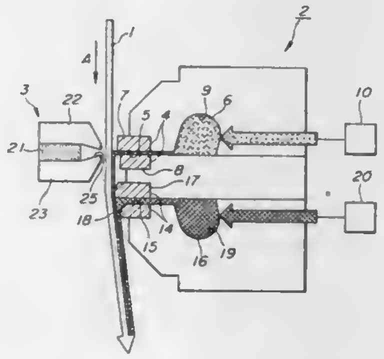
Shogo Sato, and Osamu Maniwa, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1996, Ser. No. 754,264

Claims priority, application Japan, Nov. 21, 1995, 7-303070

Int. Cl.^{6} B05C *3/02*

U.S. Cl. 118—411 **2 Claims**



1. An applicator having a die provided with two or more coating reservoirs to which coatings are supplied and two or more slits for extruding the coatings so that the coatings are extruded onto a continuously moving base material respectively from the two or more slits for forming layers of coatings on the base material, the applicator comprising:
- a first pair of lips defining a first slit for forming a first layer of one of the coatings on the base material, the first pair of lips provides so as to be not in contact with the base material;
- a second pair of lips defining a second slit for forming a second layer of one of the coatings over the first layer, one lip of the second pair adapted to abut against the first layer and the other lip of the second pair adapted to wipe against the second layer during its forming; and
- a magnet part provided in a side of the base material opposite to a side facing the first pair of lips sandwiching the base material between the first pair of lips and the magnet part.

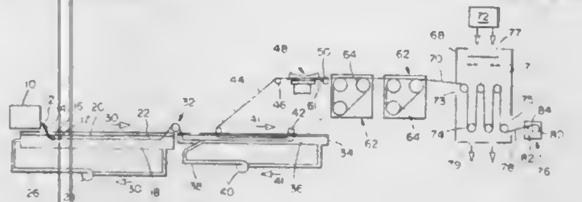
5,851,290
APPARATUS FOR SPINNING AND PROCESSING COLLAGEN FIBER

Timothy W. Fofonoff, Dedham, and Eugene Bell, Boston, both of Mass., assignors to Tissue Engineering, Inc., South Boston, Mass.

Division of Ser. No. 333,414, Nov. 2, 1994. This application May 22, 1996, Ser. No. 652,728

Int. Cl.^{6} B05C *3/12;3/00;19/02;* **B28B** *5/00*

U.S. Cl. 118—420 **10 Claims**



1. An apparatus for forming microparticulate-coated collagen fibers, comprising:
- a) means for forming a continuous liquid collagen stream;
- b) a coagulation bath, wherein a continuous liquid collagen stream can be formed into a continuous collagen gel fiber;
- c) a dehydrating bath, wherein said continuous collagen gel fiber can be partially dehydrated and further polymerized; and
- d) means for coating microparticulates on the surface of the partly dehydrated fiber, said means including
  - a support base;
  - a horizontal tube disposed on and rigidly attached to said support base, said tube having a first opening and a second opening, wherein the diameter of said tube is sufficient to allow passage of a continuous fiber under tension in a straight line into the first opening and from second opening, said horizontal tube being an inverted arch, wherein the lower portion of said horizontal tube forms the microparticulate reservoir;
  - a microparticulate reservoir within said tube, wherein the upper level of the reservoir is lower than the passage for said continuous fiber; and
  - means for shaking said support base and said tube as one unit to suspend said microparticulates in said tube, wherein the microparticulates can contact the fiber and be coated on the surface of the fiber.

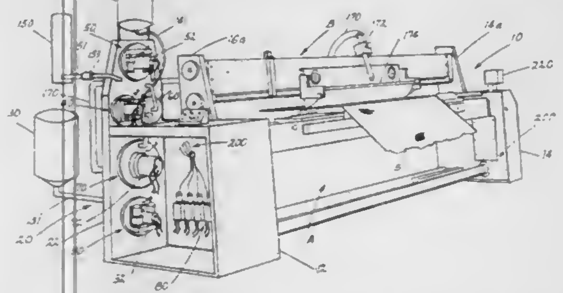
5,851,291
CHEMICAL FOAMING MACHINE AND MIXING APPARATUS

Robert J. Poterala, 140 Rocky Point, Greenville, S.C. 29615, and Joseph G. Poterala, 211 Quail Ridge Dr., Simpsonville, S.C. 29680

Filed Jul. 31, 1996, Ser. No. 690,501

Int. Cl.^{6} B05C *11/00;* **B05B** *13/02;* **B01F** *7/00*

U.S. Cl. 118—612 **46 Claims**



1. A coating machine, including a mixing apparatus, operative to apply a coating compound to a fabric web traveling through said machine along a path between first and second spaced sides of said machine, said coating machine including a coating table assembly for supporting said web and a dispenser assembly with a coating trough located between said first and second sides which applies said coating compound onto said fabric traveling along said path, said mixing apparatus comprising:
- a first side enclosure including a component support plate on a first side of said coating machine housing mechanical components of said mixing apparatus;
- said mechanical components include at least one chemical pump mounted within said enclosure, said pump operated for receiving a liquid chemical substance from a chemical supply line and pumping said substance into a chemical feed line;
- an air pump receiving air from an air supply line and pumping said air into an air feed line;
- a premix unit positioned and arranged to receive both said chemical substance from said chemical feed line and said air from said air feed line for initially mixing said chemical substance with said air to form a air-chemical mixture and to discharge said mixture into an inlet of a foamer supply line;
- a blending foamer for receiving said mixture from an outlet of said foamer supply line and blending said mixture into said chemical compound of foam substance of a consistency dischargable into a foam discharge line for transfer to said dispenser assembly of said coating machine; and
- a separate control system for said mixing apparatus integral with said coating machine for operating each of said pumps and said foamer at individually selected rotational speeds for controlling said consistency of said chemical compound.

5,851,292
ELECTROSTATIC COATING METHOD AND APPARATUS

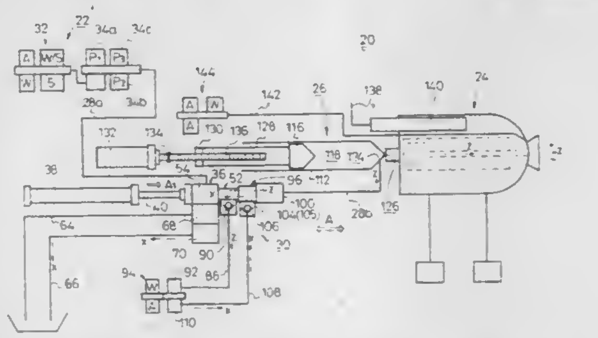
Shuuji Minoura; Yukihito Ono; Osamu Kageyama; Takashi Shimada, and Toshiyuki Kokubo, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 721,961

Claims priority, application Japan, Nov. 20, 1995, 7-301673; Nov. 20, 1995, 7-301687

Int. Cl.^{6} B05B *5/025*

U.S. Cl. 118—629 **18 Claims**



1. An apparatus for electrostatically coating a workpiece, comprising:
- a coating gun to which a high voltage will be applied; and
- an insulating separator valve mechanism for electrically separating a paint supply passage for supplying an electrically conductive paint to said coating gun into a first paint supply passage to which a high voltage will be applied and a second paint supply passage to which no high voltage will be applied, said insulating separator valve mechanism comprising:
- a first valve body connectable to said first paint supply passage through a first on/off valve;
- a second valve body connectable to said second paint supply passage through a second on/off valve; and
- actuating means for detachably connecting said first valve body and said second valve body to each other,

wherein said apparatus further comprises:
- a first dump passage branched from said first paint supply passage near said first valve body;
- a first dump valve for opening and closing said first dump passage;

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a paint trap defined by said by first valve body and said second valve body when said first valve body and second valve body are joined to each other and both of said first on/off valve and said second on/off valve are off; and

cleaning means for cleaning said paint trap while said first valve body and said second valve body are joined to each other and both of said first on/off valve and said second on/off valve are off.

5,851,293

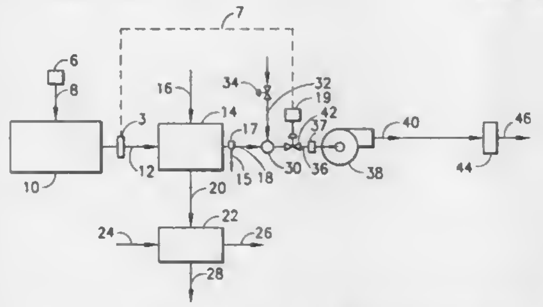
FLOW-STABILIZED WET SCRUBBER SYSTEM FOR TREATMENT OF PROCESS GASES FROM SEMICONDUCTOR MANUFACTURING OPERATIONS

Scott Lane, Chandler, Ariz.; Dinesh Shah, Fremont, Calif.; Ronald Colman, Maryport, England; Liam R. Heading, Livingston, Scotland, and Eric Simpson, Edinburgh, United Kingdom, assignors to ATMI Ecosys Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 622,861, Mar. 29, 1996. This application Sep. 6, 1996, Ser. No. 708,256

Int. Cl.⁶ C23C ***16/00***

U.S. Cl. 118—715 **60 Claims**



1. A flow stabilization system for damping pressure and flow rate increases and decreases in a process discharging an effluent gas stream, in which the process is pressure-sensitive and flow rate-sensitive, and downstream pressure and flow variations can adversely affect the upstream process, said system comprising a motive fluid driver constructed and arranged to receive the effluent gas stream from the process, and means for sensing a flow characteristic of the effluent gas stream and responsively adjusting the flow of the effluent gas stream to stabilize pressure and flow rate increases and decreases in the process.

5,851,294

GAS INJECTION SYSTEM FOR SEMICONDUCTOR PROCESSING

Lydia J. Young, Palo Alto; Richard H. Matthlesen, Scotts Valley; Simon Selitser, Fremont, and Ron van Os, Sunnyvale, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Continuation of Ser. No. 546,885, Oct. 23, 1995. This application Sep. 12, 1997, Ser. No. 928,747

Int. Cl.⁶ C23C ***16/00;14/00***

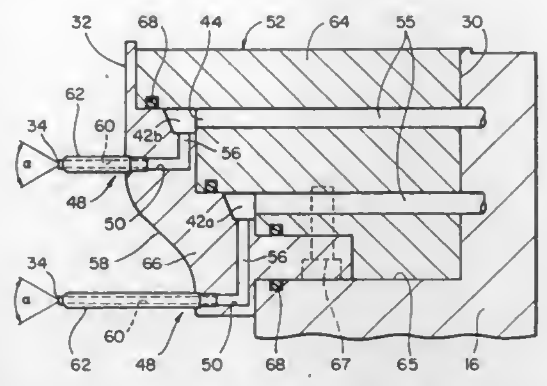
U.S. Cl. 118—715 **22 Claims**

1. A gas injection system for delivering a gaseous substance to a semiconductor processing chamber comprising:

a plenum body mountable in a processing chamber and having at least one plenum formed therein, said plenum having at least one supply inlet for delivery of a gaseous substance to said plenum,

a plurality of nozzles for injecting said gaseous substance into the processing chamber, said nozzles being spaced from said plenum, and

a plurality of indirect conduits each extending between said plenum and at least one of said nozzles for transporting said gaseous substance along an indirect path from said plenum to said nozzles, said indirect conduits directing the flow of said gaseous substance in at least two different flow directions to interrupt the flow of said gaseous substance between said plenum and said nozzle such that said gaseous substance in uniformly transported from said plenum to said nozzle independent of the location of said nozzles relative to said supply inlet.



5,851,295

Patent Not Issued For This Number

5,851,296

VACUUM PROCESSING APPARATUS AND METHOD

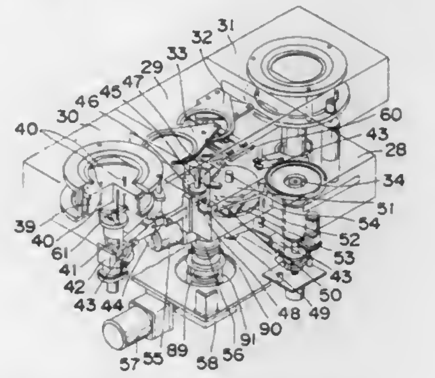
Hideo Haraguchi, Toyonaka; Masaki Suzuki, and Toshimichi Ishida, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 380,713, Jan. 30, 1995, Pat. No. 5,636,963. This application Mar. 10, 1997, Ser. No. 814,018

Claims priority, application Japan, Jan. 31, 1994, 6-9225

Int. Cl.⁶ C23C ***16/54***

U.S. Cl. 118—719 **11 Claims**



1. A vacuum processing apparatus comprising:

a first reaction chamber;

a non-reaction chamber comprising a load-lock chamber or a double load-lock chamber;

a double arm accommodated in said non-reaction chamber for taking out a processed wafer from said first reaction chamber and supplying an unprocessed wafer to said reaction chamber, said double arm comprising a first arm and a second arm which are each linearly movable into and out of said chambers;

a first wafer elevating mechanism provided in said first reaction chamber;

a second wafer elevating mechanism provided in said non-reaction chamber;

a first driving means for driving said double arm, said first wafer elevating mechanism, and said second wafer elevating mechanism by a single driving source;

a selective engagement mechanism provided at said first reaction chamber and said non-reaction chamber and said wafer elevating mechanisms, for selectively engaging said first driving means with any one of said wafer elevating mechanisms at said reaction chamber and said non-reaction chamber so as to drive said double arm and said wafer elevating mechanism at said selected chamber; and

a second driving means for rotating said double arm, said first wafer elevating mechanism, and said second wafer elevating mechanism by a second drive source.

5,851,297

METHOD AND APPARATUS FOR PREPARING CRYSTALLINE THIN-FILMS FOR SOLID-STATE LASERS

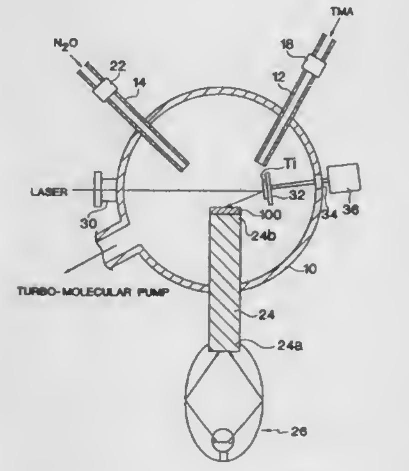
Hiroshi Kumagal, Wako, and Kouichi Toyoda, Kawagoe, both of Japan, assignors to Rikagaku Kenkyusho, Saitama, Japan

Division of Ser. No. 590,678, Jan. 29, 1996, Pat. No. 5,645,678, which is a continuation of Ser. No. 191,191, Feb. 3, 1994, abandoned. This application Dec. 17, 1996, Ser. No. 768,226

Claims priority, application Japan, Feb. 4, 1993, 5-40551

Int. Cl.⁶ C23C ***16/00***

U.S. Cl. 118—722 **5 Claims**



1. An apparatus for preparing crystalline thin-films for solid-state lasers comprising a vessel the inside of which has been highly evacuated and for containing a substrate onto the surface of which is subjected to crystal growth of crystalline thin-films for solid-state lasers;

a heating device for heating said substrate;

a laser host crystal supplying device for supplying materials for forming the laser host crystal onto the surface of said substrate contained inside said vessel in the form of gas, ion, single metal or metal compound; and

a material of active ionic species supplying device for supplying a material of active ionic species onto the surface of said substrate contained inside said vessel simultaneously with supply of said materials for forming the laser host crystal, wherein said laser host crystal supplying device is provided with a supplying device for supplying a metallic material for forming said laser host crystal and a supplying device for supplying an oxidizing agent or a halogenating agent.

5,851,298

SUSCEPTOR STRUCTURE FOR MOUNTING PROCESSING OBJECT THEREON

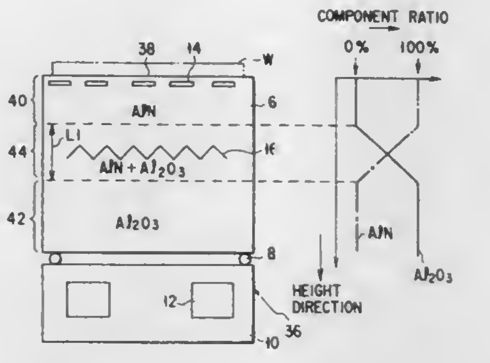
Nobuo Ishii, Yamanashi-ken, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Jan. 29, 1997, Ser. No. 790,426

Claims priority, application Japan, Feb. 1, 1996, 8-038927

Int. Cl.⁶ C23C ***16/00***

U.S. Cl. 118—728 **16 Claims**



1. A susceptor structure comprising:

a susceptor main body having a mount surface capable of mounting a processing object thereon, comprising,
  an upper side layer formed by sintering a first inorganic nonmetallic material having thermal conductivity,
  a lower side layer formed by sintering a second inorganic nonmetallic material having thermal conductivity lower than said first inorganic nonmetallic material, and
  an intermediate layer formed between said upper and lower layers, wherein said first and second inorganic nonmetallic materials are sintered together so that a component ratio of said first and second inorganic nonmetallic materials between said upper and lower side layers is transited;
  a cooling section for supporting said susceptor main body from a lower side of the susceptor main body to cool the susceptor main body;
  an electrostatic chuck, buried in the susceptor main body, for holding the processing object on the mount surface by Coulomb force; and
  heating means, buried in the susceptor main body, for heating the processing object mounted on the mount surface.

5,851,299

PASSIVE SHIELD FOR CVD WAFER PROCESSING WHICH PROVIDES FRONTSIDE EDGE EXCLUSION AND PREVENTS BACKSIDE DEPOSITIONS

David Cheng, Sunnyvale, and Mei Chang, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa clara, Calif.

Division of Ser. No. 823,942, Jan. 22, 1992, Pat. No. 5,304,248, which is a continuation-in-part of Ser. No. 622,664, Dec. 5, 1990, abandoned. This application Mar. 25, 1994, Ser. No. 218,209

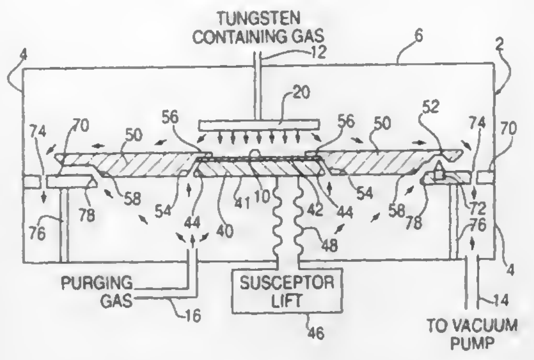
Int. Cl.⁶ C23C ***16/00;14/00;*** **C23F** ***1/00;*** **H01L** ***21/00***

U.S. Cl. 118—729 **34 Claims**

1. In a vacuum processing system, apparatus for shielding a portion of a workpiece that is supported within the system comprising:

a workpiece support having a top surface for supporting the workpiece within the system;

a shield for engaging a portion of said workpiece and for preventing deposition of materials upon said engaged portion of said workpiece; and



a movable shaft, connected to said workpiece support, for moving said workpiece support to engage said portion of said workpiece with said shield.

5,851,300

CATIONIC MODIFICATION OF STARCH AND USE OF THE CATIONICALLY MODIFIED STARCH

Friedrich Linhart, Heidelberg; Andreas Stange, Mannheim; Rudolf Schuhmacher, Böhl-Iggelheim; Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Manfred Niessner, Schifferstadt; Claudia Nilz, Rödersheim-Gronau; Wolfgang Reuther, Heidelberg, and Hubert Meixner, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04075, § 371 Date Apr. 29, 1997, § 102(e) Date Apr. 29, 1997, PCT Pub. No. WO96/13525, PCT Pub. Date May 9, 1996

PCT Filed Oct. 17, 1995, Ser. No. 817,644

Claims priority, application Germany, Oct. 29, 1994, 44 38 708.3

Int. Cl.^{6} C08B *30/12;30/00;* **D21H** *11/00*

U.S. Cl. 127—32 **8 Claims**

1. A process for cationically modifying a starch, comprising:

reacting a starch with at least one polymer comprising amino and/or ammonium groups in an aqueous medium at above the glutinization temperature of the starch, in the absence of oxidizing agents, polymerization initiators and alkali,

wherein the reaction is conducted at 115° to 180° C. under superatmospheric pressure; at least 90% by weight of the starch is digested; and the molecular weight of not more than 10% by weight of the starch is reduced.

5,851,301

METHODS FOR SEPARATION OF WHEAT FLOUR INTO PROTEIN AND STARCH FRACTIONS

George H. Robertson, Danville, and Trung K. Cao, Santa Clara, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

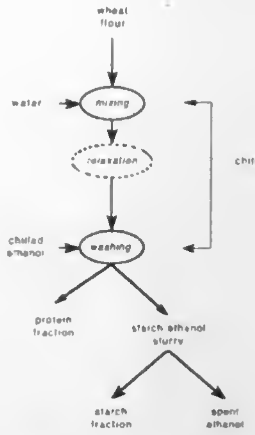
Filed Jun. 20, 1997, Ser. No. 879,560

Int. Cl.^{6} C08B *30/021*

U.S. Cl. 127—67 **16 Claims**

1. A method for separating wheat flour into protein and starch fractions, which comprises:

(1) mixing wheat flour with a sufficient amount of water and for a sufficient time to hydrate the flour and form a cohesive batter or dough;



(2) chilling the batter or dough; and

(3) mixing and washing the batter or dough with chilled ethanol to separate it into protein and starch fractions.

5,851,302

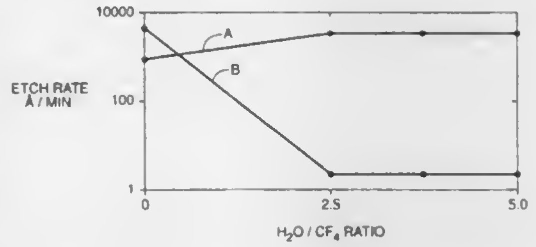
METHOD FOR DRY ETCHING SIDEWALL POLYMER

Ramiro Solis, Bandera, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 19, 1997, Ser. No. 803,180

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 134—1.2 **24 Claims**



1. A method of removing polymer from a semiconductor wafer which includes a multilayer metal structure on the wafer that comprises a first metal layer, a second metal layer, and optionally, a third metal layer that is a barrier layer which presents diffusion of second metal into the wafer, said method comprising the steps of:

(a) positioning said wafer into a chamber wherein the wafer includes polymer that is adjacent to the multilayer metal structure;

(b) introducing etchant gases comprising CF_4 and H_2O into the chamber;

(c) applying energy to the etchant gases to generate a plasma; and

(d) etching the polymer, wherein the ratio of the etch rate for polymer to the etch rate for the multilayer metal structure is at least 5 to 1.

5,851,303

METHOD FOR REMOVING METAL SURFACE CONTAMINANTS FROM SILICON

Lydia Lee-York Hwang, Midland, and Arthur Francis Porsche, Midland, both of Mich., assignors to Hemlock Semiconductor Corporation, Hemlock, Mich.

Filed May 2, 1996, Ser. No. 642,137

Int. Cl.^{6} B08B *7/04*

U.S. Cl. 134—3 **20 Claims**

1. A method for removing metal surface contaminants from a silicon metalloid, the method comprising:

(A) in a first step contacting silicon metalloid having a metal surface contaminant with vapor phase hydrogen fluoride and

(B) in a second step contacting the silicon metalloid having the metal surface contaminant with an aqueous solution consisting essentially of at least one-half weight percent hydrogen peroxide.

5,851,304

PROCESS FOR PICKLING A PIECE OF STEEL AND IN PARTICULAR A SHEET STRIP OF STAINLESS STEEL

Henri Giraud, Geeugnon; Bernard Vialatte, Creusot, and Martine Lauvergne, Gueugnon, all of France, assignors to Usinor Sacilor, Puteaux, France

Filed Feb. 27, 1997, Ser. No. 807,634

Claims priority, application France, Feb. 27, 1996, 96 02405

Int. Cl.^{6} C23G *1/08*

U.S. Cl. 134—3 **10 Claims**

1. Process for pickling a piece of steel and in particular a strip of stainless steel, comprising: applying an aqueous pickling solution containing hydrochloric acid and ferric and ferrous pickling ions in solution, and, for the purpose of maintaining a constant pickling power of said aqueous solution of hydrochloric acid having a pH lower than 1, maintaining the concentration of Fe^{3+} ions at a value between 1 g/liter and 300 g/liter by reoxidation by means of an oxygenation of the Fe^{2+} ions produced during said pickling, the REDOX potential being maintained at a value between 400 and 600 mV, said potential being measured between a platinum electrode and a reference AG/AGCl electrode which are placed in said solution.

5,851,305

WASHING APPARATUS AND WASHING METHOD

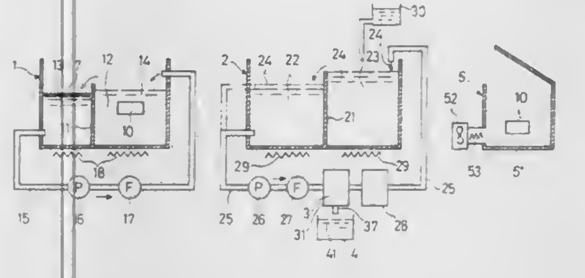
Yousuke Yamada; Yoshio Fujioka, both of Funabashi; Ryuichi Isono, Tokyo; Nobuo Takahashi, Tokyo; Akio Hayashi, Tokyo; Koichi Ogawa, Osaka; Norio Watanabe, Tokyo, and Yutaka Satoh, Kanagawa, all of Japan, assignors to Zenken Co., Ltd., Funabashi; Kinzolu Kako Gijutsu Kenkyusho Co., Ltd., Tokyo, and Kuraray Co., Ltd., Okayama, all of Japan

Filed Aug. 28, 1996, Ser. No. 703,954

Claims priority, application Japan, Aug. 31, 1995, 7-248693

Int. Cl.^{6} C23G *1/24;1/26;1/36*

U.S. Cl. 134—10 **4 Claims**



1. A method for washing articles, comprising:

washing an article in a detergent comprising a non-ionic surface active agent and a terpene-based solvent;

rinsing said article in a rinse bath with liquid rinse water;

draining said liquid rinse water from said rinse bath;

filtering said liquid rinse water; and

returning said liquid rinse water to said rinse bath,

wherein filtration of said liquid rinse water comprises a first stage and a second stage, said first stage comprising filtering said liquid rinse water through a micro-porous filter with an average pore size of 0.01–0.2 microns, and

said second stage comprising filtering said liquid rinse water through activated carbon, wherein said micro-porous filter separates and removes colloidal micelles from said liquid rinse water.

5,851,306

PROCESS FOR WASHING REFILLABLE PLASTIC BOTTLES

Patrice Robichon, 4 rue au Mètre, 78290 Croissy S/Seine, France

Division of Ser. No. 218,354, Mar. 28, 1994, Pat. No. 5,607,517. This application Nov. 12, 1996, Ser. No. 745,503

Claims priority, application France, Nov. 22, 1993, 9313927

Int. Cl.^{6} B08B *9/00*

U.S. Cl. 134—22.1 **17 Claims**

1. A process for washing a reused container containing organic contaminating agents, said container intended to be reused and having a body, a bottom on which the container rests and a base portion extending from the body to the bottom, wherein the reusable container is made of a homopolymer or a copolymer or a mixture of a homopolymer and a copolymer, wherein said homopolymer or said copolymer or said mixture of a homopolymer and a copolymer includes one or more aromatic polyesters, further wherein said homopolymer or said copolymer or said mixture of a homopolymer and a copolymer of said container is transparent and has an average degree of crystallinity higher than 30%, the thickness of the container being greater than:

0.35 mm with regard to the body,

1.00 mm as the base portion,

1.00 mm at the bottom, said process comprising

washing for re-use said container with an aqueous solution containing a base at a temperature higher than 70° C.

5,851,307

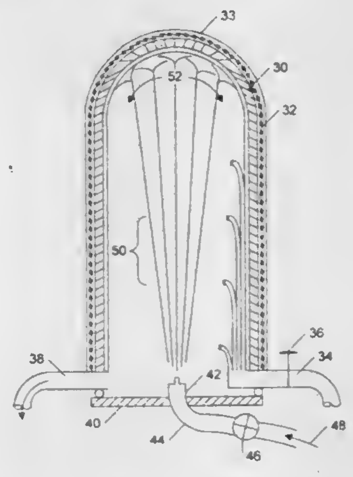
METHOD FOR IN-SITU CLEANING OF POLYSILICON-COATED QUARTZ FURNACES

Mark C. Gilmer, Austin; Mark I. Gardner, Cedar Creek, and Robert Paiz, Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Filed Apr. 28, 1997, Ser. No. 842,092

Int. Cl.^{6} B08B *9/00*

U.S. Cl. 134—22.1 **8 Claims**



1. A method for cleaning a semiconductor processing tool, comprising:

providing said semiconductor processing tool comprising a chamber encompassed partially within a quartz lining;

removing a door from a lower surface of a housing which surrounds the quartz lining;

replacing said door with another door comprising an aperture having an inner diameter dimensioned to sealingly receive an outer diameter of an injector;

introducing a cleaning agent into said chamber in gaseous communication with said quartz lining without disassembling said processing tool; and

removing cleaning byproducts from said chamber subsequent to said cleaning agent reacting with a film accumulated upon said quartz lining.

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5,851,308

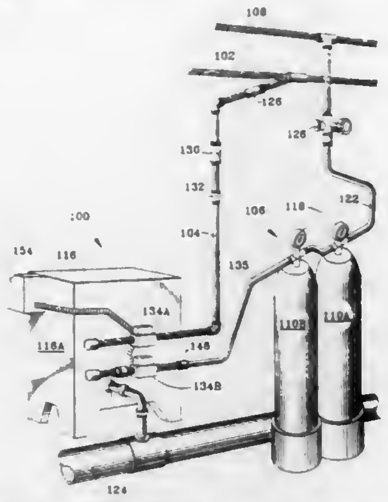
ACID BOTTLE WASHING APPARATUS AND METHOD

Steven Engelking, and Robert R. Sanchez, both of San Antonio, Tex., assignors to Sony Corporation, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Divlslon of Ser. No. 493,313, Jun. 21, 1995, Pat. No. 5,720,307. This application May 21, 1997, Ser. No. 861,020

Int. Cl.^{6} B08B *3/02;9/00*

U.S. Cl. 134—22.17 **6 Claims**



1. A method of decontaminating articles which are contaminated with acid residue comprising the steps of:

displacing an alkaline solution from a canister;

directing the alkaline solution into a washing apparatus wherein the articles to be decontaminated are located, and to first nozzles;

preventing the alkaline solution from flowing to second nozzles;

spraying the alkaline solution with the first nozzles on a first predetermined portion of the articles to be decontaminated;

directing water into the washing apparatus, and to the first and second nozzles;

rinsing the predetermined portion of the article with water using the first nozzles;

rinsing a second predetermined portion of the article with water using the second nozzles.

5,851,309

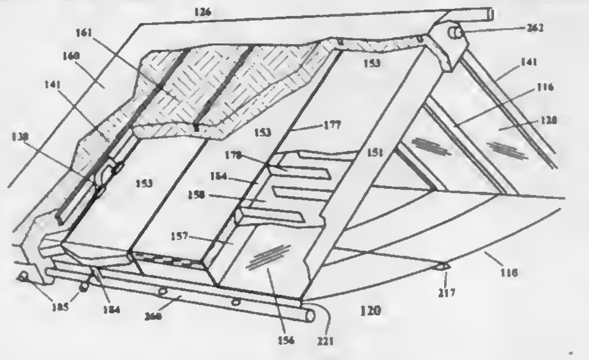
DIRECTING AND CONCENTRATING SOLAR ENERGY COLLECTORS

Paavo Kousa, 2298 Honey Run Rd., Chico, Calif. 95928

Filed Apr. 26, 1996, Ser. No. 638,481

Int. Cl.^{6} H01L *31/052*

U.S. Cl. 136—248 **26 Claims**



1. A directing and concentrating solar energy collector comprising:

a concentrating reflector constructed to concentrate a radiation from the sun along a substantially straight line of concentration, the major axis of said concentrating reflector defined to be parallel to the line of concentration;

one or more directing reflectors, at least one of said reflectors located at the end of said concentrating reflector, perpendicular to the major axis of said concentrating reflector, the major axis of said directing reflectors defined to be perpendicular to the major or a of said concentrating reflector, said directing reflectors extending from said concentrating reflector beyond the line of concentration, cooperating with said concentrating reflector by directing radiation to and from said concentrating reflector, such that when the position of the sun changes in the direction parallel to the major axis of said concentrating reflector, radiation concentrated by said reflectors remains directed and optimized between said directing reflectors, at the line of concentration, moving and changing zones of concentration appear at the line of concentration, such that when the sun is located at a direction perpendicular to the line of concentration, at the front of said solar energy collector, the concentration is evenly distributed along the line of the concentration, and when the sun is located at an angle to either side the concentration is varied along the line of concentration;

said concentrating reflector including a plurality of independently controllable thermally insulated heat chambers placed along said line of concentration for controlling the rate of heat transfer from each of said plurality of beat chambers.

5,851,310

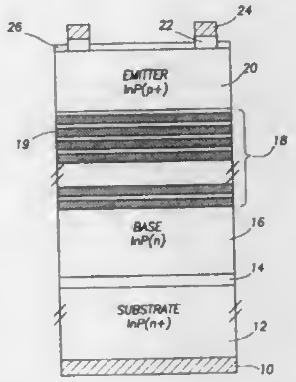
STRAINED QUANTUM WELL PHOTOVOLTAIC ENERGY CONVERTER

Alexandre Freundlich; Philippe Renaud; Mauro Francisco Vilela, and Abdelhak Bensaoula, all of Houston, Tex., assignors to Unlversity of Houston, Houston, Tex.

Filed Dec. 6, 1995, Ser. No. 568,129

Int. Cl.^{6} H01L *31/06;31/0304;31/18*

U.S. Cl. 136—255 **12 Claims**



1. A semiconductor photovoltaic energy conversion cell of the n-i-p or p-i-n junction type, comprising:

a base being lattice-matched to indium phosphide and being respectively of the n- or p-type;

an intrinsic region having a plurality of quantum wells therein, wherein each quantum well has a thickness and is formed of strained alloys or binary materials in the indium phosphide system, the plurality of quantum wells having a total thickness;

an emitter region-being lattice-matched to indium phosphide and being respectively of the p- or n-type; and

electrical contacts to the base and emitter regions.

5,851,311

POLYMERIZABLE FLUX COMPOSITION FOR ENCAPSULATING THE SOLDER IN SITU

Joram Diamant, Moraga, and Henry L. Myers, San Jose, both of Calif., assignors to Sophia Systems Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 625,062

Int. Cl.^{6} B23K *35/00*

U.S. Cl. 148—23 **39 Claims**

22. A process of forming an encapsulated metallurgical joint from a polymerizable flux composition including dicarboxylic acid flux and particles dispersed therein of a metal which melts at a temperature not exceeding 200° C., the process comprising the steps of:

placing the polymerizable composition on the surface of a substrate;

heating the composition to a temperature not exceeding 200° C. for a time interval sufficient to melt the metal particles and remove surface oxide layer therefrom by the fluxing actin of the dicarboxylic acid to form continuous fused molten metal;

heating the composition to a temperature not exceeding 200° C. for an additional time interval to segregate the polymerizable flux composition from the fused metal, and to cure the polymerizable flux composition for creating a continuous polymerized thermoset surface layer encapsulating the fused molten metal; and

cooling the composition to allow the fused molten metal to solidify as continuous metal encapsulated within the cured polymerized flux composition.

5,851,312

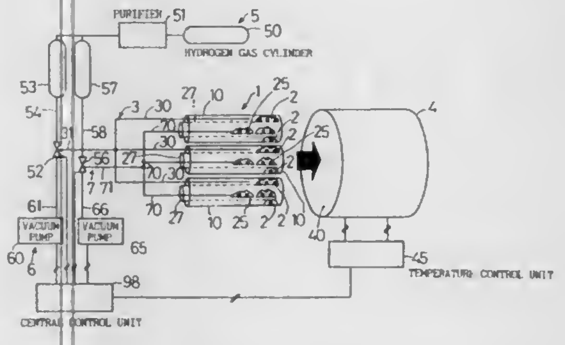
PRODUCTION METHOD, PRODUCTION APPARATUS AND HEAT TREATMENT APPARATUS FOR ANISOTROPIC MAGNET POWDER

Yoshinobu Honkura, Chita-gun; Hironari Mitarai, and Takenobu Yoshimatsu, both of Tokai, all of Japan, assignors to Aichi Steel Works, Ltd., Tokai, Japan

Division of Ser. No. 607,208, Feb. 26, 1996, abandoned. This application Jul. 11, 1997, Ser. No. 891,498

Int. Cl.^{6} H01F *1/057*

U.S. Cl. 148—122 **4 Claims**



1. A method for producing anisotropic rare earth magnet powders subjected to hydrogenation, disproportionation, desorption and recombination treatment at an elevated temperature, said method comprising the steps of

hydrogenation accompanied by heat generation and hydrogen desorption accompanied by heat absorption, and

compensating for the generated heat accompanied with the hydrogenation or compensating for the absorbed heat accompanied with the hydrogen desorption of raw materials of said anisotopic raw rare earth magnet powders by a same amount of heat generated by synchronized counter reaction of a dummy material, said dummy material having an exothermic or endothermic property, respectively.

5,851,313

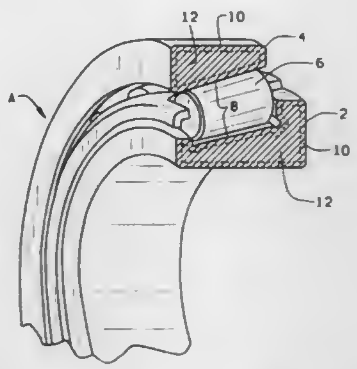
CASE-HARDENED STAINLESS STEEL BEARING COMPONENT AND PROCESS AND MANUFACTURING THE SAME

David L. Milam, North Canton, Ohio, assignor to The Timken Company, Canton, Ohlo

Filed Sep. 18, 1996, Ser. No: 718,138

Int. Cl.^{6} C23C *8/36*

U.S. Cl. 148—222 **18 Claims**



6. A process for producing a corrosion resistant bearing component, said process comprising cleaning the surface of a steel shape having the configuration generally required for the component, the steel of the shape comprising iron, less than 0.50% by weight carbon and more than about 11% by weight chromium; thereafter subjecting the steel shape with its cleaned surface to a plasma containing carbon or nitrogen or both while the shape is at an elevated temperature exceeding 900° F., all for sufficient time to enable carbon or nitrogen or both to diffuse into the shape and create a case over a core, the core having the constituency of the original shape and the case having a greater content of carbon or nitrogen or both than the core, but not exceeding about 0.98% carbon by weight at the surface; and cooling the shape to a temperature less than that at which it existed while being subjected to the plasma.

5,851,314

METHOD FOR PLASMA CARBURIZATION OF METAL WORKPIECES

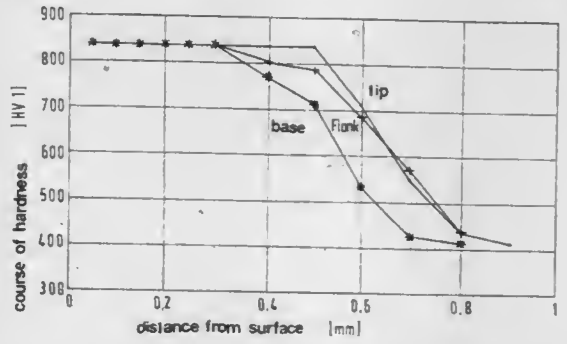
Winfried Gräfen, Duisburg, and Bernd Edenhofer, Kleve, both of Germany, assignors to Ipsen International GmbH, Kleve, Germany

Filed Dec. 13, 1996, Ser. No. 766,282

Claims priority, application Germany, Dec. 16, 1995, 195 47 131.8

Int. Cl.^{6} C23C *8/20*

U.S. Cl. 148—222 **8 Claims**



1. A method for producing a plasma carburization atmosphere for metal workpieces in a furnace, said method comprising the steps of:

providing process conditions of plasma carburization in a furnace;

introducing a mixture consisting mainly of propane and methane into the furnace atmosphere of the furnace in order to provide high carbon mass flow density and to prevent soot formation; and

cleaving propane and methane under the process conditions of plasma carburization to release pure carbon at high carbon mass flow density into the furnace atmosphere for plasma carburization without soot formation.

5,851,315

PROCESS FOR PRODUCING RADIOISOTOPE SOURCE

Gary Strathearn, Santa Monica, and Seyed K. Taghizadeh, Los Angeles, both of Calif., assignors to Iso-Science Laboratories, Inc., Burbank, Calif.

Filed Jul. 16, 1997, Ser. No. 895,092

Int. Cl.^{6} C23C *8/36*

U.S. Cl. 148—239 **10 Claims**

1. A process for implanting radioactive ions to a substrate having a surface, comprising;

a. chemically binding selected radioactive ions to the surface of the substrate;

b. removing extraneous material not chemically bound to the substrate surface; and

c. diffusing the chemically bound radioactive ions below the surface of the substrate in a non-oxidizing environment.

5,851,316

FERRITE STAINLESS STEEL SHEET HAVING LESS PLANAR ANISOTROPY AND EXCELLENT ANTI-RIDGING CHARACTERISTICS AND PROCESS FOR PRODUCING SAME

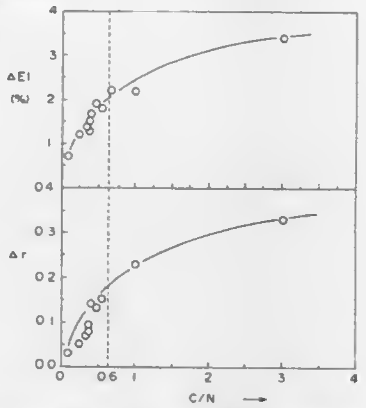
Yoshihiro Yazawa; Takumi Ujiro; Susumu Satoh; Shintaro Kumazawa; Makoto Kobayashi, and Masayuki Kasai, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Sep. 24, 1996, Ser. No. 719,401

Claims priority, application Japan, Sep. 26, 1995, 7-247770; Apr. 26, 1996, 8-107289

Int. Cl.^{6} C22C *38/00;38/18;38/22;38/32*

U.S. Cl. 148—325 **2 Claims**



1. An enhanced ferritic stainless steel plate having less planar anisotropy and excellent anti-ridging characteristics comprising:

not more than about 0.02 wt % of C, about 0.01–1.0 wt % of Si, about 0.01–1.0 wt % of Mn, not more than about 0.08 wt % of P, not more than about 0.01 wt % of S, about 0.005–0.30 wt % of Al, about 11–50 wt % of Cr, about 0.1–5.0 wt % of Mo, not more than about 0.03 wt % N,

the content of elements C and N further satisfying the relationship:

about 0.005 wt %$\leqq$(C+N)$\leqq$about 0.03 wt %, and (C/N)<about 0.6,

said sheet further comprising Ti in an amount which satisfies the relation:

about 5$\leqq$Ti/(C+N)$\leqq$about 30,

the balance of said sheet comprising Fe and incidental impurities,

said sheet having an X-ray integral intensity ratio (222)/(310) of not less than about 35 in a plane parallel to a sheet surface at a depth of about ¼ of the sheet thickness from said sheet surface, and having an elongation of not less than 30%, an r value of not less than 1.4, a planar anisotropy of elongation, ΔEl, of not more than 2.0%, a planar anisotropy of r value, Δr, of not more than 0.2, and anti-ridging characteristics of not more than 10 μm in undulating height, further comprising at least one member of at least one group selected from the following four groups:

(1) Ca: about 0.0005–0.0050 wt %,
(2) Nb: about 0.001–0.0100 wt %,
(3) Cu: about 0.01–2.0 wt %,
(4) Ni: about 0.01–2.0 wt %,

and further comprising as an essential element 0.0002–0.0020 wt % B.

5,851,317

COMPOSITE MATERIAL REINFORCED WITH ATOMIZED QUASICRYSTALLINE PARTICLES AND METHOD OF MAKING SAME

Suleyman B. Biner; Daniel J. Sordelet; Barbara K. Lograsso, and Iver E. Anderson, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 502,843, Jul. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 127,264, Sep. 27, 1993, Pat. No. 5,433,978. This application Jan. 31, 1997, Ser. No. 792,285

Int. Cl.^{6} C22C *21/00*

U.S. Cl. 148—403 **12 Claims**

1. A composite material comprising a consolidated aluminum or aluminum alloy matrix, said material comprising preformed, substantially spherical, atomized quasicrystalline reinforcement particles having a size in the range of about 1 to about 100 microns diameter disposed in the matrix, said reinforcement particles being present in said matrix in an amount of about 5 to about 70 volume % thereby imparting improved mechanical properties and high ductility to said composite material.

5,851,318

HIGH TEMPERATURE FORGEABLE ALLOY

Jutta Klöwer, Iserlohn, Germany, assignor to Krupp VDM GmbH, Werdohl, Germany

Continuation of Ser. No. 488,505, Jun. 9, 1995, abandoned. This application Dec. 19, 1996, Ser. No. 769,347

Int. Cl.^{6} C22C *30/00;19/05*

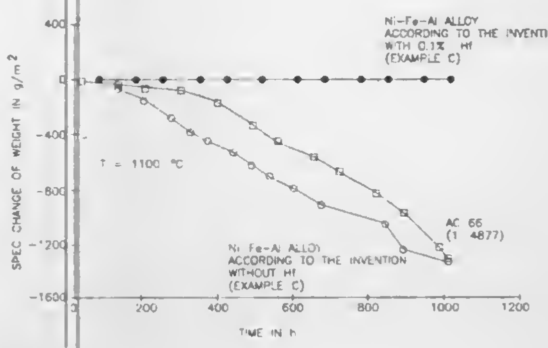
U.S. Cl. 148—410 **3 Claims**

1. A high temperature forgeable alloy of fine-grained duplex consisting (in % by weight)

<0.05 C
<0.5 Si
<0.5 Mn
8.5 to 11 Al
<0.02 p

<0.01 S
4 to 10 Cr
23 to 28 Fe
0.025 to 0.2 Hf
<0.5 Ti
<0.005 B

residue nickel and admixtures due to melting.



5,851,319

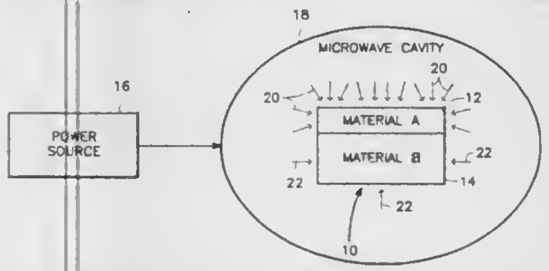
METHOD AND APPARATUS FOR SELECTIVELY ANNEALING HETEROSTRUCTURES USING MICROWAVES

Harry A. Atwater, Pasadena, Calif.; Ruth A. Brain, Portland, Oreg., and Martin B. Barmatz, La Crescenta, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 415,073, Mar. 31, 1995, Pat. No. 5,707,466. This application Aug. 14, 1997, Ser. No. 911,304

Int. Cl.^{6} H01L *21/324*

U.S. Cl. 148—525 **4 Claims**



1. A method for selectively post annealing a heterostructure comprised of a lower microwave absorption material having patterned grooves and a physical vapor deposited high microwave absorption metal film deposited thereon, comprising the steps of:

placing said heterostructure into a cavity producing microwaves:

exposing said heterostructure in said cavity to pulsed microwaves resonant with a mode of said cavity so that said metal film is heated by absorbing power from said microwaves sufficient to cause diffusion of said metal film within said patterned grooves, said pulsed microwaves having a characteristic pulse width and duty cycle tending to prevent localized heating of said lower microwave absorption material.

5,851,320

WEAR-RESISTANT ALUMINUM ALLOY AND COMPRESSOR PISTON FORMED THEREFROM

Lars Auran, Sundalsora, Norway; Gary Hugh Rhinehart, Blissfield, Mich., and Saumin Shantilal Mehta, Toledo, Ohio, assignors to Norsk Hydro, A. S., Oslo, Norway

Filed Jan. 5, 1996, Ser. No. 583,228

Int. Cl.^{6} C22C *21/00*

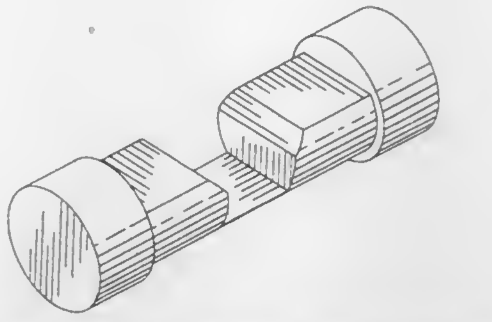
U.S. Cl. 148—552 **13 Claims**

13. A piston produced by a process comprising the steps of:

casting a homogeneous melt of a wear-resistant aluminum alloy consisting of the following by weight: about 13.0 to about 15.5 percent silicon; about 0.8 to about 1.8 percent copper; about 0.8 to about 1.3 percent magnesium; not more than 0.7 percent iron; not more than 0.25 percent zinc; not more than 0.2 percent manganese; not more than 0.15 percent nickel; not more than 0.1 percent chromium; not more than 0.1 percent titanium; up to about 0.15 percent phosphorus; not more than 0.15 percent impurities, each of the impurities not exceeding 0.05 percent of the alloy; and the balance being aluminum;

forging the wear-resistant aluminum alloy to form a piston; and

solution heat treating the piston at a temperature of about 475° C. to about 485° C. for a duration of about two hours, during which a dispersion of copper-aluminide precipitates is formed throughout the piston, the piston further containing silicon particles within a range of about fifteen to thirty-five micrometers in equivalent diameter.



5,851,321

PNEUMATIC TIRE INCLUDING CAP TREAD PORTION

Shingo Midorikawa; Kinya Kawakami, and Eri Miura, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 584,419

Claims priority, application Japan, Jan. 13, 1995, 7-004244

Int. Cl.^{6} B60C *1/00;11/00*

U.S. Cl. 152—209 R **6 Claims**

1. A pneumatic tire for running on ice and snow in which a cap tread portion is composed of a rubber composition comprising:

(A) 100 parts by weight of a rubber component mainly comprising natural rubber and polybutadiene rubber and having a hardness at 0° C. of not more than 60 based on JIS-K-6301;

(B) (i) carbon black having a nitrogen specific surface area (N$_2$SA) of not less than 120 m^2/g and a 24M4DBP of not less than 90 ml/100 g and (ii) silica in an amount of from 5 to 40 parts by weight per 100 parts by weight of the rubber component, wherein the total weight of the carbon black and silica is not more than 60 parts by weight per 100 parts by weight of the rubber component; and

(C) a low molecular weight diene liquid polymer having a molecular weight of not more than 60.000.

5,851,322

PNEUMATIC TIRE INCLUDING GROOVE AND SIDE EXTENDING ALONG PARABOLA

Motoo Hayashi, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-Ken, Japan

Filed Dec. 30, 1996, Ser. No. 774,640

Claims priority, application Japan, Jan. 30, 1996, 8-014460

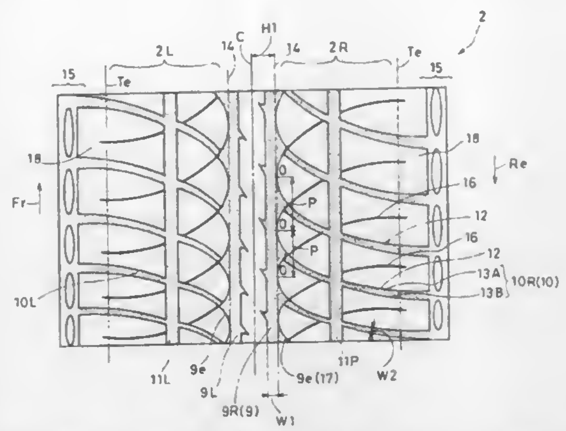
Int. Cl.^{6} B60C *11/03;11/12;115/00*

U.S. Cl. 152—209 R **6 Claims**

1. A pneumatic tire comprising

a tread portion having a tread face having tread edges,

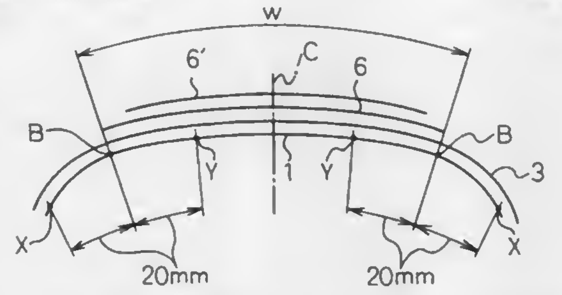
a pair of circumferential grooves each disposed on each side of the tire equator and near the tire equator and extending continuously in the circumferential direction of the tire so as to define a central part between the circumferential grooves and a pair of axially outer parts axially outward of the circumferential grooves, and



axial grooves disposed in each of the axially outer parts at pitches in the tire circumferential direction, wherein
each of the axial grooves extends from one of the circumferential grooves to one of the tread edges along a parabola,
the parabola having
  the vertex disposed on the axially outer edge of the circumferential groove, and
  the parabola axis extending parallel to the tire axial direction, and the parabola focus disposed axially outward of the parabola vertex,
and
with respect to each said parabola, on one side of the parabola axis, an axial groove is disposed to extend along the parabola, but on the other side of the parabola axis, a sipe is disposed to extend along the parabola,
the axial groove having an axially outer edge extending on the parabola from the parabola vertex to the tread edge, and
generally triangular shaped parts, each triangular shaped part surrounded by circumferentially adjacent parabolas and a circumferential straight line drawn between the parabola vertexes thereof so that the circumferential groove has a wavy axial outer edge whereas the axially inner edge of the circumferential groove is generally straight, and
a circumferentially extending rib is defined between the circumferential grooves.

5,851,323
PNEUMATIC TIRE WITH AIR PERMEATION PREVENTIVE LASER

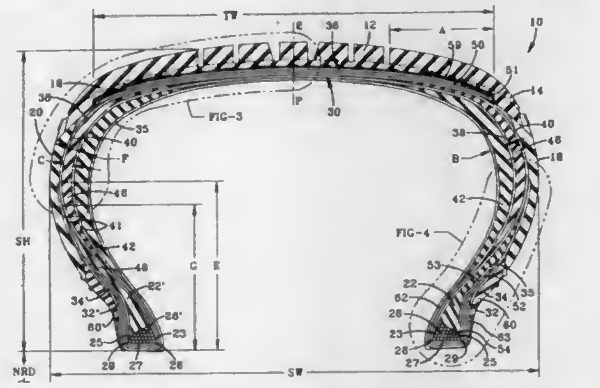
Hiroyuki Kaido; Kazuto Yamakawa; Jiro Watanabe; Zenichiro Shida, and Yoshiaki Hashimura, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
PCT No. PCT/JP96/00737, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO96/30221, PCT Pub. Date Mar. 10, 1996
PCT Filed Mar. 21, 1996, Ser. No. 750,022
Claims priority, application Japan, Mar. 24, 1995, 7-066274; Nov. 15, 1995, 7-296892
Int. Cl.⁶ B60C *5/14*
U.S. Cl. 152—510 **15 Claims**



1. A pneumatic tire having a belt layer having circumferentially extending end portions on either side thereof, an air permeation preventive layer inside of said belt layer with respect to a tread portion of said tire and comprising a film composed of a polymer composition containing a thermoplastic resin or a blend of a thermoplastic resin and an elastomer component and having an air permeation coefficient of not more than 25×10^{-12} cc·cm/cm^2·sec·cmHg and a Young's modulus of 1 to 1000 MPa, said air permeation preventive layer being arranged so as to substantially cover an inner circumferential surface of the tire in at least two regions, each region extending from a first position at one of the two end portions of the belt layer to a second position 20 mm in from one of said first positions and toward a crown center of the tire and at most in a region extending between two third positions, each of which is 20 mm out from one of said first positions and toward a bead portion of the tire.

5,851,324
RADIAL PLY PNEUMATIC TIRE

Thomas Reed Oare, Suffield; Randall Raymond Brayer, North Canton; Jeffrey Wayne Kahrs, Hartville; Beale Anthony Robinson, North Canton; Keith Carl Trares, Akron, and Raymond Dean Mc Quate, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 954,209, Sep. 30, 1992, Pat. No. 5,368,082. This application May 6, 1994, Ser. No. 239,055
Int. Cl.⁶ B60C *1/00;13/00;17/00*
U.S. Cl. 152—517 **37 Claims**



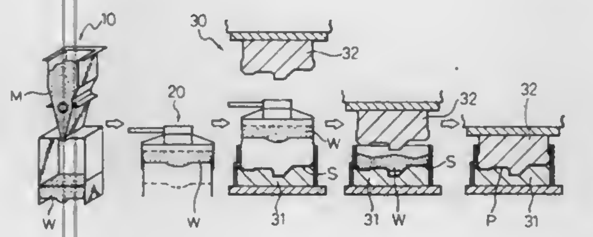
1. A radial ply pneumatic tire having an axis of rotation, a tread having a pair of lateral edges, a pair of reinforcing belts located radially inward of the tread, a pair of sidewalls, one sidewall extending radially inwardly from each lateral edge, a maximum section width, and a tire carcass structure, the tire carcass structure comprising:
  a) a pair of bead portions, one lead portion extending radially inwardly from each sidewall, each portion including a substantially inextensible core;
  b) a carcass reinforcing structure radially inward of the reinforcing belts extending circumferentially about the tire from one bead portion to the other bead portion, the carcass reinforcing structure having a first ply structure and a second ply structure, each ply structure laving at least one ply, each ply having an elastomeric ply coat and ply cords which extend from bead to bead;
  c) an innerilner radially inward of the first ply structure;
  d) a fabric reinforced overlay being radially outward of the reinforcing belts;
  e) a pair of bead fillers, one of the bead fillers being located above each bead core; and
  f) a pair of first fillers and a pair of second fillers, the first fillers being located between the innerliner and the first ply structure, one first filler extending from each bead portion radially to beneath the reinforcing belts, the second fillers being disposed between the first and second ply structures, one second filler extending radially outward from each bead portion to beneath the reinforcing belts, the first fillers having a Shore A Hardness of about 60 to about 70.

23. A radial ply pneumatic tire having an axis of rotation, a tread having a pair of lateral edges, a pair of reinforcing belts located radially inward of the tread, a pair of sidewalls, one sidewall

extending radially inwardly from each lateral edge, a maximum section width, and a tire carcass structure, the tire carcass structure comprising:
  a) a pair of bead portions, one bead portion extending radially inwardly from each sidewall, each portion including a substantially inextensible core;
  b) a carcass reinforcing structure radially inward of the reinforcing belts extending circumferentially about the tire from one bead portion to the other bead portion, the carcass reinforcing structure having a first ply structure and a second ply structure, each ply structure having at least one ply, each ply having an elastomeric ply coat and ply cords which extend from bead to bead;
  c) an innerliner radially inward of the first ply structure;
  d) a fabric reinforced overlay being radially outward of the reinforcing belts;
  e) a pair of bead filers, one of the bead fillers being located above each bead core; and
  f) a pair of first fillers and a pair of second fillers, the first fillers being located between the innerliner and the first ply structure, one first filler extending from each bead portion radially to beneath the reinforcing belts, the second fillers being disposed between the first and second ply structures, one second filler extending radially outward from each bead portion to beneath the reinforcing belts, the second fillers having a Shore A Hardness of about 60 to about 70.

5,851,325
METHOD OF MANUFACTURING A MOLDED WOODEN PRODUCT

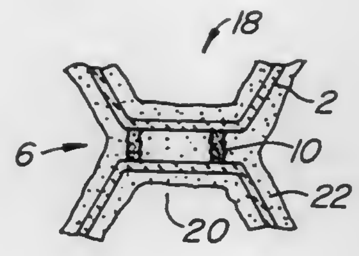
Masaki Terada, Toyota, and Yoshio Taguchi, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Nov. 14, 1995, Ser. No. 557,621
Claims priority, application Japan, Nov. 17, 1994, 6-283605
Int. Cl.⁶ B32B *5/16;31/20*
U.S. Cl. 156—62.2 **17 Claims**



1. A method of manufacturing a molded wooden product composed of a wooden body and a skin, comprising:
  adding a binder to wood fibers to form a fibrous mixture;
  stacking said fibrous mixture to form a collected body of wooden material;
  delivering said collected body of wooden material to a compression mold wherein a skin material has been provided previously, said mold having a first mold half with which the skin material comes into contact and a second mold half with which the collected body of wooden material comes into contact; and
  compressing said collected body of wooden material and said skin material under heat to eliminate a large portion of air within the collected body and form said wooden body and to adhere said wooden body and said skin material simultaneously to form said molded wooden product,
  wherein said first mold half is heated to a first temperature less than a second temperature to which said second mold half is heated to minimize warp of said molded wooden product, and wherein said binder is selected from the group consisting of an anaerobic adhesive, an unsaturated polyester and a combination of a phenol resin and a polyisocyanate.

5,851,326
METHOD FOR MAKING CERAMIC HONEYCOMB

Milton F. Custer, Byron, and Hoover Larry Ng, Oakland, both of Calif., assignors to Hexcel Corpation, Pleasanton, Calif.
Filed Oct. 25, 1995, Ser. No. 548,180
Int. Cl.⁶ B32B *31/26;* **C04B** *35/80;35/84*
U.S. Cl. 156—89.22 **31 Claims**



1. A method for making ceramic honeycomb comprising:
selecting a wave shaped adhesive pattern;
applying an adhesive in the selected wave shaped adhesive pattern to minor portions of node regions of a plurality of ceramic fabrics so that major portions of the node regions are free of said adhesive;
stacking the ceramic fabrics so the adhesive bonds adjacent fabrics to one another at nodes defined by said adhesive to create a fabric stack;
expanding the fabric stack;
impregnating the expanded fabric stack with a ceramic matrix; and
heating the impregnated fabric stack to a temperature sufficiently high to create a ceramic honeycomb.

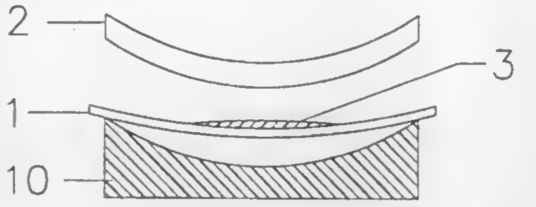
5,851,327
SILICA-CONTAINING VIBRATION DAMPER AND METHOD

Donald T. Landin, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 282,793, Jul. 29, 1994, Pat. No. 5,474,840. This application Nov. 13, 1995, Ser. No. 558,973
Int. Cl.⁶ B32B *31/04*
U.S. Cl. 156—71 **13 Claims**

1. A method for vibrationally damping an article that is subject to resonant vibrations, the method comprising the steps of:
  a) providing a vibration damper that comprises an acrylate viscoelastic vibration damping material and an amount of hydrophobic silica sufficient to increase the stiffness of the acrylate viscoelastic vibration damping material; and
  b) applying the vibration damper to the article to damp the resonant vibrations.

5,851,328
WAFER DEFORMING COMPOSITE OPHTHALMIC LENS METHOD

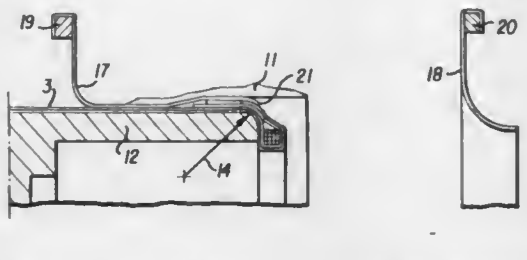
George Kohan, 16139 Chief Dr., Hudson, Fla. 34667
Filed Mar. 7, 1997, Ser. No. 813,597
Int. Cl.^{6} B32B *31/28*
U.S. Cl. 156—102 **20 Claims**



1. A method of making a composite lens comprising the steps of:
(a) pre-manufacturing a first lens and a second lens, each of said first and second lenses having first and second sides;
(b) orienting said first lens in a plane with one side facing upwardly;
(c) applying a small amount of a polymerizable adhesive to the upward facing side of said first lens;
(d) orienting said second lens in a plane substantially parallel to the plane of said first lens; and
(e) bringing said first and second lenses together such that the space between said first and second lenses is completely filled with said polymerizable adhesive material which forms an adhesive layer;
wherein one of said first and second lenses is a wafer lens and the other of said lenses is a base lens, wherein the surface area or diameter of the wafer and base lenses are essentially the same, wherein the curvature of sides of the wafer lens and base lens to be adhered are different curvatures, wherein said wafer lens is heated prior to step (e), and wherein the curvature of the sides of the wafer lens and base lens to be adhered match after step (e).

5,851,329
METHOD FOR MANUFACTURING A TIRE HAVING THE SIDEWALLS ENDS OVERLAPPING THE ENDS OF THE TREAD BAND

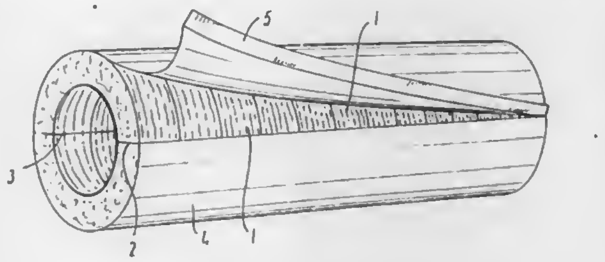
Claudio Lacagnina, Busto Arsizio, Italy, assignor to Porta, Checcacci & Botti, Milan, Italy
Filed Jul. 23, 1997, Ser. No. 899,267
Claims priority, application Italy, Jul. 31, 1996, MI96A1650
Int. Cl.^{6} B29D *30/30*
U.S. Cl. 156—111 **7 Claims**



1. Method for manufacturing a tire having sidewall ends overlapping the ends of a tread band, starting from a cylindrical sleeve-shaped tire carcass comprising at least one carcass ply provided with reinforcing cords having respective ends each folded back around at least one circumferentially inextensible bead wire and a tire sidewall fixed on each side portion of said sleeve, said method comprising the steps of:
wrapping at least one carcass ply around an assembly drum having a radially external cylindrical surface connected to corresponding axially external side surfaces through two curvilinear surfaces, said carcass ply having a width greater than the width of said drum, radially and inwardly turning down the edges of the ply onto said side surfaces of the drum,
fixing said bead wires against said edges of the carcass ply at said side surfaces,
folding back the edges of the carcass ply in loop form radially and outwardly around the bead wires and against the carcass ply,
arranging an anti-adhesive element around each side portion of said carcass ply on a cylindrical portion and for a part of predetermined width thereof,
wrapping around each anti-adhesive element the corresponding sidewall of the tire with the axially internal edge on said anti-adhesive element and with the axially external edge laterally protruding with respect to the corresponding axially external edge of said anti-adhesive element,
pressing a portion of said sidewall laterally protruding from the axially external edge of the anti-adhesive element against the corresponding ply portion and/or folded back ply portion of the carcass ply, and
withdrawing said cylindrical sleeve carcass from said assembly drum for further finishing operations of the tire,
wherein each anti-adhesive element comprises a first tubular element, coaxial with said drum, radially extensible and axially inextensible, axially movable in both directions from a first position away from said drum to a second position wherein it fits thereon.

5,851,330
METHOD OF INSULATING A PIPE WITH A TUBULAR SHEATHING

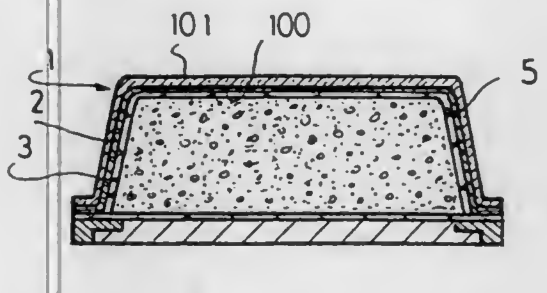
Ian Cridland, Vanløse; Jens Husbjerg, Lyngby, and Finn Ørtoft, Hedehusene, all of Denmark, assignors to Rockwool International A/S, Hedehusene, Denmark
PCT No. PCT/DK96/00222, § 371 Date Dec. 16, 1997, § 102(e) Date Dec. 16, 1997, PCT Pub. No. WO96/37728, PCT Pub. Date Nov. 28, 1996
PCT Filed May 22, 1996, Ser. No. 952,277
Claims priority, application Denmark, May 22, 1995, 0585/95
Int. Cl.^{6} F16L *59/14;59/22*
U.S. Cl. 156—229 **6 Claims**



1. A method of insulating a pipe wherein a tubular sheathing comprising an optionally radially slitted tubular member of bonded mineral fibres oriented essentially in planes perpendicular to the longitudinal axis of the tubular member and a sheet material (4) which by gluing is attached to the outer side of the tubular member, is mounted so as to envelop the pipe, characterized in that the tubular sheathing, prior to being mounted on the pipe, is alternatingly compressed and stretched in axial direction in a zone in which the tubular sheathing is to insulate a bend on the pipe.

5,851,331
PROCESS FOR DECORATING A COMPOSITE ARTICLE SUCH AS A SKI, SNOWBOARD, SURFBOARD, OR SKATEBOARD

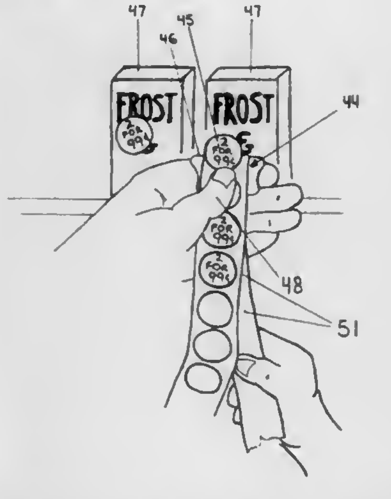
Alain Grenetier, Annecy; Philippe Renard, La Balme De Sillingy, and Valerie Rochet, Meythet, all of France, assignors to Salomon S.A., Metz-Tessy, France
Filed Nov. 14, 1996, Ser. No. 749,331
Claims priority, application France, Nov. 15, 1995, 95 13758
Int. Cl.^{6} B32B *31/12;7/12*
U.S. Cl. 156—235 **23 Claims**



1. Process for decorating a composite article including the preparation of a decorated complex to be assembled with a reinforcement structure of the article made of a resin, that is capable of flowing when heated, during a subsequent cycle or hot pressing, wherein it includes:
a first step, during which the transfer of a decoration is undertaken using the method for imprinting sublimable ink(s) on the first surface of a layer made of a transparent or translucent plastic material;
a second step during which one undertakes, by means of an adhesive film, the hot or press assembly, on the first surface thus decorated, of a contrast sheet made out of a material selected from the group consisting of non-anodized aluminum, dry natural or synthetic fiber, and wood.

5,851,332
SELF ADHESIVE LABEL APPLICATOR TOOL AND METHOD OF APPLYING

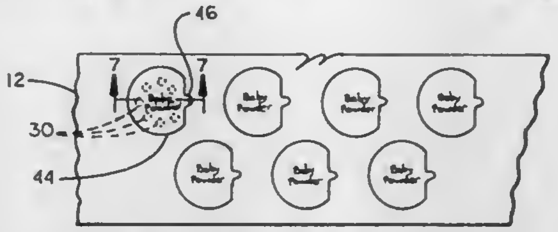
Frederick Aaron Kerr, Jr., 1804 "D" Ave., Lawton, Okla. 73501
Continuation-in-part of Ser. No. 670,571, Jun. 26, 1996. This application Nov. 12, 1997, Ser. No. 968,715
Int. Cl.^{6} B44C *1/00;* B32B *31/00*
U.S. Cl. 156—238 **2 Claims**



1. A sticker applicator comprising a plate having a top surface and a bottom surface where the plate is bent to form an angle across a portion thereof to form two plate subportions, and a ring portion attached to the top surface of one of the two plate subportions.

5,851,333
METHOD OF FORMING ROLLS OF WEBS INCLUDING PERFORATED AND PEELABLE LID SHAPES

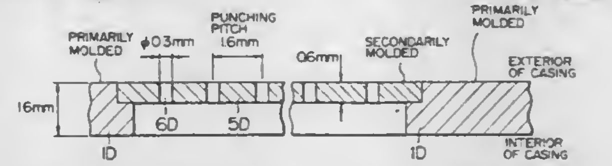
Anthony G. Fagnant, Libertyville, and Joseph A. Sykes, Grayslake, both of Ill., assignors to Label Makers, Inc., Pleasant Prairie, Wash.
Filed Apr. 22, 1997, Ser. No. 837,781
Int. Cl.^{6} B32B *31/00*
U.S. Cl. 156—252 **10 Claims**



1. A method of producing rolls of multi-layered webs, said method comprising the steps of providing at least two individual webs of selected materials to a printing press; die cutting a plurality of groups of holes in a predetermined pattern in one of the webs; printing predetermined indicia on at least one face of the other web; printing an adhesive on one of the webs; bonding the webs together with the adhesive, the indicia, and the plurality of groups of holes in registration with one another; die cutting said other web after bonding to form spaced-apart peelable lid shapes only in said other web both laterally across and longitudinally along said other web; and then forming the webs which have been bonded together and then die cut into a roll.

5,851,334
METHOD OF PRODUCING CASING FOR AUDIOVISUAL EQUIPMENT

Naohiro Shikata, Toyono-gun; Tomio Shiota, Takatsuki, and Kaoru Shimizu, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 452,721, May 30, 1995, abandoned, which is a division of Ser. No. 200,734, Feb. 23, 1994, abandoned. This application May 14, 1997, Ser. No. 856,013
Claims priority, application Japan, Mar. 5, 1993, 5-044735
Int. Cl.^{6} G10K *11/00;* H04N *5/64;* H04R *1/02*
U.S. Cl. 156—252 **6 Claims**



1. A method of producing a casing for audiovisual equipment, said method comprising:
providing a casing having at least one surface having a thickness of 0.5 mm or more,
forming a punching sheet having a given thickness and comprising a sound transmitting hole area having a plurality of fine through holes,
attaching said punching sheet to said at least one surface of said casing in an orientation such that said holes have an axis that is substantially perpendicular to said at least one surface of said casing, said holes having one of (a) a longest dimension passing through said axis and perpendicular thereto which is smaller than said thickness of the casing at said at least one surface, (b) a polygonal shape with a diagonal line, passing through said axis, which is smaller than said thickness of said casing at said at least one surface, (c) an oval shape with a chord, substantially perpendicular to said axis, which is smaller than said thickness of said casing at said at least one surface and (d) an elliptical shape with a chord, substantially perpendicular to said axis, which is smaller than said thickness of said casing at said at least one surface, said one of said longest dimension, said diagonal line, said chord of said oval shape and said chord of said elliptical shape being in a range

of 0.3 mm to 0.5 mm, wherein said casing is provided with a plurality of cabinet sound holes which have one of a rectangular size of 3 mm and a diameter of 3 mm.

5,851,335

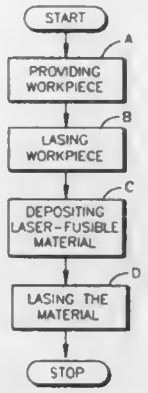
METHOD AND COMPOSITIONS FOR LASER IMPRINTING ADN ARTICLES IMPRINTED USING SUCH METHODS AND COMPOSITIONS

Daniel J. Budnik, Cheshire, and David A. Condit, Avon, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 594,053, Jan. 30, 1996. This application Jul. 16, 1997, Ser. No. 895,312

Int. Cl.^{6} B32B *31/24*

U.S. Cl. 156—257 **10 Claims**



1. A method of imprinting a workpiece, comprising:
providing a workpiece;
lasing the workpiece to create a depression;
depositing a laser-fusible material into the depression; and then lasing the material so as to fix the material into the depression.

5,851,336

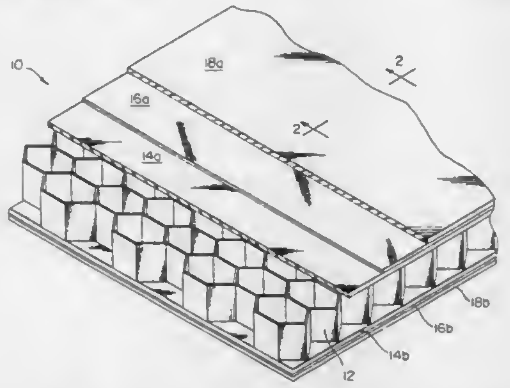
RESIN TRANSFER MOLDING IN COMBINATION WITH HONEYCOMB CORE

Thomas R. Cundiff, Puyallup, and Bradley A. Frye, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 368,062, Jan. 3, 1995, Pat. No. 5,567,499. This application Sep. 17, 1996, Ser. No. 710,447

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—272.2 **2 Claims**



1. A process for making a layered product having a honeycomb core having empty cells, said process comprising the steps of:
(a) placing a first layer of an uncured adhesive film on the top side of a central honeycomb core having empty cells, and placing a second layer of an uncured adhesive film on the bottom side of said central honeycomb core;
(b) placing a first layer of an uncured prepreg material on the top side of said first layer of uncured adhesive film distal from said central honeycomb core, and placing a second layer of an uncured prepreg material on the bottom side of said second layer of uncured adhesive film distal from said central honeycomb core;
(c) placing a first layer of a dry fiber preform on the top side of said first layer of uncured prepreg material distal from said central honeycomb core, and placing a second layer of a dry fiber preform on the bottom side of said second layer of uncured prepreg material distal from said central honeycomb core;
(d) placing the charge made by steps (a)–(c) inside a mold, and closing said mold;
(e) heating said mold to the cure temperature of said adhesive film and said prepreg material, and holding said mold at this temperature for sufficient time to cure said adhesive film and said prepreg material;
(f) reducing the temperature of said mold to the injection temperature of a selected resin transfer molding (RTM) resin system, and injecting said selected resin transfer molding (RTM) resin system into said mold;
(g) holding the temperature of said mold at the cure temperature of said resin transfer molding (RTM) resin system for sufficient time to cure said resin system; and,
(h) removing said product from said mold after curing is completed.

5,851,337

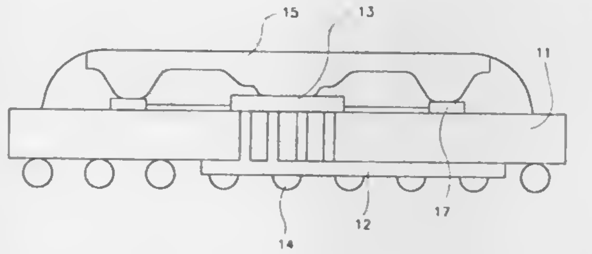
METHOD OF CONNECTING TEHS ON PBGA AND MODIFIED CONNECTING STRUCTURE

Shih-Li Chen, Hsinchu, Taiwan, assignor to Caesar Technology Inc., Hsinchu, Taiwan

Filed Jun. 30, 1997, Ser. No. 885,343

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—275.3 **20 Claims**



1. A method for connecting a TEHS to a PBGA, comprising the steps of:
(a) preparing a TEHS having connecting parts;
(b) forming hollow structures in said connecting parts;
(c) preparing a PBGA based on a substrate having connecting regions;
(d) covering a layer of thermally conductive elastic connecting medium over said connecting regions;
(e) connecting said connecting parts of said TEHS to said connecting regions of said substrate by means of the layer of said connecting medium, the hollow structures in said connecting parts being filled with a portion of said connecting medium; and
(f) treating said connecting medium appropriately for forming an elastic connecting structure.

12. A connecting structure for connecting and fixing a TEHS to a substrate of a PBGA, comprising:
a plurality of connecting parts of said TEHS, said connecting parts having hollow structures;
a connecting region of said substrate; and
a thermally conductive elastic connecting medium connecting said connecting parts of said TEHS to said connecting region of said substrate, said hollow structure in said connecting parts being filled with a portion of said connecting medium.

5,851,338

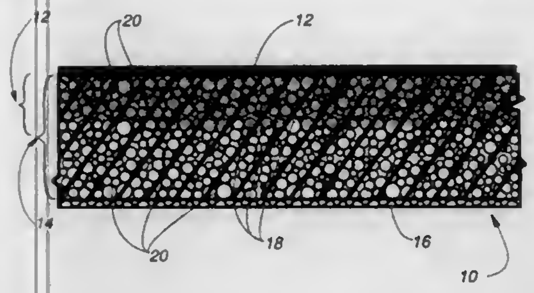
SKIVED FOAM ARTICLE CONTAINING ENERGY ABSORBING PHASE CHANGE MATERIAL

Robert J. Pushaw, Havertown, Pa., assignor to Outlast Technologies, Inc., Boulder, Colo., and R. H. Wyner Associates, Inc., West Bridgewater, Mass.

Continuation-in-part of Ser. No. 606,487, Mar. 4, 1996, Pat. No. 5,677,048. This application Apr. 15, 1997, Ser. No. 843,397

Int. Cl.^{6} B05D *3/02*

U.S. Cl. 156—278 **6 Claims**



1. A method of manufacturing an article comprising the steps of:
providing a previously cured foam substrate having an open cell configuration and opposed first and second surfaces;
dispersing microspheres containing a phase change material dispersed in an uncured polymer binder to produce a binder/microsphere dispersion;
permeating said previously cured foam substrate with said binder/microsphere dispersion; and
curing said polymer binder in said binder/microsphere dispersion to produce a fully cured foam article at least partially impregnated with said binder/microsphere dispersion and adapted for controlling thermal conductivity across said fully cured foam article.

5,851,339

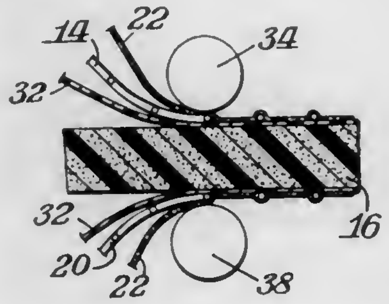
METHOD OF MAKING A LAMINATED PRODUCT SUCH AS A MATTRESS AND FURNITURE INSULATOR PAD

John R. Rucker, Norwood, Pa., assignor to Foamex L.P., Linwood, Pa.

Continuation of Ser. No. 408,731, Mar. 22, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 796,956

Int. Cl.^{6} A32B *31/20*

U.S. Cl. 156—290 **15 Claims**



1. A continuous method of preventing contamination of the surfaces of a pair of compression rollers when first and second stiffening layers and a core foam sheet are compressed between the pair of compression rollers, comprising:
applying an adhesive coating directly to an upper surface of the core foam sheet;
applying an adhesive coating directly to a lower surface of the core foam sheet;
passing the core foam sheet coated with adhesive and the first and second stiffening layers between the pair of compression rollers with a first surface of the first stiffening layer adjacent to the adhesive coating that is on the upper surface of the core foam sheet, and with a first surface of the second stiffening layer adjacent to the adhesive coating that is on the lower surface of the core foam sheet;
placing a second foam sheet having a top surface and a bottom surface formed from open-celled polyurethane foam with a thickness of about $1/32$ inch between one of the compression rollers and a second surface of the first stiffening layer;
placing a third foam sheet having a top surface and a bottom surface formed from open-celled polyurethane foam with a thickness of about $1/32$ inch between the other compression roller and a second surface of the second stiffening layer;
so that when the core foam sheet coated with adhesive on its upper and lower surfaces, the first stiffening layer, the second stiffening layer, the second foam sheet, and the third foam sheet pass between the pair of compression rollers, the first surface of the first stiffening layer adheres to the upper surface of the core foam sheet, the top surface of the second foam sheet contacts one of the compression rollers, the first surface of the second stiffening layer adheres to the lower surface of the core foam sheet, and no adhesive contacts the surfaces of the compression rollers.

5,851,340

PROCESS FOR FASTENING CONDUCTIVE BARS

Franz Muller, Grambuch, and Gunther Mussbacher, Kumberg, both of Austria, assignors to Elin Energieversorgung GmbH, Vienna, Austria

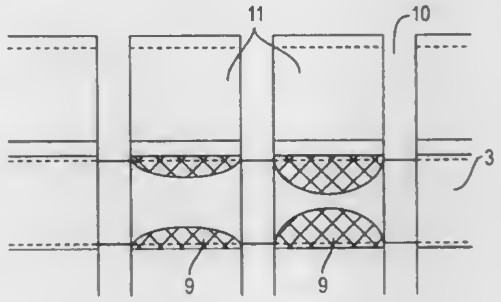
PCT No. PCT/AT95/00098, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32540, PCT Pub. Date Nov. 30, 1995

PCT Filed May 23, 1995, Ser. No. 737.600

Claims priority, application Australia, May 24, 1994, A1052/94

Int. Cl.^{6} H02K *3/48;3/40*

U.S. Cl. 156—293 **15 Claims**



1. A process for fastening conductive bars in slots of bundles of laminations provided with core ducts, comprising:
applying an electro-conductive polymer as a soft material which is not cross-linked into a bottom of a corresponding slot in a middle of a partial bundle of laminations, said electro-conductive polymer comprising an elastomer;
embedding a conductive bar into the polymer which is not cross-linked and distributing the elastomer by pressing in the conductive bar so that a predominantly enclosed elastomer layer is produced at the bottom of the slot with the elastomer layer expanding at slot flanks; and
providing core duct covers on the core ducts between partial bundles of laminations.

5,851,341
METHOD FOR MANUFACTURING BEAD FILTER USING AN EPOXY RESIN GEL

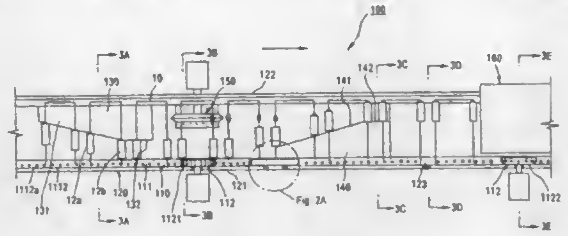
Chang Sik Kim, Kyongki-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Oct. 23, 1995, Ser. No. 546,799

Claims priority, application Rep. of Korea, Oct. 27, 1994, 1994--27619

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—294 **36 Claims**



1. A method for manufacturing bead filters each including a lead wire and a pair of ferrite cores each having a through hole, for eliminating electromagnetic interference in electronic apparatus, comprising the steps of:

mixing 10–40 wt % of an epoxy powder and 60–90 wt % of an alcohol to prepare an epoxy resin gel having a viscosity of 30–100 cps;

defoaming said epoxy resin gel;

providing a plurality of lead wires;

identifying a portion of each said lead wire where said epoxy resin gel is to be applied;

inserting each of said lead wires into a through hole of each of said ferrite cores, and conveying said lead wires at spaced intervals from each other;

positioning each of said cores so that an epoxy resin gel applying portion of the lead wire has a predetermined position relative to the through hole of said ferrite core;

applying said defoamed epoxy resin gel to said epoxy resin gel applying portion of each of said lead wires;

rotatingly moving said ferrite core up to a final position on said lead wire after passing the applied epoxy resin gel so as to form an adhesive resin layer between the inside of said through hole and the outside of said lead wire; and

drying the formed resin layer at a temperature of 150°–400° C., whereby said lead wire and said ferrite core are bonded together to form the bead filter.

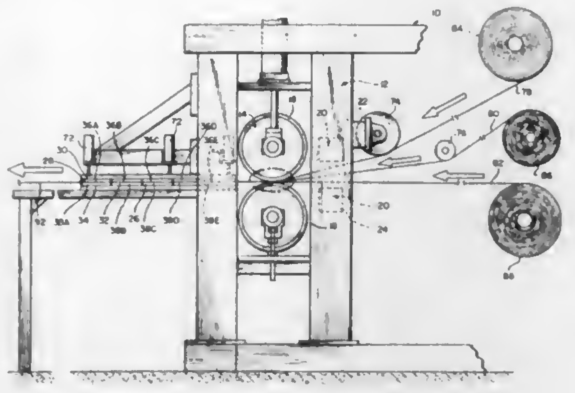
5,851,342
METHOD AND APPARATUS FOR FORMING A LAMINATE

Edward J. Vydra, Northbrook; Timothy A. Brinner, Elmhurst; Mark R. Monterastelli, Park Ridge, all of Ill., and Richard M. Hansen, Oshkosh, Wis., assignors to Material Sciences Corporation, Elk Grove Village, Ill.

Filed Nov. 14, 1996, Ser. No. 746,673

Int. Cl.^{6} B29C *65/48;* B32B *31/08;31/20*

U.S. Cl. 156—324 **25 Claims**



1. Apparatus for continuously bonding a laminate formed of at least two layers of sheet material superimposed on one another with adhesive therebetween and moved along a path, the apparatus comprising:

an upper plate assembly having a first low-friction laminate-contacting surface for contacting a first layer of the laminate while the laminate moves along the path;

an upper heat exchanger thermally coupled to the upper plate assembly and having a thermal conductivity greater than that of the upper plate assembly;

a lower plate assembly having a second low-friction laminate-contacting surface for contacting a second layer of the laminate while the laminate moves along the path, wherein the first and second laminate-contacting surfaces are disposed in opposed relationship for accommodating passage of the layers of the laminate therebetween and relative thereto along the path; and

a lower heat exchanger thermally coupled to the lower plate assembly and having a thermal conductivity greater than that of the lower plate assembly;

the laminate-contacting surfaces being disposed to apply pressure to the layers of the laminate.

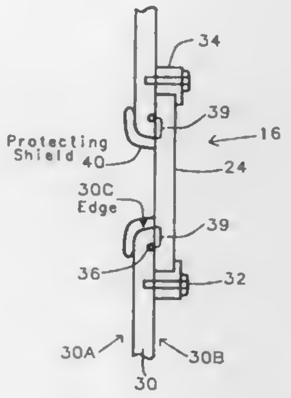
5,851,343
PROTECTIVE SHIELD AROUND THE INNER EDGE OF ENDPOINT WINDOW IN A PLASMA ETCHING CHAMBER

Yung-Mao Hsu, and Ching-Chung Wu, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed May 16, 1997, Ser. No. 857,961

Int. Cl.^{6} C23F *1/02;* C23C *16/00*

U.S. Cl. 156—345 **15 Claims**



1. A protective shield around a window in a plasma etcher comprising:

a plasma etcher having a wall surrounding a chamber, an opening in said wall; said wall having an inside face and an outside face; said inside face of said wall covered by a protective coating; an opening edge, of said wall defining said opening; a window pane over said opening and over a portion of said outside face of said wall; the improvement being;

a) a shield covering said opening edge of said wall adjacent to said opening and a portion of said inside face of said wall adjacent to said opening; said shield comprised of an electrically insulating and plasma resistant material whereby said shield prevents the chamber from arcing and generating particles and extend the lifetime of said wall.

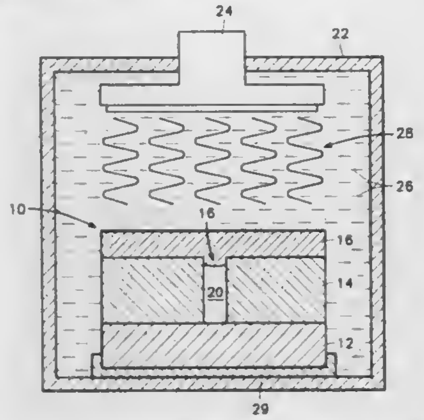
5,851,344
ULTRASONIC WAVE ASSISTED CONTACT HOLE FILLING

Zheng Xu, Foster City, and Fusen Chen, Cupertino, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 570,762, Dec. 12, 1995, Pat. No. 5,610,103. This application Sep. 24, 1996, Ser. No. 717,525

Int. Cl.^{6} H01L *21/463*

U.S. Cl. 156—379.6 **8 Claims**



1. An apparatus for substantially eliminating voids caused when material previously deposited in a vacuum over a surface of a substrate having holes extending through a film layer thereon fills a top portion of the holes but not a bottom portion thereof, the apparatus comprising:

(a) an ultrasonic processing chamber, said chamber being filled with a fluid comprising one of (i) a liquid, or (ii) a pressurized gas;

(b) a substrate holder for holding said substrate within the ultrasonic chamber; and,

(c) an ultrasonic source for generating ultrasonic waves in the fluid, said source being positioned such that said waves traveling through said fluid are capable of impinging on an exposed surface of the material deposited over the surface of the substrate when said substrate is installed in said substrate holder.

5,851,345
HEAT TRANSFER RECORDING SHEET PRODUCING APPARATUS AND A ROLL SHAFT SUPPLYING APPARATUS

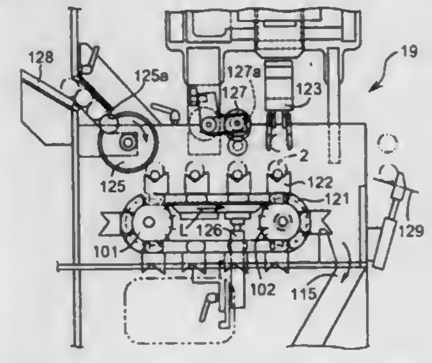
Yoshikimi Semba, Tokyo-To, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Jun. 26, 1995, Ser. No. 494,934

Claims priority, application Japan, Jun. 28, 1994, 6-146620; Jun. 28, 1994, 6-146638; Jul. 28, 1994, 6-176883; Sep. 30, 1994, 6-237153

Int. Cl.^{6} B32B *31/00;* B65C *9/04;* B07C *5/00*

U.S. Cl. 156—510 **14 Claims**



1. A heat transfer recording sheet producing apparatus comprising:

a web supplying apparatus for supplying a web having a base film and a hot melt ink layer;

a gravure printing apparatus for printing a plurality of end marks at predetermined intervals in the widthwise direction on the web supplied from the web supplying apparatus;

a drying apparatus for drying the gravure-printed end marks, said drying apparatus comprising a fan, a heater, and a circulating duct, said circulating duct providing circulation of air from an output of said heater to an input of said fan such that air is recirculated through said heater, said circulating duct and said fan;

a sheet winding apparatus for winding a sheet obtained from the web in a roll form around a roll shaft having a slit formed in one end thereof to form a sheet roll;

a roll shaft supplying apparatus for supplying the roll shaft to said sheet winding apparatus; and

a discharging apparatus for discharging the sheet roll formed by said sheet winding apparatus, wherein

said roll shaft supplying apparatus comprises:

- a transferring apparatus for transferring the roll shaft in a horizontal direction;
- an introducing apparatus connected to an upstream side of the transferring apparatus, for introducing the roll shaft to said transferring apparatus;
- a second discharging apparatus connected to a downstream side of said transferring apparatus, for discharging the roll shaft to a side of said sheet winding apparatus;
- a slit detecting apparatus for detecting the presence or absence of the slit in the roll shaft and an orientation of the roll shaft; and
- a gripping/turning apparatus arranged to operate based on a signal from said slit detecting apparatus in such a manner that if the slit is present in the roll shaft and if the orientation of the roll shaft is correct, said gripping/turning apparatus grips the roll shaft on said transferring apparatus and transfers the roll shaft to said second discharging apparatus without changing the orientation and that if the slit is present in the roll shaft and if the orientation of the roll shaft is opposite the correct orientation, said gripping/turning apparatus grips the roll shaft on said transferring apparatus, horizontally rotates the roll shaft about 180° and transfers the roll shaft to said second discharging apparatus.

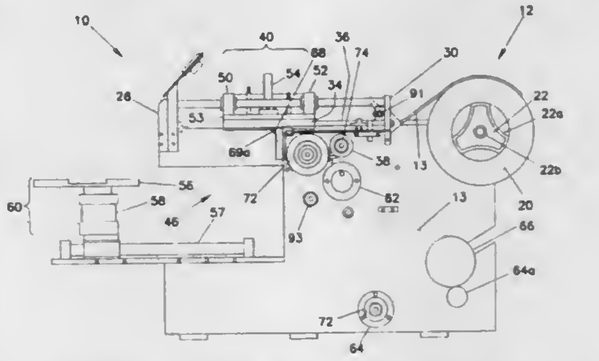
5,851,346
APPARATUS FOR SEALING CONTAINERS

John R. Hitch, Indianapolis, Ind., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 29, 1997, Ser. No. 865,354

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—542 **16 Claims**



1. An apparatus for sealing containers, the containers defined by a generally planar sealing surface and one or more receptacles, wherein each of the one or more receptacles include an opening coplanar with and defining corresponding openings in the sealing surface, said apparatus comprising:

a) a plurality of seals, each of said plurality of seals having a shape corresponding to the sealing surface, the plurality of seals peelably affixed to a length of backing, the length of backing affixed on one side to supply reel and at a second side to a take-up reel;

b) a housing;

c) a separation element affixed to the housing, the separation element located within a path of the backing between the supply reel and the take-up reel;

d) a vacuum platen having an engagement surface and movably affixed to the housing, said vacuum platen operable to generate a vacuum force that urges one of the plurality of seals towards the engagement surface while said vacuum platen moves in a substantially linear direction towards the separation element;

e) a drive means rotatably affixed to the housing for rotating and moving in coordination with the movement of the vacuum platen a portion of the backing that includes the one of the plurality of seals in the direction of and in synchronization with the vacuum platen movement; and

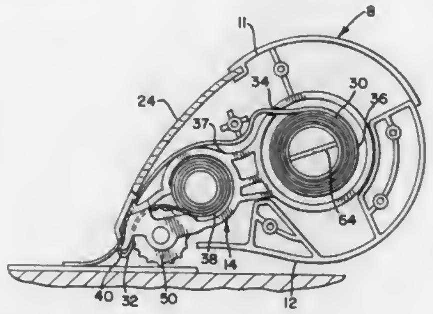
f) wherein during said synchronous movement of the vacuum platen and the portion of the backing, the portion of the backing engages the separation element, said separation element causing the portion of the backing to move in an angular difference direction from direction of movement of the vacuum platen, said movement of the vacuum platen and the vacuum force causing the one of the plurality of seals to separate from the backing, and wherein said vacuum platen moves said one of the plurality of seals to a vicinity of a container to be sealed.

5,851,347
STAMP AFFIXER APPARATUS AND METHOD
Humberto Rodriguez, Wabash, Ind., assignor to Martin Yale Industries, Inc., Wabash, Ind.

Filed Apr. 2, 1997, Ser. No. 825,895

Int. Cl.^{6} B44C *1/10*

U.S. Cl. 156—576 **18 Claims**



1. A stamp affixing apparatus comprising:

a stamp housing, the stamp housing partially enclosed within an outer shell, the outer shell comprises a top shell rotatable connected to a bottom shell; and

a first gear assembly rotatably attached to the stamp housing, the first gear assembly engaged with a second gear assembly, the second gear assembly fixedly attached to a drive roller, the second gear assembly rotatably attached to the stamp housing.

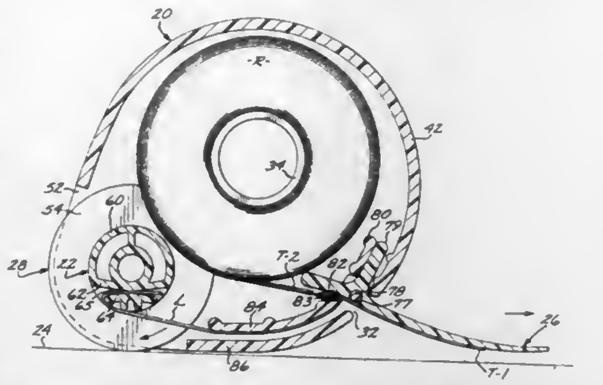
5,851,348
DISPENSER FOR TAGS, LABELS, INDEXING TABS AND THE LIKE
Kimberlee Cozby Muenzer, La Canada, and Alan Dale Crawford, Burbank, both of Calif., assignors to Barbara Thomas Enterprises, Inc., Seal Beach, Calif.

Filed Apr. 28, 1997, Ser. No. 848,550

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—577 **9 Claims**

1. A dispenser for adhesively-backed tags removably adhered to a roll of liner paper, said dispenser comprising:



a housing having a space for rotatably supporting said roll of liner paper, said housing also being formed with a tag discharge opening;

a drive roller rotatably supported by and partially extending from said housing;

a take-up reel rotatably supported by said housing and connected to said drive roller whereby rotation of the drive roller effects concurrent rotation of said take-up reel;

a presser finger on said housing above said tag discharge opening;

guide means in said housing to direct the liner paper from said roll onto said take-up reel as said drive roller is rotated;

stripper means on said guide means to peel the tags off the liner paper and onto the underside of the presser finger, said stripper means comprising one edge of the guide means; and

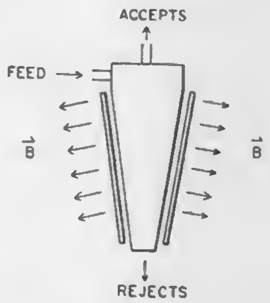
a pointed abutment on the underside of the presser finger.

5,851,349
MAGNETIC DEINKING OF WASTE PAPERS
Nipun Marwah, Mt. Pleasant, and G. Frederick Hutter, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 618,500, Mar. 19, 1996, which is a continuation-in-part of Ser. No. 447,240, May 22, 1995, Pat. No. 5,639,346, which is a continuation-in-part of Ser. No. 238,478, May 5, 1994, Pat. No. 5,527,426, which is a continuation-in-part of Ser. No. 183,746, Jan. 21, 1994, abandoned. This application Sep. 3, 1997, Ser. No. 922,883

Int. Cl.^{6} D21C *5/02*

U.S. Cl. 162—5 **9 Claims**



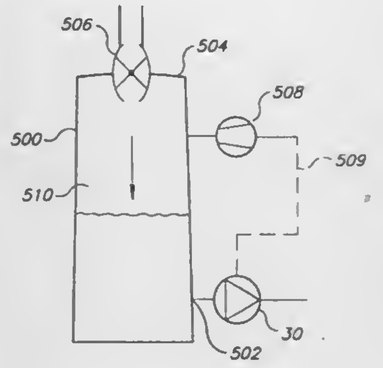
1. An improved process for deinking non-impact printed waste paper contaminated with xerographic and laser inks comprising forming a fiber slurry by repulping the waste paper, pretreating the slurry with an agglomeration agent and magnetite, followed by magnetic deinking by subjecting the pretreated slurry to a magnetic field to separate out from the pretreated slurry the xerographic and laser inks, wherein the improvement comprises replacement of a portion of the agglomeration agent in the slurry pretreatment step with a polymer selected from the group of copolymers of styrene and hydroxyesters of esters of acrylic and methacrylic acid of the form $CH_2{=}CHRCOOR'$ where R= is —R"OH, where R" is a C_2 to C_4 alkylene group, and where the polymer has a Ring and Ball softening point from 70° to 105° C. and a weight average molecular weight from 1,000 to 10,000.

5,851,350
METHOD AND APPARATUS FOR PUMPING CELLULOSE PULP
Jukka Timperi, Kotka, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Dec. 20, 1996, Ser. No. 771,064

Int. Cl.^{6} D21C *7/08*

U.S. Cl. 162—52 **12 Claims**



1. A method of pumping cellulose pulp having a consistency of between about 8–18% by utilizing a pump having a pump inlet and a stand pipe with a discharge opening, comprising the steps of:

(a) attaching the pump inlet to the discharge opening of the stand pipe;

(b) closing the stand pipe from the atmosphere;

(c) pressurizing cellulose pulp having a consistency of between about 8–18% and feeding the pulp at a consistency of 8–18% under pressure into the stand pipe to establish a level of pulp in the stand pipe and a gas space above the pulp level, and maintaining a superatmospheric pressure in the stand pipe gas space;

(d) causing the cellulose pulp to flow into the pump through the pump inlet; and

(e) pumping the cellulose pulp, at substantially the same consistency between about 8–18% as the pulp feed into the stand pipe in step (d), away from the stand pipe using the pump.

5,851,351
METHOD OF MICROBIAL PRE-TREATING WOOD CHIPS FOR PAPER MAKING
Albin Alexander Wladyslaw Baecker, Westville, and Graham David Shelver, Vorna Valley, both of South Africa, assignors to The Central Timber Co-Operative Ltd., Pietermaritzburg, South Africa

Filed Aug. 27, 1996, Ser. No. 703,669

Claims priority, application South Africa, Aug. 29, 1995, 95/7243

Int. Cl.^{6} D21H *25/02*

U.S. Cl. 162—72 **13 Claims**

1. A method of microbial pre-treatment of wood chips to be transported by a ship comprising:

chipping timber logs into wood chips and inoculating with viable propagules of a slow-growing microorganism having hemicellulolytic capacity wherein hemicellulose within the wood chips is degraded through incubation and growth of the microorganisms before transportation; and

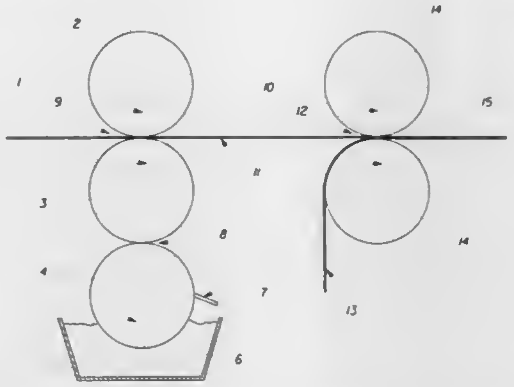
loading the wood chips into the hull of said ship and inoculating the wood chips with viable propagules a fast-growing of microorganism having ligninolytic capacity wherein the wood chips are delignified while contained within the hull of said ship within which suitable conditions for incubation and growth of the microorganisms having ligninolytic capacity are maintained during transportation.

5,851,352
SOFT MULTI-PLY TISSUE PAPER HAVING A SURFACE DEPOSITED STRENGTHENING AGENT
Kenneth Douglas Vinson, Cincinnati, Ohio; Jonathan Andrew Ficke, Lawrenceburg, Ind., and Howard Thomas Deason, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1997, Ser. No. 854,397

Int. Cl.^{6} D21H *23/22*

U.S. Cl. 162—112 **23 Claims**



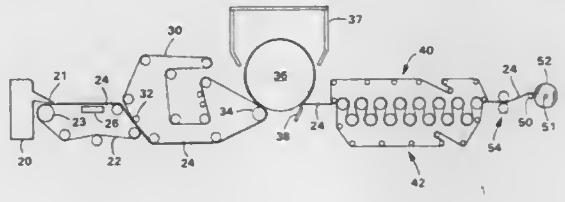
1. A strong and soft multi-ply tissue paper product, said multi-ply tissue paper product comprising at least two plies in face to face relationship, wherein each of said plies has an interior surface oriented toward the interior of said multi-ply tissue paper product, wherein at least one of said interior surfaces of said plies has a surface deposited strengthening agent, said strengthening agent being deposited on said surface in a first relatively diffiuse pattern essentially covering the entirety of said surface and in a second relatively uniform sparse pattern which is deposited on said surface at a frequency of between about 0.2 and about 2 deposits per inch, said second deposits having a diameter of at least 1000 microns wherein said strengthening agent comprises from about 0.5 to about 10% of said tissue paper product by weight based on the dry weight of said strengthening agent compared to the dry weight of said multiply tissue product.

5,851,353
METHOD FOR WET WEB MOLDING AND DRYING
Mark Wilson Fiscus, Kaukauna, and Thomas Garrett Neal, Jr., Appleton, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Apr. 14, 1997, Ser. No. 837,501

Int. Cl.^{6} B31F *1/12*

U.S. Cl. 162—113 **11 Claims**



1. A method of making a tissue sheet, comprising the steps of:

depositing an aqueous suspension of papermaking fibers onto an endless forming fabric to form a wet web;

partially dewatering the wet web;

restraining the partially dewatered wet web between a pair of sheet molding fabrics; and

processing the restrained wet web over a plurality of can dryers to dry the wet web from a consistency of at least about 40 percent to a consistency of at least about 70 percent.

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5,851,354
METHOD OF MANUFACTURING CALCIUM SILICATE BOARD

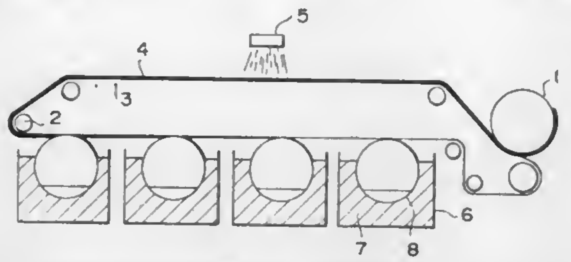
Masato Sakiyama; Takuya Asami; Tomoki Iwanaga; Yasuhide Oshio, and Masaaki Oda, all of Kanagawa, Japan, assignors to Ask Corporation, Yokohama, Japan

Filed Feb. 25, 1997, Ser. No. 805,572

Claims priority, application Japan, Apr. 22, 1996, 8-100320

Int. Cl.⁶ C04B *38/00*

U.S. Cl. 162—123 **4 Claims**



1. A method of manufacturing a lightweight calcium silicate board using the Hatschek sheet machine process, which comprises subjecting to primary curing and thereafter hydrothermally reacting in a pressure vessel a compact obtained by repeatedly laminating raw material slurry present in a series of slurry tanks, each of which contains a rotatable cylinder disposed therein, by means of said cylinders, onto a continuous felt support to form an extracted film on the continuous felt support and then winding the extracted film around a roll functioning as a making roll to form the compact, the raw material slurry containing as its solid content 17 to 50 percent by weight of calcareous material, 15 to 45 percent by weight of siliceous material, 2 to 8 percent by weight of fibrous material, and 5 to 40 percent by weight of inorganic fillers, wherein the raw material slurry also contains 2 to 20 percent by weight of one or more species selected from alunites and alums with a Blaine specific surface are of 4000 cm^2/g or more or aluminum sulfate with a Blaine specific surface area of 2000 cm^2/g or more, and the compact is subjected to primary curing under conditions where

$$(\text{curing temperature} - 15^\circ\ \text{C.}) \times \text{curing time} \geqq 120^\circ\ \text{C.}\cdot\text{hr} \qquad (1).$$

5,851,355
REVERSE OSMOSIS SUPPORT SUBSTRATE AND METHOD FOR ITS MANUFACTURE

James A. Goettmann, North East, Pa., assignor to BBA Nonwovens Simpsonville, Inc., Simpsonville, S.C.

Filed Nov. 27, 1996, Ser. No. 755,567

Int. Cl.⁶ D21F *11/00*

U.S. Cl. 162—157.3 **12 Claims**

1. A method of manufacturing a nonwoven web made from a furnish comprising:

- 5 to 40 wt. % of polymer staple fibers having a denier greater than 0.2 but less than 1.0;
- 0 to 60 wt. % of polymer staple fibers having a denier greater than 1.0 but less than 3.0;
- 15 to 50 wt. % of co-polymer/polymer bicomponent fibers having a first co-polymer sheath material which melts at a first melting temperature less than the melting temperature of said polymeric staple fibers; and
- 1 to 10 wt. % of co-polymer/polymer bicomponent fibers having a second co-polymer sheath material which melts at a second melting temperature less than the first melting temperature, comprising the steps of:
  - wet-laying a mat of fibers from said furnish using a papermaking machine;
  - drying said wet-laid mat at a drying temperature greater than said second melting temperature and less than said first melting temperature; and
  - calendaring said web at a calendering temperature greater than said first melting temperature and less than said melting temperature of said polymeric staple fibers.

5,851,356
METHOD AND APPARATUS FOR THE LATERAL SEALING OF A DRAINAGE WEDGE IN A TWIN-WIRE PAPER MACHINE

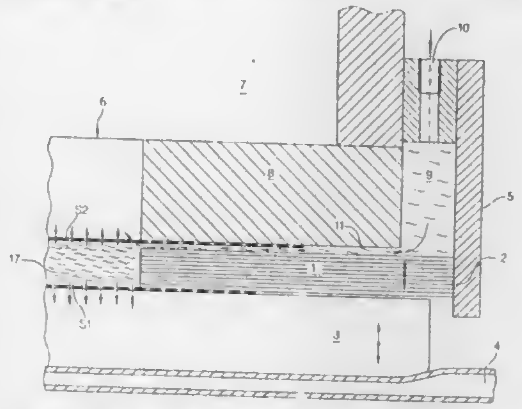
Jürgen Banning, Düren, and Christian Schiel, Heidenheim, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Apr. 17, 1997, Ser. No. 839,852

Claims priority, application Germany, Apr. 19, 1996, 196 15 503.7

Int. Cl.⁶ D21F *1/00*

U.S. Cl. 162—203 **17 Claims**



1. A method for laterally sealing a substantially wedge-shaped gap in a common drainage path between two wires of a twin-wire paper machine, the two wires for conveying a pulp slurry therebetween, the method comprising:

- providing a sealing spacer between the two wires at lateral edges of the wires fixed in the direction of travel of the pulp slurry when the paper machine is in operation producing paper;
- providing a gap between the sealing spacer and an upper one of the two wires; and
- sealing the gap with a sealing liquid.

3. Apparatus in combination with and for laterally sealing a substantially wedge-shaped gap in a common drainage path between two wires of a twin-wire paper machine, the two wires for conveying a pulp slurry therebetween, the apparatus comprising a sealing assembly comprising a substantially wedge-shaped sealing spacer extending in the direction of travel of a pulp slurry carried by the wires, the spacer not being in contact with an upper one of the wires and resting on a lower one of the wires, a lateral support wall for the spacer being provided at a location transversely away from the wires and a sealing-liquid connection for providing a sealing liquid into the wedge-shaped gap.

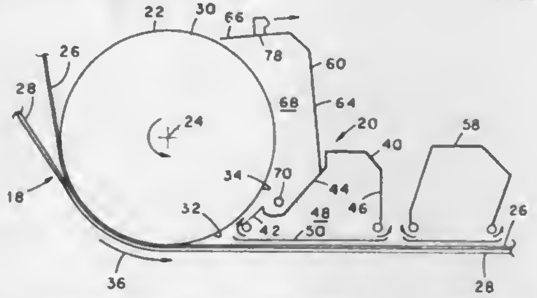
5,851,357
COMBINATION SAVEALL AND BLOWBOX SYSTEM

Niel C. Casale, Knoxville, Tenn., assignor to Valmet, Inc., Charlotte, N.C.

Filed Mar. 3, 1997, Ser. No. 796,719

Int. Cl.⁶ D21F *7/00*

U.S. Cl. 162—272 **13 Claims**



1. A system adjacent a roll of a papermachine around which a carrier fabric and web are moved together wherein the carrier fabric is disposed between the web and the surface of the roll and

wherein the roll has an off-running side off of which the carrier fabric and web move from the roll, the system comprising:

- a blowbox section positionable adjacent the roll on the off-running side thereof including means for directing source air away from the surface of the carrier fabric opposite the web to reduce separation of the web from the carrier fabric and including a partition which provides, with the surface of the roll, an air channel which extends along the surface of the roll and wherein the means for directing source air directs at least a portion of the air through the provided air channel so that water droplets and other contaminants which cling to the surface of the roll following the movement of the carrier fabric and web off of the off-running side of the roll are dislodged from the surface of the roll by the directed air portion; and
- a saveall section joined to the blowbox section and including means for collecting the water droplets and other contaminants which are dislodged from the surface of the roll by the directed air portion.

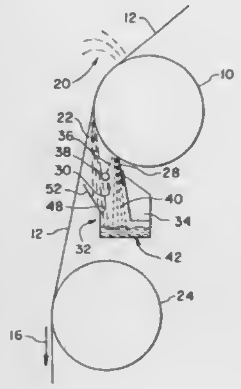
5,851,358
PAPER MAKING MACHINE WITH AN INTEGRAL SUCTION CHAMBER AND AIR/WATER SEPARATOR FOR A DOCTOR ELEMENT

Werner Kade, Neenah, Wis., assignor to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Apr. 8, 1997, Ser. No. 832,202

Int. Cl.⁶ D21F *1/00*

U.S. Cl. 162—276 **28 Claims**



1. A paper making machine having a wet end associated with a wet fiber web, said paper making machine comprising:

- a forming fabric having a plurality of voids therein for carrying liquid from the fiber web;
- a plurality of rolls carrying said forming fabric and disposed at the wet end of the paper making machine, one of said rolls and said forming fabric defining a diverging area therebetween which causes liquid in said forming fabric to exit said voids;
- a doctor back including a doctor element associated with said one roll;
- a shower providing a liquid output which is directed relative to and configured to lubricate said doctor element; and
- a liquid collection device including:
  - a suction chamber having an at least partially open top and an outlet, said open top positioned relative to each of said doctor blade and said diverging area to collect liquid from said shower and liquid exiting said voids in said forming fabric in said diverging area;
  - an air/water separator connected to said suction chamber and receiving liquid from said suction chamber outlet; and
  - a vacuum generating device mounted on said separator and generating a vacuum within said suction chamber to draw the liquid within said suction chamber into said separator.

5,851,359
SET OF RIBS IN A DEWATERING DEVICE IN A PAPER MACHINE

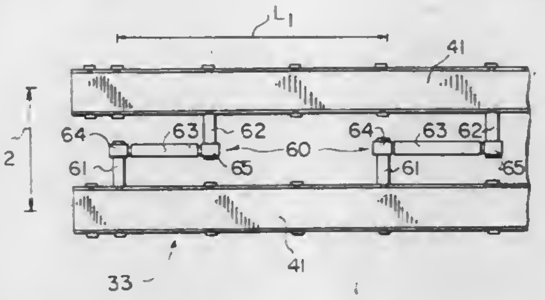
Samppa Salminen, Jyväskylä, and Aimo Närväinen, Palokka, both of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jun. 18, 1997, Ser. No. 878,324

Claims priority, application Finland, Jun. 18, 1997, U 960367

Int. Cl.⁶ D21F *1/48*

U.S. Cl. 162—301 **20 Claims**



1. In a set of ribs in a dewatering device in a paper machine, the set of ribs comprising at least two cross-direction ribs for supporting and/or loading at least one wire in the paper machine and/or doctoring water from an inner face of at least one wire, said ribs being spaced from one another in the machine direction, loading means for loading said ribs such that said ribs have adjustable height positions relative to the at least one wire, and intermediate parts for interconnecting said at least two ribs in pairs such that at least one pair of interconnected ribs is formed, the improvement comprising

- at least two crank mechanisms for further interconnecting said ribs in each of said at least one pair of interconnected ribs, said at least two crank mechanisms being spaced from one another in the cross direction of the wire and structured and arranged to enable independent loading of each of said ribs in each of said at least one pair of interconnected ribs.

5,851,360

Patent Not Issued For This Number

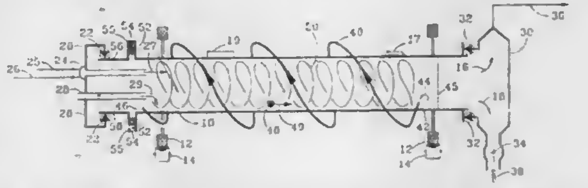
5,851,361
APPARATUS FOR PROCESSING AN ORGANIC SOLID

Jim S. Hogan, 1742 Country Club Dr., Sugar Land, Tex. 77478

Filed Nov. 25, 1996, Ser. No. 755,671

Int. Cl.⁶ C10B *1/10*

U.S. Cl. 202—136 **5 Claims**



1. An apparatus for thermally treating an organic material comprising:

- a rotatable drum having an inlet end and an outlet end,
- a stationary cover on each end of the drum,
- a seal on each of said inlet end and said outlet end of the drum in sealing engagement with the respective covers for sealing the inside of said drum from the outside of said drum,
- a burner attached to one of said covers for injecting a fuel and oxygen mixture into the drum,
- a conduit extending through said inlet cover for feeding organic material into a selected area of said drum inlet,
- a plurality of carriers within the drum,

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a helical conduit wound around the outside of the drum to rotate with said drum, said helical conduit having an inlet end connected near the drum outlet for receiving carriers from said drum outlet and an outlet end connected near the drum inlet for conveying said carriers to said drum inlet end, said helical conduit being arranged such that when said conduit rotates with said drum, said carriers are conveyed through said conduit from said conduit inlet to said conduit outlet,

means for causing said organic material with said carriers to move from said drum inlet toward said drum outlet so that the rolling, tumbling, and scraping of said carriers, moving with said organic material, helps mull said organic material and cleans the inside wall of said drum,

a separator located near the inlet end of the helical conduit positioned to separating said carriers from any remaining solid portions of said organic material and placing said carriers in said conduit inlet,

an opening in the drum outlet end cover for passing solids and gases from the drum outlet end, and

conduits in communication with the opening to convey solids and gases from the outlet end of the drum.

5,851,362

SEPARATION OF 4-METHYL-2-PENTANOL FROM 3-METHYL-1-BUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715

Filed May 27, 1997, Ser. No. 863,668

Int. Cl.^{6} B01D *3/40;* **C07C** *29/84*

U.S. Cl. 203—57 **2 Claims**

1. A method for recovering 3-methyl-1-butanol from a mixture of 3-methyl-1-butanol and 4-methyl-2-pentanol which consist essentially of distilling a mixture consisting of 3-methyl-1-butanol and 4-methyl-2-pentanol in the presence of an extractive agent, recovering the 3-methyl-1-butanol as overhead product and obtaining the 4-methyl-2-pentanol and the extractive agent as bottoms product, wherein said extractive agent is dodecane or dimethylformamide.

2. A method for recovering 4-methyl-2-pentanol from a mixture of 4-methyl-2-pentanol and 3-methyl-1-butanol which consists essentially of distilling a mixture consisting of 4-methyl-2-pentanol and 3-methyl-1-butanol in the presence of an extractive agent, recovering the 4-methyl-2-pentanol as overhead product and obtaining the 3-methyl-1-butanol and the extractive agent as bottoms product, wherein said extractive agent is dimethylsulfoxide.

5,851,363

MULTILAYER FILM MATERIALS SYSTEM

Joseph Miller; Derek P A Pearson, both of Reading, and Philip G Pitcher, Alton, all of United Kingdom, assignors to Johnson Matthey Public Limited Company, London, England

Division of Ser. No. 996,685, Dec. 24, 1992. This application Aug. 26, 1994, Ser. No. 295,063

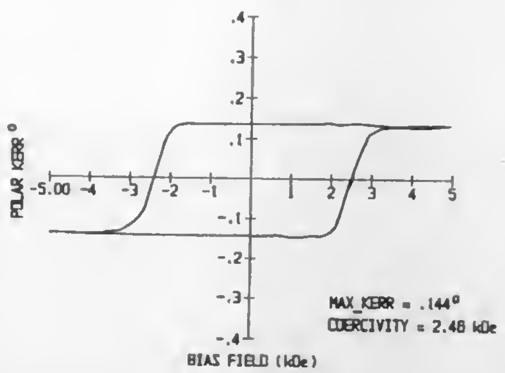
Claims priority, application United Kingdom, Dec. 27, 1991, 91/27439; Apr. 13, 1992, 92/08118

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.2 **22 Claims**

1. A process for the manufacture of metal multilayer films having perpendicular magnetic anistropy comprising:

i. sputter depositing onto a substrate a metal interlayer



ii. hyperthermal processing of the substrate and the metal interlayer, said hyperthermal processing comprising energetic particle bombardment, up to and including 265 eV; and

iii. sputter depositing onto the metal interlayer a multilayer.

5,851,364

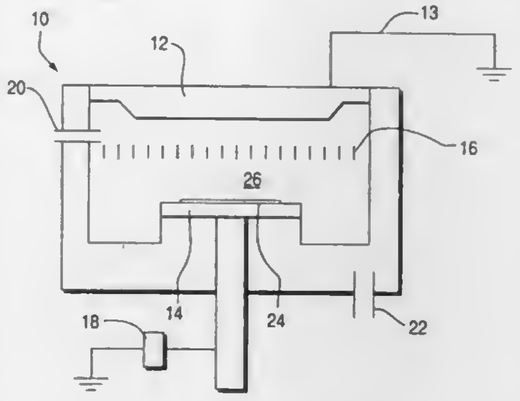
METHOD FOR FORMING ALUMINUM CONTACTS

Jianming Fu, Sunnyvale, and Zheng Xu, Foster City, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 563,167, Nov. 27, 1995, Pat. No. 5,685,960. This application Jul. 15, 1997, Ser. No. 892,778

Int. Cl.^{6} C23C *14/00*

U.S. Cl. 204—192.3 **7 Claims**



1. A process for forming aluminum contacts which comprises the following sequential steps:

a) sputter depositing a titanium layer onto a semiconductor substrate having a plurality of openings therein;

b) forming an oxygen-containing titanium layer over the titanium layer;

c) sputter depositing a titanium nitride layer over the oxygen-containing titanium layer;

d) treating the surface of the titanium nitride layer with a plasma of argon to smooth said surface; and

e) sputter depositing an aluminum layer over the plasma treated titanium nitride layer.

5,851,365

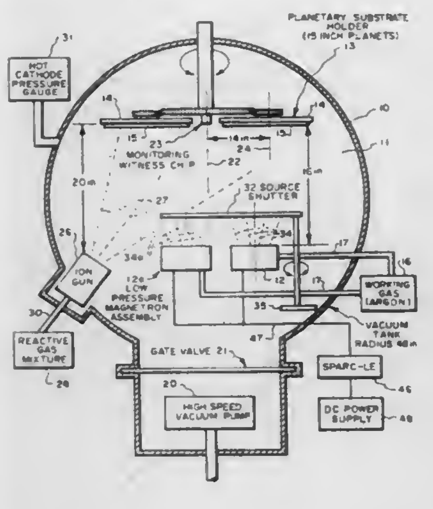
LOW PRESSURE REACTIVE MAGNETRON SPUTTERING APPARATUS AND METHOD

Michael A. Scobey, Marlborough, Mass., assignor to Corning OCA Corporation, Marlborough, Mass.

Continuation of Ser. No. 300,741, Sep. 2, 1994, Pat. No. 5,525,199, which is a continuation of Ser. No. 791,773, Nov. 13, 1991, Pat. No. 5,656,138. This application Jun. 10, 1996, Ser. No. 661,217

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.12 **14 Claims**



1. A method of depositing sputtered particles on a substrate to form a thin film coating, comprising the steps of:

providing a vacuum chamber having a magnetron and a source for sputtered particles,

providing means for positioning a substrate in said chamber spaced from and facing said source to thereby define a long throw distance,

impinging said source with inert gas at an impinging pressure partially confined to the vicinity of the magnetron means to sputter particles onto the substrate,

evacuating said inert gas from the chamber to maintain the inert gas pressure in the chamber remote from the source in the range of 5×10^{-5} Torr to 4.2×10^{-4} Torr, and

directing ionized reactant gas onto said substrate,

whereby the recited pressure range permits the long throw distance for the sputtered particles without inert gas interaction at the subtrate.

5,851,366

ADHERING METAL TO GLASS

Kay M. Belscher, Bath; LeRoy R. Morse, Campbell, both of N.Y.; Fumio Okamoto, Kanagawa, Japan, and B. Jean Sterlace, Painted Post, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 277,408, Jul. 19, 1994, abandoned, and Ser. No. 473,190, Jun. 29, 1995, Pat. No. 5,792,327. This application Dec. 22, 1995, Ser. No. 576,925

Int. Cl.^{6} C23C *14/34*

U.S. Cl. 204—192.26 **21 Claims**

1. A method of improving adherence of a metal film deposited directly on a silicate glass substrate for a display panel, comprising:

exposing the silicate glass substrate to an acid solution containing fluorine containing-ions in an amount sufficient to increase the adhesion of metal to be deposited without visibly affecting the transmissive quality of the glass substrate; and

sputter depositing the metal film on the surface of the silicate glass substrate.

5,851,367

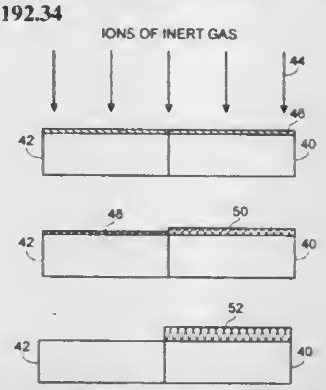
DIFFERENTIAL COPPER DEPOSITION ON INTEGRATED CIRCUIT SURFACES AND METHOD FOR SAME

Tue Nguyen, Camas; Lawrence J. Charneski, Vancouver, and Sheng Teng Hsu, Camas, all of Wash., assignors to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1996, Ser. No. 731,258

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 204—192.34 **17 Claims**



1. A method of differentially depositing metal on selected integrated circuit (IC) surfaces, the selected surfaces including conductive surfaces and a non-conductive surfaces applied to selected regions of the IC, the method comprising the steps of:

a) exposing each selected surface to an ion gun source of inert ions;

b) directly following step a), etching each selected surface to remove contaminants and undesired IC materials that have collected on the non-conductive surface while minimizing the energy of the ions impinging into the selected surfaces, whereby IC material is not removed from a surface by the kinetic energy of the ions introduced in Step a); and

c) directly following step b), applying CVD metal to each selected surface exposed in step a), forming a thick layer of metal overlying conductive surfaces, and a thin layer of metal overlying the non-conductive surfaces, whereby the exposure of the selected surfaces in step a) promotes variations in the rates at which metal is deposited.

5,851,368

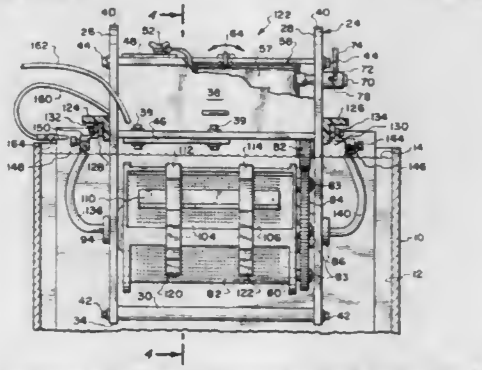
SMALL PARTS PLATING APPARATUS

Timothy P. Rumph, 6109 Vesper Ave., Van Nuys, Calif. 91411

Filed Mar. 14, 1997, Ser. No. 818,742

Int. Cl.^{6} C25D *17/20*

U.S. Cl. 204—213 **9 Claims**



1. In combination with an electroplating tank having an anode spaced from a cathode, both said anode and said cathode adapted for immersion in an electroplating bath located in said tank, a small parts plating apparatus mounted within said tank, said small parts plating apparatus being removable from said tank, said small parts plating apparatus having a barrel which is adapted to contain a quantity of small parts to be plated, said barrel being rotatable by an electric motor, said electric motor having a positive connecting

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terminal and a negative connecting terminal, connecting said positive connecting terminal and said negative connecting to an electrical power source will result in operation of said motor, the improvement comprising:

a positive wire connecting to said positive electric terminal, a negative wire connecting to said negative electric terminal, connecting of said positive wire to said anode and connecting of said negative wire to said cathode results in operation of said motor and rotating of said barrel.

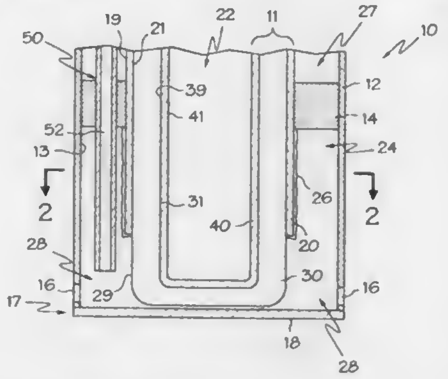
5,851,369
ELECTROLYTIC SENSOR PROVIDING CONTROLLED BURN-OFF OF DEPOSITS ON THE ELECTRODES

Xiang Cai, Cincinnati, Ohio, assignor to Marathon Monitors, Inc., Cincinnati, Ohio

Filed Sep. 20, 1996, Ser. No. 716,998

Int. Cl.^{6} G01N *27/407*

U.S. Cl. 204—428 **30 Claims**



1. A sensor, comprising:

a working electrode having an outer surface and an inner surface, a solid electrolyte having an outer surface and an inner surface, and a counter electrode having an outer surface and an inner surface, the inner surface of the working electrode being in contact with the outer surface of the solid electrolyte, the inner surface of the solid electrolyte being in contact with the outer surface of the counter electrode, and the inner surface of the counter electrode being exposed to a reference fluid;

an elongated protective casing arranged in spaced relation to the outer surface of the working electrode and defining a channel therebetween, the casing comprising a sample fluid port which permits a sample fluid to enter the channel;

a channel restrictor adjacent the sample fluid port, the channel restrictor defining a portion of the channel as a sensing zone and a portion of the channel as a non-sensing zone and reducing the volume of the channel which is exposed to the sample fluid;

a burn-off gas inlet adapted to inject a burn-off gas into the sensing zone, and

a burn-off gas in communication with the burn-off gas inlet, the burn-off gas having an oxygen concentration greater than an oxygen concentration in the sample fluid.

5,851,370
AUTOMATED ELECTROPHORESIS SYSTEM AND METHOD

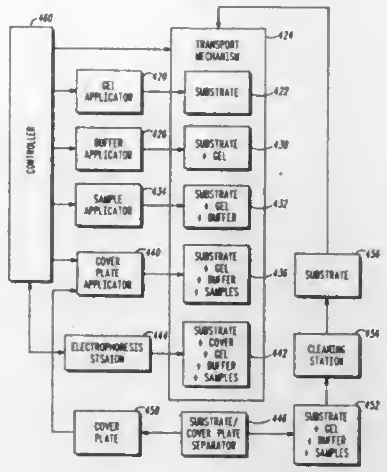
George N. Maracas, Phoenix, Ariz.; William L. Reber, Schaumburg, Ill., and Cary D. Perttunen, Shelby Township, Mich., assignors to Motorola Corporation, Schaumburg, Ill.

Filed Jan. 24, 1997, Ser. No. 788,970

Int. Cl.^{6} G01N *27/26*

U.S. Cl. 204—450 **24 Claims**

1. An automated method of electrophoresis comprising the steps of:



applying a cover plate to a first substrate having a first at least one electrophoresis lane;

applying at least one sample to a second substrate having a second at least one electrophoresis lane;

electrophoresing at least one sample within a third at least one electrophoresis lane of a third substrate;

removing a cover plate from a fourth substrate having a fourth at least one electrophoresis lane; and

washing a fifth substrate having a fifth at least one electrophoresis lane;

wherein each of the above steps is performed concurrently with at least another one of the above steps.

5,851,371
REDUCING OR AVOIDING SURFACE IRREGULARITIES IN ELECTROPHORETIC PAINTING OF PHOSPHATED METAL SURFACES

Lester E. Steinbrecher, North Wales, Pa., and Timothy J. Zens, Grosse Pointe Park, Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 642,619, May 3, 1996, abandoned, which is a continuation of Ser. No. 396,396, Feb. 28, 1995, abandoned. This application Jun. 16, 1997, Ser. No. 874,238

Int. Cl.^{6} C25D *13/12*

U.S. Cl. 204—486 **20 Claims**

1. A process for reducing or avoiding surface irregularities in electrophoretic painting of phosphated metal surfaces, said process consisting essentially of the successive steps of:

(I) contacting said metal surface with an aqueous liquid phosphate conversion coating composition;

(II) while said metal surface is still wet with the conversion coating composition continuously contacting said wetted metal surface after performing step (I) with

an aqueous liquid treatment composition comprising water, a trace amount of not more than a total of 0.0002 wt. % of hexavalent and trivalent chromium, and at least one component selected from the group consisting of: (II.1) a water soluble polymer, a water dispersible polymer or both a water soluble polymer and a water dispersible polymer wherein each of the polymers has a weight average molecular weight of at least 500; (II.2) fluorometallic acids and anions thereof consisting of (II.2.i) at least one atom of boron, silicon, zirconium, iron, aluminum, and titanium, (II.2.ii) at least four fluorine atoms, and, optionally, (II.2.iii) one or more atoms of oxygen, hydrogen, or both; (II.3) zirconium salts of ethylenediamine tetraacetic acid; and (II.4) alkali metal and ammonium salts of zirconium hydroxycarboxylates or zirconium hydroxycarbonates; and

(III) after completing the step (II), while said metal surface is still wet with the aqueous liquid treatment composition, applying to said wetted metal surface an electrophoretic paint protective outer coating.

5,851,372
PROCESS FOR DEMINERALIZING A LIQUID CONTAINING ORGANIC MATTER AND SALTS IN SOLUTION

Roland Noel, Vidauban, France, assignor to Societe Anonyme Francaise D'Ingenierie et de Recherche, Vidauban, France

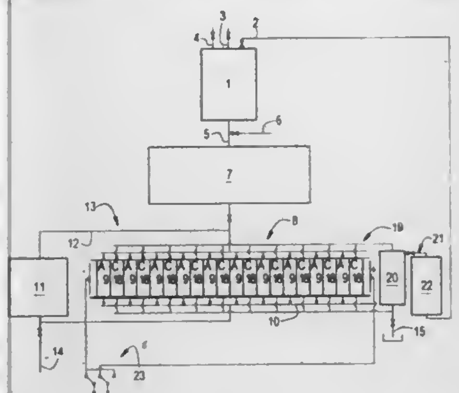
PCT No. PCT/FR95/00595, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO95/30482, PCT Pub. Date Nov. 16, 1995

PCT Filed May 9, 1995, Ser. No. 732,216

Claims priority, application France, May 9, 1994, 94 05682

Int. Cl.^{6} B01D *61/44*

U.S. Cl. 204—523 **12 Claims**



1. A process of demineralizing a liquid containing organic matter and inorganic salts in solution, wherein the treatment of the liquid comprises the following steps:

the liquid is percolated over a strong cationic ion exchange resin for monovalent ions;

both a liquid from the preceding step and a brine for receiving ions from that liquid are caused to circulate through at least one "two-compartment" electrodialyzer comprising a plurality of anionic membranes interposed between a plurality of cationic membranes

said brine is caused to circulate in at least one other electrodialyzer for regulating its concentration to provide another brine, wherein concentration of said another brine lies in the range of 80 grams per liter to 120 grams per liter and wherein said another brine is used to regenerate the ion exchange resin.

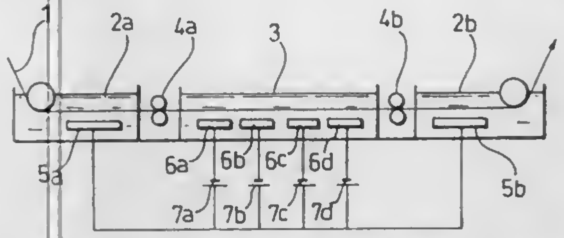
5,851,373
METHOD FOR ANODIZING ALUMINUM MATERIAL

Hiroo Kubota, and Yuzo Inukai, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 1, 1997, Ser. No. 886,539

Int. Cl.^{6} C25D *7/06; 11/04*

U.S. Cl. 205—139 **16 Claims**



1. A method for continuously anodizing a surface of an elongated aluminum or aluminum alloy web, which comprises:

anodizing the surface of the web which advances through a power supply part and an electrolytic part to form an anodized web; and then

supplying electric current to the surface of said anodized web through another power supply part in such a manner that the following relationships among current density, electric supply time and amount of anodized film thus produced are satisfied:

$$(\text{Current density})^{4/3} \times (\text{Supply time})^{1/2} \times (\text{Amount of anodized film})^{2/3} \leqq 5{,}100 \qquad (1)$$

$$1 \leqq (\text{Supply time}) \leqq 10, 0.5 \leqq (\text{Amount of anodized film}) \leqq 6.0 \qquad (2)$$

wherein the current density, the supply time and the amount of anodized film are represented in A/dm^2, second and g/m^2, respectively.

5,851,374
PROCESS FOR PRODUCTION OF CHLORINE DIOXIDE

Gerald Cowley, Mississauga, and Marek Lipsztajn, Etobicoke, both of Canada, assignors to Sterling Canada, Inc., Houston, Tex.

Filed Jan. 9, 1997, Ser. No. 781,045

Int. Cl.^{6} C01B *11/02*

U.S. Cl. 205—471 **24 Claims**

1. A method of producing chlorine dioxide, which comprises:

reacting chlorate ions with a persulfate in an aqueous acid reaction medium containing sulfuric acid at a temperature of at least about 50° C. and below the temperature at which chlorine dioxide undergoes spontaneous decomposition.

5,851,375
APPARATUS FOR DISINFECTING FLUIDS

Patrick S. Bodger; Paul T. Johnstone, both of Christchurch, and Andrew G. Jacquiery, Wellington, all of New Zealand, assignors to Ennotech Holdings Limited, Christchurch, New Zealand

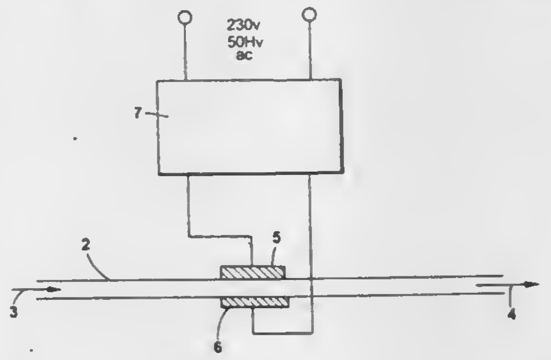
PCT No. PCT/NZ95/00066, § 371 Date Jan. 30, 1997, § 102(e) Date Jan. 30, 1997, PCT Pub. No. WO96/04206, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 26, 1995, Ser. No. 776,659

Claims priority, application New Zealand, Aug. 5, 1994, 264188

Int. Cl.^{6} C02F *1/461*

U.S. Cl. 205—701 **36 Claims**



1. Apparatus for disinfecting a continuous flow of an electrically conductive liquid, containing cells of microorganisms, said apparatus comprising:

a container having an inlet and an outlet, through which liquid to be disinfected flows in use;

at least one pair of non-sacrificial electrodes, said electrodes being positioned in said container so that liquid flowing through the container is in contact with said electrodes;

means for applying a steady-state electric voltage in the kilovolt range across said electrodes so as to create a voltage gradient between said electrodes;

said voltage gradient being such that an arc is not struck between said electrodes but a voltage gradient of at least one volt is produced across the membrane of any cell in said liquid, causing dielectric breakdown of the cell membrane and hence electro-permabilisation of said membrane.

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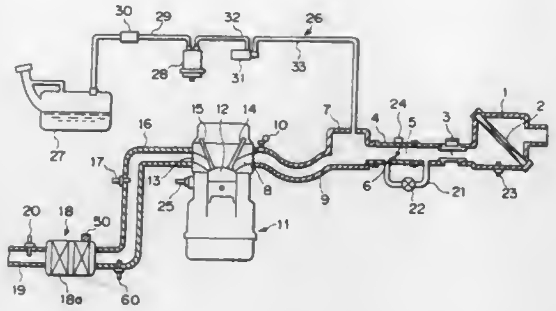
5,851,376
CATALYST DEGRADATION DETERMINATION APPARATUS AND METHOD

Futoshi Nishioka, Hiroshima; Seiji Yashiki, Hiroshima-ken, and Tetsushi Hosokai, Kure, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Nov. 20, 1996, Ser. No. 754,090

Int. Cl.^{6} G01N *27/407*

U.S. Cl. 205—784.5 **15 Claims**



13. A catalyst degradation determination method employing A/F ratio sensors respectively provided at an upstream position and a downstream position of an exhaust-purifying catalyst, integrating output values from said respective A/F ratio sensors when predetermined degradation determination conditions are satisfied, and detecting degradation of said exhaust-purifying catalyst by comparing the respective integrated values, comprising:

a holding step of holding integrated values when the predetermined degradation determination conditions are not satisfied during integration of the output values from said respective A/F ratio sensors;

an integration step of re-starting the integration of the output values with the integrated values held at said holding step when the predetermined degradation determination conditions are satisfied again; and

a clearing step of clearing the integrated values held at said holding step if a predetermined period has elapsed since the predetermined degradation determination conditions were not satisfied.

5,851,377
PROCESS OF USING ACYLATED NITROGEN COMPOUND PETROCHEMICAL ANTIFOULANTS

James H. Bush, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

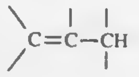
Filed Mar. 10, 1997, Ser. No. 813,416

Int. Cl.^{6} C10G *9/16*

U.S. Cl. 208—48 AA **44 Claims**

1. A process for reducing fouling in a hydrocarbon process stream, comprising adding to the stream an antifoulant composition prepared by first reacting, optionally in the presence of an acidic catalyst selected from the group consisting of organic sulfonic acids, heteropolyacids, Lewis acids, and mineral acids,

(A) at least one olefinic compound containing at least one group of the formula



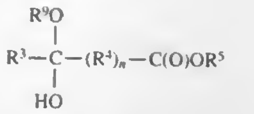
$$>C=\overset{|}{C}-\underset{|}{\overset{|}{C}H}$$

and

(B) at least one carboxylic reactant selected from the group consisting of compounds of the formula

$$R^3C(O)(R^4)_nC(O)OR^5$$

and compounds of the formula



$$R^3-\underset{HO}{\overset{R^9O}{C}}-(R^4)_n-C(O)OR^5$$

wherein each of R^3, R^5 and R^9 is independently H or a hydrocarbyl group, R^4 is a divalent hydrocarbylene group, and n is 0 or 1; wherein (A) and (B) are reacted in amounts ranging from 0.6 moles (B) per mole of (A) to 3 moles (B) per equivalent of (A); then reacting the product formed thereby with about 0.5 equivalents to about 2 moles, per mole of (B), of (C), wherein

(C) is at least one of ammonia or a hydrazine or an amine characterized by the presence within its structure of at least one H—N group.

5,851,378
HYDROCRACKING CATALYST COMPRISING COATED CRACKING COMPONENT PARTICLES

Eelco Titus Carel Vogt, Utrech, and Hendrik Gerard Brull, Ede, both of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

PCT No. PCT/EP95/02132, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO95/33562, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 2, 1995, Ser. No. 737,944

Claims priority, application European Pat. Off., Jun. 3, 1994, 94201591

Int. Cl.^{6} C10G *47/02;47/18*

U.S. Cl. 208—111 **8 Claims**

1. Hydrocracking catalyst comprising at least one hydrogenation metal component and a cracking component which is either a zeolitic cracking component, or an amorphous cracking component, or a mixture thereof, wherein the zeolitic cracking component is an aluminosilicate zeolite or a non-aluminosilicate molecular sieve, wherein the cracking component has a mean particle size in the range of 0.1 μm to 10 μm, and wherein at least 50% of the outer surface of said cracking component particles is coated with a layer of pre-formed inorganic oxide or pre-formed inorganic hydroxide or combinations thereof, which layer has a thickness in the range of 10 nm to 5 μm and which coated cracking component particles have a mean particle size of 0.11 μm to 15 μm.

8. A method for converting hydrocarbonaceous feedstocks to lower boiling point products which comprises contacting said feedstock with the hydrocracking catalyst of claim 1 under hydrocracking conditions.

5,851,379
REFORMING PROCESS USING MONOFUNCTIONAL CATALYST CONTAINING BISMUTH

Robert A. Innes, San Rafael, Calif.; Michio Sugimoto, and Tetsuya Fukunaga, both of Sodegaura, Japan, assignors to Chevron Chemical Company, San Ramon, Calif., and Idemitsu Kosan Co., Ltd., Japan

Filed Dec. 22, 1997, Ser. No. 995,588

Int. Cl.^{6} C10G *35/085;35/095*

U.S. Cl. 208—138 **7 Claims**

1. A process for reforming a hydrocarbon feed to obtain aromatics, comprising contacting the feed, under catalytic reforming conditions, with a monofunctional reforming catalyst comprising platinum, 0.01 to 0.25 atoms of bismuth per atom of platinum, and a zeolite L.

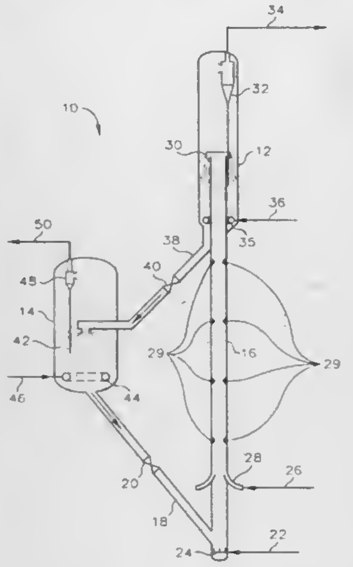
5,851,380
PROCESS AND APPARATUS FOR FLUIDIZED CATALYTIC CRACKING OF A HYDROCARBON FEED

Jan W. Wells, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1996, Ser. No. 691,065

Int. Cl.^{6} C10G *11/18;* **B01J** *8/18;* **F27B** *15/08*

U.S. Cl. 208—158 **20 Claims**



1. An improved fluidized catalytic cracking system wherein the improvement comprises a riser reactor conduit having an interior surface defining an inside diameter, a lift zone, a reaction zone and an injection zone located between said lift zone and said reaction zone with said interior surface of said reaction zone having disposed thereon turbulence generation means for promoting turbulence in the flow of catalyst in said riser reactor conduit, wherein said turbulence generation means includes:

a first surface extending from said interior surface and facing an approaching catalyst flow; and

a second surface extending from said interior surface and facing opposite said approaching catalyst flow, and

wherein said first surface and said second surface intersect at a terminal edge distant from said interior surface, wherein the dimension from said interior surface to said terminal edge is less than 10 percent of said inside diameter, and wherein said first surface slopes in the direction of said approaching catalyst flow at an angle between about 30 to 60 degrees and said second surface slopes in an opposite direction of said approaching catalyst flow at an angle between about 5 to 25 degrees.

11. A process for contacting a hydrocarbon feedstock with hot solid particles within a riser reactor of a fluidized catalytic cracking system said process comprises:

providing an elongated conduit having an interior surface, defining an inside diameter, a lift zone, a reaction zone and an injection zone located between said lift zone and said reaction zone with said interior surface of said reaction zone having disposed thereon turbulence generation means for promoting turbulence in the flow of said hydrocarbon feedstock with hot solid particles within said reaction zone, wherein said turbulence generation means includes a first surface extending from said interior surface and facing an approaching catalyst flow, and a second surface extending from said interior surface and facing opposite said approaching catalyst flow, wherein said first surface and said second surface intersect at a terminal edge distant from said interior surface, wherein the dimension from said interior surface to said terminal edge is less than 10 percent of said inside diameter, and wherein said first surface slopes in the direction of said approaching catalyst flow at an angle between about 30 to 60 degrees and said second surface slopes in an opposite direction of said approaching catalyst flow at an angle between about 5 to 25 degrees; .

introducing said hot solid particles into said lift zone wherein said hot solid particles are fluidized with a fluidization gas and lifted into said injection zone;

introducing said hydrocarbon feedstock into said injection zone wherein said hot solid particles are mixed with said hydrocarbon feedstock; and

passing said hydrocarbon feedstock with said hot solid particles into said reaction zone.

5,851,381
METHOD OF REFINING CRUDE OIL

Meishi Tanaka, Sodegaura, and Shuji Sugiyama, Tokyo, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 910,111, Jul. 1, 1992, abandoned. This application Mar. 8, 1995, Ser. No. 400,494

Claims priority, application Japan, Dec. 7, 1990, 2-406192; Dec. 26, 1990, 2-414063; Dec. 26, 1990, 2-414064

Int. Cl.^{6} C10G *45/00;65/04;65/12*

U.S. Cl. 208—210 **19 Claims**

1. A method of refining crude oil by distillation and desulfurization for preparation of petroleum products which comprises

separating a naphtha fraction from crude oil by a first distillation,

hydrodesulfurizing at a pressure of 100 to 200 kg/cm^{2}G a residual fraction which remains after the naphtha fraction has been removed from the crude oil,

separating the hydrodesulfurized fraction into a light fraction and a heavy residual oil in a high pressure separator,

hydrotreating at a pressure of 100 to 200 kg/cm^{2}G the light fraction and

separating the hydrotreated light fraction by a second distillation into a kerosene fraction, a light gas oil fraction, a naphtha fraction and a residual crude fraction.

5,851,382
SELECTIVE HYDRODESULFURIZATION OF CRACKED NAPHTHA USING HYDROTALCITE-SUPPORTED CATALYSTS

Chakka Sudhakar, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 18, 1995, Ser. No. 573,747

Int. Cl.^{6} C10G *45/04*

U.S. Cl. 208—216 R **11 Claims**

1. A process for treating a charge fluid catalytic cracked naphtha containing olefin components and undesired sulfur, which comprises:

maintaining a bed of sulfided catalyst containing (i) a metal of non-noble Group VIII, and (ii) a metal of Group VI-B, and (iii) one or more metals of intentionally added Group I-A, and (iv) optionally one or more metals of intentionally added Group II-A, on a support consisting essentially of a hydrotalcite-like composition;

passing the charge cracked naphtha containing olefinic components and undesired sulfur into contact with said catalyst in the presence of a gas selected from pure hydrogen and a gas mixture comprising greater than 60% by volume hydrogen;

maintaining said charge cracked naphtha containing olefinic components and undesired sulfur in contact with said catalyst at hydrodesulfurizing conditions thereby effecting hydrodesulfurization of said charge cracked naphtha containing olefinic components and undesired sulfur and forming a product stream of desulfurized naphtha containing a decreased content of sulfur and retaining at least 50% of the olefin content of the charge cracked naphtha; and

recovering said product stream of cracked naphtha containing a decreased content of sulfur;

said hydrotalcite-like composition having the formula:

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$[X_aY_b(OH)_c]_n[A]_d.e.H_2O$

where
a=1–10
b=1–10
2(a+b)=4–40
A is an anion of formal negative charge n
n=an integer 1–4
d is the formal positive charge of $[X_aY_b(OH)_c]$
e=1–10
X is a divalent metal
Y is a trivalent metal of Group III or Group VI-B or non-noble Group VIII of the Periodic Table,

subject to the qualification that when one of d or n is an integral multiple of the other, they are both reduced to the lowest integral terms.

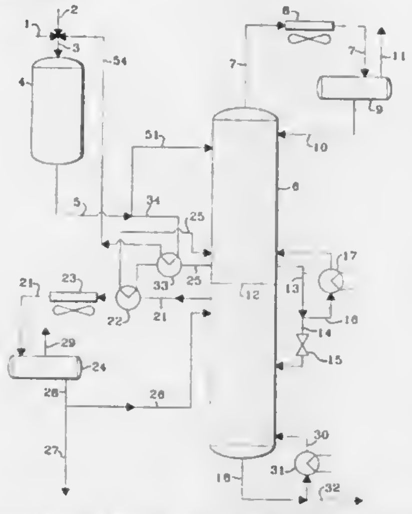
5,851,383
PROCESS FOR THIOETHERIFICATION AND SELECTIVE HYDROGENATION OF LIGHT OLEFINS

Stanley J. Frey, Palatine, Ill., assignor to UOP LLC, Des Plaines, Ill.

Continuation-in-part of Ser. No. 780,977, Jan. 9, 1997, Pat. No. 5,759,386. This application Dec. 15, 1997, Ser. No. 990,599

Int. Cl.^{6} C10G *45/04;45/00;* **C07C** *5/03;5/22*

U.S. Cl. 208—217 **7 Claims**



1. A hydrocarbon treating process which comprises the steps:

(a) combining a hydrogen feed stream, a recycle stream and a hydrocarbon feed stream to form a combined feed stream, which comprises propane, butane, butenes, hydrogen and methane, passing the combined feed stream through a reaction zone containing a bed of catalyst operated at conditions effective to simultaneously promote selective diene hydrogenation, the reaction of mercaptans and olefins present in the hydrocarbon feed stream to form thioethers and the isomerization of normal olefins, and thereby forming a reaction zone effluent stream which comprises hydrogen, methane, propane, butane, butenes, and thioethers;

(b) recovering heat from a first portion of the reaction zone effluent by indirect heat exchange against fluid removed from the stripping section of a unitary fractionation column, and then passing the first portion of the reaction zone effluent into the reaction zone as said recycle stream;

(c) passing a second portion of the reaction zone effluent into the stripping section of said unitary fractionation zone, which zone comprises an upper stripping section and a lower rerun section operated at differing reflux ratios, with the reflux ratio of the stripping section being greater than the ref lux ratio of the rerun section;

(d) passing a liquid-phase process stream comprising butane, butenes and thioethers from the bottom of the stripping section into the rerun section;

(e) recovering a net overhead product stream, comprising hydrogen and ethane, from the stripping section and withdrawing the net overhead product stream from the process;

(f) recovering a liquid-phase net product stream comprising butenes and which is substantially free of thioethers by at least partially condensing a vapor phase process stream removed at the top of the rerun section, and withdrawing the net product stream from the process; and,

(g) recovering a net bottoms stream comprising thioethers from the bottom of the rerun section.

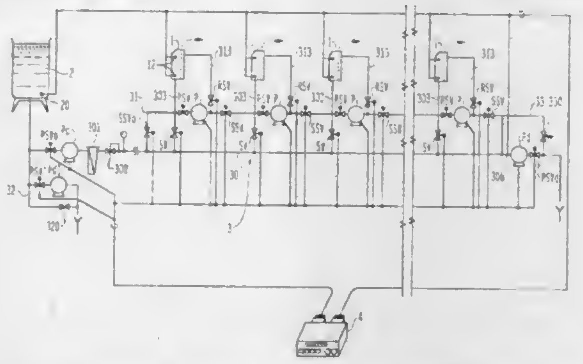
5,851,384
APPARATUS FOR AUTOMATICALLY DELIVERING HEMODIALYSIS SOLUTION TO A PLURALITY OF HEMODIALYSIS MACHINES

Tsong-Nan Shen, No. 4, Alley 25, Lane 103, Shih-Chien Street, Tainan City, Taiwan

Filed Jun. 20, 1996, Ser. No. 666,212

Int. Cl.^{6} B01D *17/12;35/02;* **F17D** *3/00*

U.S. Cl. 210—104 **12 Claims**



1. An apparatus for automatically delivering hemodialysis solution to a plurality of hemodialysis machines, comprising:

a plurality of supply tanks adapted to be fluidly communicated with a corresponding one of the hemodialysis machines, each of said supply tanks having a bottom portion provided with a connecting port, an upper level sensing unit for detecting whether said supply tank is full, and a lower level sensing unit for detecting whether said supply tank is empty;

a main tank for containing hemodialysis solution therein, said main tank having an outlet port;

a solution delivery system including
  a main delivery pipe having a terminal portion and an inlet section connected to said outlet port of said main tank,
  an electromagnetic delivery control valve provided on said main delivery pipe;
  a delivery pump provided on said main delivery pipe;
  a plurality of main branch pipes, each of said main branch pipes having an input portion connected fluidly to said main delivery pipe and an output portion connected fluidly to said connecting port of a respective one of said supply tanks, each of said main branch pipes being provided with an electromagnetic main branch valve,
  a secondary pipe connected fluidly to said inlet section of said main delivery pipe and to said output portion of each of said main branch pipes, and
  a bypass pipe connected between said terminal portion of said main delivery pipe and said secondary pipe; and

a monitoring device connected electrically to said upper and lower level sensing units, said delivery control valve, said delivery pump and said main branch valves, said monitoring device being operable in an automatic mode, wherein said monitoring device activates and deactivates said delivery control valve, said delivery pump and said main branch valves to fill up said supply tanks.

3. The apparatus as claimed in claim 1, wherein said solution delivery system further comprises a filter unit provided on said inlet section of said main delivery pipe downstream of said delivery pump.

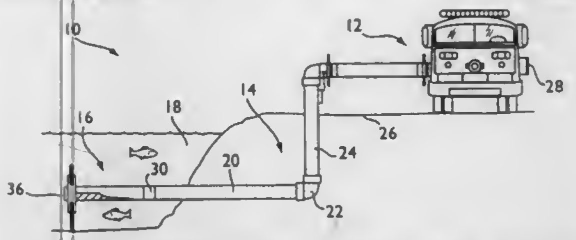
5,851,385
DRY HYDRANT STRAINER WITH STRAINER HOLE PATTERN FOR ACHIEVING UNIFORM FLOW RATES

Stanley Leo Merrett, Dadeville, Ala., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Division of Ser. No. 561,185, Nov. 21, 1995, Pat. No. 5,650,073. This application Apr. 30, 1997, Ser. No. 841,374

Int. Cl.^{6} B01D *35/02*

U.S. Cl. 210—170 **4 Claims**



1. A system for drafting fluid from a fluid reservoir, said system comprising:

(a) suction means for producing suction;

(b) an inlet submerged within said fluid reservoir, said inlet comprising:
  an inlet member having a first end and a second end, said first end being substantially capped, said second end being connected to said suction means;
  a plurality of apertures in said inlet member disposed between said first end and said second end said apertures spaced proximal to said first end of said inlet member having diameters greater than diameters of said apertures spaced proximal to said second end of said inlet member, wherein said differences in diameters defines means for providing a uniform suction zone throughout said inlet member; and

(c) an outlet connected to said suction means, said outlet being capable of delivering said fluid upon activation of said suction means.

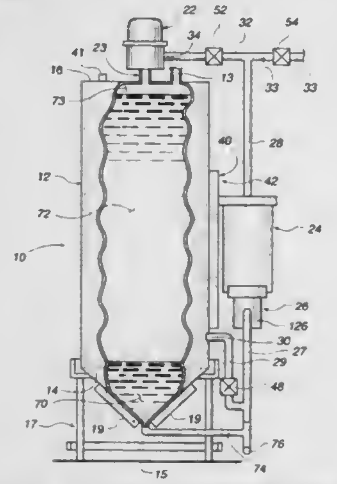
5,851,386
WASTE-OIL CLEANING APPARATUS

Christopher G. Paul, P.O. Box 71455, Fairbanks, Ak. 99707

Division of Ser. No. 698,374, Aug. 15, 1996, Pat. No. 5,676,840. This application Jul. 18, 1997, Ser. No. 896,828

Int. Cl.^{6} B01D *35/06;21/26;35/18*

U.S. Cl. 210—183 **8 Claims**



1. Apparatus for recovering combustible oil from waste-oil including non-oil fluids and solid contaminants, comprising:

a tank having a base and a top;

an inlet for admitting waste-oil to be recovered into said tank;

an outlet at the base of said tank for directly extracting from the apparatus any non-oil fluids which settle from waste-oil in said tank;

an oil cleaning arrangement connected with said tank for removing particulate material from oil circulated through said oil cleaning arrangement, said oil cleaning arrangement including a mesh filter and a centrifuge;

a pump for extracting oil from said tank, circulating said oil through said cleaning arrangement, and returning filtered and centrifuged oil to said tank; and

said centrifuge having only one inlet sort and only one discharge port, said inlet port arranged to receive oil to be centrifuged and said outlet port connected with said tank such that all fluids discharged from said centrifuge are returned to said tank.

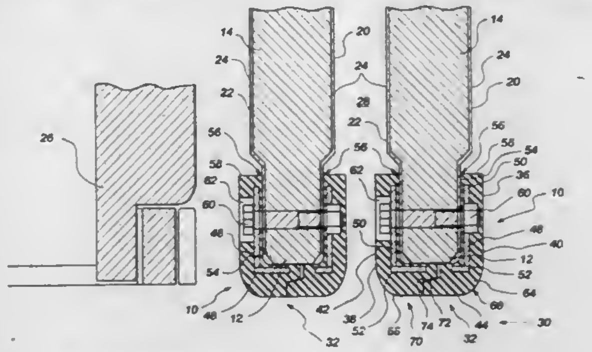
5,851,387
FILTER PLATE FEED PORT CLAMP

Reuben G. Neumann, Midvale, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 495,365, Jun. 28, 1995, abandoned. This application Apr. 22, 1997, Ser. No. 837,715

Int. Cl.^{6} B01D *25/176*

U.S. Cl. 210—229 **11 Claims**



9. A filter plate comprising:

a substantially planar plate having a first recessed surface and an opposing second recessed surface spaced apart from said first recessed surface defining a thickness therebetween and a feed port opening formed through said thickness of said substantially planar plate;

porous filter media positioned against said first recessed surface and against said second recessed surface and positioned to surround said feed port opening; and

an annular reinforced feed port clamp of abrasion-resistant material, said annular reinforced feed port clamp having a continuous, non-passaging circumferential face positioned through said feed port opening which extends continuously from said first recessed surface to said second recessed surface through said thickness therebetween and at all points about the circumference of said feed port opening to provide a secure seal against fluid infiltration of said circumferential face, said annular reinforced feed port clamp further comprising a first annular member having a first continuous circumferential face portion with a mateable non-linear edge and a first flange extending substantially perpendicular to and radially outwardly from said first continuous circumferential face portion and positioned against said porous filter media positioned against said first recessed surface, and a second annular member having a second continuous circumferential face portion with a mateable non-linear edge and a second flange extending substantially perpendicular to and radially outwardly from said second continuous circumferential face portion and positioned against said porous filter media positioned against said second recessed surface, said mateable non-linear edge of said first continuous circumferential face portion and said mateable non-linear edge of said second continuous circumferential face portion being in sealable engagement with one another to provide a non-linear sealing contact surface therebetween, and said annular reinforced feed port clamp being secured to said planar plate by a plurality of attachment members positioned through said first flange, through said thickness of said planar plate and through said second flange; and

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an embedded reinforcement member positioned in parallel alignment with, and being substantially radially co-extensive with, each said first flange and said second flange.

5,851,388

WATER PURIFIER WITH STERILIZING DEVICE

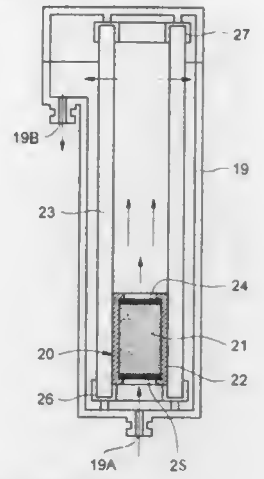
Sang-Wook Suh, Pyuntak-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd, Suwon, Rep. of Korea

Filed Dec. 6, 1996, Ser. No. 764,106

Claims priority, application Rep. of Korea, Apr. 2, 1996, 96-9920; May 29, 1996, 96-18605

Int. Cl.^{6} C02F *9/00*

U.S. Cl. 210—257.2 **3 Claims**



1. A water purifier comprising:
a storage tank; and
a water conducting system including filters for purifying water and conducting the purified water to the storage tank, the filters including a membrane filter, and a post-process filter for filtering water received from the membrane filter, the post-process filter comprising:
  a hollow cylindrical tube having radially spaced outer and inner surfaces, with activated carbon disposed therebetween, the inner surface forming an interior of the tube for conducting a flow of water through the tube, and
  a cylindrical cartridge disposed in the interior of the tube and extending across a cross section of the interior, the cartridge forming a water inlet and a water outlet for enabling the flow of water to pass through the cartridge, the cartridge containing an antibiotic comprised of iodine resin for inhibiting a growth of bacteria in the water.

5,851,389

APPARATUS FOR REMOVING A CONTAMINANT FROM A FLUID STREAM

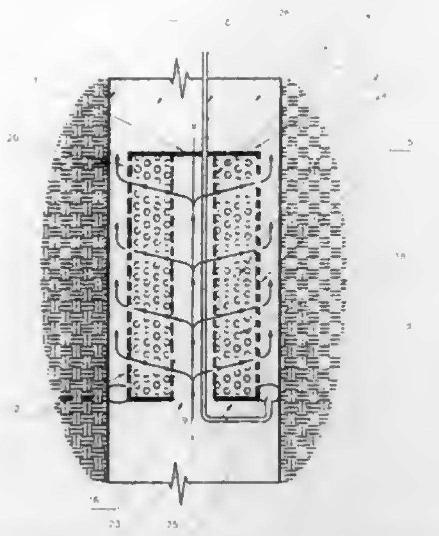
Michael D. Brewster, Tonawanda, and Richard P. Posa, North Tonawanda, both of N.Y., assignors to CSK Technical, Inc., Tonawanda, N.Y.

Filed Feb. 26, 1997, Ser. No. 806,201

Int. Cl.^{6} B01D *15/00;53/04;53/18*

U.S. Cl. 210—264 **11 Claims**

1. A device arranged to be longitudinally inserted and removed from a conduit, and arranged to be positioned at a desired location along said conduit to remove a contaminant from a fluid flowing through said conduit, comprising:
a container having an axis, said container having:
a first wall generated about said axis, said first wall being permeable to said fluid stream;
a second wall generated about said axis, said second wall being spaced from said first wall and being permeable to said fluid stream;
said first wall defining a first volume;



said first and second walls defining a second volume therebetween;
a first member sealing said first and second volumes at one end of said container;
a second member sealing said second volume at the other end of said container;
said second volume occupied by filter material;
a expandable barrier impervious to said fluid stream positioned adjacent said other end and selectively forming a seal between said second wall and the wall of said conduit;
such that said device may be longitudinally inserted into said conduit and moved to a desired position therealong, and said barrier may be selectively expanded to seal the space between said second wall and said conduit wall, so that said fluid stream flowing through said conduit will be sequentially directed into said first volume, through said first wall, into said second volume where said filter material removes said contaminant from said fluid, and through said second wall.

5,851,390

ELLIPTICAL FILTRATION UNIT

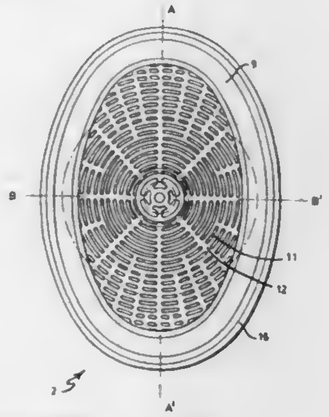
Jean Lemonnier, Paris, France, assignor to Millipore S.A., Saint-Quentin-En-Yvelines, Cedex, France

Filed Dec. 11, 1996, Ser. No. 764,680

Claims priority, application France, May 24, 1996, 96 06505

Int. Cl.^{6} B01D *69/10*

U.S. Cl. 210—321.1 **4 Claims**



1. A filtration unit which comprises:
a filtration membrane having pores which permit filtration of a fluid through said membrane,
said membrane being free of holes other than said pores, and having a shape of a solid ellipse,
said membrane being hydrophilic and having a small hydrophobic area positioned at each end portion of the major axis of the ellipse,

a cover having a fluid inlet said cover having a shape of an ellipse,
a base having a fluid outlet, said base having a shape of an ellipse,
said cover and said base being joined together with said filtration membrane positioned between said cover and said base to form a seat about the entire periphery of said membrane.

5,851,391

SLUDGE DEWATERING TREATMENT APPARATUS

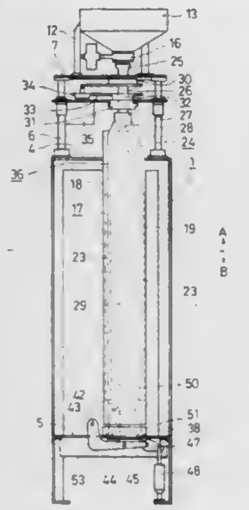
Keiichi Ozawa, Kawasaki, Japan, assignor to Cosmic Round Company, Kawasaki, Japan

Filed Jan. 20, 1998, Ser. No. 8,864

Claims priority, application Japan, Jan. 20, 1997, 9-022125

Int. Cl.^{6} B01D *33/29;33/54;* B30B *9/26*

U.S. Cl. 210—350 **3 Claims**



1. A sludge dewatering treatment apparatus, comprising:
a sludge holding hopper that is installed on a fixed plate on support columns provided vertically on the top plate of a frame, said frame further including a fixed lower plate having an opening therein;
a cylinder that is open at top and bottom, that is vertically installed on said frame, and that is secured at an opening in the top plate of said frame;
a rotating pipe shaft that has an upper end opening into which an outlet of said sludge holding hopper is inserted with clearance so as to realize continuous passage, that is arranged vertically and concentrically inside said cylinder, and further, that has sludge outflow ports;
a cylindrical filter that surrounds the rotating pipe shaft, that is attached at its upper portion to the rotating pipe shaft above the sludge outflow ports, and that is secured at its lower portion to the rim of said opening in the base plate of the frame;
a rotating pipe shaft rotation mechanism that is installed on a movable plate that is movable up and down along the support columns, and that serves to rotate said rotating pipe shaft and convey a twisting motion to said cylindrical filter;
an opening and closing cover construction that opens the base plate opening of said frame to allow discharge to the outside of dewatered cake material inside said cylindrical filter;
a water drainage construction that is installed on said frame and that drains water that is inside said cylinder that has been extracted by said cylindrical filter;
wherein:
  said cylinder is a cylindrical construction that is divided in the axial direction into two parts, a fixed side and a movable side, to form a coupled cylindrical construction that can be opened and closed;
  round pipe members are secured in a row in an axial direction around the inner surface of said cylinder that contact and press said cylindrical filter during said twisting motion of said cylindrical filter to improve extraction of water, and that moreover guide extracted water so as to improve drainage;
whereby:
  a twisting motion is applied to sludge that has been introduced into said cylindrical filter from said sludge holding hopper by way of said sludge outflow ports of said rotating pipe shaft;
  water is extracted to said cylinder and drained to the outside; and
  dewatered cake material inside said cylindrical filter is ejected to the outside by way of said opening and closing cover construction.

5,851,392

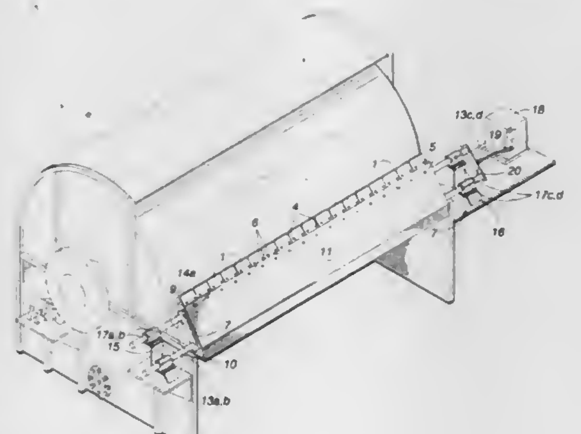
PROCESS AND APPARATUS FOR DOCTORING SOLIDS FROM A ROTARY FILTER

C. Lamar Brady, Jr., 139 Cypress Bend Rd., Selma, Ala. 36703

Filed Nov. 8, 1996, Ser. No. 748,470

Int. Cl.^{6} B01D *33/46*

U.S. Cl. 210—396 **6 Claims**



1. An improved slurry apparatus doctor blade assembly comprising:
  a. A plurality of blade teeth plates, each of said blade teeth plates having a leading edge, said leading edge having mitered left and right ends, said leading edge and left and right mitered ends further having a bevel;
  b. A means for supporting said plurality of blade teeth plates; and
  c. A means for slidably supporting said plurality of blade teeth plates such that said slidably supporting means will allow said blade assembly to move reciprocally along an axis defined by the length of said leading edge of said blade teeth plates.

5,851,393

SCREEN ASSEMBLY

Brian S. Carr, Ft. Wright, and Ari M. Hukki, Edgewood, both of Ky., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 14, 1995, Ser. No. 557,201

Int. Cl.^{6} B01D *29/05*

U.S. Cl. 210—489 **36 Claims**

1. A screen assembly comprising
a planar support including a thin support grid having a support surface with apertures therethrough, the thin support grid being defined by elongate elements extending parallel to the support surface and joined together end to end, each elongate element having a rounded surface on one side, the rounded surfaces of the elongate elements defining the support surface;

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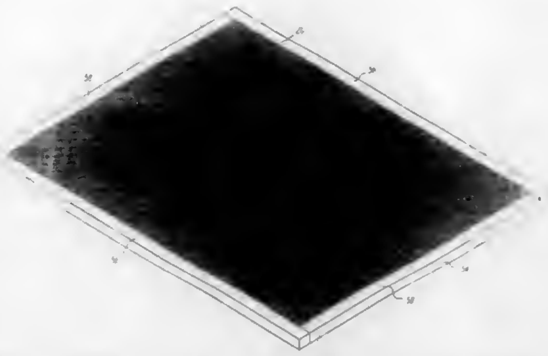


a screen cloth including interstices substantially smaller than the support grid extending across the support grid.

5,851,394
MODULE FOR BLOOD PURIFICATION, BLOOD PURIFICATION MEMBRANE AND ITS PRODUCTION

Kazuhisa Shibata; Motoki Kyo; Hidehiko Sakurai, and Makoto Ohno, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1995, Ser. No. 573,785

Claims priority, application Japan, Dec. 16, 1994, 6-313533; Oct. 5, 1995, 7-258517

Int. Cl.⁶ B01D *69/02;63/00;69/00;69/08*

U.S. Cl. 210—500.23 **11 Claims**

1. A blood purification membrane having a membrane thickness of 10 to 35 μm, an inner diameter of 100 to 300 μm, a porosity of 50 to 85%, a water permeability (ultrafiltration rate) at 37° C. of not less than 20 ml/m^2·Hr·mmHg and a sieving coefficient of albumin of not more than 0.01, a substantially homogeneous interior structure, and a smooth surface structure.

5,851,395
VIRUS-REMOVING FILTER

Mitsuo Kawase, 7-22, Nishitatsumigaoka 1-Chome, Chita City; Yuji Kawase, NGK Aoyama-Ryo, 83, Aoyama-Cho 7-Chome, Handa City; Kazunari Yamada, 95, Matoba-Cho 2-Chome, Nakagawa-Ku, Nagoya City; Kazukiyo Kobayashi, 13-10, Wagogaoka 3-Chome, Togo-Cho, Alchi-Gun, all of Aichi Pref., and Yasuo Suzuki, 3-3-102, Sena 1-Chome, Shizuoka City, Shizuoka Pref., all of Japan

Filed Dec. 20, 1996, Ser. No. 771,762

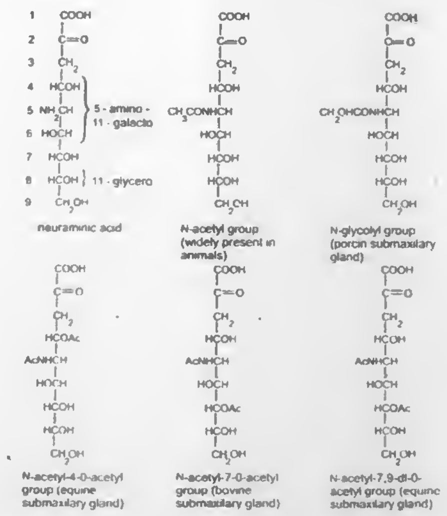
Claims priority, application Japan, Dec. 25, 1995, 7-342262; Dec. 20, 1996, 8-341199

Int. Cl.⁶ B01D *39/00*

U.S. Cl. 210—500.27 **12 Claims**

1. A virus-removing filter for removing air-suspended virus from air comprising

a filter material allowing air to pass therethrough and thereby remove air-suspended virus from air during passage therethrough and


1
2
3
4
5
6
7
8
9
COOH
C=O
CH2
HCOH
NH2CH
HOCH
HCOH
HCOH
CH2OH
5 - amino -
11 - galacto
11 - glycero
neuraminic acid
CH3CONHCH
N-acetyl group (widely present in animals)
CH2OHCONHCH
N-glycolyl group (porcin submaxilary gland)
HCOAc
AcNHCH
N-acetyl-4-0-acetyl group (equine submaxilary gland)
N-acetyl-7-0-acetyl group (bovine submaxilary gland)
N-acetyl-7,9-di-0-acetyl group (equine submaxilary gland)

a virus-capturing body on or within said filter material, said virus-capturing body selected from the group consisting of sialic acid, a sialic acid derivative, a sugar containing sialic acid and/or a sialic acid derivative, a glycoprotein containing sialic acid and/or a sialic acid derivative, a glycolipid containing sialic acid and/or a sialic acid derivative, and mixtures thereof.

5,851,396
POLLUTION SEPARATING AND PURIFYING APPARATUS FOR AT LEAST ONE FLUID MIXTURE

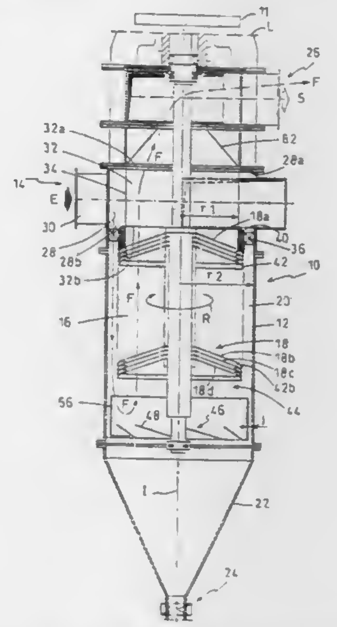
Pierre Saget, 36, avenue de la Grande-Armée, 75017 Paris, France

Filed Dec. 9, 1996, Ser. No. 750,366

Claims priority, application France, Jun. 9, 1994, 94 07057

Int. Cl.⁶ B01D *21/26;17/38*

U.S. Cl. 210—512.3 **12 Claims**



1. A pollution separating and purifying apparatus for at least one fluid mixture, the apparatus comprising:

a stationary cylindrical body having a peripheral wall and an inlet member for admitting the fluid mixture to be treated;

a rotor adapted to be rotated in a direction of rotation with respect to an axis of rotation, said rotor being mounted in said cylindrical body and comprises a stack of plates which extend radially from said axis of rotation towards the peripheral wall of said cylindrical body and which plates are provided with openings;

an annular gap between a periphery of said plates and said peripheral wall of the cylindrical body;

a means for generating a pressure drop in a top portion of said apparatus,

a hopper means for collecting a heavy phase of said fluid mixture, said hopper means being connected to the cylindrical body beneath the rotor and being provided with forced evacuation means isolated from an outside of the apparatus;

an extractor member for extracting a treated mixture, said extractor member being connected to the cylindrical body above the stack of plates; and

a means for generating a first helical motion of the fluid mixture to be treated, said first helical motion driving the fluid mixture in the annular gap and being directed downwards, that is in a direction from the inlet chamber to the hopper means, and having a direction of rotation that is the same as the direction of rotation of the rotor,

wherein the rotation of the rotor, with said pressure drop being in force, is adapted to generate a second helical motion of the fluid mixture to be treated, said second helical motion driving the fluid mixture through said openings of the plates of said stack of plates of the rotor and directly in contact with said plates, the second helical motion being directed upwards, that is in a direction from the hopper means to the extractor member and having a direction of rotation that is the same as the direction of rotation of the rotor, and

wherein the inlet member is situated between the rotor and the extractor member, said inlet member comprising an annular chamber which is provided between an inside cylindrical wall and an outside wall and which has a top end in proximity with the extractor member that is closed and a bottom end in proximity with a top plate of the stack of plates, the inlet member further presenting an inlet for admitting the mixture to be treated into said annular chamber, and a central column having open top and bottom ends, said central column extending above and over said stack of plates of the rotor.

5,851,397
AUXILIARY APPARATUS FOR SAMPLING BLOOD SERUM

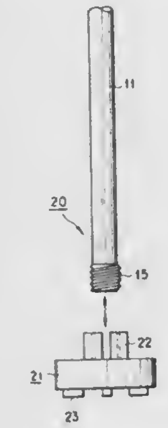
Teruaki Itoh, 5-25 Kokaihommachi, Kumamoto, Japan

Filed May 1, 1997, Ser. No. 850,008

Claims priority, application Japan, May 9, 1996, 8-114967

Int. Cl.⁶ B01D *21/26;* **G01N** *1/00*

U.S. Cl. 210—517 **1 Claim**



1. An auxiliary apparatus for sampling blood serum, comprising:

a disklike flattening member having a flat surface and capable of flattening a separation surface of a blood serum separating medium contained in a sample container by urging the flat surface against the separation surface;

a mounting member having a cylindrical shaft for lowering the flattening member through the blood serum contained in the sample container to thereby mount the flattening member in the sample container such that the flat surface of the flattening member horizontally urges the separation surface of the blood serum separating medium; and

means for securing a space which permits a sampling/dispensing tip capable of sampling and dispensing the blood serum, to be inserted into the sample container, by detaching the cylindrical shaft from the flattening member and taking the cylindrical shaft out of the sample container, after the flattening member is mounted in the sample container by the mounting member,

wherein the disklike flattening member has a rotation stopper projection on the flat surface to be brought into contact with the separating medium and the disklike flattening member and the cylindrical shaft are engaged with each other such that the cylindrical shaft can be disengaged from the disklike flattening member by rotating the cylindrical shaft about an axis of the sample container.

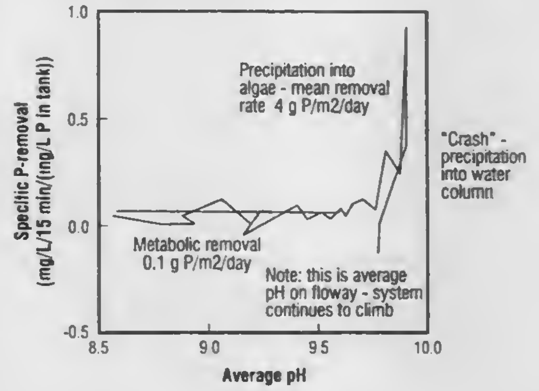
5,851,398
ALGAL TURF WATER PURIFICATION METHOD

Walter H. Adey, Gloucester, Va., assignor to Aquatic Bioenhancement Systems, Inc., Sugar Land, Tex.

Continuation-in-part of Ser. No. 336,746, Nov. 8, 1994, abandoned. This application May 16, 1997, Ser. No. 857,971

Int. Cl.⁶ C02F *3/32*

U.S. Cl. 210—602 **25 Claims**



1. A method for removing pollutants from water comprising the steps of:

providing algal spores;

providing a source of water, for flowing through a floway, said water containing a quantity of pollutants and having a pH on entry into said floway;

providing a growing surface in said water to which said algal spores form an attachment;

subjecting said algal spores to floway operating conditions so as to grow algae forming an algal turf in said water, said algal turf having a surface comprising cell walls;

adjusting the floway operating conditions such that a predetermined pollutant precipitates substantially only onto and/or into said cell walls rather than into the water; and

harvesting a portion of said algal turf onto and/or into which said pollutants have precipitated.

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5,851,399

PROCESS AND ARRANGEMENT FOR BIODEGRADING POLLUTANTS IN WATER

Ortwin Leitzke, Kaarst, Germany, assignor to Wedeco Umwelttechnologie Wasser-Boden-Luft GmbH, Herford, Germany

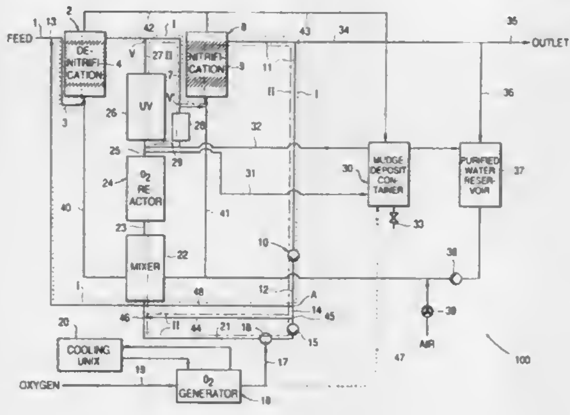
PCT No. PCT/DE95/01334, § 371 Date May 28, 1997, § 102(e) Date May 28, 1997, PCT Pub. No. WO96/09987, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 27, 1995, Ser. No. 809,367

Claims priority, application Germany, Sep. 29, 1994, 44 34 753.7

Int. Cl.^{6} C02F *1/78;3/30;1/32*

U.S. Cl. 210—605 **20 Claims**



1. A method for degrading pollutants in polluted water which can only be degraded with difficulty or not at all by purely biological means, wherein an ozone-containing gas is generated from oxygen-containing gas and admixed with the flowing water, and wherein the ozone introduced into the water at least preliminarily oxidizes the pollutants present in the water, wherein said method comprises

continuously passing the water through at least one biological treatment in a main circuit, comprising a continuous feed for polluted water and a device for removing solids formed in the biological treatment, wherein a portion of the stream of biologically-treated water is continuously separated from the main circuit into a branched-off part-circuit which rejoins the main circuit at a union point; and wherein ozone-containing gas is continuously admixed with the biologically-treated water in said part-circuit .

10. A plant for carrying out the method according to claim 1, comprising

a) a main circuit, into which polluted water, containing pollutants which can only be degraded with difficulty or not at all by purely biological means, is fed and recirculated, said main circuit comprising a feed point, at least one biological treatment unit, a union point upstream of said at least one biological treatment unit, one or more pumps and a device for removing solids formed in the biological treatment, all in fluid connection with one another, and

b) a part-circuit which is connected to and branches from said main circuit downstream of said at least one biological treatment unit, and which comprises an inlet, through which ozone-containing gas is continously introduced into said polluted water, and at least one reaction vessel, in fluid communication with one another.

5,851,400

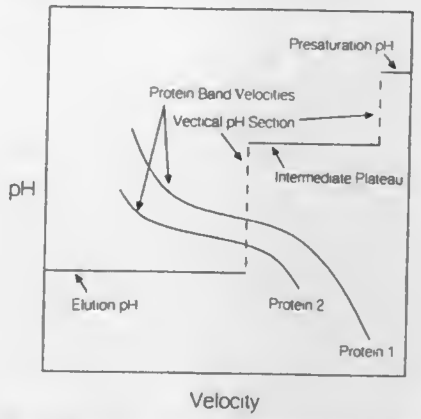
METHOD FOR ELIMINATING THE DISPLACER IN DISPLACEMENT CHROMATOGRAPHY OF PROTEINS

Douglas D. Frey, and John C. Strong, both of Baltimore, Md., assignors to University of Maryland at Baltimore County, Baltimore, Md.

Filed Mar. 21, 1997, Ser. No. 821,904

Int. Cl.^{6} B01D *15/08*

U.S. Cl. 210—635 **11 Claims**



1. A method of displacement chromatography for the separation of proteins, comprising the steps of:

selecting an adsorbed buffering species to produce an appropriate retained pH gradient having a pH profile, wherein band velocity curves of proteins to be separated intersect a vertical section of said pH profile, wherein all adsorption isotherms of said proteins to be separated are convex, and wherein none of said proteins to be separated have an adsorption isotherm which crosses another of said proteins' adsorption isotherm at a pH of an intermediate plateau; and

supplying an amount of said proteins to be separated in a feed slug to produce high enough concentrations of said proteins to result in a displacement train, that, on said intermediate pH plateau, a step change in concentration from a zero level to a level in a protein band has a same velocity as a retained pH gradient.

5,851,401

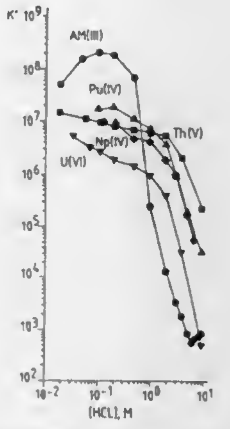
METHOD FOR THE CHROMATOGRAPHIC SEPARATION OF CATIONS FROM AQUEOUS SAMPLES

E. Philip Horwitz, Naperville; Renato Chiarizia, Elmhurst, and Mark L. Dietz, Evanston, all of Ill., assignors to Eichrom Industries, Inc., Darien, Ill.

Division of Ser. No. 467,402, Jun. 6, 1995, Pat. No. 5,651,883. This application May 9, 1997, Ser. No. 853,593

Int. Cl.^{6} B01D *15/08*

U.S. Cl. 210—635 **6 Claims**



1. A process for separating elements selected from the group consisting of trivalent, tetravalent and hexavalent actinide and lanthanide cations, and radium cations from an aqueous solution that comprises the steps of:

(a) contacting a cation-containing solution with a plurality of solid extractant particles, said solid extractant particles comprising solid support particles that do not react under the conditions of separation and having adsorbed thereon a diesterified methanediphosphonic acid extractant;

(b) maintaining said contact for a time period sufficient for said extractant to bind to the cations of said elements present in said aqueous liquid and form a second aqueous liquid phase that is relatively depleted of said cations of said elements; and

(c) separating the solid and liquid phases.

5,851,402

PROCESS FOR THE PURIFICATION OF HYDROGEN PEROXIDE

Jean-Marie Dhalluin, Viroflay; Jean-Jacques Wawrzyniak, Feytiat, and Henry Ledon, Versailles, all of France, assignors to Chemoxal S.A., Paris, France

Filed Oct. 15, 1997, Ser. No. 950,977

Claims priority, application France, Oct. 15, 1996, 96 12569

Int. Cl.^{6} B01D *61/00*

U.S. Cl. 210—651 **15 Claims**

1. Process for manufacturing unstabilized ultrapure hydrogen peroxide from a crude product comprising the steps of purifying the hydrogen peroxide by passing over a column of an adsorbent which is a zeolite, adding one or more macroligands to said solution to form a mixture and forcing the mixture through an ultrafiltration membrane.

5,851,403

CERAMIC HONEYCOMB AND METHOD

Robert A. Petrisko, Gilbert, Ariz.; Gary Lee Stark, Midland, Mich.; Daniel R. Petrak, Sanford, Mich., and Richard E. Jones, Midland, Mich., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Division of Ser. No. 368,786, Jan. 4, 1995, abandoned. This application Jun. 4, 1997, Ser. No. 869,045

Int. Cl.^{6} B01D *15/00;53/02*

U.S. Cl. 210—670 **5 Claims**

1. A method for removing substances having an affinity for binding with carbon comprising the following steps:

loading a ceramic honeycomb with carbon to get carbon-loaded ceramic honeycombs the loading step comprising:

i) applying a loading material comprising a carbon component and a heat-sensitive volatile component;

ii) heating the honeycomb with the loaded material applied thereto in an oxygen-excluded environment to drive off the volatile component, leaving the carbon from the carbon component;

exposing the carbon-loaded ceramic honeycomb to a fluid containing a substance having an affinity for binding with carbon causing said substance to combine with the carbon of the carbon-loaded ceramic honeycomb to create a contaminated ceramic honeycomb;

heating the contaminated ceramic honeycomb in the presence of oxygen to burn off the carbon and the substance combined with the carbon;

repeating the loading, exposing and heating steps.

5,851,404

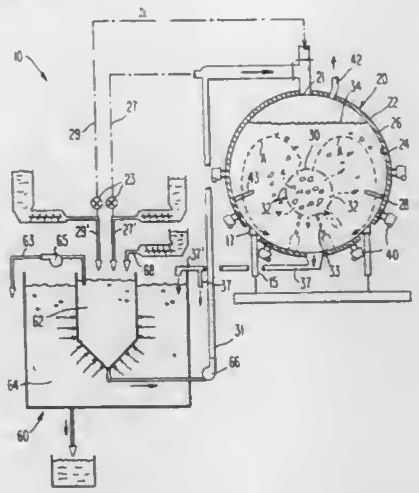
PROCESS AND APPARATUS FOR LIQUID SLUDGE STABILIZATION

Richard W. Christy, and Paul G. Christy, both of Wayne, Pa., assignors to RDP Company, Norristown, Pa.

Continuation of Ser. No. 443,927, May 18, 1995, Pat. No. 5,681,481. This application Jan. 28, 1997, Ser. No. 790,241

Int. Cl.^{6} C02F *11/14*

U.S. Cl. 210—723 **21 Claims**



1. A process for treatment of sludge such that the end product of the treatment can be spread by gravity flow comprising:

(a) providing sludge having a solids content in a range in excess of 0% but less than 10% such that the sludge is a liquid at ambient temperature and pressure, and providing an additive, to a substantially closed reactor vessel, said additive being a caustic compound selected from the group consisting of calcium hydroxide, calcium oxide, calcium carbonate, soda ash, sodium hydroxide and potassium hydroxide, with said additive present in sufficient quantity to adjust the pH of the sludge mixture to a level greater than about 12;

(b) mixing the sludge and additive into a sludge mixture to ensure said pH is greater than about 12;

(c) maintaining the pH level at a level greater than about 12 for a predetermined period of time;

(d) controlling the pressure in the reactor vessel relative to the ambient pressure, to facilitate control of the reaction;

(e) maintaining the sludge mixture as a free-flowing liquid that is at least 90% liquid; and

(f) discharging the sludge and additive mixture from the reactor vessel in a sufficiently liquid form such that it can be further handled by gravity flow.

5,851,405

PROCESS FOR CLARIFYING VINASSE

Hannu Paananen, Kantvik; Mirja Lindroos, Kirkkonummi; Tapio Viljava, and Pertti Walliander, both of Kantvik, all of Finland, assignors to Cultor Oy, Helsinki, Finland

PCT No. PCT/FI95/00328, § 371 Date Mar. 24, 1997, § 102(e) Date Mar. 24, 1997, PCT Pub. No. WO96/00775, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 7, 1995, Ser. No. 765,492

Claims priority, application Finland, Jun. 28, 1994, 943106

Int. Cl.^{6} B01D *21/26;* **C02F** *1/66*

U.S. Cl. 210—724 **12 Claims**

1. A process for pretreating vinasse for use in a subsequent chromatography process, comprising clarifying dilute vinasse containing potassium salts in solution and insoluble solids having an insoluble dry solids content of below 35 wt. % utilizing a clarifier centrifuge whereby at least 90% of said insoluble solids is removed therefrom, concentrating the clarified vinasse to a dry solids content to about 50 to about 80 weight %; and removing potassium in the form of a potassium salt therefrom.

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5,851,406

PROCESS FOR PREVENTING THE DEGRADATION OF WATER SOLUBLE PACKAGING FILMS BY HALOGENATED HYDANTOINS OR CHLORINATED CYANURIC ACID AND APPARATUS FOR DISINFECTING A WATER SYSTEM

Ronald Lee Jones, Suwanee, and P. Kirk Mitchell, Marietta, both of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Continuation of Ser. No. 319,979, Oct. 7, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 561,934

Int. Cl.^{6} C02F *1/50;1/76*

U.S. Cl. 210—755 **38 Claims**

1. A process for preventing the degradation of a water soluble polymer by halogenated hydantoins, comprising the steps of:

(a) providing halogenated 5,5-dialkyl hydantoin;
(b) providing a stabilizing agent, wherein said stabilizing agent is an alkaline carbonate, an alkaline hydroxide, an alkaline bicarbonate, an alkaline phosphate, an alkaline silicate, an alkaline borate, or mixtures of these compounds;
(c) combining said halogenated hydantoin with said stabilizing agent to form a composition, said stabilizing agent present in an amount of at most about 5.0 weight % of said composition;
(d) enclosing at least a portion of said composition in a water soluble polymer.

5,851,407

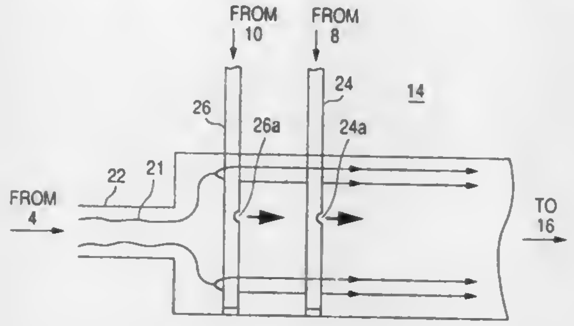
PROCESS AND APPARATUS FOR OXIDATION OF CONTAMINANTS IN WATER

Reid Bowman, Ojai; Michael McNeilly, Redwood Shores; Terry Applebury, Lafayette, and Douglas Gustafson, Antioch, all of Calif., assignors to Applied Process Technolgy, Inc., Redwood Shores, Calif.

Filed Nov. 26, 1997, Ser. No. 978,752

Int. Cl.^{6} C02F *1/78*

U.S. Cl. 210—759 **8 Claims**



1. A water decontamination process, comprising the sequence of steps of:

injecting a pressurized flow of ozone and a pressurized flow of hydrogen peroxide into a flow of contaminated water such that the velocity and direction of the injected hydrogen peroxide and ozone approximately match the velocity and direction of the contaminated water flow, said contaminated water comprising oxidizable contaminants and having an inlet pressure greater than 5 psig;
mixing said hydrogen peroxide and ozone with the contaminated water flow at approximately said inlet pressure to produce a mixture at least 99% homogeneous;
oxidizing said contaminants while maintaining the mixture at approximately said inlet pressure and forming less than 20 ppb of bromate.

5,851,408

ELIMINATION AND INHIBITION OF BIVALVE MOLLUSK ATTACHMENTS

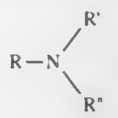
John Joseph Sedivy, 167 Concord Meeting, Glen Mills, Delaware County, Pa. 19342

Filed Jan. 24, 1997, Ser. No. 789,365

Int. Cl.^{6} C02F *1/68*

U.S. Cl. 210—764 **19 Claims**

1. A method for the control of bivalve mollusks to effect detachment from and to inhibit settlement on solids immersed in water inhabited by said mollusks comprising introducing into said water an amine salt of an inorganic or organic acid, the amine radical of said salt derived from an amine having the formula:



where R is an aliphatic hydrocarbon group containing from about 8 to about 20 carbon atoms and R' and R" are the same or different alkyl radicals having from 1 to about 8 carbon atoms, and mixtures of said amine radicals, said amine salt being introduced at a rate and length of time to at least inhibit settlement of the larva stage of said mollusk.

5,851,409

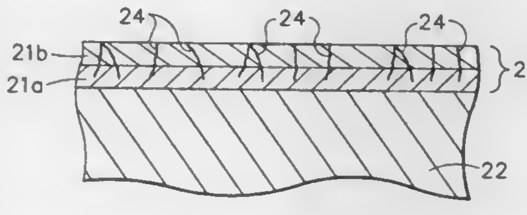
METHOD FOR REMOVING AN ENVIRONMENTAL COATING

Jon C. Schaeffer, Milford; Jeffrey A. Conner, Hamilton; Dennis P. Dry, Cincinnati; Gregory J. Anselmi, Fairfield, all of Ohio, and David C. Zlgan, Episy, France, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 24, 1996, Ser. No. 772,959

Int. Cl.^{6} C23F *4/00*

U.S. Cl. 216—2 **20 Claims**



1. A method for removing an environmental coating on a metallic substrate, the method comprising the steps of:

providing a metallic substrate having a diffusion coating comprising an additive layer and a diffusion zone between the additive layer and the substrate;
developing cracks in the diffusion coating at a temperature less than the ductile-to-brittle transition temperature thereof; and then
subjecting the diffusion coating to an acidic solution that penetrates the cracks and interacts with the diffusion zone so as to chemically strip the diffusion coating from the substrate.

5,851,410

Patent Not Issued For This Number

5,851,411

HIGH-DENSITY LIQUID CRYSTAL DISPLAY AND METHOD

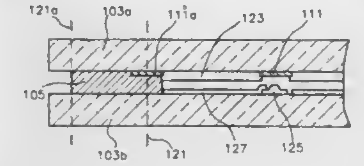
Sang-Sik An; Sang-Ho Lee; Dong-Hyo Gu, all of Kyungki-do, and Min-Choel Shin, Incheon-si, all of Rep. of Korea, assignors to LG Electronics, Inc., Seoul, Rep. of Korea

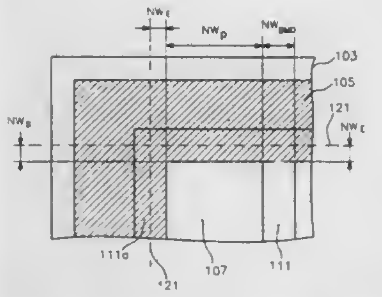
Filed Nov. 1, 1996, Ser. No. 742,913

Claims priority, application Rep. of Korea, Jul. 9, 1996, 96-27652

Int. Cl.^{6} G02F *1/1333*

U.S. Cl. 216—23 **26 Claims**





1. A method for manufacturing a display including first and second substrates, each having an inner light shielding region and an edge light shielding region, the method comprising the steps of:

defining the edge light shielding region into a first portion and a second portion;
defining an area of the first substrate, t he area including the first portion of the edge light shielding region;
removing the area including the first portion of the edge light shielding region and leaving the second portion of the edge light shielding region; and
combining the first and second substrates at the second portion of the edge light shielding region.

5,851,412

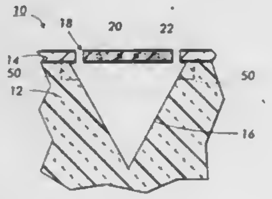
THERMAL INK-JET PRINTHEAD WITH A SUSPENDED HEATING ELEMENT IN EACH EJECTOR

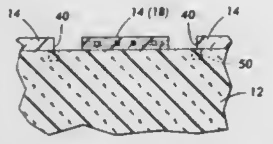
Joel A. Kubby, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 609,198, Mar. 4, 1996, Pat. No. 5,706,041. This application Sep. 15, 1997, Ser. No. 929,599

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 216—27 **11 Claims**





1. A method of making a thermal inkjet printhead, the printhead comprising at least one ejector, the ejector including a heating element for vaporizing liquid ink adjacent thereto, comprising the steps of:

providing a semiconductor chip including a functional layer disposed over a main surface of an etchable layer, the heating element being defined in a portion of the functional layer;
creating a first opening in the functional layer adjacent the heating element, the first opening exposing a portion of the etchable layer;
etching an area of the etchable layer, the area encompassing the first opening and the heating element, thereby forming a cavity in the etchable layer under the heating element; and
providing a complementary structure over the main surface of the etchable layer, the complementary structure defining a channel therein, whereby the portion of the functional layer including the heating element is suspended between the cavity and the channel.

5,851,413

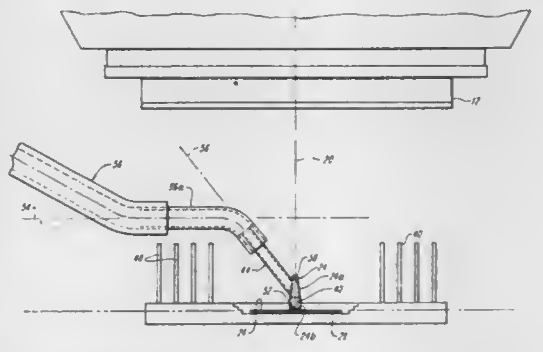
GAS DELIVERY SYSTEMS FOR PARTICLE BEAM PROCESSING

Robert A. Casella, Salem; Charles J. Libby, Winchester, both of Mass., and Gary P. Rathmell, Newton, N.H., assignors to Micrion Corporation, Peabody, Mass.

Filed Jun. 19, 1996, Ser. No. 667,966

Int. Cl.^{6} C03C *25/06*

U.S. Cl. 216—92 **20 Claims**



1. A fluid delivery system for delivering fluid material to a surface of a substrate, comprising

an extension arm having a distal portion,
a concentrator having an interior chamber extending between an upper aperture and a lower aperture for forming an axial fluid passage extending therethrough, and connected laterally, relative to said passage, to said distal portion of said arm, said axial fluid passage being open for passing a beam of particles therethrough, and
fluid delivery means for coupling said interior chamber to a source of fluid material to provide fluid to said interior chamber for forming a fluid delivery path to a substrate surface.

5,851,414

TUNDISH STOPPER ROD FOR CONTINUOUS CASTING

Mitsuru Ando, and Hisatake Okumura, both of Gifu-ken, Japan, assignors to Akechi Ceramics Kabushiki Kaisha, Japan

Filed Apr. 29, 1996, Ser. No. 639,560

Int. Cl.^{6} B22D *41/08*

U.S. Cl. 222—602 **10 Claims**

1. A tundish stopper rod for continuous casting, comprising:

(a) a stopper rod for regulating a flow rate of molten metal, which is poured from a tundish into a mold, said stopper rod defining an elongated opening and being supported by a spindle, said spindle made of steel, and
(b) a nut for attaching said stopper rod onto said spindle, said nut being mechanically and directly attached to said stopper rod opening at the nut exterior surface and said nut being mechanically and directly attached to said spindle at the nut

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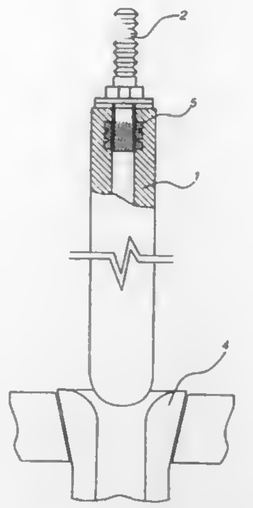


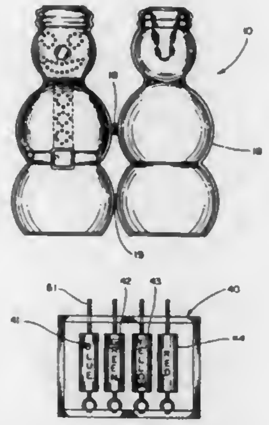
interior surface, said nut made of an engineering ceramic material and embedded in a body of said stopper rod.

5,851,415

SNOW MOLD

Larry G. Thomas, 10S330 Palisades Rd., Hinsdale, Ill. 60521
Filed May 15, 1997, Ser. No. 856,516
Int. Cl.^{6} B28B ***7/024***

U.S. Cl. 249—117 **14 Claims**



1. A combination decorative figurine and snow mold, comprising: a thin walled one-piece mold having the decorative shape of a character or figure and having an inner configuration similar to its outer configuration, said mold being constructed of a light-weight material so it may be easily transported, said mold including a first portion, a second portion separated from the first portion by a generally vertical plane with both formed with a single molding, means for converting the molding from a decorative figurine to a snow mold including means for opening the molding along the vertical plane, said means for opening the molding along the vertical line including means for separating the mold on one side of the vertical plane along a generally vertical axis and means for hinging the mold on the other side of the vertical plane also along a generally vertical and spaced axis, said means for separating the mold along a generally vertical axis including a perf-cut in the molding along the axis.

5,851,416

STABLE POLYSILOXANE FERROFLUID COMPOSITIONS AND METHOD OF MAKING SAME

Kuldip Raj, Merrimack, N.H.; Ronald E. Rosensweig, Summit, N.J., and Lutful M. Aziz, Nashua, N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.
Filed Feb. 12, 1997, Ser. No. 798,111
Int. Cl.^{6} H01F ***1/44***

U.S. Cl. 252—62.52 **7 Claims**

1. A method for preparing a ferrofluid composition comprising the steps of:

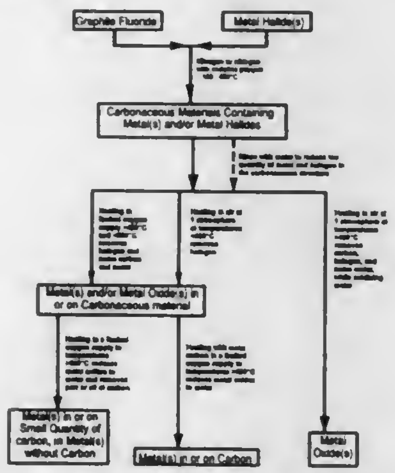
(a) mixing magnetic particles with a hydrocarbon carrier containing a first surfactant that includes a hydrocarbon with at least one polar group;
(b) heating the resulting mixture of step (a) to a temperature that is sufficient to promote sorption of the surfactant on the particles;
(c) adding a silicone carrier containing a second surfactant to the mixture of step (b), the a second surfactant including a silicone oil surfactant, soluble in the silicone oil carrier that has at least one polar group with an active hydrogen;
(d) heating the mixture of step (c) to a temperature that is sufficient to allow the silicone surfactant to sorb on the particles;
(e) evaporating the hydrocarbon carrier.

5,851,417

ELEMENTAL METALS, OXIDES, OR ALLOYS DISTRIBUTED ON A CARBON SUBSTRATE OR SELF-SUPPORTED AND PROCESS THEREFOR

Ching-Cheh Hung, 24667 Meadow La., Westlake, Ohio 44145
Filed Sep. 8, 1995, Ser. No. 524,651
Int. Cl.^{6} C01B ***31/00***

U.S. Cl. 252—62.55 **20 Claims**


Graphite Fluoride
Metal Halide(s)
Carbonaceous Materials Containing Metal(s) and/or Metal Halides
Metal(s) and/or Metal Oxide(s) in or on Carbonaceous material
Metal(s) in or on Small Quantity of carbon, or Metal(s) without Carbon
Metal(s) in or on Carbon
Metal Oxide(s)

1. A method of making chemically-modified carbon-based materials from a precursor containing graphite fluoride, said method comprising:

exposing graphite fluoride to a halide of a first metal, said halide being a compound of only said first metal and a halogen, in an atmosphere composed of a gas selected from the group consisting of noble gas, chlorine, nitrogen, nitrogen-chlorine mixture, and noble gas-chlorine mixture, said exposure being at a temperature between approximately 100° C. and approximately 450° C., for sufficient time to effect substantially complete defluorination of said graphite fluoride while also permitting said halide to enter into and alter the laminar crystal structure of said graphite fluoride, thereby resulting in a carbonaceous material appearing to be non-graphitic by X-ray diffraction standards, in that the X-ray spectrograph of the product shows no sharp peak at a position that would indicate a crystal lattice spacing at or around 3.375 Angstrom units that represents the 002 lattice spacing of graphite, and containing said first metal and said halogen.

5,851,418

PARTICULATE LOW CORROSION ICE MELTERS

William Percy Moore, Hopewell, Va., assignor to Agri-Nutrients Technology Group, Inc., Disputanta, Va.
Filed Oct. 2, 1997, Ser. No. 942,865
Int. Cl.^{6} C09K ***3/18***

U.S. Cl. 252—70 **10 Claims**

1. An attrition resistant particulate composition for melting ice and inhibiting corrosion of metals and spalling of Portland Cement concrete and asphalt, with enhanced corrosion inhibition, the composition comprising:

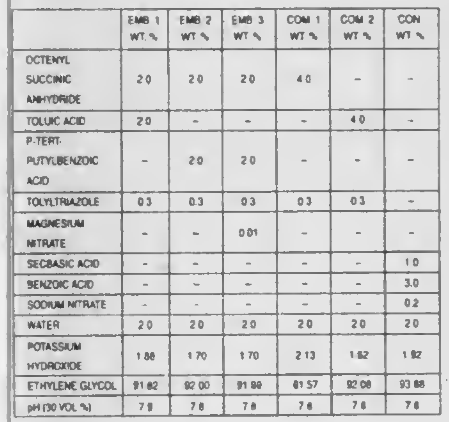
(a) a water soluble chloride salt of an alkali or alkaline earth metal amounting to between 90 and 98 percent of the particulate composition containing between 0.05 and 1.0 percent of an oxygen scavenger selected from the group consisting of sodium nitrite, potassium nitrite, and sodium fluoborate, and also containing a surface deactivating corrosion inhibitor selected from the group consisting of sodium borate, sodium silicate, potassium silicate, sodium ferricyanide, sodium ferrocyanide, sodium ferrocyanate, and triethanolatine amounting to between 0.05 and 1.0 percent; and,
(b) a water soluble ammonium or alkali metal phosphate salt amounting to between 1 and 10 percent on a dry basis, the ammonium or alkali metal phosphate salt exhibiting a property of chemically reacting with metal surfaces to form protective coatings of insoluble metal phosphate salts, the water soluble ammonium or alkali metal phosphate salt admixed with the chloride salt containing the oxygen scavenger and surface deactivating corrosion inhibitors as an aqueous solution at a concentration of between 40 and 85 percent, thereby serving as an adhesive and a buffering agent to provide hard particles at a pH of between 5 and 8, wherein the composition has a moisture content amounting to between 0.1 and 4.0 percent.

5,851,419

METAL CORROSION INHIBITIVE COOLANT COMPOSITION CONTAINING ALKENYLSUCCINIC ACID OR ALKALI METAL SALT THEREOF

Yuji Miyake, and Yasuaki Mori, both of Gifu, Japan, assignors to CCI Co., LTD., Gifu, Japan
Filed Mar. 28, 1997, Ser. No. 829,528
Claims priority, application Japan, Mar. 28, 1996, 8-073978
Int. Cl.^{6} C09K ***5/00***

U.S. Cl. 252—79 **6 Claims**



	EMB 1 WT. %	EMB 2 WT %	EMB 3 WT %	COM 1 WT %	COM 2 WT %	CON WT %
OCTENYL SUCCINIC ANHYDRIDE	2 0	2 0	2 0	4 0	–	–
TOLUIC ACID	2 0	–	–	–	4 0	–
P-TERT-PUTYLBENZOIC ACID	–	2 0	2 0	–	–	–
TOLYLTRIAZOLE	0 3	0 3	0 3	0 3	0 3	–
MAGNESIUM NITRATE	–	–	0 01	–	–	–
SECBASIC ACID	–	–	–	–	–	1 0
BENZOIC ACID	–	–	–	–	–	3.0
SODIUM NITRATE	–	–	–	–	–	0 2
WATER	2 0	2 0	2 0	2 0	2 0	2 0
POTASSIUM HYDROXIDE	1 88	1 70	1 70	2 13	1 62	1 92
ETHYLENE GLYCOL	91 82	92 00	91 99	91 57	92 08	93 88
pH (30 VOL %)	7 9	7 8	7 8	7 8	7 8	7 8

1. A coolant composition consisting essentially of a glycol as a main ingredient, at least one C 4 to C 16 alkenylsuccinic acid or alkali metal salt thereof in an amount of 0.5–5.0 wt. %, and at least one benzoic acid or derivative thereof in an amount of 0.5–5.0 wt. %, further characterized in that no phosphates, amine salts, silicates, borates, or nitrites are included.

5,851,420

PROCESS FOR MANUFACTURING GRANULAR SODIUM PERCARBONATE

Sang Ryul Kim; Chong Yun Kwag, both of Seoul; Hwan Kee Heo, Inchoen, and Jong-Pill Lee, Seoul, all of Rep. of Korea, assignors to Oriental Chemical Industries, Seoul, Rep. of Korea
Filed Mar. 1, 1996, Ser. No. 609,635
Int. Cl.^{6} C11D ***3/395; 7/12***

U.S. Cl. 252—186.27 **13 Claims**

1. A process for manufacturing sodium percarbonate which comprises initially charging a reactor with solid sodium carbonate and at least one material selected from:

(a) a sodium silicate aqueous solution expressed by the chemical formula

$$Na_2O.n(SiO_2).x(H_2O)$$

wherein, n is 1 to 4 and x is 0 to 9 or sodium silicate in granule or powder form and its aqueous solution;
(b) a higher fatty acid or ester thereof with a carbohydrate or polyol or a composition where a polyoxyethylene is added to said ester;
(c) a pyridine compound or its salts having one or more carboxyl groups as a substituent; or
(d) an aromatic or aliphatic amine and its salts having one or more sulfonic acid groups or carboxyl groups;

spraying the sodium carbonate with hydrogen peroxide solution under flowing air, at a temperature from about 20° C. to about 80° C.; and stirring the reactants to thereby obtain sodium percarbonate; continuously drying the sodium percarbonate obtained; and wherein nonuniform particle size sodium percarbonate formed by the process is recycled for continuous manufacturing.

5,851,421

THICKENED HYPOCHLORITE SOLUTIONS WITH REDUCED BLEACH ODOR AND METHOD AND MANUFACTURE OF USE

Clement K. Choy, Alamo, and Aram Garabedian, Jr., Fremont, both of Calif., assignors to The Clorox Company, Oakland, Calif.
Continuation of Ser. No. 618,006, Mar. 18, 1996, abandoned, which is a continuation of Ser. No. 500,713, Jul. 11, 1995, abandoned, which is a continuation of Ser. No. 3,037, Jan. 11, 1993, abandoned. This application Oct. 26, 1997, Ser. No. 959,740
Int. Cl.^{6} C01B ***11/06;*** **D06L** ***3/06***

U.S. Cl. 252—187.26 **23 Claims**

1. A method of employing a thickened liquid bleach composition on a hard surface to be cleaned, the steps comprising:

forming the thickened liquid bleach composition to comprises:
- an aqueous solution of a hypochlorite of an alkali metal, the hypochlorite forming from about 0.1 to about 10% by weight of the composition,
- at least one cross-linked polyacrylate polymer in an amount of about 0.2 to 2.0% by weight of the composition for thickening the composition to a viscosity of at least about 20 centipoise (cps) at 25° C., for effectively reducing bleach odor when the composition is dispensed onto a surface to be cleaned, and still further for maintaining stability of the composition and providing a compositional yield value in the range of from bout 0.1 to about 100 dynes per cm^2, and
- a stabilizer in an amount effective for providing a composition pH above 12 for stabilizing the cross-linked polyacrylate in the presence of the hypochlorite wherein the composition is a solution that is free of suspended solids for use with a spray dispenser, has an ionic strength of less than about 0.75 g-ions/Kg, and contains essentially no chloride salt; and

directing the thickened liquid bleach composition in the form of a spray onto the surface to be cleaned, wherein said spray is a gas suspended liquid particle having a diameter greater than about 10 millimicrons.

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5,851,422

POLYMERIC MATERIAL FOR LIQUID CRYSTAL/POLYMER COMPOSITE FILM, RECORD DISPLAY MEDIUM, AND USE THEREOF

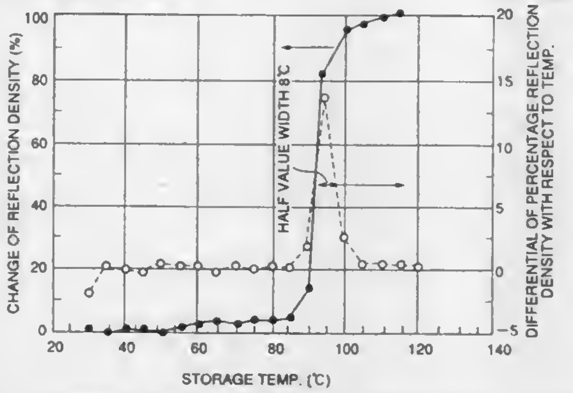
Wataru Saito; Atsushi Baba; Tadafumi Shindo; Naoki Shimada; Hidetoshi Ozawa; Yoshinori Kinase, all of Tokyo-To; Tisato Kajiyama, Fukuoka; Yasuhiro Imamura, Aichi-Ken; Norihiro Kaiya, Ishige-Machi, and Yoshitaka Goto, Yawara-Mura, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1997, Ser. No. 797,138

Claims priority, application Japan, Feb. 13, 1996, 8-049445

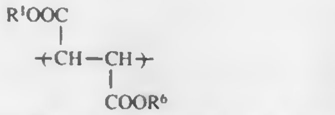
Int. Cl.^{6} C09K *19/52;19/12*

U.S. Cl. 252—299.01 **38 Claims**



1. A polymeric material for a liquid crystal/polymer composite film comprising a liquid crystal present in a polymer matrix, wherein the polymeric material has a glass transition temperature or decomposition temperature of 150° C. to 274.4° C. and is soluble in an organic solvent and insoluble in water, and

wherein the polymeric material comprises a polymer having repeating units represented by the following general formula (1):



(1)

$$-\!\!\left[\,\underset{}{\overset{R^1OOC}{\underset{}{CH}}}-\underset{COOR^6}{CH}\,\right]\!\!-$$

wherein R^1 and R^6 may be the same or different and represent a hydrocarbon group optionally having a hetero atom and/or a substituent.

5,851,423

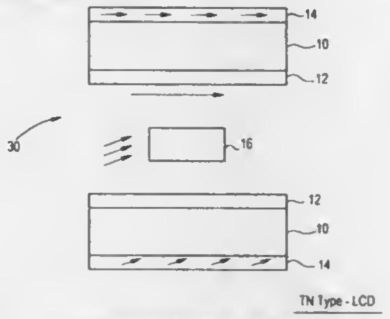
LIQUID CRYSTAL DISPLAY DEVICES INCORPORATING POLARIZERS COMPRISING LIQUID CRYSTAL POLYMERS

Chia-Chi Teng, Piscataway; Hyun Nam Yoon, New Providence, and Sunny Shen, Holmdel, all of N.J., assignors to Hoechst Celanese Corporation, Warren, N.J.

Filed May 22, 1997, Ser. No. 861,548

Int. Cl.^{6} C09K *19/00;19/52;* **G02F** *1/1335*

U.S. Cl. 252—299.1 **10 Claims**



TN Type - LCD

The arrows indicate the direction of the respective layers during the LCD construction.

1. A liquid crystal display device comprising a polarizer film, a conductive layer, an alignment layer and a phase compensation layer, wherein said polarizer film comprises a dichroic absorber and a thermotropic liquid crystal polyester, further wherein said polyester comprises repeat units corresponding to the formula:

$$-[P^1]_m-[P^2]_n-[P^3]_q-$$

wherein P^1, P^2 and P^3 represent monomeric moieties with P^1 being an aromatic hydroxy carboxylic acid, P^2 being an aromatic dicarboxylic acid and P^3 being a phenol; and m, n and q represent mole percent of the respective monomers ranging from 5–70 mole percent individually.

5,851,424

PHOTO CROSS-LINKABLE LIQUID CRYSTALLINE 1,4-DIOXANE-2,3 DIYL DERIVATIVES

Stephen Kelly, Beverley, England, assignor to Rolic AG, Zug, Switzerland

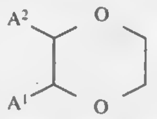
Filed Jul. 25, 1996, Ser. No. 686,974

Claims priority, application Switzerland, Jul. 28, 1995, 2219/95; European Pat. Off., May 9, 1996, 96107342

Int. Cl.^{6} C09K *19/34;19/52;* **C07D** *319/06;* **C07C** *69/75*

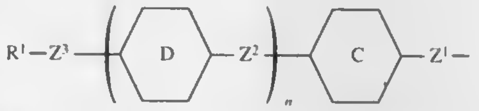
U.S. Cl. 252—299.61 **130 Claims**

1. A compound having the formula:



I

wherein A^1 and A^2 are residues of formula:



II

wherein

rings C and D each independently are pyridine-2,5 diyl, pyrimidine-2,5-diyl, trans-1,4-cyclohexylene, trans-1,3-dioxane-2,5-diyl or 1,4 phenylene unsubstituted or substituted with halogen, methyl or cyano;

Z^1 is—CH$_2$—(CH$_2$)$_m$—, —(CH$_2$)$_m$O—, —O(CH$_2$)$_m$—, —COO—, —OOC—, —(CH$_2$)$_m$COO— or —(CH$_2$)$_m$OOC—;

Z^2 is a single bond —CH$_2$CH$_2$—, —CH$_2$O—, —OCH$_2$—, —COO—, —OOC—, —(CH$_2$)$_4$—, —O(CH$_2$)$_3$ or —(CH$_2$)$_3$O—;

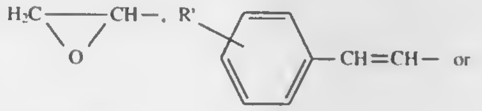
Z^3 is —(CY$_2$)$_m$—, —O(CY$_2$)$_m$—, —(CY$_2$)$_m$O—, —(CY$_2$)$_m$COO—, —(CY$_2$)$_m$OOC—, —(Si[(CH$_3$)$_2$]O)$_m$—, —OCH$_2$(Si[(CH$_3$)$_2$]O)$_m$Si[(CH$_3$)$_2$]CH$_2$O— or —NHCH$_2$(Si[(CH$_3$)$_2$]O)$_m$Si[(CH$_3$)$_2$]CH$_2$NH—;

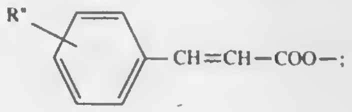
Y is hydrogen or fluorine;

n is 0, 1 or 2;

m is an integer from 1 to 16; and

R^1 is CH$_2$═CH—, CH$_2$═CH—COO—, CH$_2$═C(CH$_3$)—COO—, CH$_2$═C(Cl)—COO—, CH$_2$═C(Ph)—COO—, CH$_2$═CH—COO—Ph—, CH$_2$═CH—CO—NH—, CH$_2$═C(CH$_3$)—CONH—, CH$_2$═C(Cl)—CONH—, CH$_2$═C(Ph)—CONH—, CH$_2$═C(COOR')—CH$_2$—COO—, CH$_2$═CH—O—, CH$_2$═CH—OOC—, Ph—CH═CH—, CH$_3$—C(═NR')—, cis,trans HOO—CR'—CR'—COO—,





Ph is phenyl;

R' is lower alkyl; and

R" is methyl, methoxy, cyano or halogen;

with the proviso that R^1-Z^3 contains no —O—O— or —N—O— groups.

5,851,425

IMIDAZOTHIAZOLES

Richard Buchecker, Zürich, Switzerland; Willy Friedrichsen, Wankendorf, Germany; Jürg Fünfschilling, Basel, Switzerland, and Sandra Lüpfert, Kiel, Germany, assignors to Rolic AG, Zug, Switzerland

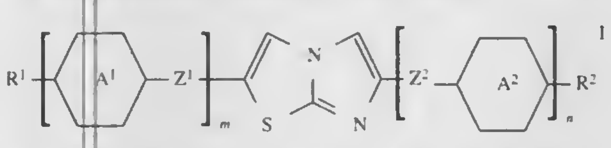
Filed Mar. 26, 1997, Ser. No. 824,375

Claims priority, application Switzerland, Apr. 4, 1996, 0887/96

Int. Cl.^{6} C09K *19/34;19/32;19/12;* **C07D** *515/02*

U.S. Cl. 252—299.61 **15 Claims**

1. An imidazothiazole derivative of the formula



I

in which the symbols m, n, R^1 and R^2 have the following meanings:

m and n are 0 or 1, with the proviso that m+n=1 or 2

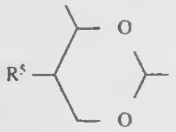
R^1 is R^3 or Q^1 or, if n is 0 and m is 1, also R^3-A^3-Z^3-,

R^2 is R^4 or Q^2 or, if n is 1 and m is 0, also R^4-A^4-Z^4,

and, independently of one another,

R^3 and R^4 are each on alkenyl or alkenyl radical incorporating at least three carbon atoms in which one methylene group or a plurality of non-neighboring methylene groups are optionally replaced by —O—, —COO— or —OOC—, and/or one hydrogen atom or a plurality of hydrogen atoms are replaced by fluorine or chlorine,

Q^1 and Q^2 are each one of the following chiral groups



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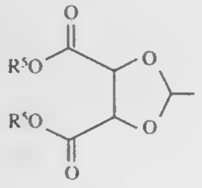

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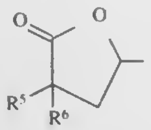

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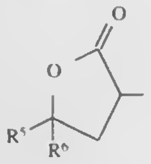

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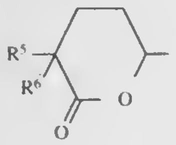

v

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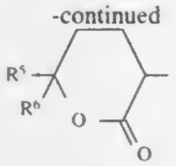

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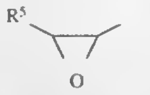


vii

in which R^5 and R^6 are each an alkyl or alkenyl radical in which one methylene group or a plurality of non-neighbouring methylene groups may be replaced by —O—, —COO— or —OOC—, and/or one hydrogen atom or a plurality of hydrogen atoms may be replaced by fluorine or chlorine, with the proviso that the oxygen atoms are not linked directly to the ring in Q^1 or Q^2.

A^1, A^2, A^3 and A^4 are trans-1,4-cyclohexylene or are 1,4-phenylene which is unsubstituted or monosubstituted or disubstituted by fluorine, chlorine, cyano or methyl, and

Z^1, Z^2, Z^3 and Z^4 are each a single bond, —CH$_2$—CH$_2$—, —O—CH$_2$—, —CH$_2$—O—, —COO—, —OOC—, —C≡C—, —(CH$_2$)$_4$—, —O(CH$_2$)$_3$—, —CH═CH—CH$_2$O—, —OCH$_2$—CH═CH—, —CH═CH—(CH$_2$)$_2$— or —(CH$_2$)$_2$—CH═CH—.

5,851,426

TWISTED NEMATIC LIQUID CRYSTAL COMPOSITION CONTAINING A SILACYCLOHEXANE COMPOUND

Takaaki Shimizu; Tatsushi Kaneko; Tsutomu Ogihara, and Mutsuo Nakashima, all of Niigata-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Toyko, Japan

Filed Jun. 12, 1997, Ser. No. 873,667

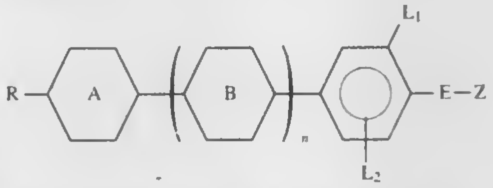
Claims priority, application Japan, Jun. 17, 1996, 8-155399

Int. Cl.^{6} C09K *19/34;19/30*

U.S. Cl. 252—299.61 **8 Claims**

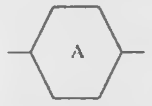
1. A twisted nematic liquid crystal composition comprising:

(a) an optically active silacyclohexane compound of the general formula (I)

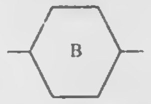


(I)

wherein R is a linear C$_{1-10}$ alkyl group, a branched C$_{3-8}$ alkyl group, a C$_{2-7}$ alkoxyalkyl group, a C$_{1-10}$ mono- or difluoroalkyl group, or a C$_{2-8}$ alkenyl group.



is a trans-1-sila-1,4-cyclohexylene or trans-4-sila-1,4-cyclohexylene group in which the silicon atom at the 1- or 4-position has a substituent comprising H, F, Cl or CH$_3$, or is a 1,4-cyclohexylene group.



is a trans-1-sila-1,4-cyclohexylene or trans-4-sila-1,4-cyclohexylene group in which the silicon atom at the 1- or 4-position has a substituent comprising H, F, Cl or CH$_3$, or is a 1,4-cyclohexylene or 1,4-phenylene group.

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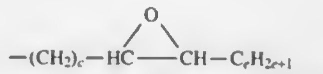
n is 0 or 1, E is —CH_2— or —O—, Z is a chiral group containing one or more chiral carbon atoms, and is selected from the group consisting of

$$—(CH_2)_a—C^*R_0G—C_bH_{2b+1} \qquad (12a)$$

wherein a is an integer of 0 to 8, b is an integer of 2 to 14, R_0 is hydrogen or a linear C_{1-6} alkyl group, G is CH_3, halogen, CF_3, CHF_2, CH_2F or CN, and C* is a chiral carbon atoms which has four different substituents, so that three substituents, R_0, G, and —C_bH_{2b+1} are different from each other,

$$—(CH_2)_c—CHF—(CH_2)_d—CHF—C_eH_{2e+1} \qquad (12b)$$

wherein c is an integer of 0 to 8, d is an integers of 0 to 6, and e is an integer of 1 to 10
and



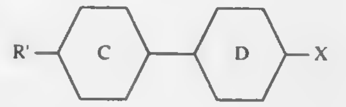
(12c)

$$—(CH_2)_c—HC\overset{O}{—}CH—C_eH_{2e+1}$$

wherein c is an integer of 0 to 8, and e is an integer 1 to 10, and L_1 and L_2 are each independently H or F,

the silacyclohexane compound containing at least one trans-1-sila-1,4-cyclohexylene or trans-4-sila-1,4-cyclohexylene group; and

(b) a liquid crystal composition comprising one or more compounds selected from the group consisting of the compounds of the general formula (2) to (7)



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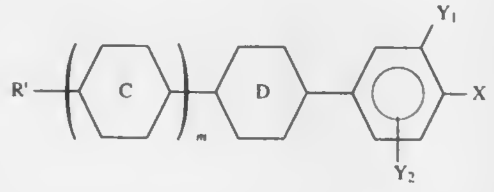

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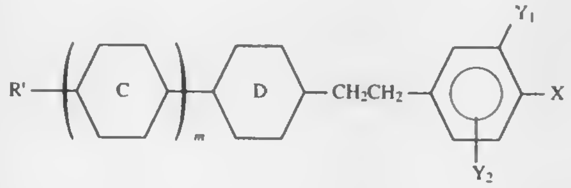

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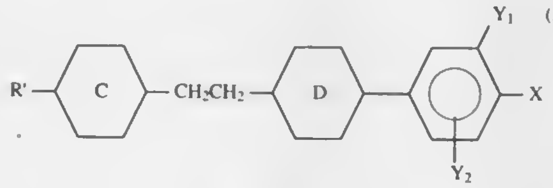

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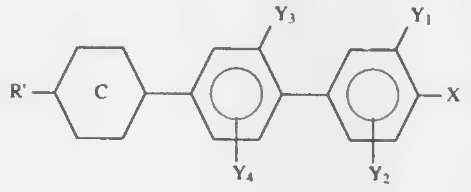

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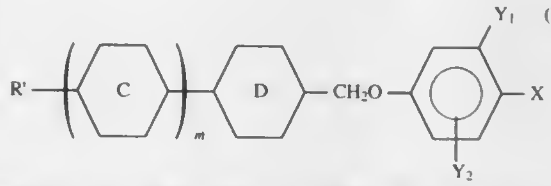
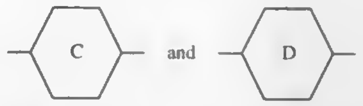


(7)

wherein R' is a C_{1-7} alkyl group, a C_{2-7} alkoxyalkyl group, a C_{2-7} mono- or difluoroalkyl group, or a C_{2-7} alkenyl group, m is 0 or 1,



are each independently a trans-1-sila-1,4-cyclohexylene, trans-4-sila-1,4-cyclohexylene or trans-1,4-cyclohexylene group.

X is H, CN, F, Cl, $OCHF_2$, OCF_3, CF_3, OC_kH_{2k+1} (wherein k is an integer of 1 to 5), C_kH_{2k+1}, $(O)_sC_pH_qF_r$ (wherein p is 2, 3 or 4, q and r are such integers that (q+r) is equal to (2p+1), and s is 0 or 1) or $(O)_sCY{=}CX_1X_2$ (wherein X_1 and Y are each H, F or Cl, X_2 is F or Cl, and s is 0 or 1), and

Y_1, Y_2, Y_3 and Y_4 are each independently H or F, at least one of the compounds being a compound containing a trans-1-sila-1,4-cyclohexylene or trans-4-sila-1,4 -cyclohexylene group.

5,851,427

PHOTOCROSS-LINKABLE NAPHTHYL DERIVATIVES

Stephen Kelly, Beverley, England, assignor to Rolic AG, Zug, Switzerland

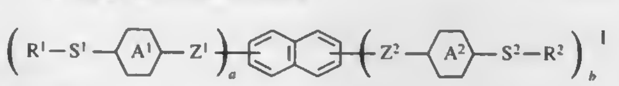
Filed Feb. 23, 1996, Ser. No. 606,102

Claims priority, application Switzerland, Mar. 3, 1995, 607/95

Int. Cl.^{6} C09K *19/32;19/52;* **C07C** *69/76;* **C07D** *303/12*

U.S. Cl. 252—299.62 **30 Claims**

1. A compound of the formula:



I

wherein

R^1 and R^2 each independently is a cross-linkable group;

S^1 and S^2 each independently is —$(CY_2)_m$—, —$O(CY_2)_m$—, —$(CY_2)_mO$—, —$(CY_2)_mCOO$—, —$(CY_2)_mOOC$—, —$(Si[(CH_3)_2]O)_m$—, —$OCH_2(Si[(CH_3)_2]O)_mSi[(CH_3)_2]CH_2O$—, or —$NHCH_2(Si[(CH_3)_2]O)_mSi[(CH_3)_2]CH_2NH$—;

Y is hydrogen, fluorine, or methyl;

a is 0 or 1;

b is 1 or 2,and a+b=2;

m is a whole number of from 1 to 16;

A^1 and A^2 each independently is pyridine-2,5-diyl, pyrimidine-2,5-diyl, trans-1,4-cyclohexylene, trans-1,3-dioxane-2,5-diyl, or 1,4-phenylene which is unsubstituted, mono-substituted or multiply-substituted with one or more substituents selected from the group consisting of halogen, cyano, methyl, methoxy, and acetyl; and

Z^1 and Z^2 each independently is a single bond, —CH_2CH_2—, —OCH_2—, —CH_2O—, —COO—, —OOC—, —$(CH_2)_4$—, —$O(CH_2)_3$—, or —$(CH_2)_3O$—.

5,851,428

PHOSPHOR AND MANUFACTURING METHOD THEREOF

Naotoshi Matsuda, Machida; Masaaki Tamatani, Fujisawa; Miwa Okumura, Kawasaki; Keiko Albessard, Yokohama; Kazuhiro Kawasaki, Fujisawa; Seiji Yokota; Shinjiro Motoki, both of Hiratsuka, and Yoshiaki Inoue, Atsugi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Neturen Co., Ltd., Tokyo, both of Japan

Filed Mar. 13, 1997, Ser. No. 816,675

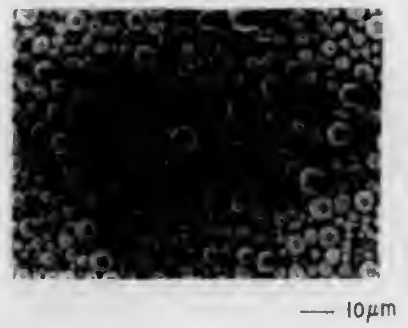
Claims priority, application Japan, Mar. 15, 1996, 8-059156

Int. Cl.^{6} C09K *11/08*

U.S. Cl. 252—301.4 R **9 Claims**

1. A method of manufacturing a phosphor comprising the steps of:

heating a raw material consisting of a phosphor powder containing a phosphor host material and an activator within a thermal plasma at a temperature which permits partially evaporating a



component of the raw material, followed by cooling to obtain spherical phosphor particles; and

subjecting the resultant spherical phosphor particles to a heat treatment at 1300° to 1600° C.

5,851,429

DISPERSIONS OF WAXY POUR POINT DEPRESSANTS

James Steven Magyar, Bedford, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 8, 1996, Ser. No. 629,211

Int. Cl.^{6} B01J *13/00;* **C10L** *1/18*

U.S. Cl. 252—311 **16 Claims**

1. A homogenized liquid pour point depressant composition, comprising:

(i) a pour point depressant comprising the reaction product of (a) an alkyl-substituted phenol wherein the alkyl group contains at least about 20 carbon atoms and (b) formaldehyde or a source therefor; said pour point depressant being a solid at 10° C. and having a number average molecular weight of at least 500 and up to about 500,000, and

(ii) an aqueous-glycol liquid medium in which the material of (i) is substantially insoluble at 10° C.;

wherein component (i) is dispersed in component (ii).

5,851,430

BITUMINOUS EMULSIONS

Maria Luisa Chirinos, Caracas, Venezuela; Alistair Stewart Taylor, Yateley, and Spencer Edwin Taylor, Camberley, both of United Kingdom, assignors to Intevep, S.A., Venezuela

Continuation of Ser. No. 474,253, Jun. 7, 1995, Pat. No. 5,670,087, which is a continuation of Ser. No. 217,221, Mar. 24, 1994, abandoned, which is a continuation of Ser. No. 53,299, Apr. 23, 1993, abandoned, which is a continuation of Ser. No. 561,264, Jul. 2, 1990, abandoned, which is a continuation of Ser. No. 266,259, Nov. 2, 1988, abandoned, which is a continuation of Ser. No. 147,022, Jan. 19, 1988, abandoned, which is a continuation of Ser. No. 726,666, Apr. 24, 1985, abandoned. This application Apr. 18, 1997, Ser. No. 844,318

Int. Cl.^{6} B01J *13/00;* **C08L** *95/00*

U.S. Cl. 252—311.5 **6 Claims**

1. A high internal phase ratio (HIPR) emulsion having a high degree of monodispersity of bitumen in water characterized by the fact that it contains 80% to 98% by weight bitumen, the emulsion comprising distorted bitumen droplets having a mean particle diameter in the range 2 to 50 microns wherein at least 80% of the oil droplets have a mean droplet diameter of less than or equal to 11 microns.

5,851,431

MICROEMULSION AND FIBER TREATMENT AGENT

Hiroki Ishikawa: Tsutomu Naganawa, and Isao Ona, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

Filed Apr. 30, 1997, Ser. No. 846,401

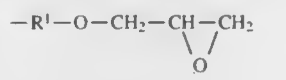
Claims priority, application Japan, Apr. 30, 1996, 8-134325

Int. Cl.^{6} B01J *13/00;* **D06M** *13/513*

U.S. Cl. 252—312 **3 Claims**

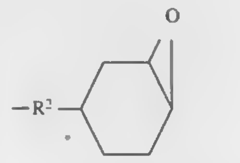
1. A microemulsion having a mean particle size of 0.15 microns or less comprising:

(1) an organopolysiloxane having at least one epoxy containing group per molecule, wherein said epoxy containing group is selected from the group consisting of:



$$—R^1—O—CH_2—\underset{\diagdown\, O\, \diagup}{CH—CH_2}$$

and



where

R^1 and R^2 are divalent hydrocarbon groups,

and wherein said organopolysiloxane also has carboxyl containing groups bonded to 0.5 to 15 mol % of silicon atoms in said organopolysiloxane, wherein said carboxyl containing groups are expressed by the formula

$$—R^3—COOR^4$$

where

R^3 is a divalent hydrocarbon group, and

R^4 is selected from the group consisting of hydrogen atoms, monovalent hydrocarbon groups and silyl groups expressed by the formula SiR^5_3, where R^5 indicates the same or different monovalent hydrocarbon groups;

(2) a nonionic surfactant; and

(3) water.

5,851,432

TRIPLE TAIL SURFACTANT FORMULATIONS FOR EMULSIFICATION OF HEAVY HYDROCARBONS

Ramesh Varadaraj, Flemington; Max Leo Robbins, South Orange, and Salvatore James Pace, Milford, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 20, 1997, Ser. No. 822,381

Int. Cl.^{6} B01J *13/00*

U.S. Cl. 252—314 **1 Claim**

1. A method for forming an emulsion of viscous hydrocarbon in water comprising:

(a) mixing a viscous hydrocarbon with a composition containing (i) an organic solvent and (ii) at least one triple tail surfactant represented by the formula

$$\{R(OCH_2CH_2)_n\}_3PO_4$$

where R is an alkyl group of from about 6 to about 20 carbon atoms and n is an integer of from 0 to 25 to form a treated hydrocarbon and then:

(b) mixing the treated hydrocarbon with water in an amount sufficient to form a hydrocarbon in water emulsion,

wherein the mixing of step (a) is at a temperature in the range of about 10° C. to about 400° C.,

wherein the mixing of step (b) is conducted at a temperature in the range of about 10° C. to 75° C., and

wherein the composition of step (a) contains 25 wt. % to 75 wt. % of surfactants, the balance being solvent.

5,851,433

METHOD OF AND COMPOSITION FOR BREAKING OIL AND WATER EMULSIONS IN CRUDE OIL PROCESSING OPERATIONS

Paul R. Hart, The Woodlands, Tex.; Jen-Chi Chen, Morrisville; Fu Chen, Newtown, both of Pa., and Thai H. Duong, Houston, Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Division of Ser. No. 657,120, Jun. 3, 1996, Pat. No. 5,693,216. This application Jul. 24, 1997, Ser. No. 899,526

Int. Cl.^{6} B01D *17/04*

U.S. Cl. 252—329 **12 Claims**

1. An oil and water emulsion breaking composition comprising an aqueous solution of 1 to 50% by weight a copolymer of tannin and a cationic monomer, 1 to 50% by weight a multivalent inorganic salt and 1 to 30% by weight a glycol.

5,851,434

KETONE-BASED SURFACTANT AND METHOD FOR TREATING INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL WASTE-WATER

Denise Christine Galante; Richard Charles Hoy; Albert Ferris Joseph, all of Charleston; Stephen Wayne King, Scott Depot; Charles Arnold Smith, Charleston, and Cheryl Marie Wizda, Cross Lanes, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 439,953, May 12, 1995, Pat. No. 5,744,064. This application Nov. 26, 1997, Ser. No. 978,920

Int. Cl.^{6} B01D *17/04;* **B01F** *17/00;* **D21C** *5/02;* **C11D** *3/16*

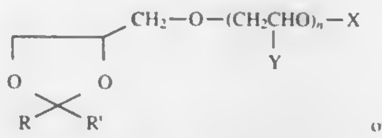
U.S. Cl. 252—358 **9 Claims**

1. A method for removing impurities associated with a splittable, nonionic surfactant in an aqueous stream, comprising:

(a) deactivating the surfactant to release the impurities from association with the surfactant by adjusting the pH of the aqueous stream to an acidic pH sufficient to split the surfactant irreversibly into a relatively water-insoluble fraction and a relatively water-soluble fraction, the released impurities and the water-insoluble fraction of the surfactant forming a relatively water-insoluble phase; and

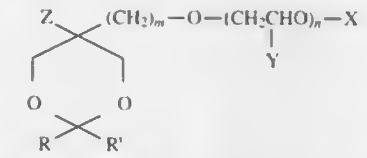
(b) removing at least a portion of the water-insoluble phase from the aqueous stream,

wherein the splittable, nonionic surfactant is represented by either of, or mixtures of, the formulas:



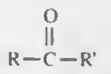
(I)

or,



(II)

of which R and R' are the residue of an organic compound derived from a saturated ketone of the formula



$$R-\overset{\displaystyle O}{\overset{\|}{C}}-R'$$

wherein R and R' may be the same or different and are residues of an organic compound which contains a total of about 8 to about 20 carbon atoms and which does not contain a beta-alkoxy substituent or other moieties or linkages which significantly interfere with the performance of the surfactant for its intended purpose: X is hydrogen or the residue of a hydrophobic end-cap; Y is hydrogen, methyl, ethyl, or mixtures thereof; Z is hydrogen, methyl, or ethyl; m is 0 or 1; and n is an integer of 1 to about 40.

5,851,435

CLEANING COMPOSITION CONTAINING BENZOTRIFLUORIDE

Hang-Chang Bobby Chen, Getzville, and Edward A. Rowe, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 10, 1996, Ser. No. 644,145

Int. Cl.^{6} B01F *1/00;* **C23G** *5/028;5/032*

U.S. Cl. 252—364 **20 Claims**

1. A composition comprising about 80 to about 99 wt % benzotrifluoride, about 1 to about 20 wt % of a monohydric alkanol from C_1 to C_4, and about 1 to about 20 wt % of a fluorocarbon having the general formula $C_mH_n F_{2m+2-n}$, where m is 4 to 8 and n is 1 to m/2 if m is even or (m+1)/2 if m is odd, and said composition is suitable for use as a cleaning composition.

5,851,436

NONAFLUOROMETHOXYBUTANE COMPOSITIONS

Abid Nazarali Merchant, Wilmington, Del.; Barbara Haviland Minor, Elkton, Md., and Shoeb Akherali Molyadi, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 19, 1997, Ser. No. 848,714

Int. Cl.^{6} C11D *7/50;* **C23G** *5/028;* **C09K** *5/00*

U.S. Cl. 252—364 **10 Claims**

1. An azeotropic or azeotrope-like composition comprising: 29–83 weight percent nonafluoromethoxybutane and 17–71 weight percent cyclopentane; 1–82 weight percent nonafluoromethoxybutane, 17–85 weight percent cyclopentane and 1–59 acetone; 1–98 weight percent nonafluoromethoxybutane, 1–60 weight percent cyclohexane and 1–98 weight percent acetone; 40–75 weight percent nonafluoromethoxybutane, 1–59 weight percent trans-1,2-dichloroethylene and 1–59 cyclopentane; or 40–70 weight percent nonafluoromethoxybutane, 15–50 weight percent trans-1,2-dichloroethylene, 1–25 weight percent cyclopentane and 1–10 weight percent methanol.

5,851,437

METHOD AND COMPOSITION FOR NEUTRALIZING STATIC ELECTRICITY

Bobby J. Brown, Dalton, Ga.; Bruce K. Fillipo, Hatboro, Pa.; David M. Polizzotti, Yardley, Pa., and Gregory J. Pomrink, Horsham, Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Apr. 22, 1997, Ser. No. 837,744

Int. Cl.^{6} H01B *1/00*

U.S. Cl. 252—500 **3 Claims**

1. A method of reducing a positive static electricity charge of air treated by an airwasher system which comprises adding a static electricity control additive consisting essentially of a water soluble negatively charged, polymeric species to water circulating in said air-washer system.

5,851,438

THICK FILM COMPOSITIONS FOR MAKING MEDICAL ELECTRODES

Man-Sheung Chan, Chapel Hill, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1997, Ser. No. 921,183

Int. Cl.^{6} H01B *1/22;1/24*

U.S. Cl. 252—514 **10 Claims**

1. A conductive composition for iontophoretic electrodes comprising, based on solids:

(a) 20–90% wt. of silver particles;

(b) 0–75% wt. of silver chloride particles;

(c) 0.25–10% wt. hydrophilic polymer; and

(d) 2–15% wt. hydrophobic thermoplastic polymer having a Tg above 40° C. said conductive composition further comprising a vehicle consisting of organic solvent or organic solvent mixtures.

5,851,439

COLORING LAYER COMPOSITION FOR CHROMATIC DEVICE AND METHOD OF PRODUCING CHROMATIC DEVICE BY USING SAME

Toshiki Inoue; Yoshifumi Kato; Hisashi Shiraki, and Takanori Murasaki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 295,241, Aug. 24, 1994, abandoned. This application May 16, 1996, Ser. No. 649,066

Claims priority, application Japan, Aug. 25, 1993, 5-210280; Apr. 28, 1994, 6-092453

Int. Cl.^{6} G02F *1/15*

U.S. Cl. 252—586 **10 Claims**

1. A coloring layer composition for a chromatic device comprising an oxide and peroxide of at least one of W, Nb, Mo and V as a solute dissolved in water and an organic solvent selected from the group consisting of an alkoxy alkanol and a dialkyl amide compatible with water, said solvent being vaporable by heat treatment and capable of inhibiting the decomposition of hydrogen peroxide and retarding the release of dissolved oxygen from the composition, and said composition being in the form of a solution.

5,851,440

SEMICONDUCTOR DEVICE AND LIQUID CRYSTAL DISPLAY APPARATUS USING THE SAME

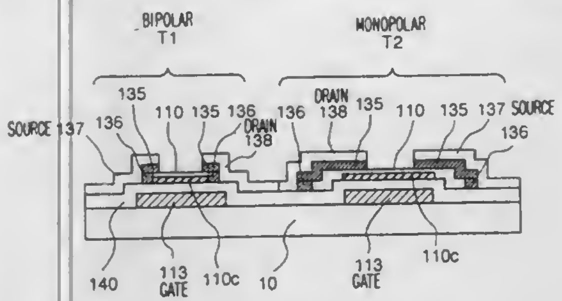
Takeshi Tanaka, Mobara, and Yoshiro Mikami, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1996, Ser. No. 717,236

Claims priority, application Japan, Sep. 20, 1995, 7-241227

Int. Cl.^{6} H01L *29/76*

U.S. Cl. 257—66 **21 Claims**



1. A liquid crystal display apparatus, comprising:

a pair of substrates, at least one of said pair of substrates being transparent, a liquid crystal layer formed by filling a liquid crystal material between said pair of substrates;

one of said pair of substrates comprising a display region having a plurality of first semiconductor elements disposed on a matrix and a peripheral circuit region having a plurality of second semiconductor elements and being disposed on the periphery of said display region to drive said plurality of first semiconductor elements;

each of said plurality of second semiconductor elements in said peripheral circuit region having a bipolar semiconductor element and a monopolar semiconductor element; and

wherein said first and second semiconductor elements are thin film semiconductor elements, respectively, and said bipolar and monopolar thin film semiconductor elements, composing said second semiconductor element, have a gate electrode formed on said substrate and a semiconductor layer formed on the gate electrode through an insulator film, said semiconductor layer having a p^{+}-zone and an n^{+}-zone respectively disposed adjacent both sides of said gate electrode.

5,851,441

SYSTEM FOR CONTROLLING HYDRAULIC DRIVE FOR COOLING FAN IN COOLING TOWER

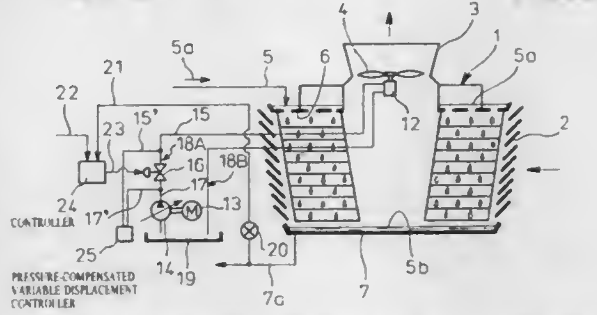
Kanji Kato, Chiba, and Hiroshi Watanabe, Yotsukaido, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 9, 1996, Ser. No. 729,029

Claims priority, application Japan, Oct. 30, 1995, 7-281611

Int. Cl.^{6} B01F *3/04*

U.S. Cl. 261—26 **6 Claims**



1. A system for controlling a hydraulic drive for a cooling fan in a cooling tower, comprising a hydraulic motor connected to the cooling fan, a variable displacement pump connected to said hydraulic motor via a hydraulic pressure supply line and driven by a motor, a flow control valve arranged in said hydraulic pressure supply line, a temperature detector for detecting sapply water temperature in the cooling tower, a controller for controlling said flow control valve based on a difference between a temperature detected by said temperature detector and a preset temperature and a pressure-compensated variable displacement regulator for controlling capacity of the variable displacement pump to maintain irreducibly minimum pressure difference between pressure on upstream side and pressure on downstream side of the flow control valve in said hydraulic pressure supply line.

5,851,442

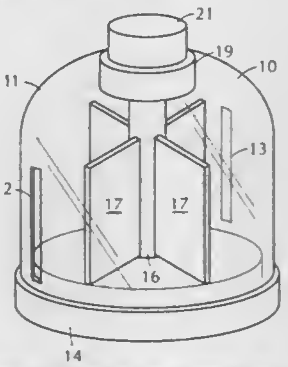
BUTTON-ACTUATED AIR FRESHENER

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Filed Jun. 13, 1997, Ser. No. 876,190

Int. Cl.^{6} B01D *47/00*

U.S. Cl. 261—30 **10 Claims**



1. A button actuated air freshener comprising:

A. a dome provided with a cylindrical shell having at least one vent mounted on a base;

B. a turret rotatable within the dome having a vertical shaft coaxial with the shell, and an array of wings radiating from the shaft, each formed of a panel of porous material impregnated with a fragrance oil; and

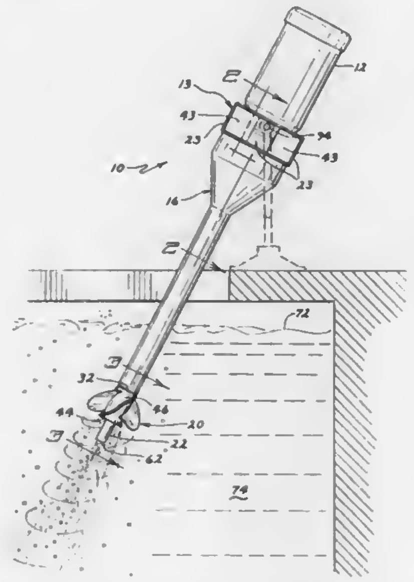
C. a spring-biased button mounted on top of the dome operatively coupled to the shaft of the turret whereby each time the button is depressed, this action causes the turret to spin within the dome to create an air vortex therein that acts to volatilize fragrance oil on surfaces of the wings to produce an aromatic vapor that is discharged through said vent in the shell into the atmosphere of an enclosure in which the air freshener is installed to mask unpleasant odors in this atmosphere.

whereby repeated depression of the button causes the turret to rotate at high speed to increase the production of aromatic vapor.

5,851,443
AERATOR WITH DUAL PATH DISCHARGE

Richard B. Rajendren, 1013 Park La., Bell Plaine, Minn. 56011
Filed Dec. 6, 1996, Ser. No. 760,925
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—87 3 Claims



1. An aerator for mixing an ambient gas with a liquid, comprising:

a motor having a shaft;

blower means operatively connected to said motor;

a central shaft coupled to said motor shaft whereby when said motor is operating said central shaft rotates;

an aerator housing enclosing said central shaft and communicating with said blower means, said housing and said rotating central shaft defining a first air flow pathway therebetween, said air flow pathway having an air intake and an air outlet and said rotatable central shaft reducing friction between said shaft and air moving therealong;

a propeller means connected to said central shaft to rotate therewith for mixing the ambient gas with the liquid adjacent said air outlet;

a bearing having a bearing aperture, said central shaft rotatably mounted in said bearing aperture, and said bearing attached to said housing;

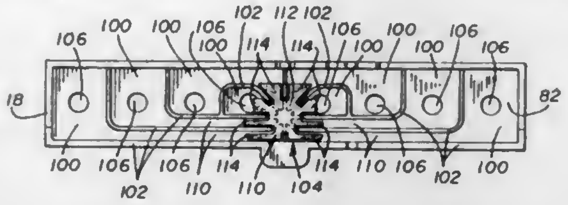
said bearing further comprising a plastic body having a central ring with said bearing aperture centrally located therein and a plurality of support spokes extending outward from said ring and positioned to engage said housing; and

said ring, said spokes and said housing defining a plurality of spaced apart air flow openings therebetween, said air flow openings allowing the free flow of air through said bearing.

5,851,444
AIR-TREATING APPARATUS HAVING IMPROVED WATER DISTRIBUTION TRAY

Martin A. Hansell, Jr., Marietta, Ohio, and Earl K. Lewis, II, Williamstown, W. Va., assignors to Skuttle Manufacturing Company, Marietta, Ohio
Filed Mar. 13, 1997, Ser. No. 816,552
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—106 7 Claims

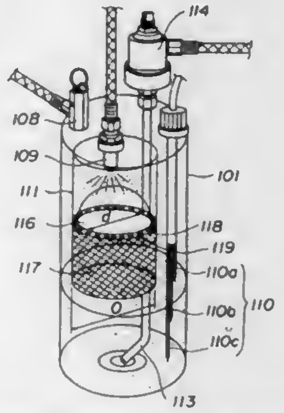


1. A water distribution tray for substantially uniformly distributing water from a single source to a plurality of preselected delivery sites regardless of the flow rate of the water, said tray comprising a bottom wall having a plurality of openings in fluid communication with said preselected delivery sites; a liquid reception area disposed below said single source of water; a plurality of channels equal to the number of said openings in said bottom wall, each said channel being in fluid communication between said liquid reception area and one of said openings; and a wick disposed in said liquid reception area and in direct fluid communication with said single source such that said water from said single source first contacts said wick and is at least partially absorbed thereby to direct said water into at least two of said channels in a substantially uniform manner.

5,851,445
APPARATUS FOR MANUFACTURING CARBONATED WATER

Yasuo Kazuma, Ohsato-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan
Division of Ser. No. 655,058, May 29, 1996, Pat. No. 5,681,507. This application Jul. 28, 1997, Ser. No. 901,789
Claims priority, application Japan, May 30, 1995, 7-154133; May 30, 1995, 7-154134; May 31, 1995, 7-157185; May 31, 1995, 7-157186; May 31, 1995, 7-157187
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—103 2 Claims

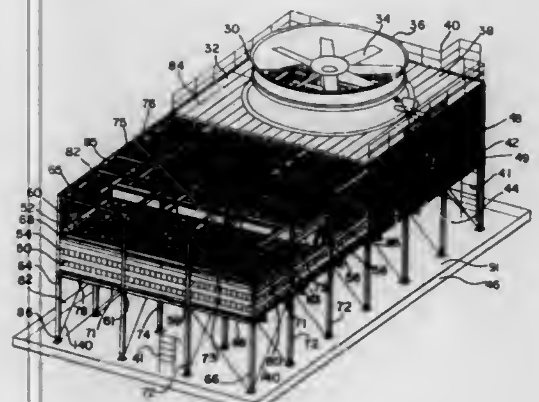


1. An apparatus for manufacturing carbonated water by contact between carbonic acid gas and water introduced into a carbonic acid gas pressure container, said apparatus comprises a cylindrical mist chamber arranged in the carbonic acid gas pressure container and having its top and peripheral walls hermetically sealed, said cylindrical mist chamber being provided with a spray at the top for introducing water therein and a semispherical projection having a diameter smaller than the inner diameter of the cylindrical mist chamber at the bottom, a coupling member for connecting said semispherical projection and the peripheral wall of the cylindrical mist chamber, said coupling member being provided with a large number of small holes for allowing water to pass therethrough, and a cylindrical metal network having open top and bottom and arranged under the coupling member so that water drops discharged from the spray collide with the surface of the semispherical projection and are atomized and dispersed in the cylindrical mist chamber to sufficiently get in touch with carbonic acid gas before they flow down through the small holes and the cylindrical metal network to the bottom of the carbonic acid gas pressure container.

5,851,446
RIGID COOLING TOWER

Charles J. Bardo, Lake Kiowa; Jesse Q. Seawell; Toby L. Daley, both of Fort Worth; James A. Bland, Rhome, and Gregory S. Mailen, Waxahachie, all of Tex., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.
Continuation-in-part of Ser. No. 711,261, Sep. 9, 1996. This application Feb. 4, 1997, Ser. No. 800,649
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—111 22 Claims



17. A cooling tower comprising:

a plurality of frame members made of a fiber reinforced material and including a first column, a second column and a beam extending between the first and second columns;

a fluid distribution system for distributing fluid within the cooling tower;

heat transfer material through which air and fluid from the fluid distribution system may pass;

the first and second columns and the beam having mounting surfaces;

first and second mounting members, the first mounting member having a mounting surface facing the mounting surfaces of the beam and the first column and the second mounting member having a mounting surface facing the mounting surfaces of the beam and the second column;

a plurality of mechanical fasteners, at least one mechanical fastener extending from each mounting member to the adjacent column, at least one mechanical fastener extending from each mounting member to the beam; and

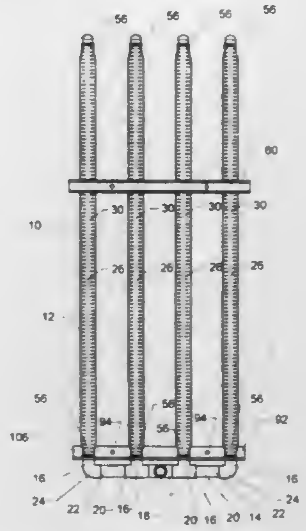
bonding material disposed between the mounting surfaces of the mounting members and the mounting surfaces of the columns and beam;

wherein at least one mounting member has a shear strength greater than 2500 pounds per square inch.

5,851,447
FLOOR-MOUNTED AERATION SYSTEM

Robert R. Tyer, Willis, Tex., assignor to Aer Research, Inc., Humble, Tex.
Continuation-in-part of Ser. No. 664,405, Jun. 17, 1996, abandoned. This application Aug. 22, 1997, Ser. No. 916,878
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—122.1 3 Claims



1. An aeration system for a wastewater treatment plant, comprising:

a manifold for receiving compressed air, the manifold being height-adjustably attached to a wastewater treatment basin floor;

the manifold having a plurality of horizontal outlets;

each outlet having a long, linear, tubular aerator extending therefrom;

each aerator including a membrane support tube and a perforated membrane sleeved over the membrane support tube; and

at least one intermediate support for the aerators remote from the manifold, the intermediate support being height-adjustably attached to the wastewater treatment basin floor.

5,851,448
SINGLE GUIDE MEMBER RETRIEVABLE AERATION SYSTEM

Robert R. Tyer, Willis, Tex., assignor to AerResearch, Inc., Humble, Tex.
Continuation-in-part of Ser. No. 746,299, Nov. 8, 1996, Pat. No. 5,690,864, which is a continuation-in-part of Ser. No. 664,405, Jun. 17, 1996, abandoned. This application Nov. 25, 1997, Ser. No. 977,571
Int. Cl.⁶ B01F *3/04*

U.S. Cl. 261—122.1 7 Claims

1. An aeration system for a wastewater treatment plant, comprising:

an air supply pipe for receiving compressed air;

the air supply pipe having a plurality of outlet;

a flexible air supply conduct extending from each outlet to an elongate aerator having ends;

an end fitting connected to the aerator at each end thereof, with a means in each end fitting for defining an attachment location;

a yoke longer than the aerator and having two ends, one end fixed to each attachment location;

the yoke also having a central yoke ring;

a guide member having lower and upper ends, the guide member being loosely interfitted with the yoke ring to permit relative movement between the aerator and guide member;

the lower end of the guide member being fixed with respect to the bottom of the wastewater treatment basin;

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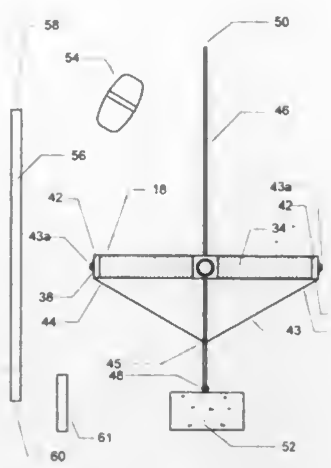


the upper end of the guide member being attached to a stop member; and

a space for the aerator, the spacer having upper and lower ends, the upper end contacting the stop member and the lower end contacting the yoke ring, such that the aerator is positioned away from the stop member by the space, with the aerator being repositionable by removing the spacer from the guide member or by changing the length of the spacer.

5,851,449

METHOD FOR MANUFACTURING A SURFACE-MOUNTED TYPE OPTICAL SEMICONDUCTOR DEVICE

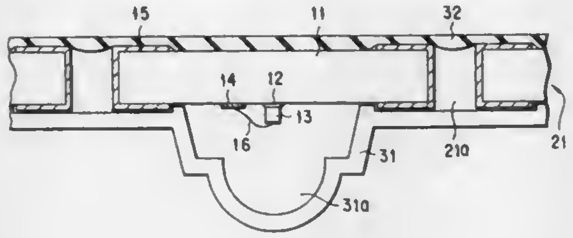
Tuguo Uchino, Yokohama; Iwao Matumoto, Fujisawa, and Hiroshi Nagasawa, Kitakyushu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1996, Ser. No. 721,015

Claims priority, application Japan, Sep. 27, 1995, 7-249532

Int. Cl.^{6} B29D *11/00*

U.S. Cl. 264—1.7 **22 Claims**



1. A method for manufacturing a surface-mounted optical semiconductor device, comprising the steps of:

mounting an optical semiconductor element on each of a plurality of insulating substrates;

adhering a sealing mold for transfer molding, having a through-gate structure and a dome-shaped portion, to a major surface of each of said insulating substrates;

continuously injecting a liquid epoxy resin having a melt viscosity of approximately 100 to 200 Pa·s into the dome-shaped portion of said sealing mold;

hardening said liquid epoxy resin by thermal curing to form a projected, domed lens on said optical semiconductor element; and

removing said sealing mold, and separating said insulating substrates from one another, wherein each insulating substrate includes said optical semiconductor element.

5,851,450

APPARATUS AND METHOD FOR USE IN APPLYING PARTICLES TO AN EXTERNAL LAYER OF UNCURED RESIN OF A COATING OF AN OPTICAL FIBRE UNIT

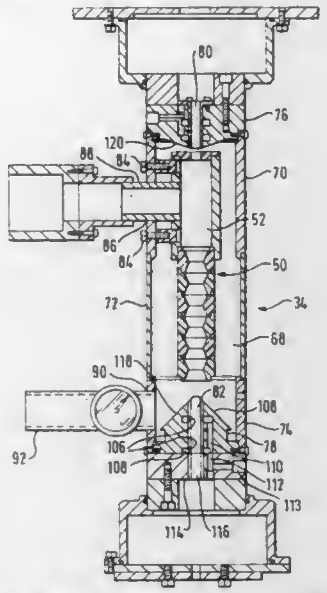
Andrew James Rennie, Old Harlow, and Thomas Curley, London, both of England, assignors to Pirelli General plc, United Kingdom

Filed Jul. 30, 1996, Ser. No. 688,475

Claims priority, application United Kingdom, Aug. 3, 1995, 9515910

Int. Cl.^{6} B29D *11/00*

U.S. Cl. 264—1.28 **68 Claims**



1. Optical fibre particle applying apparatus in which particles are applied to an external layer of uncured resin material of a coating of an optical fibre unit comprising at least one optical fibre, said apparatus comprising passage defining means defining an axially extending through-passage having upstream and downstream ends through which, in use, such an optical fibre unit is passed from the upstream end to the downstream end, said passage defining means having an inlet for admitting fluidised particles into said through-passage at one end of said passage and said through-passage being provided with surface means intermediate said ends of said through-passage and inwardly of said passage for deflecting said particles and for generating turbulence in such fluidised particles in said through-passage.

5,851,451

PRODUCTION OF MICROSPHERES

Nobuyuki Takechi; Seiji Ohtani, and Akihiro Nagai, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 13, 1996, Ser. No. 766,611

Claims priority, application Japan, Dec. 15, 1995, 7-327690

Int. Cl.^{6} A61K *9/16;9/50;9/52*

U.S. Cl. 264—4.1 **14 Claims**

1. A method of producing microspheres comprising a physiologically active substance and a biodegradable polymer, which comprises subjecting a w/o/w emulsion or o/w emulsion wherein said physiologically active substance is in an inner aqueous phase and said biodegradable polymer is in an external oil phase to an in-water drying method under the following conditions:

1) the amount of microspheres per m^3 in an external aqueous phase is about 0.1 to about 500 kg,

2) the square root of the area (unit: m^2) of the liquid surface in contact with the gas phase is about 0.2 to about 4.5 per the cube root of the volume (unit: m^3) of the external aqueous phase,

3) the w/o/w emulsion or o/w emulsion is replaced at a replacement frequency of about 0.01 to about 10 times/minute,

4) a gas is blown toward the w/o/w emulsion or o/w emulsion so that the gas transfer rate near the liquid surface is about 10 to 300 m/second, and

5) the gas is replaced at a replacement frequency of not less than about 0.5 times/minute.

5,851,452

PROCESS FOR COATING DROPLETS OR NANOMETRIC PARTICLES

José Alberto Vallet Mas, Barcelona; Francisco Javier Galan Valdivia, Badalona, and Nuria Carreras Perdiguer, Caldes de Montbui, all of Spain, assignors to Laboratorios Cusi, S.A., Barcelona, Spain

PCT No. PCT/ES94/00085, § 371 Date Jul. 20, 1996, § 102(e) Date Jul. 20, 1996, PCT Pub. No. WO95/31975, PCT Pub. Date Nov. 30, 1995

PCT Filed Sep. 30, 1994, Ser. No. 586,731

Claims priority, application Spain, May 20, 1994, 9401121

Int. Cl.^{6} A61K *9/51*

U.S. Cl. 264—4.6 **15 Claims**

1. A process for coating droplets or solid particles with sizes below 1 micron which contain a chemically or biologically active substance in which the coating is comprised of one or more biocompatible polymers, characterized by;

preparing a first phase comprising a fine dispersion of droplets or solid particles in a solution of a solvent and a non solvent for the polymer forming the coating and containing a surfactant or suspending agent,

preparing a second phase which contains the polymer or mixture of polymers dissolved in a solvent or mixture of miscible solvents,

mixing the two phases continuously in a mixing zone without agitation or ultrasonication while maintaining a constant ratio of the two phases and a constant volume of the two phases in the mixing zone, and

spraying the resulting mixture into an evaporation system where it is converted into a pulverized form by elimination of the solvent under reduced pressure so that the polymer is deposited around the droplets or particles.

5,851,453

METHOD AND APPARATUS FOR THE FORMATION OF PARTICLES

Mazen Hanna, Leeds, and Peter York, Ilkley, W. Yorkshire, both of Great Britain, assignors to University of Bradford, West Yorkshire, England

PCT No. PCT/GB94/01426, § 371 Date Jan. 31, 1996, § 102(e) Date Jan. 31, 1996, PCT Pub. No. WO95/01221, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 30, 1994, Ser. No. 578,700

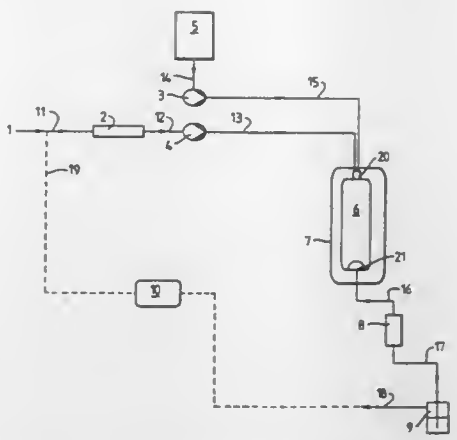
Claims priority, application United Kingdom, Jul. 1, 1993, 9313642.2

Int. Cl.^{6} B29B *9/10*

U.S. Cl. 264—5 **25 Claims**

1. Apparatus for use in the formation of a particulate product, comprising a particle formation vessel; means for controlling the temperature in said vessel; means for controlling the pressure in said vessel; and means for the co-introduction, into said vessel, of a supercritical fluid and a vehicle containing at least one substance in solution or suspension, such that dispersion and extraction of the vehicle may occur substantially simultaneously by the action of the supercritical fluid.

16. Method for the formation of a particulate product which comprises the co-introduction of a supercritical fluid and a vehicle containing at least one substance in solution or suspension into a particle formation vessel, the temperature and pressure in which are controlled, such that dispersion and extraction of the vehicle occur substantially simultaneously by the action of the supercritical fluid.



5,851,454

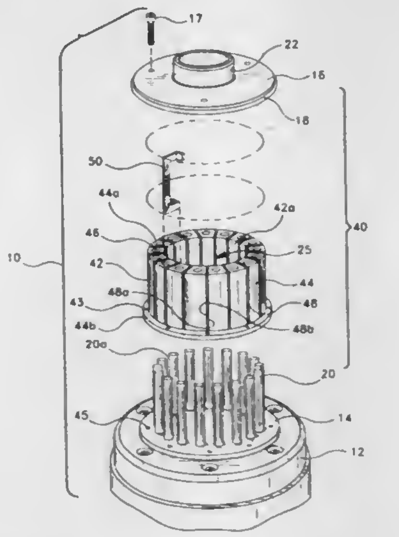
SPINNER HEAD HAVING FLOW RESTRICTING INSERTS

William F. Rutkowski, Arlington; Steven E. Frisbee, Reston, and Mesfin B. Abdi, Arlington, all of Va., assignors to Fuisz Technologies, Ltd., Chantilly, Va.

Filed Jun. 13, 1997, Ser. No. 874,215

Int. Cl.^{6} B29C *67/00*

U.S. Cl. 264—8 **36 Claims**



1. A spinner head comprising:

a base;

a cover aligned with and spaced from said base;

a plurality of discrete elongate spaced heating elements positioned between said base and said cover and defining a perimetrical configuration;

said base, said cover and said heating elements mutually defining a chamber for accommodating therein a solid non-solubilized feedstock material capable of undergoing physical transformation with the application of heat and force; and

restricting means for restricting expulsion of said feedstock material from said chamber, said restricting means including a plurality of plates, each plate being removably insertable longitudinally in a space between said heating elements.

22. A flow restricting device for a use in a spinner head having an annular slotted processing wall through which feedstock material is expellable from a central chamber comprising:

a substantially elongate plate having a pair of opposed sides, said plate being insertable in said slot, at least one of said

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plate sides including a plurality of radially extending grooves and, said grooves forming a pathway for said expelled feedstock material.

5,851,455

PROCESS AND DEVICE FOR FITTING EXTRUDATES WITH SECURING COMPONENTS OR THE LIKE

Ralf Sehr, Losheim, and Stefan Kotz, Merzig, both of Germany, assignors to Saar-Gummiwerk GmbH, Wadern, Germany

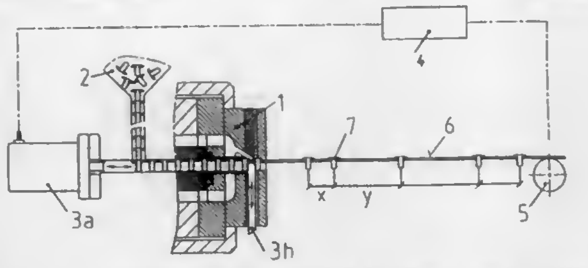
PCT No. PCT/DE96/00526, § 371 Date Dec. 24, 1996, § 102(e) Date Dec. 24, 1996, PCT Pub. No. WO96/33854, PCT Pub. Date Oct. 31, 1996

PCT Filed Mar. 21, 1996, Ser. No. 765,323

Claims priority, application Germany, Apr. 26, 1995, 195 15 334.0

Int. Cl.^{6} B29C *47/02;47/92*

U.S. Cl. 264—40.1 **3 Claims**



1. A process for serial assembly of extrudates with securing elements comprising controlling a feeder unit containing the securing elements with a control unit, feeding securing elements with the feeder unit during extrusion to an extrusion tool, and inserting and anchoring the securing elements in the extrudate during the extrusion.

5,851,456

METHOD FOR MANUFACTURING A MULTI-LAYER PLASTIC PRODUCT

Tatsuhiko Mukawa, Tokyo; Tatsuya Nakagawa, Matsudo, and Yasuo Ezaki, Nitta-machi, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, and Excell Corporation, Chiba-Ken, both of Japan

Continuation of Ser. No. 318,015, Oct. 4, 1994, abandoned. This application Mar. 28, 1997, Ser. No. 825,416

Claims priority, application Japan, Oct. 4, 1993, 5-248301

Int. Cl.^{6} B29C *45/14*

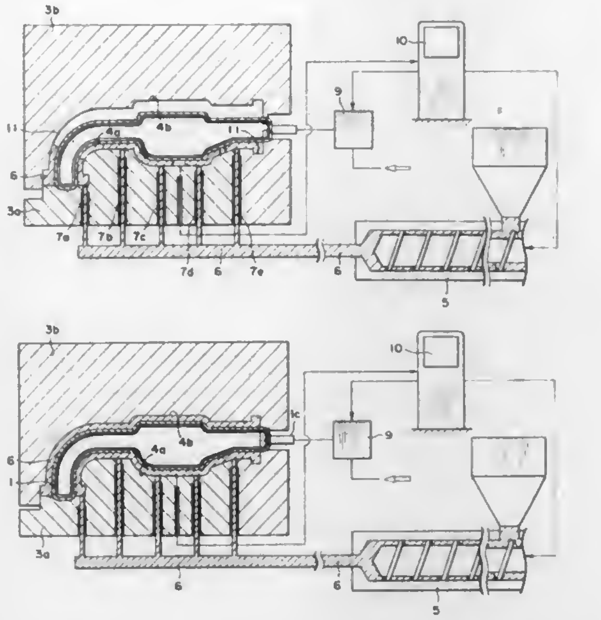
U.S. Cl. 264—40.1 **10 Claims**

1. A method for manufacturing a multi-layer thermoplastic product using a mold comprising a plurality of mold segments, said mold defining a mold cavity having a desired shape when assembled and including a plurality of supply ports in communication with said mold cavity, comprising the steps of:

(1) assembling said plurality of mold segments to thereby define said mold cavity with a blow-molded hollow plastic core located in position inside said mold cavity, said core being held in position away from a surface of said mold defining said mold cavity excepting at a plurality of core end portions, each of which portions being in engagement with a corresponding, predetermined portion of said mold;

(2) supplying a molten thermoplastic material under pressure into an open gap between said core and the surface of said mold defining said mold cavity through said plurality of supply ports;

(3) setting a pressure of said molten thermoplastic material supplied into said gap at a predetermined shaping pressure, which is approximately equal to or less than 200 kg/cm^2, to form an outer layer having a desired shape on said core to thereby form a multi-layer plastic product; and during step (2), regulating an amount of said molten thermoplastic material supplied by any one of said plurality of supply ports such that a surface area of a portion of said outer layer formed by said molten thermoplastic material and supplied by a single port does not exceed approximately 400 cm^2.



5,851,457

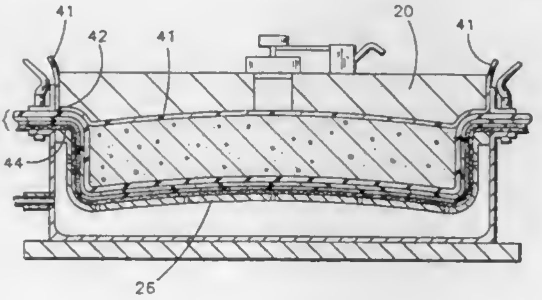
METHOD OF FORMING AN UPHOLSTERED FOAM PLASTIC SEAT CUSHION

Gordon J. Peterson, Rockford; Dale M. Groendal, Grand Rapids, and Edward H. Punches, Wyoming, all of Mich., assignors to Steelcase INC., Grand Rapids, Mich.

Filed Jun. 28, 1996, Ser. No. 669,774

Int. Cl.^{6} B29C *44/06;44/12*

U.S. Cl. 264—46.5 **3 Claims**



1. A method for making an upholstered article comprising:

positioning an air-impermeable cover over a mold cavity of a molding apparatus;

applying a vacuum to the cover through a plurality of apertures in walls defining the mold cavity to cause the cover to conform to the shape of the mold cavity;

depositing a foam precursor into the mold cavity in which the cover is conformedly positioned;

positioning an air-impermeable scrim over the foam precursor;

allowing the foam precursor to expand into the volume of the mold cavity to form an upholstered article having a foam core, an integrally attached cover, and an integrally attached scrim; and

removing the upholstered article from the mold cavity, permeating the scrim, and applying a vacuum to the scrim side of the upholstered article to crush the foam core.

5,851,458

METHOD OF FORMING A THERMAL INSULATING DEVICE

Rik De Vos, Varese, Italy; Guy Leon Jean Ghislain Biesmans, Everberg, and Alan James Hamilton, Leefdaal, both of Belgium, assignors to Imperial Chemical Industries PLC, Millbank, United Kingdom

Filed Dec. 5, 1996, Ser. No. 761,619

Claims priority, application European Pat. Off., Dec. 11, 1995, 95203438

Int. Cl.^{6} B29C *44/06;44/12*

U.S. Cl. 264—46.5 **10 Claims**

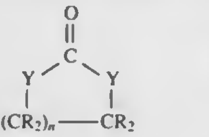
1. Method for making a thermal insulating unit or a device containing such a unit, said unit comprising a core of open celled organic foamed insulating material located between outer and inner walls of the unit, comprising the steps of

a) foaming of insulating material in a cavity between the outer and inner walls of the unit;

b) evacuating the foamed cavity;

c) refilling the foamed cavity with an insulating gaseous composition and,

d) sealing the cavity wherein the open celled organic foamed insulating material comprises open celled rigid polyurethane or urethane-modified polyisocyanurate foam prepared by reacting an organic polyisocyanate with a polyfunctional isocyanate-reactive composition in the presence of an isocyanate-reactive cyclic compound of formula (I)



(I)

wherein in formula (I)

Y is O or NR^1 where each R^1 independently is a lower alkyl radical of C_1–C_6 or a lower alkyl radical substituted with an isocyanate-reactive group; each R independently is hydrogen, a lower alkyl radical of C_1–C_6 or $(CH_2)_m$—X wherein X is an isocyanate-reactive group which is OH or NH_2 and m is 0, 1 or 2, and n is 1 or 2; with the proviso that at least one of R^1 or R is or comprises an isocyanate-reactive group, and

wherein the method is performed in the presence of a cell opening agent selected from the group consisting of fatty acids, fatty acid amines, fatty acid amides and fatty acid esters.

5,851,459

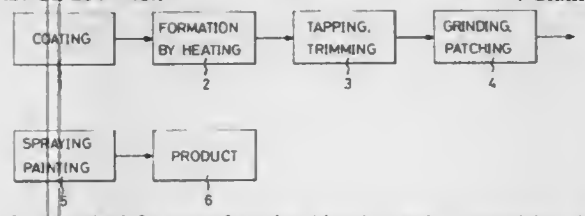
METHOD FOR MANUFACTURING CRANKS FOR BICYCLES

Jason Chen, No. 6, Lane 468, Section 4, Chang Shui Road, Pi Tou Hsiang, Chang Hua Hsien, Taiwan

Continuation-in-part of Ser. No. 829,036, Mar. 31, 1997, abandoned. This application Dec. 12, 1997, Ser. No. 989,679

Int. Cl.^{6} B29C *44/06;44/12*

U.S. Cl. 264—46.7 **4 Claims**



1. A method for manufacturing bicycle cranks, comprising the following steps of:

(a) applying a layer of foamable material on an outer surface of a metallic member which has two holes respectively defined in two ends thereof;

(b) applying a layer of composite preimpregnated material on the layer of foamable material;

(c) mounting the metallic member of step (b) in a mold including an upper mold section and a lower mold section;

(d) heating the mold to make the foamable material foam, thereby achieving formation of a semi-product crank by means of formation of the foamable material, the composite preimpregnated material, and the metallic member;

(e) tapping the holes of the semi-product crank and trimming the semi-product crank; and

(f) grinding and patching the semi-product crank to make an outer surface of the crank smooth.

5,851,460

PROCESS FOR THE MANUFACTURE OF A CERAMIC FOAM PART

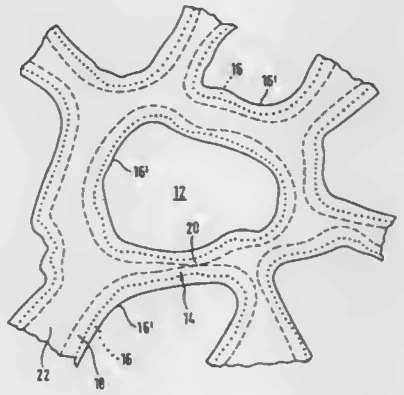
Henri Bauer, Esslingen; Reiner Buck, Stuttgart; Antje Seitz, Moeglingen, and Rainer Tamme, Ostfildern, all of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Germany

Continuation of Ser. No. 389,681, Feb. 15, 1995, abandoned. This application Feb. 11, 1997, Ser. No. 799,643

Claims priority, application Germany, Feb. 21, 1994, 44 05 331.2

Int. Cl.^{6} B29C *65/00;* **C04B** *40/00;* **B05D** *5/00*

U.S. Cl. 264—43 **13 Claims**



1. Process for manufacturing a ceramic part, comprising the steps of:

forming and sintering a ceramic material comprising non-oxidic ceramic components including at least one of a carbide and a nitride to obtain a formed body of an open cell porous ceramic foam material having pores surrounded by webs to provide a flow path for a transport medium, said formed body having a contour which is close to a final contour with a desired dimension of said ceramic part;

said contour of said formed body being defined by an outer surface thereof; and

oxidizing the at least one of a carbide and a nitride of said ceramic material of said formed body starting from said outer surface of said formed body by exposing said outer surface to an oxidizing agent in an oxidizing atmosphere, thereby converting the at least one of a carbide and a nitride to an oxide at said outer surface of said formed body and at least partially into a cross section thereof to cause at least a portion of said formed body to expand in a controlled manner to achieve said final contour with said desired dimension merely by said oxidation step;

wherein the oxidation is carried out for such a time until substantially all exposed surfaces of the ceramic material including the pores thereof which provide flow paths for said transport medium have been passivated by said oxide.

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5,851,461

METHOD OF PRODUCING POLYSACCHARIDE FOAMS

George Bakis, West Roxbury; Dana Burton Eagles, Sherborn, and John F. Tweedie, Winchester, all of Mass., assignors to Albany International Research Co., Mansfield, Mass.

Continuation of Ser. No. 487,447, Jun. 7, 1995, abandoned.

This application Feb. 14, 1997, Ser. No. 801,098

Claims priority, application United Kingdom, Jun. 19, 1992, 9212976; Nov. 19, 1992, 92242551

Int. Cl.^{6} B29D *1/00*

U.S. Cl. 264—50 **9 Claims**

1. A method of forming a polysaccharide foam from an aqueous solution of a polysaccharide, consisting essentially of the steps of:

a) forming an aqueous solution of a polysaccharide and a foam stabilizer;

b) introducing a gas into the aqueous solution to form a wet foam;

c) drying the wet foam with heated air to form a dried polysaccharide foam;

d) subsequently cross-linking or coagulating the dried foam to form a water insoluble foam with cross-linking di- or trivalent cations.

5,851,462

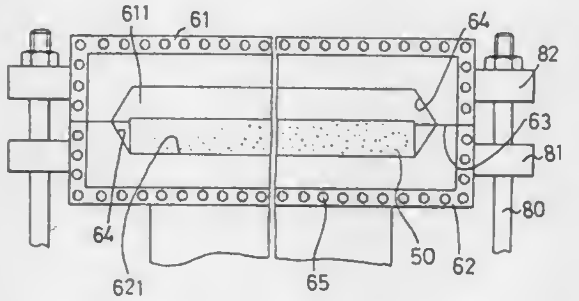
METHOD FOR MAKING A SURFBOARD

Ching Hsi Chen, Chang Hua Hsien, Taiwan, assignor to Sun Own Industrial Co., Ltd., Chang Hua Hsien, Taiwan

Filed Sep. 8, 1997, Ser. No. 925,299

Int. Cl.^{6} B29C *44/02;44/08*

U.S. Cl. 264—55 **6 Claims**



1. A method for making a surfboard, said method comprising:

providing and cutting a foamable material sheet into at least one panel,

providing a first mold device having a mold cavity,

engaging said at least one panel in said mold cavity of said first mold device,

hot-pressing said at least one panel and heating said at least one panel and expanding said at least one panel to a prototype after said at least one panel is removed from said first mold device,

providing a second mold device having a lower mold and an upper mold, said lower mold and said upper mold including a mold cavity having a size greater than that of said prototype for allowing said prototype to expand to a greater size,

engaging said prototype in said mold cavity of said lower mold and said upper mold,

hot-pressing said prototype and heating and foaming said prototype and filling said prototype in said mold cavity of said lower mold and said upper mold, and

cooling said second mold device for forming said surfboard.

5,851,463

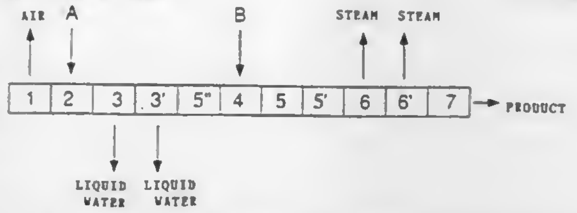
PREPARATION OF THERMOPLASTICS

Norbert Güntherberg, Speyer; Jürgen Hofmann, Ludwigshafen; Elmar Mailahn, Worms, and Hilmar Ohlig, Kaiserslautern, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 22, 1996, Ser. No. 620,259

Int. Cl.^{6} B29C *47/40;47/76*

U.S. Cl. 264—101 **12 Claims**



1. A process for the preparation of toughened thermoplastics by mechanically dewatering a solid, water-moist elastomer component A containing up to 50% by weight of residual water and mixing the resulting dewatered elastomer component A' with a thermoplastic polymer B in an extruder, wherein the solid, water-moist elastomer component A is obtained by producing a dispersion of elastomer particles in an aqueous solution and partially dewatering the dispersion of the elastomer particles by a suitable dewatering method until the solid, water-moist elastomer A results, and wherein the solid, water-moist elastomer component is fed to a twin-screw extruder which has corotating, in each case triple-flight, screws and essentially comprises, in the transport direction,

one unheated metering section in which elastomer component A is fed to the extruder by a metering means,

at least one unheated squeeze section which serves for dewatering and contains at least one retarding element and in each case at least one associated dewatering orifice, wherein no Seiher barrels are used as dewatering orifices,

at least one section in which the thermoplastic polymer B is introduced as a melt into the extruder,

at least one section provided with mixing, kneading or other plasticating elements or combinations of these elements,

at least one devolatilization section which is provided with at least one devolatilization orifice and in which the residual water is removed as steam, and

a heated discharge zone,

and wherein the water emerging from the dewatering orifices is present partially or completely in the liquid phase.

5,851,464

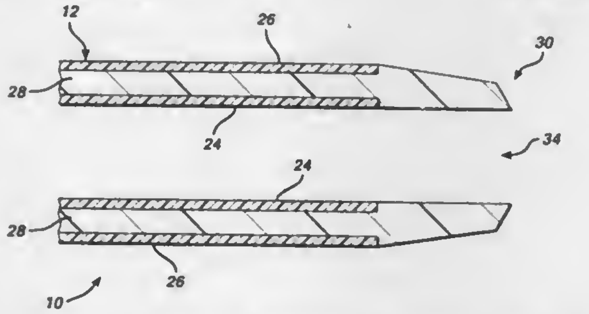
METHOD OF MAKING A FUSELESS SOFT TIP CATHETER

Luis A. Davila, Miami; Stephen J. Querns, Boca Raton, and Mark Inderbitzen, Miramar, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed May 13, 1996, Ser. No. 645,401

Int. Cl.^{6} B29C *47/06;44/06*

U.S. Cl. 264—103 **8 Claims**



1. A method of making a fuseless soft tip tubular catheter, the catheter having an elongated tubular body, a distal end, a proximal end, and at least one lumen extending therebetween, said method comprising the steps of:

(a) providing at least one polymer material for forming an inner and outer layer for the tubular body;

(h) providing another polymer material for forming a middle layer of the tubular catheter, said middle layer polymer material being more flexible and having a lower melting temperature than said inner and outer layer polymer materials, said middle layers being capable of adhering to said inner and outer layers;

(c) extruding the tubular catheter so as to form the tubular body comprising said inner, outer and middle layers,

(d) heating the distal end of the tubular catheter to a temperature above the melting temperature of the polymer material forming said middle layer and below the melting temperature of the polymer materials forming said inner and outer layers, and flowing said middle layer distally so as to form a distal tip comprising said middle layer and no more than one of said inner and outer layers, so that said distal tip is softer than portions of the tubular body proximal thereto.

5,851,465

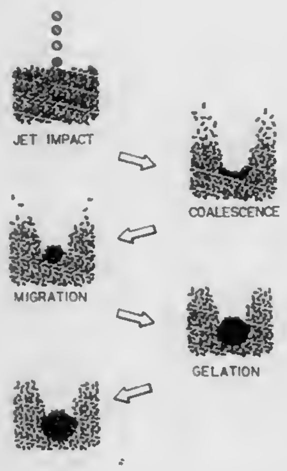
BINDER COMPOSITION FOR USE IN THREE DIMENSIONAL PRINTING

James F. Bredt, Watertown, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 581,319, Dec. 29, 1995, Pat. No. 5,660,621. This application Aug. 21, 1997, Ser. No. 915,977

Int. Cl.^{6} B29C *67/06;* **C04B** *22/06;* **C09D** *1/00;1/04*

U.S. Cl. 264—109 **21 Claims**



1. A process for forming a three dimensional part, comprising:

building up the part in layers, the formation of each layer comprising:

(a) providing a layer of powder in a bed;

(b) providing a binder composition comprising:

a fluid dispersing medium;

silica in a solid particulate form dispersed in the fluid dispersing medium;

a catalyst able to promote gelation of the binder composition when the binder composition is below a predetermined pH value; and

a base able to maintain the pH of the binder composition above the predetermined value at which the binder composition gels; and

(c) selectively depositing through a print head a binder composition onto the powder layer; and

altering the pH of the binder composition in the powder to below the value at which the binder composition gels, whereby the binder composition becomes immobilized in the powder.

5,851,466

PROCESS OF MAKING POLYBENZAZOLE STAPLE FIBERS

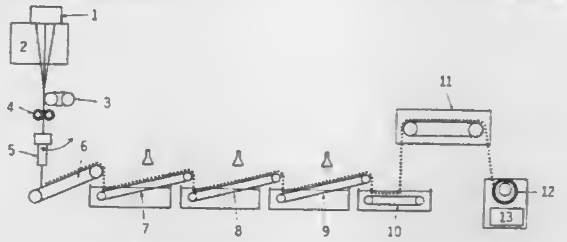
Kazuyuki Yabuki; Takaharu Ichiryu; Tadao Kuroki, and Mitsuhiro Sakuda, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 425,493, Apr. 20, 1995, Pat. No. 5,527,609. This application Nov. 8, 1995, Ser. No. 555,128

Claims priority, application Japan, Apr. 20, 1994, 6-105897; Aug. 3, 1994, 6-182421; Nov. 16, 1994, 6-281738

Int. Cl.^{6} D01D *5/202;5/26;* **D01F** *6/74;* **D02G** *1/00*

U.S. Cl. 264—143 **16 Claims**



1. A method for manufacturing crimped polybenzazole staple fibers, comprising subjecting a continuous polybenzazole filaments tow to crimping in a crimper box and cutting the obtained crimped fiber tow with a rotary cutter to form crimped polybenzazole staple fibers.

5,851,467

MOLDED SURFACE FASTENER AND METHOD FOR MANUFACTURING THE SAME

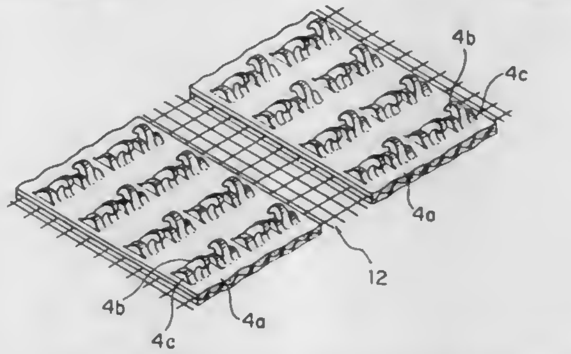
Ryuichi Murasaki, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Division of Ser. No. 666,602, Jun. 18, 1996, Pat. No. 5,643,651. This application Feb. 3, 1997, Ser. No. 794,334

Claims priority, application Japan, Jun. 20, 1995, 7-153560

Int. Cl.^{6} B29C *47/02*

U.S. Cl. 264—167 **4 Claims**



1. A method of manufacturing a synthetic resin surface fastener having a substrate sheet and a multiplicity of male engaging elements integrally molded on said substrate sheet, comprising the steps of:

(a) rotating in one direction a die wheel having a plurality of male-engaging-element-forming cavity groups, which are formed by dividing a plurality of axially arranged rows of cavities with a number of circumferential predetermined-width cavity-free areas disposed therebetween, said cavity groups being for molding the plurality of male engaging elements circumferentially on said die wheel;

(b) continuously injecting a predetermined width of molten resin from an injection die toward said male-engaging-element-forming cavity groups of said die wheel;

(c) continuously introducing, during said injecting, circumferentially of said die wheel a sheet-like connector having adequate open spaces through which said molten resin is to be passed;

(d) integrally molding the substrate sheet with the sheet-like connector on the circumferential surface of said die wheel and, at the same time, molding the male engaging elements on the circumferential surface of said die wheel as said male-engaging-element-forming cavities are filled with part of said molten resin by injecting said molten resin at a predetermined resin pressure onto the circumferential surface of said die wheel, at a portion where the molten resin is introduced onto said die wheel;

(e) leaving said cavity-free areas disposed between said rows of cavities free of said molten resin;

(f) positively cooling the circumferential surface of said die wheel; and

(g) continuously taking up the molded and cooled surface fastener from the circumferential surface of said die wheel.

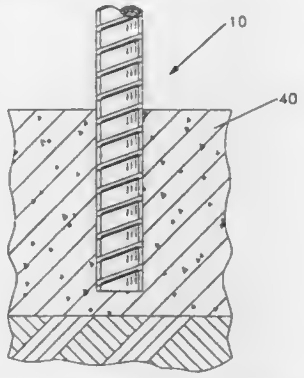
5,851,468
REINFORCING STRUCTURAL REBAR AND METHOD OF MAKING THE SAME

Mark A. Kaiser, 1620 Van Buren, Elida, Ohio 45807

Division of Ser. No. 527,976, Sep. 14, 1995, Pat. No. 5,702,816, which is a continuation-in-part of Ser. No. 267,772, Jun. 28, 1994, Pat. No. 5,763,042. This application Aug. 27, 1997, Ser. No. 919,055

Int. Cl.^{6} B29C *47/00*

U.S. Cl. 264—177.13 **13 Claims**



1. A method of forming a reinforcing structural rebar comprising the steps of:

(a) impregnating reinforcing fibers by pultruding the reinforcing fibers through a bath or injection system of a first resin material;

(b) subjecting the impregnated reinforcing fibers of step (a) to conditions sufficient to partially thicken the first resin material; and

(c) forming a inner cladding layer over the impregnated fibers of step (b) and the partially thickened first resin impregnated in the reinforcing fibers of step (b) with a second resin material reinforced with unidirectional fibers; and

(d) forming an outer cladding layer over the inner cladding layer of step (c) with a third resin material reinforced with a third reinforcing material.

5,851,469
PROCESS FOR MAKING A WOOD-THERMOPLASTIC COMPOSITE

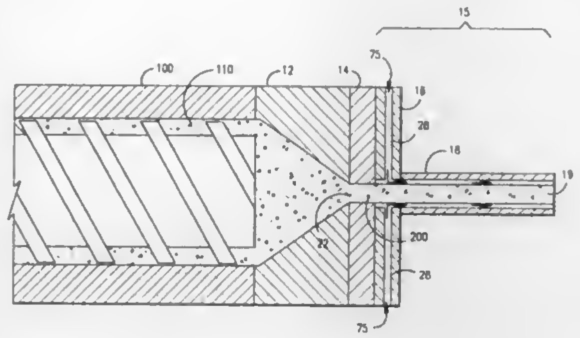
John J. Muller, Winchester, Va., and Roger A. Wittenberg, Newtown, Pa., assignors to Trex Company, L.L.C., Winchester, Va.

Continuation of Ser. No. 579,111, Dec. 27, 1995, abandoned. This application Oct. 1, 1997, Ser. No. 940,397

Int. Cl.^{6} B29C *47/88;47/90*

U.S. Cl. 264—177.1 **40 Claims**

1. A method for forming an extruded composite product containing cellulosic particles in a thermoplastic binder wherein an extrusion mass is forced through a die at an elevated extrusion temperature to form a hot shaped extrudate and cooled thereafter, said method including the steps of:



(a) heating the extrusion mass in a die means to a first temperature sufficient to decrease the shear stresses generated between the mass and the die means to form a hot shaped extrudate profile;

(b) passing the profile from the die through an intermediate temperature zone wherein the extrudate surface is thermally insulated from exterior cooling; and

(c) quenching the profile directly in a non-oxidizing fluid to a second temperature thereby setting the composite surface to form the composite product.

5,851,470
METHOD OF PRODUCING A PLATE-LIKE MATERIAL WITH A RESINOUS MEMBER FOR A WINDOW

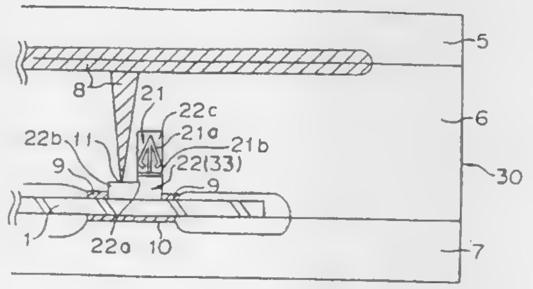
Seiichi Yokota; Hideyuki Hashimoto, and Kazuhiko Takahashi, all of Aichi-ken, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 409,100, Mar. 23, 1995, Pat. No. 5,676,898. This application Jun. 18, 1997, Ser. No. 878,077

Claims priority, application Japan, Mar. 23, 1994, 6-051974; Jul. 29, 1994, 6-178888

Int. Cl.^{6} B29C *45/14*

U.S. Cl. 264—219 **4 Claims**



1. A method of forming a resinous member on a plate-shaped material for a window in one piece, the method comprising the steps of:

forming a recess at a side surface of a shaping mold;

placing a surface of the plate-shaped material in contact with the side surface of the shaping mold, so that the recess is located at an inner peripheral region of the plate-shaped material at a position which is spaced apart from an edge of the plate-shaped material, and the recess forms a cavity between the shaping mold and the plate-shaped material which is spaced from said edge of said plate-shaped material;

injecting or extruding a resinous material for forming the resinous member into the cavity; and

curing the resinous material to form the resinous member, wherein the resinous material is formed in one piece on the plate-shaped material at said position spaced from the edge of the plate shaped material.

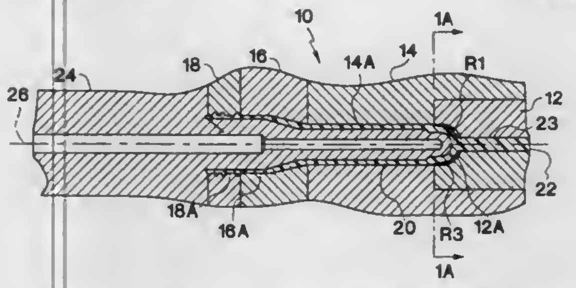
5,851,471
METHOD FOR INJECTION MOLDING A MULTI-LAYER PREFORM FOR USE IN BLOW MOLDING A PLASTIC BOTTLE

Francis M. Schloss, Perrysburg, and Dennis C. Balduff, Whitehouse, both of Ohio, assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 16, 1996, Ser. No. 648,669

Int. Cl.^{6} B29B *11/08;* **B29C** *45/16*

U.S. Cl. 264—250 **14 Claims**



1. A method of injection molding a multi-layer plastic preform to be blow molded into a container comprising the steps of:

forming an inner layer of a preform of a first plastic material having an open end, sidewalls, and a closed end, said closed end having a plurality of spaced channels on the exterior surface thereof extending from a central area on the closed end to the sidewalls.

providing an overmolding mold cavity defined by sidewalls, an open end for accommodating a core rod, and a closed end with an injection gate therethrough, and a plurality of channels on the interior surface of the closed end communicating with the gate and extending from the gate to the sidewalls;

inserting a core rod and the inner plastic layer of the preform into said overmolding mold cavity with respective channels of the inner plastic layer of the preform and the overmolding mold cavity substantially aligned; and

overmolding a second layer of a second plastic material on the inner plastic layer of the preform to form an overmolded multi-layer perform in said overmolding mold cavity by flowing the second plastic material from the gate only through the respective channels to the sidewalls of the overmolding mold cavity thereby limiting the second material in the closed end of the multi-layer preform to regions of the channels, and wherein the first plastic has a higher resistance to stress cracking than the second plastic.

5,851,472
METHOD OF MANUFACTURING WATERPROOF CONNECTOR HOUSING

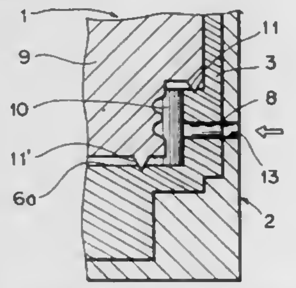
Motohisa Kashiyama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,827

Claims priority, application Japan, Jul. 22, 1994, 6-170792

Int. Cl.^{6} B29C *33/12;33/14*

U.S. Cl. 264—268 **1 Claim**



1. A method of manufacturing a waterproof connector housing comprising the steps of:

arranging a prefabricated housing between a male metal mold and a female metal mold;

aligning rubber material supply paths on said female metal mold and rubber material circulation paths on said housing;

pressing said male metal mold against said housing in a joining direction of said male metal mold and said female metal mold so that first and second overflow preventing walls projecting from said male metal mold are pressed into a front wall of a terminal accommodating part and an edge wall of a stepped portion of said housing, respectively, in order to define both edges of a space for a ring-shaped packing to be formed integrally with said housing, while surely preventing leakage of a rubber material outside said space, wherein a dimensional relationship of said stepped portion of said housing with said first and second overflow preventing walls is $M_1<H<M_2$, where M_1 is a distance from an end plane of a fitting portion of said male metal mold to a tip of said second overflow preventing wall relative to said stepped portion, M_2 is a distance from a base of said second overflow preventing wall relative to said stepped portion to a tip of said first overflow preventing wall, and H is a height of said stepped portion;

injecting said rubber material into said space through both said rubber material supply paths and said rubber material circulation paths until said space is filled up; and

forming said ring-shaped packing integrally with said housing; and

allowing said rubber material injected into said space to adhere to said housing.

5,851,473

Patent Not Issued For This Number

5,851,474
INJECTION MOLDING WITH PERIODIC FORCES TO THE MATERIAL IN THE MOLD

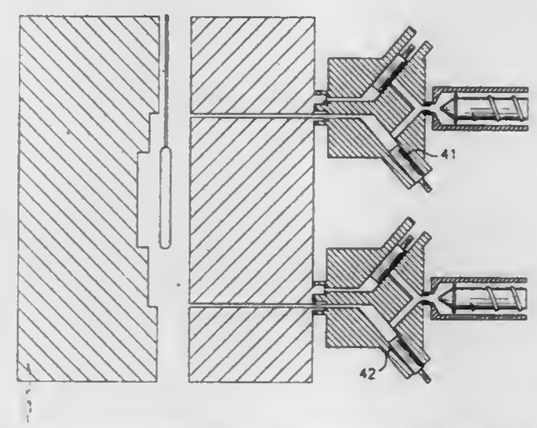
Peter Stewart Allan, Bucks; Michael John Bevis, Uxbridge, both of United Kingdom, and Kazuharu Yasuda, Yokohama, Japan, assignors to Brunel University of Uxbridge, United Kingdom, and Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Apr. 10, 1996, Ser. No. 630,525

Claims priority, application United Kingdom, Apr. 11, 1995, 9507533; May 24, 1995, 9510532

Int. Cl.^{6} B29C *45/00;45/73*

U.S. Cl. 264—403 **8 Claims**



1. An injection moulding process for moulding a molten material, containing at least one kind of thermoplastic resin having a heat distortion temperature and a melt processing temperature, in a mould having a mould cavity and at least one channel communicating with the mould cavity, each channel entering the mould at a respective mould inlet, the process comprising:

heating inner surface areas of the mould to the melt processing temperature of the material prior to supplying the molten material into the mould;

supplying the molten material into the mould by way of at least one channel and subjecting the molten material to a propelling force, sufficient to propel it through the channel into the mould;

applying periodic forces to the material in the mould at a plurality of spaced-apart regions, a first and a second of the regions being located on either side of the molten material in the mould cavity, the periodic force being applied with a difference in phase so as to cause shear of the molten material within the mould cavity between the first and second regions;

allowing the molten material in the mould to solidify by cooling the mould below the heat distortion temperature of the resin while or after applying the periodic force; and then

opening the mould, and removing the moulded article.

5,851,475

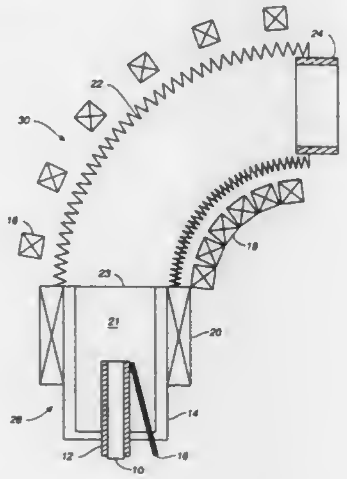
SURFACE TREATMENT OF CERAMIC ARTICLES

Kyriakos Komvopoulos, Orinda; Ian G. Brown, Berkeley; Bo Wei, Daly City; Simone Anders; Andre Anders, both of Albany, and C. Singh Bhatia, Morgan Hill, all of Calif., assignors to Regents of the University of California, Oakland, and IBM, San Jose, both of Calif.

Continuation of Ser. No. 306,501, Sep. 15, 1994, abandoned, which is a continuation of Ser. No. 185,608, Jan. 21, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 667,502

Int. Cl.^{6} B29C *71/00*

U.S. Cl. 264—430 **12 Claims**



1. A process for producing an article with improved ceramic surface properties, comprising the steps of:

providing an article having a ceramic surface;

placing said article onto a conductive substrate holder in a hermetic enclosure;

providing a low pressure ambient in said hermetic enclosure;

producing, by means other than a vacuum arc plasma gun, a plasma comprising ions of solid materials, said ceramic surface of said article being at least partially immersed in a macroparticle free region of said plasma; and

while said article is immersed in said macroparticle free region, varying a bias of said substrate holder between a low voltage at which material from said plasma condenses on the surface of said article and a high negative voltage at which ions from said plasma are implanted into said article.

5,851,476

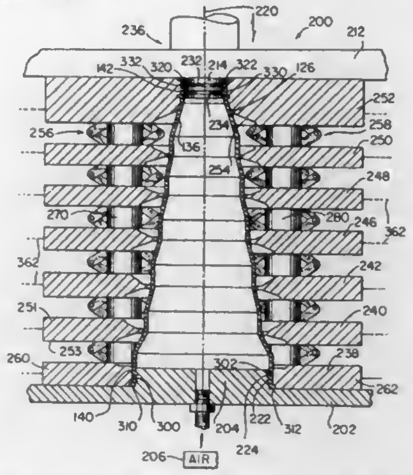
METHOD OF MANUFACTURING A BELLOWED SEAL

Neal E. Wydra, Glen Ellyn, and David W. Geick, Jr., North Aurora, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Filed May 17, 1996, Ser. No. 649,152

Int. Cl.^{6} B29C *49/00;53/08*

U.S. Cl. 264—507 **17 Claims**



2. A method for producing a bellowed seal adapted to be fitted about a constant velocity joint of a vehicle, said method comprising the steps of:

forming the bellowed seal from a hollow and elongated rigid preform having a first shape, wherein the rigid preform is formed from thermoplastic elastomers having a ratio of plastic strain to elastic strain greater than 1.5 to 1;

heating the preform while disposed in a die assembly:

collapsing the die assembly to configure the heated preform into a second shape.

5,851,477

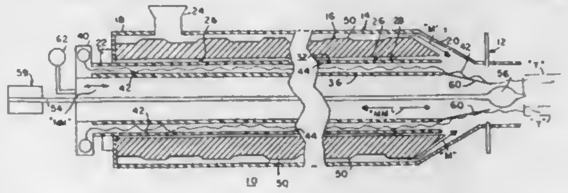
REINFORCED TUBING MANUFACTURE BY A PLASTIC PROCESSING SCREW MACHINE

Donald N. Halgren, 35 Central St., and Desider G. Csongor, 19 Bennett St., both of Manchester, Mass. 01944

Continuation-in-part of Ser. No. 773,875, Dec. 30, 1996, Pat. No. 5,744,092, which is a continuation-in-part of Ser. No. 511,055, Aug. 3, 1995, Pat. No. 5,670,112, which is a continuation-in-part of Ser. No. 393,200, Feb. 23, 1995, abandoned. This application Jan. 6, 1997, Ser. No. 778,947

Int. Cl.^{6} B29C *47/06*

U.S. Cl. 264—512 **7 Claims**



1. A method of manufacturing a reinforced thermoplastic tubular product by a plasticating screw machine, comprising the steps of:

providing an elongated rotatable screw shaft within an elongated barrel housing, and a mold or die adjacent a distal end of said housing;

arranging a longitudinally directed bore through said elongated screw shaft from a proximal end to a distal end thereof;

fitting at least one pair of spaced apart, non-rotating coaxial conduits through said bore, said conduits comprising an inner conduit and an outer conduit having proximal and distal ends, an annular delivery channel being defined between said inner and outer conduits;

arranging a mesh web generating apparatus at a proximal end of said annular delivery channel to permit a mesh web to be driven through said annular delivery channel;

generating a mesh web and driving said web through said annular channel between said spaced apart coaxial conduits; and

feeding thermoplastic material into said barrel and rotating said screw shaft so as to plasticate said thermoplastic material and permit said material to be directed from said screw shaft and into said mesh at a distal end of said screw shaft prior to said thermoplastic material being delivered to said mold or die adjacent said distal end of said housing to form said reinforced thermoplastic tubular product.

5,851,478

MOLDING METHOD AND COOLING APPARATUS FOR PRESSURE RESISTING BOTTLES OF SYNTHETIC RESIN

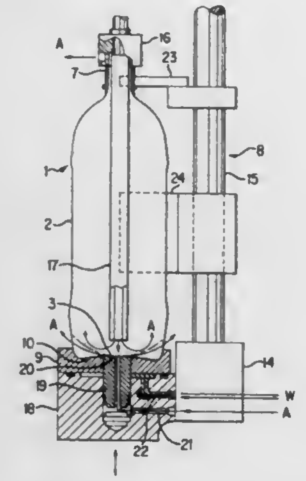
Takao Iizuka; Mamoru Oshida, and Makoto Takada, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 211,165, Jun. 21, 1994, Pat. No. 5,585,125. This application Aug. 1, 1996, Ser. No. 690,803

Claims priority, application Japan, Jul. 20, 1992, 4-214533

Int. Cl.^{6} B29C *49/66*

U.S. Cl. 264—520 **8 Claims**



1. A molding method for forming a pressure resisting biaxially stretched blow molded bottle having a big foot type petaloid bottom made of synthetic resin, said method comprising:

biaxially stretch blow molding said bottle, including blowing said bottle in a blow mold for about 2 seconds of blowing time;

releasing said bottle from said blow mold while the bottom of said bottle is warm and deformable and placing the bottom of said bottle adjacent a cooling block having a cooling medium passage with an opening directed at a center part of the bottom of said bottle;

placing a cooling nozzle into said bottle; and

directing a cooling medium through said cooling medium passage within said cooling block and toward the center part of the bottom of said bottle while directing a cooling medium through said cooling nozzle into said bottle and toward the center of the bottom of said bottle;

wherein said steps of directing a cooling medium decrease a temperature of the center part to below about 70° C. within about 5.5 seconds to about 7.0 seconds, said steps of directing a cooling medium commencing within about 4 seconds after said bottles are released from said blow mold.

5,851,479

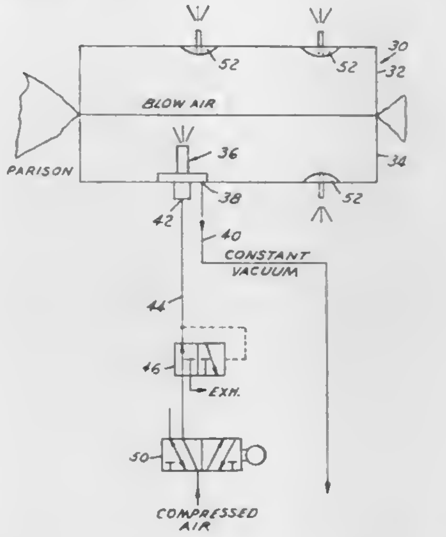
METHOD AND APPARATUS FOR BLOW MOLDING HOLLOW ARTICLES

Daniel F. McGlynn, Perrysburg, and Robert A. Gillis, Toledo, both of Ohio, assignors to Owens-Brockway Plastic Products Inc., Toledo, Ohio

Filed Dec. 24, 1996, Ser. No. 773,454

Int. Cl.^{6} B29C *49/60*

U.S. Cl. 264—526 **21 Claims**



1. A method of blow molding hollow plastic containers comprising the steps of:

providing a blow mold comprising mold portions which when closed define a mold cavity,

providing a fixed blow needle in at least one mold portion, said blow needle having an opening,

positioning a molten hollow plastic parison between said mold portions,

closing said mold portions about said plastic parison,

providing fixed means in said one mold portion surrounding said fixed blow needle for pulling the molten plastic parison about the fixed blow needle,

applying vacuum to the mold cavity through said fixed means to pull the molten plastic parison about the fixed blow needle, and

thereafter providing air through the opening in said fixed needle to tear the plastic and to expand the parison to the confines of the mold cavity.

5,851,480

Patent Not Issued For This Number

5,851,481

REBAR WITH VANADIUM ALLOY

John C. Stankus, Canonsburg; Frank Calandra, Jr., Pittsburgh; Michael Cokus, Sarver, all of Pa., and Ray W. Goetz, Skaneateles, N.Y., assignors to Jennmar Corporation, Pittsburgh, Pa.

Filed May 27, 1997, Ser. No. 863,828

Int. Cl.^{6} C22C *38/12;* **E21D** *20/00*

U.S. Cl. 420—127 **12 Claims**

1. A mine roof bolt comprising a rebar formed into an elongated body having a substantially uniform cross section, a first end for entering a bore hole in a rock strata of a mine, and a second end opposite the first end for engagement with a bolting machine to permit installation of the roof bolt within the rock strata, the rebar having 0.44–0.52 wt. % C, 1.1–1.6 wt. % Mn, 0.15–0.35 wt. % Si.

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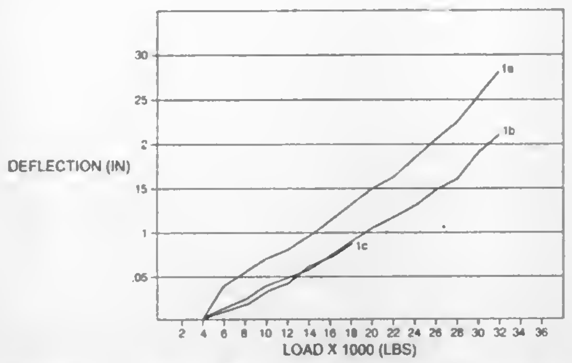


a maximum of 0.04 wt. % P, a maximum of 0.05 wt. % S, a maximum of 0.45 wt. % Cu and 0.06–0.09 wt. % V.

5,851,482
TIN-BISMUTH BASED LEAD-FREE SOLDER FOR COPPER AND COPPER ALLOYS

Chang-Joo Kim, Changwon-Si, Rep. of Korea, assignor to Korea Institute of Machinery & Metals, Daejeon-Si, Rep. of Korea

Filed Dec. 20, 1996, Ser. No. 770,797

Claims priority, application Rep. of Korea, Mar. 22, 1996, 96-8424; Mar. 24, 1996, 96-8425; Mar. 24, 1996, 96-8426

Int. Cl.^{6} C22C *13/00*

U.S. Cl. 420—557 **3 Claims**

1. A lead-free solder for copper and copper alloys, the solder of an alloy consisting essentially of 5–15 wt % bismuth (Bi), 0.01–3.0 wt % antimony (Sb), 0.01–3.0 wt % zinc (Zn), 0.01–3.0 wt % aluminum (Al), 0.01–3.0 wt % magnesium (Mg), 0.01–3.0 wt % tellurium (Te), and the balance tin (Sn).

5,851,483
HYGIENIC AGENT FOR USE IN HEMODIALYSIS

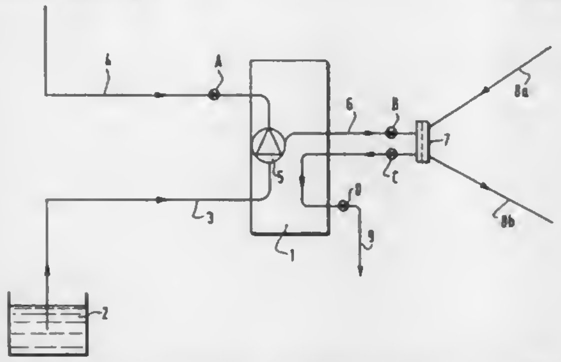
Rémy Nicolle, and Eric Jourdan-Laforte, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Continuation of Ser. No. 111,966, Aug. 26, 1993, abandoned, Ser. No. 653,972, Feb. 11, 1991, abandoned, and Ser. No. 438,293, Nov. 20, 1989, abandoned. This application Feb. 16, 1995, Ser. No. 389,971

Claims priority, application France, Nov. 23, 1988, 88 15252

Int. Cl.^{6} A61L *2/16*

U.S. Cl. 422—28 **8 Claims**



1. A method of disinfecting and removing tartar from interior portions of a dialysis generator, the method comprising the steps of:

introducing into the dialysis generator a sterilization composition consisting essentially of an aqueous solution of 6 to 8 percent by weight hydrogen peroxide, 0.3 to 0.4 percent by weight peracetic acid, and 3.5 to 4.5 percent by weight acetic acid, the composition remaining stable for at least a year;

adjusting the dialysis generator so that the sterilization composition is automatically diluted in water by the ratio of composition-to-water of 1:10 to 1:35 to provide a diluted cleaning composition and so that the diluted composition is placed in contact with the interior portions of the dialysis generator for a period of 20 to 30 minutes; and

rinsing the contacted interior portions of the dialysis generator with osmotic water for a period of about 30 minutes.

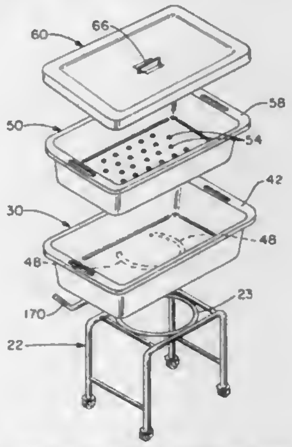
5,851,484
SAFETY SYSTEM FOR CONTAMINATED INSTRUMENTS

JoAnn Forno, Box 53, Addison, Pa. 15411, and Linda Lohr, 1525 Hyndman St., South Connellsville, Pa. 15425

Filed Jan. 24, 1996, Ser. No. 590,491

Int. Cl.^{6} A61L *2/00*

U.S. Cl. 422—28 **14 Claims**



1. A system for handling surgical tools and instruments comprising:

a waterproof and generally rectangular basin including a floor having a top surface and a bottom surface with at least one bottom support extending outwardly from the bottom surface of the floor;

a surgical ring stand containing at least one ring; and

the at least one bottom support having a curvature generally matching the curvature of the at least one ring on the ring-stand.

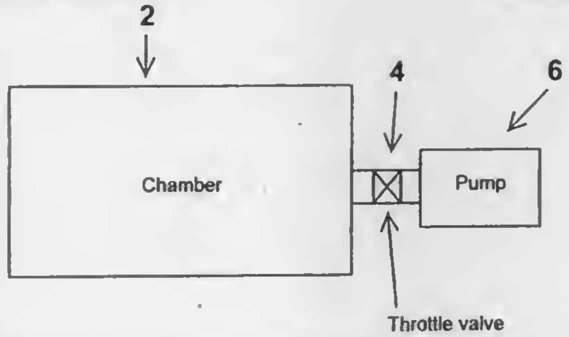
5,851,485
PROCESS FOR STERILIZATION WITH LIQUID STERILANT USING CONTROLLED PUMPDOWN RATE

Szu-Min Lin, Laguna Hills, and Paul Taylor Jacobs, Trabuco Canyon, both of Calif., assignors to Johnson & Johnson Medical, Inc., New Brunswick, N.J.

Filed Jul. 9, 1997, Ser. No. 891,866

Int. Cl.^{6} A61L *2/00;2/16*

U.S. Cl. 422—33 **56 Claims**



42. A method for sterilizing an article in a sterilization chamber, comprising the steps of:

contacting said article with liquid sterilant solution comprising hydrogen peroxide and water;

placing said article in said chamber; and

reducing the pressure of said chamber at a rate selected to control removal of the water and hydrogen peroxide so as to concentrate the hydrogen peroxide remaining in said chamber.

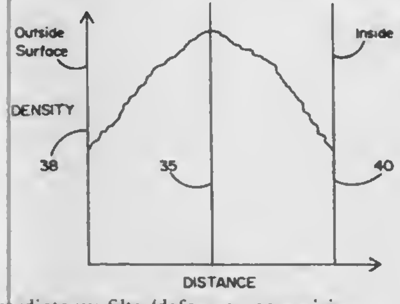
5,851,486
SPRAY SPUN FILTER CARTRIDGES FOR CARDIOTOMY FILTER/DEFOAMER

Neil D. Plotkin, Pasadena, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1996, Ser. No. 643,124

Int. Cl.^{6} A61M *1/14;* B01D *27/00*

U.S. Cl. 422—44 **7 Claims**



1. A cardiotomy filter/defoamer, comprising:

a) a reservoir;

b) a filter/defoamer; and

c) a blood inlet for receiving blood to be placed in said reservoir, said blood inlet being so positioned that blood entering said reservoir must flow through said filter/defoamer prior to being placed in said reservoir;

d) said filter/defoamer consisting of a self-supporting hollow cylinder formed from a complex matrix of spray spun non-hollow plastic fibers impregnated with an anti-foaming agent, said matrix having an effective pore size such as to pass blood cells but retain cardiotomy debris, and also a graded density between the outer and inner surfaces of the hollow cylinder.

5,851,487
DATA CHECKING APPARATUS

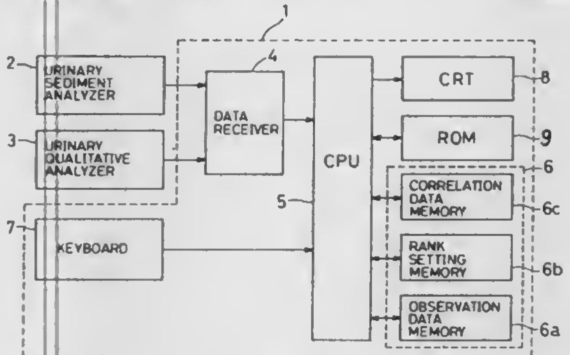
Masayuki Katayama, Miki, and Chisato Itoh, Kakogawa, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Hyogo, Japan

Filed Dec. 4, 1996, Ser. No. 760,315

Claims priority, application Japan, Dec. 6, 1995, 7-318199

Int. Cl.^{6} G01N *33/48*

U.S. Cl. 422—68.1 **8 Claims**



1. An apparatus for checking observation data obtained by analyzing a specimen with a plurality of analyzers, comprising:

a first analyzer for analyzing a specimen by a first method to obtain first observation data on one or more first observation items;

a second analyzer for analyzing the specimen by a second method to obtain second observation data on one or more second observation items;

input means for inputting, prior to an analysis operation by the first and second analyzers, correlation data indicating a desired correlation between the first and second observation items to evaluate reliability of the first and second observation data;

storage means for storing the input correlation data, the stored correlation data being represented as an area on a two dimensional coordinate system defined by parameters representing the first and the second observation items;

judgement means for making a judgment as to whether the first and second observation data conform to the stored correlation data based on whether coordinates representative of the first and second observation data are within the area;

output means for outputting results of the judgement; and

display means for displaying the coordinate system representing the stored correlation data and a sign representative of the coordinates of the first and second observation data on the coordinate system.

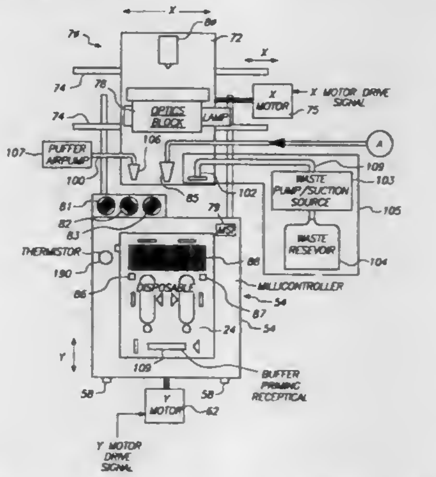
5,851,488
APPARATUS FOR AUTOMATIC ELECTRO-OPTICAL CHEMICAL ASSAY DETERMINATION

Tom Saul, El Granada; Henry L. Schwartz, Menlo Park; Todd Guion, Felton, and Hans O. Ribi, Hillsborough, all of Calif., assignors to Biocircuits Corporation, Sunnyvale, Calif.

Filed Feb. 29, 1996, Ser. No. 608,693

Int. Cl.^{6} G01N *21/64*

U.S. Cl. 422—67 **22 Claims**



1. An electro-optical instrument for measuring a quantitative physical parameter of a sample in a diagnostic cartridge, comprising:

a light source configured to project an excitation light upon the sample and upon a reference detector, the excitation light having an excitation spectrum and being capable of stimulating fluorescence of a component within the sample, the fluorescence having an emission spectrum noncoincident with the excitation spectrum;

a first optical path alone which a first portion of the excitation light can be directed toward the reference detector;

a second optical path along which a second portion of the excitation light can be directed toward the sample and along which the fluorescence can be directed toward an emission detector positioned to receive the fluorescence;

a fluid supply adapted to dispense a predetermined amount of a fluid into the cartridge;

a cartridge carriage adapted to receive the cartridge and to position it in optical alignment with the excitation light and in fluid receiving alignment with the fluid supply;

a synchronous detector capable of generating a first detection signal in response to the fluorescence directed toward the emission detector and a second detection signal in response to the first portion of the excitation light directed toward the reference detector; and

a differential converter configured to receive the first and second detection signals and produce an output signal representative of the quantitative physical parameter.

5,851,489
SPECIMEN SLIDE FOR A MICROSCOPE

Bernhard Wolf, Stegen; Werner Baumann; Alfred Dumbs, both of Freiburg; Gerd Sulz, Umkirch, and Ulrich Sieben, Reute, all of Germany, assignors to Micronas Intermetall GmbH, Freiburg, Germany

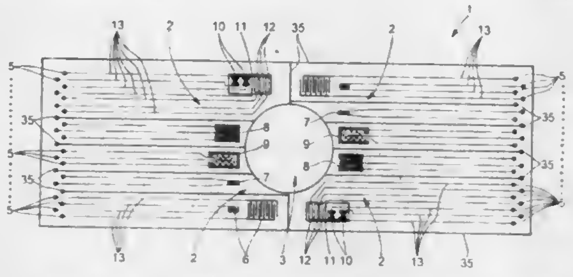
PCT No. PCT/EP95/01822, § 371 Date Nov. 15, 1996, § 102(e) Date Nov. 15, 1996, PCT Pub. No. WO95/31716, PCT Pub. Date Nov. 23, 1995

PCT Filed May 13, 1995, Ser. No. 737,688

Claims priority, application Germany, May 17, 1994, 44 17 079.3

Int. Cl.⁶ G01N ***33/48***

U.S. Cl. 422—82.02 **25 Claims**



1. A specimen slide for a microscope, camera or other such device for observing samples of living cells, tissue or other organic material; the specimen slide (**1**) comprising:

a silicon chip having a receiving area (**2**) for said samples,

a smaller observation area (**3**) in the receiving area (**2**),

an opening in the silicon chip in the observation area (**3**), said opening having a window (**26**) of optically transparent material inserted therein for visually observing the samples,

a plurality of sensors (**6** to **12**) integrated into the silicon chip in the receiving area (**2**) and distributed around the periphery of the observation area (**3**),

at least one of said sensors comprising a thin-film sensor or planer sensor for measuring physiological parameters of the samples, and

the receiving area having a structural surface adapted for cultivation of non-adherent cells.

5,851,490
METHOD FOR UTILIZING PH CONTROL IN THE RECOVERY OF METAL AND CHEMICAL VALUES FROM INDUSTRIAL WASTE STREAMS

Allan S. Myerson, Suffern, N.Y., and Micheal W. Cudahy, Jackson, Tenn., assignors to Metals Recycling Technologies Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 439,352, May 11, 1995, Pat. No. 5,759,503. This application Apr. 24, 1997, Ser. No. 847,351

Int. Cl.⁶ C22B ***13/00;17/00;19/00***

U.S. Cl. 423—97 **27 Claims**

1. A method for the recovery of metal and/or chemical values from waste material streams which comprise zinc compounds, comprising the steps of:

a. heating said waste material at an elevated temperature and in a reducing atmosphere, thereby producing exhaust fumes comprising zinc, lead, and cadmium compounds;

b. treating said exhaust fumes with an ammonium chloride solution at an elevated temperature to form a first product solution which comprises dissolved zinc compounds, and a first undissolved material;

c. determining the pH of said first product solution and if the pH of said first product solution is greater than 6.3 then adding an effective amount of a first compound to said first product solution to obtain a pH of less than about 6.3;

d. adding zinc metal to said first product solution whereby any lead and cadmium ions contained within said first product solution are displaced by said zinc metal and precipitate out of said first product solution as lead and cadmium metals, leaving a second product solution;

e. adding an effective amount of a second compound to said second product solution to obtain a pH of about 6.5 to about 7.0; and

f. lowering the temperature of said second product solution thereby precipitating the zinc compounds as a mixture of crystallized zinc compounds, leaving a third product solution.

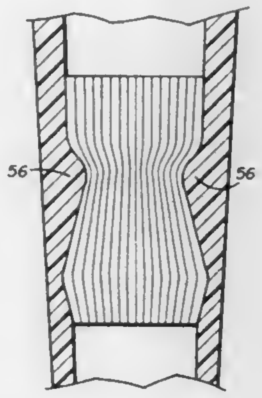
5,851,491
PIPETTE TIP AND FILTER FOR ACCURATE SAMPLING AND PREVENTION OF CONTAMINATION

Tom Moulton, San Francisco, Calif., assignor to Labcon, North America, San Rafael, Calif.

Filed Jun. 13, 1997, Ser. No. 876,195

Int. Cl.⁶ B01L ***11/00;3/02***

U.S. Cl. 422—101 **28 Claims**



1. A filter for use in a pipette tip, said pipette tip having an inner surface defining a volume, said filter comprising:

a plurality of cylindrical micro fibers cohesively bundled as adjoining columns such that when said filter is not compressed, the cross-sectional horizontal density of said micro fibers per square millimeter closely matches a predetermined value;

wherein each of said micro fibers is oriented vertically lengthwise;

wherein each of said cylindrical micro fibers has a core of an autoclavable material and an outer coating of a hydrophobic material;

such that when said micro fibers are compressed against each other upon insertion of said filter into said pipette tip, said micro fibers and said inner surface of said pipette tip interstitially define a number of vertically-oriented pores having a pore distribution and said micro fibers seal against said inner surface of said tube, said pore distribution defining varying pore sizes within said filter, said pore sizes dependent upon said volume of said pipette tip and said cross-sectional horizontal density;

whereby said pore distribution of a first filter will be consistent with said pore distribution of a second filter where said first and said second filters are inserted into pipette tips having equal size and shape at the same position within said volume.

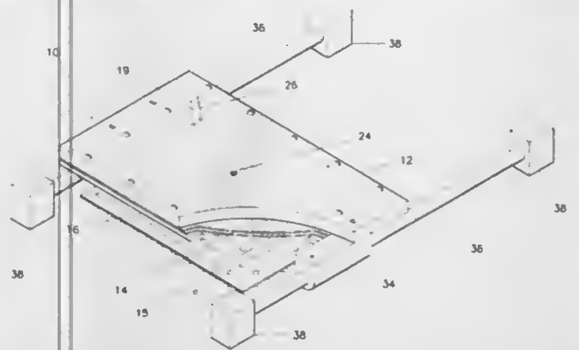
5,851,492
MICROTITER PLATE SEALING SYSTEM

Frederick R. Blattner, 1547 Jefferson St., Madison, Wis. 53711

Filed Sep. 30, 1997, Ser. No. 940,824

Int. Cl.⁶ C12M ***1/38***

U.S. Cl. 422—102 **13 Claims**



1. An apparatus for sealing and maintaining a desired temperature within at least one well formed into an upper surface of a sample holder, the apparatus comprising:

a support having a lower surface;

a deformable diaphragm secured to the lower surface of the support so that the support and the diaphragm define an inflatable chamber therebetween; and

a thermoregulable heating element in thermal connection with the diaphragm,

wherein when the diaphragm is interposed between the support and the upper surface of the sample holder and the chamber is inflated, a surface of the diaphragm engages the sample holder to form a gas-tight seal between the diaphragm and the at least one well thereby maintaining a desired temperature at the seal.

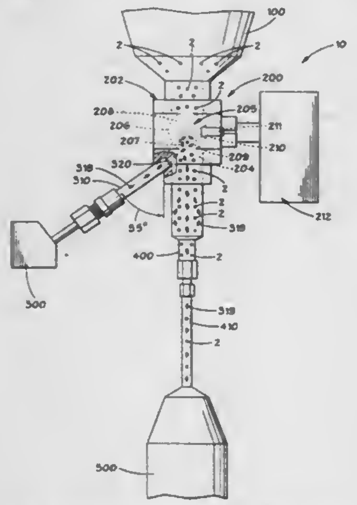
5,851,493
INJECTION SYSTEM AND METHOD FOR FEEDING PARTICULATE TO A PROCESS VESSEL

Kevin W. Lawson, Orange; Gary K. Scott, Beaumont, and Wendell H. Snelson, Orange, all of Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Filed May 22, 1997, Ser. No. 862,105

Int. Cl.⁶ C08F ***4/00***

U.S. Cl. 422—131 **13 Claims**



1. An injection system for feeding a particulate material to a process vessel, comprising:

a valve, having at least one cavity adapted for receipt of a predetermined volume of particulate, and

a sweep stream source for providing a sweep stream having flow in a direction generally toward the valve to remove substantially all of the particulate from the cavity of the valve.

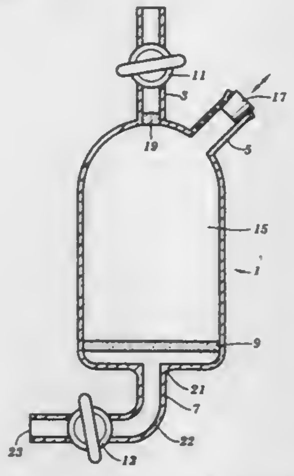
5,851,494
SOLID PHASE SYNTHESIS REACTION VESSEL AND METHOD OF USING THE SAME

Lawrence W. Dillard, Hopewell; Ian Henderson, Plainsboro; Michael H. J. Ohlmeyer, Plainsboro, and John C. Reader, Princeton, all of N.J., assignors to Pharmacopeia, Inc., Princeton, N.J.

Continuation of Ser. No. 537,268, Sep. 29, 1995, abandoned. This application Sep. 4, 1997, Ser. No. 923,208

Int. Cl.⁶ C08F ***2/00***

U.S. Cl. 422—131 **10 Claims**



1. A method of performing a solid phase synthesis reaction to produce a non-peptide small organic compound, said method comprising:

closing, with a first stopcock, the first inlet of a reaction vessel having a first inlet and a second inlet disposed proximately to a first end thereof, an outlet disposed proximately to a second end thereof, and means for preventing solid phase material from escaping from the reaction vessel via the outlet while allowing fluid to flow through the outlet;

closing, with a second stopcock, the outlet of said reaction vessel;

charging the reaction vessel, through the second inlet, with solid phase support material, reagent and solvent;

closing said second inlet; and

agitating the reaction vessel to induce a solid phase reaction within the reaction vessel to produce a non-peptide small organic compound.

5,851,495
ELECTRICALLY HEATED CATALYTIC CONVERTER FOR AN ENGINE

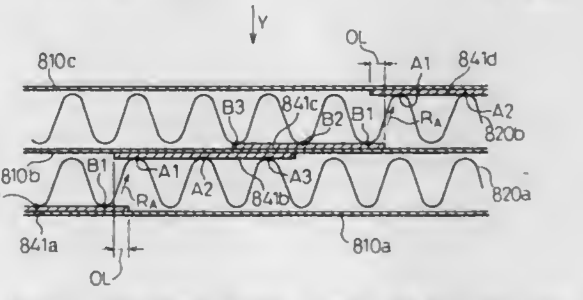
Kouji Yoshizaki, Numazu, and Shogo Konya, Kawasaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 1, 1996, Ser. No. 725,672

Claims priority, application Japan, Oct. 2, 1995, 7-255377

Int. Cl.⁶ F01N ***3/28***

U.S. Cl. 422—174 **8 Claims**



1. An electrically heated catalytic converter for an engine comprising a substrate supporting a three-way reducing and oxidizing catalyst, the substrate including a laminated assembly of layers, each layer having:

a plain metal sheet;

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- a corrugated metal sheet;
- a thin insulating layer interposed between said plain metal sheet and said corrugated metal sheet, the thin insulating layers being made of an oxide of a first metal; and
- a local conductive connection including strips of solder foil which electrically connect the plain metal sheet in said each layer to the corrugated metal sheet in said each layer through the thin insulating layer, said conductive connection electrically connects the corrugated metal sheet in said each layer to the plain metal sheet in the layer adjoining said each layer through the thin insulating layer, said strips of solder foil being made of a soldering material containing a second metal having larger reducing capability than said first metal, wherein said strips of solder foil are arranged in such a manner that the strips of solder foil disposed on both sides of the corrugated metal sheet define a single electric path which connects the strips of solder foil disposed on both sides of the corrugated metal sheet through the corrugated metal sheet therebetween.

5,851,496

CATALYTIC DEVICE FOR CLEANING EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

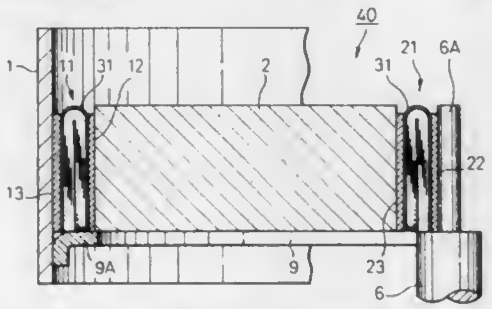
Kazuhiro Sakurai, Gotenba, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 23, 1997, Ser. No. 789,320

Claims priority, application Japan, Jan. 26, 1996, 8-011978; Sep. 27, 1996, 8-256287

Int. Cl.^{6} F01N *3/10*

U.S. Cl. 422—174 7 Claims



1. A catalytic device for cleaning exhaust gases, the catalytic device being installed in an exhaust gas passage of an internal combustion engine, comprising:

- a metallic outer cylinder connected at an upstream inlet portion and a downstream outlet portion thereof to said exhaust gas passage;
- a metallic catalyst carrier contained in said metallic outer cylinder wherein said metallic outer cylinder includes an external electrode to supply an electric current only to a central portion of said metallic catalyst carrier, and wherein said external electrode and said metallic outer cylinder are connected to a power source, so that said metallic catalyst carrie; works as an electrically heated catalyst carrier,
- a cushioning material made of a heat-resistant wire gauze arranged between said metallic outer cylinder and said metallic catalyst carrier; and
- junction materials for joining said cushioning material to said metallic catalyst carrier and for joining said cushioning material to said metallic outer cylinder, wherein said junction materials are electrically conducting brazing materials, said cushioning material is joined to said catalytic carrier and said metallic outer cylinder by brazing, and wherein said cushioning material is disposed in a compressed state between said metallic catalyst carrier and said metallic outer cylinder, wherein the wire gauze includes a plurality of continuous wires connecting an inner peripheral surface of said cushioning material adjacent to said metallic catalyst carrier to an outer peripheral surface thereof adjacent to said metallic outer cylinder, and wherein the continuous wires are substantially evenly arranged over an entire circumference of said cushioning material so that the inner peripheral surface of said cushioning material is electrically coupled to the outer peripheral surface of said cushioning material.

5,851,497

GASIFIER THROAT

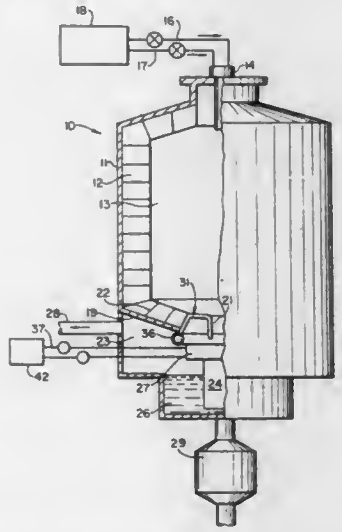
Donald Duane Brooker, Hopewell Junction, N.Y.; James Samuel Falsetti, New Fairfield, Conn.; James Kenneth Wolfenbarger, Tujunga, Calif., and Dinh-Cuong Vuong, Sugar Land, Tex., assignors to Texaco Inc., White Plains, N.Y.

PCT No. PCT/US94/13377, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/14527, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 18, 1994, Ser. No. 656,214

Int. Cl.^{6} F28D *21/00;* F22B *37/00;* F23J *1/02*

U.S. Cl. 422—207 14 Claims



1. A gasifier for the partial oxidation of a carbonaceous fuel mixture to provide an effluent, including a synthesis gas, comprising:

- a combustion chamber for receiving and partially oxidizing said carbonaceous fuel mixture, said combustion chamber having a floor;
- a bath section below said floor of said combustion chamber for holding a liquid coolant;
- a throat section at said chamber floor, said throat section having a throat opening through which said combustion chamber communicates with said bath section to conduct products of said partial oxidation from said combustion chamber into said bath section, said throat section including an internal cooling system communicating with a source of a liquid coolant; and
- means for circulating said liquid coolant through said cooling system.

5,851,498

BOILER HEATED BY CATALYTIC COMBUSTION

Vladimir Rozenshtein, Givon Hahadasha, and Yehuda Heimlich, Mevasseret Zion, both of Israel, assignors to Catalytic Systems Technologies, Ltd., Jerusalem, Israel

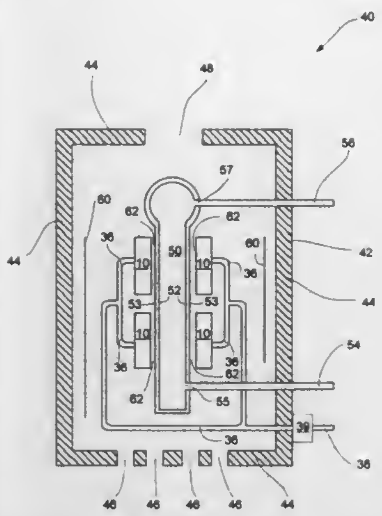
Filed Dec. 2, 1996, Ser. No. 759,341

Int. Cl.^{6} F22B *1/00;* B01J *8/00*

U.S. Cl. 422—211 12 Claims

1. A boiler for heating a fluid by infrared radiation from a catalytic reaction of a gaseous hydrocarbon fuel and atmospheric oxygen, comprising:

- (a) a chamber, for the fluid, having a wall; and
- (b) a catalytic heater operative to react the fuel and the atmospheric oxygen at a temperature between about 400° C. and about 750° C., including:



  - (i) a porous and fibrous catalyst support, having a proximal side, and having a distal side wherethrough the atmospheric oxygen diffuses towards said proximal side,
  - (ii) a particulate catalyst, for the reaction, deposited on said porous and fibrous catalyst support,
  - (iii) a mechanism for delivering the fuel to said proximal side of said catalyst support, and
  - (iv) a mechanism for heating said catalyst support, thereby initiating the reaction of the fuel and the atmospheric oxygen; said heater being mounted outside said chamber with said distal side of said catalyst support facing said chamber, said distal side of said catalyst support and said wall of said chamber defining a gap therebetween.

5,851,499

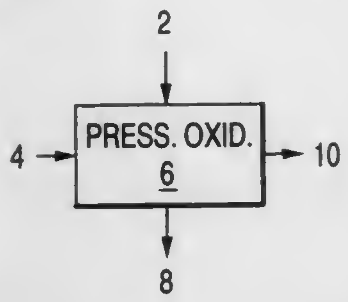
METHOD FOR PRESSURE OXIDIZING GOLD-BEARING REFRACTORY SULFIDE ORES HAVING ORGANIC CARBON

John C. Gathje, Longmont, Colo., and Gary L. Simmons, Albuquerque, N. Mex., assignors to Newmont Gold Company, Denver, Colo.

Filed Sep. 11, 1996, Ser. No. 712,252

Int. Cl.^{6} C01G *7/00;* C22B *11/08*

U.S. Cl. 423—23 31 Claims



1. A method of oxidatively treating a gold-bearing mineral material feed to facilitate recovery of gold, the mineral material feed having sulfide material from which gold is difficult to separate and having organic carbonaceous material that has an affinity for at least one member of the group consisting of gold and a gold complex, the mineral material feed being pressure oxidized in the presence of a solubilized form of a halogen which, when in the presence of the organic carbonaceous material, is capable of interfering with gold recovery, the method comprising the steps of:

- pressure oxidizing, in an oxidizing environment at elevated temperature and elevated pressure, a feed, having said mineral material feed slurried with aqueous feed liquid, to free gold from said association with said sulfide material to facilitate recovery of said gold;
- said feed comprising halogen-containing material having halogen, wherein during said step of pressure oxidizing said halogen is in a solubilized form that is capable of complexing with gold that is freed from said association with said sulfide material;
- said organic carbonaceous material, during said step of pressure oxidizing, being capable of capturing and holding gold when said organic carbonaceous material is in the presence of said solubilized form of said halogen;
- effluent from said step of pressure oxidizing comprising solid residue and aqueous effluent liquid;
- wherein, said step of pressure oxidizing is conducted under conditions to suppress the susceptibility of said gold to be captured and held by said organic carbonaceous material, such that following said step of pressure oxidation, greater than about 75 percent of said gold from said mineral material feed is removable from said solid residue by carbon-in-leach cyanidation;
- said conditions including at least one condition selected from the group consisting of:
  - (i) a temperature of lower than about 215° C.;
  - (ii) a ratio, on a weight basis, of sulfide sulfur to carbonate in said mineral material feed of smaller than about 4 to 1;
  - (iii) said aqueous effluent liquid has an oxidation/reduction potential of smaller than about 700 millivolts, relative to a standard hydrogen electrode;
  - (iv) said aqueous effluent liquid comprises sulfuric acid in an amount of less than about 28 grams of free sulfuric acid per liter;
  - (v) said step of pressure oxidizing is conducted in the presence of carbon dioxide at a partial pressure that is larger than a partial pressure that would be exerted by carbon dioxide generated during said step of pressure oxidizing from carbon released by decomposition of said mineral material feed;
  - (vi) said step of pressure oxidizing is conducted in the presence of a component that causes formation of a halogen-containing reaction product that is insoluble in aqueous liquid present during said step of pressure oxidizing;
  - (vii) said step of pressure oxidizing is conducted in the presence of a component capable of forming a complex, that does not comprise gold, with said solubilized form of said halogen to bind at least a portion of said halogen and thereby inhibit formation of a gold complex with said solubilized form of said halogen, said complex being soluble during said step of pressure oxidizing;
  - (viii) said step of pressure oxidizing is conducted in a reactor with the addition of oxygen gas to the reactor in an amount that is small enough, under reaction conditions present in said reactor, to prevent substantially complete oxidation of ferrous iron to ferric iron during said step of pressure oxidizing;
  - (ix) said step of pressure oxidizing is conducted in a batch operation;
  - (x) said step of pressure oxidizing is for a time of shorter than about 45 min; and
  - (xi) said mineral material feed comprises a blend of a first mineral material and a second mineral material, wherein said second mineral material has a higher carbonate content than said first mineral material..

5,851,500

REMOVAL OF URANIUM CONTAMINATION FROM MAGNESIUM FLUORIDE SLAG

John H. Pashley, Oak Ridge, Tenn., assignor to United States Enrichment Corporation, Bethesda, Md.

Filed Aug. 22, 1997, Ser. No. 916,612

Int. Cl.^{6} C01F *11/22;5/28*

U.S. Cl. 423—178 16 Claims

1. A method for treating uranium-contaminated magnesium fluoride slag to achieve uranium-free magnesium values, said method comprising:

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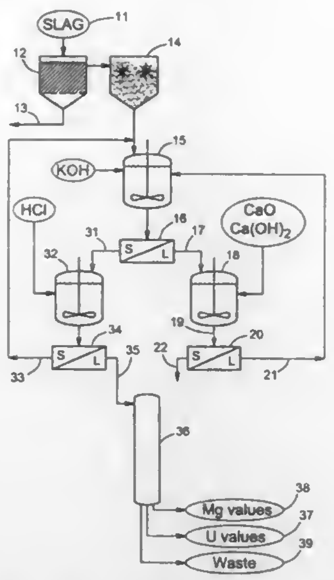


(a) treating said uranium-contaminated magnesium fluoride slag with potassium hydroxide under conditions selected to produce a solids mixture comprising magnesium hydroxide and uranium-containing solids, and a liquid phase comprising dissolved potassium fluoride;

(b) separating said solids mixture from said liquid phase and treating the liquid phase thus separated with a member selected from the group consisting of calcium hydroxide and calcium oxide to precipitate calcium fluoride and to form a liquid solution of potassium hydroxide;

(c) recycling potassium hydroxide from said liquid solution to step (a); and

(d) dissolving said solids mixture produced in step (a) in an acid solution and selectively removing metallic salts other than magnesium salts from said acid solution.

5,851,501

PROCESS FOR ABSORBING AND DESORBING NITROGEN OXIDES IN EXHAUST GASES

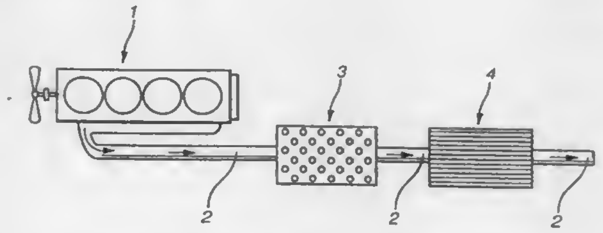
Bernd Krutzsch, Denkendorf; Andrea Seibold, Blaustein-Arnegg; Leonhard Walz, Neu-Ulm; Walter Boegner, Remseck; Martina Heinau, Ulm; Martin Hartweg, Erbach, and Brigitte Konrad, Kornwestheim, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed May 9, 1996, Ser. No. 645,008

Claims priority, application Germany, May 9, 1995, 196 16 920.4

Int. Cl.^{6} B01D *53/56*

U.S. Cl. 423—213.2 **6 Claims**



1. A process for adsorbing and desorbing nitrogen oxides in exhaust gases of an internal combustion engine of a motor vehicle operating on a lean mixture comprising the steps of adsorbing and desorbing the nitrogen oxides with a material comprising a mixed oxide containing a d element,

wherein the mixed oxide has an oxygen-rich orthorhombic structure which changes into an oxygen-poor tetragonal structure as a function of temperature, and

whereby the mixed oxide containing the d element binds the nitrogen oxides without a prior oxidation step during adsorption.

5,851,502

PRECIPITATED SILICA

Günter Türk, Hanau; Gerold Schmidt, Rodenbach; Mustafa Siray, Bonn, and Karl Meier, Alfter, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 1, 1996, Ser. No. 673,136

Claims priority, application Germany, Jul. 26, 1995, 195 27 278.1

Int. Cl.^{6} C01B *33/12*

U.S. Cl. 423—335 **11 Claims**

1. Precipitated silica with the physical-chemical characteristics:

BET surface:	DIN 66131	100–130 m^2/g
DBP absorption (anhydrous)	DIN 53601 ASTM D 2414	≧275 g/100 g
Loss on drying (2 h/105° C.)	DIN ISO 787/II ASTM D 280 JIS K 5101/21	3.5–5.5 wt. %
Oversize with ALPINE air-jet sieve:		
>63 μm		≦10.0 wt. %
>150 μm		≦0.1 wt. %
>250 μm		≦0.01 wt. %

5,851,503

FULLERENE COMPOUND, MANUFACTURING METHOD, AND USE

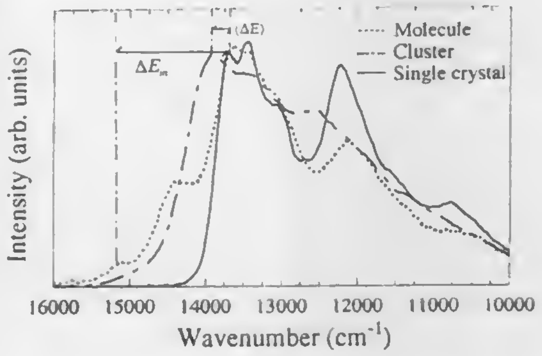
Tadaoki Mitani, 1-50, Asahidai, Tatsunokuchi, Nohmi; Keisuke Suzuki, Ishikawa; Johnson Ahn, Ishikawa, and Yoshihiro Iwasa, Ishikawa, all of Japan, assignors to Ishikawa Seisakusho, and Tadaoki Mitani, both of Ishikawa, Japan

Filed Sep. 9, 1996, Ser. No. 718,094

Claims priority, application Japan, Jun. 13, 1996, 8-175933

Int. Cl.^{6} C01B *31/00*

U.S. Cl. 423—445 B **6 Claims**



1. A fullerene cluster compound having a degree of clusterization of 23–24 or 52–53 monomers produced by a method comprising the steps of:

producing an associated body of fullerene monomers, in which said monomers are associated by virtue of a van der Waals force existing between said monomers, by solidifying a solution of fullerene monomers by cooling said solution to a temperature not higher than the freezing point of said solution; and

chemically combining said fullerene monomers in said associated body with each other by laser excitation of said associated body.

5,851,504

CARBON BASED ELECTRODES

Jeremy Barker, Henderson, Nev., and Ib I. Olsen, Cockeysville, Md., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Sep. 23, 1996, Ser. No. 716,741

Int. Cl.^{6} D01F *9/12*

U.S. Cl. 423—447.2 **20 Claims**

1. A process for preparing a composite anode comprising mixing a binder with a carbon material which is obtained by pyrolyzing a polymer of a conjugated vinyl monomer.

5,851,505

METHOD OF PRODUCING PURIFIED AQUEOUS SOLUTION OF HYDROGEN PEROXIDE

Yoshiyuki Nishide; Yoshitsugu Minamikawa, and Jun Kokubu, all of Yokkaichi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 22, 1997, Ser. No. 935,204

Claims priority, application Japan, Oct. 9, 1996, 8-268852

Int. Cl.^{6} C01B *15/01*

U.S. Cl. 423—584 **5 Claims**

1. A method of producing a purified aqueous solution of hydrogen peroxide which comprises the step of contacting an aqueous solution of hydrogen peroxide containing organic impurities with a hydrophilic porous resin having a specific surface area of not less than 800 m^2/g to remove the organic impurities in the aqueous solution of hydrogen peroxide, said hydrophilic porous resin being an adsorbent resin having no ion exchange group and containing 1 to 40 wt % of organic groups selected from the group consisting of hydroxyl groups, chloroalkyl groups, and hydroxyalkyl groups.

5,851,506

ELECTRODE MATERIALS FROM HYDROUS METAL AND/OR HYDROUS MIXED METAL OXIDES AND METHOD OF PREPARING THE SAME

Jian-Ping Zheng, Eatontown, and T. Richard Jow, Chatham, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 232,901, Apr. 21, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 678,222

Int. Cl.^{6} H01M *4/48*

U.S. Cl. 423—592 **2 Claims**

1. An electrode material for electrochemical devices comprising amorphous, hydrous ruthenium oxide having the formula $RuO_2.xH_2O$, where x is a water content value which is between 0.2 and 2.0, and a specific capacitance value greater than 500 Farads/gram.

5,851,507

INTEGRATED THERMAL PROCESS FOR THE CONTINUOUS SYNTHESIS OF NANOSCALE POWDERS

Shahid Pirzada, and Tapesh Yadav, both of Tucson, Ariz., assignors to Nanomaterials Research Corporation, Longmonte, Colo.

Filed Sep. 3, 1996, Ser. No. 706,819

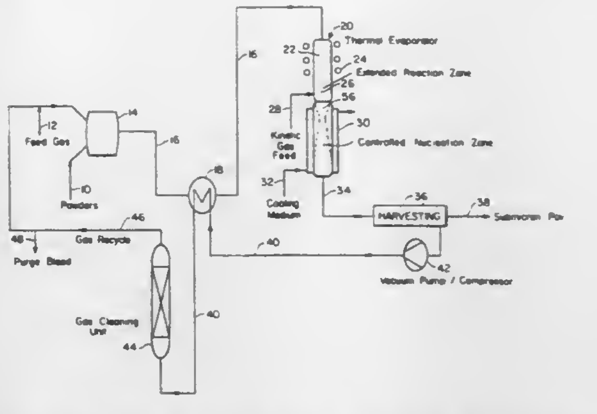
Int. Cl.^{6} B22F *9/00;* **C01B** *21/072;13/14;21/30*

U.S. Cl. 423—659 **25 Claims**

1. A process for producing a nanoscale powder from a precursor material comprising the following steps:

evaporating the precursor material in a gaseous atmosphere in a thermal reactor so as to create a vapor/gas mixture with a temperature of at least 3000K;

initiating nucleation of the precursor material from the vapor/gas mixture prior to quenching in a zone adjacent to the thermal reactor; and



quenching said vapor/gas mixture by effecting its expansion through a predetermined pressure drop, thereby causing the formation of nanoscale particles of product material in a product gas.

5,851,508

COMPOSITIONS FOR USE IN EMBOLIZING BLOOD VESSELS

Richard J. Greff, Yorba Linda; Michael L. Jones, Capistrano Beach, and Scott Evans, Santa Ana, all of Calif., assignors to MicroTherapeutics, Inc.

Continuation of Ser. No. 507,863, Jul. 27, 1995, Pat. No. 5,667,767. This application Feb. 14, 1997, Ser. No. 800,677

Int. Cl.^{6} A61K *31/765;* **G01N** *31/00;* **G21F** *1/10;* **A61F** *5/00*

U.S. Cl. 424—9.411 **15 Claims**

1. A composition comprising:

(a) from about 2.5 to about 8.0 weight percent of an ethylene vinyl alcohol copolymer;

(b) from about 20 to about 40 weight percent of a water insoluble contrast agent selected from the group consisting of tantalum, tantalum oxide and barium sulfate;

(c) from about 52 to about 87.5 weight percent of a biocompatible solvent

wherein the weight percent of each of the components is based on the total weight of the complete composition.

5,851,509

RADIOLABELED GLUCANS COVALENTLY LINKED TO A RADIOLABEL BINDING MOIETY

Richard T. Dean, Bedford, N.H., assignor to Diatide, Inc., Londonderry, N.H.

Division of Ser. No. 98,206, Jul. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,635

Int. Cl.^{6} A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.73 **17 Claims**

1. A scintigraphic imaging agent comprising a reagent comprising a specific-binding β-glucan covalently linked to a radiometal-binding moiety, wherein the β-glucan is linked to the moiety by a linkage selected from the group consisting of a direct covalent linkage and a linker having a molecular weight less than about 500 Da, and wherein the radiometal-binding moiety is attached to a radioisotope.

5,851,510

HEPATOCYTE-SELECTIVE OIL-IN-WATER EMULSION

Raymond E. Counsell; Marc A. Longino; Jamey P. Welchert, and Douglas A. Bakan, all of Ann Arbor, Mich., assignors to The Borad of Regents of The University of Michigan, Ann Arbor, Mich.

Filed May 16, 1994, Ser. No. 243,596

Int. Cl.^{6} A61K *49/00;* B01J *13/00*

U.S. Cl. 424—9.45 **18 Claims**

1. A heat stable hepatocyte-selective oil-in-water emulsion comprising:

a) between 10% and 20% (w/v) a pharmacologically inert triglyceride and a polyhalogenated triglyceride wherein the molar ratio of pharmacologically inert triglyceride to polyiodinated triglyceride is in the range of 0.3–3.0 to 1;

b) about 2.4% (w/v) dioleoylphosphatidylcholine;

c) up to 5% (w/v) cholesterol, wherein the molar ratio of cholesterol to dioleoylphosphatidylcholine is in the range of 0.05 to 0.70;

d) 5% (w/v) glycerol;

e) 0.1% α-tocopherol; and

f) the remainder of the emulsion being water, the emulsion having a mean particle diameter of the oil phase between 50 to 200 nm with greater than 98% of the particles being less than 300 nm.

5,851,511

POLYIODO COMPOUNDS, THEIR PREPARATION AND THEIR USE IN X-RAY RADIOLOGY

Gaël Le Lem, Saint-Cloud, and Dominique Meyer, Saint-Maur, both of France, assignors to Guerbet S.A., Villepinte, France

PCT No. PCT/FR95/01212, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO96/09280, PCT Pub. Date Mar. 28, 1996

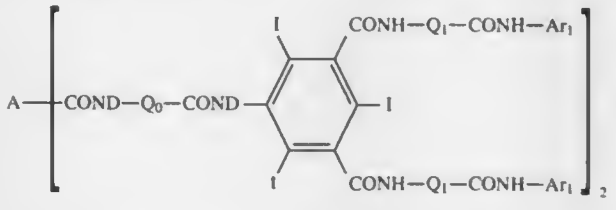
PCT Filed Sep. 20, 1995, Ser. No. 809,758

Claims priority, application France, Sep. 22, 1994, 94 11329

Int. Cl.^{6} A61K *49/04;* C07C *233/65*

U.S. Cl. 424—9.452 **24 Claims**

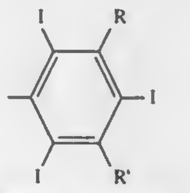
1. Compound of formula



in which

D is selected from the group consisting of H, C_1 to C_6 alkyl and C_1 to C_6 hydroxyalkyl or polyhydroxyalkyl,

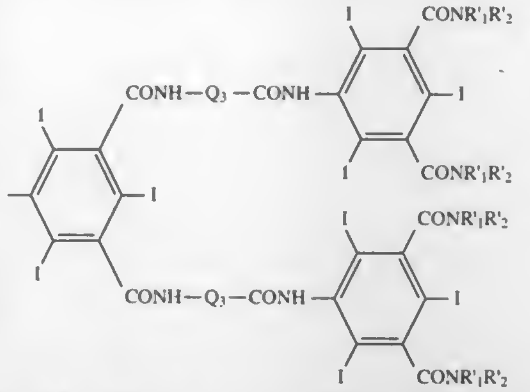
Ar_1 represents a group of formula (II):



(II)

wherein R is COOH and R' is selected from the group consisting of $CONR'_1R'_2$ and $N(R'_1)COR'_2$, R'_1 and R'_2 being selected from the group consisting of H, C_1 to C_4 alkyl and C_1 to C_8 hydroxyalkyl or polyhydroxyalkyl such that $NR'_1R'_2$ comprises more than 4 hydroxyls, or R and R' are identical and represent $—CONR'_1R'_2$, R'_1 and R'_2 being selected from the group consisting of H, C_1 to C_4 alkyl and C_1 to C_8 hydroxyalkyl or polyhydroxyalkyl such that R'_1 and R'_2 together comprise more than 6 hydroxyls,

or Ar_1 represents a group of formula (III):



(III)

wherein R'_1 and R'_2 are selected from the group consisting of H, C_1 to C_4 alkyl and C_1 to C_8 hydroxyalkyl or polyhydroxyalkyl such that R'_1 and R'_2 together comprise more than 6 hydroxyls,

Q_0, Q_1 and Q_3, which are identical or different, are selected from the group consisting of C_1 to C_6 alkylene and C_1 to C_6 hydroxyalkylene or polyhydroxyalkylene,

A is a biocompatible radical from an aliphatic or aromatic molecule of molecular weight less than 1200 having two free valences for linking to COND, as well as their pharmaceutically acceptable salts with bases.

5,851,512

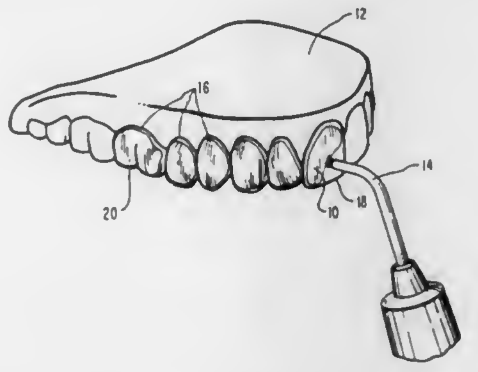
DENTAL COMPOSITIONS HAVING A STICKY MATRIX MATERIAL FOR TREATING SENSITIVE TEETH

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Continuation-in-part of Ser. No. 722,549, Sep. 26, 1996, Pat. No. 5,725,843, which is a continuation of Ser. No. 378,315, Jan. 25, 1995, Pat. No. 5,770,182, which is a continuation of Ser. No. 99,247, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 985,700, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 718,210, Jun. 20, 1991, abandoned, which is a division of Ser. No. 497,934, Mar. 22, 1990, abandoned. This application May 30, 1997, Ser. No. 865,910

Int. Cl.^{6} A61K *6/00;* A67K *7/16*

U.S. Cl. 424—49 **23 Claims**



1. A sticky dental composition adapted for use with a dental tray for treating sensitive teeth comprising:

a desensitizing agent for reducing dental pain sensations; and

a tackifying agent selected from the group consisting of carboxypolymethylene, gums, proteins, and mixtures thereof, the dental composition having a stickiness so that the dental composition is capable of adhering and retaining a dental tray over a person's teeth for at least about one hour, wherein the dental tray is designed not to exert mechanical pressure onto the person's teeth and gums.

5,851,513

ANTIPLAQUE ORAL COMPOSITION AND METHOD

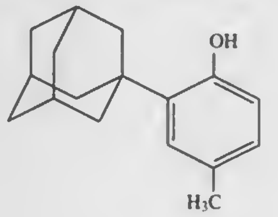
John C. Brahms, Piscataway; Shirley A. Lucchesi, Westfield; Frederick G. Saunders, Fords; Abdul Gaffar, Princeton, all of N.J., and Stuart Shapiro, Kilchberg, Sweden, assignors to Colgate Palmolive Company, New York, N.Y.

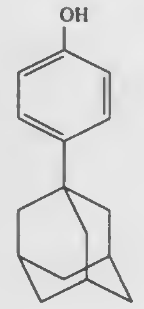
Filed Feb. 3, 1998, Ser. No. 18,127

Int. Cl.^{6} A61K *7/16*

U.S. Cl. 424—49 **7 Claims**

1. An oral composition comprising an orally acceptable mouthrinse, toothpaste, gel dentifrice, chewing gum or lozenge vehicle and an effective antiplaque amount of at least about 0.003% by weight of at least one substantially water insoluble noncationic adamantyl phenol antibacterial agent of the formulae:





and mixtures thereof.

5,851,514

STABLE AQUEOUS ABRASIVE PEROXIDE TOOTH WHITENING DENTIFRICE

Mahmoud Hassan, Piscataway; Nagaraj Dixit, Plainsboro; Michael Prencipe, Princeton Jct.; David B. Viscio, Monmouth Junction, and Salim A. Nathoo, Picataway, all of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Aug. 2, 1996, Ser. No. 692,841

Int. Cl.^{6} A61K *7/16;7/20*

U.S. Cl. 424—53 **12 Claims**

1. A method for preparing an aqueous tooth whitening composition containing an abrasive and a peroxide compound which is chemically and physically stable and effects whitening and stain removal from teeth which comprises admixing water, a peroxide compound, a humectant containing polyethylene glycol, and a polyoxyethylene polyoxypropylene block copolymer gelling agent, heating the admixture to a temperature of about 130° to 170° C. until a gel phase is formed, adding a calcium phosphate abrasive compound to the gel to form a paste, cooling the paste to about 90° F. to 130° F. and then adding 0.01 to about 1% by weight of a metal ion chelating agent, about 0.05 to about 0.20% by weight of an antioxidant, and an alkali metal pyrophosphate buffering agent effective to buffer the pH of the composition in the range of about 5.8 to about 7.2 and then heating the admixture to a temperature between about 90° to about 170° F., the buffering agent being added to the composition ingredients at a temperature no higher than 100° F.

5,851,515

ANTIPERSPIRANT COMPOSITION

Isabelle Claire Esser, Merseyside; Shirley Jones, Leeds, and Steven Wigglesworth, West Yorkshire, all of United Kingdom, assignors to Helene Curtis, Inc., Chicago, Ill.

Filed Feb. 24, 1997, Ser. No. 804,870

Claims priority, application United Kingdom, Feb. 29, 1996, 9604341

Int. Cl.^{6} A61K *7/32;7/34;7/36;7/38*

U.S. Cl. 424—65 **12 Claims**

1. An antiperspirant comprising 10 to 70% by weight ethanol, a thickener in an amount up to 1%, 5 to 20% by weight of an antiperspirant active and 0.1 to 5% by weight of an emollient.

5,851,516

FORMULATION AND APPLICATION METHOD FOR A NEUTRALIZING AGENT IN THE PERMANENT WAVING OF HAIR

Edward Borish, Ramsey; Judith A. Cohee, Mahwah, both of N.J., and Andrew Savaides, Norwalk, Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1996, Ser. No. 640,099

Int. Cl.^{6} A61K *7/09*

U.S. Cl. 424—70.1 **13 Claims**

1. A neutralizing or oxidizing composition for application to hair as part of a permanent waving process, said composition comprising:

A. between about 5% and 35% by weight of a bromate salt;

B. between about 0% and 10% by weight of dibasic sodium phosphate;

C. between about 0% and 2% by weight of monobasic sodium phosphate;

D. ammonium hydroxide in a quantity sufficient for maintaining the pH of the final composition in a range between about 7.3 and 10; and

E. deionized water forming the balance;

whereby a neutralizing or oxidizing composition is attained having an alkaline pH which is capable of being effectively employed as part of a permanent waving process.

5,851,517

COMPOSITION INCLUDING A DISPERSION OF POLYMER PARTICLES IN A NON-AQUEOUS MEDIUM

Nathalie Mougin, Paris, and Jean Mondet, Aulney-Sous-Bois, both of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR96/00929, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO97/00663, PCT Pub. Date Jan. 9, 1997

PCT Filed Jun. 17, 1996, Ser. No. 793,266

Claims priority, application France, Jun. 21, 1995, 95/07428

Int. Cl.^{6} A61K *7/02;7/11*

U.S. Cl. 424—78.02 **22 Claims**

1. A composition comprising, in a cosmetically, pharmaceutically and/or hygienically acceptable medium,

a dispersion of surface-stabilized polymeric particle in a non-aqueous medium, wherein said particles

are particles of at least one polymer formed from monomers and

are stabilized at their surface by at least one stabilizer

wherein

a) said non-aqueous medium comprises at least one non-aqueous liquid compound wherein said non-aqueous liquid compound is:

a non-aqueous liquid compound having a global solubility parameter, according to the Hansen solubility space, of less than 17 $(MPa)^{1/2}$, and

a monoalcohol having a global solubility parameter, according to the Hansen solubility space, of less than or equal to 20 $(MPa)^{1/2}$, or a mixture thereof,

and

- b) (i) when said non-aqueous medium comprises at least one non-aqueous liquid compound which is a silicone oil, said at least one stabilizer is a sequential or grafted block copolymer, or a mixture thereof, comprising at least one block of polyorganosiloxane structure and at least one block of a radical polymer or of a polyether or of a polyester, and
- (ii) when said non-aqueous medium comprises at least one non-aqueous liquid compound which is not a silicone oil, said at least one stabilizer is:
  - (A) a sequential or grafted block copolymers, or a mixture thereof, comprising at least one block of polyorganosiloxane structure and at least one block of a radical polymer or of a polyether or of a polyester,
  - (B) a copolymer of acrylates or methacrylates of C_1–C_4 alcohols, or of acrylates or methacrylates of C_8–C_{30} alcohols,
  - (C) a sequential or grafted block copolymer, or a mixture thereof, comprising at least one block resulting from the polymerization of dienes, which is optionally hydrogenated, and at least one block of at least one polymer wherein said at least one polymer is a vinyl or acrylic polymer, polyether, or polyester; or a mixture thereof.

5,851,518
POLYMERIC COMPOSITIONS

Robert Charles Hider, Osyth, and Anthony Canas-Rodriguez, Canterbury, both of England, assignors to British Technology Group Limited, London, England

Division of Ser. No. 491,855, Jul. 13, 1995, Pat. No. 5,698,190. This application Aug. 28, 1997, Ser. No. 919,174

Claims priority, application United Kingdom, Feb. 17, 1993, 9303124; Apr. 23, 1993, 9308408

Int. Cl.^{6} C08F *8/32*

U.S. Cl. 424—78.35 **15 Claims**

1. A pharmaceutical composition adapted for oral administration comprising a physiologically acceptable polymer comprising a backbone to which are attached guanidino groups chemically bonded thereto through the terminal NH group and having a 3-dimensional network in which backbone polymer chains are cross-linked, the polymer having a minimum molecular weight of 10,000, in association with a pharmaceutically acceptable solid carrier.

5,851,519
LIVE VACCINES

Gordan Dougan; Steven Neville Chatfield, both of Beckenham; Christopher Francis Higgins, Oxford, all of England, and Charles James Dorman, Dundee, Scotland, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.; The Royal Society, London; The Lister Institute of Preventive Medicine, Middlesex, both of England, and The University Court of The University of Dundee, Dundee, Scotland

Division of Ser. No. 827,584, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 528,972, May 29, 1990, abandoned. This application Apr. 10, 1995, Ser. No. 419,618

Claims priority, application United Kingdom, May 30, 1989, 8912330

Int. Cl.^{6} A61K *35/00;39/02;39/112*

U.S. Cl. 424—93.2 **13 Claims**

1. A method of inducing immunity in a host to a pathogenic bacterium that infects by the oral route, which method comprises orally administering to the host a bacterium which is attenuated by a non-reverting mutation in the ompR gene and which expresses an antigen of the pathogenic bacterium.

5,851,520

Patent Not Issued For This Number

5,851,521
VIRAL VECTORS AND THEIR USE FOR TREATING HYPERPROLIFERATIVE DISORDERS, IN PARTICULAR RESTENOSIS

Didier Branellec, La Varenne-Saint Hilaire, France; Kenneth Walsh, Carlisle; Jeffrey M. Isner, Weston, both of Mass., and Patrice Denefle, Saint Maur, France, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Sep. 30, 1996, Ser. No. 723,726

Claims priority, application France, Mar. 31, 1995, 95 04234

Int. Cl.^{6} A61K *35/76;48/00;* **C12N** *15/86;15/63*

U.S. Cl. 424—93.2 **36 Claims**

1. A method for inhibiting proliferation of mammalian vascular smooth muscle cells, said method comprising locally administering to said cells a replication defective recombinant adenovirus comprising a gene encoding a mammalian GAX protein, wherein said gene is expressed and proliferation of said cells is inhibited.

5,851,522
ENHANCING KERATINOCYTE MIGRATION

Ira M. Herman, Newton, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Filed Jun. 7, 1995, Ser. No. 484,382

Int. Cl.^{6} A61K *38/46*

U.S. Cl. 424—94.67 **8 Claims**

1. A method of enhancing the migration and proliferation of keratinocytes in human wound healing which comprises contacting same with an effective amount of purified Clostridiopeptidase A collagenase substantially free from other proteinases.

5,851,523
ISOLATED, PEPTIDES DERIVED FROM MAGE TUMOR REJECTION ANTIGEN PRECURSORS WHICH COMPLEX WITH HLA-A2 MOLECULES AND USES THEREOF

Alan Townsend; Judy Bastin, both of Oxford, England; Thierry Boon-Falleur, Brussels, Belgium; Pierre van der Bruggen, Brussels, Belgium; Pierre Coulie, Brussels, Belgium, and Thomas Gajewski, Brussels, Belgium, assignors to Ludwig Institute for Cancer Research., London, England

Continuation-in-part of Ser. No. 261,160, Jun. 17, 1994, Pat. No. 5,591,430, which is a continuation-in-part of Ser. No. 217,186, Mar. 24, 1994, Pat. No. 5,585,461. This application Aug. 15, 1994, Ser. No. 290,381

Int. Cl.^{6} A61K *39/00;39/385*

U.S. Cl. 424—185.1 **7 Claims**

1. Method for activating cytolytic T cells, comprising contacting said cytolytic T cells with a combination of IL-6 and IL-12 and a tumor rejection antigen, the amino acid sequence of which is set forth at SEQ ID NO: 6 in an amount sufficient to activate said cytolytic T cells.

5,851,524
HUMAN MONOCLONAL ANTI-RHESUS (D) ANTIBODIES AND CELL LINES PRODUCING SAME

Roland Beliard, Saintes, France; Ulf Bethke, Rodermark, Germany; Dominique Bourel, La Madeleine, France; Ahmed Bouzidi, Annoeullin, France; Hervé Broly, Perenchies, France; Peter Byrne, Alsbach, Germany; Magali Holuigue, Samer, France; Michael Kloft, and Detlef Rohm, both of Darmstadt, Germany, assignors to Association pour l'Essor de la Transfusion Sanguine dans la Region du Nord, Lille, France, and BIOTEST Pharma GmbH, Dreieich, Germany

Continuation of Ser. No. 196,061, Apr. 5, 1994, abandoned.

This application Feb. 10, 1997, Ser. No. 798,444

Claims priority, application France, Jun. 26, 1992, 92 07893; Germany, Jul. 23, 1992, 42 24 357.2

Int. Cl.^{6} A61K *39/395;* **C12N** *5/00;* **C07K** *16/00;* **C12P** *21/08*

U.S. Cl. 424—142.1 **5 Claims**

1. A human/mouse heterohybridoma cell line having deposit number DSM ACC 2039.

5,851,525
RECOMBINANT IL-5 ANTAGONISTS USEFUL IN TREATMENT OF IL-5 MEDIATED DISORDERS

Robert S. Ames, Jr., Havertown; Edward Robert Appelbaum, Blue Bell; Irwin M. Chaiken, Gladwyne; Richard M. Cook, Chester Springs; Mitchell Stuart Gross, Wayne, all of Pa.; Stephen Dudley Holmes, Epsom, United Kingdom; Lynette Jane McMillan, Ardmore, and Timothy Wayne Theisen, Phoenixville, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Division of Ser. No. 470,110, Jun. 6, 1995, Pat. No. 5,693,323, which is a continuation-in-part of Ser. No. 363,131, Dec. 23, 1994, abandoned. This application Sep. 30, 1997, Ser. No. 940,371

Int. Cl.^{6} A61K *39/395;* **C07K** *16/00;* **C12P** *21/08*

U.S. Cl. 424—145.1 **24 Claims**

1. A method of treating a pathological condition associated with excess eosinophil production in a human comprising the step of administering to a human in need of such treatment a synthetic antibody comprising a heavy and a light chain, wherein the framework regions of said heavy and light chains are obtained from at least a first antibody and the amino acid sequences of the complementarity determining regions of the heavy chain comprise in sequential order: an amino acid sequence as set forth in SEQ ID NO: 7, an amino acid sequence as set forth in SEQ ID NO: 8, and an amino acid sequence selected from the group consisting of a sequence as set forth in SEQ ID NO: 9 and a sequence as set forth in SEQ ID NO: 14, and the amino acid sequences of the complementarity determining regions of the light chain comprise in sequential order: an amino acid sequence as set forth in SEQ ID NO: 10, an amino acid sequence as set forth in SEQ ID NO: 11, and an amino acid sequence selected from the group consisting of a sequence as set forth in SEQ ID NO: 12 and a sequence as set forth in SEQ ID NO: 13, in an amount sufficient to ameliorate a condition associated with excess eosinophil production in a human.

5,851,526
METHODS OF TREATING COLON CANCER UTILIZING TUMOR-SPECIFIC ANTIBODIES

Sydney Welt; Gerd Ritter; Leonard Cohen; Clarence Williams, Jr.; Elizabeth Carswell Richards; Mary John, and Lloyd J. Old, all of New York, N.Y., assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 20,223, Feb. 16, 1993, Pat. No. 5,431,897, which is a continuation of Ser. No. 673,153, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 327,765, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 118,411, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 724,991, Apr. 19, 1985, abandoned.

This application May 25, 1995, Ser. No. 449,911

Int. Cl.^{6} A61K *39/395;39/00*

U.S. Cl. 424—156.1 **11 Claims**

1. A method for promoting tumor regression or reducing serum CEA levels in a subject comprising administering to said subject a pharmaceutically effective amount of a conjugate of an antibody selected from the group consisting of monoclonal antibody A33 produced by hybridoma cell line ATCC HB 8779, 100-210 produced by hybridoma cell line ATCC HB 11764 and 100-310 produced by hybridoma cell line ATCC HB 11028 and a radioisotope selected from the group consisting of ^{125}I, ^{131}I, ^{99}Tc, ^{90}Y and ^{111}In.

5,851,527
METHOD FOR ANTIBODY TARGETING OF THERAPEUTIC AGENTS

Hans John Hansen, Westfield, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Continuation of Ser. No. 182,623, Apr. 18, 1988, abandoned. This application May 19, 1995, Ser. No. 445,110

Int. Cl.^{6} A61K *39/395*

U.S. Cl. 424—178.1 **26 Claims**

1. A method for targeting a cytotoxic agent to a target site, comprising the steps of:

- (a) injecting a mammal parenterally with an effective amount for targeting of a bispecific antibody or antibody fragment having a first binding site specific for an antigen present at a target site and a second binding site specific for an epitope on an enzyme, wherein binding to said epitope does not interfere with enzyme activity;
- (b) subsequently injecting said mammal parenterally with an effective amount for enzyme activity of said enzyme, such that said bispecific antibody or antibody fragment binds said enzyme to form an antibody-enzyme conjugate in situ; and
- (c) after a sufficient period of time for localization of said antibody-enzyme conjugate at the target site and for unbound antibody-enzyme conjugate to clear from the circulatory system of the mammal, further injecting said mammal parenterally with an effective amount for deposition at said site of a serum soluble polymer substrate-agent conjugate which is capable of transformation by said enzyme to form a product comprising a cytotoxic agent that is relatively insoluble in serum in vivo, wherein the cytotoxic agent partitions out once the substrate-agent conjugate is acted upon by the enzyme component of the targeted antibody-enzyme conjugate, so that the agent then accretes at the target site to a significantly greater extent than the substrate-agent conjugate would accrete in the absence of the enzyme, said polymer substrate-agent conjugate comprising a polymer substrate for said enzyme, wherein either (1) a plurality of molecules of said agent are linked to said polymer substrate, or (2) said polymer substrate is a coating on the agent, which agent is one that is attracted to the target site in the absence of such coating, such that cleavage by the enzyme liberates the agent;

wherein said enzyme is selected from the group consisting of dextranase, cellulase and beta-glucosidase.

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5,851,528
METHODS OF INHIBITING COMPLEMENT ACTIVATION

Jone-Long Ko, Sudbury; Paul J. Higgins, Medford, and C. Grace Yeh, Marlborough, all of Mass., assignors to Cytomed, Inc., Cambridge, Mass.

Division of Ser. No. 310,416, Sep. 22, 1994, Pat. No. 5,679,546, which is a continuation-in-part of Ser. No. 126,596, Sep. 24, 1993, abandoned. This application Jul. 3, 1997, Ser. No. 888,171

Int. Cl.^{6} A61K *38/16;* **C07K** *14/46*

U.S. Cl. 424—185.1 **35 Claims**

1. A method of inhibiting C3a and C5a generation comprising:

(a) contacting a C3 convertase with a soluble chimeric protein comprising a first soluble polypeptide which inhibits complement activation linked to a second soluble polypeptide which inhibits complement activation, wherein said first and second polypeptides are derived from the same or different members of the regulator of complement activation (RCA) family and wherein said first polypeptide is linked to said second polypeptide by a peptide bond;

(b) contacting a C5 convertase with said chimeric protein, wherein binding of said chimeric protein to said C3 convertase and said C5 convertase inhibits the generation of C3a and C5a, respectively.

5,851,529
RECOMBINANT RETROVIRUSES

Harry E. Guber, 13083 Maritime Pl., San Diego, Calif. 92130; Douglas J. Jolly, 3050H Via Alicante Dr., La Jolla, Calif. 92037; James G. Respess, 4966 Lamont St., San Diego, Calif. 92109, and Paul K. Laikind, 12433 Caminito Mira Del Mar, San Diego, Calif. 92130

Continuation of Ser. No. 136,739, Oct. 12, 1993, which is a continuation of Ser. No. 395,932, Aug. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 170,515, Mar. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 477,890

Int. Cl.^{6} A61K *39/21;39/00;48/00*

U.S. Cl. 424—188.1 **16 Claims**

1. A method of stimulating a cell-mediated immune response to a viral or cancer antigen in a human, comprising infecting susceptible target cells with a replication defective recombinant retrovirus construct directing the expression of said viral or cancer antigen or mutated form thereof in said infected target cells, wherein said viral antigen is from a virus that is pathogenic to humans, and wherein said antigen or mutated form thereof elicits a cell-mediated immune response directed to said viral or cancer antigen or mutated form thereof in said human.

5,851,530

Patent Not Issued For This Number

5,851,531
ADULT-ONSET DIABETES TREATMENT METHOD

Douglas D. Lazarus, 17 Winter St., Apt. 17, Watertown, Mass. 02172

Filed Feb. 11, 1997, Ser. No. 799,094

Int. Cl.^{6} A01N *65/00*

U.S. Cl. 424—195.1 **30 Claims**

1. A method of inducing weight loss in a mammal in need thereof comprising administering to said mammal a lectin selected from the group consisting of pokeweed mitogen containing a chloroform precipitatable fraction and Momordica lectin in an amount effective to induce a decline in food intake in said mammal and continuing said administering step to maintain the decline in food intake.

5,851,532

Patent Not Issued For This Number

5,851,533
VACCINE BASED ON MEMBRANE BOUND PROTEINS AND PROCESS FOR MAKING THEM

Phillip W. Berman, and Laurence A. Lasky, both of San Francisco, Calif., assignors to Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 171,858, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 814,243, Dec. 23, 1991, which is a continuation of Ser. No. 695,585, May 3, 1991, abandoned, which is a continuation of Ser. No. 878,087, Jun. 24, 1986, abandoned, which is a continuation of Ser. No. 588,170, Mar. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 527,917, Aug. 30, 1983, abandoned, and Ser. No. 547,551, Oct. 31, 1983, abandoned. This application Dec. 15, 1994, Ser. No. 357,084

Int. Cl.^{6} A61K *39/245;39/255;* **A01N** *63/00;* **C12P** *21/06*

U.S. Cl. 424—229.1 **10 Claims**

1. A vaccine effective against herpes simplex virus type 1 or type 2 pathogen comprising a membrane-bound polypeptide having exposed antigenic determinants that raise neutralizing antibodies against in vivo challenge by said pathogen, said polypeptide being functionally associated with a membrane of a recombinant, stable, mammalian continuous cell line used in its production, said polypeptide comprising a gD glycoprotein of herpes simplex virus type 1 or type 2.

5,851,534
METHODS FOR PREVENTION AND/OR TREATMENT OF NEUTROPENIA

Fazal Raheman, Burlington; Nicolae Istrate, Lexington; Gita Muni, North Reading, and Edgard Brauner, Brighton, all of Mass., assignors to Dynagen, Inc., Cambridge, Mass.

Filed May 3, 1996, Ser. No. 642,425

Int. Cl.^{6} A61K *39/108*

U.S. Cl. 424—260.1 **18 Claims**

1. A method of treating neutropenia in a human subject comprising the step of administering to a human subject exhibiting neutropenia or at risk of developing neutropenia a colony modulating factor derived from *pseudomonas* in an amount effective for inhibiting a decrease in the number of neutrophils in the subject, wherein the colony modulating factor is a *pseudomonas* solvent extract which is prepared by the steps of incubating a *pseudomonas* culture with a ketone to produce a first precipitate, wherein the ketone is a lower C_2-C_6;

mixing the first precipitate with an alcohol to produce an alcohol extract, wherein the alcohol is a lower C_1-C_6;

collecting the alcohol extract; and

precipitating an active material from the alcohol extract with a lower C_1-C_6 ketone to produce the *pseudomonas* solvent extract.

5,851,535
MIMOTOPIC POLYPEPTIDES OF *TOXOPLASMA GONDII* AND APPLICATIONS

Colette Jolivet-Reynaud, Bron, France, assignor to Bio Merieux, Marcy L'Etoile, France

Filed Jan. 26, 1996, Ser. No. 592,646

Claims priority, application France, Jan. 30, 1995, 95 01297

Int. Cl.^{6} A61K *39/012*

U.S. Cl. 424—273.1 **16 Claims**

1. An isolated polypeptide that binds specifically with an anti-*Toxoplasma gondii* P30 protein antibody, whose peptide sequence comprises SEQ ID No.2.

5,851,536
THERAPEUTIC DELIVERY USING COMPOUNDS SELF-ASSEMBLED INTO HIGH AXIAL RATIO MICROSTRUCTURES

Paul Yager; Michael H. Gelb; Paul A. Carlson; Kyujin C. Lee; Anatoly N. Lukyanov, and Alex S. Goldstein, all of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Nov. 21, 1996, Ser. No. 752,848

Int. Cl.^{6} A61K *9/00;9/127*

U.S. Cl. 424—400 **10 Claims**

1. A therapeutic agent comprising a covalent covalent complex according to the formula HARFM-Th, where HARFM is a high axial ratio forming microstructure material selected from the group consisting of tubules, cochleate cylinders, helical ribbons, twisted ribbons, and mixtures thereof the Th being a therapeutic covalently attached to molecules assembled into the high axial ratio microstructure.

5,851,537
TOPICAL APPLICATION OF α-DFMO FOR PREVENTING SKIN CANCER

David S. Alberts, and Robert T. Dorr, both of Tucson, Ariz., assignors to Cancer Technologies, Inc., Tucson, Ariz.

Filed Jan. 31, 1997, Ser. No. 792,619

Int. Cl.^{6} A61K *9/00;31/195*

U.S. Cl. 424—400 **5 Claims**

1. A method for the reduction of actinic keratoses (Aks) in human skin, said method including the steps of:

providing a salve containing between 1–22 % by weight α-DFMO; and

applying an appropriate amount of the salve to skin containing actinic keratoses.

5,851,538
RETINOID FORMULATIONS IN POROUS MICROSPHERES FOR REDUCED IRRITATION AND ENHANCED STABILITY

Michael Froix, Mountain View; Masha Pukshansky, San Francisco, and Sergio Nacht, Redwood City, all of Calif., assignors to Advanced Polymer Systems, Inc., Redwood City, Calif.

Filed Dec. 29, 1995, Ser. No. 581,126

Int. Cl.^{6} A61K *7/00;7/02*

U.S. Cl. 424—401 **16 Claims**

1. A stable pharmaceutical composition for topical administration of retinol consisting of an oil-in-water emulsion comprising, suspended in the emulsion, solid water-insoluble microscopic particles containing a substantially continuous network of pores open to the exterior of the particles and a retinoid composition comprising retinol residing only in the pores, the composition causing lower irritancy when applied than a composition containing the same concentration of retinol in a non-(microscopic particle) formulation.

5,851,539
FLUOROCARBON CONTINUOUS PHASE WATER-IN-OIL EMULSIONS EMPLOYING SILICONE SURFACTANTS

Myriam Mellul, L'Hay les Roses, and Pascal Arnaud, Creteil, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 139,163, Oct. 21, 1993, abandoned. This application Oct. 24, 1996, Ser. No. 736,491

Claims priority, application France, Oct. 21, 1992, 92 12608

Int. Cl.^{6} A61K *7/00;7/021*

U.S. Cl. 424—401 **11 Claims**

1. Cosmetic or dermatological emulsion of the water-in-oil type, comprising an aqueous phase emulsified by means of a silicone surfactant in a continuous fatty phase containing at least one fluorohydrocarbon, wherein said fluorohydrocarbon is liquid, solid or pasty, has a substitution ratio of between 0.5 and 95%, has at least one hydrocarbon group and has the formula (I):

$$(R_F)_x—(A)_y—(R_H)_z \qquad (I)$$

in which:

x represents 1, 2 or 3,

y represents 0 or 1,

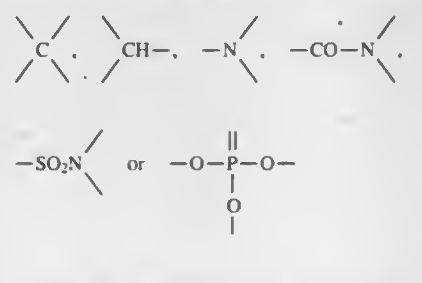
z represents 0, 1, 2 or 3,

on the condition that y and z are not simultaneously 0, and that when z is 0, x is 2 or 3,

R_F represents a fluorinated radical selected from the group consisting of saturated and unsaturated, linear, branched and cyclic, aliphatic and aromatic fluorinated radicals which may be functionalized by insertion, terminal or pendant substitution of the backbone by at least one organic functional group selected from the group consisting of an alcohol, thiol, acid, carbonyl, sulfoxide, ester, amide, amine, phosphate, ethylene, acetylene, enamide and sulfonamide, interrupted by one or more oxygen or sulfur atoms or carrying hydrogen substituents or halogen substituents other than fluorine, provided that for any two carbon atoms of the skeleton, no more than one of said substituents other than fluorine is present on said two carbon atoms,

R_H is an aliphatic hydrocarbon radical selected from the group consisting of saturated and unsaturated, linear and branched radicals, which may be functionalized by insertion, terminal or pendant substitution of the backbone by at least one organic functional group selected from the group consisting of an alcohol, thiol, acid, carbonyl, sulfoxide, ester, amide, amine, phosphate, ethylene, acetylene, enamide and sulfonamide, or interrupted by one or more oxygen or sulfur atoms,

A represents a di-, tri- or quadrivalent radical of the formula:



or cyclic, aliphatic or aromatic structures or ethylenic unsaturations; the aqueous phase representing 10 to 90% by weight of the emulsion and said emulsion being in the form of a milk, a cream for skin or hair care, anti-sun cream, coloured cream, foundation, lipstick, mascara or blusher.

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5,851,540

COMPOSITION, BARRIER FILM, AND METHOD FOR PREVENTING CONTACT DERMATITIS

Joan Dalla Riva Toma, Piscataway, and Curtis L. Karl, Somerset, both of N.J., assignors to Hydromer, Inc., Branchburg, N.J.

Division of Ser. No. 642,227, Apr. 30, 1996. This application Mar. 26, 1997, Ser. No. 824,282

Int. Cl.^{6} A61K *9/48*

U.S. Cl. 424—401 **4 Claims**

1. A dermatologically-compatible barrier film comprising:

(1) a polysaccharide, said polysaccharide is a nonionic cellulose derivative selected from the group consisting of methylcellulose, ethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, hydroxybutylcellulose, methylhydroxyethylcellulose, methylhydroxypropylcellulose, methylhydroxybutylcellulose, hydroxyethylhydroxypropylcellulose, and ethylhydroxyethylcellulose;

(2) a low molecular weight, synergistic saccharide, said low molecular weight, synergistic saccharide is selected from the group consisting of a fructose, glucose, mannose, sucrose, maltose, maltodextrin, corn syrup solids, derivatized monosaccharide, derivatized disaccharide, and derivatized starch hydrolysate,

said derivatized monosaccharide is selected from the group consisting of ethoxylates of methyl glucoside, propoxylates of methyl glucoside, propoxylates of methyl glucoside distearate, and methyl glucose dioleate,

said derivatized disaccharide is selected from the group consisting of about 10 mole ethoxylates, about 20 mole ethoxylates, about 10 mole propoxylates, about 20 mole propoxylates,

said derivatized starch hydrolysate is selected from the group consisting of about 10 mole ethoxylates, about 20 mole ethoxylates, about 10 mole propoxylates, and about 20 mole propoxylates; and

(3) optionally one or more additives.

5,851,541

STABILIZED CLEANSING COMPOSITION WITH OPACIFIER

Joseph Michael Corey, Waterbury, and Cathleen Corcoran, Oxford, both of Conn., assignors to Elizabeth Arden Co. Division of Conopco, Inc., New York, N.Y.

Filed Jun. 4, 1997, Ser. No. 869,128

Int. Cl.^{6} A61K *6/00;7/00*

U.S. Cl. 424—401 **9 Claims**

1. A cosmetic emulsion composition with good foaming properties comprising:

(i) from 0.01 to 5% of an inorganic opacifying pigment;

(ii) from 0.1 to 50% of an anionic surfactant;

(iii) an effective amount to stabilize the emulsion of a hydroxy functionalized wax.

5,851,542

COSMETIC AND DERMATOLOGICAL LIGHT PROTECTION FORMULATIONS HAVING A CONTENT OF TRIAZINE DERIVATIVES AND GLYCEROL MONO- OR DICARBOXYLIC ACID MONOESTERS

Heinrich Gers-Barlag, Kummerfeld, Germany, assignor to Beiersdorf AG, Hamburg, Germany

Filed Aug. 13, 1997, Ser. No. 910,186

Claims priority, application Germany, Aug. 16, 1996, 196 32 913.2

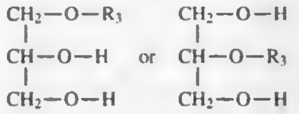
Int. Cl.^{6} A61K *6/00*

U.S. Cl. 424—401 **10 Claims**

1. A cosmetic or dermatologic formulation for protecting skin against the damaging effects of UV light, said formulation comprising an effective amount therefor of a combination of:

(a) tris(2-ethylhexyl) 4,4',4"-(1,3,5-triazine-2,4,6-triyltriimino) trisbenzoate and

(b) one or more surface-active substances selected from the group consisting of glycerol mono- and dicarboxylic acid monoesters of the general formula



$$\begin{array}{ccc} CH_2-O-R_3 & & CH_2-O-H \\ | & & | \\ CH-O-H & \text{or} & CH-O-R_3 \\ | & & | \\ CH_2-O-H & & CH_2-O-H \end{array}$$

wherein R_3 is a branched or unbranched acyl radical having 6–24 carbon atoms.

5,851,543

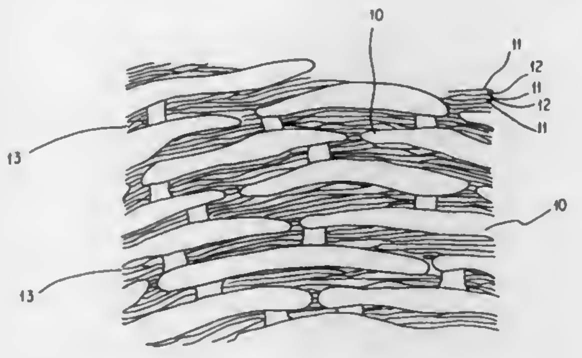
SKIN CARE PREPARATION AND METHOD

Donald R. Korb, Boston, Mass.; Thomas Glonek, Oak Park, Ill., and Jack V. Greiner, Winchester, Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Continuation of Ser. No. 552,426, Nov. 3, 1995, Pat. No. 5,738,856. This application Nov. 26, 1997, Ser. No. 978,538

Int. Cl.^{6} A61K *7/48*

U.S. Cl. 424—401 **8 Claims**



1. A method for treatment of human skin by enhancing formation of lamellae between corneocytes within the skin, said method comprising topical application of a pharmaceutically acceptable composition to the skin, said composition comprising essentially a carrier, an effective amount of a hydrocarbon oil having from 10 to 50 carbon atoms and an effective amount of a bilayer component that is a mixture of a negatively charged phospholipid and a triglyceride.

5,851,544

COSMETIC SKIN OR HAIR CARE COMPOSITIONS CONTAINING FLUOROCARBONS INFUSED WITH CARBON DIOXIDE

Christine Penska, Park Ridge; Uma Santhanam, Tenafly, and Stephan Habif, Demarest, all of N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Dec. 18, 1997, Ser. No. 993,294

Int. Cl.^{6} A61K *7/48*

U.S. Cl. 424—401 **3 Claims**

1. A cosmetic skin or hair care oil-in-water emulsion comprising:

i) from about 0.1% to about 70%, by weight of the emulsion of a fluorocarbon infused with carbon dioxide wherein the fluorocarbon is inert, liquid at 25° C. and hydrophobic and is selected from the group consisting of perfluorooctane, perfluorodecane, perfluorodecalin, perfluorooctylbromide, perfluorodecylbromide, perfluorooctyliodide, perfluorotripropylamine, perfluoro-tributylamine, bis-(F-butyl)-ethene and perfluoro-polymethylisopropyl ether;

ii) an ingredient selected from the group consisting of a sunscreen in an amount from 0.1 to 25% by weight; and a cationic conditioning agent in an amount from 0.01 to 10% by weight;

iii) a cosmetically acceptable vehicle.

3. A method of preparing the emulsion of claim 1, the method comprising infusing fluorocarbon with carbon dioxide and subsequently incorporating the fluorocarbon infused with carbon dioxide into the emulsion.

5,851,545

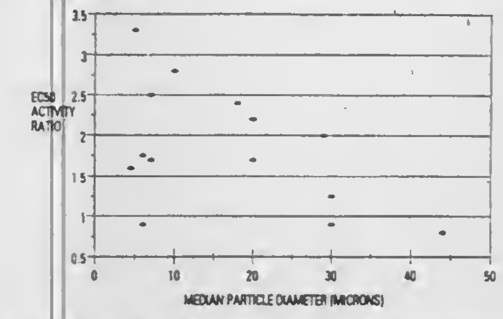
INSECTICIDAL MATRIX AND PROCESS FOR PREPARATION THEREOF

Jeffrey D. Fowler, and Benjamin E. Feinstein, both of Mountain View, Calif., assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 12, 1996, Ser. No. 654,512

Int. Cl.^{6} A01N *25/00*

U.S. Cl. 424—405 **9 Claims**



1. A method for preparing a biopesticidal insecticidally effective composition which comprises:

(a) forming an aqueous polymer solution wherein said aqueous polymer is soluble under neutral to alkaline conditions and insoluble under weakly acidic conditions in an aqueous medium;

(b) forming a dispersion of an inorganic light blocking agent;

(c) obtaining a suspension culture of an active insecticidal ingredient selected from the group of bacteria and viruses;

(d) preparing a solution of a volatile base and combining said solution with the suspension of step (c);

(e) mixing the dispersion of the light blocking agent with the solution of the polymer to obtain a second dispersion and then combining the second dispersion with the suspension of the active ingredient and solution of volatile base; and

(f) spray drying the mixture of (e)

wherein the active ingredient and the light blocking agent are dispersed in a matrix formed by said aqueous polymer.

5,851,546

POLYMER COMPOSITION FOR CONTROLLED RELEASE OF ACTIVE INGREDIENTS IN RESPONSE TO PH, AND A PROCESS OF PREPARING THE SAME

Raghunath Anant Mashelkar; Mohan Gopalkrishna Kulkarni, and Rohini Nitin Karmalkar, all of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Mar. 14, 1996, Ser. No. 615,431

Claims priority, application India, Jun. 14, 1995, 1096/DEL/95

Int. Cl.^{6} A61F *2/00;* **A61K** *9/52*

U.S. Cl. 424—426 **23 Claims**

1. A polymer for the controlled release of an active ingredient, the polymer having the general formula $A_xB_yC_zS_q$ wherein A is an imidazole group-bearing vinyl monomer, B is a hydroxyl group-bearing vinyl monomer, C is a carboxyl group-bearing vinyl monomer, and S is a vinyl monomer covalently bonded to an active ingredient through an amide or an ester; and $x+y+z+q=1$; and x, y, z, q can vary such that $0<x<1$, and $0<q<1$, and y and z can vary between 0 to 1.

5,851,547

CONTROLLED RELEASE DRUG FORMULATION OF OPEN END CYLINDRICAL ROD FORM

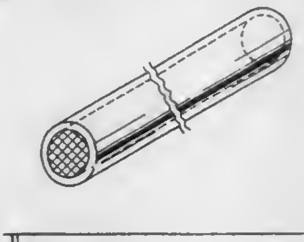
Keiji Fujioka, Hyogo Prefecture; Takeshi Hirasawa, Osaka Prefecture; Masako Kajihara, Hyogo Prefecture; Akihiko Sano, Osaka Prefecture; Shuichi Sugawara, and Yosuke Urabe, both of Kanagawa Prefecture, all of Japan, assignors to Dow Corning Asia, Ltd., Tokyo, and Sumitomo Pharmaceuticals Co., Ltd., Osaka, both of Japan

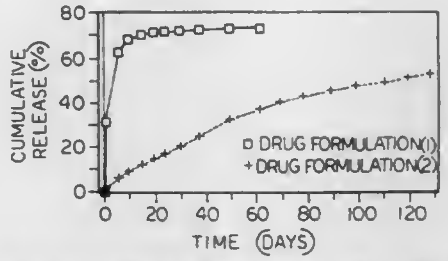
Continuation of Ser. No. 362,623, Dec. 22, 1994, abandoned. This application Dec. 10, 1996, Ser. No. 762,847

Claims priority, application Japan, Dec. 27, 1993, 5-331467

Int. Cl.^{6} A61K *9/24*

U.S. Cl. 424—426 **23 Claims**





1. A controlled release drug formulation in the form of a cylindrical rod having an axial length comprising:

(a) a nondisintegrating inner layer having a cross-sectional diameter and a circumference wherein said inner layer is comprised of a biocompatible hydrophobic material selected from the group consisting of polyesters, polyamino acids, silicones, ethylene-vinyl acetate copolymers and polyvinyl alcohols that contains at least one uniformly dispersed water-soluble drug as the only active agent(s), and

(b) an outer layer comprised of a biocompatible hydrophobic polymer wherein said outer layer surrounds the circumference of the inner layer and the outer layer is impermeable to water and is capable of controlling the swelling of the inner layer;

wherein the ratio of the axial length of the drug formulation to the cross-sectional diameter of the inner layer is one or more and at least one end of the inner layer is open so as to come into contact with any external environment, and wherein the drug is released at a controlled rate over a prolonged period of time exclusively through said open end.

5,851,548

LIPOSOMES CONTAINING CATIONIC LIPIDS AND VITAMIN D

Nanibhushan Dattagupta; Aditya Ranjan Das, both of San Diego; C. Nagaraja Sridhar, Simi Valley, and Jasmin R. Patel, San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 482,305

Int. Cl.^{6} A61K *9/127*

U.S. Cl. 424—450 **17 Claims**

1. A formulation for introducing a biomolecule into a cell comprising a liposome, said liposome comprising a Vitamin D derivative, a pH sensitive amphiphile, a biomolecule and a thiocationic lipid of the formula:

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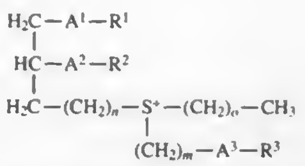


$$\begin{array}{l} H_2C-A^1-R^1 \\ \;\;| \\ HC-A^2-R^2 \\ \;\;| \\ H_2C-(CH_2)_n-S^+-(CH_2)_o-CH_3 \\ \qquad\qquad\quad\;\; | \\ \qquad\qquad (CH_2)_m-A^3-R^3 \end{array}$$

and optical isomers, salts, or a combination of optical isomers and salts thereof wherein:

A^1 and A^2 are the same or different and are —O—CO—, —O—, —S—CO— or —S—;

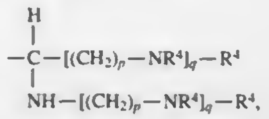
A^3 is —O—, —O—CO—, —CO—O—, —S—, —S—CO—, —CO—S—, —O—CS—, —CS—O—, —CO—NH—, —NH—CO—, —CS—NH—, —NH—CS—, —NH—CO—O—, —NH—CO—NH—, —O—CO—NH—, or is absent;

R^1 and R^2 are the same or different and are H, or C_1 to C_{23} saturated or partially unsaturated alkyl or aralkyl, with the proviso that at least one of R^1 and R^2 is not H;

R^3 is a C_1 to C_{12} alkyl, aralkyl, alkaryl, heterocyclyl or heteroaryl; or

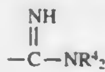
R^3 is an amino acid, a dipeptide, a tripeptide, a tetrapeptide or a pentapeptide; or

R^3 is $-[(CH_2)_p-NR^4]_q-R^4$,
$-(CH_2)_p-NR^4{}_3{}^+$,



$$\begin{array}{l} \;\;H \\ \;\;| \\ -C-[(CH_2)_p-NR^4]_q-R^4 \\ \;\;| \\ \;\;NH-[(CH_2)_p-NR^4]_q-R^4, \end{array}$$

or



$$\begin{array}{l} \;\;NH \\ \;\;\| \\ -C-NR^4{}_2, \end{array}$$

wherein p is an integer from 1 to 5, q is an integer from 0 to 4, and R^4 is H or a C_1 to C_4 alkyl, and each of m, n and o is an integer from 0 to 8, with the provisos that $m \geqq 1$ and $(m+n+o) \geqq 3$.

5,851,549
PATCH, WITH SYSTEM AND APPARATUS FOR MANUFACTURE

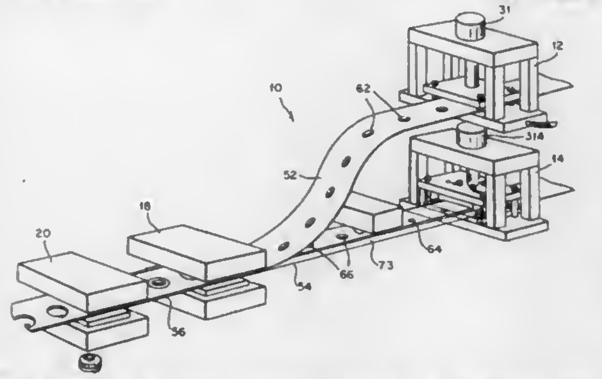
James A. Svec, Bloomingdale, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

PCT No. PCT/US94/05861, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO94/27649, PCT Pub. Date Dec. 8, 1994

PCT Filed May 25, 1994, Ser. No. 549,747

Int. Cl.^{6} A61F *13/00;* **B32B** *31/00;* **A61K** *9/70*

U.S. Cl. 424—448 **20 Claims**



1. A patch for applying a substance topically to an applied area, comprising:

a trilaminate material including:

a first material having a reservoir formed therein;

wherein said reservoir is defined by dimple formed in said first material with a cavity therein;

a dosage of medication contained in said reservoir; and

a second material including a diaphragm covering said reservoir with a plurality of slits in said diaphragm through which the medication may pass for application to the applied area.

5,851,550
PHARMACEUTICAL FORMULATIONS OF COMPACTED GRANULATES OF β-LACTAM ANTIBIOTICS

Luis Carvajal Martin, and Juan Dedios Romero, both of Toledo, Spain, assignors to SmithKline Beecham p.l.c., Brentford, United Kingdom

Continuation of Ser. No. 146,069, Jul. 14, 1994, abandoned. This application Oct. 9, 1996, Ser. No. 729,222

Claims priority, application United Kingdom, May 8, 1991, 9109862

Int. Cl.^{6} A61K *9/16;9/20*

U.S. Cl. 424—464 **26 Claims**

1. A process for the manufacture of a pharmaceutical tablet, in which granulates comprising a medicament which comprises amoxycillin optionally in combination with a salt of clavulanic acid in a weight ratio equivalent to amoxycillin: clavulanic acid in the range 12:1 to 1:1, optionally together with an intra-granular disintegrant; which granulates are prepared by dry roller compaction, are mixed with an extra-granular disintegrant and optionally with an extra-granular lubricant and excipients, provided that if a lubricant is present it amounts to less than 0.5% by weight of the mixture, and the mixture is compressed into tablets.

5,851,551
SUSTAINED-RELEASE MATRICES FOR DENTAL APPLICATION

Mingchih M. Tseng, Hingham, and Carl M. Philbrook, Jamaica Plain, both of Mass., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 898,471, Jun. 15, 1992, Pat. No. 5,340,581, which is a continuation-in-part of Ser. No. 749,137, Aug. 23, 1991, abandoned. This application Jun. 21, 1994, Ser. No. 262,961

Int. Cl.^{6} A61K *9/26;7/16;7/22;31/74*

U.S. Cl. 424—486 **6 Claims**

1. A method of releasing an anti-microbial agent into a mouth of an animal, comprising

providing a matrix including between 50% and 90% by weight of a water-insoluble resin comprising ethylene vinyl acetate, between 5% and 40% by weight polyethylene oxide, and an anti-microbial agent;

inserting said matrix into a mouth of an animal; and

causing said water-soluble polymer to dissolve out of said matrix, releasing said anti-microbial agent into the mouth.

5,851,552
DELIVERY OF CONTROLLED-RELEASE SYSTEM(S)

Garry L. Myers; Gerald E. Battist, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies, Ltd., Chantilly, Va.

Division of Ser. No. 334,729, Nov. 4, 1994, Pat. No. 5,567,439, which is a continuation-in-part of Ser. No. 259,496, Jun. 14, 1994, abandoned, and Ser. No. 259,258, Jun. 14, 1994. This application Aug. 16, 1996, Ser. No. 698,907

Int. Cl.^{6} A61K *9/20*

U.S. Cl. 424—488 **15 Claims**

1. A composition for preparing uncured comestible units having controlled release properties comprising microparticulates containing a mixture of:

a controlled-release system containing an active ingredient and amorphous saccharide-based shearform masses.

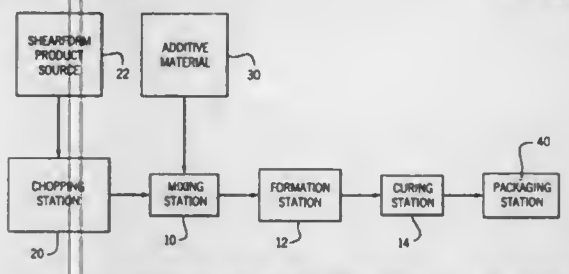
5,851,553
PROCESS AND APPARATUS FOR MAKING RAPIDLY DISSOLVING DOSAGE UNITS AND PRODUCT THEREFROM

Garry L. Myers; Gerald E. Battist, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies, Ltd., Chantilly, Va.

Continuation-in-part of Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551, and a division of Ser. No. 652,252, May 23, 1996, Pat. No. 5,622,719, which is a continuation of Ser. No. 259,496, Jun. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 133,669, Oct. 7, 1993, Pat. No. 5,597,416. This application Dec. 19, 1996, Ser. No. 772,024

Int. Cl.^{6} A61K *9/20;9/22*

U.S. Cl. 424—488 **14 Claims**



1. A cured comestible unit which can dissolve in the mouth in less than 10 seconds prepared by the method comprising:

mixing a chopped uncured shearform matrix and an additive;

compressing to a density of about 1.2 or less; and

curing said compressed shearform matrix by subjecting it to conditions of heat, moisture and pressure which induce crystallization.

5,851,554
PURIFIED CARDIAC TROPONIN I

Lillian Lee, North York, and George Jackowski, Inglwood, both of Canada, assignors to Spectral Diagnostics, Inc., Toronto, Canada

Division of Ser. No. 296,644, Aug. 26, 1994, Pat. No. 5,560,937, which is a continuation-in-part of Ser. No. 110,824, Aug. 24, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 578,240

Int. Cl.^{6} A61K *35/34*

U.S. Cl. 424—569 **13 Claims**

1. A pure, stable cardiac troponin I preparation, the troponin I having a molecular weight of about 28 kDa, prepared by a process which comprises the steps of:

extracting human cardiac tissue with an aqueous extraction buffer at a pH of from about 7 to 9 which is 8 to 10M in Urea and contains a protease inhibitor mixture comprising at least two cathepsin protease inhibitors, at least one serine protease inhibitor and at least one cysteine protease inhibitor; separating the troponin I from the extract by affinity chromatography in the presence of the extraction buffer and calcium ion thereby to absorb the troponin I; and desorbing the troponin I by washing with the aqueous extraction buffer containing EGTA.

5,851,555
CONTROLLED RELEASE DOSAGE FORMS CONTAINING WATER SOLUBLE DRUGS

Pradeepkumar P. Sanghvi, Herndon; Tushar K. Misra, Leesburg, and David V. Prior, Ashburn, all of Va., assignors to Fuisz Technologies LTD., Chantilly, Va.

Filed Aug. 15, 1997, Ser. No. 914,339

Int. Cl.^{6} A61K *9/20;9/22;9/26*

U.S. Cl. 424—464 **17 Claims**

1. Compositions suitable for making controlled release dosage forms consisting essentially of

about 5 to about 40 parts of a water soluble active agent;

about 0 to about 15 parts of an inert carrier;

about 5 to about 45 parts cellulosic polymer; and

about 0.1 to about 45 parts lipophilic ingredient,

wherein the lipophilic ingredient is at least one selected from the group consisting of: a fatty acid ester, a wax, a fat or cetyl alcohol.

5,851,556
USE OF A SALT OF AN ALKALINE-EARTH METAL AS TNF-A OR SUBSTANCE F INHIBITOR IN A TOPICAL COMPOSITION AND COMPOSITION OBTAINED

Lionel Breton, Versailles, and Olivier De Lacharriere, Paris, both of France, assignors to Société L'Oréal S.A., Paris, France

Filed Apr. 10, 1996, Ser. No. 630,326

Claims priority, application France, Apr. 10, 1995, 95 04264; Apr. 10, 1995, 95 04265; Apr. 10, 1995, 95 04267; Apr. 10, 1995, 95 04268; Sep. 20, 1995, 95 10980

Int. Cl.^{6} A61K *33/32*

U.S. Cl. 424—639 **87 Claims**

1. Cosmetic, dermatological, veterinary or pharmaceutical composition containing, in a cosmetic, dermatological, veterinary or pharmaceutical medium, at least one salt of at least one alkaline-earth metal which alkaline earth metal inhibits TNF-alpha activity and at least one neuropeptide antagonist or at least one inflammation mediator antagonist, different from the said salt.

5,851,557
RIGID-CORE MOLD FOR ANNULAR TREADS INTENDED, IN PARTICULAR, FOR THE RECAPPING OF TIRES

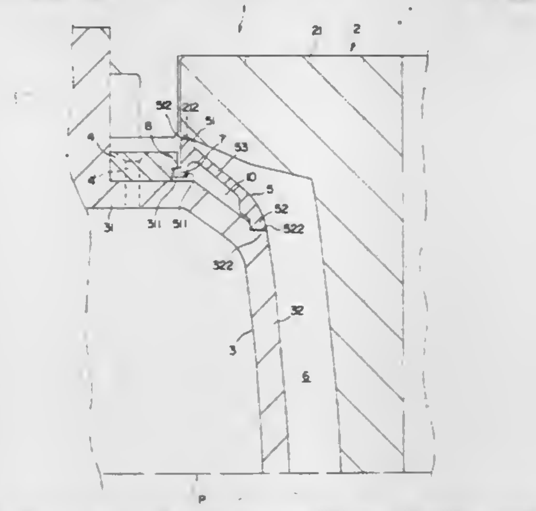
Guy Pouille, Clermont-Ferrand, and Bernard Ravel, Nohanent, both of France, assignors to Compagnie Generale des Establissements Michelin - Michelin & Cie, Clermont-Ferrand, France

Filed Dec. 18, 1996, Ser. No. 769,715

Claims priority, application France, Dec. 19, 1995, 95 15892

Int. Cl.^{6} B29C *35/02*

U.S. Cl. 425—46 **15 Claims**



1. A mold for the molding and vulcanizing of annular treads, comprising at least one rigid core defining the inner surface of the tread, a collar divided into sectors which are movable radially between an open position and a closed position of said collar for molding of the outer surface of the tread, and axially movable connecting means on the core for providing a tight connection between said core and the sectors whatever the position of the sectors between said closed position of the collar and a slightly apart position of the sectors, the sectors, the core, and the connecting means defining the mold cavity for the tread.

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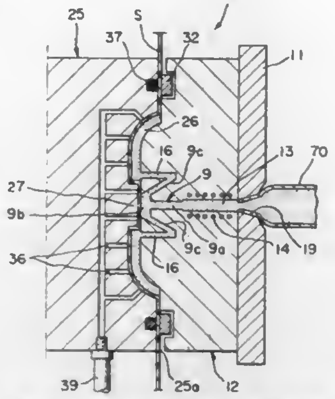
5,851,558
FOIL-DECORATING INJECTION MOLDING MACHINE

Hiroyuki Atake, Tokyo-to, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan
Filed Nov. 27, 1996, Ser. No. 755,571
Int. Cl.⁶ B29C *45/14;45/27*
U.S. Cl. 425—111 **6 Claims**



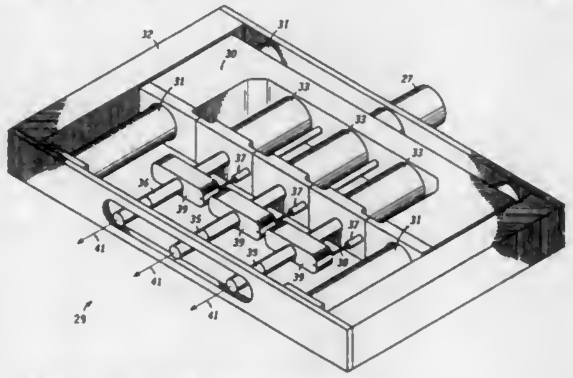
1. A foil-decorating injection molding machine comprising: an injection unit; and an injection mold including a female mold provided with a recess for forming a cavity, and a male mold provided with a hot runner and a gate through which a molten resin is injected into a cavity formed between the male mold and the female mold, comprising:

a land protruding from said female mold in the cavity to form an opening in a molding molded in the cavity; and

means forming a reversing passage in the male mold between the hot runner and the gate so that a molten resin flows first against the land, and then flows in a reverse direction toward an upstream end of the gate said reversing passage having a straight forward feed section connected to a downstream end of the hot runner, a distributing section formed at the downstream end of the forward feed section facing the land, and a reverse feed section extending in an obliquely reverse direction from the distributing section toward the upstream end of the gate, at an acute angle to the forward feed section.

5,851,559
TRANSFER MOLDING PRESS

Cliff J. Scribner, Chandler, and Albert J. Laninga, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 31, 1995, Ser. No. 550,699
Int. Cl.⁶ B29C *45/02*
U.S. Cl. 425—116 **12 Claims**



1. A transfer molding press comprising:

a hydraulic pressure source;

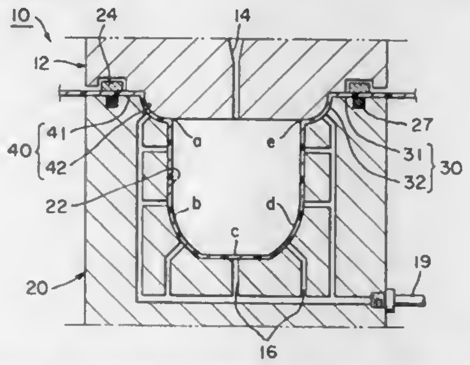
a plurality of plungers coupled to a plurality of pressure control cylinders which are coupled to the hydraulic pressure source that move along an axis, wherein the plurality of plungers are coupled to mold compound;

a sliding block assembly coupled to the plurality of plungers, wherein the sliding block assembly moves in a direction substantially parallel to the axis of the plurality of plungers and the pressure control cylinders allow each of the plurality of plungers to apply a pressure to the mold compound that is different than the pressure applied by the other plungers of the plurality; and

a sensor coupled to the sliding block assembly and to one of the plurality of plungers that measures a distance the sliding block assembly moves relative to the one plunger.

5,851,560
FOIL-DECORATING INJECTION MOLDING MACHINE

Kazuhisa Kobayashi; Masayuki Shibata, and Hirohisa Yoshikawa, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1996, Ser. No. 753,775
Claims priority, application Japan, Nov. 30, 1995, 7-313104
Int. Cl.⁶ B29C *45/16*
U.S. Cl. 425—121 **5 Claims**



1. A foil-decorating injection molding machine comprising:

an injection mold having a female mold provided with a cavity surface for forming a cavity, and a parting surface, and a male mold having a parting surface to be brought into close contact with the parting surface of the female mold when the injection mold is closed and capable of being moved relative to the female mold: and

a decorative sheet feed mechanism for feeding a decorative sheet into a space between the respective parting surfaces of the male mold and the female mold; wherein:

the parting surface of the female mold comprises an outer peripheral section cooperable with the parting surface of the male mold to hold the decorative sheet therebetween, and an inner peripheral section extending between an inner edge of the outer peripheral section and an outer edge of the cavity surface, said inner peripheral section having a concavely curved shape and being related with a corresponding section of the parting surface of the male mold to hold between the inner peripheral section and said corresponding section a residual portion of the decorative sheet which is to extend beyond a product molded in said cavity, when said parting surfaces are brought into close contact.

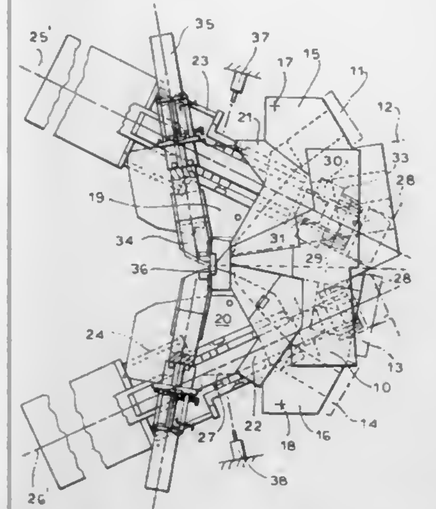
5,851,561
MULTIPLE-EXTRUDER HEAD ASSEMBLY WITH PIVOTAL HEAD PARTS

Ingo Hirschkorn, Neu Wulmstorf, Germany, assignor to Krupp Kunststofftechnik GmbH, Essen, Germany
Filed Jul. 11, 1997, Ser. No. 891,651
Claims priority, application Germany, Jul. 16, 1996, 196 28 608.5
Int. Cl.⁶ B29C *47/04;47/14*
U.S. Cl. 425—131.1 **7 Claims**

1. An extruder head assembly comprising:

a main stationary part adapted to be connected to a plurality of extruders;

two head parts pivotal on the main part;

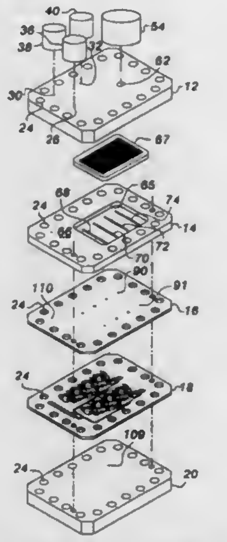


respective actuators associated with the pivotal head parts and having piston rods movable along respective longitudinal axes from the respective pivotal head parts to the stationary part, at least one of the actuators being mounted directly on the respective pivotal head part; and

latch means including interengaging formations on the 1 stationary part and an outer end of the rod of the one actuator for locking the pivotal head parts tightly against the stationary main part.

5,851,562
INSTANT MIXER SPIN PACK

Jeff S. Haggard, Cocoa, and Bryan Norcott, Palm Bay, both of Fla., assignors to Hills, Inc., West Melbourne, Fla.
Division of Ser. No. 337,531, Nov. 8, 1994, Pat. No. 5,516,476.
This application May 13, 1996, Ser. No. 645,463
Int. Cl.⁶ D01D *4/06*
U.S. Cl. 425—131.5 **24 Claims**



18. A fiber extrusion spin pack for forming blended composition fibers having preselected characteristics, said spin pack comprising:

first metering means for metering a molten base polymer into said spin pack;

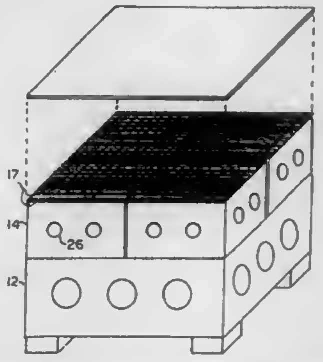
second metering means for metering a second molten component into said spin pack;

a mixer disposed within said spin pack for blending said molten base polymer together with said second molten component to produce a blended molten composition fiber material having preselected characteristics, said mixer including a first flow path through which a portion of said molten base polymer and a portion of said second molten component flow as a first flow, and a second flow path through which another portion of said molten base polymer add another portion of said second molten component flow as a second flow, said first flow path intersecting said second flow path at a plurality of crossovers, such that alternate flow sides of said first and second flows mix at said crossovers through boundary layer interaction; and

a spinneret plate for receiving and extruding said blended composition fiber material to simultaneously produce multiple fibers having said preselected characteristics.

5,851,563
RECONFIGURE MODULAR TOOLING

Peter L. Hoffman, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Mar. 28, 1997, Ser. No. 829,503
Int. Cl.⁶ B29C *33/00;* **B28B** *07/02*
U.S. Cl. 425—175 **7 Claims**



1. An apparatus for forming a mold for a workpiece having a contoured surface, comprising:

a. a base including a drive mechanism having at least four axes of motion;

b. tooling module means for conforming to the contour of a curved pre-programmed surface or workpiece, mounted on the base and having a spaced array of apertures therein with pins slideably movable within the apertures, wherein the tooling module means generally consists of rubber blocks connected into an array of tooling blocks to form a single tooling fixture; and

c. computer means for storing algorithms to approximate the shape and contour of various workpieces and having interface means to control the drive mechanism in at least four axes of motion, to position the pins to approximate the contour of a workpiece.

5,851,564
APPARATUS FOR FORMING A HOLLOW STRUCTURAL PROFILE

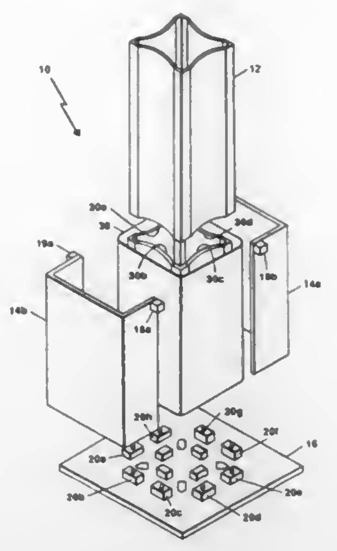
Jay S. Triandafilou, 66 Curzon Mill Rd., Newburyport, Mass. 01950
Filed Oct. 24, 1996, Ser. No. 736,291
Int. Cl.⁶ B29C *33/30*
U.S. Cl. 425—186 **5 Claims**

1. Apparatus for forming a hollow seamless, structural profile comprising:

means for shaping an inside surface of said structural profile;

means spaced a predetermined distance from said shaping means for forming an outside surface of said structural profile;

said forming means comprises a first bracket section and a second bracket section, said first bracket section and said second bracket section, abutting each other to surround said shaping means by said predetermined distance, comprises bolting means at the top of each abutting side for securing together said first bracket means and said second bracket means;



base means for holding said shaping means and said forming means in a predetermined position, said base means comprises a plurality of adjustable fastening means for securing and easily removing said structural profile from said base means, said shaping means being surrounded by said forming means and separated by said predetermined distance, wherein said fastening means further comprises an inner arrangement of side blocks and corner posts for positioning said shaping means on said base means and an outer arrangement of side blocks for positioning said forming means on said base means said predetermined distance from said shaping means; and

means poured between said shaping means and said forming means for solidifying into said structural profile.

5,851,565

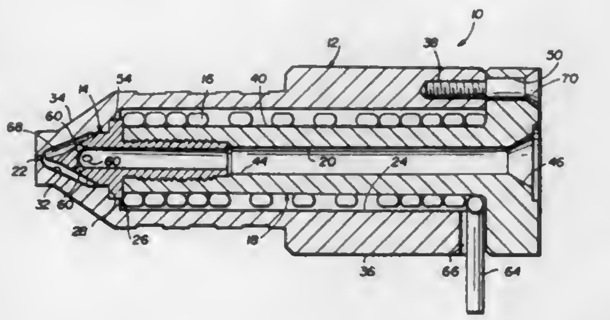
NOZZLE ASSEMBLY FOR INJECTION MOLDING APPARATUS

Jerry L. Garver, Paradise, and Gerald D. Hudack, Sinking Spring, both of Pa., assignors to Exide Corporation, Reading, Pa.

Filed Feb. 11, 1997, Ser. No. 797,732

Int. Cl.^{6} B29C *45/20;45/74*

U.S. Cl. 425—190 **9 Claims**



6. A nozzle assembly for an injection molding apparatus, said nozzle assembly having an outer sleeve, a forward end of which is formed with an orifice, and a rearward end of which is substantially open; and a subassembly slidably receivable within said outer sleeve, said subassembly including a molten material manifold, a nozzle tip removably secured to the manifold at a forward end thereof and a coil heater received over the manifold and engaged by a radial flange on said nozzle tip; said manifold having a cap flange at a rearward end thereof adapted for releasable attachment to said outer sleeve.

5,851,566

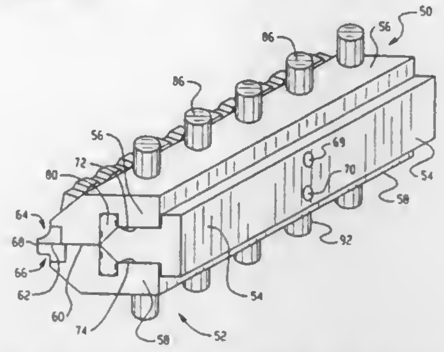
APPLICATOR DIE

Bert Potjer, HD Voorschoten, Netherlands; Luigi Sartor, Pasadena, Calif., and Robert Lindsay Druschel, Eau Claire, Wis., assignors to Avery Dennison, Pasadena, Calif.

Filed Jul. 2, 1996, Ser. No. 676,522

Int. Cl.^{6} B28B *13/00*

U.S. Cl. 425—225 **25 Claims**



1. A die for alternately depositing first and second liquid materials on the surface of a moving web to form a coating layer thereon, said die comprising

a die body defining an elongated coating orifice, first and second liquid passageways communicating with said coating orifice, first and second inlet orifices communicating with said first and second liquid passageways, respectively, and closure means for alternately opening and closing said first and second liquid passageways, said closure means being adapted to:

(a) define a closed passage from said first inlet orifice to said coating orifice when said second liquid passageway is closed, whereby said first liquid material can flow from said first inlet orifice through said coating orifice but is prevented from entering said second liquid passageway, and said second liquid material is prevented from flowing through said coating orifice or entering said first liquid passageway; and

(b) define a closed passage from said second inlet orifice to said coating orifice when said first liquid passageway is closed, whereby said second liquid material can flow from said second inlet orifice through said coating orifice but is prevented from entering said first liquid passageway, and said first liquid material is prevented from flowing through said coating orifice or entering said second liquid passageway;

whereby the supply of liquid to said coating orifice is switched rapidly and positively from said first liquid material to said second liquid material and from said second liquid material to said first liquid material, and leakage of said first liquid material and second liquid material into one another is prevented.

5,851,567

EARTH BLOCK MACHINE

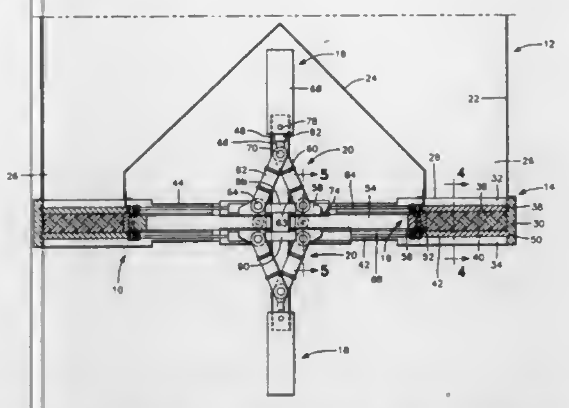
Oscar Pronl, Hollywood, Fla., assignor to Earth-Block International Corporation, Miami, Fla.

Filed Mar. 10, 1997, Ser. No. 814,786

Int. Cl.^{6} B28B *3/06*

U.S. Cl. 425—346 **21 Claims**

1. An earth block machine comprising a pair of aligned opposed molds oriented in spaced relation, each of said molds having an inner open end and an outer closed end, compacting members reciprocally mounted in said molds, each of said molds including an inlet for soil and an outlet for a compressed earth block, said inlet and outlet being in aligned vertically spaced relation for gravity flow of soil into the mold and gravity discharge of compressed earth blocks, an openable closure for each said inlet, an openable closure for each said outlet, a power structure oriented generally between said molds, said power structure being connected to each of said compacting members through said inner open end by a force increasing leverage system providing compacting force to said compacting members.



5,851,568

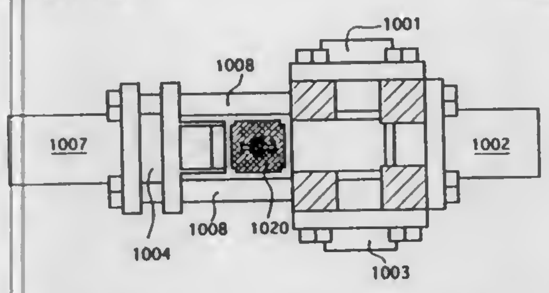
HEX-DIRECTIONAL PRESS FOR CONSOLIDATING POWDERED MATERIALS

Xiaodi Huang, 406 2nd St., Houghton, Mich. 49931

Division of Ser. No. 512,221, Aug. 7, 1995. This application Jul. 2, 1996, Ser. No. 674,526

Int. Cl.^{6} B29C *43/10*

U.S. Cl. 425—356 **1 Claim**



1. A hex-directional press comprising, a die body having a central cavity for receiving a mold of pressure transmitting medium therein, said die body having six passages formed therein in communication with said cavity, a punch including an inner end being slidably mounted in each of said passages for movement toward and away from said cavity, a cylinder connected to each of said punches for moving said punches toward and away from said cavity, one of said cylinders being slidably supported for movement toward and away from said die body such that the inner end of the associated punch can be spaced from said die body so that said mold of pressure transmitting medium can be positioned between the inner end of said associated punch and the associated passage, and an auxiliary cylinder connected to said one cylinder for slidably moving said one cylinder, whereby when said auxiliary cylinder moves said one cylinder inwardly said mold is moved through said associated passage and into said cavity.

5,851,569

COLD EDGE FOLDING APPARATUS FOR MAKING DOOR INSERTS FOR AUTOMOBILE DOORS

Steven Christopher Moore, Harrison Township, and Ken DeVon Noack, Huntington Woods, both of Mich., assignors to Mexican Industries of Michigan, Inc., Detroit, Mich.

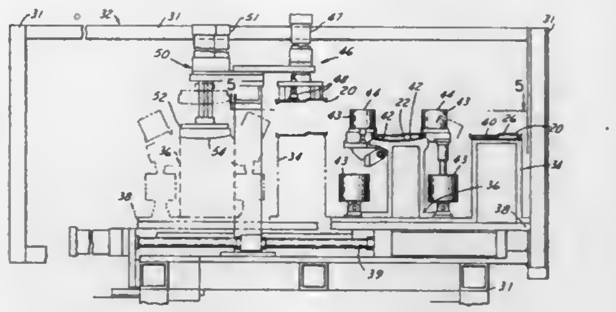
Filed Dec. 3, 1996, Ser. No. 760,100

Int. Cl.^{6} B29C *31/00;63/04*

U.S. Cl. 425—504 **4 Claims**

1. An apparatus with positions 1–4 for forming a trim insert having a substrate with a first side which receives an adhesive and a second side and a material, said apparatus comprising:

a frame;



a horizontal plate mounted on said frame for horizontal movement;

a first carrier mounted on said plate at position 1 which receives the substrate and where adhesive is applied to the substrate;

a second carrier including a mold mounted on said plate at position 2 which receives the material;

an edge folder proximate to and moveable with said second carrier;

first means for horizontally moving said plate and said first carrier to position 3 and said second carrier to position 4;

a positioner proximate to and located above said first carrier when at position 3 where said positioner lifts the substrate from said first carrier;

conforming means proximate to and located above said second carrier at position 4 to conform the material against the mold of said second carrier at position 4;

said conforming means including a control cylinder including a plunger which retractably extends therefrom and presses the material into said mold of said second carrier at position 4;

means for applying a vacuum through said mold to hold the material within the mold at position 4;

said first means thereafter moving said plate and said first carrier from position 3 to position 2 and said second carrier from position 4 to position 3 where said first carrier is now empty and said positioner places the substrate onto the second carrier at position 3, said edge folder at position 3 folding the material over the substrate and holding the material so that the material contacts and is adhesively secured to the substrate;

said first means thereafter returning said plate and said first carrier to positeion 1 for reloading of a substrate and said second carrier to position 2 where the finished trim insert is removed from said second carrier and for reloading of the material thereon;

said first means for horizontally moving said plate and said first carrier and said second carrier including a drive assembly coupled to said plate; and

a controller coupled to said drive assembly, said positioner and said edge folder, said controller controlling movement of said first carrier and said second carrier to the several positions, initiating said positioner to lift the substrate, initiating said positioner to place the substrate on the material, and initiating said edge folder to fold the material over an edge of the substrate.

5,851,570

ELECTRIC DRIVE FOR BLOW MOLDING HEAD

Robert O. Hayes, 6 Edgewater Cir., Lake St. Louis, Mo. 63367

Filed Jun. 12, 1997, Ser. No. 874,009

Int. Cl.^{6} B29C *47/22;49/04*

U.S. Cl. 425—532 **9 Claims**

1. An electric drive for a blow molding head having a tooling set including a programming rod for setting a die gap, said electric drive comprising:

a programming roller screw adapted for straight line attachment to a programming rod distal a die gap;

a programming roller nut threaded on the programming roller screw, said programming roller nut fixed with respect to the die gap and supported in a programming roller nut housing on

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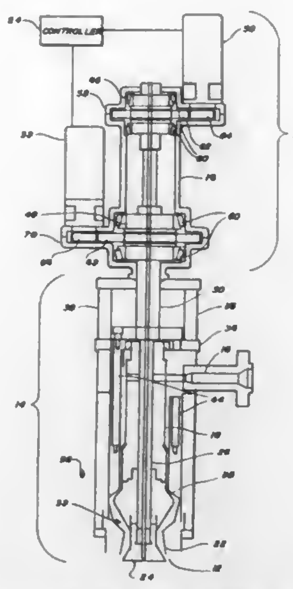


a paired row of tapered roller bearings, positioned back to back on opposite ends of the programming roller nut; and,

an electric motor coupled in direct rotary relationship to the programming roller nut whereby rotation of the programming roller nut causes rectilinear movement of the programming roller screw in a direction depending on the direction in which the programming roller nut is rotated for use in setting the die gap.

5,851,571

NEEDLE VALVE NOZZLE FOR INJECTION MOLDS AND VALVE NEEDLE

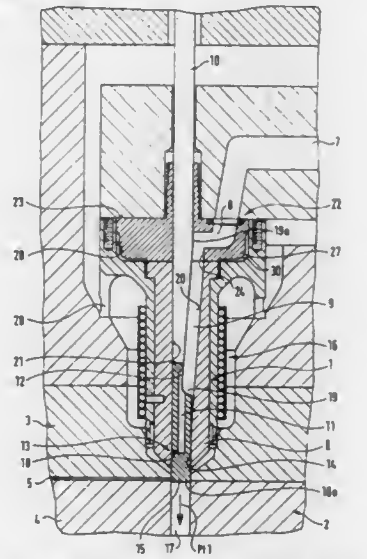
Otto Manner, Unter Gereuth 9, 79353 Bablingen, Germany

Filed Mar. 24, 1997, Ser. No. 824,647

Claims priority, application Germany, Apr. 10, 1996, 196 14 171.0; May 24, 1996, 196 21 084.4

Int. Cl.^{6} B29C *45/23*

U.S. Cl. 425—564 **18 Claims**



1. A needle valve nozzle (**1**) for an injection mold (**2**), comprising a housing (**6**) having a longitudinal passage (**14**), a material feed (**7,8**) to the housing (**6**) and into an interior (**9**) of the housing (**6**), and a valve needle (**10**) which can be moved axially in the longitudinal passage of said housing (**6**), the nozzle (**1**) having a material outlet which can be closed by means of the valve needle (**10**), the valve needle (**10**) having a channel (**11**) running longitudinally in its interior, said channel (**11**) being shorter than the valve needle (**10**), wherein an inlet (**12**) into the channel (**11**) is provided in the interior (**9**) of the housing (**6**), the channel (**11**) having as an outlet at least one lateral exit (**13**) in an area before a free end (**10***a*) of the valve needle (**10**) which faces the injection mold (**2**), and wherein the free end (**10***a*) of the valve needle (**10**) in the area of the exit (**13**) protrudes out of the passage (**14**) for the valve needle (**10**) into an injection molding position.

5,851,572

METHOD OF INCREASING FAT FIRMNESS AND IMPROVING MEAT QUALITY IN ANIMALS WITH CONJUGATED LINOLENIC ACID

Mark E. Cook; Daria L. Jerome; Michael W. Pariza, and Dennis R. Buege, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 25, 1997, Ser. No. 845,535

Int. Cl.^{6} A23K *1/00*

U.S. Cl. 426—2 **9 Claims**

1. A method of improving the fat firmness and meat quality of a meat animal which comprises administering to a meat animal an amount of conjugated linoleic acid (CLA) which is effective to increase the fat firmness and quality indices of the animal's meat.

5,851,573

PET FOOD COMPOSITION FOR LARGE BREED PUPPIES AND METHOD FOR PROMOTING PROPER SKELETAL GROWTH

Allan Lepine, Lewisburg, and Gregory A. Reinhart, Dayton, both of Ohio, assignors to The Iams Company, Dayton, Ohio

Filed Apr. 29, 1997, Ser. No. 840,402

Int. Cl.^{6} A23K *1/175*

U.S. Cl. 426—74 **5 Claims**

1. A pet food composition for large breed puppies comprising from about 0.75% to 0.95% by weight calcium and from about 0.62% to 0.72% by weight phosphorus on a total weight basis, said composition further comprising a source of protein, a source of fiber, and a source of fat.

5,851,574

METHOD FOR AGGLOMERATING FINE POWDERS

Frederic T. Barrows, Bozeman, Mont., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 28, 1997, Ser. No. 791,150

Int. Cl.^{6} A23L *1/025*

U.S. Cl. 426—285 **17 Claims**

1. A method for agglomerating feed particles of diameters within a desired size range for use as a larval aquatic feed, said method comprising:

placing, in a marumerizer, a wet charge of a larval aquatic feed material from which particles are to be produced;

placing, in said marumerizer a further charge of inert elements of a diameter between 50 μm and 10 mm; and

activating said marumerizer to provide spinning of said wet charge and said inert elements in the marumerizer so that the inert elements compact and agglomerate the wet charge into shaped feed particles of a diameter less than 1000 μm.

5,851,575

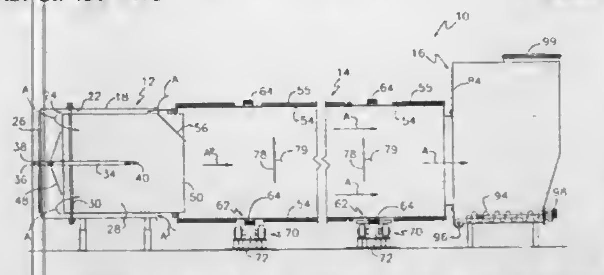
METHOD FOR DRYING AND PROCESSING RAW FOOD MATERIAL

Dennis B. Griffin, Erlanger, and John L. Crowley, Alexandria, both of Ky., assignors to Griffin Industries, Inc., Cold Springs, Ky.

Filed Apr. 29, 1997, Ser. No. 841,230

Int. Cl.^{6} A23B *4/03*

U.S. Cl. 426—471 **8 Claims**



1. A method of drying raw material in a drying apparatus including a spray dryer section and a rotary drying section in fluid communication, said method comprising:

maintaining an air stream running through said spray dryer section and downstream through said rotary drying section;

spray drying said raw material having a first relatively high moisture content;

conveying said spray dried raw material having a first relatively high moisture content in said air stream to said rotary drying section; and

rotary drying said spray dried raw material having a first relatively high moisture content.

5,851,576

METHOD FOR MAKING A SPRAY DRIED FAT REPLACEMENT COMPOSITION CONTAINING INULIN

Amna Abboud, Cordova, Tenn., assignor to Kraft Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 568,593, Dec. 5, 1995, Pat. No. 5,658,609, which is a continuation-in-part of Ser. No. 268,833, Jun. 29, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 640,429

Int. Cl.^{6} A23L *1/0522*

U.S. Cl. 426—550 **1 Claim**

1. A method for the manufacture of an inulin containing spray dried fat replacement composition comprising preparing a mixture of emulsifiers and water having a pH above about 6.0, adding inulin to said mixture, hydrating the added inulin while maintaining the pH of said mixture above about 6.0, and spray drying said mixture.

5,851,577

PROCESSED CHEESE MADE WITH YOGURT

Bennett Lee Brenton, Mundelein, and Kent Raymond Seger, Chicago, both of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Jun. 28, 1996, Ser. No. 672,584

Int. Cl.^{6} A23C *19/00*

U.S. Cl. 426—582 **10 Claims**

1. A method for making process cheese comprising grinding one or more types of natural cheese to provide a particulate cheese, mixing said particulate cheese with a dry component selected from the group consisting of whey protein concentrate, non-fat dry milk and mixtures thereof in a blender to provide a cheese mixture, transferring said mixture to a cooker and heating said mixture to a first predetermined temperature in the range of from about 163° F. to about 175° F., adding yogurt having a temperature in the range of from about 40° F. to about 45° F. to said heated mixture to provided a cooled process cheese product having a temperature in the range of from about 140° F. to about 145° F. and heating said product to a second predetermined temperature in the range of from about 163° F. to about 170° F.

5,851,578

CLEAR OR TRANSLUCENT LIQUID BEVERAGE WITH SOLUBLE FIBER AND NUTRIENTS

Amita Gandhi, Louisville, Ky., assignor to Soma Technologies, Marlton, N.J.

Filed Feb. 21, 1997, Ser. No. 786,219

Int. Cl.^{6} A23L *2/54;2/68*

U.S. Cl. 426—590 **18 Claims**

1. A clear, low viscosity, water-like, stable, ready-to-use, bottled, carbonated or non-carbonated drink or a concentrated clear liquid for reconstitution or a powder/granular mix to be reconstituted with water or any other orally ingestible liquid as a drinkable liquid, containing a non-gelling partially hydrolyzed soluble dietary fiber, water soluble salts of calcium, with or without water soluble vitamins, with or without additional mineral supplements from the group consisting of salts of K, Zn, Fe, Mg or mixtures thereof and buffered with food acids.

5,851,579

AQUEOUS ENTERIC COATING COMPOSITIONS

Stephen Hong-Wei Wu, Kingsport, and Warren Kent Hopkins, Piney Flats, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 8, 1997, Ser. No. 947,121

Int. Cl.^{6} B05D *1/22;1/40;* A61K *9/22;9/36*

U.S. Cl. 427—2.21 **17 Claims**

10. A method for preparing an enterically-coated solid dosage form which comprises contacting the dosage form with an enteric coating composition comprising a dispersion of

a) about 1 to about 35% weight of an alkali-soluble acrylic latex polymer suspended in;

b) about 1 to about 25% by weight of an aqueous solution of ammonium or alkaline salts of cellulose polymers; and

c) about 60 to about 95% by weight of water.

5,851,580

SHOTCRETE SPRAYING PROCESS

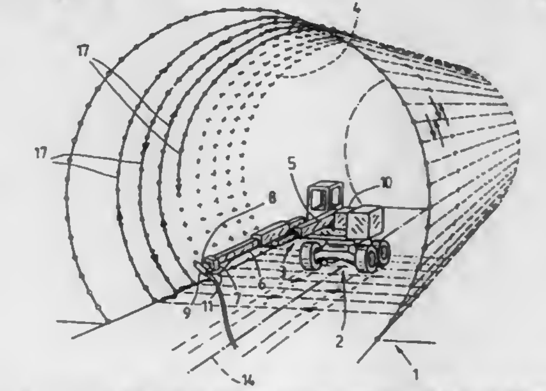
Felix Amberg, Hinterbühlstrasse 5, CH-8307 Effretikon; Otto Tschumi, Spannerstrasse 5, CH-8500 Frauenfeld, and Markus Vogel, In der Hohfurri 10, CH-8172 Niederglatt, all of Switzerland

Filed Dec. 23, 1996, Ser. No. 772,682

Claims priority, application Switzerland, Dec. 27, 1995, 03682/95

Int. Cl.^{6} B05D *7/22;7/24*

U.S. Cl. 427—8 **13 Claims**



1. A process for batch coating of an inside surface of a tunnel section with a sprayable concrete composition, comprising the steps of:

- providing a cement spraying apparatus having a control unit, and a spray lance having a spray nozzle and a measuring probe mounted on the spray lance, wherein the spray lance is displaceable along the length of the tunnel;
- measuring a distance from the measuring probe to each of a first plurality of data points on the inside surface of the tunnel on a first vertical measuring plane perpendicular to the spray lance, and storing each of the measured distances within the control unit;
- subsequently displacing the measuring probe a predetermined horizontal distance along the length of the tunnel;
- measuring a distance from the measuring probe to each of at least a second plurality of data points on the inside surface of the tunnel on a second vertical measuring plane perpendicular to the spray lance, and storing each of the measured distances within the control unit;
- after all measuring steps, subsequently;
- spraying the concrete composition as a spray jet onto the inside surface of the tunnel section from the spray nozzle, the control unit adjusting positioning of the spray nozzle with respect to the inside surface of the tunnel such that the spray nozzle remains at a set distance from the surface, and the center of the spray jet is either perpendicular to and directed to be upon a straight line joining two adjacent data points, or, is perpendicular to and within a plane defined by three adjacent data points.

5,851,581
SEMICONDUCTOR DEVICE FABRICATION METHOD FOR PREVENTING TUNGSTEN FROM REMOVING

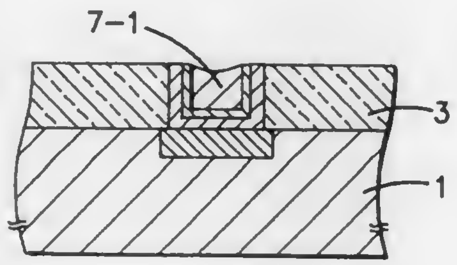
Masanobu Zenke, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 426,136, Apr. 21, 1995, abandoned. This application Jul. 24, 1997, Ser. No. 899,722

Claims priority, application Japan, Apr. 22, 1994, 6-084236

Int. Cl.^{6} B05D *5/12*

U.S. Cl. 427—97 **12 Claims**



1. A method for fabricating a semiconductor device comprising the steps of:

- depositing an amorphous silicon film on a hole in an insulating film covering a semiconductor substrate by a low-pressure CVD process using a thermal decomposition of a disilane gas in a first chamber at a first temperature between 400° and 500° C.; and
- depositing a tungsten film on said amorphous silicon film by a CVD process in the first chamber at a second temperature;
- said first temperature being substantially equal to said second temperature so that said amorphous silicon film and said tungsten film are continuously deposited in the same chamber wherein between depositing the amorphous silicon film and depositing the tungsten film, the step of decreasing without stopping an input flow of the disilane gas into the first camber and introducing a tungsten gas into the first chamber so that a flow rate between the disilane gas and the tungsten film depositing gas in about 1:2.

5,851,582
MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Kousaku Tamari, Hiroshima, and Takanori Doi, Hatsukaichi, both of Japan, assignors to Toda Kogyo Corporation, Japan

Division of Ser. No. 403,368, Mar. 15, 1995, Pat. No. 5,601,904. This application Oct. 7, 1996, Ser. No. 725,820

Claims priority, application Japan, Mar. 16, 1994, 6-72663

Int. Cl.^{6} G11B *5/84*

U.S. Cl. 427—130 **2 Claims**

1. A process for producing a magnetic recording medium comprising a substrate, an NiO primary layer formed on the substrate, in which the plane (200) is substantially oriented in parallel with the surface of the substrate, and a Co-containing maghemite thin film formed on the NiO primary layer, in which the plane (400) is substantially oriented in parallel with the surface of the substrate, the molar ratio of Co to Fe is not less than 0.01:1 to less than 0.10:1, and the spacing of the plane (400) is not more than 2.082 Å; and having the coercive force of less than 3000 Oe, which process comprises the steps of:

- (a) forming, on a substrate, a NiO primary layer in which the plane (200) is substantially oriented in parallel with the surface of the substrate;
- (b) forming a monolayered Co-containing magnetite film or a multilayered film composed of at least one unit on the NiO primary layer, one unit being a laminate of a magnetite layer and a CoO layer, in which the plane (400) is substantially oriented in parallel with the surface of the substrate, and the molar ratio of Co to Fe is not less than 0.01:1 and less than 0.10:1; and
- (c) annealing the monolayered film or multilayered film in a temperature range of 240° to 450° C.

5,851,583
METHOD OF BLENDING PAINT AND SPOT PAINTING

Thomas J. Kronenwetter, Myrtle Beach, S.C., assignor to Total Car Franchising Corporation Colors on Parade, Conway, S.C.

Filed Dec. 6, 1996, Ser. No. 761,570

Int. Cl.^{6} B32B *35/00;* **B05D** *1/02*

U.S. Cl. 427—140 **10 Claims**

1. A process for preparing paint comprising the steps of:

- (a) providing a base coat reducer,
- (b) providing a first color imparting component, and mixing the base coat reducer with the first color imparting component to obtain a first reduced component;
- (c) providing a second color imparting component and mixing the base coat reducer with the second color imparting component to obtain a second reduced component;
- (d) mixing a portion of the first reduced component with a portion of the second reduced component to obtain a test base coat paint;
- (e) testing the test base coat paint by a series of substeps comprising: (I) applying the test base coat paint onto a surface and allowing it to dry to obtain a painted surface; (II) temporarily simulating the appearance of a clear coat by applying to the painted surface a volatile lustrous liquid which remains wet for about ten seconds, provides a simulated clear coated painted surface and does not permanently modify the painted surface upon evaporation; and (III) comparing the color of the temporarily simulated clear coated painted surface with the color of an existing finish;
- (f) if the simulated coated painted surface does not match the existing finish, adding a further portion of either the first reduced component or second reduced component to the test base coat paint to obtain a varied test base coat paint, and testing the varied test base coat paint as in step (e); and
- (g) repeating step (f) until the simulated coated painted surface matches the existing finish when tested as in step (e).

5,851,584
METHOD FOR APPLYING A PROTECTIVE LAYER TO WHICH MICROORGANISMS DO NOT ADHERE, TO VESSELS AND UTENSILS IN THE FOOD INDUSTRY

Petrus Johannes van Leeuwen, Meer en Geerweg 9, Stompwijk, Netherlands, 2266 HW

PCT No. PCT/NL95/00239, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO96/00505, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 30, 1995, Ser. No. 765,635

Claims priority, application Netherlands, Jun. 30, 1994, 9401098

Int. Cl.^{6} B05D *3/00*

U.S. Cl. 427—154 **7 Claims**

1. A method for applying a protective layer to vessels or utensils used in the food industry, which protective layer prevents the adherence and/or growth of microorganisms which comprises the steps of contacting the vessels or utensils with an aqueous soap solution without disinfectant comprising from 2–10 ml of liquid soap per 100 l of water, said liquid soap comprising a potassium salt of a saturated or unsaturated C_{12-18} fatty acid and rinsing the vessels or utensils with water.

5,851,585
IMPREGNATION OF PLASTIC SUBSTRATES WITH PHOTOCHROMIC ADDITIVES

Amitava Gupta, Bethesda, Md.; Ronald D. Blum, and Venkatramanl S. Iyer, both of Roanoke, Va., assignors to Innotech, Inc., Roanoake, Va.

Division of Ser. No. 669,738, Jun. 26, 1996, Pat. No. 5,789,015. This application Nov. 14, 1997, Ser. No. 970,579

Int. Cl.^{6} B05D *5/06*

U.S. Cl. 427—162 **8 Claims**

1. A method comprising:

- forming a solution comprising one or more photochromic additives in a solvent;
- forming a mixture comprising said solution and a liquid, the liquid having a boiling point higher than the boiling point of the solvent;
- applying ultrasonic energy to said mixture; and
- heating said mixture to a temperature sufficient to remove said solvent.

2. The method of claim 1, further comprising contacting said mixture with a plastic substrate.

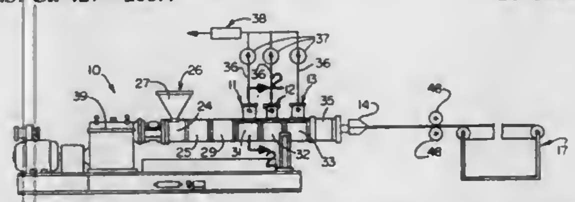
5,851,586
PROCESS FOR PRODUCING POLYMER FILMS FROM AQUEOUS POLYMER COMPOSITIONS

Joseph Arthur LaRose, Ravenna, Ohio; Eric Alan Overholt, Bath, Pa., and Lawrence Joseph Schnieders, Eastlake, Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 824,316, Mar. 26, 1997, Pat. No. 5,716,669. This application Nov. 7, 1997, Ser. No. 966,255

Int. Cl.^{6} B05D *5/10*

U.S. Cl. 427—208.4 **26 Claims**



1. A process for producing a polymer film from an aqueous polymer composition wherein the process comprises the steps of:

- (A) introducing an aqueous composition comprising water and a polymer through at least one feed unit in one upstream section of an extruder comprising a plurality of interconnecting sections wherein at least one downstream section comprises a homogenizer mixer;
- (B) conveying the composition through the extruder;
- (C) maintaining the composition at a temperature which facilitates vaporization of at least a portion of the water as the composition is conveyed through the extruder;
- (D) reducing the pressure in at least one section of the extruder downstream of the feed unit sufficiently to evaporate at least a portion of the water in the composition conveyed through that section;
- (E) removing the evaporated water from the extruder through at least one vent in a downstream section to form a water-reduced composition; and
- (F) extruding the water-reduced composition through a die thereby to produce a film.

5,851,587
PROCESS FOR PRODUCING COATED BISMUTH VANADATE YELLOW PIGMENTS

Hans-Joachim Schittenhelm, Köln, and Rudolf Hill, Langenfeld, both of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Jan. 11, 1996, Ser. No. 585,123

Claims priority, application Germany, Jan. 25, 1995, 195 02 196.7

Int. Cl.^{6} B05D *7/00;* **C04B** *14/00*

U.S. Cl. 427—212 **10 Claims**

1. A process for producing coated bismuth vanadate yellow pigments comprising:

- a) core particles of a yellow-coloring bismuth vanadate, said core particles having an external surface which is activated with a phosphate-containing compound; and
- b) a coating which is located on top of the activated external surface of the core particles, said coating comprising at least one layer of at least one material selected from the group consisting of aluminum phosphate, aluminum/zinc phosphate or silicon oxide;

wherein at least 99 wt. % of the core particles have a diameter that is from 0.2 μm to 3.5 μm; comprising the following steps:

- (a) subjecting a reaction mixture comprising a suspension in nitric acid of bismuthyl nitrate and vanadium (V) oxide, or a suspension in nitric acid of bismuth (III) oxide and vanadium (V) oxide, to stirring to form bismuth vanadate particles;
- (b) terminating the stirring and holding the reaction mixture for a period of time;
- (c) filtering off the bismuth vanadate particles;
- (d) washing the bismuth vanadate particles;
- (e) dispersing the washed bismuth vanadate particles in a hot, phosphate-containing, aqueous solution to activate the surface of the particles;
- (f) filtering off the activated bismuth vanadate particles;
- (g) washing the activated bismuth vanadate particles;
- (h) dispersing the activated bismuth vanadate particles in water to form a suspension;
- (i) precipitating at least one material selected from the group consisting of hydrated aluminum phosphate, aluminum/zinc phosphate or silicon oxide onto the external surface of the activated bismuth vanadate particles in the suspension to form said coating;
- (j) filtering off the coated bismuth vanadate particles; and
- (k) washing and drying the coated bismuth vanadate particles, wherein said hot, phosphate-containing, aqueous solution is at a temperature of about 85°–90° C.

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5,851,588

METHOD FOR MAKING OPEN-MESH CARBON-FIBER-REINFORCED CARBON COMPOSITE MATERIAL

Loren H. Uthoff, Jr., Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 21, 1996, Ser. No. 754,573

Int. Cl.^{6} B05D *3/02*

U.S. Cl. 427—228 **17 Claims**

1. A method for making an open-mesh carbon-fiber-reinforced carbon composite material formed substantially of carbon, the method comprising the steps of:

coating a carbon-fiber meshed cloth substrate with a liquid form of a carbon source, the thickness of the coating being such that, upon carbonization of the coating, the carbonized coated cloth substrate retains porosity, is open-mesh having through pores, and is light-pervious; and

carbonizing the coating on the coated cloth substrate by heating the coated cloth substrate to a carbonizing temperature so that an open-mesh, light-pervious carbon-fiber-reinforced carbon composite material having through pores and formed substantially of carbon is formed.

5,851,589

METHOD FOR THERMAL CHEMICAL VAPOR DEPOSITION

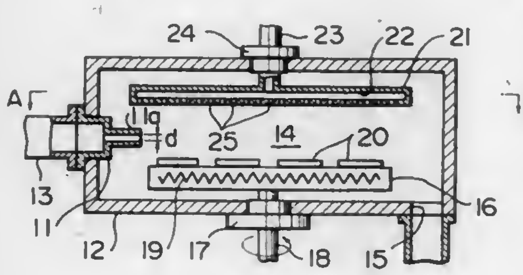
Izumi Nakayama, Hiratsuka; Akitoshi Suzuki, Chigasaki; Yoshiro Kusumoto, Chigasaki; Kazuo Takakuwa, Chigasaki, and Tetsuya Ikuta, Chigasaki, all of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Chigasaki, Japan

Continuation of Ser. No. 200,363, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 513,028, Apr. 25, 1990, abandoned, which is a continuation of Ser. No. 65,909, Jun. 24, 1987, abandoned. This application Sep. 26, 1994, Ser. No. 311,438

Claims priority, application Japan, Jun. 28, 1986, 61-152123; Aug. 22, 1986, 61-197737

Int. Cl.^{6} C23C *16/00*

U.S. Cl. 427—248.1 **4 Claims**



1. A method of thermal chemical vapor deposition comprising the steps of feeding a first gas flow containing reactive gas in a sheet state in parallel with a surface of a heated substrate in a reaction chamber; feeding a second gas flow containing a non-reactive gas perpendicularly towards the surface of the substrate to suppress the diffusion of the first gas flow and to stabilize and laminarize the first gas flow; and externally controlling the flow rates of the first and second gas flows so as to maintain the first gas flow containing the reactive gas in said laminarized flow condition, localize it in the vicinity of the substrate and provide uniformly a film or layer on the surface of the substrate.

5,851,590

INK JET INKS CONTAINING POLYACRYLAMIDES

David Herbert Donovan, Barcelona, Spain; Gregg Allen Lane, San Diego, Calif., and Chaucer C. Tang, Kennett Square, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 774,994, Dec. 27, 1996, Pat. No. 5,712,338. This application Oct. 1, 1997, Ser. No. 942,077

Int. Cl.^{6} B05D *1/36;5/06;7/04*

U.S. Cl. 427—265 **7 Claims**

1. A process for creating a multicolor printed element having reduced color bleed, the process comprising:

(a) printing a first ink onto a substrate;

(b) printing a second ink onto the substrate and in contact with said first ink;

wherein at least one of said first and second inks comprises an aqueous carrier medium, an aqueous carrier medium insoluble colorant, a structured polymeric dispersant and a film-forming polyacrylamide polymer having a weight average molecular weight of 500–100,000.

5,851,591

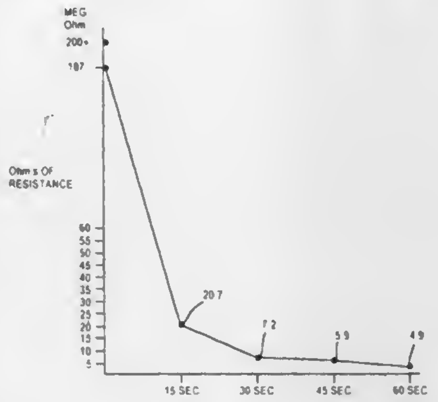
CONDUCTIVE-RESISTIVE SURFACE COATING COMPOSITIONS AND METHODS

Fred D. Brandt, Brinnon, Wash., assignor to Electro Forming Systems Co., Inc., Silverdale, Wash.

Filed Mar. 5, 1997, Ser. No. 811,849

Int. Cl.^{6} B05D *3/10*

U.S. Cl. 427—333 **28 Claims**



1. A method for forming a conductive-resistive coating on a non-conductive surface comprising the steps of:

applying a pre-conductive coating composition comprising a lacquer base containing butyl acetate as a solvent and a conductive agent onto said non-conductive surface to form a pre-conductive coating;

exposing said pre-conductive coating to a developer to confer a conductive-resistive capacity to said pre-conductive coating to yield a conductive-resistive coating; and

exposing the conductive-resistive coating to an aqueous rinse having a pH between about pH 5.0 and pH 6.8 after said step of exposing the pre-conductive coating to the developer.

5,851,592

APPARATUS AND METHOD FOR APPLYING COATING MATERIALS TO INDIVIDUAL SHEET MEMBERS

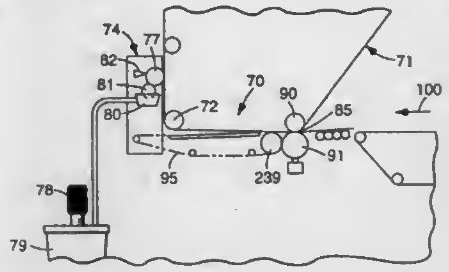
Frédéric Pierre Alain Le Riche, Osny, and Bernard Raymond Pierre, Monneville, both of France, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 675,857, Jul. 5, 1996, abandoned, which is a continuation-in-part of Ser. No. 291,610, Aug. 17, 1994, abandoned, and Ser. No. 615,587, Mar. 12, 1996, abandoned, which is a continuation of Ser. No. 291,628, Aug. 17, 1994, abandoned. This application Oct. 14, 1997, Ser. No. 949,873

Claims priority, application United Kingdom, Feb. 16, 1996, 96/03281; Feb. 16, 1996, 96/03345; Feb. 16, 1996, 96/03355; Feb. 16, 1996, 96/03365; Feb. 16, 1996, 96/03366

Int. Cl.^{6} B05D *3/12;1/28;* **B05C** *1/08;13/00*

U.S. Cl. 427—350 **10 Claims**



10. A method for applying coating material to sheets, comprising:

(a) applying a coating material to an endless transfer surface;

(b) conveying a succession of overlapped sheets along a sheet path and through a transfer location, wherein the sheets in the succession of overlapped sheets have a trailing edge portion positioned over a leading edge portion of a succeeding sheet;

(c) contacting the overlapped sheets against the transfer surface at the transfer location so as to transfer the coating material on the transfer surface to the overlapped sheets;

(d) applying a suction of about 350–550 mm H_2O to the overlapped sheets as the sheets exit the transfer location so as to facilitate detachment of the overlapped sheets and the coating material from the transfer surface; and

(e) applying a reduced suction of about 150–200 mm H_2O to the overlapped sheets farther downstream from the transfer location without transferring the sheets to a separate conveyor surface, wherein the reduced suction maintains the overlapped sheets in position as the sheets are transported away from the transfer location.

5,851,593

FLUOROMONOMER/FUNCTIONALIZED HYDROCARBON MONOMER COPOLYMERIZATION PROCESS AND COPOLYMER PRODUCT

Clay Woodward Jones, Washington, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 514,374, Aug. 11, 1995, Pat. No. 5,712,355, which is a continuation-in-part of Ser. No. 383,281, Feb. 3, 1995, abandoned. This application Oct. 23, 1997, Ser. No. 956,867

Int. Cl.^{6} B05D *3/02*

U.S. Cl. 427—379 **3 Claims**

1. Process for coating a substrate, comprising applying to said substrate a coating comprising at least partially saponified carboxyl-ester containing polymer and difunctional crosslinking agent and applying to said layer a topcoat comprising at least partially saponified carboxyl-ester functionalized polymer and polyfunctional crosslinking agent and curing each said coatings by crosslinking them, said carboxyl-ester functionalized polymer being a copolymer comprising fluoromonomer of the formula $CF_2{=}CR_1R_2$, wherein R_1 is H, F, or Cl, and R_2 is H or F, with hydrocarbon monomer of the formula $CH_2{=}CHOC(O)R_3$, wherein R_3 is an alkyl group containing 1 to 4 carbon atoms.

5,851,594

AQUEOUS DISPERSIONS BASED ON VISCOUS SILICONE OILS CAPABLE OF CROSS-LINKING ON REMOVAL OF WATER

Michel Feder, Lyon, and Jean Ulrich, Thernay, both of France, assignors to Rhone Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 424,324, Jun. 14, 1995, abandoned. This application Mar. 21, 1997, Ser. No. 821,172

Claims priority, application France, Oct. 20, 1992, 92/12518

Int. Cl.^{6} B05D *5/00*

U.S. Cl. 427—387 **2 Claims**

1. A process for treating a surface comprising the steps of:

(1) forming an emulsion of at least one organopolysiloxane oil in water, said emulsion prepared by kneading a mixture comprising (i) 100 parts by weight of a silicone phase having a dynamic viscosity at 25° C. at least equal to 3 Pa·s, said silicone phase comprising at least one organopolysiloxane oil; (ii) 2 to 20 parts by weight of water; and (iii) 3 to 20 parts by weight of one or more surface-active agents having an HLB value of at least 10;

the weight ratio of components (ii)/((ii)+(iii)) being between 0.2 and 0.7; where said entire kneading step is carried out for a period of time in a single mixer equipped with one or more stirrers in which the moving part of said one or more stirrers does not rotate at more than 500 revolutions/min with a tangential speed at the end of the moving part not exceeding 2.5 m/s wherein said kneading step produces an oil-in-water emulsion having a particle size of 0.1 to 5 micrometers;

(2) diluting said emulsion with water to yield a dilute emulsion having a solids content of between 25 to 97%; and

(3) adding the following components:

  (a) 0.1 to 100 parts by weight of one or more crosslinking agents per 100 parts by weight organopolysiloxane oil;

  (b) 0 to 50 parts by weight of a silane per 100 parts by weight organopolysiloxane oil;

  (c) 0 to 300 parts by weight of a siliceous or nonsiliceous inorganic filler per 100 parts by weight: organopolysiloxane oil; and

  (d) a catalytically effective amount of a cure catalyst, whereby a dispersion is formed;

(4) coating said dispersion on said surface; and

(5) crosslinking the polymer of said dispersion on said surface by means of a condensation reaction.

5,851,595

METHOD OF TREATING CARPET YARN AND CARPET TO ENHANCE REPELLENCY

Dennis J. Jones, Jr., Dalton, Ga., assignor to Shaw Industries, Inc., Dalton, Ga.

Continuation-in-part of Ser. No. 615,588, Mar. 12, 1996, abandoned, which is a continuation of Ser. No. 388,033, Feb. 13, 1995, Pat. No. 5,520,962. This application Mar. 24, 1997, Ser. No. 822,847

Int. Cl.^{6} B05D *3/02*

U.S. Cl. 427—393.4 **41 Claims**

1. A method of treating carpet yarn to enhance its repellency comprising the steps of:

providing a carpet yarn comprising polypropylene or polyester fibers;

providing effective repellency enhancing amounts of an anionic or nonionic fluorochemical compound in an aqueous medium, the aqueous medium having a pH below about 3.5;

immersing the carpet yarn in the aqueous medium;

heating the carpet yarn and aqueous medium; and

removing excess water from the carpet yarn.

5,851,596

Patent Not Issued For This Number

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5,851,597

PROCESS FOR SURFACE-TREATING BODY MADE OF METAL

Masahiko Kakizaki, Tokyo, and Masahiro Akimoto, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, and Denka Himaku Inc., Kanagawa, both of Japan

Filed Feb. 18, 1997, Ser. No. 802,532

Claims priority, application Japan, Feb. 20, 1996, 8-032468

Int. Cl.^{6} C23C *22/00;* **B05D** *1/18*

U.S. Cl. 427—435 **7 Claims**

1. A process for surface-treating a body made of metal, comprising a step of:

immersing said body made of metal in an aqueous solution comprising

at least one compound selected from the group consisting of $Si(OCH_3)_4$ and $Si(OC_2H_5)_4$ and

at least one film-forming assistant, thereby forming a transparent film on a surface of the body made of metal.

5,851,598

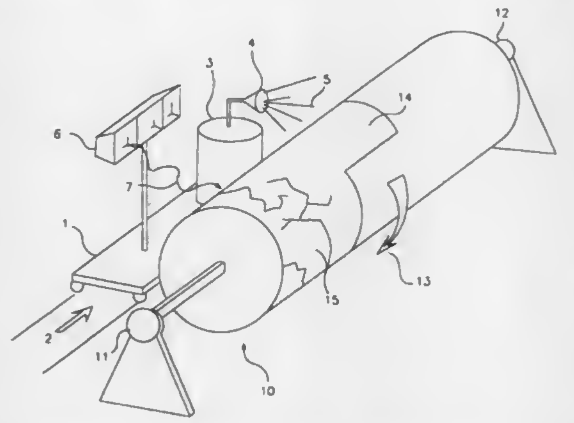
METHOD FOR APPLYING A RELEASE COATING TO A ROLL

James O. Gallant, Attleboro, Mass., assignor to Mount Hope Machinery Company, Taunton, Mass.

Continuation of Ser. No. 539,200, Oct. 4, 1995, abandoned. This application May 8, 1997, Ser. No. 848,448

Int. Cl.^{6} B05D *3/06*

U.S. Cl. 427—515 **13 Claims**



1. A method of of applying a release coating to the surface of a machine element, said method comprising the steps of:

(a) mixing liquid solutions comprising, respectively, an acrylated monomer and an acrylated urethane to form a first oligomer mixture;

(b) applying said first oligomer mixture onto the surface of said machine element to form an adhesive layer, said applying step being performed during the performance of step (a);

(c) irradiating said adhesive layer with sufficient radiant energy to partially cure said adhesive layer;

(d) mixing a second pre-reacted reactive oligomer mixture comprising, respectively, liquid solutions an acrylated monomer, an acrylated urethane, and an acrylated polysiloxane;

(e) applying said second pre-reacted reactive oligomer mixture onto said adhesive layer to form a first release layer bonded with said adhesive layer; and

(f) irradiating said adhesive and release layers with sufficient radiant energy to fully cure said adhesive and release layers.

5,851,599

BATTERY ELECTRODE SUBSTRATE AND PROCESS FOR PRODUCING THE SAME

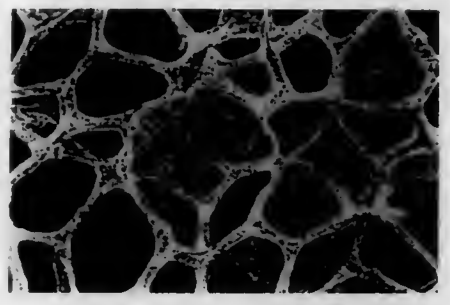
Keizo Harada; Kenichi Watanabe; Shosaku Yamanaka, all of Itami; Kiyoshi Hayashi, Neyagawa; Nobuyasu Morishita, Fujiidera; Hiroki Takeshima, Fujisawa; Hideo Kaiya, Chigasaki, and Munehisa Ikoma, Ishiki-gun, all of Japan, assignors to Sumitomo Electric Industries Co., Ltd., and Matsushita Electric Industrial Co., Ltd., both of Japan

Filed Sep. 20, 1996, Ser. No. 717,191

Claims priority, application Japan, Sep. 28, 1995, 7-250920; Dec. 18, 1995, 7-328880; Jul. 12, 1996, 8-193556

Int. Cl.^{6} B05D *3/04*

U.S. Cl. 427—531 **3 Claims**



1. A process for producing a battery electrode substrate comprising: mixing an iron oxide powder of at most 20 μm in an average particle size with a binder resin and a diluent selected from the group consisting of water and an organic solvent to prepare a slurry; applying the slurry on a porous resin core and then drying the core; thereafter effecting a heat treatment in a reducing atmosphere within the temperature range of 950° C. to 1,350° C. to remove the binder resin and the resin core while simultaneously sintering Fe to obtain a porous Fe body having a carbon content of at most 0.2% and a porosity of at least 90%; and then covering the surface of the Fe skeletal portion of the Fe body thereof with Ni by Ni electroplating, the skeletal portion of the porous metallic body is composed mainly of Fe and has a Ni covering layer on the surface thereof while pores communicating with the inside and outside of Fe skeletal portion exist in the Fe skeletal portion and the inside of the pores is covered with Ni.

5,851,600

PLASMA PROCESS METHOD AND APPARATUS

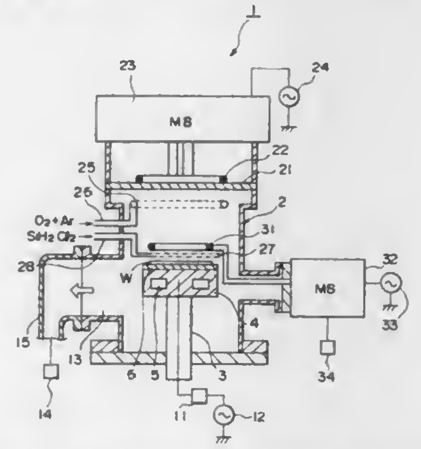
Yasuhiro Horiike, Tokyo-to, and Yasuo Kobayashi, Yamanashi-ken, both of Japan, assignors to Tokyo Electrón, Ltd., Tokyo-to, Japan

Continuation of Ser. No. 662,649, Jun. 13, 1996, abandoned. This application Oct. 17, 1997, Ser. No. 953,624

Claims priority, application Japan, Jun. 15, 1995, 7-172938

Int. Cl.^{6} B05D *3/04*

U.S. Cl. 427—535 **10 Claims**



1. A plasma processing method for subjecting a substrate to be processed to a predetermined plasma process in a plasma atmosphere, comprising the steps of:

introducing a plasma processing gas into a processing vessel and ionizing said plasma processing gas to form a plasma within said processing vessel, said plasma including ions acting as an etchant; and

re-ionizing portions of plasma that have recombined to generate etchant acting ions at locations close to said substrate to be processed;

halting said step of re-ionizing whereby deposition seeds of precursors are deposited on a surface of said substrate to permit formation of a film; and

resuming said step of re-ionizing whereby etchant acting ions generated during said ionizing step and during said re-ionizing step etch overhang portions of said film.

5,851,601

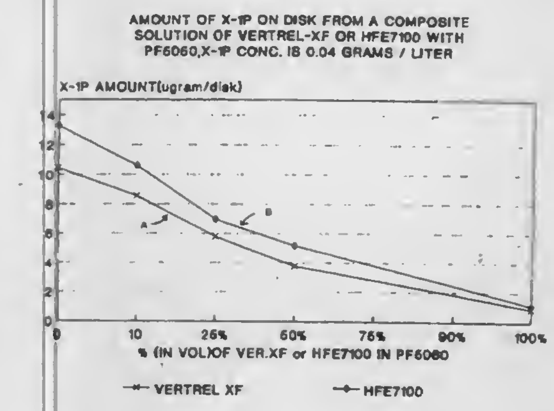
METHOD FOR CONTROLLING LUBRICANT THICKNESS ON THIN FILM, MAGNETIC DISK MEDIA

Yassin Mehmandoust, Saratoga; Hamid R. Samani, San Jose, and Atef H. Eltoukhy, Saratoga, all of Calif., assignors to StorMedia, Inc., Santa Clara, Calif.

Filed Aug. 29, 1997, Ser. No. 921,297

Int. Cl.^{6} B05D *3/00*

U.S. Cl. 427—561 **4 Claims**



1. A method of enhancing the application of lubricant to the outer surfaces of thin-film, magnetic disk media, said method comprising:

heating a solvent for dissolving a disk lubricant to above an ambient temperature;

dissolving a disk lubricant at an original lubricant concentration in said heated solvent;

ultrasonically vibrating said heated solvent containing said disk lubricant;

reducing the temperature of said heated and ultrasonically vibrated solvent containing said dissolved disk lubricant to approximately said ambient temperature, with

said disk lubricant remaining dissolved in said solvent and substantially free of separation therefrom, and

said disk lubricant remaining dissolved in said solvent at at least said original concentration level; and

applying said reduced temperature solvent containing said dissolved disk lubricant to an outer surface of a magnetic disk media with

the concentration of said disk lubricant in said solvent remaining substantially at at least said original concentration;

said heating and ultrasonic vibration of said solvent cooperating to

prevent separation of dissolved disk lubricant from said solvent, and

thereby permit relatively high amounts of said lubricant to be applied to said disk media.

5,851,602

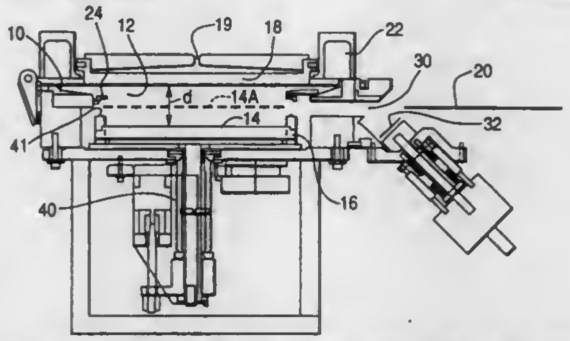
DEPOSITION OF HIGH QUALITY CONFORMAL SILICON OXIDE THIN FILMS FOR THE MANUFACTURE OF THIN FILM TRANSISTORS

Kam Law, Union City; Robert Robertson, Palo Alto, and Jeffrey Feng, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 442,936, May 17, 1995, abandoned, which is a division of Ser. No. 165,052, Dec. 9, 1993, abandoned. This application Aug. 26, 1996, Ser. No. 703,582

Int. Cl.^{6} B05D *3/06;* **H01L** *21/316*

U.S. Cl. 427—579 **5 Claims**



1. A method of making thin film transistors on a large glass substrate at least about 350 mm on a side, or at least $(350)^2$ mm^2 in area, comprising the steps of:

heating the glass substrate in a process chamber to a temperature of between about 250° and 350° C.;

introducing a precursor gas including silane and nitrous oxide into the process chamber through a gas inlet manifold, the precursor gas being introduced at a pressure of at least about 0.8 torr, the flow rate of silane through the gas inlet manifold being between about 100 and 400 sccm, the flow rate of nitrous oxide through the gas inlet manifold being between about 6000 and 10,000 sccm, and the distance between the gas inlet manifold and the substrate being between about 400 and 1500 mils;

generating a plasma of said precursor gas using a power density of less than about 0.5 watts per square centimeter to form an active conformal layer of silicon oxide having an index of refraction of between about 1.44 and 1.46;

depositing a layer of amorphous silicon thereover; and

forming a patterned metal contact layer over the amorphous silicon layer.

5,851,603

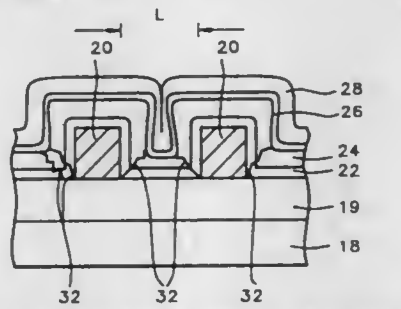
METHOD FOR MAKING A PLASMA-ENHANCED CHEMICAL VAPOR DEPOSITED SIO_2 S_3N_4 MULTILAYER PASSIVATION LAYER FOR SEMICONDUCTOR APPLICATIONS

Kwong-Jr Tsai, Chung-Hsung; Shiang-Peng Cheng, Hsinchu; Yeur-Luen Tu, Taipei, and Ing-Ruey Liaw, Hsinchu, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jul. 14, 1997, Ser. No. 891,910

Int. Cl.^{6} B05D *3/06*

U.S. Cl. 427—579 **18 Claims**



1. A method for fabricating a multilayer passivation layer over metal interconnections on a substrate comprising the steps of:

depositing a metal layer on said substrate;

- patterning said metal layer forming metal lines for said metal interconnections; and further
- depositing sequentially said multilayer passivation layer by plasma-enhanced chemical vapor deposition (PECVD) consisting of;
  - depositing a first silicon oxide layer on said patterned metal layer,
  - depositing a first silicon nitride layer on said first silicon oxide layer,
  - depositing a second silicon oxide layer on said first silicon nitride layer thereby filling and sealing cracks and pinholes in said first silicon nitride layer,
  - depositing a second silicon nitride layer on said second silicon oxide layer thereby providing a main passivation layer and completing said multilayer passivation layer.

5,851,604
INTERFERENCE PIGMENTS COMPRISING MOLECULES FIXED IN A CHOLESTERIC CONFIGURATION, AND USE THEREOF

Christoph Müller-Rees, Pullach; Silvia Jung, München; Johann Doppelberger, Emmerting, and Walter Goeblmeier, Rogglfing, all of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Germany

Filed May 1, 1995, Ser. No. 432,298

Claims priority, application Germany, May 6, 1994, 44 16 191.3

Int. Cl.^{6} B32B *5/16;* **C09B** *19/00*

U.S. Cl. 428—1 **7 Claims**

1. A pigment having a structure which is substantially that of a platelet, a thickness of from 1 μm to 20 μm and a diameter of between 500 μm and 5 μm consisting essentially of oriented three-dimensionally, crosslinked substances of a liquid-crystalline structure having a chiral phase.

5,851,605
ADHESIVE PARTICULATE COMPOSITION, ADHESIVE SPACERS FOR LIQUID CRYSTAL DISPLAY PANEL, AND LIQUID CRYSTAL DISPLAY PANEL

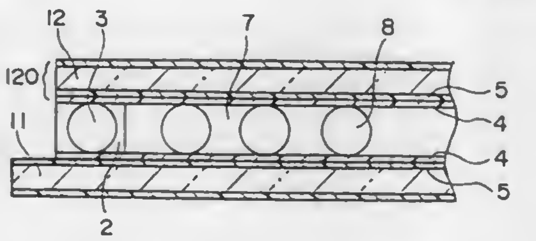
Shinji Hisamitsu, Osaka; Teruhisa Ishihara; Katsuya Tamaki, both of Ishikawa; Shigefumi Kuramoto, Osaka; Yasuhiro Sakai, Osaka, and Shinji Takasaki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., and Nippon Shokubai Co., Ltd., both of Japan

Filed Dec. 24, 1996, Ser. No. 772,430

Claims priority, application Japan, Dec. 26, 1995, 7-339448

Int. Cl.^{6} G02F *1/1339*

U.S. Cl. 428—1 **16 Claims**



1. An adhesive particulate composition comprising
- (a) adhesive coated particles comprising a thermoplastic resin-containing layer covering at least part of the surface of core particles having an average particle diameter in the range of 1 to 20 μm and a coefficient of variation of not more than 10% and
- (b) adhesive layer particles formed of said thermoplastic resin

wherein the ratio of the number of said adhesive layer particles (b) to that of said adhesive coated particles (a) is in the range of 0.1 to 10%.

5,851,606
THERMOFORMABLE ACRYLIC RESIN SHEET

Eli Visser, Leeuwarden, Netherlands, assignor to Atohaas holding C.V., Haarlem, Netherlands

Filed Mar. 26, 1996, Ser. No. 622,595

Claims priority, application European Pat. Off., Mar. 27, 1995, 95200764

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—15 **18 Claims**

1. A process for producing a thermoformable acrylic resin sheet having a granitic appearance and smooth surface after thermoforming, which comprises: mixing 0.3–1.5 wt. % of ground particles of a methyl methacrylate resin having a size smaller than 1 mm, the methyl methacrylate resin being slightly cross-linked with 0.005–0.2 wt. % of a polyfunctional monomer, with a liquid methyl methacrylate matrix resin composition containing a sufficient amount of a cross-linking monomer for effecting cross-linking of the matrix resin to a degree equal to or higher than the degree of cross-linking of the ground resin particles, and wherein at least one of the resin particles or the matrix resin composition contains a coloring material to provide a color difference between them; transporting the mixture to a flat mold, wherein the mixture is kept therein for a sufficient amount of time to allow the resin particles to settle; and polymerizing the mixture in the mold to produce the thermoformable acrylic resin sheet.

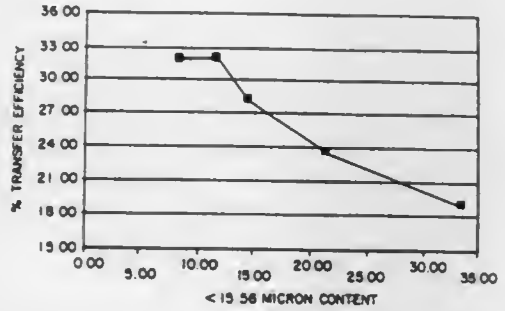
5,851,607
TRIBOELECTRIC COATING POWDER AND PROCESS FOR COATING WOOD SUBSTRATES

Paul R. Horinka, Reading, and Martin J. Korecky, Shillington, both of Pa., assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 644,553, May 10, 1996, Pat. No. 5,731,042, and a continuation-in-part of Ser. No. 169,793, Dec. 20, 1993, Pat. No. 5,552,191, which is a continuation of Ser. No. 837,459, Feb. 14, 1992, abandoned. This application Aug. 27, 1997, Ser. No. 918,123

Int. Cl.^{6} A01H *1/00*

U.S. Cl. 428—15 **9 Claims**



1. A coated wood substrate having a uniform continuous protective or decorative plastic powder coating in a thickness range of about 1 to 8 mils, said plastic coating having been applied as a powder to said substrate using a triboelectric spray gun and wherein said powder has a particle size distribution, Mx comprising all in percent by weight:

95%–100% smaller than 88 microns,
5%–15% smaller than 15.56 microns and
0%–6% smaller than 11 microns.

5,851,608
PAPER CONTAINER FOR LIQUID AND PROCESS FOR PRODUCING THE SAME

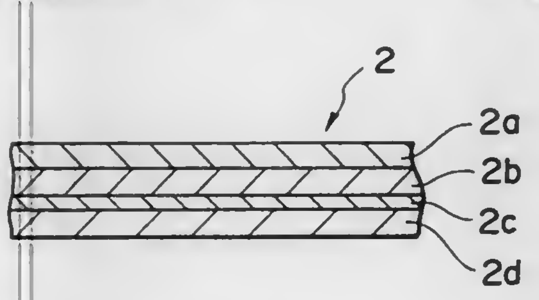
Kazuki Yamada, and Hirotaka Tsunoda, both of Tokyo-to, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo-to, Japan

Continuation of Ser. No. 59,181, May 7, 1993, abandoned, which is a continuation of Ser. No. 777,671, Oct. 15, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 210,254

Claims priority, application Japan, Oct. 16, 1990, 2-277473; Feb. 14, 1991, 3-042736

Int. Cl.^{6} B65D *5/72*

U.S. Cl. 428—34.2 **18 Claims**



1. A paper container for a liquid being formed from a base material which comprises:
- a paper layer,
- a polyolefin resin layer disposed on one side of the paper layer, for providing an outer surface of the base material and providing an outer peripheral surface of the container, and
- a saturated polyester resin layer disposed on the other side of the paper layer by the medium of a polyolefin resin layer, for providing an inner surface;
- wherein the saturated polyester resin layer for providing the inner surface comprises an amorphous or low-crystallinity saturated polyester resin having a glass transition point of not lower than 60° C., the saturated polyester resin layer of the paper container being composed of a copolymer containing a carboxylic acid component including a terephthalic acid and another carboxylic acid and an alcohol component including at least an ethylene glycol, wherein the main carboxylic acid component is terephthalic acid, the saturated polyester resin layer being laminated on the polyolefin resin layer by the medium of a carboxyl group modified polyethylene resin and a portion of the base material to be disposed on the inner side of the paper container with respect to the paper layer having a water vapor permeability of not less than 10 $g/m^2 \cdot 24$ hr·1 atm and not higher than 25 $g/m^2 \cdot 24$ hr·1 atm; and wherein the portion of the base material to be disposed on the inner side of the paper container with respect to the paper layer has an oxygen permeability of not higher than 900 $cc/m^2 \cdot 24$ hr·1 atm.

5,851,609
PREFORMED FLEXIBLE LAMINATE

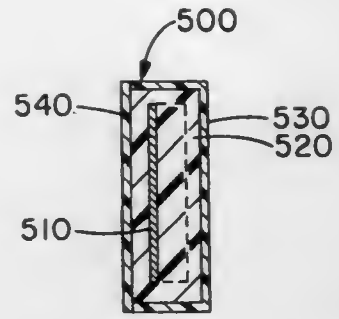
James Lynn Baratuci, Stow; Ronald Ellsworth Buchanan, Broadview Heights; Louis Anthony Ferri, Brecksville, and Lanny Dean Ritz, Tallmadge, all of Ohio, assignors to Tru-Seal Technologies, Inc., Beachwood, Ohio

Filed Feb. 27, 1996, Ser. No. 607,896

Int. Cl.^{6} B29C *45/14;* **B32B** *1/04;* **E06B** *3/24*

U.S. Cl. 428—34 **26 Claims**

1. A composite structure comprising;
- at least a first and second transparent or translucent panel members having facing, generally parallel surfaces spaced a generally finite distance apart from each other and a unitary seal located generally along the peripheries of said first and second members, in physical contact with the facing surfaces of said members, said unitary seal comprising
  - a) at least one longitudinal core material



  - b) at least one longitudinal adhesive film in physical contact with said core material and adhering said core material to said first and second members; and
  - c) at least one longitudinal spacer element substantially perpendicular to the planes formed by said first and second members and having a width, measured perpendicular to said panel members, of less than or equal to said finite distance, said at least one spacing element being bendable perpendicular to its width to an angle from 2° to 150° without changing said width of said spacer element more than one tenth of one percent, said at least one spacing element extending substantially along the length of said unitary seal, and said at least one spacer element adhered to, partially embedded in, or embedded in said at least one longitudinal core material,
- said adhesive film of said unitary seal being compositionally different than the composition of said at least one core material and at least a portion of said longitudinal core material being located between said spacer element and a gas space defined by said first and second members and said unitary seal.

5,851,610
SHRINK FILMS AND ARTICLES INCLUDING THE SAME

William J. Ristey, Berwyn; George A. Senich, Norristown; William J. Hill, Landenberg, all of Pa., and Harry S. Anderson, Newark, Del., assignors to Applied Extrusion Technologies, Inc., Peabody, Mass.

Continuation of Ser. No. 144,629, Nov. 2, 1993, abandoned, and Ser. No. 35,511, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 691,415, Apr. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 651,966, Feb. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 651,966, Feb. 7, 1991, abandoned, said Ser. No. 144,629 is a continuation of Ser. No. 37,468, Mar. 26, 1993, abandoned, which is a continuation of Ser. No. 651,966, Feb. 7, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 359,160

Int. Cl.^{6} B32B *27/06;27/32;31/14*

U.S. Cl. 428—34.9 **14 Claims**

1. A shrink film comprising a biaxially oriented transparent polymer film, the polymer being selected from the group consisting of polypropylene homopolymers, polypropylene copolymers and blends thereof, said polymer film having a machine direction shrinkage and a transverse direction shrinkage that is less than or equal to 50% of the machine direction shrinkage and wherein the

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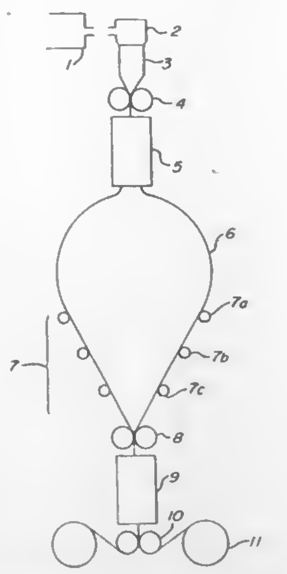


machine direction shrinkage is greater than 15% and the transverse direction shrinkage is less than 10% at about 140° C.

5,851,611
MULTI-LAYERED STORAGE CONTAINER

Alvin Guttag, 415 Russell Ave., Apt. 108, Gaithersburg, Md. 20877-2845, assignor to Alvin Guttag, Gaithersburg, Md.
Filed Jun. 5, 1995, Ser. No. 462,031
Int. Cl.⁶ G01N *21/00;* B32B *27/00*
U.S. Cl. 428—35.7 **15 Claims**

1. A multi-layered storage container that indicates the presence of acid gases by colored change, comprising:

(a) at least one layer of a gas-porous plastic wherein the gas is selected from the group consisting of carbon dioxide, hydrogen chloride, sulfur dioxide and sulfur trioxide and wherein the plastic is selected from the group consisting of a hydrocarbon polymer of a mono-olefin having two to six carbon atoms, ethylene-mono-olefin copolymer, linear polyester, polycarbonate and polystyrene,

(b) at least one layer of a gas-barrier polymer, said gas-barrier polymer being decomposable to form an acid gas,

wherein the innermost layer of said multi-layer storage container is made of said gas-porous plastic, and wherein at least one layer of said multi-layer storage container is provided with a color-changing indicator which changes color to show the presence of the acid gas formed by the decomposition of said gas-barrier polymer.

5,851,612
CONTAINER FORMED FROM COPOLYESTER COMPOSITION, COPOLYESTER COMPOSITION THEREFOR AND METHOD OF PRODUCING THE SAME

Masami Umeda, and Kimihiko Sato, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Dec. 24, 1997, Ser. No. 998,387
Int. Cl.⁶ B29D *22/00;* C08K *3/02*
U.S. Cl. 428—35.7 **15 Claims**

1. A container formed from a copolyester composition which comprises a copolyester containing 80 to 95 mol % of terephthalic acid and 20 to 5 mol % of 2,6-naphthalenedicarboxylic acid as acid components and ethylene glycol as a glycol component, wherein catalyst metal components are contained in the copolyester in such amounts that satisfy the following expressions (1) to (4) based on the total of the whole acid component:

$$0.1<\mathrm{Ca}\leqq 35 \tag{1}$$

$$0.1<\mathrm{Mg}\leqq 80 \tag{2}$$

$$40\leqq(\mathrm{Ca}+\mathrm{Mg})\leqq 90 \tag{3}$$

$$0\leqq\mathrm{Co}\leqq 15 \tag{4}$$

in which Ca, Mg and Co represent each an amount (mmol %), in terms of metal, of a calcium compound, magnesium compound and cobalt compound contained in the copolyester, based on the total of the whole acid component.

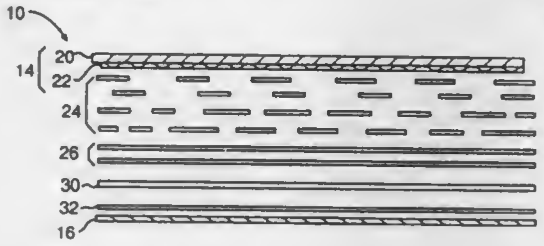
5,851,613
ABSORBENT FILTER PAPER STICK

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.
Filed Mar. 3, 1997, Ser. No. 810,252
Int. Cl.⁶ B32B *9/00*
U.S. Cl. 428—36.3 **17 Claims**

1. An essentially homogeneous, water-resistant, water-absorbent rod comprising a cohesive spiral winding of water-resistant, water-absorbent sheet material, wherein said rod can absorb at least 50% by weight of water when placed in water at 23° C. for one minute.

5,851,614
SELF-ADHESIVE OPAQUE DRY TRANSFER DECALS

Ronald Mark Buck, 423 Pacific, Solana Beach, Calif. 92075
Filed Dec. 10, 1996, Ser. No. 763,039
Int. Cl.⁶ B41M *3/12*
U.S. Cl. 428—40.1 **11 Claims**



1. A dry transfer decal for affixing to a display surface, the decal comprising:

a transparent base sheet having ultraviolet absorbing properties;
a decal image comprising multiple ink layers printed onto the transparent base sheet using offset printing techniques;
an opaque layer laid on top of the decal image ink layers;
a releasable adhesive layer laid on top of the opaque layer; and
a backing sheet, having a release layer, that when removed exposes the releasable adhesive, thereby permitting the transparent base sheet and ink layers to be attached to the display surface.

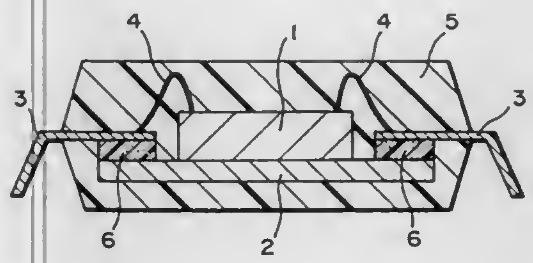
5,851,615
TAMPER INDICATING SECURITY ITEM AND JOINING METHOD

Ralph Kay, Basingstoke, Great Britain, assignor to De la Rue International Limited, London, Great Britain
PCT No. PCT/GB96/00436, § 371 Date Aug. 7, 1997, § 102(e) Date Aug. 7, 1997, PCT Pub. No. WO96/27178, PCT Pub. Date Sep. 6, 1996
PCT Filed Feb. 27, 1996, Ser. No. 860,663
Claims priority, application United Kingdom, Mar. 2, 1995, 9504145
Int. Cl.⁶ B32B *3/00*
U.S. Cl. 428—40.1 **20 Claims**

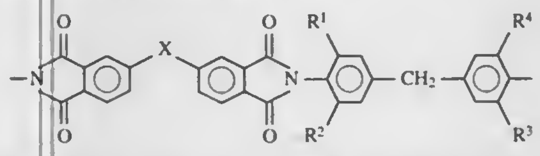
1. A heat shrink packaging material comprising a heat shrinkable film; and a tamper indicating security item comprising a substrate including a surface relief structure which generates an optically variable effect, each surface of the substrate carrying an adhesive layer the item being substrate has been adhered to a surface it cannot be removed without damaging the optically variable effect.

5,851,616
ADHESIVE TAPE FOR ELECTRONIC PARTS AND LIQUID ADHESIVE

Osamu Oka; Takeshi Nishigaya, and Fumiyoshi Yamanashi, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan
Filed May 3, 1996, Ser. No. 642,371
Claims priority, application Japan, May 31, 1995, 7-155474
Int. Cl.⁶ C09J *7/02*
U.S. Cl. 428—41.8 **19 Claims**



1. An adhesive tape for electronic parts which comprises an adhesive layer composed of a polyimide resin comprising a repeating unit represented by the formula (1), provided on at least a surface of a heat resistant film:

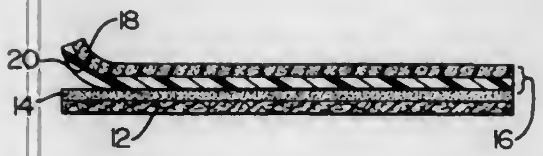


(1)

wherein X is —SO_2— or —C(=O)—OCH_2CH_2O—C(=O)—, and R^1, R^2, R^3 and R^4 are independently an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms.

5,851,617
ARTICLES INCLUDING MICROCELLULAR FOAM MATERIALS AS COMPONENTS THEREOF

LeRoy H. Keiser, Darien, Ill., assignor to Rexam Release, Inc., Oak Brook, Ill.
Filed Jul. 3, 1996, Ser. No. 675,352
Int. Cl.⁶ B32B *7/06*
U.S. Cl. 428—41.8 **14 Claims**



1. A release liner sheet consisting essentially of:

a sheet of microcellular foam material having a plurality of cells distributed substantially uniformly throughout said sheet, the cell density of said cells in said sheet lying in a range from about 10^9 to about 10^{15} cells per cubic centimeter and the average size of said cells being less than about 10 microns; and
a release material on a surface of said sheet.

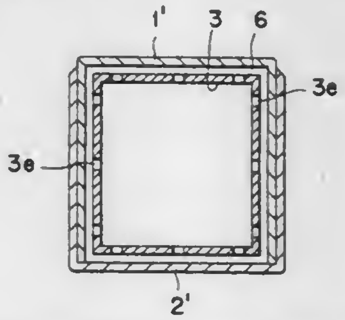
5,851,618
PEELABLE FLOOR COATING SYSTEMS

Kimm Alan Liddell, Cincinnati, and Mohsen Mohamed Marzouk, Sharonville, both of Ohio, assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Oct. 21, 1997, Ser. No. 955,082
Int. Cl.⁶ B65B *33/00;* B05D *3/12;* D06N *7/00*
U.S. Cl. 428—41.8 **30 Claims**

1. A peelable floor coating system comprising a release coating applied to a floor surface and a durable coating applied to the release coating, wherein the release coating has sufficient adhesion properties to bond to the floor surface, but which forms a stronger bond to the durable coating than to the floor surface and wherein the durable coating binds to the release coating and may be pulled up in sheets.

5,851,619
LAMINATED MOLDED ARTICLE AND ITS PRODUCTION METHOD

Hideo Sakai; Kojiro Motai; Satoru Kishi; Katsuyuki Morita; Nobuyuki Hosoyama, and Hiroshi Tanabe, all of Kanagawa-Ken, Japan, assigoors to Mitsui Chemicals, Inc., Tokyo, Japan
PCT No. PCT/JP93/01108, § 371 Date May 31, 1994, § 102(e) Date May 31, 1994, PCT Pub. No. WO94/03322, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 6, 1993, Ser. No. 196,197
Claims priority, application Japan, Aug. 7, 1992, 4-211787
Int. Cl.⁶ B29C *67/14;* B32B *3/00*
U.S. Cl. 428—57 **11 Claims**



1. A method for preparing a molded article comprising:

providing a first prepreg comprised of a fiber-reinforced thermoplastic resin containing reinforcing fibers in an amount of not less than 30% and not more than 85% by weight in contact with part of a molding surface of a molding tool having a desired cross-sectional shape;
providing a separate second prepreg comprised of a fiber-reinforced thermoplastic resin containing reinforcing fibers in an amount of not less than 30% and not more than 85% by weight in contact with two side edge portions of said first prepreg and part of the molding surface of said molding tool not covered by said first prepreg so as to form a shell surrounding said molding tool;
molding said first and second fiber-reinforced thermoplastic resin prepregs at a temperature above the glass transition temperature of the thermoplastic resin of said first and second fiber-reinforced thermoplastic resin prepregs so that said first and second fiber-reinforced thermoplastic resin prepregs conform to the desired cross-sectional shape of said molding tool and so that the second fiber-reinforced thermoplastic resin prepreg is adhered to the side edge portions of the first fiber-reinforced thermoplastic resin prepreg to form a molded article, said side edge portions being sufficient so that the first and second fiber-reinforced thermoplastic resin prepregs can be adhered together so as to form the molded article in hollow form; and
cooling said molded article.

5. The method of claim 1 wherein the first and second fiber-reinforced thermoplastic resin prepregs are molded by a second

molding tool which contacts the first fiber-reinforced thermoplastic resin prepreg and presses the first fiber-reinforced thermoplastic resin prepreg against said molding tool having the desired cross-sectional shape and a third molding tool which contacts the second fiber-reinforced thermoplastic resin prepreg and presses the second fiber-reinforced thermoplastic resin prepreg against said molding tool having the desired cross-sectional shape.

5,851,620
DISC METAL MOLD AND RECORDED DISC

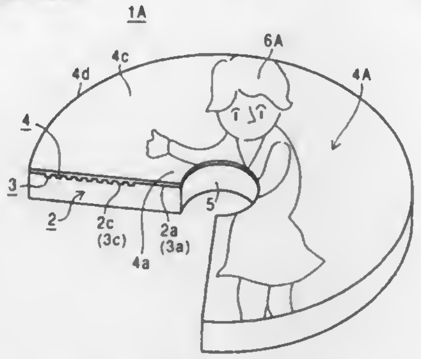
Hiroshi Nakajima; Tetsuya Hasegawa, both of Sagamihara, and Takafumi Niwa, Atsugi, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 18, 1996, Ser. No. 769,592

Claims priority, application Japan, Dec. 26, 1995, 7-351356

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—64.1 **6 Claims**



1. A disc metal mold having a fixed metal mold section and a movable metal mold section for forming a cavity therebetween, at least one of the fixed and movable metal mold sections to be provided with a stamper having an information signal surface on which an information signal is formed in a form of pits and a center hole at a center of the stamper for retaining thereof in the disc metal mold, wherein a fused resin is injected into the cavity to form a disc substrate having a center through hole at the center thereof, the disc metal mold comprising:

a retainer for retaining the stamper, the retainer having a slightly larger diameter at a top surface thereof than a diameter of the center hole of the stamper so that the top surface of the retainer is approximately flush with the information signal surface of the stamper by causing a top end of the retainer to engage with the center hole of the stamper.

5,851,621
HIGH-CAPACITY STORAGE MEDIA

Heinz Wolleb, Marly; Beat Schmidhalter, Giffers, and Jean-Luc Budry, Clarens, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

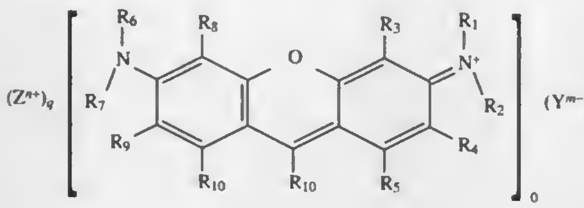
Filed Apr. 23, 1997, Ser. No. 842,292

Claims priority, application Switzerland, May 3, 1996, 1135/96

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—64.1 **23 Claims**

1. An optical recording medium comprising a substrate, a reflecting layer and a recording layer, wherein this recording layer consists essentially of one or more dyes of the formula (I)



(I)

in which R_1, R_2, R_6 and R_7 independently of one another are hydrogen, unsubstituted or mono- or poly-halo-, —C_1–C_8alkoxy-, —C_1–C_8alkylthio-, —NO_2—, —CN—, —NR_{12} R_{13}—, —COO^-—, —COOH, —COO—C_1–C_8alkyl-, SO_3^-—, —SO_3H— or —SO_3—C_1–C_8alkyl-substituted C_1– C_{20}alkyl, C_2–C_{20}alkenyl or C_2–C_{20}alkynyl or unsubstituted or mono- or poly-C_1–C_8alkyl-, —C_1–C_8alkoxy-, —C_1–C_8alkylthio-, -halo-, —NO_2—, —CN—, —$NR_{12}R_{13}$—, SO_3^-—, —SO_3R_{12}—, —$SO_2NR_{12}R_{13}$—, —COO^-—, —$COOR_{12}$—, —$CONR_{12}R_{13}$—, —PO_3^-—, —$PO(OR_{12})(OR_{13})$— or —$SiR_{14}R_{15}R_{16}$-substituted C_7–C_{18}aralkyl or C_6–C_{14}aryl, wherein R_1 and R_6 and R_2 and R_7 are not each both simultaneously hydrogen, and where R_1 and R_2 and R_6 and R_7 independently of one another, each in pairs, are separate or, if they contain substitutable sites, can be connected to one another in such a way, via a direct bond or via a bridge —O— or —NR_{12}—, as to form with the shared N^+ a five- or six-membered heterocycle;

R_3, R_4, R_5, R_8, R_9 and R_{10} independently of one another are hydrogen, halogen, OR_{17}, SR_{17}, NO_2, $NR_{18}R_{19}$ or unsubstituted or mono- or poly-halo-, —C_1–C_8alkoxy-, —C_1–C_8alkylthio-, —NO_2—, —CN— or —$NR_{18}R_{19}$-substituted C_1–C_{20}alkyl, C_2–C $_{20}$alkenyl, C_2–C_{20}alkynyl or C_7–C_{18}aralkyl, R_1 and R_3, R_2 and R_4, R_6 and R_8 and R_7 and R_9 independently of one another, each in pairs, are separate or, if both in each case contain at least one substitutable site, are connected to one another in such a way, via a direct bond or via a bridge —O— or —NR_{20}—, as to form a five- or six-membered heterocycle with the shared group C—C═N^+, C═C—N or C—C—N,

or R_4 and R_5 or independently thereof, R_9 and R_{10} together are 1,4-buta-1,3-dienylene which is unsubstituted or is substituted one or more times by C_1–C_8alkyl, C_1–C_8alkoxy, C_1–C_8alkylthio, halogen, NO_2, CN, $NR_{18}R_{19}$, SO_3^-, SO_3R_{17}, $SO_2NR_{18}R_{19}$, COO^-, $COOR_{17}$, $CONR_{18}R_{19}$, PO_3^-, $PO(OR_{18})(OR_{19})$ or $SiR_{21}R_{22}R_{23}$, so that alone or together with the shared C═C group a six-membered aromatic ring is formed;

R_{11} is hydrogen, $(CH_2)_kCOO^-$, $(CH_2)_kCOOR_{24}$, C_1–C_{20}alkyl, C_2–C_{20}alkenyl, C_2–C_{20}alkynyl or C_6 –C_{14}aryl or C_7–C_{18}aralkyl which is unsubstituted or substituted one or more times by halogen, NO_2, CN, $NR_{24}R_{25}$, SO_3^-, SO_3R_{24}, $SO_2NR_{24}R_{25}$, COO^-, $(CH_2)_kOR_{24}$, $(CH_2)_kOCOR_{24}$, $COOR_{24}$, $CONR_{24}R_{25}$, OR_{24}, SR_{24}, PO_3^-, $PO(OR_{24})(OR_{25})$ or $SiR_{21}R_{22}R_{23}$;

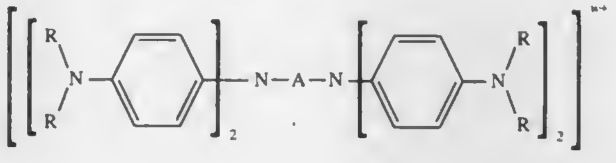
R_{12}, R_{13}, R_{17}, R_{18}, R_{19}, R $_{20}$, R_{24} and R_{25} independently of one another are hydrogen, C_1–C_{20}alkyl, C_2–C_{20}alkenyl, C_2–C_{20}alkynyl or C_7 –C_{18}aralkyl, or are C_6–C_{14}aryl which is unsubstituted or substituted one or more times by C_1–C_8alkyl, C_1–C_8alkoxy, C_1–C_8alkylthio, halogen, NO_2, CN, NH_2, NHR_{21}, $NR_{21}R_{22}$, SO_3^-, SO_3R_{23}, SO_2NH_2, SO_2 NHR_{21}, $SO_2NR_{21}R_{22}$, COO^-, $COOR_{23}$, $CONH_2$, $CONHR_{21}$, $CONR_{21}R_{22}$, PO_3^-, $PO(OR_{21})(OR_{22})$ or $SiR_{14}R_{15}R_{16}$,

or $NR_{12}R_{13}$, $NR_{18}R_{19}$, $NR_{21}R$ $_{22}$ or $NR_{24}R_{25}$ is a five- or six-membered heterocycle which can contain an additional N or O atom and which can be substituted one or more times by C_1–C_8alkyl;

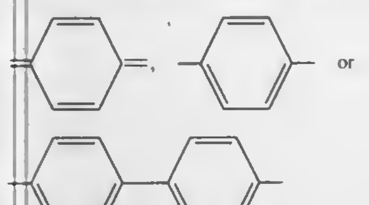
R_{14}, R_{15}, R_{16}, R_{21}, R_{22} and R_{23} independently of one another are C_1–C_{20}alkyl, C_2–C_{20}alkenyl, C_2–C_{20}alkynyl, or C_7–C_{18}aralkyl;

Y is the anion of an inorganic, organic or organometallic acid, or a mixture thereof, with the proviso that

Y is not a compound of formula,



wherein R is hydrogen or a lower alkyl group, A is,



and w is 1 or 2;

Z is a proton or a metal cation, ammonium cation or phosphonium cation, or a mixture thereof;

k is an integer from 1 to 10;

m, n and o independently of one another are each an integer from 1 to 3; and

p and q are each an integer from 0 to 4, where the relationship between o, p and q, depending on the charge of the associated substructures, is such that there is no excess positive or negative charge in formula (1).

5,851,622
MAGNETIC RECORDING MEDIUM

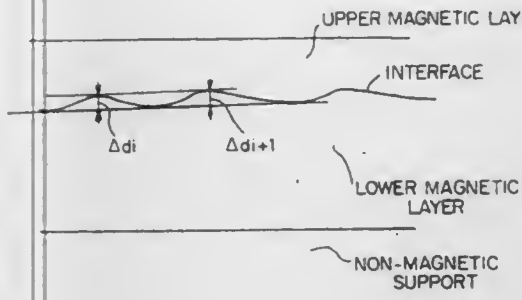
Kiyomi Ejiri; Hiroo Inaba; Shinji Saito, and Satoru Hayakawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 873,201, Apr. 24, 1992, Pat. No. 5,645,917, which is a continuation-in-part of Ser. No. 822,975, Jan. 21, 1992, Pat. No. 5,258,223. This application Dec. 4, 1996, Ser. No. 761,081

Claims priority, application Japan, Jan. 21, 1991, 3-019221; Apr. 25, 1991, 3-121873; Apr. 25, 1991, 3-121875; Jul. 15, 1991, 3-198309; Jan. 8, 1992, 4-18416; Jan. 10, 1992, 4-21782

Int. Cl.^{6} G11B *5/708*

U.S. Cl. 428—65.3 **13 Claims**



1. A magnetic recording medium, comprising a flexible support having provided thereon, at least a lower layer comprising a binder and a non-magnetic powder component dispersed therein and an upper magnetic layer comprising a binder and an acicular ferromagnetic powder dispersed therein which is coated over the lower layer while the lower layer is in a wet state, wherein said upper magnetic layer has an average dry thickness (d) in a range of from 0.05 to 0.8 um and a thickness variation ($^{\Delta}$d) at the interface between said upper magnetic layer and lower layer of not more than d/2, and said non-magnetic powder component comprises an inorganic powder having a Mohs hardness of not less than 3 and an average particle size of not more than ⅓ the major axis length of said acicular ferromagnetic powder in the upper magnetic layer.

5,851,623
PROTECTIVE COVER FOR A HAND OPERATED COMPUTER CONTROL DEVICE

Daniel J. Tarulli, 7 Huron St., Glen Head, N.Y. 11545, and Thomas Clark, 20 Deacon Dr., York, Me. 03909

Filed Oct. 3, 1996, Ser. No. 724,754

Int. Cl.^{6} B32B *1/04;1/08;* H01H *13/04*

U.S. Cl. 428—68 **8 Claims**

1. A protective cover for a hand operated computer control device, wherein the hand operated computer control device includes a control device upper surface, upon which is positioned at least one button for activating certain functions of a computer, and a cursor controller coupled to electronics for permitting a user to move a cursor on a monitor by simply moving the hand operated computer control device along a support surface, the protective cover comprising:

a cover including a cavity shaped to receive a hand operated computer control device such that the hand operated computer control device is releasably secured within the cavity;

the cover further includes a continuous, one piece upper surface preventing undesirable materials from slipping under the cover and damaging the hand operated computer control device, and the cover also includes a push button member defined by weakened sections formed in the cover such that the continuous, one piece upper surface of the cover is maintained, the push button member is oriented to be adjacent a button on the hand operated computer control device when the hand operated controller control device is positioned within the cover; and

wherein the push button member is moveable into the cavity to engage and actuate the button on the hand operated computer control device when a user presses down on the push button member.

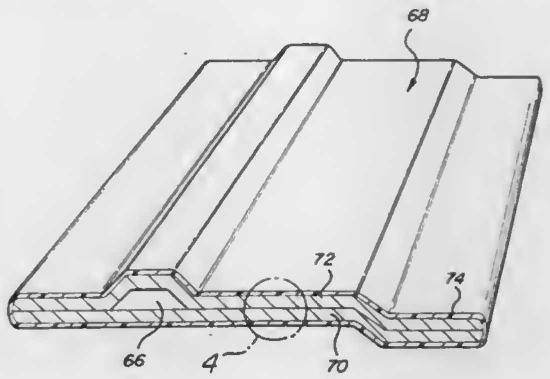
5,851,624
SOFT TOUCH TOP COVER AND METHOD OF MANUFACTURING

Leoncio C. Ang, Bloomfield Hills, and Darlene B. Collins, Lathrup Village, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation-in-part of Ser. No. 521,764, Aug. 31, 1995, abandoned. This application Apr. 4, 1997, Ser. No. 826,638

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—68 **2 Claims**



1. A unitized soft feel cover of a substantially constant thickness for finishing interior panels of an automotive vehicle comprising a support core of at least two flattened inner layers of a recyclable first plastic material, each layer being of a first thickness and disposed in a top and bottom relationship so as to have flattened interior surfaces in substantial full contact and fused to one another throughout the extent thereof, a flexible outer layer of a recyclable second plastic that is relatively thin with respect to each of said inner layers, said outer layer surrounding and in direct full contact with the outermost surfaces of said support core and integrally joined thereto at least at the interface thereof, said outer layer having an outer surface providing a soft feel to the physical touch

thereof and being recyclable with said inner layers while all of said layers are joined together.

5,851,625
ADDITIVE FOR TEXTILE AND ADHESIVE APPLICATIONS

Ronald Raymond Smesny, Lafayette; Warren Darius Stidham, Jr., Cohutta, both of Ga., and Paul Graham Barnhardt, Charlotte, N.C., assignors to Rhodia Inc., Cranbury, N.J.

Continuation-in-part of Ser. No. 374,056, Jan. 19, 1995, abandoned. This application Jun. 21, 1996, Ser. No. 668,412

Int. Cl.^{6} D03D *27/00*

U.S. Cl. 428—95 **14 Claims**

1. An article of manufacture comprising a carpet backing material, unitary backing material, textile coating, textile precoat or adhesive including a composition comprising:
   (a) a material selected from the group consisting of a naturally occurring latex and a synthetic latex; and
   (b) a thickening agent comprising a polygalactomannan;

wherein said thickening agent is present in an amount of between about 0.01 to about 15 parts per 100 parts of polymer in said naturally occurring or synthetic latex, said article being in a foamed state.

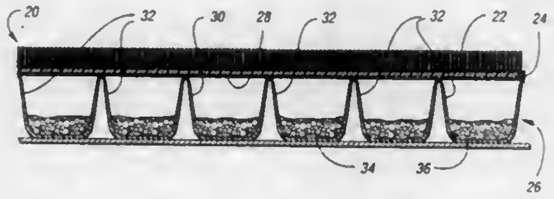
5,851,626
VEHICLE ACOUSTIC DAMPING AND DECOUPLING SYSTEM

Richard McCorry, Walled Lake, and Michael Dinsmore, Troy, both of Mich., assignors to Lear Corporation, Southfield, Mich.

Filed Apr. 22, 1997, Ser. No. 841,999

Int. Cl.^{6} B32B *3/02;* B60J *5/00*

U.S. Cl. 428—95 **7 Claims**



1. A vehicle acoustical system for attachment over a vehicle interior sheet metal component, comprising:
   a carpet layer;
   a sound barrier layer secured to the carpet layer; and
   a bubble pack comprising a first film layer and a second film layer secured to the first film layer, said first and second film layers cooperating to form a plurality of pockets therebetween, said pockets comprising a gas disposed therein such that the pockets are substantially compressible, said pockets including not more than approximately 25% by volume kinetic energy dissipating granules so that the granules only partially fill the pockets to maintain said compressibility to allow decoupling of the sound barrier layer from the sheet metal for improved isolation of noise, and wherein said bubble pack is adapted to be positioned in direct contact with the sheet metal component.

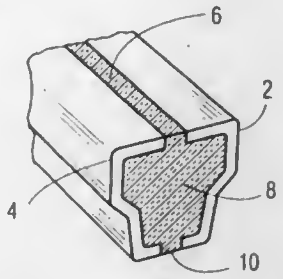
5,851,627
THERMALLY BROKEN INSULATING GLASS SPACER WITH DESICCANT

Malcolm N. Farbstein, 9818 Bridle Rd., Philadelphia, Pa. 19115

Division of Ser. No. 469,094, Jun. 6, 1995, Pat. No. 5,641,575, which is a division of Ser. No. 11,207, Jan. 29, 1993, Pat. No. 5,424,111. This application Jun. 20, 1997, Ser. No. 880,077

Int. Cl.^{6} B32B *3/10;* E06B *3/24*

U.S. Cl. 428—137 **8 Claims**



1. A thermally broken insulating spacer for a pair of glass panels comprising: a central core of thermally insulating material; first and second substantially U shaped metallic side portions each of said U shaped portions being formed by a side wall and two substantially parallel end walls connected to said side wall, said side walls and said substantially parallel end walls being attached to and substantially surrounding said central core, said first and second metallic side portions having no connection with each other except as provided by said central core, said first metallic side portion being formed for contacting one of a pair of glass panels, and said second metallic side portion being formed for contacting the other of said pair of glass panels said insulating material being a thermosetting elastomeric polyurethane filled with desiccant consisting essentially of: a polyol mixture having a molecular weight of 200–2800, about 1.06 parts; a desiccant, about 0.4 parts; diphenylmethane diisocyanate, about 1.0 parts, (MDI); pigment, about 0.25 parts, and a plasticizer, about 1.00 parts.

5,851,628
MAGNETIC RECORDING MEDIUM AND METHOD FOR MANUFACTURING THE SAME

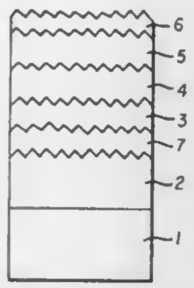
Keiji Ohkubo, and Naoki Takizawa, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Mar. 21, 1997, Ser. No. 821,455

Claims priority, application Japan, Mar. 21, 1996, 8-063963

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—141 **13 Claims**



1. A magnetic recording medium comprising:
a substrate;
a base layer made of one of Cr and an alloy containing Cr, said base layer being laminated on said substrate;
a magnetic layer made of an alloy containing Co and laminated on said base layer; and
a seed layer provided between said substrate and said base layer,
wherein said seed layer is made of a material selected from the group consisting of Al_{1-x}—Co_x in which $0.45 \leqq x \leqq 0.65$, Cu_{1-x}—Si_x in which $0.10 \leqq x \leqq 0.20$, Ni_{1-x}—Ga_x in which $0.35 \leqq x \leqq 0.60$, Cu_{1-x}—Be_x in which $0.30 \leqq x \leqq 0.60$, Mn_{1-x}—V_x in which $0.01 \leqq x \leqq 0.10$, Ni_{1-x}—Zn_x in which $0.40 \leqq x \leqq 0.60$, and Fe_{1-x}—V_x in which $0.45 \leqq x \leqq 0.55$.

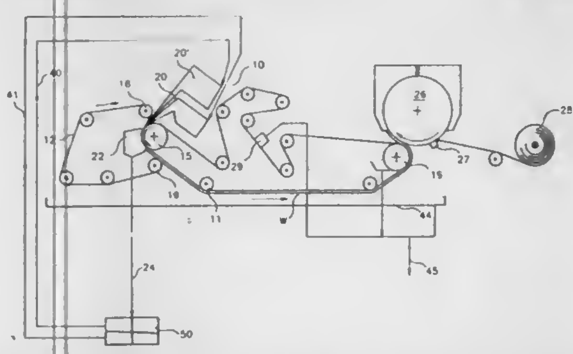
5,851,629
SOFT SINGLE-PLY TISSUE HAVING VERY LOW SIDEDNESS

T. Philips Oriaran, Appleton; Frank D. Harper, Neenah; Anthony O. Awofeso, Appleton; Cristian M. Neculescu, Neenah; Phuong Van Luu, Appleton; Thomas N. Kershaw, Neenah, and Galyn A. Schulz, Greenville, all of Wis., assignors to Fort James Corporation, Deerfield, Ill.

Division of Ser. No. 223,392, Apr. 1, 1994, Pat. No. 5,695,607. This application Aug. 13, 1997, Ser. No. 910,914

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—153 **20 Claims**



1. A soft bathroom tissue product having a serpentine configuration and a low sidedness comprising a single ply tissue formed by conventional wet pressing of a cellulosic web, adhering said web to a Yankee and creping said web from said Yankee, said tissue formed from at least two furnish sources combined into a single structurally uniform but compositionally differentiated stratum prior to depositing furnish on forming fabric;
   the first furnish source comprising softwood, recycled fiber, and optionally, strength enhancing agent; and
   the second furnish comprising hardwood, softwood, and recycled fiber, and optionally, a softener/debonder providing softwood fibers and hardwood fibers in amounts sufficient to form an overall furnish comprising about 40 to 100 weight percent softwood fibers and recycled fibers and about 60 to 0 weight percent hardwood fibers wherein about 0 to 12 pounds of the strength enhancing agent per ton of the total furnish are added to the softwood source and about 0 to 5 pounds of the softener/debonder per ton of the total furnish are added to the web after both furnish sources are combined, controlling the amount of softener/debonder added and the relative amounts of softwood to hardwood such that said tissue exhibits a sidedness parameter of less than 0.3, a tensile modulus of no more than 30 grams/percent strain, a GM MMD friction of no more than about 0.225, and a cross directional dry tensile strength of at least 200 grams per 3 inches.

5,851,630
CONTAINER AND BLANK FOR "DUCKBILL" ELIMINATION

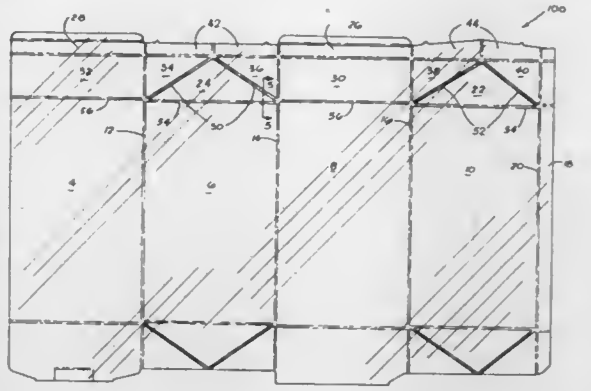
Denny Earl Davis, II, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 27, 1997, Ser. No. 788,334

Int. Cl.^{6} B32B *3/00;* B65D *5/74*

U.S. Cl. 428—155 **6 Claims**

1. An improved blank for gable-top container that eliminates duckbilling and allows the gable-top container to form more easily, wherein said container is comprised of:
   a blank having inner and outer sides, with printed graphics being located on said outer side, and a coating layer located on said inner side, and further including a first side panel means hingedly connected to a second side panel means along a first vertical side panel score line means;
   a third side panel means hingedly connected to said second side panel means along a second vertical side panel score line means;
   a fourth side panel means hingedly connected to said third side panel means along a third vertical side panel score line means;
   a side seam flap hingedly connected to said fourth side panel wherein said blank further comprises end panel means foldably connected to said side panel means wherein a first end panel means is hingedly connected to one of said side panel means by a first horizontal end panel score lines means and a second end panel means is hingedly connected to another side panel means along a second horizontal end panel score line means such that said second end panel means is located a distance of at least one of said side panel means away from said first end panel means; and
   said first and second end panel means are further comprised of a reversed diagonal score line means such that a raised area of said reversed diagonal score line means extends above said outer side of said blank to eliminate duckbilling of an extensible pour spout when said container is sealed.



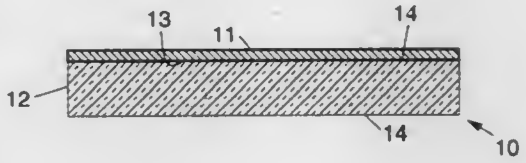
5,851,631
COMPOSITE INFRARED WINDOWS USING SILICON AND PLASTIC

Michael R. Borden, Santa Monica; Herbert C. Bitting, Rolling Hills Estates; Christopher D. Taylor, and Jeanette Lurier, both of Redondo Beach, all of Calif., assignors to Raytheon Company, El Segundo, Calif.

Filed Dec. 8, 1995, Ser. No. 569,536

Int. Cl.^{6} B32B *3/00;* G02B *1/10*

U.S. Cl. 428—156 **11 Claims**



1. A composite infrared window comprising:
a silicon substrate having a first surface and a second surface;
a first antireflection coating on the first surface of the silicon substrate;
a second antireflection coating on the second surface of the silicon substrate;
an infrared-transmissive plastic film having a surface embossed to reduce reflection therefrom; and
an adhesive disposed between the first antireflection coating and the plastic film and bonding them together.

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5,851,632

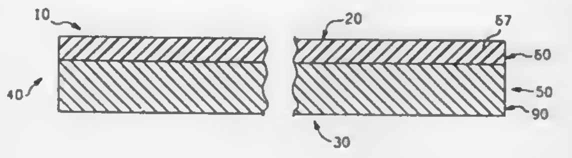
GRIP TAPE FOR HANDLE

Sam Hsin-Shun Chen, 13947 Carriage Rd., Poway, Calif. 92064, and C. F. Chang, 403 Sha-Tien Rd., Sec. 2, Ta-Tu, Taichung, Taiwan

Filed Feb. 3, 1997, Ser. No. 794,013

Int. Cl.^{6} B32B *3/00;* **C21C** *5/30;* **B25G** *1/01*

U.S. Cl. 428—156 **19 Claims**



1. A grip tape for wrapping a handle comprising:

an elongate tape having a top, a bottom, a left side and a right side; said tape in lateral cross section including:

a central portion having a thickness and a top;

a right densified portion lateral said central portion and adjacent said right side; said material of said right densified portion being denser than said material of said central portion; said right densified portion having a top below said top of said central portion and having a beveled bottom; and

a left densified portion lateral said central portion and adjacent said left side; said material of said left densified portion being denser than said material of said central portion; said left densified portion having a top below said top of said central portion and having a beveled bottom.

5,851,633

RESIN-MOLDED PRODUCT AND METHOD OF MANUFACTURING THE SAME

Chiharu Kamiya, Anjo, and Yoshihide Kanai, Toyota, both of Japan, assignors to Nippondenso Co., Ltd, and Shimizu Industry Co., Ltd, both of Kariya, Japan

Filed May 16, 1996, Ser. No. 648,706

Claims priority, application Japan, May 16, 1995, 7-117401

Int. Cl.^{6} B32B *3/00*

U.S. Cl. 428—158 **16 Claims**

1. A resin-molded product comprising:

a resin-made body;

a porous elastic member disposed on a surface of a portion of said resin-made body for providing an airtight seal, wherein said porous elastic member is disposed on a first area of said surface of said resin-made body and is not disposed on a second area of said surface of said resin-made body exclusive of resin inlets;

wherein said porous elastic member disposed on said surface of said resin-made body is fixed to and adheres to said resin-made body with molten resin of said resin-made body sinking into a contact surface of said porous elastic member and wherein a portion of said resin-made body on which said porous elastic member is disposed is thicker than a portion of said resin-made body on which said porous elastic member is not disposed.

5,851,634

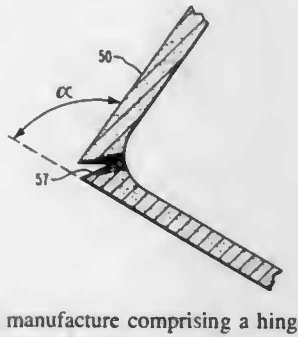
HINGES FOR HIGHLY INORGANICALLY FILLED COMPOSITE MATERIALS

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 163,681, Dec. 6, 1993, abandoned, and Ser. No. 152,354, Nov. 19, 1993, Pat. No. 5,508,072, which is a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 982,383, Nov. 25, 1992, abandoned, and Ser. No. 101,500, Aug. 3, 1993, which is a continuation-in-part of Ser. No. 929,898, said Ser. No. 95,662 and Ser. No. 982,383, each is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 163,681 is a continuation-in-part of Ser. No. 101,500, Ser. No. 95,662, Ser. No. 19,151, and Ser. No. 929,898. This application Feb. 7, 1994, Ser. No. 192,965

Int. Cl.^{6} B32B *3/30;* **E05F** *1/08*

U.S. Cl. 428—159 **112 Claims**



1. An article of manufacture comprising a hinged inorganically filled matrix including a substantially homogenous mixture of aggregate and organic binder, said matrix being formed from an inorganically filled mixture comprising water, a water-dispersible organic polymer binder selected from the group consisting of polysaccharides, proteins, and mixtures or derivatives thereof, an inorganic aggregate material having a concentration in a range from about 40% to about 98% by volume of total solids in said inorganically filled mixture, and a fibrous material substantially homogeneously dispersed throughout said inorganically filled matrix.

5,851,635

DEVICE FOR THE TRANSMITTING MOTION WITH A REDUCED NOISINESS AND BELTS SUITABLE FOR THE PURPOSE

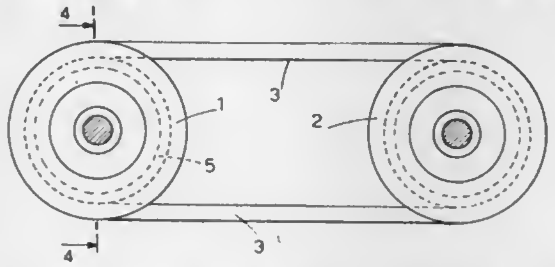
Tommaso Di Giacomo, Guardiagrele; Mauro Piccirilli, Isernia, and Massimo Matricardi, Ortona, all of Italy, assignors to Dayco PTI, S.p.A., Chieti Scalo, Italy

Filed Jul. 3, 1995, Ser. No. 497,744

Claims priority, application Italy, Aug. 2, 1994, MI94A1679

Int. Cl.^{6} B32B *3/30;25/04;* **F16G** *1/28;5/04*

U.S. Cl. 428—167 **29 Claims**



1. A device for transmitting motion, comprising: a flexible elastomeric element and at least one rigid element in driving surface contact with one another, said rigid element being movable, wherein the surface of said flexible elastomeric element that comes into surface contact with said rigid element has been surface treated with a halogenated polyether, wherein the halogenated polyether has been applied only to the surface of said flexible elastomeric element that comes into contact with said rigid element wherein said polyether permeates a layer on the surface of the elastomeric element the layer having a permeation thickness of 0.05 to 0.5 mm.

5,851,636

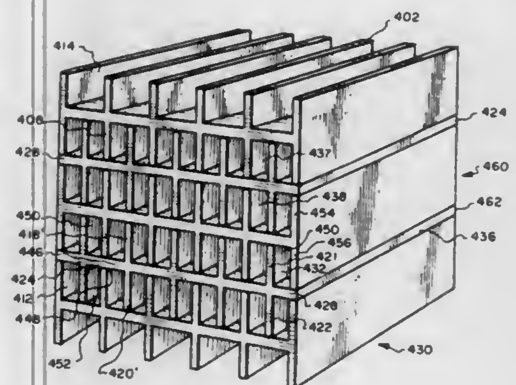
CERAMIC PACKING WITH CHANNELS FOR THERMAL AND CATALYTIC BEDS

Ko C. Lang, Agoura Hills, Calif., and Jun Huang, Xigu, Lanzhou, China, assignors to Lantec Products, Inc., Agoura Hills, Calif.

Filed Apr. 5, 1996, Ser. No. 630,958

Int. Cl.^{6} B32B *3/28;31/00;* **F28F** *3/00*

U.S. Cl. 428—167 **22 Claims**



1. A ceramic plate packing element comprising a first plate and an opposed plate, each having a first end and a second end and a first surface and a second surface, at least said first surface of said plate first and opposed plates, each containing a plurality of parallel, continuous ribs having a first end surface extending from the first surface of the plate forming parallel grooves between the ribs, the distance between grooves being greater than the width of an opposed rib and the length of the ribs being substantially equivalent to the depth of the grooves, the grooves terminating in a bottom surface, being interleaved with the ribs on said first plate being interleaved with the ribs on the opposed plate, the continuous end surface of said ribs being in contact with the bottom surface of the grooves, said bottom surfaces substantially closes said grooves to form channels.

5,851,637

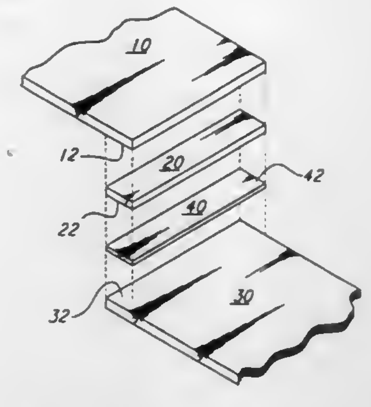
METHOD FOR ADHERING A FLEXIBLE SHEET TO A SEMI-RIGID THERMOPLASTIC RESINOUS SHEET AND PRODUCTS RELATING THERETO

Michael P. Sofie, and John A. Barrett, both of Seattle, Wash., assignors to Barrett Enclosures, Inc., Seattle, Wash.

Division of Ser. No. 520,929, Aug. 30, 1995, Pat. No. 5,660,916, which is a continuation-in-part of Ser. No. 176,032, Dec. 30, 1993, Pat. No. 5,472,771. This application Jul. 2, 1997, Ser. No. 887,485

Int. Cl.^{6} B32B *23/02;* **B31B** *1/60*

U.S. Cl. 428—192 **24 Claims**



1. A method for adhering a flexible fibrous sheet to a semi-rigid thermoplastic resinous sheet comprising the steps of:

contacting at least a portion of an edge surface of the flexible fibrous sheet wish a thermosetting resin and allowing the resin to cure to yield a unified surface;

applying an adhesive along at least a portion of an edge surface of the semi-rigid thermoplastic resinous sheet to yield an adhesive surface; and

contacting the unified surface with the adhesive surface for a period of time and under sufficient pressure to adhere the unified surface to the adhesive surface.

5,851,638

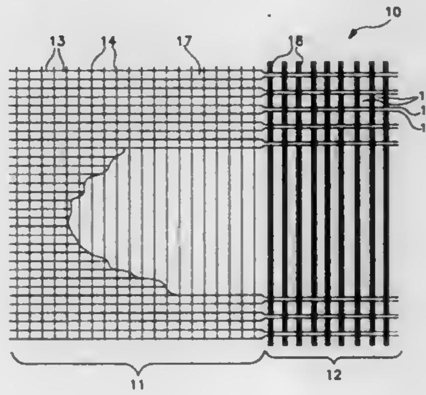
FABRIC FOR STRENGTHENING AND/OR REINFORCING FLAT-SHAPED ARTICLES

Bernd Lagemann, Birkenweg, and Friedrich Mathias, Rechbergerstrasse, both of Germany, assignors to Synteen Gewebe Technik GmbH, Germany

Continuation of Ser. No. 808,795, Feb. 28, 1997, which is a continuation of Ser. No. 225,567, Apr. 11, 1994, Pat. No. 5,637,379. This application Aug. 15, 1997, Ser. No. 911,712

Int. Cl.^{6} B32B *23/02*

U.S. Cl. 428—193 **9 Claims**



1. A roofing material comprising:

a fabric made of woof threads and warp threads which define open areas having a main area and a reinforced edge area wherein said reinforced edge area includes means for strengthening the edge area with respect to the main area wherein the reinforced edge area has a strength greater than that of the main area, the strength of the reinforced edge area being sufficient so that the roofing material passes Standard Test FM I-90, that is, a 3.8 m×7.5 m piece of fabric can withstand a pressure of 4.3 kPa for one minute without damage.

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5,851,639
COVER FOIL WITH HEAT-ACTIVATED LAYER

Johannes Antonius Maria Reinders, Wernsveld, Netherlands, assignor to Sallmetall B.V., Raalte, Netherlands

PCT No. PCT/NL95/00318, § 371 Date Jun. 2, 1997, § 102(e) Date Jun. 2, 1997, PCT Pub. No. WO96/09928, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 22, 1995, Ser. No. 809,038

Claims priority, application Netherlands, Sep. 26, 1994, 9401566; Nov. 11, 1994, 9401885

Int. Cl.^{6} B32D *3/00*

U.S. Cl. 428—195 **13 Claims**

1. A light-transmitting cover foil intended to be adhered to a surface, which foil consists of a laminate comprising:

a first layer plastically deformable only at a first temperature which first layer is provided with a structure formed before, during or after joining together to other layers;

a second layer adhered to said first layer and consisting of a dimensionally stable carrier layer; and

a third layer adhered to said second layer which is meltable and heat-activatable at a second temperature lower than the first temperature,

wherein said layers are connected to each other.

5,851,640
SEALABLE, TRANSPARENT, BIAXIALLY ORIENTED MULTILAYER POLYPROLYLENE FILM

Detlef Erich Schuhmann, Kiedrich; Herbert Peiffer, Mainz-Finthen, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 887,827, May 26, 1992, Pat. No. 5,326,625. This application May 11, 1994, Ser. No. 240,621

Claims priority, application Germany, Feb. 28, 1991, 41 17 422.9; Feb. 3, 1992, 42 02 982.1

Int. Cl.^{6} B23B *15/08;27/08;27/32*

U.S. Cl. 428—200 **29 Claims**

1. A sealable, biaxially oriented, transparent, coextruded multilayer film which comprises a core layer and a sealable top layer, and an intermediate layer between the core layer and the sealable top layer wherein

(a) the core layer comprises a propylene polymer, and

(b) the top layer comprises

a copolymer of
  ethylene and propylene,
  ethylene and butylene,
  propylene and butylene,
  ethylene and an α-olefin having 5 to 10 carbon atoms, or
  propylene and an α-olefin having 5 to 10 carbon atoms, or
a terpolymer of
  ethylene and propylene and butylene, or
  ethylene and propylene and an α-olefin having 5 to 10 carbon atoms, or
a mixture of one or more of the above copolymers and terpolymers with polypropylene, or
a mixture of two or more of said copolymers, said terpolymers, or both of said copolymers and said terpolymers,

wherein the layer thickness of the sealable top layer is less than or equal to 0.4 μm, and wherein the top layer does not comprise either polydimethylsiloxane or silicon dioxide, and

wherein the intermediate layer consists essentially of a propylene polymer and the layer thickness of the intermediate layer is 2 to 12 μm.

5,851,641
ELECTROSTATIC CHUCKING DEVICE

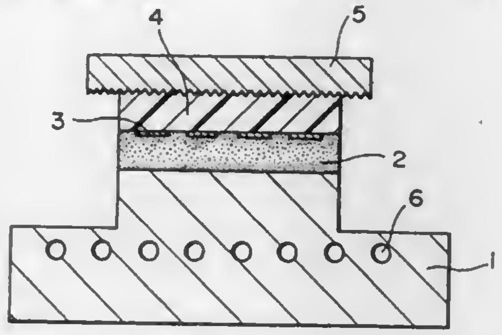
Tadao Matsunaga, Shizuoka; Takaya Matsushita, Yokkaichi, and Kei Hattori, Yokohama, all of Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, and Kabushiki Kaisha Toshiba, Kanagawa-ken, both of Japan

Division of Ser. No. 561,731, Nov. 22, 1995, Pat. No. 5,645,921. This application Apr. 29, 1997, Ser. No. 848,625

Claims priority, application Japan, Nov. 22, 1994, 6-311335

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—209 **6 Claims**



1. A process for producing an electrostatic chucking device comprising:

forming a metal layer on one face of a heat resistant film using a depositing or plating method;

forming an electrode layer by providing a photoresist layer on the surface of the metal layer, and carrying out pattern exposure, development, and etching processes;

forming a laminated sheet by forming a semi-cured adhesive layer on the surface of the electrode layer using an adhesive;

punching the laminated sheet according to the shape of a metal base; adhering the punched laminated sheet on the metal base by placing the semi-cured adhesive layer in contact with the metal base; and

curing the semi-cured adhesive layer to form a laminated product.

5,851,642
PRODUCT PRODUCED BY COATING A SUBSTRATE WITH AN ELECTRICALLY CONDUCTIVE LAYER

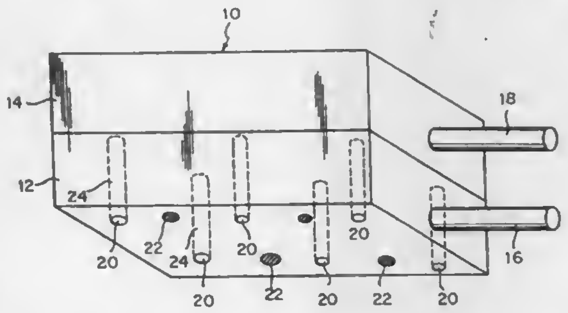
Vincent Sauvinet, Paris; Jean Bletry, Grenoble; Micheline Bonnaud, Malakoff, and Maurice Trouve, Nemours, all of France, assignors to Saint-Gobain Vitrage, Courbevole, France

Continuation-in-part of Ser. No. 821,365, Jan. 22, 1986, Pat. No. 5,859,499. This application Jul. 10, 1989, Ser. No. 363,758

Claims priority, application France, Jan. 22, 1985, 85-00854; Jul. 3, 1985, 85-10145

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 428—212 **8 Claims**



1. A plate of glass coated with a layer consisting essentially of indium and tin oxides having zones of a low emissivity and resistivity of less than or equal to 0.15 and 3×10^{-4} ohm-cm, respectively for a thickness of between about 1800 and 4500 angstroms with at least one other zone wherein the emissivity and resistivity are higher than 0.15 and 3×10^{-4} ohm-cm, respectively that is produced by:

preparing a dry metal composition containing indium formate;

mixing at least a powdered or gaseous tin compound or a gaseous organotin compound with the indium formate in proportions ranging from one to thirty weight percent;

depositing said composition onto a surface of a heated glass plate so as to pyrolyze the composition; and

heating the coated glass plate to enhance the properties of the layer.

5,851,643
MAGNETIC RECORDING MEDIA AND MAGNETIC RECORDING READ-BACK SYSTEM WHICH USES SUCH MEDIA

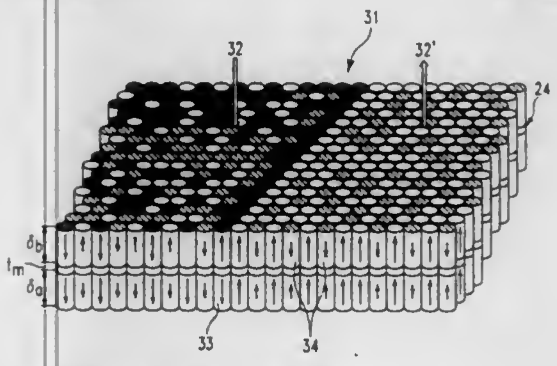
Yukio Honda, Fuchuu; Nobuyuki Inaba, Hasuda; Mikio Suzuki, Kokubunji; Masaaki Futamoto, Tukui-gun; Hiroyuki Awano, Nagareyama; Yoshibumi Matsuda, Odawara, and Yoshihiro Shiroishi, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 336,882, Nov. 9, 1994, abandoned. This application Mar. 26, 1997, Ser. No. 832,330

Claims priority, application Japan, Nov. 11, 1993, 5-282385; Nov. 12, 1993, 5-283052; Dec. 17, 1993, 5-318166

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—212 **61 Claims**



1. A magnetic recording media comprising:

a non-magnetic substrate;

a magnetic film having at least two magnetic layers separated by a non-magnetic intermediate layer, each of the at least two magnetic layers having a lattice constant, the lattice constants being different from one another; and

a structure control underlayer situated between the non-magnetic substrate and the magnetic film,

wherein at least one of the at least two magnetic layers includes at least two magnetic films, of different lattice constants, which have been epitaxially grown so as to interface each other.

5,851,644
FILMS AND COATINGS HAVING ANISOTROPIC CONDUCTIVE PATHWAYS THEREIN

Ciaran B. McArdle, and Joseph Burke, both of Dublin, Ireland, assignors to Loctite (Ireland) Limited, Dublin

Filed Jul. 25, 1996, Ser. No. 686,987

Int. Cl.^{6} B32B *7/02;5/16;* **H01B** *1/06;* **H01C** *1/06*

U.S. Cl. 428—213 **18 Claims**

1. An anisotropically-conductive film or a substrate having a surface coated with an anisotropically-conductive coating, said film or coating having been formed by solidifying a solidifiable ferrofluid composition, the solidifiable ferrofluid composition comprising

(i) a colloidal suspension of ferromagnetic particles in a non-magnetic carrier, and

[redacted]

(ii) a plurality of electrically-conductive particles dispersed in the ferrofluid composition, said electrically-conductive dispersed particles having an average particle size which is about 10 times or more than the particle size of said ferromagnetic particles,

said electrically-conductive particles having been arrayed in a non-random pattern by application of a substantially uniform magnetic field to the composition in a liquid state and having been locked in position by solidification of the composition.

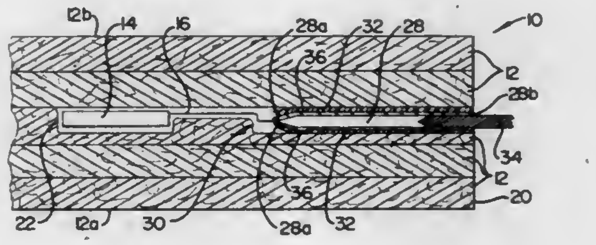
5,851,645
COMPOSITE STRUCTURE HAVING AN EXTERNALLY ACCESSIBLE ELECTRICAL DEVICE EMBEDDED THEREIN AND A RELATED FABRICATION METHOD

Robert A. Glowasky, Webster Grove; Jack H. Jacobs, St. Louis; Bruce E. McIlroy, Florissant, all of Mo., and Matthew M. Thomas, Madison, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 473,098

Int. Cl.^{6} G01L *1/00*

U.S. Cl. 428—221 **5 Claims**



1. A composite structure having an externally accessible electrical device embedded therein, the composite structure comprising:

a plurality of plies stacked to thereby form a multi-ply laminate structure, the laminate structure having opposed inner and outer surfaces and an edge surface extending between the inner and outer surfaces and along a peripheral edge thereof;

an electrical device disposed within the laminate structure, wherein said electrical device includes at least one electrical lead for establishing electrical contact with said electrical device; and

at least one tube disposed within the laminate structure and having opposed first and second ends, wherein the first end of said at least one tube electrically contacts the at least one electrical lead, and wherein the second end of said at least one tube opens through the edge surface of the laminate structure to thereby define an externally accessible electrical port,

wherein the externally accessible electrical port is adapted to receive a corresponding connector such that electrical contact is established via the at least one electrical lead with said electrical device.

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5,851,646
PREPREG, PROCESS FOR PRODUCING THE SAME AND PRINTED CIRCUIT SUBSTRATE/BOARD USING THE SAME

Tsutomu Takahashi; Yoshifumi Tsujimoto; Hiroaki Kumada, and Hiroyuki Sato, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 15, 1996, Ser. No. 732,577

Claims priority, application Japan, Oct. 16, 1995, 7-267040; Apr. 1, 1996, 8-078739

Int. Cl.^{6} B32B *5/28;5/26;17/04*

U.S. Cl. 428—294.1 **5 Claims**

1. A prepreg comprising a porous para-oriented aromatic polyamide film impregnated with a thermoplastic resin and/or a thermosetting resin, wherein the porous para-oriented aromatic polyamide film is composed of para-aramid fibrils having a diameter of not more than 1 μm, with the fibrils planarly arranged as a network or a nonwoven fabric and laminated in layer form, and the film has a linear thermal expansion coefficient at 200° to 300° C. of $\pm 50\times10^{-6}$/°C. and has 30 to 95% of vacant spaces.

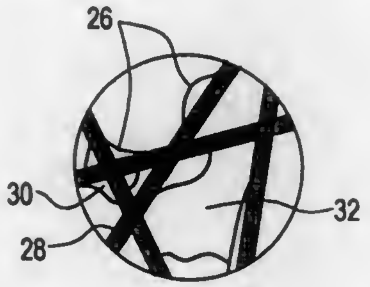
5,851,647
NONWOVEN METAL AND GLASS

Richard P. Foster, Norwood, Mass., assignor to Hollingsworth & Vose Company, East Walpole, Mass.

Filed Feb. 14, 1997, Ser. No. 801,798

Int. Cl.^{6} B32B *3/26;5/22*

U.S. Cl. 428—304.4 **18 Claims**



18. A flexible material comprising a perforate matrix of glass at least partially enveloping at least some of a plurality of metal fibers selected from the group consisting of stainless steel, copper, and aluminum that are configured as a non-sintered, nonwoven sheet, each of the metal fibers having a length in the range of 3 mm to 10 mm, wherein the material has a weight in the range of 25 to 100 pounds per 3,000 square feet, and wherein the flexible material is capable of being pleated, formed, shaped and folded without breaking.

5,851,648
ARTICLES COMPRISING ABSORBENT FOAMS MADE FROM HIGH INTERNAL PHASE EMULSIONS USEFUL FOR ACQUIRING AND DISTRIBUTING AQUEOUS FLUIDS

Keith Joseph Stone, Fairfeld; Thomas Allen DesMarais, Cincinnati; Gary Dean La Von, Middletown; Stephen Allen Goldman, and Paul Selden, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 689,613, Aug. 13, 1996, which is a division of Ser. No. 645,664, May 14, 1996, Pat. No. 5,632,737, which is a division of Ser. No. 370,695, Jan. 10, 1995, Pat. No. 5,563,179. This application May 14, 1997, Ser. No. 856,159

Int. Cl.^{6} B32B *3/26;* **A61J** *13/15*

U.S. Cl. 428—304.4 **14 Claims**

1. An absorbent article especially suitable for absorbing and retaining aqueous body fluids, said article comprising:

I) a backing sheet; and

II) an absorbent core associated with said backing sheet such that said absorbent core is positioned between said backing sheet and the fluid discharge region of the wearer of the article, said absorbent core comprising a polymeric foam material which is capable of acquiring and distributing aqueous fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:
   A) the ability to vertically wick synthetic urine to a height of 5 cm in less than about 120 seconds:
   B) a capillary absorption pressure of from about 5 to about 25 cm;
   C) a capillary desorption pressure of from about 8 to about 40 cm;
   D) a resistance to compression deflection of from about 5 to about 85% when measured under a confining pressure of 0.74 psi;
   E) a free absorbent capacity of from about 12 to about 125 g/g; and
   F) a recovery from wet compression of at least about 60%.

5,851,649
INORGANIC POROUS SINTERED BODY AND FILTER

Masahide Mohri, and Tetsu Umeda, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Nov. 22, 1996, Ser. No. 754,138

Claims priority, application Japan, Dec. 6, 1995, 7-345289

Int. Cl.^{6} C30B *29/20*

U.S. Cl. 428—319.1 **12 Claims**

1. An alumina porous sintered body comprising alumina polyhedral particles having a primary particle size of from 0.1 to 3 μm, said alumina porous sintered body having pores formed by the alumina particles, wherein said pores have a pore size distribution such that a ratio of D10 to D90 is not more than 2 and D50 is 0.01–1 μm, wherein D10, D50 and D90 represent pore sizes at 10%, 50% and 90% cumulation from the largest pore size of a cumulative pore volume distribution, respectively, and the porous sintered body has a porosity of 10–50%.

5,851,650
MAGNETIC RECORDING MEDIUM INCLUDING A BACKCOAT LAYER CONTAINING A SPECIFIED VINYL CHLORIDE COPOLYMER

Akira Somiya, and Shigeo Kurose, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 12, 1997, Ser. No. 798,104

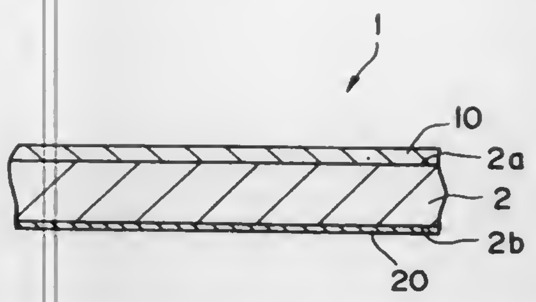
Claims priority, application Japan, Feb. 15, 1996, 8-052460

Int. Cl.^{6} G11B *5/70*

U.S. Cl. 428—323 **6 Claims**

1. A magnetic recording medium comprising a nonmagnetic support having opposite surfaces and provided on one of said opposite surfaces with a magnetic layer and on the other surface thereof with a backcoat layer having a nonmagnetic powder and a binder as main components thereof, wherein said binder in said backcoat layer contains a vinyl chloride copolymer having an amine-containing vinyl unit and an acidic functional group-containing vinyl unit in the same molecular unit,

wherein the content of said amine-containing vinyl unit is in the range of 0.03 to 2.3% by weight, based on the amount of said vinyl chloride copolymer and the content of said acidic functional group-containing vinyl unit is in the range of 0.05 to 1.85% by weight, based on the amount of said vinyl chloride copolymer.



5,851,651
COATING FOR INKJET RECORDING

Hung-Tai Chao, Cumberland, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 7, 1997, Ser. No. 833,542

Int. Cl.^{6} B41M *9/00*

U.S. Cl. 428—327 **2 Claims**

1. An inkjet recording sheet comprising a paper substrate having a surface smoothness of about 500 seconds BEKK or higher and a Cobb Value (water absorbtivity) of between about 17–54 gr/m^2, bearing on at least one surface thereof an inkjet coating comprising a combination of one or more pigments and one or more binders for binding the pigments within the coating structure and for fixing inkjet inks applied thereto, said coating further comprising one or more additives selected from the group consisting of dispersants, lubricants, defoamers, insolubilizers, viscosity modifiers, polyelectroylytes and the like, wherein the pigment to binder ratio is about 3:1, a major portion of the pigment component consists of precipitated calcium carbonate and a hollow sphere plastic pigment, and a major portion of the binder component consists of poly(vinylpyrrolidone); a copolymer of poly(vinylpyrrolidone) and styrene; and a styrene butadiene copolymer wherein the binders are cross linked.

5,851,652
LIGHTFAST T102 PIGMENT

Howard W. Jacobson, and Andrew A. Feng, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 321,661, Oct. 12, 1994, abandoned, which is a continuation of Ser. No. 958,828, Oct. 9, 1992, abandoned. This application Aug. 22, 1996, Ser. No. 701,518

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—328 **6 Claims**

1. Rutile TiO_2 pigment particles bearing coatings consisting essentially of, in sequence:

(a) an inner layer comprising about 0.05–1 percent by weight, based on the weight of the TiO_2, of cerium radicals and about a stoichiometric amount of phosphate radicals needed to form cerium phosphate,

(b) a second layer of about 0.1–4 percent by weight, based on the weight of the TiO_2, of uncalcined amorphous silica, and optionally

(c) an outer layer of (1) about 0.5 to 8 percent by weight, based on the weight of the TiO_2, of hydrous alumina or (2) hydrous alumina in the amount of about 0.5–8 percent, based on the weight of the TiO_2, and associated therewith up to about a stoichiometric amount of phosphate radicals needed to form aluminum phosphate, the combined total weight of said coatings being about 2 to 12 percent by weight, based on the weight of the TiO_2, said particles not flocculating in aqueous media having a pH of about 6 to 8.

5,851,653
TRANSPARENT BRITTLE FILM

Masahiro Nakamura, Saitamaken, and Etsuo Matsui, Yamanashiken, both of Japan, assignors to Lintec Corporation, and Asahi Kagaku Kogyo Co., Ltd., both of Tokyo, Japan

Filed Dec. 18, 1996, Ser. No. 769,069

Claims priority, application Japan, Jan. 11, 1996, 8-020451

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—328 **15 Claims**

1. A transparent brittle film prepared from a resin composition comprising (A) 100 parts by weight of a vinyl chloride resin, (B) 20 to 200 parts by weight of an acrylic resin, (C) 20 to 250 parts by weight of at least one type of filler selected from the group consisting of (a) fused silica comprising aggregates of particles having an average particle diameter in the range of 5 to 20 μm and individual particle diameters in the range of 0.5 to 100 μm, (b) aluminum hydroxide comprising aggregates of particles having an average particle diameter in the range of 1 to 20 μm and individual particle diameters in the range of 0.2 to 50 μm, and (c) barium sulfate comprising aggregates of particles having an average particle diameter in the range of 1 to 20 μm and individual particle diameters in the range of 0.2 to 50 μm, (D) 0 to 40 parts by weight of a plasticizer, and (E) 0.5 to 10 parts by weight of a stabilizer; and

wherein the film has a light transmittance of 20% or more in a range of wave length of 300 to 700 nm and a tensile strength at break of 1.0 to 3.0 kg/mm^2.

5,851,654
RECORDING MEDIUM AND INK-JET RECORDING METHOD USING THE SAME

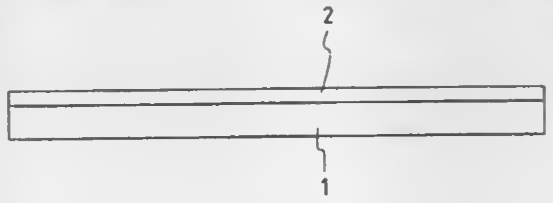
Hitoshi Yoshino, Zama; Kyo Miura, Yokohama, and Yuji Kondo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 464,209, Jun. 5, 1995, abandoned, which is a division of Ser. No. 231,659, Apr. 25, 1994, Pat. No. 5,635,291. This application Jan. 14, 1997, Ser. No. 782,645

Claims priority, application Japan, Apr. 28, 1993, 5-125437; Apr. 28, 1993, 5-125438; Apr. 28, 1993, 5-125439; Dec. 28, 1993, 5-352110; Dec. 28, 1993, 5-352111; Dec. 28, 1993, 5-352112

Int. Cl.^{6} B41J *2/01;* **B41M** *2/00*

U.S. Cl. 428—328 **18 Claims**



1. A recording medium comprising a substrate, in the form of a sheet, comprising pulp fibers and a filler, wherein the filler comprises alumina hydrate particles containing 0.01 to 1.00% by weight of titanium dioxide within the alumina hydrate particles.

5,851,655
RECEIVING PAPER FOR MELT-TYPE HEAT TRANSFER RECORDING

Tomofumi Tokiyoshi, Soka; Hitoshi Ishizawa, Chiba, and Masaru Kato, Yokohama, all of Japan, assignors to OJI Paper Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1997, Ser. No. 791,621

Claims priority, application Japan, Feb. 2, 1996, 8-017306

Int. Cl.^{6} B41M *5/38*

U.S. Cl. 428—330 **17 Claims**

1. A receiving paper for melt-type heat transfer recording comprising a base paper and an image receiving layer thereon, said receiving layer containing a binder and a pigment and receiving a heat-meltable ink, wherein said receiving layer contains spherical precipitated calcium carbonate having an average particle diameter of 0.5 to 10 μm as a pigment, and wherein the surface of said receiving layer has a surface roughness (Rmax) of 0 to 15 μm as measured according to JIS B 0601, a pore open area ratio of 30 to 85% and an average pore open area of 0.5 to 20.0 μm^2.

5,851,656
MAGNETIC RECORDING MEDIUM

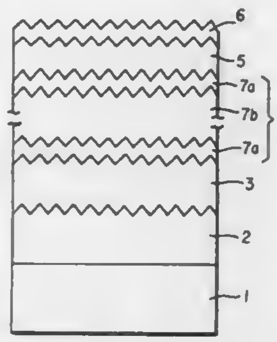
Keiji Ohkubo, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Japan

Filed Jan. 13, 1997, Ser. No. 782,744

Claims priority, application Japan, Jan. 12, 1996, 8-003517

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—332 **14 Claims**



1. A magnetic recording medium, comprising:
a substrate;
a base layer formed on said substrate; and
a multiple-film magnetic layer formed on said base layer, said multiple-film magnetic layer comprising two to six magnetic films formed of a material selected from the group consisting of a CoNiCrTa alloy, a CoCrPt alloy and a CoCrTaPt alloy, said magnetic films being laminated on each other with a non-magnetic intermediate film interposed between adjacent ones of the magnetic films, said non-magnetic intermediate film being formed of a Cr alloy containing an element selected from the group consisting of Mo in a range of 2 at % to 12 at %, Ta in a range of 2 at % to 12 at %, Ti in a range of 2 at % to 15 at % and W in a range of 1 at % to 20 at %.

5,851,657
CHARGING MEMBER

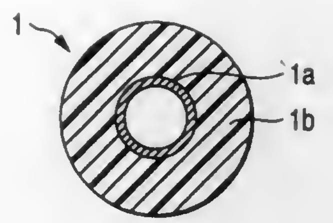
Michiaki Yasuno, and Minoru Rokutan, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1997, Ser. No. 792,223

Claims priority, application Japan, Feb. 19, 1996, 8-030212

Int. Cl.^{6} B32B *25/20*

U.S. Cl. 428—332 **14 Claims**



1. A charging member comprising an electroconductive substrate and an electroconductive elastomer layer fixed to a surface of the electroconductive substrate, the electroconductive elastomer layer comprising a crosslinked silicone rubber in which the content of uncrosslinked silicone polymer components having a number-average molecular weight of 10,000 or higher is not higher than 1% by weight.

5,851,658
DIAMOND COATED ARTICLE AND PROCESS FOR PRODUCING THEREOF

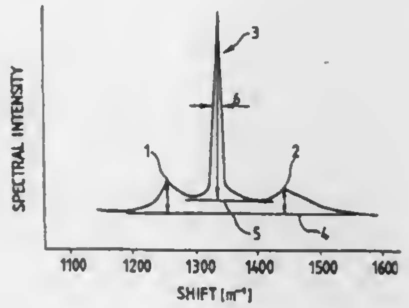
Hiroshi Yamamoto; Takashi Okamura, and Satoshi Iio, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 5, 1996, Ser. No. 675,905

Claims priority, application Japan, Jul. 5, 1995, 7-194234; Jul. 4, 1996, 8-195394

Int. Cl.^{6} C23C *16/26*

U.S. Cl. 428—334 **2 Claims**



1. A diamond coated article consisting essentially of a substrate and a plurality of consecutive adjacent polycrystalline diamond film layers cumulatively coated on the substrate in a total thickness of at least 20 μm, each of said polycrystalline diamond film layers (i) having a thickness of 6 to 13 μm, (ii) having an average crystallite size in the surface direction thereof of 3 to 7 μm, (iii) having (111) oriented diamond crystallites exposed on the surface thereof, and (iv) satisfying the relationship: $I(N)/I(D)<0.2$, wherein I(D) represents the intensity of the diamond Raman peak appearing around 1333 cm^{-1} and I(N) represents the maximum intensity among non-diamond Raman peaks appearing between 1200 cm^{-1} and 1600 cm^{-1}.

5,851,659
SLIDING MEMBERS AND A METHOD OF PREPARATION THEREOF

Toshiro Komuro; Masaki Ooya, and Teruo Imai, all of Kashiwazaki, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 291,075

Int. Cl.^{6} F16J *9/26*

U.S. Cl. 428—336 **6 Claims**

1. A sliding member in which the surface of a substrate is coated with a coating of CrN (111) having a porosity of between 1.5% and 20%, characterized in that a columnar crystal structure is present in a tension fracture surface of the coating, the columns being aligned towards the coating surface from the substrate surface.

5,851,660
METHOD OF FABRICATING A THIN-FILM MAGNETIC RECORDING MEDIUM AND THIN-FILM MAGNETIC RECORDING MEDIUM

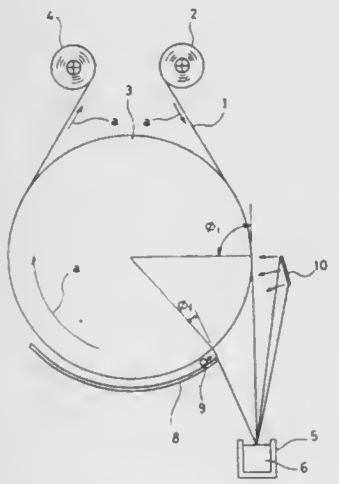
Kiyokazu Tohma, Hirakata; Kazunari Yoshimoto, Kyoto, and Ryuji Sugita, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 5, 1996, Ser. No. 743,827

Claims priority, application Japan, Nov. 30, 1995, 7-311789

Int. Cl.^{6} B05D *3/04*

U.S. Cl. 428—336 **17 Claims**



1. In a method of fabricating a thin film magnetic recording medium where vapor evaporation is effected by a vacuum evaporation device onto a traveling substrate to form a magnetic layer, the method comprising the steps of:
raising, to higher than the melting point of an evaporation material, the temperature of a reevaporation member disposed so as to be opposed to the substrate on the downstream side of a magnetic layer formation start portion where said magnetic layer begins to form;
reevaporating atoms, which are evaporated from an evaporation source and reach said reevaporation member, by the raised temperature of the reevaporation member;
mixing the atoms reevaporated and atoms evaporated directly from said evaporation source together and then causing the mixed atoms to reach said substrate at the same time to form said magnetic layer.

5,851,661
WATER VAPOR PERMEABLE FILM

Harald Werenicz, Rippenstedt; Franz Maitz, Bruckmuhl, both of Germany; Walter Nussbaumer, Alumunster, Austria; Ludwig Stingl, Munich, and Franz Peter Schmitz, Vaterstetten, both of Germany, assignors to H.B. Fuller Licensing & Financing, Inc., St. Paul, Minn.

Division of Ser. No. 906,807, Jun. 30, 1992, Pat. No. 5,508,371. This application Apr. 12, 1995, Ser. No. 420,660

Claims priority, application Germany, Jul. 1, 1991, 4121716.0-43

Int. Cl.^{6} B32B *7/12;13/12;27/40*

U.S. Cl. 428—350 **10 Claims**

1. Material that is permeable to water only in vapour form, comprising a fibre material coated with a water vapour permeable polyurethane film formed from a hot melt moisture curing adhesive containing at least one isocyanate functional polyurethane consisting essentially of the reaction product of a component that contains NCO groups and a diol component comprising at least one linear dihydroxy polyester, characterized in that the dihydroxy functional polyester is formed from a diacid constiment and a diol constituent, the diol constituent comprising a dihydroxy poplyether that has a weight average molecular weight of at least 1000, thereby providing polyether segmenting of said polyester, and wherein the ratio of OH:NCO in said isocyanate functional polyurethane is between 1.0:1.6 and 1.0:2.6, said water vapor permeable polyurethane film being applied to the fiber material as a layer, directly or through a transfer process while said hot melt adhesive is in a molten state, and subsequently hardened by the effects of moisture to form a water-vapor permeable film. through a transfer process while said hot melt adhesive is in a molten state, and subsequently hardened by the effects of moisture to form a water-vapour permeable film.

5,851,662
ADHESIVE SHEET

Kenji Suzuki; Akira Kunihiro, and Hiroyuki Ohhashi, all of Utsunomiya, Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02573, § 371 Date Aug. 12, 1996, § 102(e) Date Aug. 12, 1996, PCT Pub. No. WO96/18703, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 15, 1995, Ser. No. 693,193

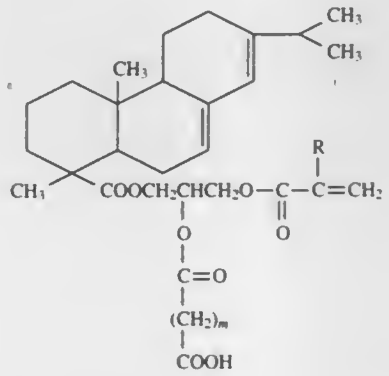
Claims priority, application Japan, Dec. 16, 1994, 6-313794; Nov. 8, 1995, 7-289927

Int. Cl.^{6} B32B *7/12*

U.S. Cl. 428—352 **23 Claims**

1. An adhesive sheet comprising a surface stock and an adhesive layer, the adhesive layer being formed by coating the surface stock with an adhesive containing a copolymer in the form of an aqueous emulsion and drying the adhesive, the adhesive having redispersibility in water or an alkali aqueous solution, the copolymer comprising, based on the copolymer;

(a) 5 to 40% by weight of at least one member selected from the group consisting of a compound represented by the formula (1)



(1)

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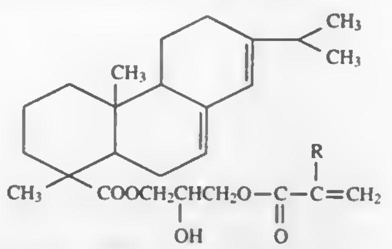
wherein R is methyl group or a hydrogen atom and m is an integer of 1 to 8

and a compound represented by the formula (2)



(2)

wherein R is methyl group or a hydrogen atom,

(b) 5 to 40% by weight of a (poly)ethylene glycol (meth)acrylate monomer, and

(c) 30 to 60% by weight of a (meth)acrylic acid C 4–18 alkyl ester monomer.

5,851,663
FLAME RETARDANT PRESSURE-SENSITIVE ADHESIVES AND TAPES

Keith P. Parsons, Bishops Stortford; Mark R. Buckingham, Sawston, both of United Kingdom; James H. Diamond, Austin, Tex.; Steven J. Ilkka, Oakdale, Minn., and Petra Nowak, Palenberg, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US95/06388, § 371 Date Nov. 15, 1996, § 102(e) Date Nov. 15, 1996, PCT Pub. No. WO95/32257, PCT Pub. Date Nov. 30, 1995

PCT Filed May 19, 1995, Ser. No. 737,689

Claims priority, application United Kingdom, May 25, 1994, 94100444

Int. Cl.^{6} B32B *7/12;15/04;* **C08K** *3/32*

U.S. Cl. 428—355 **17 Claims**

1. A pressure-sensitive adhesive composition comprising an adhesive selected from the group consisting of rubber resin adhesives and acrylic adhesives containing from about 10 to about 60% by weight of the adhesive of a non-halogen intumescent flame retardant.

5,851,664
SEMICONDUCTOR WAFER PROCESSING ADHESIVES AND TAPES

Richard E. Bennett, Hudson, Wis.; Gerald C. Bird, Woodbury, Minn.; Mark K. Nestegard, Woodbury, Minn., and Eleanor Rudin, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 499,896, Jul. 11, 1995, abandoned. This application Jun. 3, 1997, Ser. No. 868,143

Int. Cl.^{6} B32B *7/12*

U.S. Cl. 428—355 BL **37 Claims**

1. A semiconductor wafer processing tape comprising a permanent backing and a layer of a non-pressure sensitive adhesive comprising a thermoplastic elastomer block copolymer on the permanent backing, wherein the adhesive has a storage modulus at room temperature greater than 3×10^5 Pascals and wherein the tape attaches to a surface of a semiconductor wafer under ambient conditions.

5,851,665
FIBERFILL STRUCTURE

Ilan Marcus, Versoix, Switzerland, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1997, Ser. No. 871,875

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—357 **9 Claims**

1. A filling material comprising clusters of bonded thermoplastic fibers, the fibers having crimped configuration and being bonded together at only one location in each cluster, the bonding location extending along a minor proportion of the length of the fibers, said improvement being characterized by the fibers being bonded at locations that vary in different clusters in the filling material.

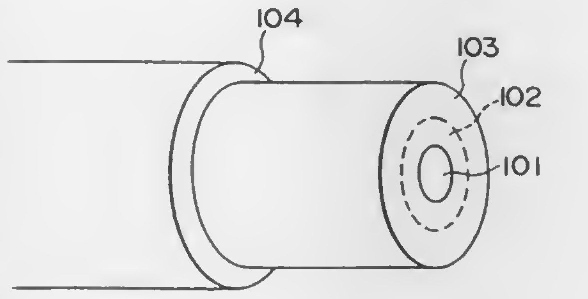
5,851,666
PLASTIC OPTICAL FIBER PREFORM, AND PROCESS AND APPARATUS FOR PRODUCING THE SAME

Tsuyoshi Nonaka; Toshifumi Hosoya; Yuji Kobayashi, and Yasuo Matsuda, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 381,875, Feb. 16, 1995, Pat. No. 5,614,253. This application Jan. 2, 1997, Ser. No. 775,881

Int. Cl.^{6} D02G *3/00;* **B32B** *15/00;27/00*

U.S. Cl. 428—380 **19 Claims**



1. A preform for plastic optical fiber, comprising:
- a core comprising an organic polymer;
- a cladding layer comprising an organic polymer and disposed on the outer circumference of the core; and
- a jacket layer disposed on the outer circumference of the cladding layer;

wherein a refractive index modifier b having a refractive index higher than the polymer of the core is optionally added to the core, and a refractive index modifier c having a refractive index lower than the organic polymer of the cladding is optionally added to the cladding layer so that the refractive index of the preform gradually decreases from the center outward, and the core has a higher refractive index than the cladding layer.

5,851,667
PROCESS FOR PRODUCTION OF A COMPOSITE PRODUCT

Yeong-Show Yang, Witney, Great Britain; Francette Porato, Le Mesnil en Thelle, and Serge Lequeux, Verneuil en Halatte, both of France, assignors to Cray Valley S.A., France

Filed Feb. 7, 1996, Ser. No. 598,170

Claims priority, application France, Feb. 7, 1995, 95 01485

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—396 **20 Claims**

1. A process for production of a composite product, comprising:

juxtaposing at least one first material and an oriented-reinforcement material that is preimpregnated with resin,

molding at a time and temperature effective to harden the resin and to connect the oriented reinforcements and to adhere the oriented reinforcement material to said at least one first material of the composite product,

wherein said at least one first material and the resin are assembled simultaneously before the application of temperature in molding stage, such that the resin is not injected separately after the other materials in the mold are assembled,

and wherein in said process said resin is a modified polyester-polyurethane that is formed by reacting:

a first component that comprises (A) at least one polyisocyanate that has a functionality of 2 to 3 and (B) a peroxide or a peroxide mixture that is able to initiate polymerization by free radicals, at a ratio such that:

$$\frac{(B)}{(A)+(B)}$$

is about 0.5 to 4% by weight,

with a second component that comprises:

(a) at least one polyol polyester that is prepared from at least one diacid or ethylenically unsaturated anhydride and at least one polyhydric alcohol at an alcohol/acid molar ratio of about 1.3 to 2.0,

(b) at least one ethylenically unsaturated monomer at a ratio such that

$$\frac{(b)}{(a)+(b)}$$

is 10% to 50% by weight, and

(c) at least one promoter of the decomposition of the catalyst peroxide in the first component at room temperature (20° C.), in an amount of about 0 to 4% by weight with respect to the level of the second component,

(d) at least one catalyst of the isocyanate-alcohol reaction, in an amount of about 0 to 4% by weight with respect to the level of the second component, and

(e) at least one hydroxylated (alk)acrylate at a ratio such that

$$\frac{(e)}{(a)+(e)}$$

is between about 0.1% and 35% by weight,

the ratio in moles of the NCO functions in the first component to the sum of the OH functions of components (a) and (e) of the second component being about 0.7 to 1.1.

5,851,668
CUT-RESISTANT FIBER CONTAINING A HARD FILLER

Robert Bruce Sandor, South Orange, N.J.; Michele C. Carter, Del Rio, Tex.; Gunilla E. Gillberg-LaForce, Summit, N.J.; William F. Clear, Hunterville, N.C.; John A. Flint, Berkeley Heights; Herman Leslie Lanieve, Warren, both of N.J.; Scott W. Thompson, Charlotte; Etheridge Odell Oakley, Jr., Matthews, both of N.C.; Edward Ronald Kafchinski, Winfield, and Mohammed Ishaq Haider, Bernardsville, both of N.J., assignors to Hoechst Celanese Corp, Somerville, N.J.

Continuation-in-part of Ser. No. 243,344, May 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 980,813, Nov. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 482,207, Jun. 7, 1995, abandoned, said Ser. No. 484,544 and Ser. No. 481,020, Jun. 7, 1995, abandoned, is a division of Ser. No. 243,344. This application Nov. 19, 1996, Ser. No. 752,297

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—397 **51 Claims**

1. A cut-resistant fiber comprising a fiber-forming polymer and a hard filler distributed uniformly in said fiber, said fiber having a denier in the range of about 1 to about 50 dpf; said filler having a Mohs Hardness Value greater than 3, said filler being present in an amount of about 0.05% to about 20% by weight, said filler being selected from the group consisting of a powder having an average diameter up to 20 microns, an elongated particle having an average length up to 20 microns, and mixtures thereof; said filler being included in sufficient quantity to improve the cut resistance by at least 10% compared with a fiber comprising said polymer without said filler as measured by the Ashland Cut Protection Performance Test.

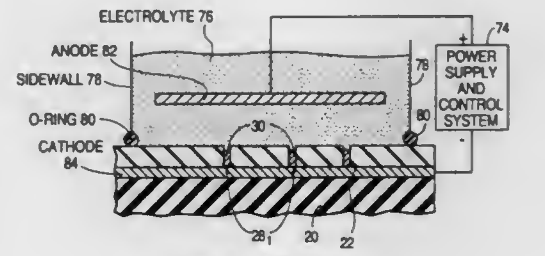
5,851,669
FIELD-EMISSION DEVICE THAT UTILIZES FILAMENTARY ELECTRON-EMISSIVE ELEMENTS AND TYPICALLY HAS SELF-ALIGNED GATE

John M. Macaulay, Palo Alto, Calif.; Peter C. Searson, Baltimore, Md.; Robert M. Duboc, Jr., and Christopher J. Spindt, both of Menlo Park, Calif., assignors to Candescent Technologies Corporation, San Jose, Calif.

Division of Ser. No. 118,490, Sep. 8, 1993, Pat. No. 5,462,467. This application May 22, 1995, Ser. No. 446,392

Int. Cl.^{6} D02C *3/00*

U.S. Cl. 428—401 **20 Claims**



ELECTROCHEMICAL CELL 72

1. A structure comprising:
- a substrate for providing structural support;
- a patterned lower electrically conductive region comprising a group of generally parallel lines situated over electrically insulating material of the substrate;
- a porous electrically insulating layer situated over the lower conductive region; and
- a multiplicity of electron-emissive filaments respectively situated in corresponding pores extending through the porous layer down to the lower conductive region, the lower end of each filament contacting the lower conductive region.

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5,851,670
IN VIVO-SOLUBLE COMPOSITE PARTICLES COMPRISING CALCIUM PHOSPHATE

Ayumi Mitoh, and Tetsuro Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1997, Ser. No. 790,984

Claims priority, application Japan, Jan. 29, 1996, 8-013385

Int. Cl.^{6} B32B *5/16;* **A01N** *59/26;* **A61K** *9/16*

U.S. Cl. 428—403 **8 Claims**

1. In vivo-soluble composite particles which comprise a particle of a polymeric substance soluble in a living organism, having a calcium phosphate compound having a Ca/P ratio of about 1.0 to 2.0 coated on a surface thereof.

5,851,671

Patent Not Issued For This Number

5,851,672
ABSORBENT MATERIALS HAVING MODIFIED SURFACE CHARACTERISTICS AND METHODS FOR MAKING THE SAME

Lin Wang; Yumiko Hayashi, both of Kobe, and Ebrahim Rezai, Motoyama-Kita-Machi, all of Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 224,453, Apr. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 197,913, Feb. 17, 1994, abandoned. This application Jan. 6, 1997, Ser. No. 779,172

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—407 **13 Claims**

1. An absorbent material having modified surface characteristics, comprising:

a water-insoluble, water-swellable polymer; and

a reactive hydrophilic compound chemically bonded to said water-insoluble, water-swellable polymer;

wherein the contact angle of blood on a surface of said absorbent material is from about 0 degree to about 40 degree.

5,851,673
TONER FUSER MEMBER HAVING A METAL OXIDE FILLED FLUOROELASTOMER OUTER LAYER WITH IMPROVED TONER RELEASE

Jiann H. Chen, Fairport; Tonya D. Binga, Rochester, and William J. Staudenmayer, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1997, Ser. No. 805,479

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 428—421 **24 Claims**

1. A toner fuser member having improved toner release properties, said fuser member comprising:

a substrate;

an outermost layer comprising 100 parts by weight of a cured fluoroelastomer that includes at least about 21 mole percent of hexafluoropropylene (HFP) and at least 10 parts by weight of a metal oxide selected from the group consisting of cupric oxide, plumbous oxide, and mixtures thereof; and

a polydimethylsiloxane (PDMS) release agent applied to said outermost layer in an amount effective to produce, upon incubation at elevated temperature, a surface having improved toner release properties on said outermost layer.

5,851,674
ANTISOILING COATINGS FOR ANTIREFLECTIVE SURFACES AND METHODS OF PREPARATION

Mark J. Pellerite; Judith M. Invie, and Dong-Wei Zhu, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 30, 1997, Ser. No. 902,666

Int. Cl.^{6} B32B *29/00*

U.S. Cl. 428—421 **39 Claims**

1. An antireflective article comprising a substrate having an antireflective surface and an antisoiling coating of less than about 100 Angstroms thick deposited thereon; wherein the antisoiling coating comprises a fluorinated siloxane prepared by applying a coating composition comprising a fluorinated silane of the following formula:

$$R_f—R^1—SiX_{3-x}R^2_x$$

wherein:

R_f is a perfluorinated group optionally containing one or more heteroatoms;

R^1 is a divalent alkylene group, arylene group, or mixture thereof, substituted with one or more heteroatoms or functional groups, containing about 2 to about 16 carbon atoms;

R^2 is a lower alkyl group;

X is a halide, a lower alkoxy group, or an acyloxy group; and x is 0 or 1.

5,851,675
APPARATUS HAVING SLIDING MEMBER WITH PRECURSOR MATERIAL PROVIDING SOLID LUBRICANT MATERIAL DURING SLIDING

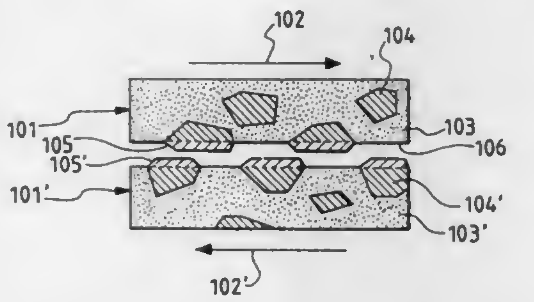
Tomohito Oyagi, Osaka; Mitsuo Nakagawa, Ibaraki; Junji Sakai, Ibaraki; Yoshiyuki Yasutomi, Ibaraki, and Takahiko Okouchi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1995, Ser. No. 454,564

Claims priority, application Japan, May 30, 1994, 6-137850

Int. Cl.^{6} B32B *17/00*

U.S. Cl. 428—426 **21 Claims**



1. An apparatus, comprising a plurality of sliding members, wherein at least one of said sliding members comprises a matrix material and a precursor material dispersed in at least a surface region of said matrix material, said precursor material providing a solid lubricant material, different from said precursor material, on a sliding surface of the sliding member by chemical reaction induced by sliding.

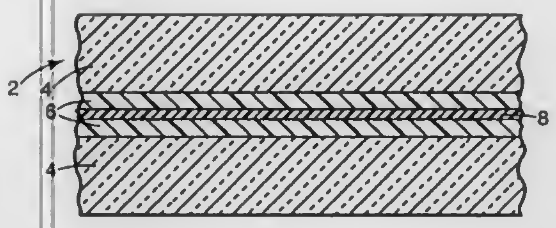
5,851,676
DAMPED GLASS AND PLASTIC LAMINATES

Donald T. Landin, Eagan, Minn.; Boris V. Gregl, Nordrhein-Westfalia, Germany, and Thomas Coratti, Walled Lake, Mich., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Dec. 16, 1996, Ser. No. 766,999

Int. Cl.^{6} B32B *17/10*

U.S. Cl. 428—437 **18 Claims**



1. An article comprising a laminate, wherein the laminate comprises:

(a) a first rigid layer formed from a material selected from the group consisting of glass and plastic;

(b) a second rigid layer formed from a material selected from the group consisting of glass and plastic;

(c) a vibration damping material layer(s) comprising a viscoelastic material positioned between the first rigid layer and the second rigid layer wherein the vibration damping material layer(s) has a loss factor of at least about 0.1 at 20° C. and 10 Hz;

(d) a first layer of a flexible plastic positioned between the first rigid layer and the vibration damping material layer(s), wherein the first layer of flexible plastic is of such a nature that a test construction of the layer of flexible plastic laminated between two sheets of annealed glass, each sheet of annealed glass having a thickness of 2.5 mm, would pass the Consumer Product Safety Commission test 16CFR, Part 1201, Category I; and

(e) optionally a second layer of a flexible plastic positioned between the second rigid layer and the vibration damping material layer(s) wherein the second layer of flexible plastic is of such a nature that a test construction of the second layer of flexible plastic laminated between two sheets of annealed glass, each sheet of glass having a thickness of 2.5 mm, would pass the Consumer Product Safety Commission test 16CFR, Part 1201, Category I.

5,851,677
COATING COMPOSITION FOR CARBON-CONTAINING PRODUCTS AND SAID COATING

Veronique Laurent, Voreppe, and Denis Paillet, La Frette, both of France, assignors to Carbone Savoie, Aigueblanche Cedex, and Aluminum Pechiney, Courbevoie, both of France

PCT No. PCT/FR96/00164, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO96/23745, PCT Pub. Date Aug. 8, 1996

PCT Filed Jan. 31, 1996, Ser. No. 687,321

Claims priority, application France, Feb. 3, 1995, 95 01468

Int. Cl.^{6} B32B *9/04;13/04*

U.S. Cl. 428—446 **18 Claims**

13. A coated liner for an aluminum electrolysis cell for use in a hot, oxidizing environment, said liner being coated at least on a part exposed to said hot, oxidizing environment when in use, said coating comprising the reaction product of a polysilicate and at least one alkaline inorganic polymer comprising sialate groups, wherein said coating has a thickness of from 40–100 mg/cm².

5,851,678
COMPOSITE THERMAL BARRIER COATING WITH IMPERMEABLE COATING

Wayne Charles Hasz, Pownal, Vt.; Marcus Preston Borom, Niskayuna, and Curtis Alan Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 417,580, Apr. 6, 1995, abandoned. This application Apr. 11, 1996, Ser. No. 630,337

Int. Cl.^{6} B32B *15/04*

U.S. Cl. 428—469 **5 Claims**

1. A composite comprising a porous thermal barrier coating on a part with a continuous impermeable barrier coating adjacent to an outer surface of the thermal barrier coating where said impermeable barrier coating is dense and non-porous and where the impermeable barrier coating is about 0.2–250 micrometers thick and where said impermeable barrier coating is selected from the group consisting of tantalum oxide, scandium oxide, hafnium oxide, magnesium aluminum oxide, calcium zirconate, silicon carbide, tantalum carbide, titanium carbide, tungsten carbide, silicon oxycarbide, silicon nitride, zirconium nitride, tantalum nitride, boron nitride, chromium silicide, molybdenum silicide, tantalum silicide, titanium silicide, tungsten silicide, zirconium silicide, silver, gold, and alloys thereof.

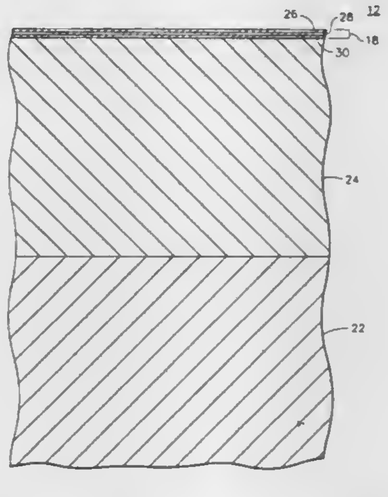
5,851,679
MULTILAYER DIELECTRIC STACK COATED PART FOR CONTACT WITH COMBUSTION GASES

William R. Stowell, Rising Sun, Ind.; John F. Ackerman, Cheyenne, Wyo.; Andrew J. Skoog, West Chester, Ohio; George E. Cook, and Glenn E. Varney, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 17, 1996, Ser. No. 768,264

Int. Cl.^{6} B32B *17/06*

U.S. Cl. 428—472 **16 Claims**



1. A coated part for use in combustive gas atmospheres, said part comprising:

(a) a substrate, and

(b) a multilayer dielectric coating disposed on said substrate, said coating exhibiting an average reflectance of at least 80 percent for the wavelength range of 1 micron to 2.9 microns, of at least 80 percent for the wavelength range of 4.0 to 4.5 microns, and less than 30 percent for the wavelength range of 2.9 to 3.9 microns.

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5,851,680

BORO, -DOPED TITANIUM NITRIDE COATINGS AND COATED PARTS

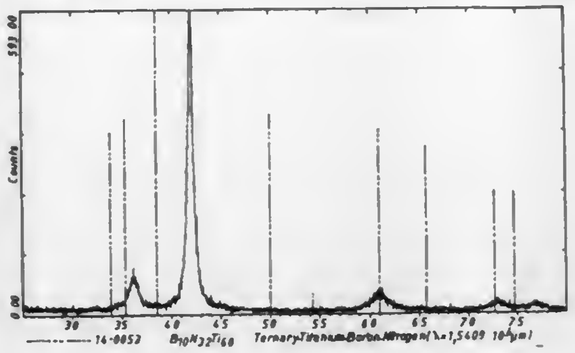
Christophe Heau, Saint-Etienne, France, assignor to Tecmachine, France

Filed Jan. 27, 1997, Ser. No. 789,462

Claims priority, application France, Feb. 1, 1996, 96 01229

Int. Cl.⁶ B32B *9/00;15/04;* C04B *35/58*

U.S. Cl. 428—472 **11 Claims**



1. Titanium nitride doped with boron, crystallizing with the same structure as titanium nitride TiN, and having a Vickers microhardness greater than approximately 50 GPa.

5,851,681

WIRING STRUCTURE WITH METAL WIRING LAYERS AND POLYIMIDE LAYERS, AND FABRICATION PROCESS OF MULTILAYER WIRING BOARD

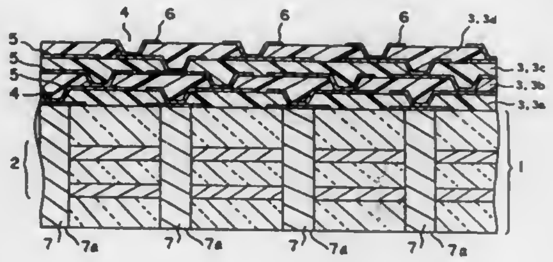
Haruhiko Matsuyama, Hiratsuka; Eiji Matsuzaki, Yokohama; Shozi Ikeda, Yokohama; Fumio Kataoka, Yokohama, and Fusaji Shoji, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1994, Ser. No. 212,766

Claims priority, application Japan, Mar. 15, 1993, 5-054318

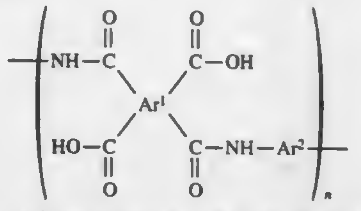
Int. Cl.⁶ G11B *5/40;* C08G *69/26*

U.S. Cl. 428—473.5 **14 Claims**



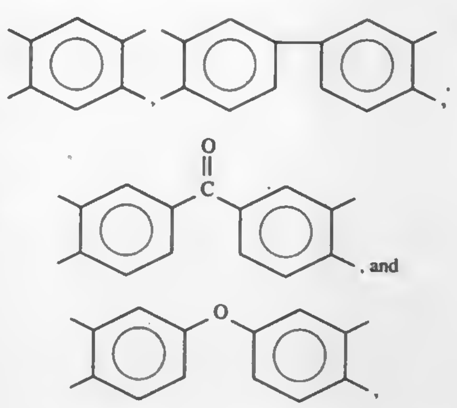
1. A wiring structure comprising a metal wiring layer and a polyimide layer, wherein said polyimide layer is a layer which has been formed by heating and curing a resin composition comprising a polyimide precursor, an amine compound and an organic solvent, and wherein said polyimide precursor is represented by the following formula (1):

Formula (1)

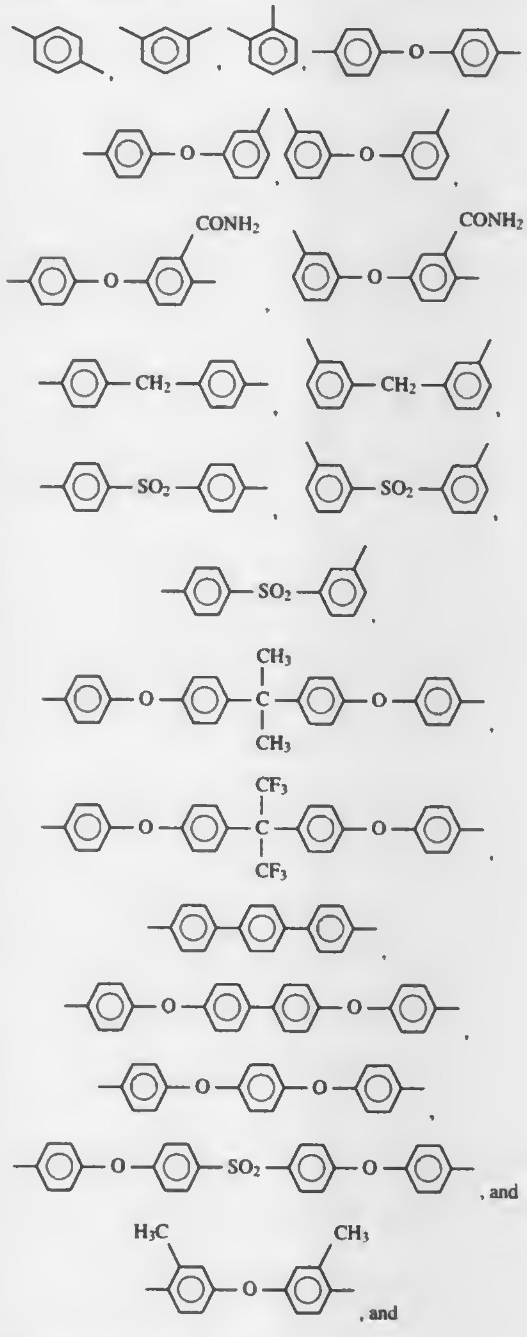


wherein Ar¹ represents at least one tetravalent organic group selected from the following formulas (2):

Formulas (2)



Ar^2 represents at least one divalent organic group selected from the following formulas (3):



n stands for a positive integer.

5,851,682

POLYOLEFIN RESIN COMPOSITION AND RESIN FILM

Kozo Kotani, Osaka; Hideo Negawa, Shiga; Taiichi Sakaya, Osaka; Makoto Nakagahara, Osaka, and Aki Kudo, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP95/00261, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO95/23186, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 23, 1995, Ser. No. 537,691

Claims priority, application Japan, Feb. 28, 1994, 6-030072; Jul. 8, 1994, 6-157398

Int. Cl.⁶ B32B *27/00;* C08J *5/17*

U.S. Cl. 428—500 **11 Claims**

1. A polyolefin resin composition comprising

(a) 100 wt. parts of a polyolefin resin,

(b) 0.03 to 60 wt. parts of an inorganic compound of the formula:

$$[\mathrm{Li}+\mathrm{Al}^{3}+_{2}(\mathrm{OH}\text{-})_{6}].\mathrm{A}^{n-}{}_{1/n}\cdot m\mathrm{H_2O} \qquad \text{(I)}$$

wherein A^{n-} represents a n-valent anion, n is an integer of 1 to 4, and m is a number satisfying $0 \leqq m \leqq 3$, and

(c) 0.02 to 5 wt. parts of a hindered amine compound.

5,851,683

SEQUENTIAL COPOLYMER BASED GLOVES

Sebastian S. Plamthottam, Upland, and Bessie E. Callos, Palmdale, both of Calif., assignors to Allegiance Corporation, McGaw Park, Ill.

Continuation of Ser. No. 457,871, Jun. 1, 1995, abandoned, which is a division of Ser. No. 370,212, Jan. 6, 1995, abandoned, which is a continuation of Ser. No. 24,559, Mar. 1, 1993, abandoned. This application Mar. 17, 1997, Ser. No. 820,452

Int. Cl.⁶ A41D *19/00;* B32B *25/16*

U.S. Cl. 428—519 **6 Claims**

1. A powder-free and protein-free multiple layered glove comprising an inner layer, an outer layer and a middle layer between the inner and outer layers wherein the inner and outer layers are each constructed from at least one sequential copolymer selected from the group consisting of: high styrene poly(styrene-b-isoprene-b-styrene), poly(styrene-b-butadiene-b-styrene), poly(styrene-b-ethylene butylene-b-styrene) and poly(styrene-b-ethylene-propylene-b-styrene) and the middle layer is constructed from poly(styrene-b-isoprene-b-styrene) wherein the styrene content of the high styrene sequential copolymers is greater than approximately 20 wt. %.

5,851,684

DECORATIVE SHEETS USED IN THE PRODUCTION OF LAMINATED PANELS

Horst Matscheko, Karlsruhe, and Stefan Zachert, Neustadt, both of Germany, assignors to Arjo Wiggins Deutschland GmbH, Ettlingen, Germany

Continuation of Ser. No. 351,402, Mar. 30, 1995, abandoned. This application Nov. 18, 1996, Ser. No. 746,917

Claims priority, application France, Jun. 22, 1992, 92 07558

Int. Cl.⁶ B32B *29/00*

U.S. Cl. 428—537.5 **25 Claims**

1. A method for manufacturing an impregnated sheet for use in decorative laminates, comprising impregnating a sheet of paper with an aqueous composition substantially free of melamine formaldehyde resin and comprising a styrene-ethyl acrylate-butyl acrylate copolymer and a binder to form an impregnated sheet, and drying said impregnated sheet, wherein less than 0.15 mg of formaldehyde is released by the dried impregnated sheet per hour and per square meter.

5,851,685

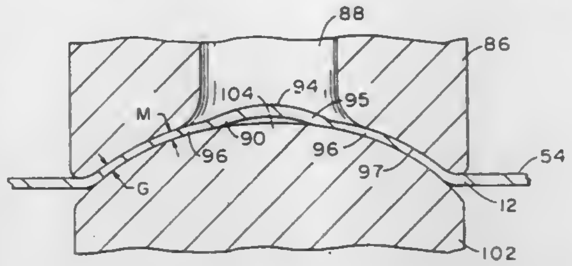
RIVET IN A CONVERTED CAN END, METHOD OF MANUFACTURE, AND TOOLING

Carl McEldowney, Russia, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 336,459, Nov. 9, 1994, abandoned. This application Nov. 8, 1996, Ser. No. 747,101

Int. Cl.⁶ B21C *37/00;* B65D *17/34*

U.S. Cl. 428—573 **8 Claims**



1. A rivet preform that is adapted to be further formed into a rivet that attaches a pull tab onto a panel of an easy open can end, said rivet preform comprising a panel which is at least partially formed into a bubble having a rounded cone-shaped head with integral side wall and a truncated base portion with integral side wall, said truncated based portion being disposed between said rounded cone-shaped head integral side wall and said panel portion and wherein said truncated base portion integral side wall tapers upwardly from said panel at a lesser slope than the upwardly tapered, rounded cone-head integral side wall, said rivet preform truncated base portion being coldworked to be of a predetermined thickness that varies along said truncated base portion integral side wall wherein said cold-worked rivet preform truncated base portion integral side wall is of a lesser thickness proximate said cone-shaped head than proximate the panel.

5,851,686

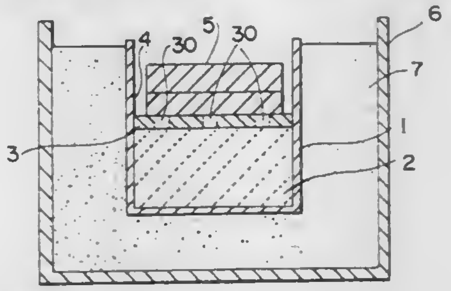
GATING MEAN FOR METAL MATRIX COMPOSITE MANUFACTURE

Michael Kevork Aghajanian; Ralph Alfred Langensiepen; Christopher Robin Kennedy; Michael Angelo Rocazella; Robert James Wiener; Gregory Eugene Hannon; John Jennings Crowther, all of Newark, and Allyn Leslie McCormick, Bear, all of Del., assignors to Lanxide Technology Company, L.P., Newark, Del.

Continuation of Ser. No. 261,694, May 31, 1994, Pat. No. 5,553,657, which is a continuation of Ser. No. 961,680, Jan. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 521,196, May 9, 1990, Pat. No. 5,119,864. This application Aug. 23, 1996, Ser. No. 702,076

Int. Cl.⁶ B32B *5/00;15/20;* C22C *1/09;1/10*

U.S. Cl. 428—614 **10 Claims**



1. An article, comprising:

a metal body;

a metal matrix composite body comprising at least one filler material dispersed in a matrix metal;

a gating means comprising graphite and featuring a plurality of microchannels therethrough, said gating means being disposed between said metal body and said metal matrix composite body, wherein said gating means reduces a strength of a bond between said metal body and said metal matrix composite body; and

a plurality of continuous metal pathways from said metal body to said metal matrix composite body through at least a portion of said plurality of microchannels.

5,851,687
ALUMINA COATED CUTTING TOOL

Björn Ljungberg, Enskede, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Nov. 25, 1994, Ser. No. 348,084

Claims priority, application Sweden, Dec. 23, 1993, 9304283

Int. Cl.^{6} B32B *13/00*

U.S. Cl. 428—689 **12 Claims**

1. A coated body with a <20 μm thick coating including at least one layer of alumina with a thickness of 1–10 μm, said coated body having a thermal expansion coefficient between 4 and $7\cdot10^{-6}$ K^{-1} said alumina layer being essentially free of cooling cracks, said alumina layer comprising flat grains with a length of 2–8 μm and a length/width ratio of 1–10 and having a single phase α-structure textured in the (110)-direction with a texture coefficient larger than 1.5, the texture coefficient being defined as below:

$$TC(hkl)=\frac{I(hkl)}{I_o(hkl)}\left\{\frac{1}{n}\Sigma\frac{I(hkl)}{I_o(hkl)}\right\}^{-1}$$

where

I(hkl)=measured intensity of the (hkl) reflection

I_o(hkl)=standard intensity of the ASTM standard powder pattern diffraction data

n=number of reflections used in the calculation, (hkl) reflections used are: (012), (104), (110), (113), (024), (116).

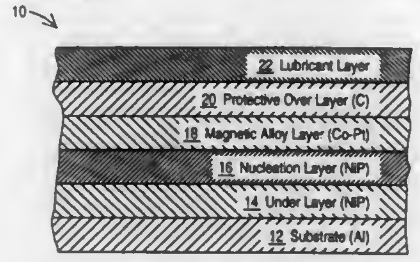
5,851,688
THIN FILM MAGNETIC ALLOY HAVING LOW NOISE, HIGH COERCIVITY, AND HIGH SQUARENESS

Tu Chen, Monte Sereno; Tsutomu Tom Yamashita, Milpitas; John Ko-Jen Chen, Monte Sereno; Rajiv Yadav Ranjan, San Jose; Keith Kadokura, Cupertino, and Ting Joseph Yuen, Fremont, all of Calif., assignors to Komag, Inc.

Continuation of Ser. No. 189,088, Jan. 28, 1994, abandoned. This application Nov. 20, 1997, Ser. No. 974,929

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—694 T **19 Claims**


10
22 Lubricant Layer
20 Protective Over Layer (C)
18 Magnetic Alloy Layer (Co-Pt)
16 Nucleation Layer (NiP)
14 Under Layer (NiP)
12 Substrate (Al)

1. A magnetic recording media for horizontal recording, comprising:

a substrate; and

a sputter deposited magnetic layer, which exhibits ferromagnetism as deposited and which is not heat treated after deposition, formed over said substrate, the magnetic layer having a composition comprising an alloy of cobalt and platinum, said magnetic layer doped with nitrogen in an amount greater than approximately 1 atomic percent, the sputtered magnetic layer doped with nitrogen exhibiting a higher signal-to-noise ratio than the sputtered magnetic layer without nitrogen.

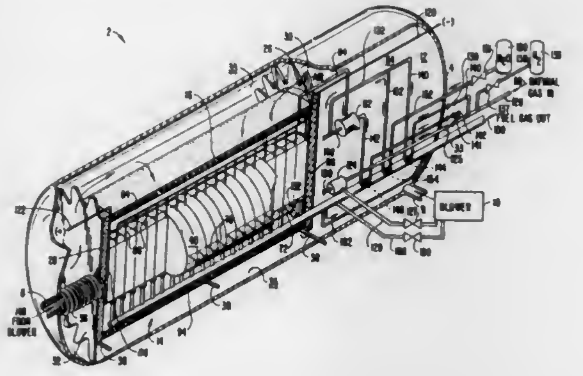
5,851,689
METHOD FOR OPERATING A FUEL CELL ASSEMBLY

Tan-Ping Chen, Walnut Creek, Calif., assignor to Bechtel Corporation, San Francisco, Calif.

Filed Jan. 23, 1997, Ser. No. 786,954

Int. Cl.^{6} H01M *8/04*

U.S. Cl. 429—13 **11 Claims**



1. A method for operating a fuel cell assembly comprising the following steps:

providing a fuel cell stack, comprising a plurality of cells alternating with a plurality of interconnect plates within a housing, said interconnect plates comprising fuel and oxidant sides, said fuel cell stack comprising a periphery, said housing comprising a gas-permeable, porous wall surrounding said periphery of said stack to define a region therebetween;

raising the temperature of said stack to a start temperature;

supplying a fuel to the fuel sides of the interconnect plates;

passing an oxygen-containing gas through said gas-permeable, porous wall to said region;

removing reaction products from the fuel side; and

removing flue gas from the oxidant side.

5,851,690
HYDROGEN ABSORBING ALLOYS

Yumiko Nakamura, Moriguchi; Hiroshi Nakamura, Neyagawa; Maki Kamikawa, Hirakata; Hiroshi Watanabe, Hirakata; Shin Fujitani, Hirakata, and Ikuo Yonezu, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

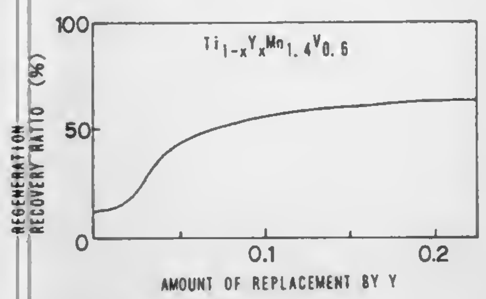
Continuation of Ser. No. 539,221, Oct. 4, 1995, abandoned. This application Aug. 22, 1997, Ser. No. 916,446

Claims priority, application Japan, Oct. 5, 1994, 6-241026

Int. Cl.^{6} H01M *4/38*

U.S. Cl. 429—59 **5 Claims**

1. In a process of absorbing and desorbing hydrogen in a closed container having an inlet-outlet opening for hydrogen gas wherein a hydrogen absorbing alloy is packed in the container, the improvement wherein the hydrogen absorbing alloy contains therein an appropriate amount of Y, the alloy being represented in atomic ratio by $Ti_{1-x-z}\alpha_zY_xMn_{y-w}\beta_w$ wherein x, y, z and w are respectively in the range of $0.05 \leqq x \leqq 0.2$, $1.5 \leqq y \leqq 2.0$, $0 \leqq z \leqq (1-x)/2$ and $0 \leqq w \leqq y/2$, α is at least one of Hf and Zr, and β is at least one element selected from the group consisting of V, Fe, Cr, Co, Ni, Cu and Al.



5,851,691
BATTERY SIZE ADAPTOR FOR PORTABLE APPARATUS

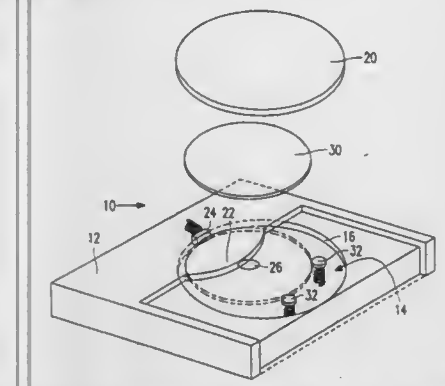
Keith J. Palmer, Cambridge, and Ian D. Lewis, Fleet, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1997, Ser. No. 960,393

Claims priority, application United Kingdom, Oct. 30, 1996, 9622611

Int. Cl.^{6} H01M *2/10*

U.S. Cl. 429—97 **9 Claims**



1. An electrical apparatus comprising a case having a battery receiving recess of a size to receive the larger of at least two coin-shaped batteries having respectively different predetermined diameters, a resiliently biased electrical edge contact for bearing on the periphery of a battery inserted into the recess, another electrical contact for bearing on a face of a battery when placed in the recess, and at least one resiliently biased battery locating abutment means disposed to extend heightwise into the recess at a location coinciding with the periphery of the smaller sized battery when placed in the recess, said abutment means maintaining the smaller battery in contact with the resiliently biased edge contact but being depressed when the larger battery is placed in the recess.

5,851,692
ELECTRONIC DEVICE HAVING A CONCEALED BATTERY LATCH DOOR

Anthony Morris Potts, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1997, Ser. No. 847,089

Int. Cl.^{6} H01M *2/10*

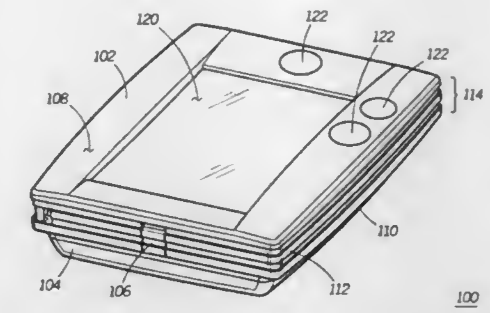
U.S. Cl. 429—100 **20 Claims**

1. An electronic device having a concealed battery door latch comprising:

a housing having a surface located adjacent to a battery compartment and including an ornamental design;

a battery door for sealing said battery compartment; and

a battery door latch, moveable between a latched position and an unlatched position, for latching and unlatching said battery door,



said battery door latch being retained within said surface of said housing and including an ornamental design which matches said ornamental design of said surface of said housing, wherein said battery door latch is concealed by said ornamental design when said battery door latch is placed in the latched position.

5,851,693
ORGANIC ELECTROLYTE BATTERIES

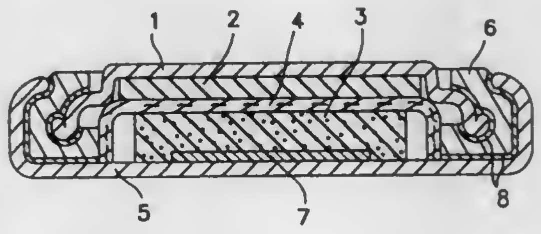
Akihiro Sano; Shuichi Nishino, both of Hirakata; Fumio Daio, Kitakatsuragi-gun; Shusuke Oguro, Ikoma, and Masatsugu Kondo, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 538,097, Oct. 2, 1995, Pat. No. 5,656,392. This application Jan. 22, 1997, Ser. No. 788,082

Claims priority, application Japan, Mar. 20, 1995, 7-60767

Int. Cl.^{6} H01M *2/08;6/14*

U.S. Cl. 429—174 **4 Claims**



1. An organic electrolyte cell, comprising:

a positive electrode;

a negative electrode comprising lithium; and

an organic electrolyte comprising a solvent selected from the group consisting of an organic solvent and a mixed organic solvent, said solvent having a boiling point of at least 170° C.;

wherein the positive electrode and the negative electrode are separated by a separator made of porous synthetic resin sheet having a melting point of at least 170° C. and a gasket consisting essentially of a thermoplastic synthetic resin having a continuously usable temperature of at least 150° C. said gasket having a surface pre-coated with a sealant layer consisting essentially of blown asphalt, said gasket inserted between a metal container of positive polarity and a metal container of negative polarity, said metal containers sealed by curling the upper flange of one of said metal container of positive polarity and said metal container of negative polarity and by applying pressure on said gasket inserted between said metal containers.

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5,851,694
REDOX FLOW TYPE BATTERY

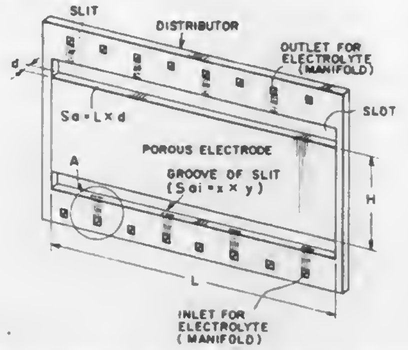
Mitsutaka Miyabayashi; Kanji Sato; Toshiyuki Tayama; Yoshiteru Kageyama, and Haruo Oyama, all of Ibaraki-ken, Japan, assignors to Kashima-Kita Electric Power Corporation, Ibaraki-ken, Japan

Filed Jun. 12, 1997, Ser. No. 873,453

Claims priority, application Japan, Jun. 19, 1996, 8-158477

Int. Cl.^{6} H01M *8/20*

U.S. Cl. 429—105 **10 Claims**


SLIT
DISTRIBUTOR
OUTLET FOR ELECTROLYTE (MANIFOLD)
d
Sa = L × d
SLOT
POROUS ELECTRODE
A
GROOVE OF SLIT (Sai = x × y)
H
L
INLET FOR ELECTROLYTE (MANIFOLD)

1. A liquid-circulating type redox flow battery which comprises:
a positive cell;
a negative cell;
a permeable membrane interposed therebetween;
two porous carbon electrodes disposed in said positive and negative cells, respectively; and
two, positive and negative, electrolytic solutions, said electrolytic solutions being circulated in said positive and negative cells, respectively, so as to cause an oxidation-reduction reaction to take place and hence lead to charge and discharge;
(a) said battery being defined by a ratio (H/L) where (H) is the average height of each of said porous electrodes in a flow direction of each of said electrolytic solutions, and (L) is the length of each of said porous electrodes in a direction perpendicular to the flow direction of each of said electrolytic solutions, the ratio (H/L) being in the range of 0.18 to 1.95; and
(b) said battery being defined by ratios ($\Sigma s_{ai}/S_a$) and ($\Sigma s_{ci}/S_c$) where (Σs_{ai}) is the sum of the cross-sectional area of an inlet for introducing said positive electrolytic solution into said positive cell, (Σs_{ci}) is the sum of the cross-sectional area of an inlet for introducing said negative electrolytic solution into said negative cell, (S_a) is the average of the cross-sectional area of said porous electrode in a direction perpendicular to the flow direction of said positive electrolytic solution, and (S_c) is the average of the cross-sectional area of said porous electrode in a direction perpendicular to the flow direction of said negative electrolytic solution, each of the ratios ($\Sigma s_{ai}/S_a$) and ($\Sigma s_{ci}/S_c$) being in the range of 0.001 to 0.04, and said battery being further defined by ratios ($\Sigma s_{ao}/S_a$) and ($\Sigma s_{co}/S_c$) where (Σs_{ao}) is the sum of the cross-sectional area of an outlet for discharging said positive electrolytic solution out of said positive cell, (Σs_{co}) is the sum of the cross-sectional area of an outlet for discharging said negative electrolytic solution out of said negative cell, and (S_a) and (S_c) are as denoted above, each of the ratios ($\Sigma s_{ao}/S_a$) and ($\Sigma s_{co}/S_c$) being in the range of 0.001 to 0.04.

5,851,695
RECOMBINANT LEAD-ACID CELL AND LONG LIFE BATTERY

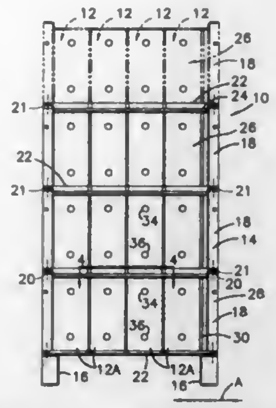
Sudhan S. Misra, North Wales, and Franz Wagner, Lansdale, both of Pa., assignors to C & D Technologies, Inc., Blue Bell, Pa.

Filed Feb. 10, 1992, Ser. No. 833,433

Int. Cl.^{6} H01M *10/20*

U.S. Cl. 429—159 **9 Claims**

1. A battery comprising:



a. a plurality of lead-acid cells arranged in at least one horizontal row;
b. means contacting at least a portion of facing surfaces of adjacent cells for maintaining facing surfaces of adjacent cells spaced from one another while providing generally vertically extending channels for convective cooling of the cells by air flow along said channels;
c. means for maintaining said facing surfaces of adjacent cells spaced from each other, providing separator portions of essentially uniform thickness in the direction between the cells contacting facing surfaces of adjacent cells;
d. wherein said cells are in a plurality of vertically stacked horizontal rows and facing surfaces of horizontally adjacent cells have vertically extending channels formed therein for convective cooling by air flow along said channels;
e. wherein said channels of said cells in said vertically stacked horizontal rows are substantially vertically aligned;
f. said space maintaining means lying across horizontally facing mouths of said channels.

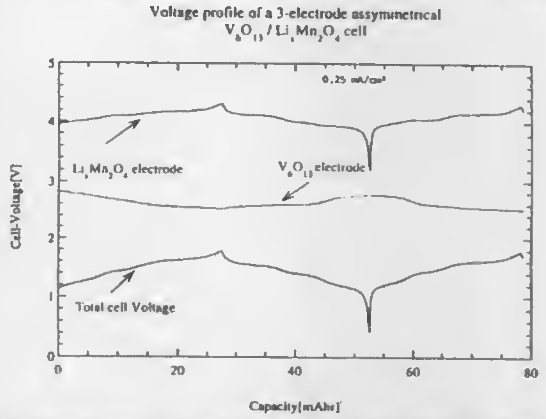
5,851,696
RECHARGEABLE LITHIUM BATTERY

M. Yazid Saidi, and Jeremy Barker, both of Henderson, Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Jan. 29, 1996, Ser. No. 593,636

Int. Cl.^{6} H01M *4/48*

U.S. Cl. 429—218 **4 Claims**



1. A lithium battery which comprises a positive electrode and a negative electrode, said negative electrode having an active material comprising an oxide of vanadium, and said positive electrode having an active material which is a lithium chalcogenide compound different from $Li_yV_6O_{13+x}$, with $0 \leqq y < 8$ and $0 < x < 2$; said negative electrode comprising said oxide of vanadium, represented by the formula $Li_yV_6O_{13+z}$, where y is greater than or equal to 0 and less than or equal to 8, where z is greater than 0 and less than 2; and having said oxide which, when fully or partially lithiated with lithium ions and fully or partially charged, is represented by said formula $Li_yV_6O_{13+z}$ where y is greater than 4; and having said oxide which, in an unlithiated, uncharged state, or fully discharged state, is represented by said formula $Li_yV_6O_{13+z}$ with y equal to 0, corresponding to V_6O_{13+z}; said oxide further characterized by an inherent monoclinic crystal structure, and is in the monoclinic crystal structure condition after repeated charging and discharging.

5,851,697
NEGATIVE ELECTRODE MATERIAL FOR LITHIUM SECONDARY CELL, METHOD FOR ITS PRODUCTION, AND LITHIUM SECONDARY CELL

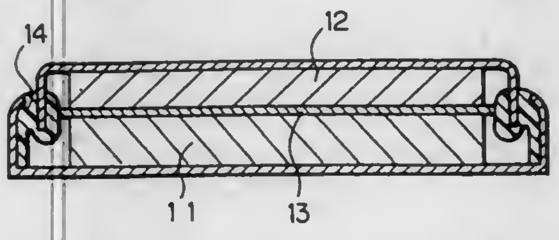
Takashi Iijima; Kimihito Suzuki, both of Kawasaki, and Maki Sato, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 341,553, Jan. 13, 1995, Pat. No. 5,622,793. This application Jan. 14, 1997, Ser. No. 782,188

Claims priority, application Japan, May 25, 1992, 4-156148

Int. Cl.^{6} H01M *4/58*

U.S. Cl. 429—218 **4 Claims**



1. A negative electrode material for a lithium secondary cell, which comprises carbonaceous particles consisting essentially of carbon fibers prepared by pulverizing pitch-based carbon fibers, wherein the layer spacing d between the carbon layers, as determined by X-ray diffraction, is less than 0.338 nm, the average particle size is 5–200 μm, the fiber diameter of said pitch-based carbon fibers is 5–30 μm, and the aspect ratio of said carbon fibers is greater than 1 to 100.

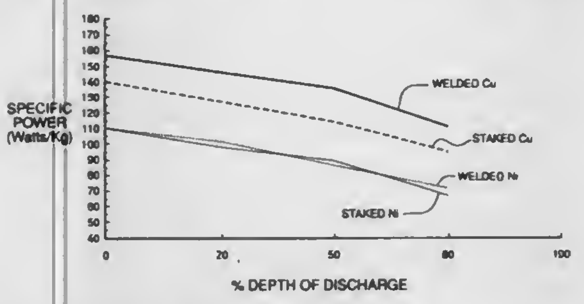
5,851,698
NICKEL-METAL HYDRIDE BATTERIES HAVING HIGH POWER ELECTRODES AND LOW-RESISTANCE ELECTRODE CONNECTIONS

Benjamin Reichman, Bloomfield; Srinivasan Venkatesan, Southfield; Stanford R. Ovshinsky, Bloomfield Hills, and Michael A. Fetcenko, Rochester Hills, all of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Filed Jan. 31, 1997, Ser. No. 792,359

Int. Cl.^{6} H01M *4/66*

U.S. Cl. 429—223 **14 Claims**



1. In a nickel-metal hydride battery having
at least one negative electrode including a porous metal substrate, and
an electrode tab attached to said electrode, the improvements comprising:
said porous metal substrate comprising copper, copper-plated nickel, or a copper-nickel alloy having a resistivity less than pure nickel, and wherein the copper is exposed to electrolyte, and
said electrode tab is directly attached to said porous metal substrate and said negative electrode operating in the immunity region pertaining to voltage and pH for copper metal.

5,851,699
TOGGLE TYPE VERTICAL CLAMPING APPARATUS USING ELECTRIC MOTOR

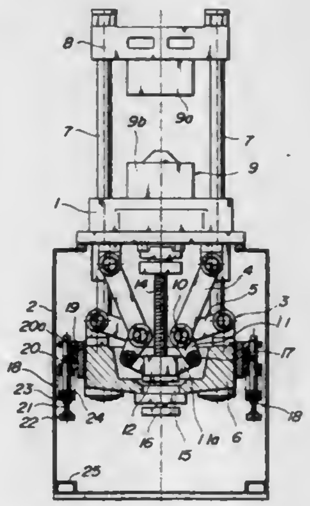
Kouichi Matsubayashi, and Nobusuke Takahashi, both of Nagano-ken, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano-ken, Japan

Filed Oct. 6, 1997, Ser. No. 944,239

Claims priority, application Japan, Oct. 9, 1996, 8-268968

Int. Cl.^{6} B29C *45/66*

U.S. Cl. 429—593 **3 Claims**



1. Apparatus comprising:
a toggle housing having a top and a bottom separated by a space;
a mold base on the top of the toggle housing, the mold base being adapted to support a mold lower part;
a platen adapted to support a mold lower part, the platen being attached to a pair of pulling shafts extending through the mold base and the top of the toggle housing into the space within the toggle housing such that the mold upper and lower parts when supported by the mold base and platen are opened and closed by vertical movement of the pulling shafts from within the space; and a toggle mechanism disposed within the toggle housing space, the toggle mechanism including a pressure receiving plate connected to the pulling shafts, a pair of pivot joined upper and lower links connecting the pressure receiving plate to the mold base, a link operating member connected to the links at their pivot, a ball screw shaft installed on a central portion of the pressure receiving plate, the ball screw shaft extending through a threaded opening of the link operating member and being adapted for rotation by an electric motor such that rotation of the ball screw shaft causes the links to pivot between a position of mold closure in which the links form a large angle and a position of mold openness in which the links form a smaller angle,

and one or more spring members disposed between the pressure receiving plate and the bottom of the toggle housing to counteract the effect of gravity when the toggle mechanism is being operated to close a mold by pivoting the links toward the large angle, whereby mold closing force is more completely controlled by the links.

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5,851,700

FILTER FOR LIQUID CRYSTAL DISPLAY DEVICE

Masaru Honda; Shigeo Hozumi, both of Ibaraki, and Shinichiro Kitayama, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP94/01404, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO95/06267, PCT Pub. Date Mar. 2, 1995

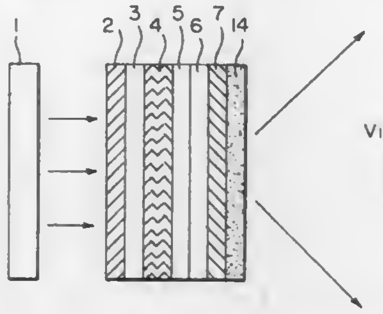
Continuation of Ser. No. 432,177, Jun. 2, 1995, abandoned.

This PCT application Aug. 25, 1994, Ser. No. 808,343

Claims priority, application Japan, Aug. 25, 1993, 5-210512; Jan. 17, 1994, 6-003236

Int. Cl.^{6} G03H *1/04;* C09K *19/00;* G02B *5/02*

U.S. Cl. 430—2 **13 Claims**



1. A method for widening a view angle of a liquid crystal display device comprising fitting a filter to a liquid crystal display device, wherein said filter comprises a light diffusing plate which is obtained by shaping into a film a composition comprising at least two photopolymerizable oligomers or monomers having refractive indexes which differ by at least 0.01 and irradiating ultraviolet light on said film of the composition, wherein the polymerizable oligomers or monomers have acrylate functional groups.

5,851,701

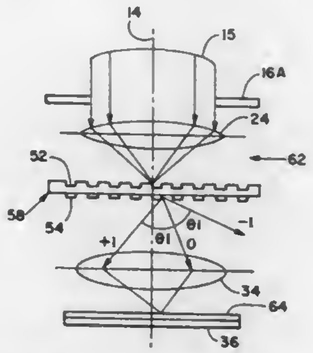
ATOM LITHOGRAPHIC MASK HAVING DIFFRACTION GRATING AND ATTENUATED PHASE SHIFTERS

J. Brett Rolson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 1, 1997, Ser. No. 831,066

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **37 Claims**



1. A lithographic mask comprising:
a transparent substrate;
a pattern of attenuated phase shifters proximate to a first side of the substrate, the attenuated phase shifters comprising an absorbing layer configured to absorb and phase shift an exposure energy directed through the mask; and
a diffraction grating formed proximate to a second side of the substrate in alignment with the pattern of attenuated phase shifters and configured to diffract the exposure energy to illuminate the attenuated phase shifters and print a plurality of features corresponding to the attenuated phase shifters on a target.

5,851,702

METHOD FOR PRODUCING A PHOTOMASK

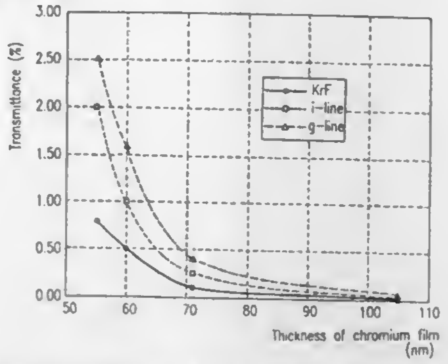
Kunio Watanabe, Tenri; Shinji Kobayashi, Nara, and Masashi Inoue, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1997, Ser. No. 871,977

Claims priority, application Japan, Aug. 28, 1996, 8-226382

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **7 Claims**



1. A method for producing a photomask, comprising the steps of:
forming a light-blocking film on a surface of a transparent substrate;
forming a resist film for an EB on the light-blocking film on a side thereof remote from the substrate;
patterning the resist film by EB writing and development; and
selectively etching the light-blocking film using the patterned resist film as a mask to form a photomask;
wherein the light-blocking film has a thickness in the range of about 60 nm to about 70 nm.

5,851,703

PHOTOMASK AND PATTERN FORMING METHOD EMPLOYING THE SAME

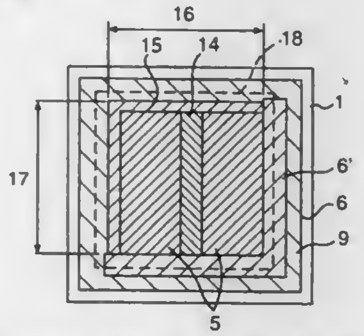
Norio Hasegawa; Fumio Murai, both of Tokyo, and Katsuya Hayano, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 699,732, Aug. 20, 1996, Pat. No. 5,656,400, which is a continuation of Ser. No. 418,402, Apr. 7, 1995, Pat. No. 5,578,421, which is a division of Ser. No. 162,319, Dec. 7, 1993, Pat. No. 5,429,896. This application Aug. 1, 1997, Ser. No. 904,754

Claims priority, application Japan, Dec. 7, 1992, 4-326433

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **20 Claims**



1. A pattern forming method, comprising the steps of:
forming a photoresist film on a substrate;
placing said substrate having said photoresist film on a sample stage of an aligner having a masking blade mounted thereon for changing an area through which exposure light is projected;
exposing, with a projection exposure optical system, a predetermined first area of said substrate by using a photomask including first and second portions, said first portion being an element pattern portion including a semitransparent phase shifting region, and said second portion including a semitransparent phase shifting pattern and a transparent pattern which are arranged in an alternating and periodic pattern with a predetermined repeated pitch; wherein said semitransparent phase shifting region and said semitransparent phase shifting pattern are semitransparent with respect to exposure light, said transparent pattern is transparent with respect to exposure light, light that has passed through said semitransparent phase shifting region and said semitransparent phase shifting pattern is substantially 180 degrees out of phase with respect to light that has passed through said transparent pattern, and wherein said second portion is disposed outside a periphery of the first portion;
moving said substrate horizontally; and
exposing a second area of said substrate which is adjacent to said predetermined first area by using said photomask.

5,851,704

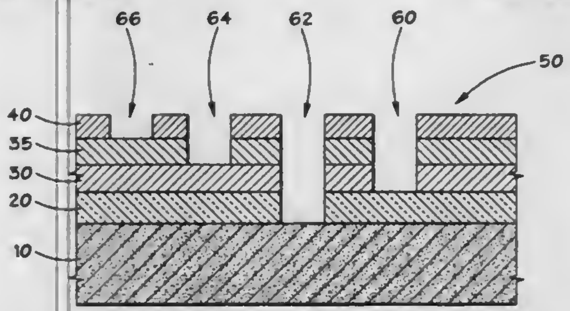
METHOD AND APPARATUS FOR THE FABRICATION OF SEMICONDUCTOR PHOTOMASK

Christophe Pierrat, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 9, 1996, Ser. No. 762,540

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **45 Claims**



1. An apparatus for the fabrication of a semiconductor photomask, comprising:
a substrate;
at least three layers located above said substrate, at least two of said layers having chemical compositions different than said substrate;
a top layer above said third layer; and
openings within said top layer and at least two of said at least three layers such that light incident upon said photomask exits said photomask with at least three phase angles.

5,851,705

METHOD FOR MANUFACTURING A SELF-ALIGNED TYPE OUT-RIGGER PHASE SHIFT MASK

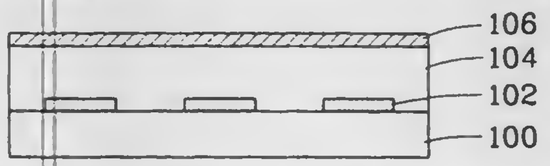
Jun-Seok Lee, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Choongcheongbuk-Do, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 773,595

Claims priority, application Rep. of Korea, Dec. 27, 1995, 1995/58734

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **27 Claims**



1. A method of manufacturing a self-aligned type out-rigger phase shift mask, the method comprising the steps of:
forming light-shielding patterns spaced apart by a predetermined distance from each other on a transparent substrate;
forming a photosensitive organic layer on the light-shielding patterns and the substrate;
surface-treating the photosensitive organic layer with an organic material to form an insoluble layer on a surface of the photosensitive organic layer into which the organic material soaks;
performing back side exposure and development to flood an insoluble layer and photosensitive organic material stacked pattern having over-hanging parts on upper side edges of the stacked pattern;
selectively etching the substrate by using the insoluble layer and photosensitive organic material stacked pattern as a mask to define a first pattern between the light-shielding patterns and a second pattern on both sides of the first pattern; and
removing the insoluble layer and photosensitive organic material stacked pattern.

5,851,706

PHASE SHIFT MASKS INCLUDING CHROMIUM OXIDE AND ALUMINA PHASE SHIFTER PATTERNS, AND METHODS OF MANUFACTURING AND USING THE SAME

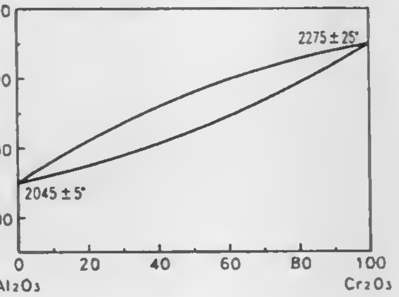
Sung-chul Lim; Sang-gyun Woo; Ho-young Kang, and Kwang-soo No, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 25, 1997, Ser. No. 882,719

Claims priority, application Rep. of Korea, Oct. 16, 1996, 1996-46357

Int. Cl.^{6} G02F *9/00*

U.S. Cl. 430—5 **33 Claims**



1. A phase shift mask comprising:
a substrate which is transparent with respect to exposure radiation; and
a phase shifter pattern on the substrate, which exposes a predetermined area of the substrate, the phase shifter pattern comprising a mixture or a solid solution of chromium oxide (Cr_2O_3) and alumina (Al_2O_3) that form a uniform phase shifter pattern, the transmissivity and phase difference of which are controlled by the ratio of the chromium oxide and alumina; and
a radiation blocking film pattern on a predetermined portion of the phase shifter pattern opposite the substrate.

5,851,707

MICROLITHOGRAPHY PROJECTION-EXPOSURE MASKS, AND METHODS AND APPARATUS EMPLOYING SAME

Masato Shibuya, Ohmiya; Hiroshi Ooki; Kazuya Okamoto, both of Yokohama, and Soichi Owa, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

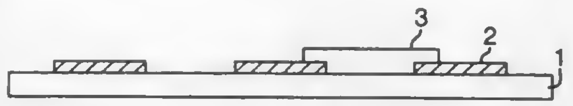
Filed Jul. 24, 1997, Ser. No. 899,909

Claims priority, application Japan, Jul. 24, 1996, 8-213131

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **15 Claims**

1. A mask for microlithographically projecting a pattern onto a photosensitive substrate comprising single- and multiple-exposure areas, the mask comprising:



(a) a first mask pattern for exposing the single-exposure areas of the photosensitive substrate;
(b) at least a second and a third mask pattern for exposing the multiple-exposure areas of the photosensitive substrate; and
(c) each of the mask patterns for exposing the multiple-exposure areas transmitting to the photosensitive substrate a lower illumination-light-flux intensity per exposure than the first mask pattern so that an average illumination-light-flux intensity transmitted to the single-exposure areas is substantially equal to an average illumination-light-flux intensity transmitted to the multiple-exposure areas after the multiple exposures.

5,851,708
METHOD FOR FABRICATING PHASE SHIFTING MASK AND A PHASE SHIFTING MASK

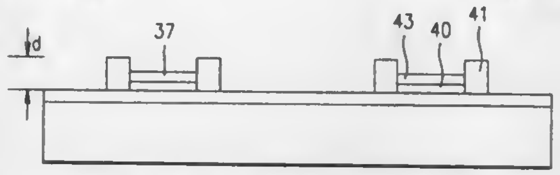
Jún Seok Lee, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju-si, Rep. of Korea

Filed May 14, 1997, Ser. No. 856,194

Claims priority, application Rep. of Korea, Jun. 26, 1996, 24096/1996

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **26 Claims**



1. A method for fabricating a phase-shifting mask, comprising:
providing a substrate having a light shielding layer and a phase-shifting light transmitting layer sequentially formed thereon;
first patterning said light shielding layer and said phase-shifting light-transmitting layer to form phase-shifting regions;
oxidizing sidewall portions of said light shielding layer in each phase-shifting region to form phase-shifting light-transmitting sidewall portions;
depositing photoresist over said substrate;
second patterning said photoresist using said light shielding layer as a mask such that in each phase-shifting region a portion of said phase-shifting light-transmitting layer on said light shielding layer is exposed by removal of said photoresist;
forming a rim phase-shifting layer in each phase-shifting region using said photoresist pattern as a mask, said rim phase-shifting layer including unexposed portions of said light shielding layer and said phase-shifting light transmitting sidewall portions; and
forming a half-tone layer in each phase-shifting region using said photoresist pattern as a mask such that a rim phase-shifting layer is adjacent each side of said half-tone layer.

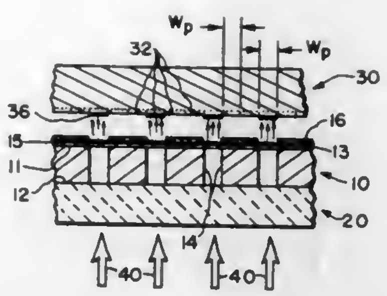
5,851,709
METHOD FOR SELECTIVE TRANSFER OF A COLOR ORGANIC LAYER

William J. Grande, Pittsford; Paul J. Fleming, Lima, and Ching W. Tang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1997, Ser. No. 961,808

Int. Cl.^{6} G02B *5/20*

U.S. Cl. 430—7 **14 Claims**



1. A method for selective transfer of a color organic layer from a donor layer onto a device having an array of pixels with each pixel formed from a number of color subpixels having selected positions in the array, comprising the steps of:
a) providing a substrate having opposing first and second surfaces;
b) forming a light transmissive heat insulating layer over the first surface of the substrate;
c) forming a light absorbing layer over the heat insulating layer;
d) providing the substrate with an array of openings extending from the second surface to the heat insulating layer, the number and positions of the openings corresponding to the number and positions of the color subpixels of the device, and each opening having a size equal to or smaller than the size of the color subpixel;
e) providing a transferable color forming organic donor layer formed on the light absorbing layer;
f) positioning the device in contact or close proximity to the donor layer in an oriented relationship between the openings in the substrate and the corresponding color subpixels on the device; and
g) employing a source of radiation for producing sufficient heat at the light absorbing layer over the openings to cause the selective transfer of portions of the transferable color forming organic donor layer to the corresponding color subpixels of the device.

5,851,710
INFORMATION RECORDING MEDIUM

Masayuki Iijima, and Masato Okabe, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 448,740, May 24, 1995, Ser. No. 355,028, Dec. 13, 1994, Pat. No. 5,516,607, and Ser. No. 838,456, Mar. 11, 1992, Pat. No. 5,418,096. This application Jan. 3, 1997, Ser. No. 775,957

Claims priority, application Japan, Jul. 12, 1990, 2-186033

Int. Cl.^{6} C09K *19/02;* **G02F** *1/135*

U.S. Cl. 430—20 **2 Claims**

1. An information recording medium, comprising an information recording layer including a resin member with liquid crystal phase dispersed therein, said information recording layer fixed on a first electrode layer and selected in such a manner that a refractive index of said resin member is approximately consistent with a refractive index of said liquid crystal phase when an electric field is applied and a photosensitive layer laminated on a second electrode wherein said information recording layer and the photosensitive layer are brought into planar contact with each other and wherein said information recording layer is fixed on the first electrode via an electric charge injection prevention layer on the information recording layer.

5,851,711
IMAGE FORMING METHOD

Katuichi Kawabata; Kouichi Itou, and Hiroaki Miho, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 777,209

Claims priority, application Japan, Jan. 9, 1996, 8-001530

Int. Cl.^{6} G03G *13/09*

U.S. Cl. 430—45 **6 Claims**

1. A method of forming a multi-color image on a photoreceptor with plural developing devices each different in color from others, wherein each developing device comprises a developing sleeve which is cylindrical and rotatable and a stationary magnetic member which is fixed inside the developing sleeve and has plural magnetic poles, and wherein each developing device faces the photoreceptor so as to form a developing region between the photoreceptor and the developing sleeve and a distance between the developing sleeve and the photoreceptor becomes shortest at the closest position between the developing sleeve and the photoreceptor on the developing region, comprising:
conducting an image forming step which comprises charging the photoreceptor; imagewise exposing the photoreceptor so that an electrostatic latent image is formed; and developing the electrostatic latent image with color toner particles by using one of the plural developing devices so that a color toner image is formed on the photoreceptor; and
repeating the image forming step for each color by selectively using another one of the plural developing devices in accordance with a color to be formed so that different color toner images are superimposed one after another on the photoreceptor;
the developing step of each image forming step comprising
agitating the color toner particles and resin-coated magnetic carrier particles so as to form a color developer in which the color toner particles are triboelectrically charged and adhered on the resin-coated magnetic carrier particles, wherein the resin-coated magnetic carrier particles have a specific electric resistance of 10^5 Ω·cm to 10^{12} Ω·cm;
attracting the developer onto the developing sleeve by an attracting magnetic field formed between neighboring different poles of the plural magnetic poles so that a developer layer is formed on the developing sleeve;
regulating a thickness of the developer layer smaller than 300 μm on the developing sleeve so that the thickness of the developer layer becomes smaller than the shortest distance between the developing sleeve and the photoreceptor and the developing layer is not brought in contact with the photoreceptor;
rotating the developing sleeve so as to convey the developer layer to the developing region in which a strength of attracting magnetic field formed at the closest position on a surface of the developing sleeve by the magnetic member is 1000 gauss to 2500 gauss;
applying an oscillating electric bias in the developing region so that the toner particles shift from the developer layer to the latent image on the photoreceptor; and
removing the used developer from the developing sleeve by a removing member.

5,851,712
ELECTROPHOTOSENSITIVE MATERIAL

Nariaki Muto; Keisuke Sumida; Hiroaki Iwasaki; Tsuneo Oki; Eiichi Miyamoto; Yasuyuki Hanatani, and Hiroaki Sakai, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

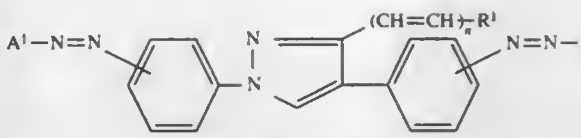
Division of Ser. No. 6,317, Jan. 22, 1993, Pat. No. 5,521,044. This application Jun. 1, 1995, Ser. No. 457,393

Claims priority, application Japan, Jan. 22, 1992, 4-9326; Apr. 19, 1992, 4-111911; Jul. 22, 1992, 4-195626; Jul. 22, 1992, 4-195627

Int. Cl.^{6} G03G *5/06*

U.S. Cl. 430—83 **9 Claims**

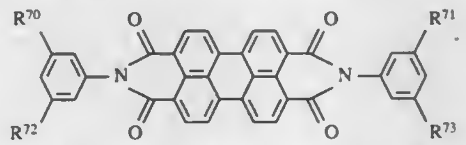
1. An electrophotosensitive material comprising:
a conductive substrate; and
a single layer photosensitive layer provided on said conductive substrate, said single layer photosensitive layer including, as a charge generating material, a bis azo pigment according to formula (1):



(1)

wherein A^1 and A^2 denote coupler residual groups which are the same or different from one another; R^1 denotes a member selected from the group consisting of: a hydrogen atom, an alkyl group, an aryl group and a heterocyclic group, wherein the alkyl group, the aryl group or the heterocyclic group may have a substituent selected from the group consisting of halogen atom, amino group, hydroxyl group, carboxyl group that may be esterified, cyano group, alkyl group with 1 to 6 carbon atoms, alkoxy group with 1 to 6 carbon atoms, and alkenyl group with 2 to 6 carbon atoms that may possess an aryl group; n is 0 or 1; and

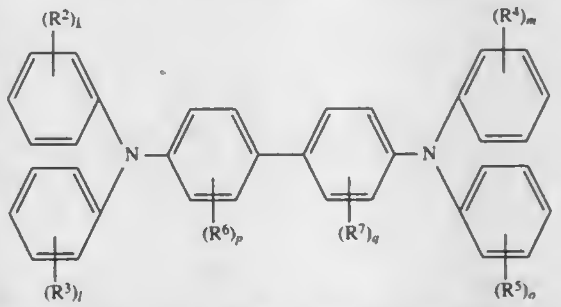
a perylene pigment according to formula (51):



(51)

wherein R^{70}, R^{71}, R^{72} and R^{73} are the same or different, and are selected from the group consisting of: hydrogen atoms, alkyl groups, alkoxyl groups and aryl groups;

said photosensitive layer further including, as a charge transferring material, a diamine compound according to formula (2):



(2)

wherein R^2, R^3, R^4, R^5, R^6 and R^7 are the same or different, and are selected from the croup consisting of: alkyl groups, alkoxy groups, halogen atoms, aryl groups, nitro groups, cyano groups and alkylamino groups; p and q are the same or different, and are integers in the range of 0 to 3; and k, l, m and o are the same or different, and are integers in the range of 0 to 2; wherein said bis-azo pigment (1) is present in an amount of 10 to 80% by weight based on a total amount of said perylene pigment and said bis-azo pigment (1).

5,851,713
TONER FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

Kenji Hayashi; Mikio Koyama; Tomoe Kikuchi, all of Hino; Hiroshi Yamazaki, Hachioji; Naohiro Hirose, Hino; Shinichi Suzuki, Hino; Tsutomu Iwamoto, Hino, and Yoshiki Nishimori, Hino, all of Japan, assignors to Konica Corporation, Japan

Filed Sep. 30, 1996, Ser. No. 724,063

Claims priority, application Japan, Oct. 2, 1995, 7-255021; Nov. 16, 1995, 7-298355; Dec. 26, 1995, 7-339107; Feb. 28, 1996, 8-041468

Int. Cl.^{6} G03G *9/08*

U.S. Cl. 430—109 **15 Claims**

1. A toner for developing an electrostatic latent image, said toner having a BET specific surface area of not less than 5 m^2/g, a particle size distribution (2SD) of not more than 5 μm, and an average particle size by volume of said toner of 2 to 10 μm.

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5,851,714

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND FIXING METHOD

Masaaki Taya, Kawasaki; Kenji Okado, Yokohama; Ryoichi Fujita, Tokyo; Makoto Kanbayashi, Kawasaki; Tsuyoshi Takiguchi, Shizuoka-ken; Wakashi Iida, Higashikurume, and Tetsuya Ida, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1997, Ser. No. 825,395

Claims priority, application Japan, Apr. 2, 1996, 8-102080

Int. Cl.^{6} G03G *9/097*

U.S. Cl. 430—110 **32 Claims**

1. A toner for developing an electrostatic image, comprising: toner particles containing at least a binder resin, a colorant and an organometallic compound; wherein

the binder resin in the toner particles has a tetrahydrofuran-insoluble (THF-insoluble) content of at most 5.0 wt.% based on the binder resin,

the toner has a glass transition temperature of 50°–80° C.,

the toner has a storage modulus at 80° C. (G'_{80}) of 1×10^4–5×10^6 [dyn/cm^2],

the toner has a storage modulus at 130° C. (G'_{130}) providing a ratio G'_{80}/G'_{130} of 10–5×10^3, and

the toner provides a storage modulus curve showing a minimum (G'min) in a temperature region of 110°–190° C.

5,851,715

PROCESS FOR THE SILYLATION OF INORGANIC OXIDES

Herbert Barthel, Lessingstr.; Mario Heinemann, Leibnizstr.; Franz Herrmann, Muehlbachstr., all of Germany, and August Altenbuchner, Hadermarkt, Austria, assignors to Wacker-Chemie GmbH, Germany

Division of Ser. No. 442,452, May 16, 1995, Pat. No. 5,686,054. This application Jun. 18, 1997, Ser. No. 878,338

Claims priority, application Germany, Jun. 1, 1994, 44 19 234.7

Int. Cl.^{6} C01B *33/12;* **G03G** *9/00;* **C08K** *3/34*

U.S. Cl. 430—110 **4 Claims**

1. Highly apolar, pyrogenic silica having an average primary particle size of less than 100 nm, with a specific surface area of greater than 25 m^2/g, a carbon content of at least 1% by weight per 100 m^2/g of specific surface area, a methanol number of greater than or equal to 50, a relative sorption capacity for hydroxyl ions of less than 15%, and no fraction of silylating agent which is soluble or extractable from the silica, and in that no isolated silanol groups can be detected at a wavenumber of 3750 cm^{-1} on the highly apolar pyrogenic silica by means of infrared spectroscopy, wherein said highly apolar, pyrogenic silica is prepared by treating a very finely divided silica with at least one silylating agent which is relatively nonvolatile in the temperature range of the overall process, with a proviso that the relatively nonvolatile silylating agent is admixed as a liquid with the finely divided silica, in the form of a very finely atomized aerosol.

3. A polar system containing as a thickener, a highly apolar, pyrogenic silica as claimed in claim 1.

4. A free-flow additive in a toner comprising a highly apolar pyrogenic silica as claimed in claim 1.

5,851,716

ELECTROPHOTOGRAPHIC IMAGE FORMING METHOD AND TONER COMPOSITION USED THEREFOR

Shinichi Kuramoto; Masami Tomita, and Hiroyuki Fushimi, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 8, 1997, Ser. No. 835,522

Claims priority, application Japan, Apr. 8, 1996, 8-110555; Apr. 15, 1996, 8-115293; May 24, 1996, 8-152992; Jun. 18, 1996, 8-177546; Jun. 18, 1996, 8-177548

Int. Cl.^{6} G03G *9/097;13/16*

U.S. Cl. 433—110 **9 Claims**

1. An image forming method wherein a toner image on an image carrier is transferred to an intermediate image transfer element, the transferred toner image on said intermediate image transfer element being subsequently transferred to a transfer medium, and wherein said toner exhibits an electric potential change ΔVp of less than 120 V as an absolute value in the charge penetration test defined in the Specification.

5,851,717

DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY, AND IMAGE FORMATION METHOD USING THE SAME

Kazuo Tsubuko, Numazu; Akihiko Gotoh, Susono; Tsuyoshi Asami, Yokohama; Kazuyo Mizuno, and Akihiro Koseki, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1996, Ser. No. 637,081

Claims priority, application Japan, Apr. 24, 1995, 7-123156; May 31, 1995, 7-155523

Int. Cl.^{6} G03G *9/12*

U.S. Cl. 430—111 **20 Claims**

1. A developer for use in electrophotography for developing latent electrostatic images to visible toner images, comprising at least two kinds of toner particles with different shapes selected from the group consisting of spherical toner particles, fibrous toner particles and amorphous toner particles, each of which toner particles comprises a coloring agent and a binder resin.

5,851,718

TONER FOR ELECTROSTATIC IMAGE DEVELOPMENT BY HEAT

Takeshi Ohwada, and Takashi Shintaku, both of Chigasaki, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Division of Ser. No. 679,337, Jul. 11, 1996, abandoned. This application Aug. 19, 1997, Ser. No. 912,829

Claims priority, application Japan, Jul. 14, 1995, 7-178444; Jul. 14, 1995, 7-178445

Int. Cl.^{6} G03S *15/20*

U.S. Cl. 430—124 **6 Claims**

1. A method of fixing a dry toner for electrostatic image development by heat, comprising hot roll fixing the dry toner upon a copying paper wherein the dry toner comprises a resin, a coloring agent and a compound represented by the formula II:

$$\mathrm{T{-}CO{-}({-}O{-}A{-}CO{-})n{-}OH} \qquad \mathrm{II}$$

wherein A represents a substituted or unsubstituted divalent hydrocarbon group; T represents an substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a unsubstituted cycloalkyl group, a substituted or unsubstituted polycycloalkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted polyaryl group; and n is a natural number.

5,851,719

DEVELOPING SLEEVE FOR ELECTROPHOTOGRAPHY AND PROCESS FOR IMAGE FORMATION

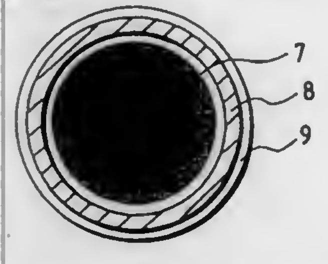
Masayuki Takei; Yuichi Yashiki; Hideyuki Akagi; Naoki Ohta; Yasushi Sakata, and Junichi Tomonaga, all of Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1996, Ser. No. 766,343

Claims priority, application Japan, Dec. 18, 1995, 7-328891

Int. Cl.^{6} G03G *15/14;* **B29D** *22/00*

U.S. Cl. 430—126 **12 Claims**



1. A developing sleeve for electrophotography comprising a sleeve substrate having provided thereon a coating film including particles dispersed in an acrylic resin containing beads of at least one of a melamine resin and a guanamine resin, wherein the acrylic resin comprises a component having a molecular weight of 500 or lower in an amount of 3.5% by weight or lower.

5,851,720

TRANSFER MATERIAL FOR USE IN THERMAL TRANSFER AND METHOD OF FORMING THERMAL TRANSFER IMAGES

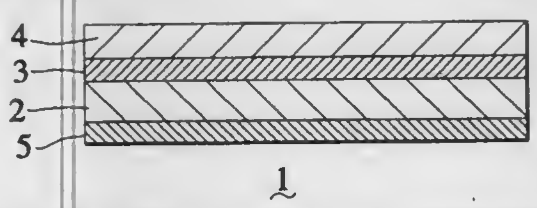
Satoru Shinohara, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1996, Ser. No. 745,736

Claims priority, application Japan, Nov. 14, 1995, 7-320982; Nov. 14, 1995, 7-320983; Nov. 14, 1995, 7-320984

Int. Cl.^{6} G03C *1/40;1/35;11/18*

U.S. Cl. 430—201 **12 Claims**



1. A method of forming sepia tone images, comprising forming images to a transfer material having a sepia tone.

4. A method of forming sepia tone images as defined in claim 1, wherein images are formed to thermal transfer print paper colored to the sepia tone by a thermal transfer process.

5,851,721

PHOTOTHERMOGRAPHIC ELEMENTS

Takeshi Shibata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1997, Ser. No. 887,419

Claims priority, application Japan, Jul. 9, 1996, 8-179701

Int. Cl.^{6} G03C *8/52;1/795*

U.S. Cl. 430—203 **5 Claims**

1. A diffusive transfer-type photothermographic material which comprises (i) a light-sensitive element comprising a light-sensitive silver halide and a binder provided on a first support and (ii) an image-fixing element provided on a second support, wherein said light-sensitive element and said image-fixing element are capable of forming an image by being attached to each other with a small amount of solvent under heat in the presence of a base, a base precursor or a mixture thereof, after or simultaneous imagewise exposure of said light-sensitive element,

wherein at least one of the first support and the second support is a film which comprises a stretched and heat-fixed melt comprising a polyester and a polyolefin having a melting temperature lower than that of the polyester.

5,851,722

IMAGING ELEMENT FOR MAKING AN IMPROVED PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; Guido Hauquier, Nijlen; Eric Verschueren, Merksplas, and Eric Hoes, Lille, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 3, 1997, Ser. No. 888,287

Claims priority, application European Pat. Off., Jul. 4, 1996, 96201908.9

Int. Cl.^{6} G03C *8/52;1/76;* **G03F** *7/07*

U.S. Cl. 430—204 **8 Claims**

1. An imaging element comprising in the order given on a hydrophilic base (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer and (iii) an antistress layer being in water permeable relationship with said image receiving layer and comprising gelatin, wherein said antistress layer comprises at least 30 mg/M^2 of a matting agent with a weight average diameter of at least 3 μm, which is a copolymer of styrene, methyl methacrylate and maleic acid.

5,851,723

PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE

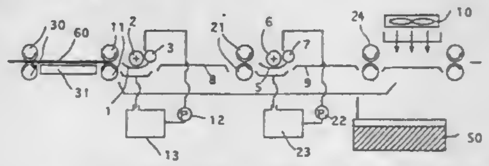
Toshiro Kondo, Tokyo, Japan, assignor to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Aug. 19, 1997, Ser. No. 914,184

Claims priority, application Japan, Aug. 19, 1996, 8-217129

Int. Cl.^{6} G03C *8/06;5/39;* **G03F** *7/07*

U.S. Cl. 430—204 **27 Claims**



1. In a process for making a lithographic printing plate utilizing the silver complex diffusion transfer process by subjecting the lithographic printing plate, including a support, a silver halide emulsion layer and a physical development nuclei layer, to exposure and then development processing, the improvement comprising:

performing the development processing by using a developing solution containing a monothioether compound containing succinic acid, a salt thereof or a succinic acid derivative selected from the group consisting of an ester in which a hydrogen atom of a carboxy group is substituted, an amide in which a hydroxyl group of a carboxy group is substituted, and an acid anhydride.

5,851,724

METHOD FOR PRODUCING LITHOGRAPHIC PLATES WITH IMAGING ELEMENTS COMPRISING A PHOTOSENSITIVE ACID PRECURSOR

Marc Van Damme, Heverlee; Joan Vermeersch, Deinze; Etienne Schacht, Staden, and Stefan Vansteenkiste, De Pinte, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 29, 1995, Ser. No. 521,045

Claims priority, application European Pat. Off., Sep. 8, 1997, 94202581

Int. Cl.^{6} G03F *7/34;7/11*

U.S. Cl. 430—253 **10 Claims**

1. A method for obtaining a lithographic printing plate comprising the steps of:

(a) image-wise or information-wise exposing a photosensitive imaging element comprising on a hydrophilic surface of a support a hydrophobic photosensitive layer contiguous to said hydrophilic surface, comprising (i) a photosensitive acid precursor and (ii) a hydrophobic polymeric binder and

(b) developing said exposed imaging element by the steps of:

(i) laminating before or after said exposure an uppermost layer of said imaging element to a receptor layer and

(ii) peeling away the receptor layer from the hydrophilic surface of the support thus transferring said hydrophobic photosensitive composition patternwise to the receptor layer, wherein said hydrophobic photosensitive layer comprises as photosensitive acid precursor a non-ionic photosensitive precursor of a sulphonic acid or a non-ionic photosensitive precursor of an optionally partially esterified phosphonic acid or a non-ionic photosensitive precursor of an optionally partially esterified phosphoric acid, the latter phosphonic or phosphoric acid precursors used in the absence of monomers capable of undergoing cationic polymerization.

5,851,725
EXPOSURE OF LITHOGRAPHIC RESISTS BY METASTABLE RARE GAS ATOMS

Jabez McClelland, Bethesda, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 26, 1993, Ser. No. 8,976

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—269 **5 Claims**

1. A lithography process for defining features on a workpiece comprising directing a beam of metastable rare gas atoms onto a surface of a lithographic resist so that the metastable rare gas atoms strike the surface of said lithographic resist whereby internal energy of said metastable rare gas atoms is released.

5,851,726
METHOD FOR PRODUCING A CHEMICALLY ADSORBED FILM

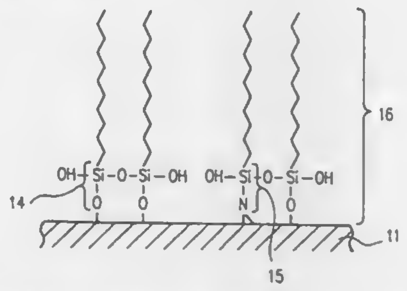
Shigeo Ikuta, Katano; Kazufumi Ogawa, Nara, and Mamoru Soga, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 9, 1995, Ser. No. 556,015

Claims priority, application Japan, Nov. 14, 1994, 6-279122; Oct. 3, 1995, 7-255979

Int. Cl.^{6} G03F *7/26*

U.S. Cl. 430—269 **9 Claims**



1. A method for producing a chemically adsorbed film comprising the steps of:

irradiating a surface of a polymer substrate with ultraviolet laser light so as to produce a hydrophilic group on the surface of the polymer substrate, wherein the ultraviolet laser light is selectively irradiated onto a predetermined part of the surface of the polymer substrate; and

contacting the surface of the polymer substrate on which the hydrophilic group is produced with a chemical adsorption solution containing a chlorosilane-containing chemical adsorbent and a nonaqueous solvent; and reacting the hydrophilic group of the polymer substrate with a chlorosilyl group of the chlorosilane-containing chemical adsorbent for forming a covalent bond, thereby forming a chemically adsorbed film on the surface of the polymer substrate.

4. A method for producing a chemically adsorbed film comprising the steps of:

irradiating a surface of a polymer substrate with ultraviolet light including a wavelength of about 175 nm or less so as to produce a hydrophilic group on the surface of the polymer substrate, wherein the ultraviolet light including a wavelength of about 175 nm or less is selectively irradiated onto a predetermined part of the surface of the polymer substrate; and

contacting the surface of the polymer substrate on which the hydrophilic group is produced with a chemical adsorption solution containing a chlorosilane-containing chemical adsorbent and a nonaqueous solvent; and reacting the hydrophilic group of the polymer substrate with a chlorosilyl group of the chlorosilane-containing chemical adsorbent for forming a covalent bond, thereby forming a chemically adsorbed film on the surface of the polymer substrate.

8. A method for producing a chemically adsorbed film comprising the steps of:

irradiating a surface of a polymer substrate with ultraviolet laser light so as to produce a hydrophilic group on the surface of the polymer substrate, wherein the ultraviolet laser light is selectively irradiated onto a predetermined part of the surface of the polymer substrate; and

contacting the surface of the polymer substrate on which the hydrophilic group is produced with a chemical adsorption solution containing a chlorosilane-containing chemical adsorbent and a nonaqueous solvent; and reacting the hydrophilic group of the polymer substrate with a chlorosilyl group of the chlorosilane-containing chemical adsorbent for forming a covalent bond, thereby forming a chemically adsorbed film on the surface of the polymer substrate,

wherein the ultraviolet light is selected from the group consisting of excimer laser light, gas laser light and YAG laser light.

5,851,727
PHOTOSENSITIVE POLYMERS AND PHOTORESIST COMPOSITIONS CONTAINING THE SAME

Sang-jun Choi, Kyungki-do; Chun-geun Park, Kyungki-do, and Young-bum Koh, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

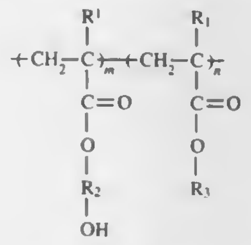
Filed May 30, 1997, Ser. No. 866,807

Claims priority, application Rep. of Korea, Aug. 5, 1996, 1996-32631

Int. Cl.^{6} G03F *7/004*

U.S. Cl. 430—270.1 **24 Claims**

1. A photosensitive polymer represented by the formula:

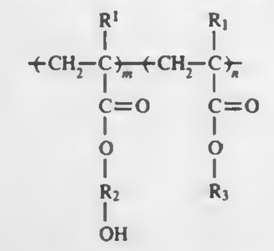


$$\left(-CH_2-\underset{\begin{array}{c}|\\C=O\\|\\O\\|\\R_2\\|\\OH\end{array}}{\overset{\begin{array}{c}R^1\\|\end{array}}{C}}-\right)_m\left(-CH_2-\underset{\begin{array}{c}|\\C=O\\|\\O\\|\\R_3\end{array}}{\overset{\begin{array}{c}R_1\\|\end{array}}{C}}-\right)_n$$

wherein R_1 is selected from the group consisting of hydrogen and methyl; R_2 is selected from the group consisting of aliphatic hydrocarbons having from 6 to 20 carbon atoms; R_3 is selected from the group consisting of a t-butyl group and a tetrahydropyranyl group, and m and n are selected such that the ratio m/(n+m) ranges from 0.1 to 0.9.

12. A photoresist composition comprising:

a photosensitive polymer represented by the following formula:



$$\left(-CH_2-\underset{\begin{array}{c}|\\C=O\\|\\O\\|\\R_2\\|\\OH\end{array}}{\overset{\begin{array}{c}R^1\\|\end{array}}{C}}-\right)_m\left(-CH_2-\underset{\begin{array}{c}|\\C=O\\|\\O\\|\\R_3\end{array}}{\overset{\begin{array}{c}R_1\\|\end{array}}{C}}-\right)_n$$

wherein R_1 is selected from the group consisting of hydrogen and methyl; R_2 is selected from the group consisting of aliphatic hydrocarbon groups having from 6 to 20 carbon atoms; R_3 is selected from the group consisting of a t-butyl group and a tetrahydropyranyl group, and m and n are selected such that the ratio m/(n+m) ranges from 0.1 to 0.9; and

a photoacid generator.

5,851,728
THREE-COMPONENT CHEMICAL AMPLIFIED PHOTORESIST COMPOSITION

Seong-Ju Kim; Joo-Hyeon Park; Ki-Dae Kim, and Dong-Chul Seo, all of Taejeon, Rep. of Korea, assignors to Korea Kumho Petrochemical Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 9, 1996, Ser. No. 728,771

Claims priority, application Rep. of Korea, Oct. 14, 1995, 1995-35530

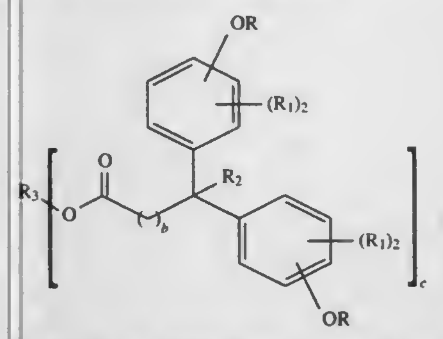
Int. Cl.^{6} G03F *7/004*

U.S. Cl. 430—270.1 **3 Claims**

1. A chemically amplified photoresist composition comprising:

an alkali soluble resin;

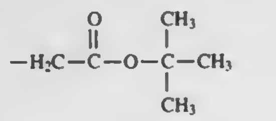
a dissolution inhibitor which is an aromatic polyhydroxy compound of the following general formula I:



I

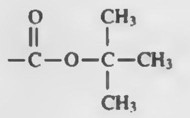
wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, an alkyl radical and an alkoxy radical; a is an integer of 1 to 3; b is an integer of 1 to 8; c is an integer of 1 to 12; R_3 is an alkoxy radical or an alkoxy radical substituted with an ether group, a mercapto group, a sulfoxide group, a sulfone group, an aryl group or a hydroxyl group;

R is independent and is at least two of the radicals represented by formulas II-1, II-2, II-3, or II-4:



$$-H_2C-\overset{\overset{O}{\|}}{C}-O-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$$

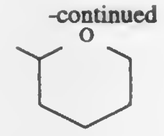
II-1



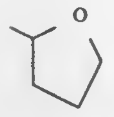
$$-\overset{\overset{O}{\|}}{C}-O-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$$

II-2

-continued



II-3



II-4

and

a photo acid generating agent of an onium salt represented by the following general formula III:

$$Ar_3X^+Y^- \qquad \text{(III)}$$

wherein Ar is any one selected from the group consisting of aromatic hydrocarbons and halogen-substituted aromatic hydrocarbons, x is selected from the group consisting of halogen, sulfur, and selenium, and Y is selected from the group consisting of BF_4, PF_6, AsF_6, SbF_6 and CF_3SO_3.

5,851,729
OPTICAL DISC

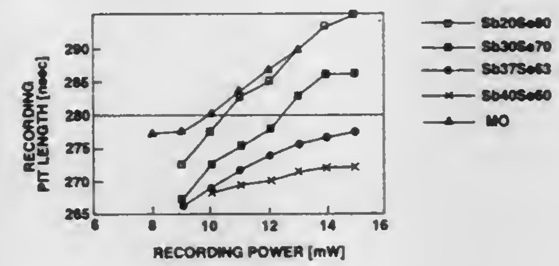
Atsushi Takeuchi; Shuichi Igarashi, and Mikio Yoshida, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 27, 1996, Ser. No. 703,792

Claims priority, application Japan, Aug. 31, 1995, 7-224067; Aug. 31, 1995, 7-224072

Int. Cl.^{6} G11B *7/24*

U.S. Cl. 430—270.12 **1 Claim**



1. A write-once optical disc comprising:

a substrate having a surface;

a recording layer disposed on the surface comprising a first Sb—Se based thin film disposed on the surface having a thickness of from about 15 to about 25 nm and including 70 atomic % or more of Se, a Bi_2Te_3 based thin film on said first Sb—Se based thin film, and a second Sb—Se based thin film including 70 atomic % or more of Se disposed on said Bi_2Te_3 based thin film; and

an Al thin film disposed on the recording layer, said write-once optical disc having a reflectance value from the recording layer for a laser beam of a wavelength of about 680 nm of from about 10 to about 25%, and said write-once optical disc producing a recording pit length of about 280 nsec at a recording power level of about 12.5 mW at said 680 nm wavelength.

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5,851,730

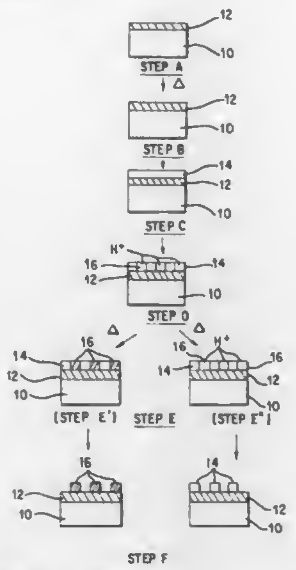
SUBSTRATES COATED WITH AN ANTIHALATION LAYER THAT CONTAINS A RESIN BINDER COMPRISING ANTHRACENE UNITS

James W. Thackeray, Braintree, and George W. Orsula, Avon, both of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Division of Ser. No. 792,482, Nov. 15, 1991. This application Nov. 26, 1997, Ser. No. 978,827

Int. Cl.^{6} G03C *1/83*

U.S. Cl. 430—271.1 **21 Claims**



1. A coated substrate comprising:

a substrate having thereon a coating layer of an antihalation composition and a coating layer of a photoresist over the antihalation composition coating layer,

the layer of the antihalation composition comprising a resin binder and a crosslinker, the resin binder having anthracene units therein and the resin binder capable of reacting with the crosslinker, and the crosslinker compound capable of causing a crosslinking reaction of the resin binder,

the photoresist comprising a resin binder and a radiation sensitive component.

5,851,731

COMPOSITION FOR THE MANUFACTURE OF FLEXOGRAPHIC PRINTING PLATES

Carl David McAfee, Kennedale; Piseth Lov, Mansfield; David Thomas Hughes, Whitney, and Michael Wayne Chase, Arlington, all of Tex., assignors to M. A. Hanna Company, Cleveland, Ohio

Filed Sep. 9, 1996, Ser. No. 707,862

Int. Cl.^{6} G03F *7/033;7/30;7/038*

U.S. Cl. 430—286.1 **21 Claims**

1. A photopolymer composition capable of being processed in aqueous media to form a flexographic printing plate comprising: 1) a flexomer blend having at least one hydrophilic flexomer, which is a carboxylated acrylonitrile butadiene polymer, at least one crosslinking agent, and at least one photoinitiator, and 2) at least one compatible swell enhancing filler consisting of a compound different from said hydrophilic flexomer but which is compatible with said hydrophilic flexomer such that said compatible swell enhancing filler and said hydrophilic flexomer remain dispersed within one another, wherein said compatible swell enhancing filler increases the volume swell of said flexomer blend in the presence of water.

6. A photopolymer composition capable of being processed in aqueous media to form a flexographic printing plate comprising: 1) a flexomer blend having at least one hydrophilic flexomer, which is a carboxylated acrylonitrile butadiene polymer, at least one crosslinking agent, and at least one photoinitiator, and 2) at least one compatible swell enhancing component comprising a) a swell enhancing filler which is incompatible with said hydrophilic flexomer, and b) at least one compatibilizer having both hydrophilic and nonhydrophilic constituents so that said compatible swell enhancing component is compatible with said hydrophilic flexomer to the extent that said compatible swell enhancing component and said hydrophilic flexomer remain dispersed within one another, said compatibilizer reducing the haze of said photopolymer composition, wherein said swell enhancing filler increases the volume swell of said flexomer blend in the presence of water.

10. A photopolymer composition according to claim 6, wherein said plurality of crosslinking agents comprises first and second crosslinking agents, said first crosslinking agent being a hydrophilic crosslinking agent and said second crosslinking agent being less hydrophilic than said first crosslinking agent.

5,851,732

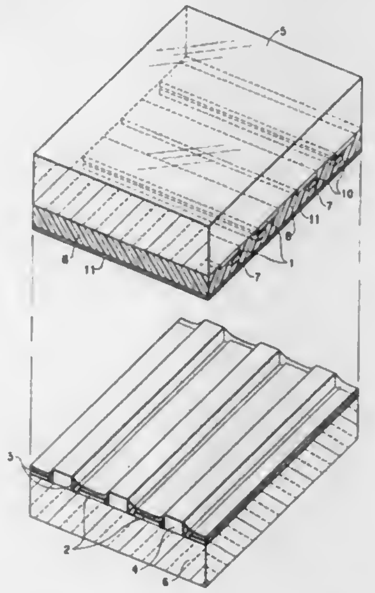
PLASMA DISPLAY PANEL DEVICE FABRICATION UTILIZING BLACK ELECTRODE BETWEEN SUBSTRATE AND CONDUCTOR ELECTRODE

Hiroshi Kanda, Yakohama, Japan; Jerome David Smith, Cary, and Terry R. Suess, Raleigh, both of N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 6, 1997, Ser. No. 812,230

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—321 **12 Claims**



1. A method of fabricating an AC plasma display panel device comprising front and rear insulating substrates spaced apart from each other, and an electrode arrangement composed of groups of electrode composites respectively formed on the front and rear insulating substrates with specified electrode patterns, which are positioned face to face in an orthogonal relationship across a discharge space filled with ionizable gas between the insulating substrates, characterized in that the method of forming the electrode composites on at least the front insulating substrate comprising the sequential steps of:

(1) applying a photosensitive black composition on at least the front insulating substrate, wherein the photosensitive black composition comprises an admixture of (a) conductive particles of at least one of RuO_2, ruthenium based polynary oxide or mixtures thereof, (b) at least one inorganic binder, (c) organic, carboxylic acid containing polymeric binder, (d) photoinitiation system, and (e) photohardenable monomer;

(2) imagewise exposing the photosensitive black composition to actinic radiation to define the specified pattern;

(3) developing the exposed black composition in basic aqueous solution to remove the composition in areas not exposed to actinic radiation;

(4) firing the developed black composition, forming a black conductive component on the substrate;

(5) applying a photosensitive conductive composition which forms a conductor electrode and comprises an admixture of (a) conductive particles of at least one metal selected from a group of Au, Ag, Pd, Pt and Cu, or combinations thereof, (b) at least one inorganic binder, (c) organic, carboxylic acid containing polymeric binder, (d) photoinitiation system, and (e) photohardenable monomer;

(6) imagewise exposing the photosensitive conductive composition to actinic radiation to define the electrode pattern;

(7) developing the exposed conductive composition in basic aqueous solution to remove the composition in areas not exposed to actinic radiation;

(8) firing the developed conductive composition forming the conductor electrodes on top of the arrangement of black electrodes on the substrate.

5,851,733

PHOTOLITHOGRAPHIC PATTERN GENERATION

Recai Sezi, Röttenbach; Rainer Leuschner, and Erwin Schmidt, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE95/01184, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO96/08750, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 1, 1995, Ser. No. 793,310

Claims priority, application Germany, Sep. 12, 1994, 44 32 446.4

Int. Cl.^{6} B03C *5/00*

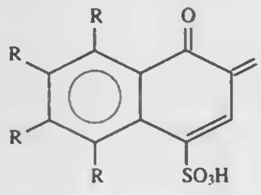
U.S. Cl. 430—311 **10 Claims**

1. A method for producing photolithographic patterns in the submicron range, comprising the steps of:

applying onto a substrate a photoresist layer comprising

a polymer containing carboxylic acid anhydride groups and tert. butylester or tert. butoxy-carbonyloxy groups,

a photoactive component in the form of an ester of a naphthoquinonediazide-4-sulfonic acid having a structure of



with an aromatic or aliphatic-aromatic hydroxy compound, the residues R signifying—independently of one another— hydrogen, alkyl, halogenalkyl, alkoxy, phenyl, halogenphenyl, phenoxy or halogen, and a suitable solvent;

drying the photoresist layer;

exposing the photoresist layer in an imaging manner;

subjecting the exposed photoresist layer to a temperature treatment in the range of between 120° and 150° C. for a duration of 100 to 600 seconds;

subjecting the thus treated photoresist layer to liquid silylation; and

dry-developing the silylated photoresist layer in an anisotropic oxygen plasma.

5,851,734

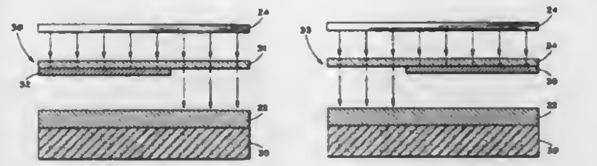
PROCESS FOR DEFINING RESIST PATTERNS

Christophe Pierrat, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 26, 1996, Ser. No. 626,666

Int. Cl.^{6} G03F *7/20*

U.S. Cl. 430—312 **12 Claims**



1. A process of defining a pattern of a desired width in resist material on a semiconductor wafer, comprising:

defining one edge of the pattern by exposing a first portion of the resist material to a resist modifying source through a first mask having first opaque portions; and

defining another edge of the pattern by exposing a second portion of the resist material to a resist modifying source through a second different mask having second opaque portions, the opaque portions of the first and second masks overlapping by a distance correlative to the desired width of the pattern.

5,851,735

ALKALINE DEVELOPING COMPOSITION AND METHOD OF USE TO PROCESS LITHOGRAPHIC PRINTING PLATES

Gary Roger Miller, Ft. Collins, and Melanie Ann Felker, Loveland, both of Colo., assignors to Kodak Polychrome Graphics, Norwalk, Conn.

Division of Ser. No. 729,471, Oct. 11, 1996, Pat. No. 5,766,826. This application Jul. 31, 1997, Ser. No. 904,092

Int. Cl.^{6} G03F *7/32*

U.S. Cl. 430—322 **16 Claims**

1. A method for processing comprising:

developing an imagewise exposed positive-working or negative-working lithographic printing plate with an aqueous alkaline developing composition having a pH of at least about 12 and comprising:

a) an alkali metal silicate, and

b) at least 5 weight % of glycerine.

5,851,736

HEAT-RESISTANT PHOTORESIST COMPOSITION, PHOTOSENSITIVE SUBSTRATE, AND PROCESS FOR FORMING HEAT-RESISTANT POSITIVE OR NEGATIVE PATTERN

Toshihiko Omote; Shun-ichi Hayashi, and Hirofumi Fujii, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 248,535, May 24, 1994, which is a continuation-in-part of Ser. No. 835,535, Feb. 14, 1992, abandoned, and Ser. No. 86,084, Jul. 6, 1993, abandoned. This application Dec. 20, 1996, Ser. No. 769,829

Claims priority, application Japan, Mar. 5, 1991, 3-65634; Apr. 4, 1991, 3-71767; Apr. 15, 1991, 3-111163; Jul. 7, 1992, 4-179685; Oct. 26, 1992, 4-287384

Int. Cl.^{6} G03F *7/40:7/004*

U.S. Cl. 430—325 **3 Claims**

1. A process for forming a negative pattern which comprises coating a photosensitive liquid on a substrate, said photosensitive liquid being prepared by dissolving a heat-resistant photoresist composition in an organic solvent, the photoresist composition comprising a polyimide precursor having a structural unit represented by formula (I):

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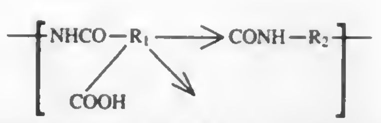
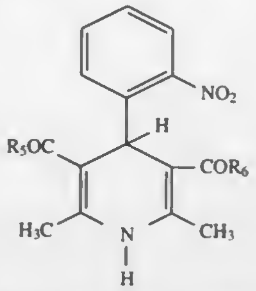


$$\left[-NHCO-\underset{COOH}{R_1} \longrightarrow CONH-R_2- \right] \quad (I)$$

wherein the arrows each indicate a bond which can be substituted by isomerization, R^1 represents a skeleton of benzene, naphthalene, perylene, diphenyl, diphenyl ether, diphenyl sulfone, diphenylpropane, diphenylhexafluoropropane, benzophenone, butane or cyclobutane, and R^2 represents a skeleton of diphenyl ether, diphenyl thioether, benzophenone, diphenylmethane, diphenylpropane, diphenylhexafluoropropane, diphenyl sulfoxide, diphenyl sulfone, biphenyl, pyridine or benzene, and a compound represented by formula (IIa):



(IIa)

wherein R_5 and R_6 each represent an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms, and wherein said compound represented by formula (IIa) is present in an amount of from 5 to 50 parts by weight per 100 parts by weight of the polyimide precursor,

drying the resulting coating to form a film on the substrate,

irradiating the resulting film with actinic rays through a photomask,

heat-treating the irradiated film at a temperature of about 170° C. or more, and

removing unexposed areas of the film by development with an alkaline developing solution, wherein the step of heat treating the irradiated film at a temperature of about 170° C. or more is conducted after the film is irradiated and before the film is developed.

5,851,737

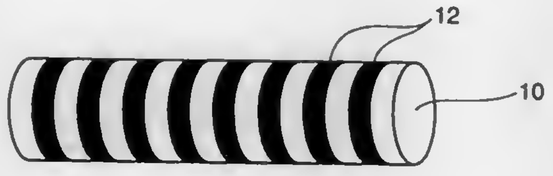
SPATIALLY VARIED INTERFACES FOR COMPOSITE MATERIALS

Benji Maruyama, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 27, 1997, Ser. No. 863,236

Int. Cl.^{6} G03F *7/00*

U.S. Cl. 430—325 **10 Claims**



1. A method for fabricating a fiber- or filament-reinforced matrix composite structure comprising the steps of (a) partially coating a reinforcing fiber or filament with a material which either promotes or deters bonding between the reinforcing fiber or filament and the matrix material to provide a patterned coating, (b) combining the coated fiber or filament with a matrix material to provide a preform, and (c) densifying the preform to provide said composite.

5,851,738

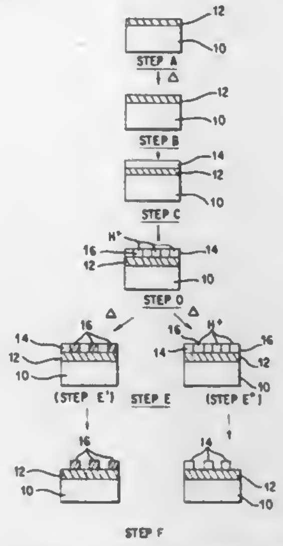
METHOD COMPRISING SUBSTRATES COATED WITH AN ANTIHALATION LAYER THAT CONTAINS A RESIN BINDER COMPRISING ANTHRACENE UNITS

James W. Thackeray, Braintree, and George W. Orsula, Avon, both of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Division of Ser. No. 792,482, Nov. 15, 1991. This application Nov. 26, 1997, Ser. No. 978,688

Int. Cl.^{6} G03C *5/16;* **C08J** *3/28*

U.S. Cl. 430—327 **29 Claims**



1. A method for forming a relief image on a substrate, the method comprising:

applying on the substrate a layer of an antihalation composition comprising a resin binder and a crosslinker, the resin binder having anthracene units therein and the resin binder capable of reacting with the crosslinker, and the crosslinker capable of causing a thermally-activated crosslinking reaction of the resin binder,

applying over said antihalation composition layer a layer of a photoresist composition comprising a resin binder and a radiation senstive component, and

imagewise exposing the photoresist composition layer to activating radiation and developing the exposed photoresist composition layer.

5,851,739

QUINONEDIAZIDE/NOVOLAK POSITIVE ELECTRON BEAM RESIST DEVELOPER

Hiroki Oosedo, Ehime; Mutsuo Kataoka, deceased, late of Shiga, by Mayumi Kataoka legal representative; by Shigeyoshi Kanetsuki, legal representative, Shiga; Kazutaka Tamura, Shiga, and Masaya Asano, Shiga, all of Japan, assignors to Toray Industries, Inc., Japan

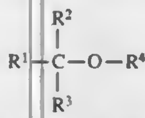
Continuation of Ser. No. 747,908, Nov. 12, 1996, abandoned, which is a division of Ser. No. 360,806, May 25, 1995, Pat. No. 5,629,127. This application Nov. 26, 1997, Ser. No. 979,370

Claims priority, application Japan, Apr. 28, 1993, 5102428

Int. Cl.^{6} G03C *5/00*

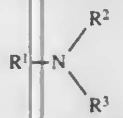
U.S. Cl. 430—331 **10 Claims**

1. A quinonediazide/novolak positive electron beam resist developer comprising alkali metal ions, weak acid ions and a water soluble organic compound subject to the following conditions: $0.05 \leqq a \leqq 0.5$, $0.07 \leqq bn \leqq 1.5$ and $a<bn$ or $a>bn$, wherein a is the concentration of the alkali metal in mol/kg, b is the concentration of the weak acid in mol/kg and n is the valence of the weak acid ions, and the concentration of the water soluble organic compound is 0.5 to 10 wt % based on the total weight of the developer; said water soluble organic compound being at least one compound selected from the group consisting of compounds represented by the following general formulae (I), (II), (III), dimethyl sulfoxide, acetonitrile, pyridine and morpholine:



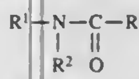
$$R^1-\overset{\displaystyle R^2}{\underset{\displaystyle R^3}{C}}-O-R^4 \quad (I)$$

(where R^1, R^2, R^3 and R^4 stand for, respectively independently, one selected from a group consisting of hydrogen atom, alkyl group and hydroxyalkyl group; R^1 and R^4 may also be combined to form a closed ring; and the number of carbon atoms is 1 to 6)



$$R^1-N\begin{matrix} \diagup R^2 \\ \diagdown R^3 \end{matrix} \quad (II)$$

(where R^1, R^2 and R^3 stand for, respectively independently, one selected from a group consisting of hydrogen atom, alkyl group and hydroxyalkyl group; R^1 and R^3 may also be combined to form a closed ring; and the number of carbon atoms is 1 to 9)



$$R^1-\underset{\displaystyle R^2}{N}-\underset{\displaystyle O}{\overset{}{C}}-R^3 \quad (III)$$

(where R^1, R^2 and R^3 stand for, respectively independently, one selected from a group consisting of hydrogen atom, alkyl group and hydroxyalkyl group; R^1 and R^3 may also be combined to form a closed ring; and the number of carbon atoms is 1 to 9).

5,851,740

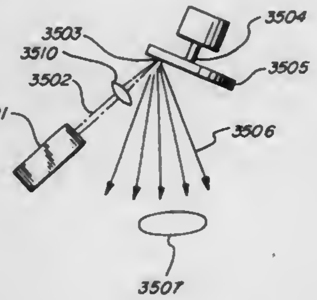
SPECKLELESS ILLUMINATION OF OBJECTS BY LASER LIGHT RESULTS WHEN THE LASER LIGHT IS TRANSMITTED OR IS REFLECTED BY A MOVING DIFFUSER

George M. Sawyer, 7251 Garden Grove Blvd., #E, Garden Grove, Calif. 92641

Continuation of Ser. No. 292,318, Aug. 19, 1994, Pat. No. 5,443,597, which is a continuation of Ser. No. 168,274, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 737,889, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 291,535, Dec. 27, 1988, abandoned, which is a division of Ser. No. 920,782, Oct. 20, 1986, Pat. No. 4,835,090, which is a continuation-in-part of Ser. No. 699,504, Feb. 8, 1985, abandoned, which is a continuation of Ser. No. 539,640, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 348,610, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 072,209, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 072,197, Sep. 14, 1970, Pat. No. 4,178,181, which is a continuation of Ser. No. 544,275, Apr. 21, 1966, abandoned. This application May 8, 1995, Ser. No. 437,298

Int. Cl.^{6} G03C *5/08;5/04;7/00;* **G03B** *27/54*

U.S. Cl. 430—363 **13 Claims**



1. In the prior art, when laser light, reflected by a stationary-diffuse-element, illuminates a subject,

an undesirable and unevenly illuminated subject results that is in the form of a speckled pattern of light and dark areas,

said undesirable and unevenly illuminated subject is obviated by an inventive step,

said inventive step replaces the stationary-diffuse-element by a moving-diffuse-element resulting in a desirable and evenly illuminated subject.

5,851,741

METHOD FOR THE FORMATION OF COLOR IMAGES

Osamu Takahashi; Hideaki Naruse, and Nobuo Sakai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 715,866, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 7,201, Jan. 27, 1987, abandoned. This application Sep. 6, 1994, Ser. No. 300,849

Claims priority, application Japan, Jan. 24, 1986, 14546/86

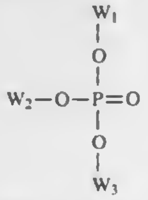
The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.

Int. Cl.^{6} G03C *7/38;7/384;7/413*

U.S. Cl. 430—380 **18 Claims**

1. A process for the formation of color images comprising:

image-wise exposing a silver halide color photographic material, said photographic material having on a reflective support a silver halide emulsion layer containing a dispersion of oleophilic fine grains having a mean grain size of 0.25 μm to 0.05 μm, which dispersion contains a pyrazolo[5,1-c][1,2,4]triazole or pyrazolo[1,5-b][1,2,4]triazole coupler capable of forming a magenta dye after having been coupled with an oxidation product of an aromatic primary amine developing agent and at least one high boiling organic solvent having a dielectric constant of 5.0 or more (25° C., 10 KHz) and having the formula (I):



$$W_2-O-\overset{\displaystyle W_1-O}{\underset{\displaystyle O-W_3}{P}}=O \quad (I)$$

wherein W_1, W_2 and W_3 each represents an alkyl, cycloalkyl, alkenyl or aryl group;

then subjecting the image-wise exposed photographic material to development at a processing temperature of 33° to 45° C. with a color developer which contains an aromatic primary amine developing agent and 0.5 ml/l or less of benzyl alcohol, for a period of time within 2 minutes or less.

5,851,742

SOLID PROCESSING COMPOSITION AND METHOD FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shoji Nishio, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

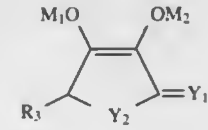
Continuation of Ser. No. 736,399, Oct. 24, 1996. This application Nov. 26, 1997, Ser. No. 978,609

Claims priority, application Japan, Oct. 30, 1995, 7-281649

Int. Cl.^{6} G03C *5/30*

U.S. Cl. 430—465 **7 Claims**

1. A solid processing composition for processing a silver halide photographic light sensitive material, the sodium cation content of said solid composition being 80 to 95 mol % based on the total metal cation content, wherein the solid processing composition contains said developing agent represented by the following formula (1-a) in an amount of 30 to 70 weight %:



formula (1-a)

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wherein R_3 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted amino group, a substituted or unsubstituted alkoxy group, a sulfo group, a carboxy group, an amido group or a sufonamido group; Y_1 represents O or S; Y_2 represents O, S or NR_4, in which R_4 is a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; and M_1 and M_2 independently represent a hydrogen atom or an alkali metal atom.

5,851,743
COLORED PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIAL, METHOD FOR PRODUCING SAME, AND PACKAGED PHOTOSENSITIVE MATERIAL

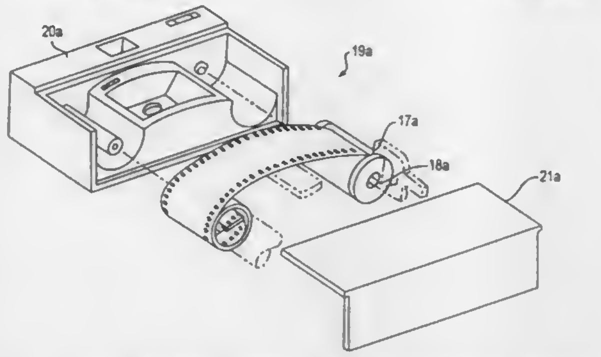
Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., LTD., Kanagawa-ken, Japan

Filed Dec. 27, 1996, Ser. No. 774,355

Claims priority, application Japan, Dec. 28, 1995, 7-353004

Int. Cl.^{6} G03C *3/00*

U.S. Cl. 430—501 **24 Claims**



1. A colored packaging material for a photosensitive material comprising a colored pigment, a dispersing pigment, and a fatty acid metal salt,

wherein said dispersing pigment is a pigment dispersing said colored pigment, and

wherein said fatty acid metal salt is present in an amount of from 2 to 5 wt %.

5,851,744
PHOTOGRAPHIC FILM

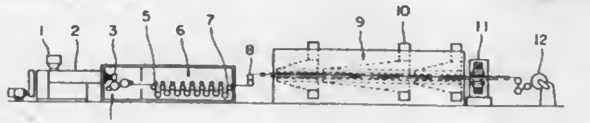
Fumiyuki Suzuki; Takahito Miyoshi; Yukio Shirokura; Takanori Sato, and Hiroko Sugihara, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 27, 1997, Ser. No. 917,770

Claims priority, application Japan, Aug. 27, 1996, 8-245594

Int. Cl.^{6} G03C *1/795*

U.S. Cl. 430—501 **5 Claims**



1. A photographic film having a width of 35 mm which comprises a continuous support comprising polyester and at least one photographic layer provided thereon,

wherein the polyester has recurring units comprising 60 to 85 molar % of ethylene-2,6-naphthalate unit and 15 to 40 molar % of ethylene terephthalate unit and satisfies the formula (1):

$$-0.65 \leqq [NDA]+\log\,[NET] \leqq 0.28 \qquad (1)$$

wherein [NDA] represents a ratio of a number of 2,6-naphthalate unit to a total number of 2,6-naphthalate unit and terephthalate unit, and [NET] represents a ratio of a number of ethylene unit which has a 2,6-naphthalate unit on one side and a terephthalate unit on the other side to a total number of an ethylene unit in the polyester; and

the support has a thickness of 112 to 128 μm.

5,851,745
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSTIVE MATERIAL AND METHOD FOR FORMING AN IMAGE

Kiyoshi Takeuchi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

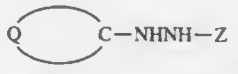
Filed Aug. 7, 1997, Ser. No. 908,681

Claims priority, application Japan, Aug. 14, 1996, 8-214885

Int. Cl.^{6} G03C *1/42*

U.S. Cl. 430—505 **12 Claims**

1. A silver halide photographic light-sensitive material having at least one photographic constitutional layer on a base, wherein one or more of the said photographic constitutional layers contains at least one color-developing agent represented by formula (I) and at least one dye-forming coupler represented by formula (II) in the same layer or different layers:



formula (I)

wherein Z represents a carbamoyl group, and Q represents a group of atoms required to form an unsaturated ring together with the C,

$$(Y^1)_n\text{—}M\text{—}G\text{—}(Y^2)_m \qquad \text{formula (II)}$$

wherein M represents a coupler component capable of causing coupling reaction at the site where G is bonded with the oxidation product of the color-developing agent represented by formula (I), G represents a group capable of coupling split-off by the coupling reaction with the oxidation product of the color-developing agent represented by formula (I) and is selected from the group consisting of a heterocyclic group, an aryloxy group, a heterocyclic oxy group, an acyloxy group, an alkoxy group, a carbamoyloxy group, an aryloxycarbonyloxy group, an alkoxycarbonyloxy group, an arylthio group, a heterocyclic thio group, an alkylthio group, an alkylsulfonyloxy group, an arylsulfonyloxy group, a carbonamido group, a sulfonamide group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, an arylazo group, and a carbamoylamino group, Y^1 and Y^2 each represent a group having a dissociation group, whose pKa is 1 or more but 12 or less, n is an integer of 0 to 3 and m is an integer of 1 or 2, provided that $n+m \geqq 1$, and when n and m are each 2 or more, Y^1's and Y^2's are each the same or different.

5,851,746
PHOTOGRAPHIC SILVER HALIDE ELEMENT HAVING POLYETHYLENE NAPHTHALATE SUPPORT AND THIN NON-IMAGING BOTTOM LAYERS

John Brian Rieger, Rochester, and Drake Matthew Michno, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 652,875, May 23, 1996, abandoned, which is a continuation-in-part of Ser. No. 593,224, Jan. 29, 1996, abandoned. This application Nov. 26, 1997, Ser. No. 978,675

Int. Cl.^{6} G03C *1/815*

U.S. Cl. 430—510 **17 Claims**

1. A multicolor photographic element comprising an ultraviolet ray absorbing polyester support comprising a polymer derived from a fused polycyclic aromatic dicarboxylate monomer which may be a homopolymer, a copolymer or a graft polymer, bearing a light-sensitive silver halide photographic emulsion layer, the support having adjacent thereto one or more contiguous non imaging layers between the support and the closest silver halide photographic emulsion layer, said one or more contiguous layers containing a combined gelatin laydown of 2.3g/m^2 or less, containing an antihalation agent, the contiguous nonimaging layers being substantially free of ultraviolet absorbing compounds and having a gel to solvent weight ratio of at least 2.9.

5,851,747
SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Shigeaki Takahashi, Hino, Japan, assignor to Konica Corporation, Japan

Filed May 20, 1996, Ser. No. 651,803

Claims priority, application Japan, May 25, 1995, 7-126308

Int. Cl.^{6} G03C *1/32;1/005*

U.S. Cl. 430—531 **13 Claims**

1. A silver halide photographic light sensitive material comprising a support, having thereon component layers including a light sensitive silver halide emulsion layer and a light insensitive hydrophilic colloid layer, wherein said silver halide emulsion layer comprises a silver halide emulsion which has been subjected to desalting by ultrafiltration, at least one of the component layers containing a composite material comprising inorganic particles and a hydrophobic polymer, said silver halide emulsion comprising silver halide grains having an average grain size of about 0.15 to about 5.0 microns.

5,851,748
PHOTOGRAPHIC MATERIALS AND PROCESS COMPRISING A PARTICULAR ACYLACETANILIDE YELLOW DYE-FORMING COUPLER

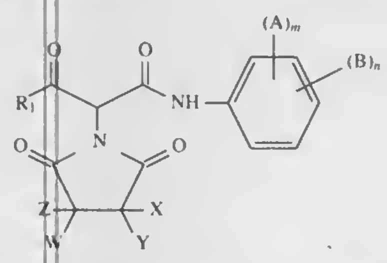
Ping-Wah Tang; Stanley W. Cowan; David J. Decker, all of Rochester, and Thomas A. Rosiek, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1996, Ser. No. 766,194

Int. Cl.^{6} G03C *1/08;7/26;7/32*

U.S. Cl. 430—557 **18 Claims**

1. A photographic element comprising a silver halide emulsion layer having associated therewith a yellow dye-forming coupler having the formula:



wherein X, Y, Z, W are independently selected from the group consisting of H, alkyl, aryl, halogen, alkoxy and aryloxy groups, provided that X and W may join to form a saturated ring:

Each A is selected from the group consisting of halogen, alkoxy and aryloxy groups;

m is an integer from 1 to 3:

each B is independently selected from the group consisting of —C(O)OR$_2$ and —NHSO$_2$R$_3$ wherein R$_2$ and R$_3$ are independently selected from the group consisting of alkyl and aryl groups;

n is an integer from 1 to 3: and

R$_1$ is a substituent group.

5,851,749
COLOR-DEVELOPING AGENT, SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND IMAGE-FORMING METHOD

Atsuhiro Okawa; Toshiyuki Makuta, and Toshiki Taguchi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

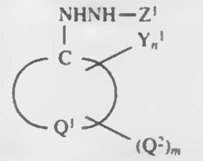
Filed Nov. 26, 1996, Ser. No. 757,730

Claims priority, application Japan, Nov. 30, 1995, 7-334183

Int. Cl.^{6} G03C *1/42*

U.S. Cl. 430—566 **26 Claims**

1. A silver halide photographic light-sensitive material, comprising a compound represented by formula (I) that is contained in at least one hydrophilic colloid layer provided on a base:



Formula (I)

wherein Z^1 represents a carbamoyl group, Q^1 represents a group of nonmetal atoms required to form a 5- or 6-membered aromatic ring together with the C, Q^2 represents a heterocyclic residue, Y^1 represents a group capable of substitution onto the aromatic ring, m is 1 or 2, and n is an integer of 0 to 3.

5,851,750
SILVER HALIDE GRAIN, SILVER HALIDE EMULSION AND PREPARATION METHOD THEREOF

Naoko Furusawa; Masako Kuramoto; Kazuyoshi Ichikawa, and Haruhiko Masutomi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 13, 1996, Ser. No. 710,197

Claims priority, application Japan, Sep. 21, 1995, 7-243156

Int. Cl.^{6} G03C *1/005;1/08*

U.S. Cl. 430—567 **7 Claims**

1. A silver halide emulsion comprising silver halide grains, wherein at least 50% of the total number of the grains is accounted for by silver halide grains each having one or more chemical sensitization clusters, a largest size of the clusters being not less than 1.2 nm and less than 4.0 nm.

5. A method for preparing a silver halide emulsion comprising the steps of

forming a silver halide grain emulsion by mixing an aqueous silver salt solution and aqueous halide solution, and

chemically ripening the silver halide emulsion with a chemical sensitizer,

wherein, in the step of chemical ripening, the rate of chemical ripening being so controlled that the following requirement is satisfied,

$1.24\times10^2 \leqq \epsilon 1.53\times10^7$

wherein ϵ is a relative aggregation rate constant represented by the following equation,

$$\epsilon = N \cdot k/(2 \cdot ks)$$

wherein N is an addition amount of the chemical sensitizer in number per μm^2 of the grain surface; k is an aggregation rate constant in μm^2/min.; and ks is a reaction rate constant of the chemical sensitizer in min.$^{-1}$.

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5,851,751
PHOTOGRAPHIC MATERIALS WITH IMPROVED IMAGE TONE

Julian M. Wallis, Cheshunt; Robert J. D. Nairne, Bishops Stortford, both of Great Britain, and Alexis Zinn-Warner, Maplewood, Minn., assignors to Imation Corp., Oakdale, Minn.

Filed Jan. 21, 1997, Ser. No. 784,671

Claims priority, application United Kingdom, Feb. 21, 1996, 9603658

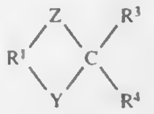
Int. Cl.^{6} G03C *1/035;1/10;1/005*

U.S. Cl. 430—567 **10 Claims**

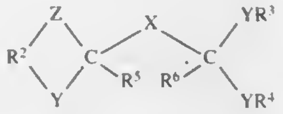
1. A silver halide emulsion of average grain size 0.2 µm or less comprising:

(a) silver halide grains having a core and an outer shell, wherein the core comprises at least 85 mole % of the total silver halide content of the grain, at least 50 mole % of the silver halide in the core is silver bromide, and the outer shell comprises silver halide of which greater than 50 mol % is silver chloride; and

(b) a toning agent comprising a compound of formula I or II:



I



II

wherein:

R^1 and R^2 independently represent the atoms selected from C, N, O and S necessary to complete a 5, 6, or 7 membered ring;

R^3 and R^4 independently represent H, alkyl or aryl groups, or together represent the atoms selected from C, N, O and S necessary to complete a 5, 6 or 7 membered cyclic ring but are not both H;

R^5 and R^6 independently represent H or alkyl groups, or together represent the atoms selected from C, N, O and S necessary to complete a 5, 6 or 7 membered ring;

X represents a bond or a divalent linking group;

each Y may be the same or different and is selected from the group consisting of O, NR^7, S, and Se, where R^7 is H or alkyl of up to 5 carbon atoms; and

Z is S or Se.

5,851,752
SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING HOLE-INJECTION-TYPE SENSITIZING DYE(S) AND SUPERSENSITIZING COMPOUND(S)

Mitsuhiro Uchida, and Shunji Takada, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 7, 1995, Ser. No. 499,187

Claims priority, application Japan, Jul. 11, 1994, 6-180430

Int. Cl.^{6} G03C *1/29;1/34*

U.S. Cl. 430—572 **19 Claims**

1. A silver halide photographic material comprising a support having provided thereon at least one silver halide emulsion layer comprising a substantially surface-latent-image silver halide emulsion which comprises hole-injection sensitizing dye(s) in an amount of 4×10^{-4} mol or more per mol of silver in the emulsion and further comprises supersensitizing compound(s), wherein one of the hole-injection sensitizing dye(s) and one of the supersensitizing compound(s) satisfy the following requirements:

(1) when both said one of the hole-injection sensitizing dye(s) and said one of the supersensitizing compound(s) have been adsorbed onto the silver halide grains constituting the emulsion, the emulsion has a maximum absorption wavelength of longer than 545 nm;

(2) when said one of the hole-injection sensitizing dye(s) is singly adsorbed onto a standard, negative silver iodobromide emulsion which is employed for the intended evaluation and which gives a surface negative image by exposure, the relative quantum yield of the negative sensitivity of the emulsion is smaller than 0.6;

(3) when both said one of the hole-injection sensitizing dye(s) and said one of the supersensitizing compound(s) are adsorbed onto a standard, internally fogged reversal silver iodobromide emulsion which is employed for the intended evaluation and which gives an internal reversal image by exposure, the degree of intrinsic desensitization of the reversal sensitivity of the emulsion is smaller than 0.2 as log E; and

(4) when both said one of the hole-injection sensitizing dye(s) and said one of the supersensitizing compound(s) are adsorbed onto the standard, internally fogged reversal silver iodobromide emulsion referred to in (3), the relative quantum yield of the reversal sensitivity of the emulsion is 0.8 or more.

5,851,753
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

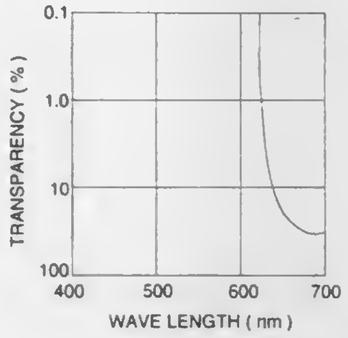
Taketoshi Yamada; Norio Miura; Naoyo Suzuki; Hiroshi Kashiwagi, and Hideki Takiguchi, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Oct. 8, 1996, Ser. No. 727,147

Claims priority, application Japan, Oct. 13, 1995, 7-265697; Oct. 19, 1995, 7-271244; Jan. 11, 1996, 8-003291

Int. Cl.^{6} G03C *1/09;1/18;1/34*

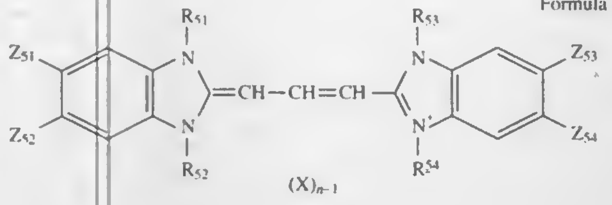
U.S. Cl. 430—603 **9 Claims**



1. A monochromatic silver halide photographic light-sensitive material comprising a support, and a silver halide emulsion layer and a non-light-sensitive hydrophilic colloid layer provided on the support, wherein a compound represented by Formula 1 is contained in either said emulsion layer, said colloid layer or both said emulsion layer and said colloid layer, and said silver halide emulsion is sensitized by a sulfur sensitizer, a gold sensitizer, and a selenium compound or a tellurium compound and said emulsion contains tabular silver halide grains having an average aspect ratio of not less than 2.0, said grains accounting for at least 50% of a total grain projected area of said emulsion, and said tabular grains have an average silver iodide content of not more than 1 mole %, and said emulsion layer contains a spectral sensitizing dye represented by Formula 5;

$$R_{11}—(S)_n—R_{12}$$

wherein R_{11} and R_{12} each represent an aliphatic, an aromatic group or a heterocyclic group, the groups represented by R_{11} and R_{12} may be the same or different and they may be bonded with together to form a ring; and n is an integer of from 2 to 6



Formula 5

wherein R_{51} and R_{53} are each an alkyl group, which may have a substituent; R_{52} and R_{54} are each a lower alkyl group having 1 to 4 carbon atoms and at least one of R_{52} and R_{54} is a lower alkyl group having 1 to 4 carbon atoms which has a hydrophilic substituent; X is an ion necessary for neutralizing the intramolecular electric charge, n is 1 or 2, provided that n is 1 when an intramolecular salt is formed; Z_{51}, Z_{52}, Z_{53} and Z_{54} are each a halogen atom, an alkyl group, an alkoxyl group, an alkylthio group, a trifluoromethyl group, a cyano group, a carboxyl group, an alkoxycarbonyl group, an acyl group, a sulfonyl group, a carbamoyl group, a sulfamoyl group, an acetylamino group, an acetyloxy group or an aryl group.

5,851,754
SILVER HALIDE PHOTOGRAPHIC MATERIAL AND HYDROXAMIC ACID-BASE COMPOUND FOR USE THEREIN

Hisashi Mikoshiba; Hiroo Takizawa; Junichiro Hosokawa; Yoshio Ishii; Keiji Mihayashi; Masakazu Morigaki, and Mamoru Sakurazawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

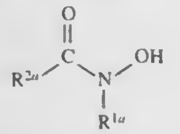
Filed Jun. 6, 1996, Ser. No. 659,722

Claims priority, application Japan, Jun. 7, 1995, 7-463085; Jun. 12, 1995, 7-167836; Sep. 5, 1995, 7-250141

Int. Cl.^{6} G03C *1/34*

U.S. Cl. 430—607 **10 Claims**

1. A silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein said silver halide photographic material contains a compound represented by formula (IA):



(IA)

wherein R^{1a} represents a hydrogen atom, a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, a substituted or unsubstituted alkenyl group having from 2 to 20 carbon atoms or a substituted or unsubstituted aryl group having from 6 to 20 carbon atoms;

R^{2a} represents an alkenyl group having a total carbon number of 4 or more or a cycloalkenyl group having a total carbon atom number of 6 or more;

provided that when R^{2a} is a styryl group, R^{1a} is a substituted or unsubstituted alkyl group having from 1 to 20 carbon atoms, a substituted or unsubstituted alkenyl group having from 2 to 20 carbon atoms or a substituted or unsubstituted aryl group having from 6 to 20 carbon atoms; and

when R^{2a} is an alkenyl group having a total carbon number of 17 or more, R^{1a} is a hydrogen atom, a substituted or unsubstituted alkyl group having 7 or more carbon atoms, a substituted or unsubstituted alkenyl group having 7 or more carbon atoms or a substituted or unsubstituted aryl group having from 6 to 20 carbon atoms.

5,851,755
PHOTOTHERMOGRAPHIC MATERIAL COMPRISING AT LEAST ONE DYE ABSORBING ELECTROMAGNETIC RADIATION IN THE WAVELENGTH RANGE 700 TO 1100NM

Herman Uytterhoeven, Bonheiden; Johan Loccufier, Zwijnaarde; Geert Deroover, Kessel-Lo, and Paul Callant, Edegem, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

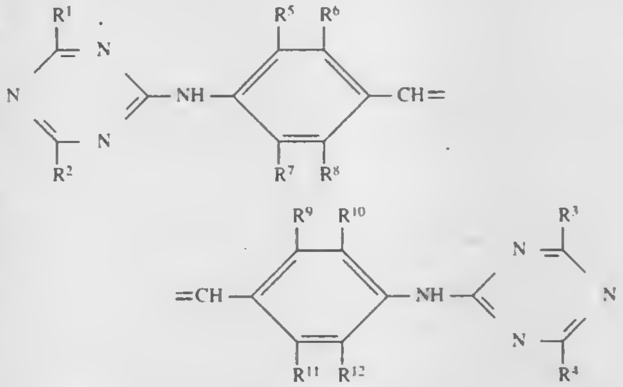
Filed Jul. 8, 1997, Ser. No. 889,404

Claims priority, application European Pat. Off., Jul. 24, 1996, 96202107.7

Int. Cl.^{6} G03C *1/498;1/494*

U.S. Cl. 430—619 **9 Claims**

1. A process for producing a photothermographic recording material, having a photo-addressable thermally developable element containing a substantially light-insensitive organic silver salt, photosensitive silver halide in catalytic association with said substantially light-insensitive organic silver salt and spectrally sensitized to infra-red light with a dye, a supersensitizer for said dye, a reducing agent in thermal working relationship with said substantially light-insensitive organic silver salt and a binder, comprising the steps of: (i) producing an aqueous dispersion or aqueous dispersions comprising said substantially light-insensitive organic silver salt, said photosensitive silver halide spectrally sensitized to infra-red light with said dye, said supersensitizer for said dye, said reducing agent and said binder; (ii) coating said aqueous dispersion or aqueous dispersions onto a support, wherein said binder includes a water soluble polymer, a water-dispersible polymer or a water soluble polymer and a water-dispersible polymer; said dye absorbs electromagnetic radiation in the wavelength range from 700 to 1100 nm; and said supersensitizer is a stilbene compound represented by formula (I):



wherein R^1, R^2, R^3 and R^4 are independently hydrogen or alkyl, aryl, aralkyl, alkaryl, alkoxy or aryloxy groups; and R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11} and R^{12} are independently hydrogen and alkyl, alkoxy, carboxy or sulfo groups.

5,851,756
METHOD FOR IN VITRO PROLIFERATION OF DENDRITIC CELL PRECURSORS AND THEIR USE TO PRODUCE IMMUNOGENS

Ralph M. Steinman, Westport, Conn.; Kayo Inaba, Kyoto, Japan, and Gerold Schuler, Innsbruck, Austria, assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 40,677, Mar. 31, 1993, abandoned, which is a continuation-in-part of Ser. No. 981,357, Nov. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 861,612, Apr. 1, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,230

Int. Cl.^{6} C12N *5/00;5/02;5/08;* **A01N** *1/02*

U.S. Cl. 435—2 **38 Claims**

1. A method of producing a population of dendritic cell precursors from proliferating cell cultures comprising:

a) providing a tissue source comprising dendritic cell precursors;

b) treating the tissue source from (a) to increase the proportion of dendritic cell precursors to obtain a population of cells suitable for culture in vitro;

c) culturing the tissue source on a substrate in a culture medium comprising GM-CSF to obtain nonadherent cells and cell clusters;

d) subculturing the nonadherent cells and cell clusters to produce cell aggregates comprising proliferating dendritic cell precursors;

e) serially subculturing the cell aggregates at least one time to enrich the proportion of dendritic cell precursors.

5,851,757

INDICATOR CELL LINE FOR DETECTING RNA VIRUSES AND METHOD THEREFOR

Paul D. Olivo, and Sondra Schlesinger, both of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 171,214, Dec. 21, 1993, Pat. No. 5,591,579. This application Dec. 31, 1996, Ser. No. 774,406

Int. Cl.^{6} C12N *5/10;* **C12Q** *1/02;1/04;1/70*

U.S. Cl. 435—4 **14 Claims**

1. A method for the detection of an active RNA virus that replicates through an RNA intermediate, the method comprising:

incubating a specimen suspected of containing said RNA virus with a mammalian cell stably transformed with a DNA molecule containing a promoter operably linked to a cDNA of a structurally defective genome of said RNA virus, wherein said cDNA contains a structural coding sequence encoding a reporter gene product, wherein said promoter is capable of causing transcription of said cDNA into an RNA molecule in a mammalian cell, and wherein the transcribed RNA molecule is replicated only in the presence of said virus; and

detecting expression of said reporter gene product, wherein an increased level of expression of said reporter gene product over that in uninfected cells indicates the presence of said RNA virus in said specimen.

5,851,758

CYTOPATHIC REPLICATION OF HEPATITIS C VIRUS IN A NEW CELL LINE

Roberto P. Fernandez-Larsson, Silver Spring, Md., assignor to Childrens Research Institute, Washington, D.C.

Filed Oct. 25, 1995, Ser. No. 547,842

Int. Cl.^{6} C12Q *1/70;* **G01N** *33/53;* **C12N** *5/22;* **A61K** *39/42*

U.S. Cl. 435—5 **10 Claims**

1. A cloned human lymphoid T-cell line, obtained by subcloning H9 cells, wherein said clone exhibits a cytopathic effect upon infection with hepatitis C virus ("HCV"), wherein said cytopathic effect is selected from the group consisting of cell syncytia, cell degeneration and cell death.

5,851,759

HETERODUPLEX TRACKING ASSAY (HTA) FOR GENOTYPING HCV

Amy J. Weiner, Benicia, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Filed Apr. 19, 1996, Ser. No. 634,797

Int. Cl.^{6} C12Q *1/70;1/68;* **C12P** *19/34;* **G07H** *21/04*

U.S. Cl. 435—5 **23 Claims**

12. A method of determining the HCV genotype of an HCV strain, said method comprising the steps of:

(a) subjecting said HCV strain to one or more stages of PCR, wherein the one or more stages of PCR utilizes a sense probe from the core region of the HCV genome and an antisense probe from the E1 region of the HCV genome, or a sense probe from the E1 region of the HCV genome and an antisense probe from the core region of the HCV genome;

(b) forming a heteroduplex by denaturing and reannealing mixtures of the amplified product obtained in step (a) with DNA or RNA fragments of a known HCV genotype, said fragments comprising a region of the HCV genome between the core and E1 regions;

(c) comparing the mobility of said heteroduplex on a system that separates by size with the mobility of a homoduplex of the DNA or RNA fragments of known genotype to determine the genotype of the HCV strain.

5,851,760

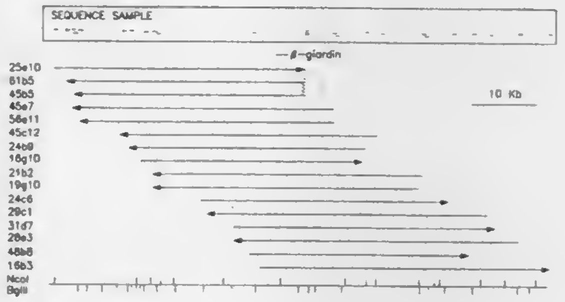
METHOD FOR GENERATION OF SEQUENCE SAMPLED MAPS OF COMPLEX GENOMES

Glen A. Evans, San Marcos, and Michael W. Smith, San Diego, both of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation-in-part of Ser. No. 78,471, Jun. 15, 1993, abandoned. This application Sep. 7, 1993, Ser. No. 117,952

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **20 Claims**



1. A method for sequencing complex genomes, said method comprising:

(1) sequencing at least 100 nucleotides from the end of each member of a library of cosmid clones,

wherein said cosmid clones are prepared by inserting genomic DNA fragments into cosmid vectors, and

wherein the cosmid vectors include sequences of nucleotides that flank at least one end of the inserted DNA, and that serve as transcription initiation sites for the synthesis of nucleic acids specific to the ends of the inserted DNA,

(2) determining the relative spatial relationship between the cosmid clones, and

(3) assembling a sequence sampled map by correlating the end-specific nucleotide sequence information with the relative spatial relationship between the cosmids.

5,851,761

PROBES, KITS AND METHODS FOR THE DETECTION AND DIFFERENTIATION OF MYCOBACTERIA

Ruth Anne McAdam, Bronx, N.Y.; Jeremy Watson Dale, Guildford, United Kingdom; Zainul Fadziruddin Bin Zainuddin, Penang, Malaysia, and David Catty, Birmingham, England, assignors to Cogent Limited, United Kingdom

Division of Ser. No. 752,661, Oct. 18, 1991, abandoned. This application Dec. 1, 1993, Ser. No. 160,524

Claims priority, application United Kingdom, Feb. 22, 1989, 8903968; Jan. 9, 1990, 9000411

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **12 Claims**

1. A nucleotide probe for the diagnosis and/or epidemiological study of Mycobacterial infection that specifically hybridizes to nucleic acid from members of the *Mycobacterium tuberculosis* complex but not to nucleic acid from mycobacteria that are not members of the complex, wherein said nucleotide probe comprises, or hybridizes with, *Mycobacterium tuberculosis* DNA from recombinant phage EMBL4/A-3 (accession number NCTC 12380).

5,851,762

GENOMIC MAPPING METHOD BY DIRECT HAPLOTYPING USING INTRON SEQUENCE ANALYSIS

Malcolm J. Simons, Glenluce, Australia, assignor to Gene Type AG, Switzerland

Continuation of Ser. No. 971,856, Mar. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 550,939, Jul. 11, 1990, abandoned. This application Aug. 22, 1994, Ser. No. 293,779

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **23 Claims**

1. A genomic mapping method for identifying informative, polymorphic markers and using said markers to identify a chromosomal region associated with a trait, comprising:

(a) obtaining a first set of genomic DNA samples from a plurality of individuals representing the diversity of a general population;

(b) amplifying a non-coding sequence from a selected chromosomal region in each of said first set of genomic DNA samples to produce a first set of amplified DNA sequences;

(c) analyzing said first set of amplified DNA sequences to determine whether said non-coding sequence comprises a plurality of polymorphic regions, wherein said plurality of polymorphic regions defines a plurality of haplotypic patterns detectable by a selected technique for analyzing genetic variation;

(d) determining the number of haplotypic patterns associated with said non-coding sequence that are distinct as measured by said selected technique, wherein each haplotypic pattern is a marker for a haplotype of said selected chromosomal region;

(e) repeating steps (a)–(d) to identify a plurality of non-coding sequences, each having a plurality of associated haplotypic patterns, at a series of selected chromosomal regions;

(f) obtaining a second set of genomic DNA samples from a plurality of individuals with the trait from said general population, wherein said plurality of individuals with the trait is not derived from a single family;

(g) amplifying said plurality of non-coding sequences from said series of selected chromosomal regions in each genomic DNA sample in said second set to produce a second set of amplified DNA sequences;

(h) detecting the haplotypic pattern for each amplified DNA sequence in said second set to identify the haplotype of each corresponding selected chromosomal region;

(i) determining the degree of restriction in haplotype heterogeneity at each selected chromosomal region for said second set of amplified DNA sequences by comparing the number of haplotypic patterns identified for each selected chromosomal region for said first set of amplified DNA sequences and said second set of amplified DNA sequences; and

(j) comparing the degree of haplotype heterogeneity restriction across said selected chromosomal regions, to identify a subseries of adjacent selected chromosomal regions having a greater degree of haplotype heterogeneity restriction at a central selected chromosomal region in said subseries than at selected chromosomal regions at the ends of said subseries as an indication that said central selected chromosomal region is associated with the trait.

5,851,763

RAPID DETECTION OF ANTIBIOTIC RESISTANCE IN MYCOBACTERIUM TUBERCULOSIS

Beate Heym, Ville d'Avray; Stewart Cole, Clamart, both of France; Douglas Young, Ruislip; Ying Zhang, London, both of United Kingdom; Nadine Honore, Colombes, France; Amalio Telenti, Gerzensee, and Thomas Bodmer, Ersigen, both of Switzerland, assignors to Institut Pasteur, Paris, France

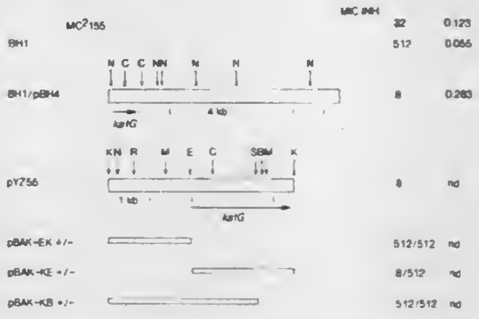
PCT No. PCT/EP93/01063, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO93/22454, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 313,185

Claims priority, application France, Sep. 17, 1992, 92 11098; Apr. 16, 1993, 93-04545

Int. Cl.^{6} C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04;21/00*

U.S. Cl. 435—6 **21 Claims**



1. A process for the detection of a resistance to an antibiotic in a mycobacterium which comprises detecting a mutation in a gene selected from the group consisting of the katG (SEQ ID NO:45) gene or fragment thereof, the rpoB (SEQ ID NO: 59) gene or fragment thereof and the rpsL (SEQ ID NO:63) gene or fragment thereof.

5,851,764

HUMAN PROSTATE TUMOR INDUCING GENE-1 AND USES THEREOF

Paul B. Fisher, Scarsdale, and Ruoqian Shen, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 351,888, Dec. 8, 1994, which is a continuation of Ser. No. 225,493, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 106,323, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 603,804, Oct. 25, 1990, abandoned. This application Jan. 11, 1995, Ser. No. 371,377

Int. Cl.^{6} C12Q *1/68;* **C07H** *21/04;* **G01N** *33/00;* **C12N** *15/00*

U.S. Cl. 324—6 **8 Claims**

1. An isolated mammalian nucleic acid molecule having the sequence of Prostate Tumor Inducing Gene-1 as set forth in SEQ. ID No. 16.

5,851,765

DNA SEQUENCING BY MASS SPECTROMETRY VIA EXONUCLEASE DEGRADATION

Hubert Köster, Concord, Mass., assignor to Sequenon, Inc., San Diego, Calif.

Division of Ser. No. 388,171, Feb. 10, 1995, Pat. No. 5,622,824, which is a continuation of Ser. No. 034,738, Mar. 19, 1993, abandoned. This application May 30, 1995, Ser. No. 454,527

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *19/00;21/04*

U.S. Cl. 435—6 **28 Claims**

1. A multiplex mass spectrometric method for simultaneously determining the sequence of at least two different nucleic acids concurrently, comprising the steps of:

(i) obtaining multiple copies of the at least two different nucleic acids, wherein at least one of the at least two different nucleic acids comprises mass modified nucleotides;

(ii) concurrently cleaving the at least two different nucleic acids unilaterally from a first end to a second end with an exonuclease to generate sequentially released individual nucleotides and optionally, at least two different sets of nucleic acid fragments;

(iii) identifying each of the sequentially released nucleotides by mass spectrometry or determining the molecular weight values of each of the sets of nucleic acid fragments by mass spectrometry; and

(iv) determining the sequence of the at least two different nucleic acids based on the molecular weight values of the sequentially released individual nucleotides or the sets of nucleic acid fragments.

5,851,766

PROCESS FOR ISOLATING CHEMICALLY REGULATABLE DNA SEQUENCES

John A. Ryals, Durham, N.C., and Christian Harms, Bad Krozingen, Germany, assignors to Novartis Finance Corporation, New York, N.Y.

Filed May 31, 1995, Ser. No. 456,262

Int. Cl.^{6} C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **14 Claims**

1. A process for isolating a chemically regulatable DNA promoter fragment from the 5' flanking region of a chemically regulatable gene in a plant tissue containing said gene, which process comprises the steps of:

(a) activating expression in said plant system of RNA from the chemically regulatable gene bv applying a chemical regulator to said plant tissue;

(b) isolating said RNA;

(c) differentially screening a genomic library for a genomic clone that corresponds to said RNA and that is less abundant or absent in isolated from control plant tissue that is not activated;

(d) isolating said genomic clone;

(e) subcloning the chemically regulatable gene from said genomic clone; and

(f) functionally mapping said chemically regulatable DNA promoter fragment.

5,851,767

DETECTION OF PROKARYOTIC ORGANISM BY DNA HYBRIDIZATION

Eric J. Stanbridge, Corona Del Mar, Calif., and Ulf Gobel, Freiberg, Germany, assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 136,723, Oct. 14, 1993, abandoned, which is a continuation of Ser. No. 20,874, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 799,856, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 191,852, May 6, 1988, abandoned, which is a continuation of Ser. No. 707,725, Mar. 4, 1985, abandoned. This application Jun. 6, 1995, Ser. No. 469,600

Int. Cl.^{6} C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **63 Claims**

1. A method for detecting the presence of mycoplasma specific nucleic acids, which comprises:

contacting a medium, which may contain a nucleic acid or nucleic acid fragment from said mycoplasma having said particular nucleotide sequence, with an oligonucleotide, said oligonucleotide comprising a nucleotide sequence complementary to said particular nucleotide sequence, whereby said oligonucleotide hybridizes with any nucleic acid or nucleic acid fragment from said mycoplasma which may be present in said medium; and

detecting the presence of any nucleic acid or nucleic acid fragment hybridized with said oligonucleotide; wherein said particular nucleotide sequence includes at least one of the following mycoplasma-specific sequence regions or a sequence region, of at least nine nucleotides, complementary to at least one of the following sequences: 5'AACACGTATC3', 5'CGAATCAGCTATGTCG3', 5'GAGGTT-AAC3', 5'ATCCGGATTTATT3', 5'TCTCAGTTCGGATTGA3', 5'AGGTGGTGCATGGTTG3', 5'TCCTGGCTCAGGAT3', 5'ATACATAGGT3', 5'AACTATGTGC3', 5'AATTTTTCACAATG3', 5'TCTCGGGTCT3', and 5'TAGATATATG3', wherein T represents thymine, G represents guanine, A represents adenine, C represents cytosine and - indicates a nucleotide deletion within the sequence; wherein said oligonucleotide hybridizes with the nucleic acid or nucleic acid fragment from mycoplasma but not nucleic acids from eukaryotic or from other prokaryotic organisms, and wherein said oligonucleotide comprises at least nine nucleotides but is less than the length of mycoplasma rRNA or the nucleic acid sequence encoding mycoplasma rRNA.

5,851,768

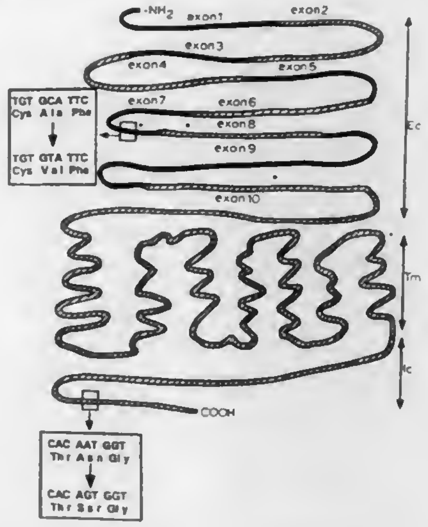
METHOD FOR DIAGNOSIS OF OVARIAN DYSGENESIS

Albert de la Chapelle, Helsinki; Ilpo Huhtaniemi, Turku, and Kristiina Aittomäki, Helsinki, all of Finland, assignors to Helsinki University Licensing, Ltd., Helsinki, Finland

Filed Sep. 20, 1995, Ser. No. 531,070

Int. Cl.^{6} C12Q *1/68;* C12P *19/34;* C07H *21/02;21/04*

U.S. Cl. 435—6 **19 Claims**



1. A method for diagnosing ovarian dysgenesis in a female patient, comprising the steps of:

obtaining a cell sample from a female patient;

isolating nucleic acids from said cell sample;

amplifying a portion of said nucleic acids, said portion encoding a receptor for follicle-stimulating hormone, thereby generating amplified DNA;

exposing said amplified DNA to a restriction endonuclease selected from the group consisting of BsmI and restriction endonucleases having a recognition site which overlaps that of BsmI, under conditions wherein said restriction endonuclease specifically cleaves DNA at its recognition site;

detecting polynucleotide restriction fragments of said amplified DNA; and

diagnosing ovarian dysgenesis from said restriction fragments, wherein ovarian dysgenesis is correlated with a C to T mutation in codon 189 of DNA encoding a human receptor for follicle-stimulating hormone, said mutation eliminating a recognition site of said restriction endonuclease, whereby the absence of restriction fragments that are indicative of cleavage at said recognition site by said restriction endonuclease is an indication of ovarian dysgenesis.

5,851,769

QUANTITATIVE DNA FIBER MAPPING

Joe W. Gray, San Francisco, and Heinz-Ulrich G. Weier, Oakland, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Sep. 27, 1995, Ser. No. 534,479

Int. Cl.^{6} C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **13 Claims**

1. A method of treating a nucleic acid fiber immobilized to a solid support comprising:

a) providing:

i) a stretched nucleic acid fiber having a sequence immobilized to a solid support; and

ii) one or more labeled probes containing sequences essentially complementary to said sequence of said immobilized nucleic acid fiber;

b) reacting said immobilized nucleic acid fiber with said probes under conditions wherein said probes are capable of binding to essentially complementary sequences present on said nucleic acid fiber and wherein no substantial background is produced; and

c) detecting the presence of probes bound to said nucleic acid fiber.

5,851,770

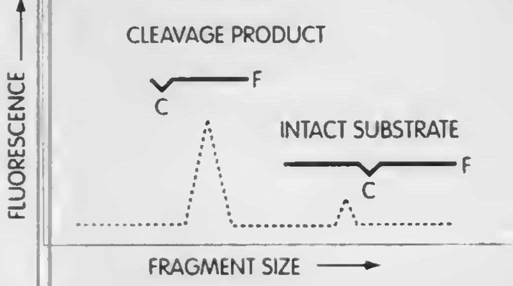
DETECTION OF MISMATCHES BY RESOLVASE CLEAVAGE USING A MAGNETIC BEAD SUPPORT

Jeff Babon; Rima Youil, both of Melbourne, Australia; Jay Stoerker, West Chester; Anne Huff, Collegeville, both of Pa., and Richard G. H. Cotton, Melbourne, Australia, assignors to Variagenics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 522,582, Sep. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 232,530, Apr. 25, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,404

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **29 Claims**



1. A method for detecting one or more mismatches between a first and a second nucleic acid, said first and said second nucleic acids being capable of preferentially hybridizing, said method comprising:

a) providing a magnetic bead to which is bound, through a specific binding pair, a duplex comprising said first and said second nucleic acids, said duplex being further bound to a detectably labelled reagent;

b) separating said magnetic bead and bound products from the remainder of a sample containing said magnetic beads;

c) contacting said magnetic bead-bound nucleic acid with a resolvase capable of recognizing at least one single base pair mismatch in a heteroduplex, under conditions which permit said resolvase to cleave said heteroduplex; and

d) analyzing said product of step (c), the presence of a cleavage product being an indication of a mismatch between said first and said second nucleic acids.

5,851,771

CHEMILUMINESCENT 1,2-DIOXETANES

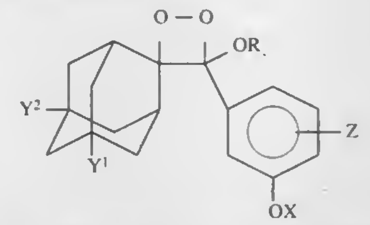
Irena Bronstein, Newton; Brooks Edwards, Cambridge, and Alison Sparks, North Andover, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

Continuation of Ser. No. 57,903, May 7, 1993, Pat. No. 5,538,847, which is a continuation-in-part of Ser. No. 806,928, Dec. 12, 1991, Pat. No. 5,330,900, which is a division of Ser. No. 574,786, Aug. 30, 1990, Pat. No. 5,112,960, which is a continuation-in-part of Ser. No. 559,152, Jul. 25, 1990, abandoned, which is a division of Ser. No. 367,772, Jul. 17, 1989, abandoned, and Ser. No. 140,197, Dec. 31, 1987, abandoned. This application Jan. 19, 1996, Ser. No. 588,810

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **14 Claims**

1. A dioxetane of the formula (I):



(I)

wherein Y^1 and Y^2 are independently H, a hydroxyl group, a halogen, an unsubstituted lower alkyl group, a hydroxy lower alkyl group, a halo lower alkyl group, a phenyl group, a halo phenyl group, an alkoxy phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group,

wherein R is C1-12 alkyl, aryl or aralkyl,

wherein X is an enzyme-labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, β-D- glucuronide, α-D-mannoside, β-D-mannoside, β-D-fructofuranoside, β-glucosiduronate, P-toluenesulfonyl-L-arginine ester, and P-toluenesulfonyl-L-arginine amide, and wherein Z is an electron-active group selected from the group consisting of electron withdrawing groups and electron-donating groups and occupies the four or five position on the phenyl ring.

5,851,772

MICROCHIP METHOD FOR THE ENRICHMENT OF SPECIFIC DNA SEQUENCES

Andrei Darievich Mirzabekov; Yuri Petrovich Lysov, both of Moscow, Russian Federation; Valentine Vladimirovich Shick, Hinsdale, Ill., and Svetlana Alekseevna Dubiley, Moscow, Russian Federation, assignors to University of Chicago, Chicago, Ill.

Filed Jan. 29, 1996, Ser. No. 593,345

Int. Cl.^{6} C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **19 Claims**

1. A method for enriching specific genetic sequences, comprising:

a) immobilizing a first set of oligonucleotide molecules at a plurality of positions on a first gel substrate, said first set of oligonucleotide molecules synthesized to complement base sequences of the genetic sequences;

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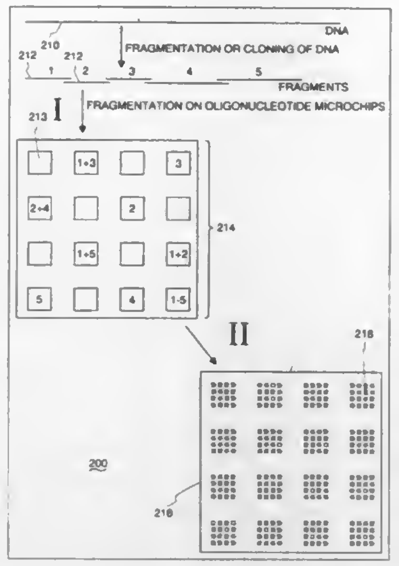
DNA
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212
FRAGMENTATION OR CLONING OF DNA
1
2
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FRAGMENTS
213
I
FRAGMENTATION ON OLIGONUCLEOTIDE MICROCHIPS
1+3
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2+4
2
1+5
1+2
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4
1-5
214
II
218
200
216

- b) contacting genetic material with said first set of oligonucleotides, said genetic material containing the specific genetic sequences, so as to allow formation of first duplexes of said first set of oligonucleotides and fragments of the specific genetic sequences;
- c) simultaneously isolating the fragments of the specific genetic material sequences from the duplexes formed via diffusion;
- d) labeling the now-isolated fragments with a fluorochrome;
- e) simultaneously contacting each now-labeled fragment with a second separate set of sequencing oligonucleotide molecules contained on a sequencing gel substrate, said sequencing set of oligonucleotide molecules which are complementary to subsequence regions of each now-labelled fragment, so as to allow for second duplexes to form between the subsequence regions and said sequencing set of oligonucleotide molecules; and
- f) isolating the subsequence regions, thereby enriching the specific genetic sequences.

5,851,773

METHODS OF IDENTIFYING INDUCIBLE INHIBITORS OF TRANSFORMATION PROGRESSION

Paul B. Fisher, Scarsdale, and Zao-zhong Su, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 209,478, Mar. 10, 1994, abandoned. This application Dec. 12, 1996, Ser. No. 764,743

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **11 Claims**

1. A method of isolating a progression suppressor gene which suppresses expression of a gene regulated by a long terminal repeat of a Moloney leukemia virus comprising:

- a) introducing DNA containing the long terminal repeat regulated protein kinase C B_1 gene of pMV7-PKC into a population of Ad5-transformed cells, E11 Cells;
- b) treating the cells resulting from step (a) with a DNA demethylating agent so as to induce the expression of at least one progression suppressor gene and thereby cause a subpopulation of the cells to selectively suppress the expression of the long terminal repeat regulated protein kinase C B_1 gene;
- c) selecting cells resulting from step (b) which express the progression suppressor gene;
- d) isolating mRNA from the cells resulting from step (c);
- e) comparing the mRNA so obtained with mRNA obtained from uninduced transformed cells so as to identify mRNA only expressed by the cells resulting from step (c); and
- f) isolating the gene encoding the mRNA identified in step e) so as to thereby identify the progression suppressor gene.

5,851,774

HUMAN MLF3 PROTEIN

Jennifer L. Hillman, Mountain View, and Surya K. Goli, Sunnyvale, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Feb. 25, 1997, Ser. No: 805,965

Int. Cl.^{6} C12Q *1/68;* **C07H** *21/00;21/02;21/04*

U.S. Cl. 435—6 **9 Claims**

1. An isolated and purified polynucleotide sequence encoding the polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,851,775

β-CATENIN, TCF-4, AND APC INTERACT TO PREVENT CANCER

Nick Barker, Utrecht; Hans Clevers, Ruysdaellaan, both of Netherlands; Kenneth W. Kinzler, Belair, Md.; Vladimer Korinek, Prague, Czech Rep.; Patrice J. Morin, Columbia, Md.; Andrew B. Sparks, and Bert Vogelstein, both of Baltimore, Md., assignors to Johns Hopkins University, Baltimore, Md., and Utrecht University, Netherlands

Filed Mar. 20, 1997, Ser. No. 821,355

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/53*

U.S. Cl. 435—6 **9 Claims**

1. A method of identifying candidate drugs for use in Familial Adenomatous Polyposis (FAP) patients, patients with Adenomatous Polyposis Coli (APC) or β-catenin mutations, or patients with increased risk of developing colorectal cancer, comprising the steps of:

- contacting a cell having no wild-type APC or a mutant β-catenin with a test compound, wherein said cell comprises a TCF-responsive reporter gene;
- measuring transcription of the Tcf-responsive reporter gene in said cell, wherein a test compound which inhibits the transcription of the reporter gene in said cell is a candidate drug for cancer therapy.

5,851,776

CONJUGATES AND ASSAYS FOR SIMULTANEOUS DETECTION OF MULTIPLE LIGANDS

Gunars E. Valkirs, Escondido, Calif., assignor to Biosite Diagnostics, Inc., San Diego, Calif.

Continuation of Ser. No. 685,084, Apr. 11, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,782

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.1 **25 Claims**

1. A conjugate capable of simultaneously detecting the presence or amount of at least two target ligands in a sample, and which avoids interference between ligands in a heterogenous assay, said conjugate comprising:

- a signal development element;
- at least two assay components coupled to said signal development element, each of said assay components capable of binding a complementary binding partner, wherein each of said assay components is either:
  - (a) similar in size or larger than its complementary binding partner,
  - (b) smaller than its complementary binding partner and coupled to a molecular structure that is similar in size or larger than the assay component's complementary binding partner, or
  - (c) smaller than its complementary binding partner and the assay component is aggregated to create an aggregate, such that the aggregate is similar in size or larger than the assay component's complementary binding partner; and,
- whereby in a heterogenous assay, said conjugate simultaneously detects the presence of each of said at least two target ligands in said sample.

5,851,777

HOMOGENEOUS SOL-SOL ASSAY

Thomas J. Hunter, Cooper City, Fla., and Ernest H. Pfadenhauer, Costa Mesa, Calif., assignors to Dade Behring Inc., Deerfield, Ill.

Filed Feb. 5, 1996, Ser. No. 596,825

Int. Cl.^{6} G01N *33/53;33/567;33/553;33/536*

U.S. Cl. 435—7.1 **36 Claims**

1. A method for detecting the presence of or determining the amount of a ligand in a fluid sample, the method comprising:

- (a) providing a first reagent comprising a sol particle having a detectable physical property bound (i) to the ligand or (ii) to a substance capable of specifically coupling with the ligand;
- (b) providing a second reagent comprising a sol particle having a detectable physical property bound to a substance capable of specifically coupling the ligand;
- (c) combining the first reagent, second reagent and; fluid sample, said second reagent coupling to the first reagent as a function of the presence of the ligand in the sample; and
- (d) detecting or determining during or after the reaction, a change in the physical property of the sol particles which detection or determination is related to the degree of coupling of the reagents and provides a qualitative or quantitative indication of the ligand in the fluid sample.

5,851,778

ANALYTE ASSAY USING A TRIFUNCTIONAL CONJUGATE

Chan S. Oh, Diamond Bar, and James C. Sternberg, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 410,014, Mar. 22, 1995, Pat. No. 5,661,019, which is a continuation of Ser. No. 911,827, Jul. 10, 1992, abandoned, which is a division of Ser. No. 768,118, Sep. 30, 1991, Pat. No. 5,168,057, which is a continuation of Ser. No. 103,093, Sep. 30, 1987, abandoned. This application Apr. 2, 1997, Ser. No. 832,143

Int. Cl.^{6} C12N *11/00;11/06;* **G01N** *33/547;33/532*

U.S. Cl. 435—7.9 **46 Claims**

1. An assay for determining an analyte of interest using a trifunctional conjugate having a first member, a second member and a third member, each member being attached to an organic spacer moiety, the organic spacer moiety being attached to all three members so that the first member is attached to the second member through covalent bonds, the first member is attached to the third member through covalent bonds, and the second member is attached to the third member through covalent bonds, wherein:

- a) the first member is a small molecule capable of noncovalently binding to a first member binding partner;
- b) the second member is a modulating member capable of noncovalently binding to a modulating member specific binding partner;
- c) the third member is a small molecule capable of noncovalently binding to a third member binding partner; and
- d) the organic spacer moiety is selected such that the binding of the modulating member to the modulating member binding partner prevents, by steric inhibition, at least one of the first member binding partner or the third member binding partner from binding to the first member or the third member, respectively,
- wherein the modulating member is selected from the group consisting of:
  - i) the same entity as the analyte of interest, and
  - ii) an analog to the analyte of interest, said analog having substantially the same specific binding activity as said analyte, the assay comprising the steps of:
- a) contacting a test sample, which may or may not contain the analyte of interest with:
  - i) the trifunctional conjugate;
  - ii) a limited quantity of the modulating member binding partner; and
  - iii) an excess of either or both of the first member binding partner and the third member binding partner; and
- b) detecting the amount of modulating member binding partner diverted away from the trifunctional conjugate to determine the presence of the analyte of interest in the sample.

5,851,779

METHOD FOR MEASURING CARBAMAZEPINE IN HUMAN SERUM

Chengrong Wang, Hockessin, Del., assignor to Dade Behring Inc., Deerfield, Ill.

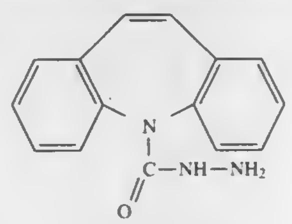
Divisicn of Ser. No. 473,810, Jun. 7, 1995, Pat. No. 5,688,944. This application Jul. 25, 1997, Ser. No. 900,768

Int. Cl.^{6} G01N *33/53;33/531;33/543;33/545*

U.S. Cl. 435—7.1 **2 Claims**

1. A method for measuring carbamazepine in human serum comprising the steps of

- (1) incubating
  - (a) a particle reagent covalently attached to at least one carfpe bamazepine hydrazide having the structural formula:



  - (b) serum suspected of containing carbamazepine; and.
  - (c) an agglutinating agent selected from the group consisting of an antibody to a carbamazepine compound, an antibody to an analog of carbamazepine of a carbamazepine compound, an antibody to an antigen analog of a carbamazepine compound; and
- (2) photometrically measuring increased particle size resulting from agglutination.

5,851,780

GENOMIC DNA OF HUMAN CHOLESTEROL 7α-HYDROXYLASE AND METHODS FOR USING IT

John Young Ling Chiang, Stow, Ohio, assignor to Northeastern Ohio University, Rootstown, Ohio

Continuation of Ser. No. 361,458, Dec. 21, 1994, which is a continuation of Ser. No. 135,488, Oct. 13, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,952

Int. Cl.^{6} C12Q *1/26*

U.S. Cl. 435—7.6 **3 Claims**

1. A method for screening a compound for its effect on non-truncated human CYP7 enzyme activity, comprising the steps of:

- (a) contacting catalytically active, truncated human CYP7 according to claim 1 with a compound; and
- (b) measuring the catalytic activity of the catalytically active, truncated human CYP7.

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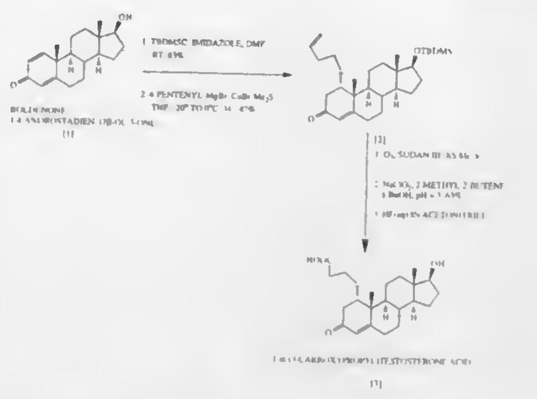
REAGENTS AND METHODS FOR THE DETECTION AND QUANTIFICATION OF TESTOSTERONE IN FLUID SAMPLES

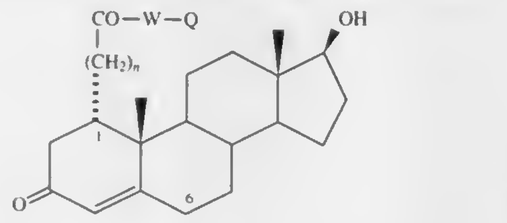
Maciej Adamczyk, Gurnee; Yon-Yih Chen, Mundelein, both of Ill.; John A. Walling, Charles City, Iowa; Bryan D. James, Chicago, and Sharon G. Artrip, Elmhurst, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 102,083, Aug. 3, 1993, Pat. No. 5,491,071.
This application Apr. 28, 1995, Ser. No. 432,439
Int. Cl.^{6} G01N *33/53*
U.S. Cl. 435—7.9 **21 Claims**



1. A competitive immunoassay method for the quantification of testosterone in a test sample, said method comprising the steps of:

(a) contacting said test sample with a Position 1 labeled reagent, and antibodies which are capable of binding said Position 1 labeled reagent and said analyte, to form a reaction solution, the Position 1 labeled reagent having the following formula:



wherein

Q is a detectable moiety, W is a linking moiety, and n is between 2 and 10, inclusively; and

(b) measuring the amount of said Position 1 labeled reagent in said reaction solution which is bound to said antibodies as a function of the amount of testosterone in said test sample.

5,851,782

INHIBITORS OF CERAMIDASE

Yusuf A. Hannun, Chapel Hill; Alicja Bielawska, Apex, both of N.C., and Charles McKay, Wilmington, Del., assignors to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 652,238, May 23, 1996. This application Nov. 8, 1996, Ser. No. 745,128
Int. Cl.^{6} A61K *31/70*
U.S. Cl. 435—7.71 **4 Claims**

1. A method of testing a compound for its ability to ilhibit mammalian alkaline ceramidase comprising

i) preparing a reaction mixture comprising said compound, mammalian alkaline ceramidase and ceramide, and incubating said mixture under conditions such that said alkaline ceramidase degrades ceramide to sphingosine in the absence of said compound, and

ii) measuring the level of degradation of said ceramide in the presence of said compound and comparing that level to a level of degradation of ceramide obtained in the absence of said compound

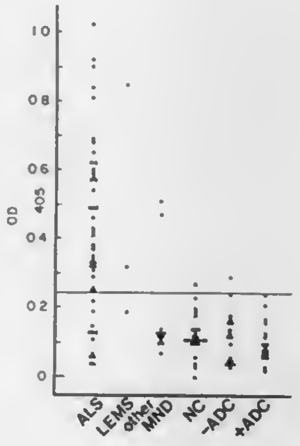
wherein a lower level of degradation of ceramide in the presence of said compound indicates that said compound inhibits said alkaline ceramidase.

5,851,783

METHOD FOR DIAGNOSING AMYOTROPHIC LATERAL SCLEROSIS

Stanley H. Appel; R. Glenn Smith, and Enrico Stefani, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 897,893, Jun. 12, 1992, abandoned.
This application Feb. 13, 1995, Ser. No. 388,179
Int. Cl.^{6} G01N *33/543;33/545;33/564;33/567*
U.S. Cl. 435—7.92 **11 Claims**



1. A method useful in the diagnosis of amyotrophic lateral sclerosis or the evaluation of the progression of that disease which comprises

(a) contacting purified L-type skeletal muscle calcium channel complex with a biological fluid obtained from an individual suspected of having or having amyotrophic lateral sclerosis for a time and under conditions sufficient for said calcium channel complex and anti-calcium channel complex antibodies that may be present in the biological fluid to form an antigen/antibody complex; and

(b) determining the presence or absence of said antigen/antibody complex to aid in the diagnosis or prognosis of amyotrophic lateral sclerosis, wherein the presence of said antigen/antibody complex is suggestive of amyotrophic lateral sclerosis in the individual or the presence of an elevated level of said antigen/antibody complex is suggestive of a more rapid progression of amyotrophic lateral sclerosis in the individual.

10. A method useful in the diagnosis of amyotrophic lateral sclerosis (ALS) or the evaluation of the progression of that disease which comprises

(a) contacting central N-type calcium channel complex with a biological fluid obtained from an individual suspected of having or having amyotrophic lateral sclerosis for a time and under conditions sufficient for said central N- type calcium channel complex and anti-calcium channel complex antibodies that may be present in the biological fluid to form an antigen/antibody complex; and

(b) determining the presence or absence of said antigen/antibody complex to aid in the diagnosis or prognosis of ALS, wherein the presence of said antigen/antibody complex is suggestive of amyotrophic lateral sclerosis in the individual or the presence of an elevated level of said antigen/antibody complex is suggestive of a more rapid progression of amyotrophic lateral sclerosis in the individual.

5,851,784

HUMAN PHOSPHODIESTERASE TYPE IVC, AND ITS PRODUCTION AND USE

Raymond John Owens, Henley-on-Thames; Martin John Perry, Surrey, and Simon Mark Lumb, Maidenhead, all of United Kingdom, assignors to Celltech Therapeutics, Limited, Berkshire, England

Filed Dec. 22, 1995, Ser. No. 577,492
Claims priority, application United Kingdom, Dec. 23, 1994, 9426227; Jun. 26, 1995, 9512996
Int. Cl.^{6} C12Q *1/44*
U.S. Cl. 435—19 **5 Claims**

1. A recombinant phosphodiesterase comprising the amino acid sequence of FIGS. 2A to 2C herein (SEQ. ID No: 32), or a catalytically active fragment thereof.

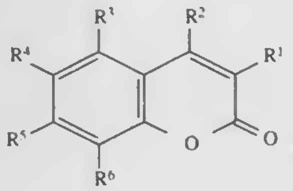
5,851,785

METHOD OF QUANTITATIVE DETERMINATION OF SUBSTANCES USING COUMARIN DERIVATIVES

Norihito Aoyama; Hideki Takenaka, and Akira Miike, all of Sunto-gun, Japan, assignors to Kyowa Medex Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 122,582, Oct. 1, 1993, abandoned.
This application Aug. 16, 1994, Ser. No. 288,738
Claims priority, application Japan, Feb. 4, 1992, 4-019043; WIPO, Feb. 3, 1993, PCT/JP93/00128
Int. Cl.^{6} C12Q *1/28*
U.S. Cl. 435—28 **35 Claims**

1. A method of quantitatively determining one of a peroxidation-active substance, hydrogen peroxide or a coumarin derivative represented by the formula:



in which R^1 represents hydrogen, C_{1-8} linear or branched alkoxy, substituted or unsubstituted phenyl, substituted or unsubstituted naphthyl, cyano, carboxyl, C_{1-8} linear or branched alkoxycarbonyl, C_{1-8} linear or branched alkanoyl, pyridyl or benzothiazolinyl;

R^2, R^3, R^4 and R^6 are independently hydrogen or substituted or unsubstituted C_{1-8} linear or branched alkyl; and

R^5 represents C_{1-8}, linear or branched alkoxy, nitro or substituted or unsubstituted amino; or R^1 and R^2 combined together form C_{2-4} alkylene or C_{2-4} alkenylene; or R^4 and R^5 combined together form $—CH_2CH_2CH_2NH—$, the substituted phenyl, naphthyl and alkyl being independently substituted with 1–5 cyano, halogen, amino independently substituted with 0 to 2 C_{1-8} linear or branched alkyl, substituted or unsubstituted heterocyclic group (wherein the heterocyclic group is independently triazinyl, pyrazinyl, pyridyl or pyrimidinyl independently substituted with 0 to 2 cyano, halogen, amino, alkoxy, hydroxy or C_{1-8} linear or branched dialkylamino), C_{1-8} linear or branched alkyl, C_{1-8} linear or branched alkoxy, carboxy, C_{1-8} linear or branched alkoxycarbonyl and hydroxy, and the substituted amino being independently substituted with 1 or 2 C_{1-8} linear or branched alkyl, triazinyl, pyrazinyl, pyridyl or pyrimidinyl; in a sample, comprising the steps of:

(A) selecting a known amount of two substances selected from the peroxidation-active substance, hydrogen peroxide and coumarin derivative or salt thereof;

(B) reacting said two substances with said sample having an unknown amount of the remaining substance from said peroxidation active substance, hydrogen peroxide, or coumarin derivative or salt thereof;

(C) determining the intensity of light emitted from the reacted solution; and

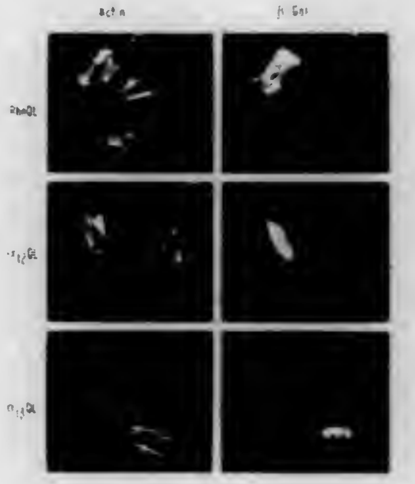
(D) comparing the intensity of said emitted light with a calibration curve.

5,851,786

PRODUCT AND PROCESS TO REGULATE ACTIN POLYMERIZATION

Gary L. Johnson, Boulder, Colo., assignor to National Jewish Center For Immunology and Respiratory Medicine, Denver, Colo.

Filed Sep. 27, 1995, Ser. No. 534,694
Int. Cl.^{6} C12Q *1/02;1/37;1/00;* G01N *33/53*
U.S. Cl. 435—29 **43 Claims**



1. A method to identify compounds capable of regulating actin polymerization, stress fiber formation or focal adhesion assembly in a cell, comprising:

(a) contacting a cell with a putative regulatory compound, wherein said cell includes a Rho protein and a G protein that can regulate the activity of said Rho protein, said G protein selected from the group consisting of G_{12} and G_{13}; and

(b) assessing the ability of said putative regulatory compound to regulate a biological function selected from the group consisting of actin polymerization, stress fiber formation or focal adhesion assembly.

5,851,787

NUCLEIC ACID ENCODING AMYLOID PRECURSOR-LIKE PROTEIN AND USES THEREOF

Wilma Wasco, Boston, Mass.; Keith Bupp, Orsay, France; Margaret Magendantz, Summerville, Mass.; Rudolph Tanzi, Canton, Mass., and Frank Solomon, Cambridge, Mass., assignors to The General Hospital Corporation, Boston, and The Massachusetts Institute of Technology, Cambridge, both of Mass.

Continuation-in-part of Ser. No. 930,022, Aug. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 872,642, Apr. 20, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 7,999
Int. Cl.^{6} C12N *15/09;15/12;5/06;* C07H *21/00*
U.S. Cl. 435—69.1 **9 Claims**

1. A recombinant nuleotide molecule encoding an amyloid precursor-like protein (APLP) polypeptide, comprising a nucleotide sequence encoding the amino acid sequence of SEQ ID NO:4, or a nucleotide sequence complementary thereto.

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NUCLEIC ACID ENCODING A FAMILY OF ACETYL-COENZYME-A TRANSPORTER PROTEINS, AND PRODUCTS RELATED THERETO

Minoru Fukuda, San Diego, Calif.; Akiko Kanamori, Tokoyo, and Yoshio Hirabayashi, Saltama, both of Japan, assignors to The Burnham Institute, La Jolla, Calif.

Filed Jan. 31, 1997, Ser. No. 791,887

Int. Cl.⁶ C12Q *1/02;1/68;* **C12N** *5/00;* **C07H** *21/04*

U.S. Cl. 435—29 19 Claims

1. An isolated nucleic acid encoding a mammalian acetyl-coenzyme A transporter (AT) protein, or a fragment thereof, wherein said nucleic acid is selected from:

(a) DNA encoding the amino acid sequence set forth in SEQ ID NO:2, or

(b) DNA that hybridizes to the DNA of (a) under moderately stringent conditions, wherein said DNA encodes biologically active AT, or

(c) DNA degenerate with respect to either (a) or (b) above, wherein said DNA encodes biologically active AT, or

(d) splice variant cDNA sequences thereof.

5,851,789

METHODS AND AGENTS FOR MEASURING AND CONTROLLING MULTIDRUG RESISTANCE

Sanford M. Slmon, New York, N.Y., and Melvin M. S. Schindler, Okemos, Mich., assignors to The Rockefeller University, New York, N.Y., and Board of Trustees Operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 379,875, Jan. 27, 1995, abandoned, which is a continuation of Ser. No. 190,336, Feb. 1, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 535,995

Int. Cl.⁶ C12Q *1/18;1/02;* **G01N** *21/80;31/00*

U.S. Cl. 435—32 21 Claims

1. A method for measuring the development or onset of pH-dependent multidrug resistance in a tumor cell in which such multidrug resistance is suspected, comprising determining whether there is a defect in the pH regulatory mechanism of an intracellular vesicular compartment of the cell; wherein said defect is symptomatic of the tumor cell being drug-sensitive; and wherein the absence of said defect is indicative of the onset or development of multidrug resistance in the tumor cell.

5,851,790

METHOD FOR DRYING CELLS USING CYTOGENETIC CHAMBER

Richard Walker, Hudsonville; Andrew Veldt, Kalamazoo; Kevin Ewing, Holland; Daniel Dorn, Thompsonville, all of Mich.; Jack L. Spurbeck, Kasson, and Syed M. Jalal, Rochester, both of Minn., assignors to Venturedyne, Ltd., Milwaukee, Wis.

Continuation of Ser. No. 518,109, Aug. 22, 1995, abandoned. This application Jul. 2, 1997, Ser. No. 886,981

Int. Cl.⁶ G02B *21/34*

U.S. Cl. 435—40.51 7 Claims

1. A method for drying fixative-treated metaphase and interphase cells having cell chromosomes and being supported on a manually-manipulated slide, the method including the steps of:

providing a cytogenetic chamber having a single enclosure, and an access door mounted for movement between closed and open positions;

and, while retaining the door in the closed position:

preparing a fixative-treated cell on a slide;

manually placing the slide on a horizontal chamber shelf in the enclosure;

flowing air through the enclosure while maintaining the relative humidity of the air substantially uniform and not greater than about 75%; and

retaining the slide on the shelf in the enclosure while spreading the chromosomes and drying the fixative.

5,851,791

UBIQUITIN CONJUGATING ENZYME (E2) FUSION PROTEINS

Richard David Vierstra, and Mark Mattnew Gosink, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 70,157, May 28, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,298

Int. Cl.⁶ C12P *21/06;21/04;* **C12N** *9/10;* **C07H** *21/04*

U.S. Cl. 435—168.1 13 Claims

1. A DNA sequence encoding an E2 fusion protein. the DNA sequence comprising:

a promoter effective in the cells of a host to express a protein coding sequence located 3' to the promoter; and

a DNA sequence encoding a fusion protein, the DNA fusion protein coding sequence located 3' to the promoter, the DNA sequence encoding the fusion protein including, 5' to 3':

,a DNA sequence encoding an E2 core region;

a DNA sequence encoding a spacer of at least four amino acids; and

a DNA sequence encoding a protein binding ligand having affinity for a target protein, the protein binding ligand not natively associated with any E2 protein, wherein

the fusion protein encoded by the DNA sequence is capable of conjugating a ubiquitin moeity to proteins recognized by the protein binding ligand even in the ubiquitin protein ligase absence of an (E3).

5,851,792

AGLUCONE ISOFLAVONE ENRICHED VEGETABLE PROTEIN WHEY WHEY PROTEIN MATERIAL AGLUCONE ISOFLAVONE MATERIAL HIGH GENISTEIN CONTENT MATERIAL AND HIGH DAIDZEIN CONTENT MATERIAL AND PROCESS FOR PRODUCING THE SAME FROM A VEGETABLE PROTEIN WHEY

Jerome Shen, 5937 Keith Pl., St. Louis, Mo. 63109; Mark A. Roussey, 5523-A Ed-Lou La., St. Louis, Mo. 63128; Barbara A: Bryan, 7039 Pershing Ave., St. Louis, Mo. 63130, and Maryann C. Allred, 168 Bohnenstiehl Rd., Collinsville, Ill. 62234

Filed Apr. 3, 1996, Ser. No. 627,301

Int. Cl.⁶ C12P *21/06;19/62*

U.S. Cl. 435—68.1 53 Claims

1. A process for producing an aglucone isoflavone enriched vegetable protein whey from a vegetable protein whey containing isoflavone conjugates, comprising:

a.) treating said vegetable protein whey at a temperature and pH for a time period sufficient to convert at least a majority of isoflavone conjugates to isoflavone glucosides; and

b.) contacting an enzyme with said isoflavone glucosides in said vegetable protein whey at a temperature and a pH for a time period sufficient to convert at least a majority of the isoflavone glucosides to aglucone isoflavones.

5,851,793

RECOMBINANT DNA ENCODING RECEPTOR PROTEIN FOR HUMAN B-CELL STIMULATORY FACTOR-2

Tadamitsu Kishimoto, 5-31, Nakanocho, 3-chome, Tondabayashi-shi, Osaka, Japan

Division of Ser. No. 907,650, Jul. 2, 1992, abandoned, which Is a division of Ser. No. 298,694, Jan. 19, 1989, Pat. No. 5,171,840. This application May 18, 1995, Ser. No. 444,296

Claims priority, application Japan, Jan. 22, 1988, 63-012387; Jan. 25, 1988, 63-012599; Aug. 4, 1988, 63-194885; Jan. 14, 1989, 1-7461

Int. Cl.⁶ C12P *21/00;* **C12N** *15/12;* **C07K** *14/715*

U.S. Cl. 435—69.1 42 Claims

8. A DNA coding for a receptor protein, wherein said receptor protein consists essentially of the amino acid sequence:

Arg Lys Ser Pro Leu Ser Asn Val Val Cys Glu Trp
Gly Pro Arg Ser Thr Pro Ser Leu Thr Thr Lys Ala
Val Leu Leu Val Arg Lys Phe Gln Asn Ser Pro Ala
Glu Asp Phe Gln Glu Pro Cys Gln Tyr Ser Gln Glu
Ser Gln Lys Phe Ser Cys Gln Leu Ala Val Pro Glu
Gly Asp Ser Ser Phe Tyr Ile Val Ser Met Cys Val
Ala Ser Ser Val Gly Ser Lys Phe Ser Lys Thr Gln
Thr Phe Gln Gly Cys Gly Ile Leu Gln Pro Asp Pro
Pro Ala Asn Ile Thr Val Thr Ala Val Ala Arg Asn
Pro Arg Trp Leu Ser Val Thr Trp Gln Asp Pro His
Ser Trp Asn Ser Ser Phe Tyr Arg Leu Arg Phe Glu
Leu Arg Tyr Arg Ala Glu Arg Ser Lys Thr Phe Thr
Thr Trp Met Val Lys Asp Leu Gln His His Cys Val
Ile His Asp Ala Trp Ser Gly Leu Arg His Val Val
Gln Leu Arg Ala Gln Glu Glu Phe Gly Gln Gly Glu
Trp Ser Glu Trp Ser Pro Glu Ala Met Gly Thr Pro
Trp Thr Glu Ser Arg Ser Pro Pro Ala.

5,851,794

COLLAGEN BINDING PROTEIN AS WELL AS ITS PREPARATION

Bengt Guss, Upsala, Sweden; Magnus Höök, Birmingham, Ala.; Hans Jönsson; Martin Lindberg, both of Upsala, Sweden; Joseph Patti, Birmingham, Ala.; Christer Signäs, Upsala, Sweden, and Lech Switalski, Birmingham, Ala., assignors to Alfa Laval AB, Tumba, Sweden

Continuation of Ser. No. 861,804, Aug. 21, 1992, abandoned. This application May 22, 1995, Ser. No. 447,031

Claims priority, application Sweden, Oct. 22, 1990, 9003374-7

Int. Cl.⁶ C12P *21/06;* **C12N** *1/20;15/09;* **C07H** *21/04*

U.S. Cl. 435—69.1 9 Claims

1. A plasmid pSAC104 as contained in the *E. coli* TG1 having the deposit number DSM 6199.

5,851,795

SOLUBLE CTLA4 MOLECULES AND USES THEREOF

Peter S. Linsley; Jeffrey A. Ledbetter, both of Seattle, Wash.; Nitin K. Damle, Hopewell, N.J.; William Brady, Bothell, and Peter A. Kiener, Edmonds, both of Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 375,390, Jan. 18, 1995, which is a continuation-in-part of Ser. No. 228,208, Apr. 15, 1994, which is a continuation-in-part of Ser. No. 8,898, Jan. 22, 1993, which is a continuation-in-part of Ser. No. 723,617, Jun. 27, 1901, abandoned. This application Jun. 2, 1995, Ser. No. 459,818

Int. Cl.⁶ A61K *38/02;39/395*

U.S. Cl. 435—69.1 21 Claims

1. An isolated soluble CTLA4 molecule the having the extracellular domain of CTLA4 which binds a B7 antigen expressed on activated B cells.

5,851,796

AUTOREGULATORY TETRACYCLINE-REGULATED SYSTEM FOR INDUCIBLE GENE EXPRESSION IN EUCARYOTES

David G. Schatz, New Haven, Conn., assignor to Yale University, New Haven, Conn.

Filed Jun. 7, 1995, Ser. No. 474,169

Int. Cl.⁶ C12N *15/63;15/79;5/10;* **C07H** *21/04*

U.S. Cl. 435—69.1 28 Claims

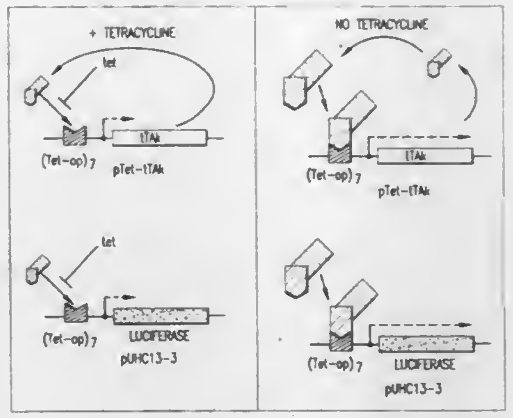
26. A method to activate the expression of a heterologous protein in a eucaryotic cell comprising

(a) obtaining a eucaryotic cell comprising

(i) a first polynucleotide molecule encoding a tetracycline transactivator fusion protein, said protein comprising a prokaryotic tet repressor and a eucaryotic transcriptional activator protein, and said polynucleotide molecule being operably linked to an inducible minimal promoter, which promoter contains at least one tet operator sequence;

(ii) a second polynucleotide molecule encoding the heterologous protein, said second polynucleotide molecule being operably linked to an inducible minimal promoter, and said promoter containing at least one tet operator sequence; and

(b) cultivating the eucaryotic cell in a medium lacking tetracycline or a tetracycline analogue such that expression of the heterologous protein is activated.



5,851,797

TIE LIGAND-3, METHODS OF MAKING AND USES THEREOF

David M. Valenzuela, Franklin Square, N.Y.; Pamela F. Jones, Fairfield, Conn., and George D. Yancopoulos, Yorktown Heights, N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Filed Jun. 19, 1996, Ser. No. 665,926

Int. Cl.⁶ C07K *14/475;* **C12N** *5/10;5/12;15/64*

U.S. Cl. 435—69.1 15 Claims

1. An isolated nucleic acid molecule comprising a nucleotide sequence encoding TIE ligand-3, wherein the nucleotide sequence is selected from the group consisting of:

(a) the nucleotide sequence encoding TIE ligand-3 as set forth in FIGS. 21A and 21B (SEQ. ID NO.7); and

(b) a nucleotide sequence that, as a result of the degeneracy of the genetic code, differs from the nucleotide sequence of (a) and encodes a ligand that binds TIE-2 receptor.

5,851,798

NUCLEIC ACID ENCODING HUMAN GPR14 RECEPTOR

Usman Shabon, Swarthmore, and Derk Bergsma. Berwyn, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jan. 27, 1997, Ser. No. 789,354

Int. Cl.⁶ C12N *15/12;* **C07K** *14/705*

U.S. Cl. 435—69.1 19 Claims

1. An isolated polynucteotide comprising a nucleotide sequence encoding the polypeptide having the amino acid sequence set forth in SEQ ID NO:2.

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HISTONE-LIKE PROTEIN

Olga Bandman, Mountain View; Surya K. Goli, Sunnyvale, and Hong Zhang, Fremont, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 19, 1997, Ser. No. 821,009

Int. Cl.^{6} C12P *21/06;* **C07H** *21/02;21/04;* **C07K** *1/00*

U.S. Cl. 435—69.1 **7 Claims**

1. An isolated and purified polynucleotide sequence encoding the human histone-like protein of SEQ ID NO:1.

5,851,800

PROCESS FOR PRODUCING A PROTEIN

Lars Adamson, Lidingö; Erik Walum, Akersberga; Johan Dixelius, Uppsala, and Kristina Lima Lie, Stockholm, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

Filed May 7, 1997, Ser. No. 852,783

Claims priority, application Sweden, May 14, 1996, 9601855

Int. Cl.^{6} C12P *21/06;* **C12N** *5/02*

U.S. Cl. 435—69.1 **19 Claims**

1. A process for producing a biologically active recombinant human polypeptide in a cell culture allowing expression and secretion of said polypeptide into the cell culture medium, comprising adding an inhibitor of metal-dependent proteases containing a phosphoramidate, hydroxamate or carboxylate, or an inhibitor of chymotrypsins containing α-(2-iminohexahydro-4(S)-pyrimidyl)-S-glycine, or a combination thereof, to the cell culture medium, and recovering said polypeptide from the cell culture medium.

5,851,801

METHOD OF PREPARING POLYPEPTIDE BINDING COMPOSITIONS DERIVED FROM IMMUNOGLOBULIN VARIABLE REGIONS

Kevin W. Moore, San Bruno, and Alejandro Zaffaroni, Atherton, both of Calif., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 394,923, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 210,540, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 61,760, May 13, 1993, abandoned, which is a continuation of Ser. No. 928,526, Aug. 11, 1992, abandoned, which is a continuation of Ser. No. 740,862, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 235,835, Aug. 18, 1988, abandoned, which is a continuation of Ser. No. 880,300, Jun. 30, 1986, abandoned, which is a continuation of Ser. No. 558,551, Dec. 15, 1983, Pat. No. 4,642,334, which is a continuation of Ser. No. 358,414, Mar. 15, 1982, abandoned. This application Jun. 5, 1995, Ser. No. 460,892

Int. Cl.^{6} C12P *21/00;21/08;* **C12N** *15/13*

U.S. Cl. 435—69.6 **3 Claims**

1. A process of synthesizing a single-chain antibody fragment comprising:

cloning DNA encoding a fragment of an antibody chain comprising 95–125 amino acids of a variable region without a constant region from a hybridoma producing an antibody to a predetermined ligand; and

expressing the cloned DNA in a host cell to produce the fragment.

5,851,802

METHODS FOR RECOMBINANT MICROBIAL PRODUCTION OF FUSION PROTEINS AND BPI-DERIVED PEPTIDES

Marc D. Better, Los Angeles, Calif., assignor to Xoma Corporation, Berkeley, Calif.

Filed Mar. 22, 1996, Ser. No. 621,803

Int. Cl.^{6} C12M *15/62*

U.S. Cl. 435—69.7 **15 Claims**

1. A recombinant DNA vector construct suitable for introduction into a bacterial host comprising a coding sequence for a fusion protein having: (a) at least one cationic bactericidal/permeability-increasing (BPI) peptide encoding DNA sequence; (b) a carrier protein encoding DNA sequence; and (c) an amino acid cleavage site encoding DNA sequence located between the sequences (a) and (b), wherein the construct additionally encodes a bacterial secretory leader sequence at the amino-terminus of the fusion protein and wherein the encoded BPI peptide has anti-bacterial activity.

5,851,803

Patent Not Issued For This Number

5,851,804

CHIMERIC KANAMYCIN RESISTANCE GENE

Linda Anne Snyder, Pottstown, and C. Satishchandran, Lansdale, both of Pa., assignors to Apollon, Inc., Malvern, Pa.

Filed May 6, 1996, Ser. No. 642,045

Int. Cl.^{6} C12P *19/34;* **C07H** *21/04;* **C12N** *15/54;15/63*

U.S. Cl. 435—91.1 **29 Claims**

1. A chimeric kanamycin resistance gene comprising:

a nucleotide sequence that encodes ANT(4')-IA enzyme operably linked to a heterologous prokaryotic promoter and a heterologous prokaryotic termination sequence.

8. A plasmid comprising a chimeric kanamycin resistance gene according to claim 1.

14. A method of producing plasmids according to claim 8 comprising the steps of:

culturing, in media which contains kanamycin, bacteria cells that comprise said plasmids, and

isolating said plasmids from media and bacteria cell materials.

5,851,805

METHOD FOR PRODUCING DNA FROM MRNA

Dong Wei; Veronica M. Maher, both of East Lansing, and Joseph Justin McCormick, Morrice, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Jan. 16, 1997, Ser. No. 784,751

Int. Cl.^{6} C07H *19/00;21/04;21/00;* **C12P** *19/34*

U.S. Cl. 435—91.2 **27 Claims**

1. A method for producing DNA from mRNA in a sample, which comprises:

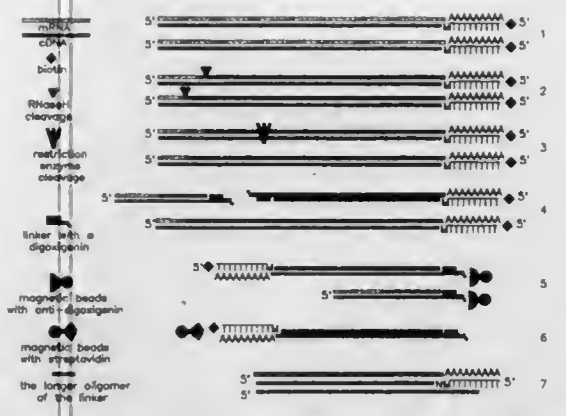
(a) isolating RNA from the sample;

(b) priming the mRNA with a first synthetic oligodeoxynucleotide that hybridizes with the polyadenylate (polyA) tail of mRNA and one non-adenylate nucleotide, and consists of polydeoxythymidylate (dT) with a 5' and a 3' end, which has a first label at the 5' end and has a deoxynucleotide (M) at the 3' end, wherein M is selected from the group consisting of dG, dC and dA;

(c) reverse transcribing the mRNA to produce a mRNA:cDNA hybrid;

(d) producing a double-stranded DNA from the mRNA:cDNA hybrid;

(e) digesting the double-stranded DNA with a restriction endonuclease to produce a cut in the double-stranded DNA:


mRNA
cDNA
biotin
RNaseH cleavage
restriction enzyme cleavage
linker with a digoxigenin
magnetic beads with anti-digoxigenin
magnetic beads with streptavidin
the longer oligomer of the linker
5'
1
2
3
4
5
6
7

(f) ligating the 5' end of one strand of the double-stranded DNA at the cut to a 3' end of one strand of a complementary pair of second and third synthetic oligodeoxynucleotides that comprise a linker DNA, where one of the strands of the linker DNA is longer than the other, so that the linker DNA has a staggered end and a blunt end, wherein the longer strand of the linker DNA has a second label, different from the first label, at the staggered end, the 5' end, and is the strand of the linker DNA that is ligated at the blunt end to the polyA tail strand of the double-stranded DNA at the cut;

(g) isolating the double-stranded DNA containing the second label with a first reagent which binds the second label to retain the DNA that has been ligated to the linker DNA;

(h) isolating the double-stranded DNA containing the first label and second label with a second reagent which binds the first label, wherein the isolated DNA is now free of double stranded DNA containing only the second label;

(i) amplifying the isolated DNA strand in step (h) which contains the polyA tail by a polymerase chain reaction (PCR); and

(j) separating the amplified DNA.

5,851,806

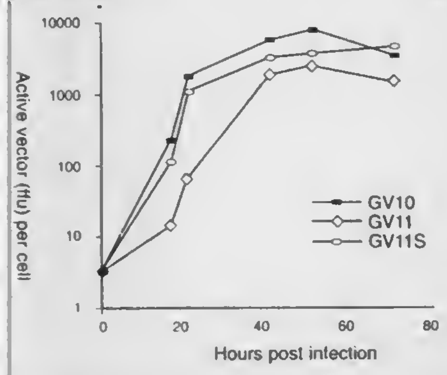
COMPLEMENTARY ADENOVIRAL SYSTEMS AND CELL LINES

Imre Kovesdi, Rockville; Douglas E. Brough, Olney; Duncan L. McVey, Derwood; Joseph T. Bruder, Gaithersburg, and Alena Lizonova, Rockville, all of Md., assignors to GenVec, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 258,416, Jun. 10, 1994. This application Dec. 14, 1995, Ser. No. 572,126

Int. Cl.^{6} C12P *19/34;* **C12N** *15/11;5/16;5/22*

U.S. Cl. 435—91.41 **63 Claims**



1. An adenoviral vector comprising (a) an adenoviral genome deficient in the E4 region of the adenoviral genome,, (b) a spacer of at least 15 base pairs in the E4 region of the adenoviral genome, and (c) a passenger gene, wherein said spacer comprises a sequence that is non-native to the E4 region of the adenoviral genome, and wherein the viral production level of said adenoviral vector is greater than the viral production level of said adenoviral vector without said spacer.

5,851,807

PROCESS FOR BIOLOGICAL MATERIAL CARBON-CARBON BOND FORMATION

Rawle I. Hollingsworth, Haslett, Mich.; Seunho Jung, Kuyngkido, Rep. of Korea, and Carol A. Mindock, Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Jan. 17, 1997, Ser. No. 784,367

Int. Cl.^{6} C12P *7/64*

U.S. Cl. 435—311 **19 Claims**

1. A process for formation of a long carbon chain compound which comprises;

(a) reacting in an aqueous reaction mixture in absence of whole cells at a pH between pH 3 and pH 10 (1) a cellular material of a bacterium selected from the group consisting of Thermoanaerobacter, Sarcina and Butyrivibrio, wherein the cellular material is a cellular membrane fragment, (2) two molecules of long chain aliphatic compound having a terminal methyl group wherein at least one of the molecules is exogenous to and foreign to the bacterium and (3) an added hydrogen acceptor compound, wherein the two molecules of (2) form a carbon-carbon bond with the cellular membrane fragment as a catalyst, at a position of each molecule adjacent to the methyl group to provide the long chain carbon compound with vicinal dimethyls adjacent to the carbon-carbon bond; and

(b) separating the long chain aliphatic compound with the vicinal dimethyls from the cellular membrane material.

5,851,808

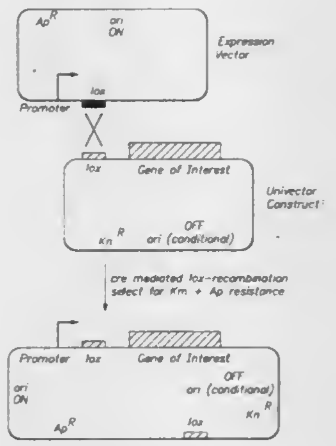
RAPID SUBCLONING USING SITE-SPECIFIC RECOMBINATION

Stephen J. Elledge, and Qinghua Liu, both of Houston, Tex., assignors to Baylor College of Medicine

Filed Feb. 28, 1997, Ser. No. 864,224

Int. Cl.^{6} C12N *5/09;15/63;15/64;15/66*

U.S. Cl. 435—172.3 **24 Claims**



1. A pUNI vector construct comprising, in 5' to 3' operable order:

a) a conditional origin of replication;

b) a sequence-specific recombinase target site having a 5' and a 3' end; and

c) a unique restriction enzyme site, said restriction enzyme site located adjacent to said 3' end of said sequence-specific recombinase target site.

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5,851,809

TRYPTOPHANYL TRNA SYNTHETASE POLYNUCLEOTIDES OF STREPTOCOCCUS

Elizabeth Jane Lawlor, SmithKline Beecham Corporation, Corporate Intellectual Property - UW2220, P.O. Box 1539, King of Prussia, Pa. 19406-0939

Filed Sep. 4, 1997, Ser. No. 923,867

Claims priority, application United Kingdom, Sep. 12, 1996, 9619072

Int. Cl.⁶ C12N *9/00;15/00;1/20;* **C07H** *21/04*

U.S. Cl. 435—183 **31 Claims**

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(b) a polynucleotide having at least a 97% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(c) a polynuceotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(d) a polynucleotide hybrdizing under stringent conditions to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2. said hybridizing being over the entire length of said polynucleotide encoding a polypeptide,

(e) a polynucleotide having at least a 95% identity to a polynucleotide encoding the same mature polypeptide expressed by the tryptophanyl tRNA synthetase gene contained in NCIMB Deposit No. 40794 or 40800;

(f) a polynucleotide having at least a 97% identity to a polynucleotide encoding the same mature polypeptide expressed by the tryptophanyl tRNA synthetase gene contained in NCIMB Deposit No.40794 or 40800; and

(g) a polynucleotide encoding the same mature polypeptide expressed by the tryptophanyl tRNA synthetase gene contained in NCIMB Deposit No. 40794 or 40800.

5,851,810

NUCLEIC ACID ENCODING RHODOCOCCUS PHENYLALANINE DEHYDROGENASE

John S. Blanchard, Pelham Manor, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Filed Jun. 5, 1995, Ser. No. 461,990

Int. Cl.⁶ C12N *9/02;1/20;15/00;* **C07H** *21/04*

U.S. Cl. 435—189 **14 Claims**

1. A purified and isolated nucleic acid encoding Rhodococcus L-phenylalanine dehydrogenase.

5,851,811

PEROXIDASE VARIANTS WITH IMPROVED HYDROGEN PEROXIDE STABILITY

Karen Gjesing Welinder, Virum, and Morten Birket Andersen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK93/00189, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO91/05858, PCT Pub. Date May 2, 1991

PCT Filed Jun. 1, 1993, Ser. No. 331,515

Int. Cl.⁶ C12N *9/08;15/09;15/53*

U.S. Cl. 435—192 **20 Claims**

1. A variant of a *Coprinus cinereus* peroxidase, comprising one or more substitutions selected from the group consisting of:

Q1S, E.
S8N,
C22S,
C23S,
Q38N,
D56N, T, I,
N142S, T, P, D.
G154E,
G156F,
N157E, F.
D245I, T, N.
C256S,
S263N,
N265S,
A304S.
T331A, N, and
S338A,

wherein the peroxidase has an amino acid sequence of SEQ ID NO: 2 and the variant has improved hydrogen peroxide stability over the peroxidase.

5,851,812

IKK-β PROTEINS, NUCLEIC ACIDS AND METHODS

David V. Goeddel, Hillsborough, and John Woronicz, South San Francisco, both of Calif., assignors to Tularik Inc., South San Francisco, Calif.

Continuation of Ser. No. 887,114, Jul. 1, 1997, abandoned. This application Jul. 10, 1997, Ser. No. 890,853

Int. Cl.⁶ C12N *1/21;5/10;9/12;15/54*

U.S. Cl. 435—194 **12 Claims**

1. An isolated or recombinant nucleic acid comprising at least 96 consecutive nucleotides of SEQ ID NO: 1.

5,851,813

PRIMATE LENTIVIRUS ANTIGENIC COMPOSITIONS

Ronald C. Desrosiers, Hudson, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 727,494, Jul. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 551,945, Jul. 12, 1990, abandoned. This application Jan. 27, 1994, Ser. No. 188,583

Int. Cl.⁶ C12N *7/00;7/01;* **C07K** *1/00;* **A61K** *39/12*

U.S. Cl. 435—235.1 **33 Claims**

1. An antigenic composition comprising isolated primate lentivirus whose genome contains an engineered non-revertible null mutation in the nef gene, or an infectious DNA clone thereof, in a pharmaceutically acceptable carrier.

5,851,814

HUMAN ELASTATE IV

John M. Green, Gaithersburg, Md., and Mark D. Adams, North Potomac, Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

PCT No. PCT/US95/07236, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/01270, PCT Pub. Date Jan. 18, 1996

Continuation-in-part of Ser. No. 270,584, Jul. 5, 1994, Pat. No. 5,710,035. This PCT application Jun. 6, 1995, Ser. No. 765,192

Int. Cl.⁶ C12N *9/66;* **C07K** *2/00;16/40*

U.S. Cl. 435—218 **28 Claims**

1. An isolated polypeptide comprising a polypeptide selected from the group consisting of:

(a) a polypeptide consisting of amino acids 1 to 268 of SEQ ID NO: 2;

(b) a polypeptide consisting of amino acids 2 to 268 of SEQ ID NO: 2;

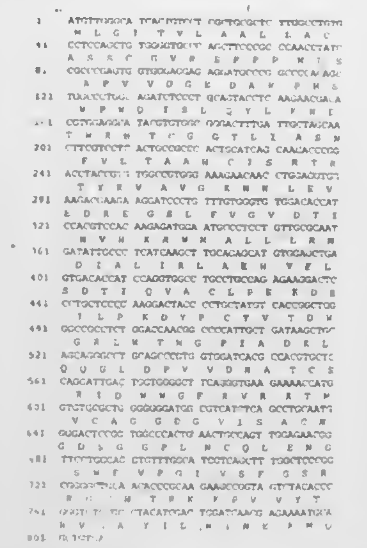
(c) a polypeptide consisting of amino acids 16 to 268 in SEQ ID NO: 2;

(d) a polypeptide consisting of amino acids 30 to 268 in SEQ ID NO: 2;

(e) a polypeptide having protease activity consisting of amino acids 30 to 268 of SEQ ID NO: 2, except for at least one conservative amino acid substitution;

(f) a fragment of the polypeptide of (a) having protease activity; and

(g) a fragment of the polypeptide of (a) which binds to an antibody specific for the polypeptide of (a).



5,851,815

MCH4 AND MCH5, APOPTOTIC PROTEASES

Emad S. Alnemri; Teresa Fernandes-Alnemri, both of Ambler; Gerald Litwack, Wynnewood, all of Pa.; Robert Armstrong, San Diego, and Kevin Tomaselli, La Jolla, both of Calif., assignors to IDUN Pharmaceuticals, Inc., La Jolla, Calif.

Filed Mar. 19, 1996, Ser. No. 618,408

Int. Cl.⁶ C12N *9/50;9/48;* **A61K** *38/00*

U.S. Cl. 435—219 **8 Claims**

1. An isolated Mch4 polypeptide comprising an amino acid sequence selected from the group consisting of:

SEQ ID NO:2;
amino acids 1 through 239 of SEQ ID NO:2;
amino acids 102 through 346 of SEQ ID NO:2; and
amino acids 102 through 239 of SEQ ID NO:2.

5,851,816

CULTURED HIGH-FIDELITY THREE-DIMENSIONAL HUMAN UROGENITAL TRACT CARCINOMAS AND PROCESS

Thomas J. Goodwin; Tacey L. Prewett, both of Friendswood; Glenn F. Spaulding, and David A. Wolf, both of Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 939,791, Sep. 3, 1992, Pat. No. 5,308,764, which is a continuation of Ser. No. 317,931, Mar. 2, 1989, Pat. No. 5,153,132, which is a continuation-in-part of Ser. No. 317,776, Mar. 2, 1989, Pat. No. 5,155,034, which is a continuation-in-part of Ser. No. 213,558, Jun. 30, 1988, Pat. No. 5,026,650, Ser. No. 213,559, Jun. 30, 1988, Pat. No. 4,988,623, and Ser. No. 625,345, Dec. 1, 1990, Pat. No. 5,153,131. This application Dec. 27, 1993, Ser. No. 172,962

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.⁶ C12N *5/02;5/06;* **A01N** *1/02*

U.S. Cl. 435—240.2 **25 Claims**

1. A process for producing aggregates of urogenital tract carcinoma cells comprising the steps of

(a) inoculating urogenital tract carcinoma cells into a culture vessel containing culture media and a culture matrix;

(b) culturing the urogenital tract carcinoma cells under microgravity conditions whereby the urogenital tract carcinoma cells form aggregates; and

(c) maintaining the microgravity culture conditions whereby high-fidelity, three-dimensional urogenital tract carcinoma growth is achieved.

5,851,817

SPECIES SPECIFIC EGG-BINDING PROTEINS OF SPERM

Daniel M. Hardy, Dallas, and David L. Garbers, Irving, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jul. 19, 1994, Ser. No. 276,967

Int. Cl.⁶ C12N *15/12*

U.S. Cl. 435—252.3 **19 Claims**

1. A DNA segment comprising an isolated gene that encodes a mammalian egg-binding protein or peptide that comprises the amino acid sequence of SEQ ID NO:2.

5,851,818

CONDENSED PLASMID-LIPOSOME COMPLEX FOR TRANSFECTION

Shi Kun Huang, Castro Valley; Edwin Kiyoshi Oto, Redwood City; Mohammad Hassanipour, Vallejo, and Bei Jin, Union City, all of Calif., assignors to Sequus Pharmaceuticals, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 657,795, May 31, 1996, abandoned. This application Mar. 28, 1997, Ser. No. 827,236

Int. Cl.⁶ C12N *15/64;* **A01N** *25/26;* **B01J** *13/02;* **C12P** *21/02*

U.S. Cl. 435—320.1 **8 Claims**

1. An improvement in a method of preparing plasmid-liposome complexes by condensing plasmid molecules and mixing the condensed plasmids with a suspension of cationic liposomes to form plasmid-liposome complexes for use in transfecting a host cell, said improvement comprising the steps of

selecting as a condensing agent for condensing the plasmid molecules, a polycation selected from the group consisting of histones, poly-1-glutamine, melittin and polymyxin B,

selecting as a medium for suspending said condensed plasmid molecules, a low-ionic strength aqueous medium, and

selecting a ratio of liposome lipid to plasmid of greater than 10 nmole liposome lipid/μg plasmid and less than 15 nmole liposome lipid/μg plasmid,

where the plasmid-liposome complexes produced by the improvement have:

(i) sizes in the range of 120–180 nm and

(ii) a transfection stability of at least 30 days, as evidenced by a stable in vivo transfection efficiency of the complex after storage for 30 days at 4° C.

5,851,819

VECTORS CARRYING MDR1 CDNA WHICH CONFER MULTIDRUG RESISTANCE ON TRANSDUCED CELLS

Michael M. Gottesman, Betheda; Ira Pastan, Potomac, both of Md., and Kazumitsu Ueda, assignors to National Institutes of Health, Bethesda, Md.

Continuation of Ser. No. 416,623, Apr. 4, 1995, which is a continuation-in-part of Ser. No. 701,576, May 14, 1991, abandoned, and a continuation-in-part of Ser. No. 202,782, Jun. 3, 1988, abandoned, which is a continuation of Ser. No. 62,583, Jun. 16, 1987, abandoned. This application May 31, 1995, Ser. No. 454,761

Int. Cl.⁶ C12N *15/63*

U.S. Cl. 435—320.1 **8 Claims**

1. A vector comprising a full-length human MDR1 cDNA that expresses a functional human P-glycoprotein in a mammalian host cell wherein expression of said functional human P-glycoprotein renders said host cell multidrug resistant.

5,851,820

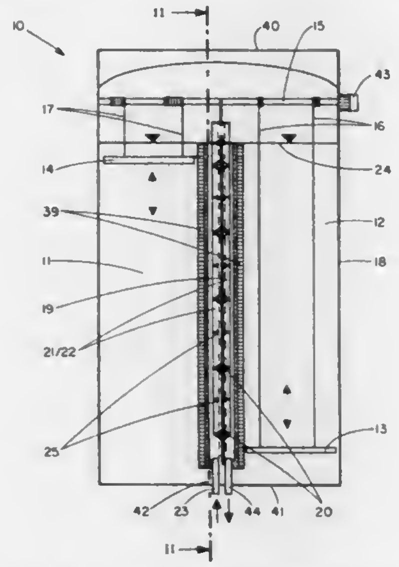
UNIT FOR THE PREPARATION OF FERMENTING GAS

Christoph Frese, Twangweg 13, 59964, Medebach, Germany

Filed Feb. 18, 1997, Ser. No. 801,474

Int. Cl.⁶ C17M *3/00*

U.S. Cl. 435—289.1 **9 Claims**



1. A unit for the preparation of fermenting gas by fermenting viscous media comprisng:

- a) a tank comprising a chamber for mixing the medium to be fermented;
- b) several mixing paddles in the tank continuously movable in a vertical direction of mixing;
- c) a joint drive unit connected to and for simultaneously moving the mixing paddles where the joint drive operates such that each individual mixing paddle moves only a limited stroke distance in the direction of mixing;
- d) a suspension unit connected to and dividing the several paddles into a first group of linearly aligned mixing paddles and a second group of linearly aligned mixing paddles, with the first and second groups arranged side-by-side in the tank, and wherein the suspension unit operates to move the first group of mixing paddles up then down while simultaneously moving the second group of mixing paddles down then up; and

wherein the suspension unit further comprises two pressure arms connected to an eccentric cam having a lower end, wherein the lower end of the eccentric cam is fitted with a pressure roller that pushes one of the pressure arms down, with the other pressure arm free to reach an upper position, producing a pendulum type movement.

5,851,821

DNA REPLICATION-REGULATING GENES

R. Sanders Williams, Dallas, Tex., and Bruce Stillman, Cold Spring Harbor, N.Y., assignors to Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., and The Board of Regents, The University of Texas System, Austin, Tex.

Filed May 2, 1996, Ser. No. 643,034

Int. Cl.⁶ C12N *15/63;15/85;* C07H *21/04;* C07K *14/00*

U.S. Cl. 435—320.1 **14 Claims**

1. An isolated vertebrate CSH gene comprising the DNA sequence of SEQ ID NO: 1.

5,851,822

INFLAMMATION-INDUCED EXPRESSION OF A RECOMBINANT GENE

Robert S. Munford, Dallas, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 456,103, May 30, 1995, Pat. No. 5,744,304. This application Apr. 28, 1998, Ser. No. 67,908

Int. Cl.⁶ C12N *15/86*

U.S. Cl. 435—320.1 **10 Claims**

1. A nucleic acid segment comprising an anti-inflammatory protein gene positioned under the transcriptional control of a heterologous cytokine-responsive promoter.

5,851,823

HEPATITIS B VACCINE

Howard Christopher Thomas, and William Frederick Carman, both of London, England, assignors to Imperial College of Science Technology and Medicine, London, England

Division of Ser. No. 339,281, Nov. 7, 1994, Pat. No. 5,639,637, which is a continuation of Ser. No. 927,489, Nov. 16, 1992. This application Mar. 10, 1997, Ser. No. 813,611

Claims priority, application United Kingdom, Mar. 29, 1990, 9007024

Int. Cl.⁶ C12N *15/51;* C12P *21/02;* C07H *21/04*

U.S. Cl. 435—320.1 **10 Claims**

1. An expression vector comprising a DNA sequence encoding a variant hepatitis BS (vHBsAg) protein or fragment thereof said vHBsAg protein or fragment thereof comprising a modified "a" determinant of an S(HBs) protein in which the amino acid at position 145 at the HBs protein is arginine, said vHBsAg displaying an antigenicity different from that of wild-type S(vHBsAg) protein.

5,851,824

HUMAN CALCIUM CHANNEL α-1C/α-1D, α-2, β-1, AND γ SUBUNITS AND CELLS EXPRESSING THE DNA

Michael M. Harpold; Steven B. Ellis, both of San Diego; Mark E. Williams, Carlsbad; Daniel H. Feldman, San Diego; Ann F. McCue, La Mesa, all of Calif., and Robert Brenner, Austin, Tex., assignors to Sibia Neurosciences, Inc., La Jolla, Calif.

Continuation of Ser. No. 868,354, Apr. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 745,206, Aug. 15, 1991, Pat. No. 5,429,921, which is a continuation-in-part of Ser. No. 620,250, Nov. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 176,899, Apr. 4, 1988, abandoned, said Ser. No. 223,305 is a continuation-in-part of Ser. No. 482,384, Feb. 20, 1990, Pat. No. 5,386,025, and Ser. No. 603,751, Nov. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 176,899, Apr. 4, 1988, abandoned. This application Apr. 4, 1994, Ser. No. 223,305

Int. Cl.⁶ C12N *15/12;* C07K *14/435;14/705*

U.S. Cl. 435—325 **64 Claims**

1. An isolated DNA molecule, comprising a sequence of nucleotides that encodes an α_1-subunit of a human calcium channel selected from the group consisting of:

an α_{1C} subunit comprising the sequence of amino acids set forth in SEQ ID NO. 45;

an α_{1D} subunit comprising the sequence of amino acids of the α_1-subunit set forth in SEQ ID NO. 49; or comprising the sequence of amino acids of the α_1-subunit set forth in SEQ ID NO. 151; and

a human calcium channel α_1-subunit that is encoded by DNA capable of hybridizing under conditions of high stringency with DNA that is fully complementary to an mRNA transcript native to a human cell that encodes one of the aforesaid human calcium channel α_1-subunits, wherein: the α_1-subunit is an α_{1C}- or α_{1D}-subunit; such that any probe that contains at least 14 contiguous bases from the coding portion of the α_1-encoding DNA is capable of hybridizing under conditions of high stringency to the DNA that if fully complementary to the mRNA transcript.

12. A cultured eukaryotic cell, comprising heterologous DNA having the sequence of the DNA molecule of claim **1**, wherein the cell is a mammalian cell or a yeast cell.

13. The eukaryotic cell of claim **12**, further comprising additional DNA encoding at least one subunit selected from the group consisting of a human calcium channel β-subunit, a human calcium channel α_2-subunit, and a human calcium channel γ-subunit, wherein:

the α_2-subunit is selected from the group consisting of:

- an α_2-subunit comprising the sequence set forth in SEQ ID NO: 53,
- an α_2-subunit comprising the sequence set forth in SEQ ID NO: 54,
- an α_2-subunit comprising the sequence set forth in SEQ ID NO: 55,
- an α_2-subunit comprising the sequence set forth in SEQ ID NO: 56, and
- an α_2-subunit comprising the amino acid sequence of an α_{2a}, α_{2c}, α_{2d}, or α_{2e} subunit polypeptide, wherein the additional DNA encoding the $\alpha 2$-subunit is capable of hybridizing under conditions of high stringency with DNA that is fully complementary to an mRNA transcript native to a human cell that encodes the amino acid sequence set forth in SEQ ID NO: 53, 54, 55, or 56, such that any probe that contains at least 14 contiguous bases from the coding portion of the DNA encoding the $\alpha 2$-subunit hybridizes under conditions of high stringency to the DNA that is fully complementary to the mRNA transcript that encodes an α_2-subunit;

the β-subunit is selected from the group consisting of:

- a β-subunit comprising the sequence of amino acids set forth in SEQ ID NO: 40,
- a β-subunit comprising the sequence of amino acids set forth in SEQ ID NO: 41,
- a β-subunit comprising the sequence of amino acids set forth in SEQ ID NO: 42,
- a β-subunit comprising the sequence of amino acids set forth in SEQ ID NO: 43,
- a β-subunit comprising the sequence of amino acids set forth in SEQ ID NO: 44, and
- a human calcium channel β-subunit encoded by DNA capable of hybridizing under conditions of high stringency with DNA that is fully complementary to an mRNA transcript native to a human cell that encodes one of the aforesaid β subunits, such that any probe that contains at least 14 contiguous bases from the coding portion of the DNA that encodes the β-subunit hybridizes under conditions of high stringency to the DNA that is fully complementary to the mRNA transcript that encodes a β-subunit;

the γ-subunit is selected from the group consisting of:

- a γ-subunit native to a human cell which comprises the sequence of amino acids set forth in SEQ ID NO: 57, and
- a human calcium channel γ-subunit encoded by DNA capable of hybridizing under conditions of high stringency with DNA that is fully complementary to an mRNA transcript native to a human cell that encodes the aforesaid γ-subunit, such that any probe that contains at least 14 contiguous bases from the coding portion of the DNA that encodes the γ-subunit hybridizes under conditions of high stringency to the DNA that is fully complementary to the mRNA transcript that encodes a γ-subunit.

5,851,825

Patent Not Issued For This Number

5,851,826

HELPER VIRUS-FREE HERPESVIRUS VECTOR PACKAGING SYSTEM

Cornel Fraefel, Brookline; Alfred I. Geller, Boston, and Filip Lim, Brookline, all of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Filed Jul. 26, 1995, Ser. No. 508,088

Int. Cl.⁶ C12N *5/00;15/00;* C12P *21/00*

U.S. Cl. 435—325 **19 Claims**

1. A system for packaging a herpesvirus vector in the absence of a helper virus comprising:

- a) at least one first vector which upon delivery into a cell capable of supporting herpesvirus DNA replication can form a DNA segment or segments that can express structural herpesvirus proteins, but wherein said at least one vector lacks a functional herpesvirus cleavage/packaging site-containing sequence, said DNA segment or segments referred to as a herpesvirus DNA segment;
- b) a packaging vector containing a herpesvirus packaging site-containing sequence and an origin of DNA replication which is recognized by the herpesvirus DNA replication proteins and enzymes, wherein the herpesvirus is a herpes simplex virus.

5,851,827

DNA ENCODING *CLOSTRIDIUM PERFRINGENS* ALPHA-TOXIN PEPTIDES

Richard William Titball, and Ethel Diane Williamson, both of Salisbury, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 341,538, Nov. 28, 1994, Pat. No. 5,817,317. This application Oct. 4, 1996, Ser. No. 725,518

Claims priority, application United Kingdom, May 20, 1992, 9210717; Jul. 23, 1992, 9215655

Int. Cl.⁶ C12N *5/10;1/00;15/11;15/63*

U.S. Cl. 435—325 **22 Claims**

1. A recombinant DNA which encodes a peptide which (a) comprises the amino acid sequence of *Clostridium perfringens* alpha-toxin from amino acid 261 to amino acid 300 as set forth in SEQ ID NO:2, (b) lacks an amino acid sequence having phospholipase C and sphingomyelin hydrolyzing activity, and (c) induces an immune response protective against *Clostridium perfringens* in a human or animal.

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5,851,828

TARGETED CYTOLYSIS OF HIV-INFECTED CELLS BY CHIMERIC CD4 RECEPTOR-BEARING CELLS

Brian Seed; Babak Banapour, both of Boston; Charles Romeo, Belmont, and Waldemar Kolanus, Watertown, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 195,395, Feb. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 847,566, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,961, Mar. 7, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,391

Int. Cl.^{6} C12N *5/10;* C07H *21/04*

U.S. Cl. 435—328 15 Claims

1. A human cell which expresses a proteinaceous membrane-bound chimeric receptor, said receptor comprising (a) an extracellular portion which includes a CD4 domain that specifically recognizes and binds HIV or an HIV-infected cell but which does not mediate HIV infection, (b) a transmembrane portion, and (c) an intracellular portion which signals said cell to destroy a receptor-bound HIV or HIV-infected cell.

5,851,829

METHOD OF INTRACELLULAR BINDING OF TARGET MOLECULES

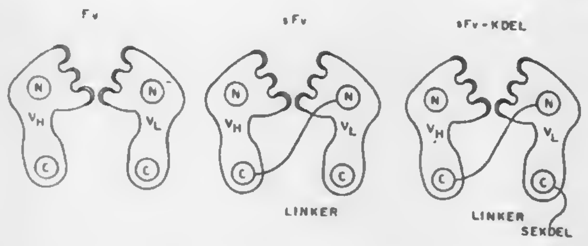
Wayne A. Marasco, Wellesley, Mass., and William A. Haseltine, Rockville, Md., assignors to Dana-Farber Cancer Institute, Boston, Mass.

PCT No. PCT/US93/06735, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. WO94/02610, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 373,190

Int. Cl.^{6} C12N *15/00*

U.S. Cl. 435—328 62 Claims



1. A cell line constitutively transformed by a nucleotide sequence containing a promoter operably linked to an antibody gene capable of binding to a target antigen, wherein said antibody is intracellularly expressed as a functional antibody where said function is determined by the ability to bind to the target antigen.

5,851,830

LUMINAL EPITHELIAL ANTIGEN

S. Ashraf Imam, N. Hollywood, and Clive R. Taylor, South Pasadena, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation of Ser. No. 33,672, Mar. 16, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,833

Int. Cl.^{6} C07K *16/18;16/28;* C12N *5/20;5/18*

U.S. Cl. 435—334 2 Claims

2. A monoclonal antibody produced by a hybridoma HB 11225 as deposited with the A.T.C.C.

5,851,831

METHOD FOR LONG TERM SUBCULTURE OF DERMAL PAPILLA CELLS

Mutsumi Inamatsu; Takashi Matsuzaki, and Katsutoshi Yoshizato, all of Hiroshima, Japan, assignors to Research Development Corporation of Japan, Japan

Filed Apr. 11, 1995, Ser. No. 419,708

Int. Cl.^{6} C12N *5/00*

U.S. Cl. 435—383 2 Claims

1. A method of long term cultivation of dermal papilla cells of a mammalian species, which comprises culturing and subculturing the dermal papilla cells in a cell culture medium which consists essentially of a medium conditioned by epidermal cells derived from said mammalian species, thereby proliferating the dermal papilla cells.

5,851,832

IN VITRO GROWTH AND PROLIFERATION OF MULTIPOTENT NEURAL STEM CELLS AND THEIR PROGENY

Samuel Weiss; Brent Reynolds, both of Alberta, Canada; Joseph P. Hammang, and E. Edward Baetge, both of Barrington, R.I., assignors to Neurospheres, Ltd., Canada

Continuation-in-part of Ser. No. 270,412, Jul. 5, 1994, abandoned, which is a continuation of Ser. No. 726,812, Jul. 8, 1991, abandoned, and a continuation-in-part of Ser. No. 385,404, Feb. 7, 1995, abandoned, which is a continuation of Ser. No. 961,813, Oct. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 726,812, and Ser. No. 359,945, Dec. 20, 1994, abandoned, which is a continuation of Ser. No. 221,655, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 967,622, Oct. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 726,812, Jul. 8, 1991, abandoned, and Ser. No. 376,062, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 10,829, Jan. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 726,812, and Ser. No. 149,508, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 726,812, and Ser. No. 311,099, Sep. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 726,812, and Ser. No. 338,730, Nov. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 726,812. This application Jun. 7, 1995, Ser. No. 486,648

Int. Cl.^{6} C12N *5/06;5/08;5/02*

U.S. Cl. 435—368 80 Claims

1. A method for preparing a population of mammalian neural cells enriched with multipotent neural stem cells comprising:

(a) obtaining a population of mammalian neural cells which contains at least one multipotent neural stem cell capable of producing progeny that are capable of differentiating into neurons and glia, including astrocytes;

(b) preparing a culture medium containing one or more predetermined growth factors capable of inducing multipotent neural stem cell proliferation; and

(c) combining the population of mammalian neural cells obtained in (a) with the culture medium prepared in (b) and culturing said mammalian neural cells under conditions that allow the proliferation of said at least one multipotent neural stem cell to produce multipotent neural stem cell progeny which includes daughter multipotent neural stem cells to produce a cell culture that contains a percentage of multipotent neural stem cells that is at least ten fold higher than that of said population of mammalian neural cells obtained in (a).

5,851,833

NEOMORPHOGENESIS OF UROLOGICAL STRUCTURES IN VIVO FROM CELL CULTURE

Anthony Atala, Newton, Mass., assignor to Children's Medical Center Corp., Boston, Mass.

Division of Ser. No. 98,569, Jul. 27, 1993, Pat. No. 5,567,612, which is a continuation of Ser. No. 781,898, Oct. 24, 1991, abandoned. This application Aug. 7, 1996, Ser. No. 692,243

Int. Cl.^{6} C12N *5/00;* A61F *2/00;13/00*

U.S. Cl. 435—378 8 Claims

1. A method for isolating and culturing normal mammalian urothelial cells, the method comprising:

exposing urological tissue to an enzyme solution;

collecting normal mammalian urothelial cells which are dissociated by the solution; and

culturing the dissociated urothelial cells on a biocompatible, biodegradable polymeric matrix suitable for implantation at a site where urothelial tissue is to be repaired or replaced.

5,851,834

METHODS FOR DETERMINING IMPURITY DISTRIBUTIONS IN MICROELECTRONIC STRUCTURES FORMED FROM ALUMINUM-CONTAINING MATERIALS

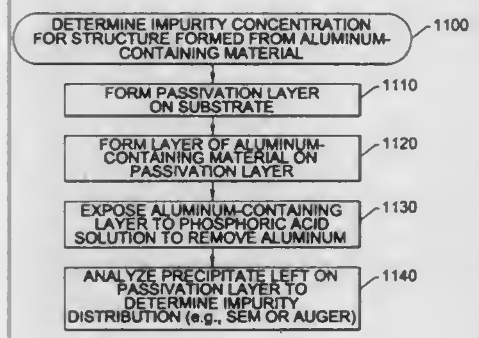
Sung-teak Moon; Sung-pil Choi, and Dong-jun Lee, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 19, 1997, Ser. No. 934,482

Claims priority, application Rep. of Korea, Dec. 18, 1996, 1996-67451

Int. Cl.^{6} G01N *13/00*

U.S. Cl. 436—5 20 Claims


DETERMINE IMPURITY CONCENTRATION FOR STRUCTURE FORMED FROM ALUMINUM-CONTAINING MATERIAL
1100
FORM PASSIVATION LAYER ON SUBSTRATE
1110
FORM LAYER OF ALUMINUM-CONTAINING MATERIAL ON PASSIVATION LAYER
1120
EXPOSE ALUMINUM-CONTAINING LAYER TO PHOSPHORIC ACID SOLUTION TO REMOVE ALUMINUM
1130
ANALYZE PRECIPITATE LEFT ON PASSIVATION LAYER TO DETERMINE IMPURITY DISTRIBUTION (e.g., SEM OR AUGER)
1140

1. A method of determining impurity distributions in microelectronic structures formed from an aluminum-containing material, the method comprising the steps of:

forming a passivation layer on a substrate;

forming a layer of the aluminum-containing material having impurities therein on the passivation layer;

exposing the layer of the aluminum-containing material to a phosphoric acid solution to remove an aluminum from the layer of the aluminum-containing material and leave said impurities on said passivation layer;

removing the phosphoric acid solution from said passivation layer to leave a precipitate of said impurities on said passivation layer; and

analyzing the precipitate to determine a distribution of impurities in the layer of the aluminum-containing material.

5,851,835

MULTIPARAMETER HEMATOLOGY APPARATUS AND METHOD

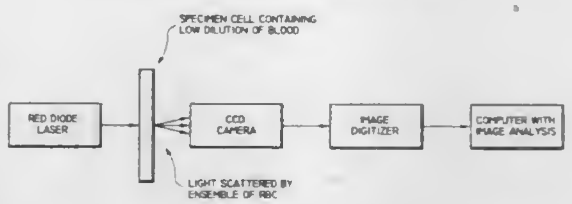
Warren Groner, Great Neck, N.Y., assignor to Center For Laboratory Technology, Inc., Great Neck, N.Y.

Filed Dec. 12, 1996, Ser. No. 764,322

Int. Cl.^{6} G01N *33/48*

U.S. Cl. 436—63 18 Claims

BLOCK DIAGRAM OF RBC MEASUREMENT


SPECIMEN CELL CONTAINING LOW DILUTION OF BLOOD
RED DIODE LASER
CCD CAMERA
IMAGE DIGITIZER
COMPUTER WITH IMAGE ANALYSIS
LIGHT SCATTERED BY ENSEMBLE OF RBC

6. A method for making measurements of a blood cell population comprising the steps of:

providing a multiparameter hematology apparatus having a source of light energy configured to emit coherent light in a red spectrum, a transparent reservoir for containing a blood specimen diluted to less than 1/100.a camera for receiving an ensemble light scattering pattern from an ensemble of blood cells contained in the specimen contained in the reservoir and providing images thereof a digitizing means for digitizing images in operative communication with the camera for receiving and converting the images into digital images and a processor operatively connected to the digitizing the means for performing image analysis on the digital images;

providing a blood specimen diluted to less than 1/100 in the transparent reservoir of the multiparameter hematology apparatus;

irradiating the specimen with light from the source of light energy in the red spectrum;

picking up the ensemble light scattering pattern from the irradiated ensemble of blood cells contained in the specimen with the camera; and

converting the images of the ensemble light scattering pattern into digital images with the digitizing means ,and processing the digitized images of the ensemble light scattering pattern with the process to establish blood parameters for the blood specimen including intrinsic parameters such as cell size, extrinsic parameters such as cell counts as well as aggregation and sedimentation of blood cells.

5,851,836

METHOD FOR DETERMINING FIBRINOGEN AND REAGENT FOR DETERMINATION THEREOF

Masayasu Enomoto, Takatsuki, Japan, assignor to Nippon Shoji Kaisha Ltd., Osaka, Japan

Filed Aug. 31, 1995, Ser. No. 521,868

Claims priority, application Japan, Sep. 2, 1994, 6-209940

Int. Cl.^{6} G01N *33/49*

U.S. Cl. 436—69 24 Claims

1. A method for determining a fibrinogen concentration, consisting essentially of adding thrombin or a protease having a similar activity thereto to an undiluted test sample to convert fibrinogen in the sample to fibrin, and determining a coagulation time as a measure of fibrinogen concentration, wherein the conversion of the fibrinogen to fibrin is carried out in a solution containing at least one salt selected from the group consisting of sodium salt, potassium salt and magnesium salt at a concentration, said concentration of the salt being set for a level which provides a coagulation time of 5–100 seconds when the coagulation time is measured at 37° C. using a mixture of a sample containing fibrinogen (275 mg/dl), and a reagent containing thrombin (100 NIHU/ml) and HEPES (100 mM, pH 7–35), at a volume ratio of the sample to the reagent of 1:2.

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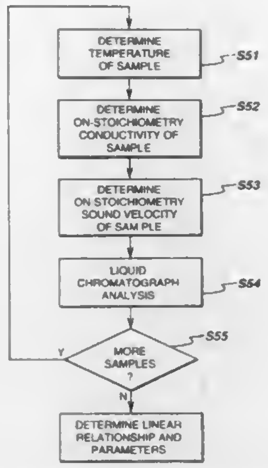
5,851,837
METHOD FOR DETERMINATION OF SALT STOICHIOMETRY

Edward Brittain Stokes, Schenectady, N.Y.; Thomas Link Guggenheim, Mt. Vernon, and James Marshall Finan, Evansville, both of Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 6, 1997, Ser. No. 795,839

Int. Cl.^{6} G01N *27/00;29/00*

U.S. Cl. 436—149 **17 Claims**


DETERMINE TEMPERATURE OF SAMPLE
S51
DETERMINE ON-STOICHIOMETRY CONDUCTIVITY OF SAMPLE
S52
DETERMINE ON STOICHIOMETRY SOUND VELOCITY OF SAM PLE
S53
LIQUID CHROMATOGRAPH ANALYSIS
S54
MORE SAMPLES ?
S55
Y
N
DETERMINE LINEAR RELATIONSHIP AND PARAMETERS

8. A method for determining stoichiometry error SE of a sample, the method comprising:

determining temperature of the sample;
determining conductivity of the sample; and
determining sound velocity for the sample;
where stoichiometry error SE for a sample is determined by:

$$SE=A\times(\sigma(1-c_{\sigma}(T-T_{0}))\times(1-d(\upsilon(1+c_{v}(T-T_{o}))-\upsilon_{TO}))-\sigma_{TO})$$

where SE equals calculated stoichiometry error (mole-% excess BPA); σ equals measured conductivity (mS/cm): υ equals measured sound velocity (m/s); T equals measured temperature (deg C); υ_{TO} equals sound velocity (m/s): σ_{TO} equals conductivity at "normal" operating conditions (mS/cm); A is a proportionality constant that scales conductivity into mole-% excess BPA (mole-%) / (mS/cm): c_{σ} equals a linear temperature correction factor for conductivity (1/deg C),: c_v equals a linear temperature correction factor for sound velocity (1/degC): d equals a linear factor to adjust conductivity for sound velocity (s/m).

5,851,838
DIAGNOSTIC TEST CARRIER WITH A CAPILLARY GAP

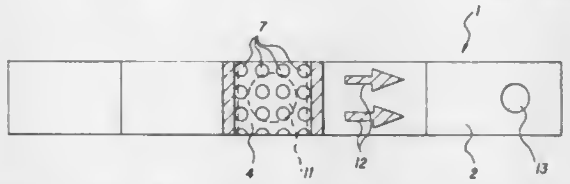
Peter Vetter, Schifferstadt; Heinz Macho, Fürth; Peter Vogel, Hemsbach, and Michael Fritz, Biblis, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jul. 21, 1997, Ser. No. 897,509

Claims priority, application Germany, Jul. 23, 1996, 196 29 654.4

Int. Cl.^{6} G01N *33/48*

U.S. Cl. 436—170 **29 Claims**



25. A method of using a diagnostic test carrier comprising a supporting layer; a detection layer arranged on the supporting layer, said detection layer carrying reagents, and an inert layer covering and extending beyond the detection layer onto the supporting layer, to which said inert layer is attached, wherein the inert layer contains at least one hole in the area of the inert layer covering the detection layer, through which at least one hole a liquid sample containing analytes to be detected is applied to the detection layer, wherein the inert layer is spaced from the detection layer at a distance which allows a capillary liquid transport between the detection layer and the inert layer, and wherein the inert layer is spaced from the supporting layer at a distance such that a capillary liquid transport between the inert layer and the supporting layer is also possible, comprising

passing the liquid sample through the inert layer to the diagnostic layer, with removal of excess liquid through capillary action, to produce a detectable signal in the diagnostic layer from reaction of the liquid sample with the reagents in the diagnostic layer; and
detecting the signal.

5,851,839
PLATELET AGGREGATION INHIBITORS

Robert M. Scarborough, Belmont, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 806,558, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,610, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,488, Jun. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,229, Feb. 20, 1990, Pat. No. 5,318,899, which is a continuation-in-part of Ser. No. 418,028, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,509, Jun. 16, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 465,551

Int. Cl.^{6} G01N *33/543*

U.S. Cl. 436—518 **3 Claims**

1. A method to detect the presence or absence of the peptide selected from the group consisting of:

PAI 80	Mpr-P-Har-G-D-W-P-C-NH_2	(SEQ ID No:1)
PAI 81	Mpr-G-Har-G-D-W-P-C-NH_2	(SEQ ID No:2)
PAI 82	Mpr-A-Har-G-D-W-P-C-NH_2	(SEQ ID No:3)
PAI 83	Mpr-Aib-Har-G-D-W-P-C-NH_2	(SEQ ID No:4)
PAI 84	Mpr-(N-Me-Arg)-Har-G-D-W-P-C-NH_2	(SEQ ID No:5)
PAI 85	Mpr-(N-Me-Ser)-Har-G-D-W-P-C-NH_2	(SEQ ID No:6)
PAI 86	Mpr-(D-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:7)
PAI 87	Mpr-(β-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:8)
PAI 88	Mpr-(N-Me-Leu)-Har-G-D-W-P-C-NH_2	(SEQ ID No:9)
PAI 89	Mpr-(N-Me-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:10)
PAI 90	Mpr-Sar-Har-G-D-W-P-C-NH_2	(SEQ ID No:11)
PAI 91	Mpr-V-Har-G-D-W-P-C-NH_2	(SEQ ID No:12)
PAI 92	Mpr-S-Har-G-D-W-P-C-NH_2	(SEQ ID No:13)
PAI 93	Mpr-Har-G-D-W-P-A-C-NH_2	(SEQ ID No:14)
PAI 94	Mpr-Har-G-D-W-P-(N-Me-Ala)-C-NH_2	(SEQ ID No:15)
PAI 95	Mpr-Har-G-D-W-P-G-C-NH_2	(SEQ ID No:16)
PAI 96	Mpr-Har-G-D-W-P-(D-Ala)-C-NH_2	(SEQ ID No:17)
PAI 97	Mpr-Har-G-D-W-P-P-C-NH_2	(SEQ ID No:18)
PAI 98	Mpr-Har-G-D-W-P-(Sar)-C-NH_2	(SEQ ID No:19)
PAI 99	Mpr-Har-G-D-W-P-(Aib)-C-NH_2	(SEQ ID No:20)
PAI 100	Mpr-A-(Har)-G-D-W-P-Pen-NH_2	(SEQ ID No:21)
PAI 101	Mpr-A-K-G-D-W-P-Pen-NH_2	(SEQ ID No:22), and
PAI 102	Mpr-D-(Har)-G-D-W-P-Pen-NH_2	(SEQ ID No:23)

which method comprises contacting a sample suspected of containing said peptide with an antibody specifically immunoreactive with said peptide under conditions wherein a complex is formed in the presence of said peptide, and detecting the presence or absence of said complex.

5,851,840
BIOTINSILANE COMPOUNDS AND A BINDING MATRIX CONTAINING THESE COMPOUNDS

Peter Sluka, Weilheim, and Hans-Georg Batz, Tutzing, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

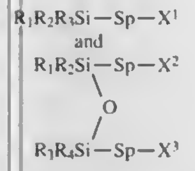
Continuation of Ser. No. 375,035, Jan. 19, 1995, abandoned. This application Dec. 31, 1996, Ser. No. 774,579

Claims priority, application Germany, Jan. 19, 1994, 44 01 450.3; Oct. 6, 1994, 44 35 728.1

Int. Cl.^{6} G01N *33/553;* **C07D** *495/04*

U.S. Cl. 436—525 **62 Claims**

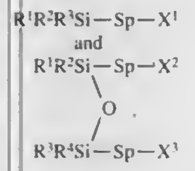
1. Binding matrix comprising an oxidic surface, wherein the oxidic surface is at least partially covered by a diluted and essentially laterally homogeneous binding layer, said binding layer formed by covalent reaction of a silane compound with the oxidic surface, said silane compound selected from the group consisting of:



$$R_1R_2R_3Si-Sp-X^1 \quad \text{and} \quad \begin{array}{l} R_1R_2Si-Sp-X^2 \\ \quad \backslash \\ \quad\; O \\ \quad / \\ R_1R_4Si-Sp-X^3 \end{array}$$

wherein R_1, R_2, R_3 and R_4 are the same or different and are substituents on the Si atom, provided that at least one of the substituents is covalently bound to the oxidic surface, and wherein said substituents are selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, amino and halogen; Sp is a flexible, linear spacer molecule with a chain length of 2 to 50 atoms, and X^1X^2 and X^3 are each solid phase reactants capable of binding to an analyte in a sample, wherein said binding matrix further comprises diluent molecules which are covalently bound to the oxidic surface but are incapable of binding to the analyte.

30. A silane compound selected from the group consisting of:



$$R^1R^2R^3Si-Sp-X^1 \quad \text{and} \quad \begin{array}{l} R^1R^2Si-Sp-X^2 \\ \quad \backslash \\ \quad\; O \\ \quad / \\ R^3R^4Si-Sp-X^3 \end{array}$$

wherein R^1, R^2, R^3, and R^4 can be the same or different and are substituents on the Si atom, provided that at least one of the substituents R^1, R^2, R^3 and R^4, can covalently bind to an oxidic surface, wherein said substituents are selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, amino, and halogen, Sp is a flexible, linear spacer molecule with a chain length of 2 to 50 atoms which is covalently bound to the Si atom by an Si—C bond, and X^1, X^2, X^3 are selected from the group consisting of biotin, a biotin analogue, a biotin derivative, a hapten, an oligonucleotide, a polynucleotide, and a C_1–C_1 alkoxy(oligo-C_2–C_4 alkylene-oxide) group and are covalently bound to the spacer molecule.

5,851,841
METHOD FOR PRODUCING FERROELECTRIC FILM ELEMENT, AND FERROELECTRIC FILM ELEMENT AND FERROELECTRIC MEMORY ELEMENT PRODUCED BY THE METHOD

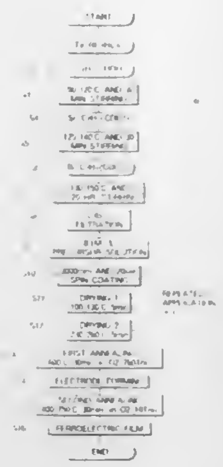
Maho Ushikubo; Yasuyuki Ito; Seiichi Yokoyama, all of Kashiwa; Hironori Matsunaga, Noda, and Masayoshi Koba, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 13, 1996, Ser. No. 713,651

Claims priority, application Japan, Sep. 26, 1995, 7-247509; Feb. 23, 1996, 8-036041

Int. Cl.^{6} H01L *21/70;27/00*

U.S. Cl. 437—60 **5 Claims**



1. A method for producing a ferroelectric element comprising the steps of:

forming a lower electrode layer on a substrate;
applying a metal-contained precursor solution to the surface of said lower electrode;
drying said precursor solution applied to the surface so as to remove only said solution by heating;
a first heat treatment for heating the dried precursor to form a ferroelectric film;
forming an upper electrode layer on said ferroelectric film; and
a second heat treatment for heating the formed film element in a gas-pressurized atmosphere of lower than 1 atmosphere.

5,851,842
MEASUREMENT SYSTEM AND MEASUREMENT METHOD

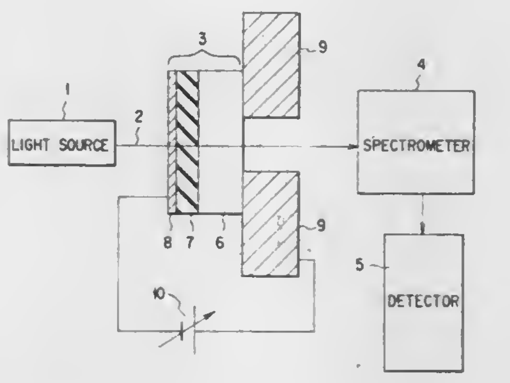
Ryota Katsumata, Yokohama; Nobuo Hayasaka, Yokosuka; Naoki Yasuda; Hideshi Miyajima, both of Yokohama; Iwao Higashikawa, Tokyo, and Masaki Hotta, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1997, Ser. No. 857,360

Claims priority, application Japan, May 16, 1996, 8-121918; Mar. 18, 1997, 9-065147

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—9 **22 Claims**



11. A measurement method comprising the steps of:

irradiating a dielectric film with light including wavelength of an infrared region; and
measuring a potential difference of the dielectric film charged with plasma on the basis of change in absorbance of the light within absorption wavelength range intrinsic to the dielectric film, among the light absorbed by the dielectric film.

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5,851,843
METHOD OF MANUFACTURING A SUPER CONDUCTION FIELD EFFECT TRANSISTOR

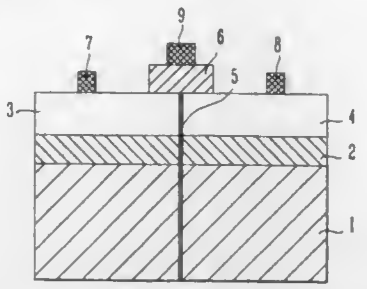
Jeong Dae Suh, and Gun Yong Sung, both of Daejon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejon, Rep. of Korea

Filed Oct. 16, 1997, Ser. No. 951,503

Claims priority, application DPR of Korea, Nov. 4, 1996, 96-51780

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—2 **27 Claims**



1. A method for manufacturing a field effect transistor having a bi-crystal boundary junction comprising the steps of:

preparing a bi-crystal substrate;

forming a super conductive thin films for source and drain electrode on said bi-crystal substrate by depositing a super conductive thin film thereon;

forming a boundary channel interposed between said bi-crystal super conductive thin films for source and drain electrode and extended into said bi-crystal substrate;

forming an amorphous insulating layer for gate electrode on a portion between said bi-crystal super conductive thin films for source and drain electrode above the boundary channel by depositing an amorphous insulating layer on the entire surface of the resulting structure and performing a mask patterning process thereof; and

forming metal pads for electrode on said bi-crystal super conductive thin films for source and drain electrode and the amorphous insulating layer for gate electrode by depositing a metal layer on the entire surface of the resulting structure and performing a mask patterning process thereof.

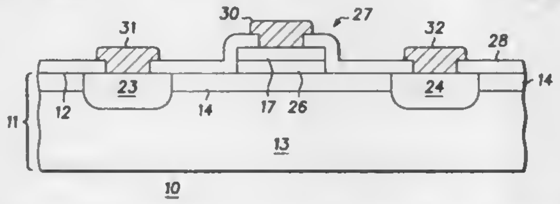
5,851,844
FERROELECTRIC SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE

William J. Ooms, Chandler, and Jerald A. Hallmark, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 7, 1996, Ser. No. 743,761

Int. Cl.^{6} H01L *21/00;21/336*

U.S. Cl. 438—3 **13 Claims**



1. A method for manufacturing a ferroelectric device, comprising the steps of:

providing a semiconductor material of a first conductivity type;

forming a ferroelectric gate structure over the semiconductor material, the ferroelectric gate structure having first and second edges;

forming impurity regions of a second conductivity type in the semiconductor material and located on opposing sides of the ferroelectric crate structure, where the impurity regions are spaced apart from the first and second edges and the impurity regions are not self-aligned to the ferroelectric gate structure; and

forming first and second contacts to the semiconductor material, the first contact spaced apart from the first edge of the ferroelectric gate structure and the second contact spaced apart from the second edge of the ferroelectric gate structure.

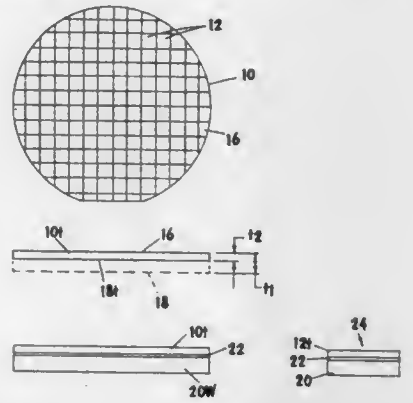
5,851,845
PROCESS FOR PACKAGING A SEMICONDUCTOR DIE USING DICING AND TESTING

Alan G. Wood, Boise, and Warren M. Farnworth, Nampa, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 18, 1995, Ser. No. 574,403

Int. Cl.^{6} H01L *21/58;21/60;21/70*

U.S. Cl. 438—15 **16 Claims**



1. A semiconductor packaging method comprising:

providing a first substrate comprising a plurality of integrated circuit dice;

thinning the first substrate using chemical mechanical polishing;

providing a second substrate;

following thinning, attaching the first substrate to the second substrate by forming an adhesive layer between a backside of the first substrate and the second substrate;

dicing the first substrate and the second substrate to form a package comprising a die, a portion of the adhesive layer and a portion of the second substrate;

providing a testing apparatus configured to electrically connect the package to test circuitry; and

testing the package by placing the package in the testing apparatus and applying test signals through the testing apparatus to integrated circuits on the die.

5,851,846
POLISHING METHOD FOR SOI

Masaki Matsui, Nagoya; Masatake Nagaya, Nishikamo-gun; Akinari Fukaya, Obu, and Hiroaki Himi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 21, 1995, Ser. No. 576,593

Claims priority, application Japan, Dec. 22, 1994, 6-319832; Nov. 2, 1995, 7-286171

Int. Cl.^{6} H01L *21/66*

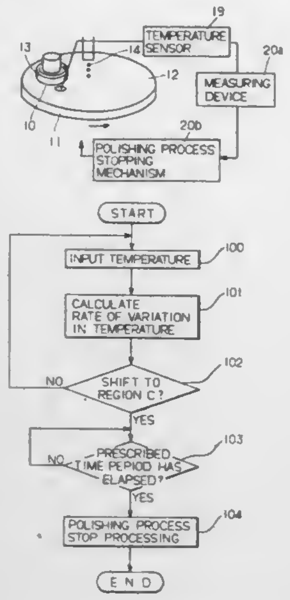
U.S. Cl. 438—17 **24 Claims**

1. A method for polishing a material, said method comprising the steps of:

providing a stopper material having at least one protruding portion extending through a portion of the material and towards a surface of the material, the stopper material being selected to have a polishing rate lower than a polishing rate of the material;

polishing the surface of the material with a polishing pad constructed and arranged to make contact with the surface of the material;

measuring a temperature of the polishing pad at different times during said polishing step to obtain a plurality of measured temperatures; and


19
TEMPERATURE SENSOR
13
14
20a
12
MEASURING DEVICE
10
11
20b
POLISHING PROCESS STOPPING MECHANISM
START
INPUT TEMPERATURE
100
CALCULATE RATE OF VARIATION IN TEMPERATURE
101
NO
SHIFT TO REGION C?
102
YES
NO
PRESCRIBED TIME PEPIOD HAS ELAPSED?
103
YES
POLISHING PROCESS STOP PROCESSING
104
END

detecting an end point of said polishing step based on variations of the measured temperatures.

5,851,847
PHOTONIC DEVICE AND PROCESS FOR FABRICATING THE SAME

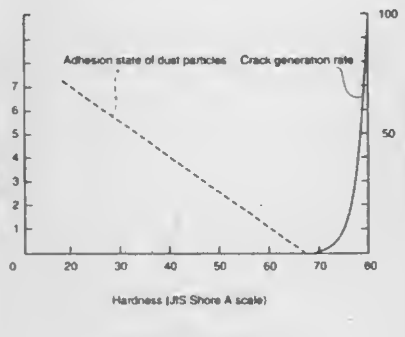
Hideo Yamanaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 716,113, Sep. 19, 1996. This application Jun. 10, 1997, Ser. No. 872,575

Claims priority, application Japan, Sep. 29, 1995, 7-252635

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—26 **6 Claims**



A graph explaining the optimal hardness

1. A process of fabricating a photonic device comprising the steps of:

mounting a photonic element on a base;

forming a wiring on a photonic element;

sealing said photonic element by potting a light-transmitting resin having a predetermined viscosity which is less than or equal to 30 Poise; and

applying a heating treatment, thereby driving out bubbles from an inside of said light-transmitting resin and curing said light-transmitting resin to a final hardness of between 60 and 70 JIS Shore A hardness by relaxing the curing shrinkage stress.

5,851,848
METHOD AND APPARATUS FOR ALIGNING THE POSITION OF DIE ON A WAFER TABLE

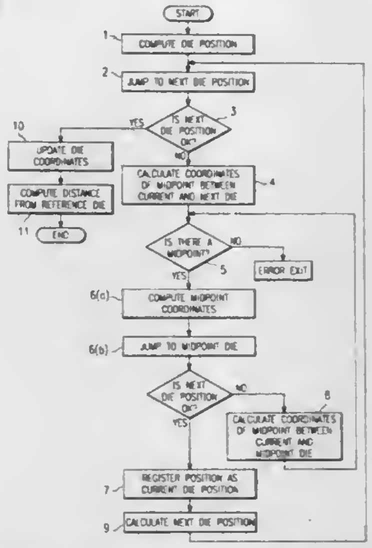
Subramanian Balamurugan, Singapore, Singapore, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 20, 1996, Ser. No. 667,246

Claims priority, application Singapore, Jan. 31, 1996, 9600739

Int. Cl.^{6} H01L *21/66*

U.S. Cl. 438—33 **5 Claims**


START
1
COMPUTE DIE POSITION
2
JUMP TO NEXT DIE POSITION
3
IS NEXT DIE POSITION OK?
YES
NO
10
UPDATE DIE COORDINATES
COMPUTE DISTANCE FROM REFERENCE DIE
11
END
CALCULATE COORDINATES OF MIDPOINT BETWEEN CURRENT AND NEXT DIE
4
IS THERE A MIDPOINT?
NO
ERROR EXIT
5
YES
6(a)
COMPUTE MIDPOINT COORDINATES
6(b)
JUMP TO MIDPOINT DIE
IS NEXT DIE POSITION OK?
NO
8
CALCULATE COORDINATES OF MIDPOINT BETWEEN CURRENT AND MIDPOINT DIE
YES
7
REGISTER POSITION AS CURRENT DIE POSITION
9
CALCULATE NEXT DIE POSITION

1. A method for relative positioning a die on a wafer table with respect to a die pickup device after cutting a wafer into dies comprising the steps of:

measuring street widths between at least two adjacent dies in both horizontal and vertical direction;

averaging said measured street widths;

generating a control signal proportional to an average street width plus a nominal die dimension; and

moving said die pickup device relative to a wafer table a distance defined by the control signal.

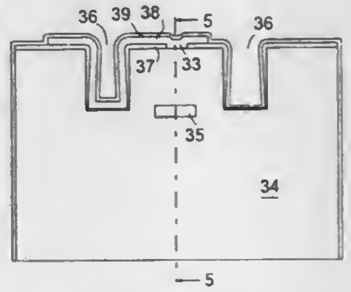
5,851,849
PROCESS FOR PASSIVATING SEMICONDUCTOR LASER STRUCTURES WITH SEVERE STEPS IN SURFACE TOPOGRAPHY

Robert Benedict Comizzoli, Belle Mead, N.J.; Mindaugas Fernand Dautartas, Alburtis, and John William Osenbach, Kutztown, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 22, 1997, Ser. No. 848,736

Int. Cl.^{6} H01S *3/19*

U.S. Cl. 438—38 **17 Claims**



1. A process for the manufacture of a semiconductor laser comprising the steps of:

a. forming a layered semiconductor laser structure,

b. etching said layered semiconductor structure to form a trench along a portion of the layered structure, said trench having a depth at least three times the width, and

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c. coating said etched semiconductor structure with a passivating coating of a passivating compound by the steps of
  i. mounting the etched stacked semiconductor structure in a vacuum chamber,
  ii. evacuating the chamber to a pressure in the range of 1–50 mbar, heating the stacked structure to a temperature in the range 100° C. to 400° C.,
  iii. admitting at least two precursor gases into the chamber in alternate steps, said alternate steps comprising a first step of admitting a flow of a first of said precursor gases, said first of said precursor gases consisting of a source of one part of said passivating compound and a second step of admitting a flow of said second of said precursor gases, said second of said precursor gases comprising a source of an oxidizing agent to form said passivating compound, and continuing to alternate between step one and step two for at least 1000 cycles to produce the desired conformal passivating layer.

5,851,850
METHOD FOR FABRICATING A GAP TYPE SEMICONDUCTOR SUBSTRATE OF RED LIGHT EMITTING DEVICES

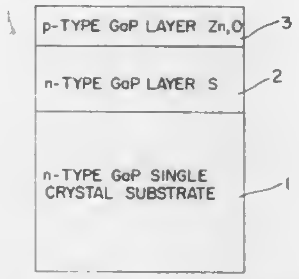
Munehisa Yanagisawa, Takasaki; Susumu Higuchi, Annaka; Yuuki Tamura, Annaka; Akio Nakamura, Annaka, and Toshio Otaki, Takasaki, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 377,132, Jan. 23, 1995, Pat. No. 5,514,881, which is a continuation-in-part of Ser. No. 38,693, Mar. 29, 1993, abandoned. This application Aug. 17, 1995, Ser. No. 516,096

Claims priority, application Japan, Jul. 31, 1992, 4-225324

Int. Cl.⁶ H01L *21/00*

U.S. Cl. 438—46 **5 Claims**



1. A method for fabricating a GaP type semiconductor substrate of red light emitting devices comprising the steps of:
  growing an n-type single crystal containing more than 1.0×10^{16} but less than 1.0×10^{17} atoms/cc carbon by the Liquid Encapsulation Czochralski method using B_2O_3 as an encapsulation liquid, wherein said B_2O_3 contains at least 200 ppm water; and;
  forming an n-type GaP layer and a p-type GaP layer successively on a semiconductor substrate obtained from said n-type GaP single crystal.

5,851,851
METHOD FOR FABRICATING A SEMICONDUCTOR ACCELERATION SENSOR

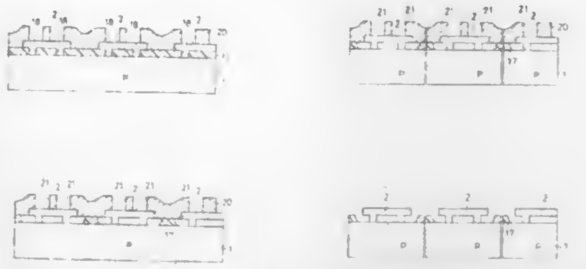
Hirofumi Uenoyama, Anjo; Masakazu Kanosue, Nagoya; Kenichi Ao, Tokai, and Yasutoshi Suzuki, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1995, Ser. No. 399,342

Claims priority, application Japan, Mar. 7, 1994, 6-036139; Mar. 7, 1994, 6-036141

Int. Cl.⁶ H01L *21/78*

U.S. Cl. 438—50 **18 Claims**



14. A method for fabricating a semiconductor acceleration sensor which comprises a movable portion of beam structure on a semiconductor substrate with a gap interposed therebetween so as to detect acceleration from displacement of said movable portion accompanying the action of acceleration, comprising the step of:
  disposing a movable portion support material on said electrode film so that the movable portion support material is not disposed between said semiconductor substrate and said electrode film to suspend said movable portion on said semiconductor substrate;
  dicing said semiconductor substrate in a state wherein said movable portion is suspended by said movable portion support material; and
  etching said movable portion support material.

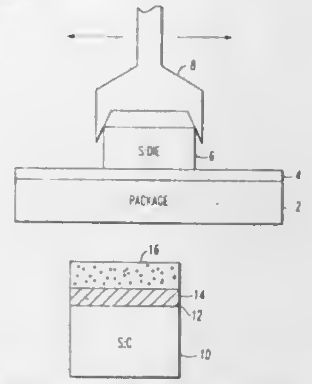
5,851,852
DIE ATTACHED PROCESS FOR SIC

John A. Ostop, Severna Park, and Li-Shu Chen, Ellicott City, both of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 13, 1996, Ser. No. 600,777

Int. Cl.⁶ H01L *21/58*

U.S. Cl. 438—106 **11 Claims**



1. A die attach procedure for SiC, comprising:
(a) providing a package with a plating thereon:
(b) providing a SiC die;
(c) forming a first layer on said SiC die which bonds to said SiC die;
(d) forming a second layer on said first layer which bonds to said first layer; and
(e) scrubbing said SiC die on said package such that said second layer bonds to said package.

5,851,853
METHOD OF ATTACHING A DIE ONTO A PAD OF A LEAD FRAME

Hwa Young Lee; Jong Keun Jun; Tae Hyuk Kim, and Jae Won Lee, all of Chungcheongnam-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 15, 1996, Ser. No. 632,050

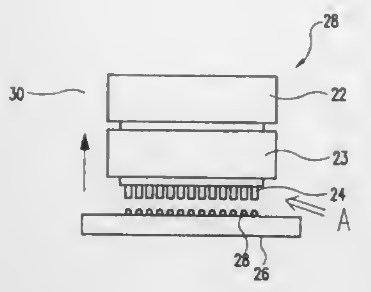
Claims priority, application Rep. of Korea, Oct. 17, 1995, 1995 35777

Int. Cl.⁶ H01L *21/44*

U.S. Cl. 438—108 **15 Claims**

1. A method of attaching a semiconductor chip onto a die pad of a lead frame using an epoxy adhesive, comprising the steps of:

  dispensing the epoxy adhesive onto the die pad;
  decreasing a viscosity of the epoxy adhesive dispensed onto the die pad by blowing a hot gas over at least part of the epoxy adhesive thereby preventing a formation of an epoxy tail, while preventing the hot gas from being blown directly onto the die pad; and
  placing the chip into the adhesive to attach the chip to the die pad.



5,851,854
METHOD FOR PRODUCING A DATA CARRIER

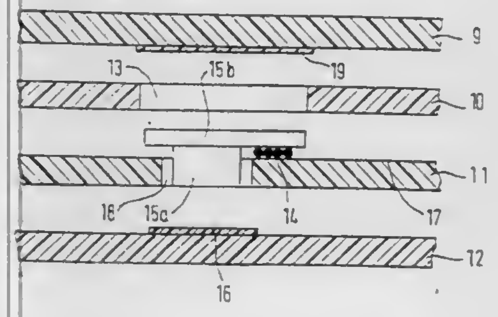
Yahya Haghiri-Tehrani; Albert Ojster, both of Munich, and Achim Oertel, Rosenheim, all of Germany, assignors to Giesecke & Devrient GmbH, Munich, Germany

Filed Aug. 2, 1996, Ser. No. 691,376

Claims priority, application Germany, Aug. 4, 1995, 195 28 730.4

Int. Cl.⁶ H01L *21/44*

U.S. Cl. 438—118 **14 Claims**



1. A method for producing a multi-layered data carrier carrying an electronic module, comprising the steps of:
  providing at least a first and a second layer (**4**,**11**,**21**), the first layer having at least one opening therein (**20**,**18**,**23**),
  positioning an electronic module (**8***a*,**8***b*,**2** or **15***a*,**15***b*,**14**) in the opening in the first layer such that there remains a cavity between the module and one side of the opening,
  printing a filling material (**7**,**16**,**19**) on the second layer selectively in the area of said side of the opening of the first layer including the cavity, the softening temperature of the filling material being lower than the softening temperature of the at least first and second layers, and
  laminating at least first and second layers and filling material under heat sufficient to soften the at least first and second layers, and pressure such that the filling material is caused to soften and flow at least partly into the cavity remaining between the electronic module and the opening before said at least first and second layers are softened and laminated.

5,851,855
PROCESS FOR MANUFACTURING A MOS-TECHNOLOGY POWER DEVICE CHIP AND PACKAGE ASSEMBLY

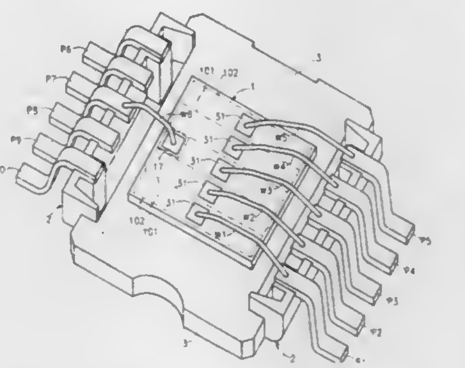
Giuseppe Ferla, Catania, and Ferruccio Frisina, Sant'Agata Li Battiati, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

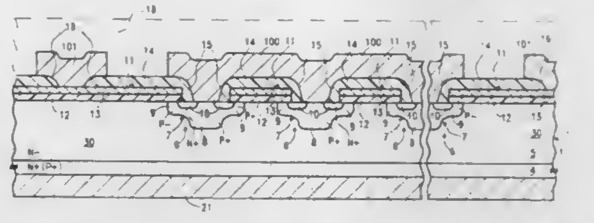
Continuation of Ser. No. 509,956, Aug. 1, 1995, Pat. No. 5,631,476. This application Feb. 4, 1997, Ser. No. 795,697

Claims priority, application European Pat. Off., Aug. 2, 1994, 94830394

Int. Cl.⁶ H01L *21/265;49/00*

U.S. Cl. 438—129 **23 Claims**





1. A method for making a MOS-technology power device chip and package assembly comprising the steps of:
  a) forming a plurality of elementary functional units in a semiconductor material layer, wherein each elementary unit includes
    a first doped region of a first conductivity type in said semiconductor layer, and
    a second doped region of a second conductivity type inside said first doped region;
  b) forming sub-pluralities of elementary functional units in said plurality of elementary functional units;
  c) contacting each second doped region of each sub-plurality by a same metal plate so that each metal plate corresponding to each sub-plurality is electrically insulated from one another;
  d) connecting each metal plate, through a bonding wire, to a source electrode pin of said package;
  e) separating said sub-pluralities of elementary functional units by regions of said semiconductor material layer where no elementary functional units are formed;
  f) covering said semiconductor material layer by a conductive insulated gate layer partially extending over each first doped region;
  g) contacting said insulated gate layer by gate metal mesh surrounding each metal plate;
  h) connecting said gate metal mesh to at least one gate metal pad;
  i) connecting said gate metal pad, by means of a bonding wire, to a pin of said package; and
  j) soldering a bottom surface of said chip onto a metal plate of said package.

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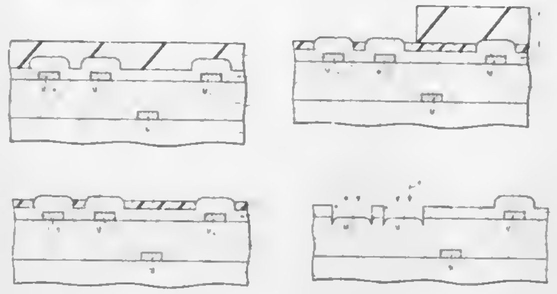
5,851,856
MANUFACTURE OF APPLICATION-SPECIFIC IC

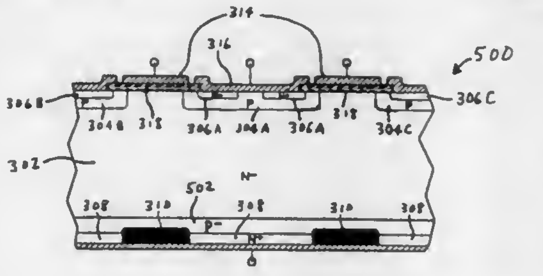
Masahiko Nagura, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed Nov. 30, 1994, Ser. No. 346,672
Claims priority, application Japan, Dec. 3, 1993, 5-304441
Int. Cl.^{6} H01L *21/28;21/44*
U.S. Cl. 438—130 28 Claims



1. A method of manufacturing a semiconductor device, said method comprising the steps of:
- forming an insulating film over a wiring layer pattern formed on a substrate;
- forming a planarized film over the whole surface of said insulating film until the surface of said planarized film becomes flat, said planarized film being made of a material having a different property from said insulating film;
- removing said planarized film until the partial surface area of said insulating film formed on the top of said metal wiring pattern is exposed;
- forming a resist film on the surface of said exposed insulating film and said planarized film;
- patterning said resist film to form a resist pattern having an opening exposing at least one partial exposed surface area of said insulating film;
- selectively removing a partial area of said insulating film not covered with said planarized film and said resist pattern and exposing a partial area of said metal wiring pattern;
- removing said resist pattern and said planarized film after said preceding steps; and
- cutting said exposed metal wiring pattern after said step of removing said resist pattern.

5,851,857
HIGH VOLTAGE POWER MOS DEVICE

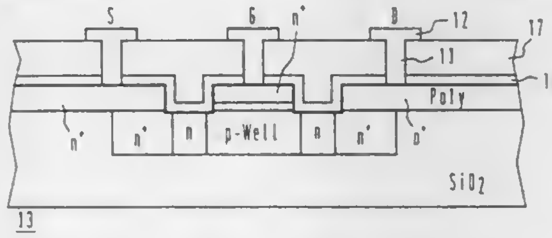
Ulrich Kelberlau, Lampertheim, Germany; and Nathan Zommer, Los Altos, Calif., assignors to IXYS Corporation, Santa Clara, Calif.
Filed Sep. 4, 1996, Ser. No. 706,513
Int. Cl.^{6} H01L *21/332*
U.S. Cl. 438—134 21 Claims



1. A method for fabricating a switching device comprising the steps of:
- providing a semiconductor substrate of a first conductivity type having a front side and a back side;
- forming a first region of a second conductivity type in the semiconductor substrate adjacent the front side;
- forming a second region of the first conductivity type within the first region and adjacent the front side;
- forming a plurality of island regions of the first conductivity type adjacent the back side; and
- forming a third region of the second conductivity type adjacent the back side, the third region being coupled to the island regions;
- wherein the first region, the second region, the semiconductor substrate, and the island regions form a first transistor, and wherein the first region, the second region, the semiconductor substrate, and the third region form a second transistor in parallel with the first transistor.

5,851,858
METHOD FOR PRODUCING A MULTIPLICITY OF MICROELECTRONIC CIRCUITS ON SOI

Karlheinz Mueller, Waldkraiburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 30, 1996, Ser. No. 723,846
Claims priority, application Germany, Sep. 28, 1995, 195 36 262.4
Int. Cl.^{6} H01L *21/00;21/336*
U.S. Cl. 438—154 12 Claims

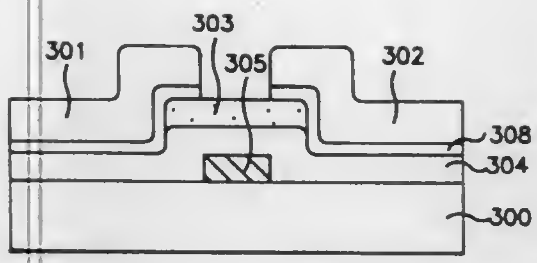


1. A method for producing a multiplicity of microelectronic circuits on silicon on insulator substrate, which comprises:
- defining a multiplicity of active regions in an insulator material;
- implanting an n-well or a p-well in each of the active regions, depending on a structure to be created;
- creating and defining a gate oxide layer in partial regions of the active region;
- applying a polysilicon layer;
- n^+ or p^+ doping a region of the polysilicon layer located above the well, depending on the structure to be created;
- etching the polysilicon layer for exposing portions of the active regions;
- performing an oxidation of the polysilicon layer and of the active regions previously etched bare, to form a second oxide layer;
- performing a p^- or n^- implantation, depending on the structure to be created;
- diffusing implanted dopants into underlying well regions;
- applying a third oxide layer; and
- performing contacting.

5,851,859
METHOD FOR MANFACTURING A THIN FILM TRANSISTOR BY USING TEMPERATURE DIFFERENCE

Jeong Hyun Kim, Seuol, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Division of Ser. No. 375,643, Jan. 20, 1995, Pat. No. 5,686,320.
This application Mar. 7, 1997, Ser. No. 812,535
Int. Cl.^{6} H01L *21/336;21/20*
U.S. Cl. 438—158 7 Claims

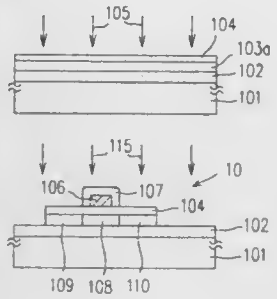
1. A method for forming a thin film transistor, comprising the steps of:
- a) providing a substrate;
- b) patterning a gate electrode on the substrate;
- c) forming an insulating layer on the substrate including the gate electrode;



- d) selectively depositing a semiconductor layer on the insulating layer over the gate electrode by heating the substrate with a lamp; and
- e) patterning a source electrode and a drain electrode on the insulating layer to contact the semiconductor layer.

5,851,860
SEMICONDUCTOR DEVICE AND METHOD FOR PRODUCING THE SAME

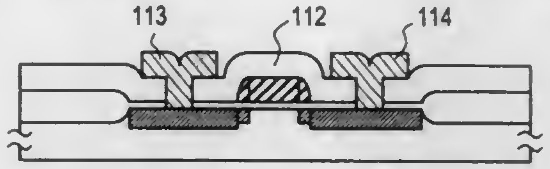
Naoki Makita, Nara, and Takashi Funai, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 2, 1995, Ser. No. 458,685
Claims priority, application Japan, Jul. 15, 1994, 6-164380; Jul. 15, 1994, 6-164381
Int. Cl.^{6} H01L *21/84*
U.S. Cl. 438—166 10 Claims



1. A method for producing a semiconductor device comprising the sequential steps of:
- continuously forming, by a plasma CVD method, an amorphous silicon film and an insulating film to be used as a gate insulating film of the semiconductor device on a substrate having an insulating surface without exposing the substrate to an outside gas, no other process step being interposed between the amorphous silicon film formation and the insulating film formation;
- introducing a catalyst element for promoting a crystallization of the amorphous silicon film through the insulating film into the amorphous silicon film by an ion implantation method, and wherein a channel region of the semiconductor device is formed in a region to which the catalyst has been implanted;
- crystallizing at least a portion of the amorphous silicon film, to which the catalyst is added, by a heat treatment; and
- forming a gate electrode on the insulating film.

5,851,861
MIS SEMICONDUCTOR DEVICE HAVING AN LDD STRUCTURE AND A MANUFACTURING METHOD THEREFOR

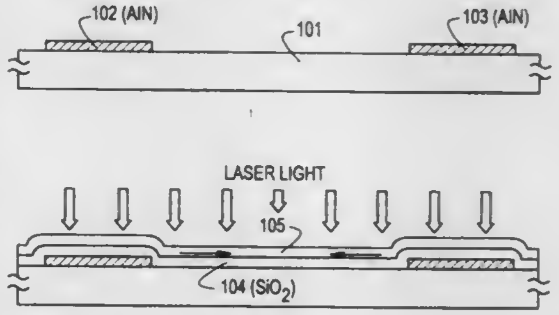
Hideomi Suzawa, Kanagawa; Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Filed Nov. 21, 1995, Ser. No. 561,531
Claims priority, application Japan, Nov. 25, 1994, 6-315633
Int. Cl.^{6} H01L *21/027*
U.S. Cl. 438—166 19 Claims



1. A method of manufacturing a MIS semiconductor device, said method comprising the steps of:
- forming a gate insulating film on a surface of a semiconductor, said gate insulating film comprising an oxide film;
- forming a gate electrode central portion;.
- forming a lightly doped impurity region in the semiconductor in a self-aligned manner using the gate electrode central portion as a mask;
- forming a coating over said gate electrode and said gate insulating film;
- forming a side wall on a side face of the gate electrode central portion by anisotropically or semi-anisotropically etching the coating in an atmosphere including a halogen fluoride by applying a plasma; and
- forming a source or a drain in a self-aligned manner using the side wall as a mask,
- wherein a portion of said coating which is damaged by said plasma is likely etched by said halogen fluoride.

5,851,862
METHOD OF CRYSTALLIZING A SILICON FILM

Hisashi Ohtani, Kanagawa; Yasuhiko Takemura, Shiga; Akiharu Miyanaga, Kanagawa, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 402,239, Mar. 10, 1995, abandoned.
This application Apr. 18, 1997, Ser. No. 839,940
Claims priority, application Japan, Mar. 11, 1994, 6-067983
Int. Cl.^{6} H01L *21/324;21/336*
U.S. Cl. 438—166 25 Claims



1. A method for producing a semiconductor device comprising the steps of:
- selectively forming a film comprising a high thermal conductivity material adjacent to an insulating surface;
- forming a semiconductor film comprising silicon which is amorphous or crystalline;
- heating the semiconductor film;

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cooling the heated semiconductor film to grow crystals from a region of the semiconductor film formed adjacent to the film comprising the high thermal conductivity material; and

producing the semiconductor device using the cooled semiconductor film,

wherein the high thermal conductivity material comprises aluminum nitride, boron nitride, or diamond.

5,851,863
SEMICONDUCTOR DEVICE

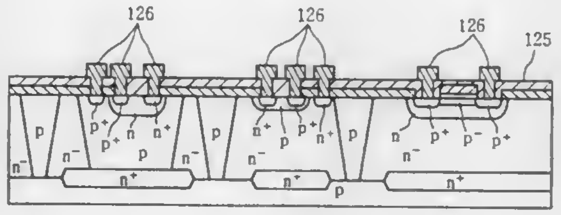
Taizo Fujii; Takehiro Hirai, and Sugao Fujinaga, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 8, 1996, Ser. No. 629,248

Claims priority, application Japan, Apr. 7, 1995, 7-082243

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 438—203 **12 Claims**



1. A method of fabricating a semiconductor device in which at least a first bipolar transistor having a vertical bipolar transistor structure, at least a second bipolar transistor having a vertical bipolar transistor structure, and at least a MOSFET are formed on a semiconductor substrate;

said semiconductor device fabrication method comprising:

(a) a first step of forming a collector layer of a first conductivity type of said first bipolar transistor, a collector layer of a second conductivity type of said second bipolar transistor, and an active region of a second conductivity type of said MOSFET;

(b) a second step of forming a base diffusion layer of a second conductivity type in a region surrounded by said collector layer of said first bipolar transistor by implanting an impurity of a second conductivity type thereinto, and forming a diffusion layer of a second conductivity type in a region surrounded by said active region of said MOSFET by implanting an impurity of a second conductivity type thereinto, said second-conductivity-type base diffusion layer and said second-conductivity-type diffusion layer are formed simultaneously with each other by one-time ion-implantation of an impurity of a second conductivity type;

(c) a third step of forming a base diffusion layer of a first conductivity type in a region surrounded by said collector layer of said second bipolar transistor by implanting an impurity of a first conductivity type thereinto and forming a channel dope diffusion layer of a first conductivity type which includes at-least a portion where a channel is to be formed in a region that is within said second-conductivity-type diffusion layer of said MOSFET by implanting an impurity of a first conductivity type thereinto, said first-conductivity-type base diffusion layer and said first-conductivity-type channel dope diffusion layer are formed simultaneously with each other by one-time ion-implantation of an impurity of a first conductivity type at a smaller implantation energy than an implantation energy used in said second step; and

(d) a fourth step of forming a gate electrode on said region where said second-conductivity-type diffusion layer and said first conductivity-type channel dope diffusion layer are formed in said active region of said MOSFET, said fourth step being conducted subsequently to said third step.

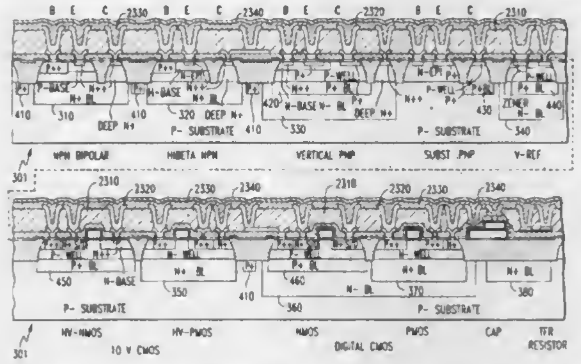
5,851,864
METHOD OF FABRICATING BICMOS DEVICES

Akira Ito, Palm Bay, and Michael David Church, Sebastian, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 917,635, Jul. 20, 1992, which is a continuation-in-part of Ser. No. 785,400, Oct. 30, 1991, abandoned. This application Oct. 22, 1997, Ser. No. 956,074

Int. Cl.^{6} H01L *7/44*

U.S. Cl. 438—203 **18 Claims**



1. A method of fabrication of integrated circuits, comprising the steps of:

(a) introducing N-type dopants into a semiconductor layer to simultaneously form the bases for PNP transistors and the drains of first NMOS transistors; and

(b) introducing P-type dopants into said semiconductor layer to simultaneously form the bases for NPN transistors and compensate said drains of first NMOS transistors wherein said first NMOS transistors with drains having P-type and N-type dopants are characterized by a dopant concentration equal to the dopant concentration of the base dopants of said PNP transistors minus the dopant concentration of the base dopants of said NPN transistors.

5,851,865
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE HAVING MASK LAYER FORMING STEP FOR ION IMPLANTATION

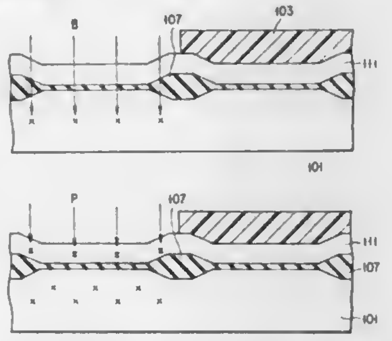
Hidetoshi Koike, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 707,659

Claims priority, application Japan, Sep. 5, 1995, 7-227757

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 438—217 **35 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming an oxide layer over the major surface of a semiconductor substrate;

depositing a conductive layer over the entire surface;

forming a mask layer which has an opening to expose a portion of said conductive layer;

ion implanting first impurities into said semiconductor substrate through said conductive layer and said oxide layer using said mask layer as a mask;

ion implanting second impurities into said conductive layer using said mask layer as a mask; and

etching, after said mask layer is removed, said conductive layer so as to leave a portion, thereby forming a gate electrode.

5,851,866
FABRICATION METHOD FOR CMOS WITH SIDEWALLS

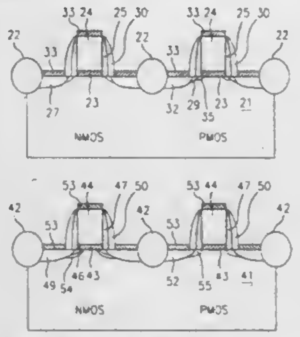
Jeong-Hwan Son, Daejon, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Nov. 26, 1997, Ser. No. 979,565

Claims priority, application Rep. of Korea, Nov. 27, 1996, 1996-58081

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 438—231 **44 Claims**



1. A method of fabricating a semiconductor device, the method comprising the steps of:

providing a substrate having a first region and a second region and a first gate structure and a second gate structure formed on the first region and the second region, respectively;

forming first impurity regions in the first region on each side of the first gate structure;

forming second impurity regions in the second region on each side of the second gate structure;

forming first sidewalls on each side of the first gate structure and on each side of the second gate structure;

forming third impurity regions in the second region on each side of the second gate structure from at least a portion of each of the second impurity regions; and

forming fourth impurity regions adjacent to each of the first impurity regions in the first region and halo impurity regions adjacent to each of the second impurity regions in the second region.

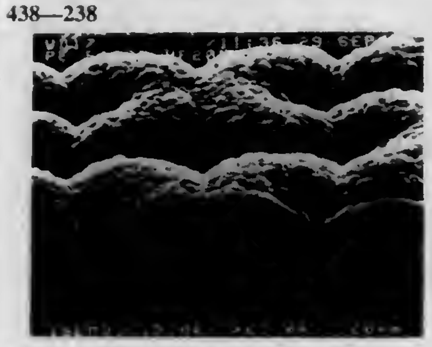
5,851,867
RUGGED STACKED OXIDE LAYER STRUCTURE AND METHOD OF FABRICATING SAME

Kuang-Chao Chen, and Tuby Tu, both of Hsin-chu, Taiwan, assignors to Mosel Vitellic Incorporated, Hsin-Chu, Taiwan

Filed Aug. 27, 1996, Ser. No. 697,623

Int. Cl.^{6} H01L *21/8234;21/31*

U.S. Cl. 438—238 **10 Claims**



1. A method of fabricating a rugged stacked oxide layer comprising the steps of:

forming a lower layer of PE TEOS on a silicon substrate; and

subsequently depositing an upper layer of O_3/TEOS on the lower layer of PE TEOS at a temperature between 300°–500° C. to form the rugged stacked oxide layer.

5,851,868
METHODS OF FORMING INTEGRATED DECOUPLING CAPACITORS

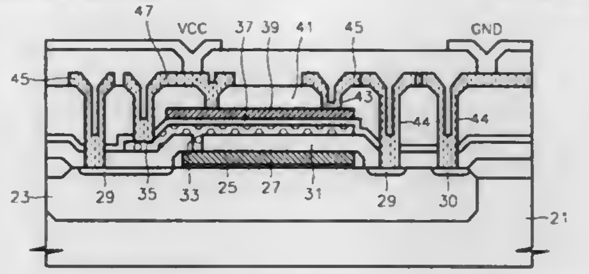
Sung-bong Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 20, 1996, Ser. No. 699,945

Claims priority, application Rep. of Korea, Sep. 19, 1995, 1995-30681

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 438—238 **35 Claims**



1. A method of forming an integrated decoupling capacitor, comprising the steps of:

forming an insulated first capacitor electrode on a first portion of a face of a semiconductor substrate containing a region of first conductivity type therein extending to the first portion of the face;

forming a second capacitor electrode on the insulated first capacitor electrode, disposed opposite the region of first conductivity type at the first portion of the face;

forming an inversion-layer charge source region of second conductivity type in the region of first conductivity type;

forming a first conductivity type contact region in the region of first conductivity type;

forming a first capacitor contact electrically connected to the insulated first capacitor electrode; and

forming a second capacitor contact electrically connected to the second capacitor electrode, the first conductivity type contact region and the inversion-layer charge source region.

5,851,869
MANUFACTURE OF SEMICONDUCTOR DEVICE HAVING LOW CONTACT RESISTANCE

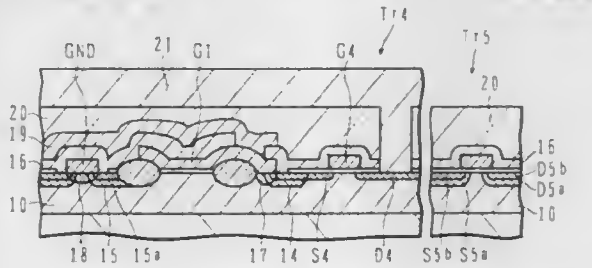
Takehiro Urayama, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Division of Ser. No. 466,078, Jun. 6, 1995, Pat. No. 5,600,167. This application Sep. 24, 1996, Ser. No. 719,399

Claims priority, application Japan, Jul. 20, 1994, HEI 6-168026

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 438—238 **20 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing a semiconductor substrate having an active region of a first conductivity type;

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(b) forming a gate oxide film on a surface of said active region;

(c) selectivity removing said gate oxide film and forming a first connection region where a surface of said semiconductor substrate is exposed;

(d) forming a conductive film including impurities of a second conductivity type opposite to the first conductivity type on said semiconductor substrate, patterning said conductive film, and forming a first gate electrode on said gate oxide film and a first wiring on said first connection region;

(e) forming a resist pattern exposing a transistor forming region including said first gate electrode and said first connection region and implanting first impurity ions of the second conductivity type by using a mask said resist pattern, said first gate electrode and said first wiring;

(f) implanting second impurity ions of the second conductivity type into the transistor forming region including said first gate electrode by using as a mask said first gate electrode; and

(g) annealing said semiconductor substrate to activate said first and second impurity ions and diffuse impurities in said first wiring of said conductive film into said semiconductor substrate at said first connection region, wherein said semiconductor device comprises an SRAM cell including a pair of driver transistors, a pair of transfer transistors, and a plurality of interconnection wirings between said transistors, and a peripheral circuit including a MISFET of a double-diffused drain (DDD) structure.

5,851,870

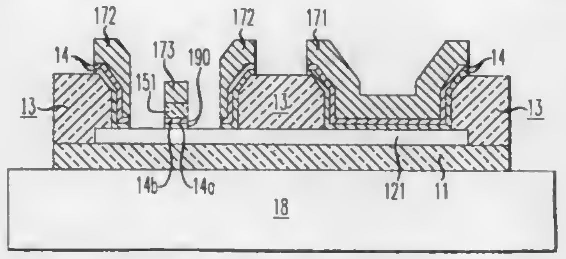
METHOD FOR MAKING A CAPACITOR

Dayo Alugbin, Windmere; Chung Wai Leung, Orlando; Joseph Rudolph Radosevich, Orlando; Ranbir Singh, Orlando, and Daniel Mark Wroge, Orlando, all of Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 353,015, Dec. 9, 1994, Pat. No. 5,576,240. This application May 9, 1996, Ser. No. 644,086

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—239 **2 Claims**



1. A method for forming a capacitor comprising:

forming a conductive substrate;

forming a patterned dielectric upon said substrate, said patterned dielectric having an opening which exposes said substrate, said opening having at least one side;

forming at least one conductive material within said opening; said conductive material contacting said substrate and not contacting said sides of said opening;

forming a dielectric upon said conductive material, said dielectric not contacting said sides of said opening;

forming a conductive top layer upon said dielectric layer, said conductive top layer not contacting said sides of said opening.

5,851,871

PROCESS FOR MANUFACTURING INTEGRATED CAPACITORS IN MOS TECHNOLOGY

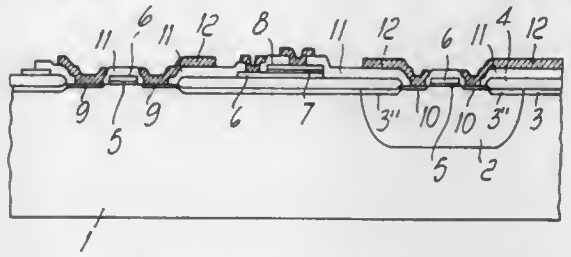
Danilo Re, Bernareggio, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Italy

Continuation of Ser. No. 224,106, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 986,923, Dec. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 636,558, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 284,271, Dec. 14, 1988, abandoned. This application Jul. 3, 1996, Ser. No. 675,520

Claims priority, application Italy, Dec. 23, 1987, 23200/87

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—250 **13 Claims**



1. A method for manufacturing integrated capacitors for analog applications in MOS technology on a substrate of semiconductor material, consisting only of low temperature steps and starting from a substrate which already bears doping implantations for active components and on which an oxide is already formed, comprising the steps of:

forming, on the oxide, a first conducting layer to form a first plate of a capacitor, wherein the first conducting layer comprises polycrystalline silicon doped in at least a region forming the first plate of the capacitor by low temperature ion implantation;

forming a single capacitor dielectric layer by forming a dielectric material on and in contact with said first conducting material layer using only low temperature during the entire formation of said dielectric layer; and

forming a second conducting material superimposed on and in contact with said capacitor dielectric layer to form a second plate of the capacitor, wherein a width of the second conducting material is smaller than a corresponding width of the first conducting layer;

said low temperature not allowing for the displacement of said doping implantation.

5,851,872

METHOD OF FABRICATING DYNAMIC RANDOM ACCESS MEMORY

Hwi-Huang Chen, and Gary Hong, both of Hsinchu City, Taiwan, assignors to United Microelectronics Corporation, Taiwan

Filed Apr. 3, 1996, Ser. No. 627,128

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—253 **16 Claims**

1. A method of fabricating dynamic random access memory that includes a capacitor and a metal oxide semiconductor field effect transistor, comprising the steps of

(a) forming a field oxide layer on a silicon substrate;

(b) forming a gate oxide layer on the silicon substrate;

(c) depositing a first polysilicon layer on the gate oxide layer;

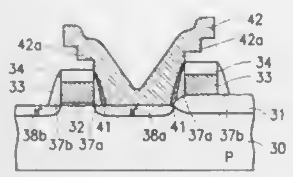
(d) depositing an insulator on the first polysilicon layer;

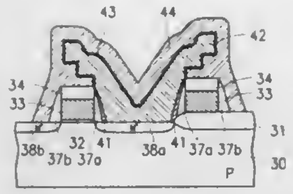
(e) depositing a first silicon nitride layer on the insulator;

(f) processing the first silicon nitride layer, the insulator, the first polysilicon layer and the gate oxide layer to form a gate electrode having first and second sidewalls at respective opposite first and second sides thereof;

(g) forming first spacers on the first and second sidewalls;

(h) forming first and second source-drain regions on the substrate respectively beside the first and second sides of the gate electrode;





(i) forming a contact window on the first source-drain regions;

(j) forming a second spacer on a surface of the first spacer on the first sidewall, adjacent to the contact window;

(k) depositing a second silicon nitride layer on a surface of the first silicon nitride layer, and on the first spacer on the second sidewall;

(l) depositing a second polysilicon layer on the contact window, the second spacer, the first silicon nitride layer, and the second nitride layer, as a charge-storage electrode of the capacitor;

(m) removing the first silicon nitride layer and the second silicon nitride layer;

(n) depositing a dielectric layer on the second polysilicon layer; and

(o) depositing a third polysilicon layer on the dielectric layer as a cell plate of the capacitor.

5,851,873

METHOD OF MAKING SEMICONDUCTOR MEMORY DEVICE

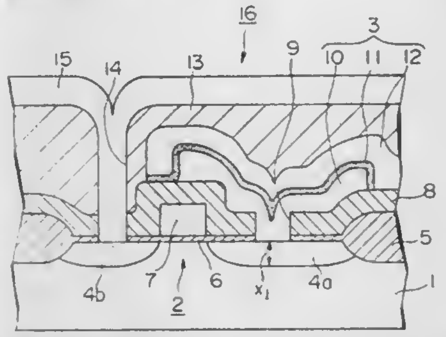
Ichiro Murai; Hidemi Arakawa, and Shinobu Shigeta, all of Tateyama, Japan, assignors to Nippon Steel Semiconductor Corporation, Tateyama, Japan

Filed Oct. 22, 1996, Ser. No. 734,602

Claims priority, application Japan, Oct. 27, 1995, 7-280871; Jul. 11, 1996, 8-182543

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—253 **6 Claims**



1. A method for making a semiconductor memory device provided with a memory capacitor having a storage node electrode in electrical contact with a dopant diffusion region through a contact hole, comprising the steps of:

forming dopant diffusion regions in a semiconductor substrate having a first conductivity type by ion implanting a dopant having a second conductivity type opposite in conductivity to said first conductivity type into said semiconductor substrate;

forming an interlayer isolator film on said semiconductor substrate;

opening said contact hole through said interlayer isolator film above one dopant diffusion region of said dopant diffusion regions;

forming a storage node electrode film having at least one portion extending through said contact hole to be in electrical contact with said one dopant diffusion region;

implanting second dopant ions of said second conductivity type into a top surface of said storage node electrode film followed by implanting driving dopant ions into said top surface to collide with the second dopant ions to force the second dopant ions to move deeper into said storage node electrode film to form a high concentration distribution profile; and

subjecting said second ions forming said high concentration distribution profile to a heat treatment step so as to diffuse out some of said second ions forming said high concentration distribution profile from within said storage node electrode film into said semiconductor substrate so as to produce a junction depth of not less than 0.1 μm for said at least one dopant diffusion region; and

providing a dielectric layer and a cell plate electrode over the storage node electrode to form the memory capacitor.

5,851,874

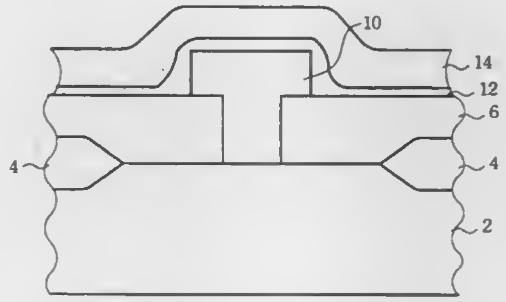
METHOD OF PLANARIZING MEMORY CELLS

Chan-Jen Kuo, and Fu-Liang Yang, both of Tainan, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Dec. 10, 1996, Ser. No. 762,837

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—253 **12 Claims**



1. A method of planarizing a memory cell on semiconductor substrate, said method comprising the steps of:

forming a capacitor contact on said semiconductor substrate;

forming a first dielectric layer on said substrate and on said capacitor;

etching said first dielectric layer to form side wall spacers on the side wall of said capacitor contact, and etching leaving at least a residue of said first dielectric layer atop of said capacitor contact; and

forming a second dielectric layer on said first dielectric layer.

5,851,875

PROCESS FOR FORMING CAPACITOR ARRAY STRUCTURE FOR SEMICONDUCTOR DEVICES

Er-Xuan Ping, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 14, 1997, Ser. No. 893,931

Int. Cl.^{6} H01L *21/8242*

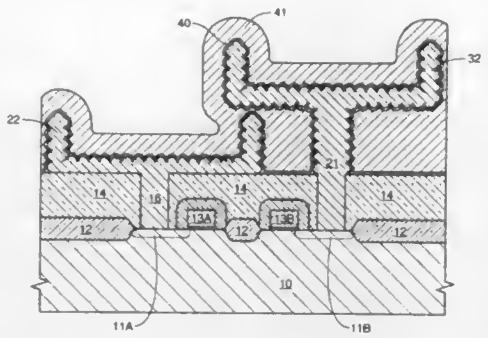
U.S. Cl. 438—253 **7 Claims**

1. A process for forming a memory array of storage capacitors in a dynamic random access device, said process comprising the steps of:

forming a plurality of a generally parallel conductive word lines;

forming a first set of individual storage node plates for a first set of storage capacitors;

forming a set of storage node pillars that alternates in position with said individual storage node plates of said first set of



individual storage node plates, said storage node pillars being approximately equal in height to neighboring storage node plates;

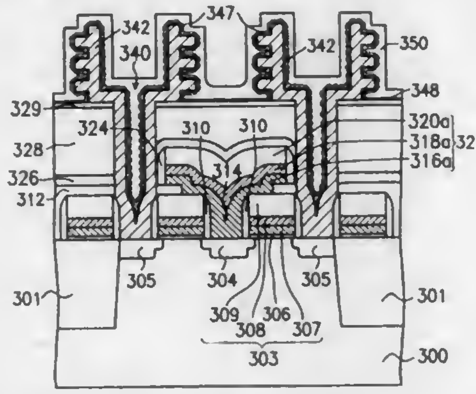
forming a second set of individual storage node plates for a second set of storage capacitors, each said individual storage node plate of said second set physically connecting to an individual storage node pillar;

forming a cell dielectric material on said first and second sets of individual storage node plates;

forming a second capacitor plate over said first and second sets of individual storage node plates.

5,851,876
METHOD OF MANUFACTURING DYNAMIC RANDOM ACCESS MEMORY

Jason Jenq, Pingtung, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan
Filed May 14, 1998, Ser. No. 79,254
Claims priority, application Taiwan, Mar. 18, 1998, 87104002
Int. Cl.^{6} H01L *21/8242*
U.S. Cl. 438—253 **27 Claims**



1. A method of manufacturing dynamic random access memory comprising the steps of:

providing a substrate having a field effect transistor formed thereon, wherein the field effect transistor includes a first source/drain region and a second source/drain region;

forming a bit line electrically coupled with the first source/drain region, wherein the bit line is further covered on top by a cap layer;

forming spacers on the sidewalls of the bit line;

forming a first dielectric layer and a second dielectric layer sequentially over the substrate structure;

forming a stack of patterned sacrificial layers above the second dielectric layer, wherein the stack of sacrificial layers is formed by depositing a first insulating layers and a second insulating layers alternately over each other, and the stack of sacrificial layers have a wide opening that exposes a portion of the second dielectric layer;

performing a wet etching operation so that the stack of sacrificial layers on the sidewalls of the wide opening turns into a gear-teeth cross-sectional profile with a plurality of cavities;

patterning the second dielectric layer and the first dielectric layer to form a self-aligned contact opening that exposes the second source/drain region;

forming a first conductive layer over the substrate structure, wherein the conductive material completely fills the cavities and surface of the gear-teeth profile, as well as completely filling the self-aligned contact opening so that the conductive layer is electrically coupled to the second source/drain region;

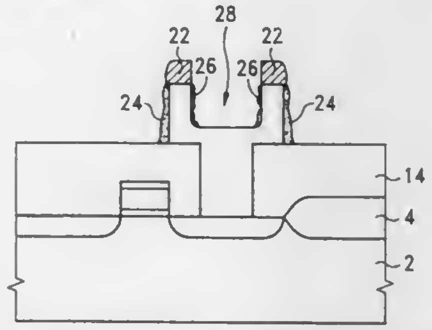
using the second dielectric layer as an etching stop layer, removing the sacrificial layers to expose the first conductive layer that becomes a storage electrode

forming a dielectric thin film over the exposed first conductive layer; and

forming a second conductive layer over the dielectric thin film, wherein the second conductive layer acts as a cell electrode.

5,851,877
METHOD OF FORMING A CROWN SHAPE CAPACITOR

Yu-Chun Ho, Taipel, and Hsiang-Wei Tseng, Taichung, both of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan
Filed Jan. 6, 1998, Ser. No. 3,301
Int. Cl.^{6} H01L *21/8242*
U.S. Cl. 438—253 **19 Claims**



1. A method of fabricating a crown shape capacitor over a semiconductor substrate, said method comprising:

forming a polysilicon layer over said semiconductor substrate;

patterning said polysilicon layer, residual photoresist formed on said polysilicon layer;

performing a first ash step to remove said residual photoresist, polymers being formed on said polysilicon layer and at edges of said polysilicon layer;

forming an organic layer on a surface of said polysilicon layer, said polymers;

etching said organic layer to form organic side-wall spacers on side walls of said polysilicon layer, then etching said polysilicon layer using said polymers, said organic side-wall spacers as an etching mask, thereby forming said polysilicon with crown shape structure to act as a first storage node of said capacitor;

performing a second ash step to remove said polymers, said organic side-wall spacers;

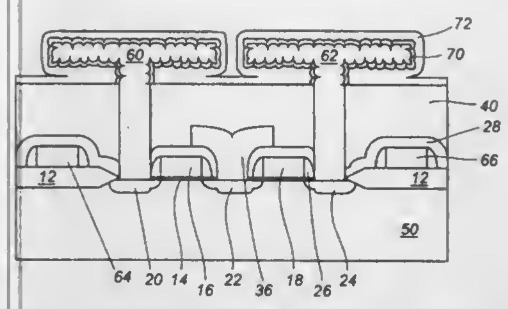
forming a dielectric layer on said crown shape structure; and

forming a conductive layer over said dielectric layer to act as a second storage node of said capacitor.

5,851,878
METHOD OF FORMING A RUGGED POLYSILICON FIN STRUCTURE IN DRAM

Hslu-Wen Huang, Kaohslung, Talwan, assignor to United Microelectronlcs Corporation, Taiwan
Filed Jul. 7, 1997, Ser. No. 888,560
Int. Cl.^{6} H01L *21/8242*
U.S. Cl. 438—255 **14 Claims**

1. A method of forming an integrated circuit memory device including charge storage capacitors, the method comprising:



providing a substrate having charge storage capacitor access circuitry formed thereon;

providing a first layer of dielectric material over the substrate and over and on the access circuitry;

providing a second dielectric layer over the first layer of dielectric material;

providing a barrier layer over the second dielectric layer;

providing a sacrificial layer over the barrier layer;

providing a first polysilicon layer over the sacrificial layer and patterning the layer of polysilicon to define a plurality of bottom capacitor electrodes separated by spaces;

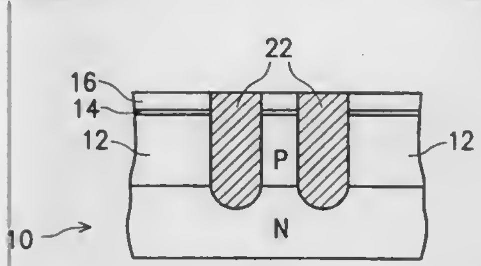
providing a first wet etchant to the sacrificial layer through the spaces between the bottom capacitor electrodes, removing the sacrificial layer from between the barrier layer and the first polysilicon layer;

providing a capacitor dielectric layer over the bottom capacitor electrodes; and

providing a second polysilicon layer over the capacitor dielectric layer to form an upper capacitor electrode.

5,851,879
METHOD FOR FABRICATING COMPACT CONTACTLESS TRENCHED FLASH MEMORY CELL

Ruei-Ling Lin, Kao Hsiung; Ching-Hsiang Hsu, and Gary Hong, both of Hsinchu, all of Taiwan, assignors to United Microelectronics Corporation, Taiwan
Filed Jan. 22, 1997, Ser. No. 786,907
Claims priority, application Taiwan, May 31, 1996, 85106472
Int. Cl.^{6} M01L *21/336*
U.S. Cl. 438—257 **36 Claims**



1. A process for fabricating a compact contactless trenched flash memory array of a plurality of memory cells for semiconductor EEPROM devices, said process comprising the steps of:

(a) forming a P-well in a wafer substrate;

(b) growing a gate oxide layer over the P-well in the substrate, depositing a first polysilicon layer on the gate oxide layer and patterning said first polysilicon layer for forming deep trenches having the bottom thereof reaching down to said substrate, and then reoxidizing the processed substrate to seal a surface thereof;

(c) depositing a first BPSG (borophosphosilicate glass) layer on said sealed substrate surface and then reflowing and etching back the first BPSG layer;

(d) subsequently forming, on said reflowed first BPSG layer and said first polysilicon layer, an ONO (oxide-nitride-oxide) layer, depositing a second polysilicon layer with in-situ dope, forming a WSi$_x$ layer, growing a pad oxide layer, and then depositing a nitride layer;

(e) forming stacked gates for said flash memory array by patterning into said formed nitride, pad oxide, WSi$_x$, second polysilicon, and ONO layers, selectively etching back said first BPSG layer filled in said trenches, and then removing partially said first polysilicon and gate oxide layers from the substrate after said patterning;

(f) forming n$^+$ source/drain regions in the substrate between said stacked gates, and depositing sidewall spacers for said stacked gates;

(g) depositing a third polysilicon layer over the substrate in process, followed by selectively etching back said third polysilicon layer to expose said stacked gate sidewall spacers, and then reducing resistance of said formed third polysilicon layer;

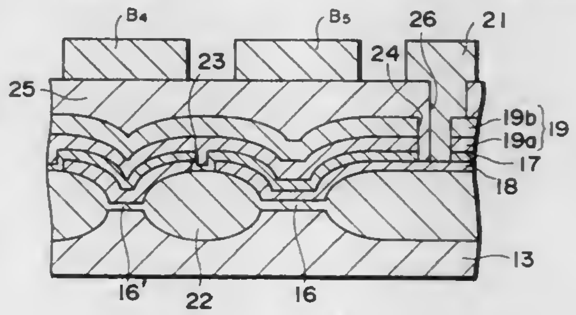
(h) sealing edges of said stacked gates and a surface of said third polysilicon layer and then covering the third polysilicon layer and exposed stacked gates with a second BPSG layer;

(i) forming contact openings for said source/drain regions; and

(j) forming metal lines leading into said contact openings for interconnecting the memory cells in said flash memory array with peripheral control circuits of said semiconductor EEPROM devices.

5,851,880
METHOD OF MAKING NONVOLATILE MEMORY ELEMENTS WITH SELECTOR TRANSISTORS

Masami Ikegami, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 18, 1997, Ser. No. 820,650
Claims priority, application Japan, Jun. 14, 1996, 8-175506
Int. Cl.^{6} H01L *21/8247*
U.S. Cl. 438—258 **6 Claims**



1. A method of manufacturing a semiconductor memory including a plurality of memory elements arranged in a matrix formation on a semiconductor substrate, each memory element having a floating gate and a control gate, and selector transistors, each provided with a gate, for selecting said memory elements, comprising the steps of:

forming a floating-gate conductive layer, an intergate insulating layer, and a control-gate conductive layer on a semiconductor substrate, including a memory element region portion and a selector transistor region portion in each active region of said semiconductor substrate;

in conjunction with patterning of control gates forming each word line by preferential etching of said control-gate conductive layers, said intergate insulating film, and said floating-gate conductive layers, forming a first contact hole passing through said control-gate conductive layer and opening above said intergate insulating layer in that portion of said control gate which is close to each said selector transistor region portion;

forming source and drain regions in each said memory element region portion and in each said selector transistor region portion;

after covering the surface of said substrate with an interlayer insulating film, forming a drain contact hole passing through said interlayer insulating film and opening to each said drain region, and simultaneously forming a second contact hole passing through said first contact hole portion and said intergate insulating layer and opening to each said floating-gate conductive layer; and

forming bit lines each passing through said drain contact hole and contacting to said drain region, and simultaneously forming a connector passing through said first and second contact holes and connecting said floating-gate conductive layer and said control-gate conductive layer together in each selector transistor.

5,851,881

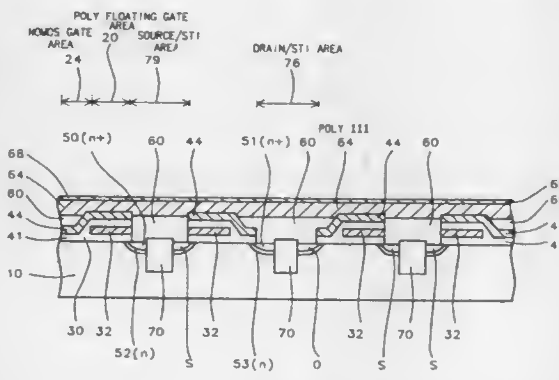
METHOD OF MAKING MONOS FLASH MEMORY FOR MULTI-LEVEL LOGIC

Ruei-Ling Lin, Kaohsiung; Ching-Hsiang Hsu, and Mong-Song Llang, both of Hsin-chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Oct. 6, 1997, Ser. No. 944,500

Int. Cl.^{6} H01L *21/8247*

U.S. Cl. 438—261 **11 Claims**



1. A method of manufacture of a multi-level logic flash memory cell comprising the steps as follows:

a) forming a tunnel oxide layer on a surface of a substrate having active regions; said substrate having a floating gate channel area and a MONOS channel area in said active regions;

b) forming a poly floating gate electrode over said stacked gate channel region;

c) forming an ONO layer over said poly floating gate electrode and the exposed surfaces of said tunnel oxide layer;

d) forming a second polysilicon layer over said ONO layer;

e) forming a pad oxide layer over said second polysilicon layer;

f) forming a second nitride layer over said pad oxide layer;

g) patterning said second nitride layer, said pad oxide layer, said second polysilicon layer, and said ONO layer forming a dual gate stack; the remaining portion of said second polysilicon layer forming a control gate electrode spanning across said poly floating gate electrode and said ONO layer over said MONOS channel region;

h) forming shallow trench isolation regions in said substrate surrounding said dual gate stack;

i) forming a source region in said substrate adjacent to said floating gate channel area and under a portion of said poly floating gate electrode; and forming a drain region in said substrate adjacent to said MONOS channel area and under a portion of said ONO layer; said source and drain regions orientated in a first direction;

j) said control gate electrode and said floating gate electrode forming a poly floating gate transistor over said floating gate channel area; and said ONO layer and said control gate over said MONOS channel area forming a MONOS transistor over said MONOS channel area; a multi-level logic flash memory cell comprised of said poly floating gate transistor and said MONOS transistor.

5,851,882

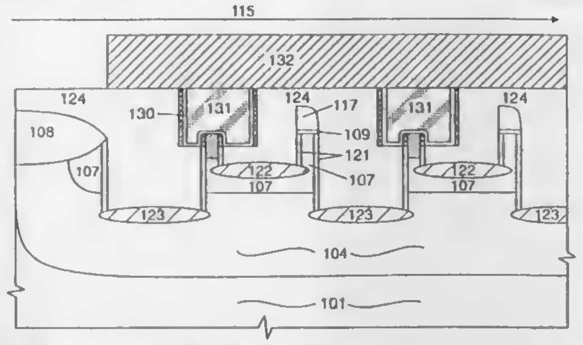
ZPROM MANUFACTURE AND DESIGN AND METHODS FOR FORMING THIN STRUCTURES USING SPACERS AS AN ETCHING MASK

Steven T. Harshfield, Emmott, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 6, 1996, Ser. No. 642,769

Int. Cl.^{6} H01L *21/8246*

U.S. Cl. 438—275 **31 Claims**



10. A method for manufacturing an array of memory cells, the method comprising the steps of:

(a) forming a first doped region in a semiconductive substrate;

(b) forming a second doped region in the first doped region, the second doped region being doped opposite the first doped region;

(c) forming a first dielectric layer over the second doped region;

(d) forming strips of material over the first dielectric layer;

(e) forming spacers along the strips;

(f) using the spacers as a mask, performing an etching operation to form a portion of the second doped region into a plurality of bit lines;

(g) forming a second dielectric layer over the resulting structure;

(h) forming contact holes over selected spacers and removing the selected spacers to expose selected portions of the second doped region;

(i) doping the exposed selected portions of the second doped region to form a plurality of diodes;

(j) operatively coupling programmable elements to the plurality of diodes; and

(k) forming a plurality of word lines operatively coupled to at least one selected programmable element and extending generally perpendicular to the plurality of bit lines.

5,851,883

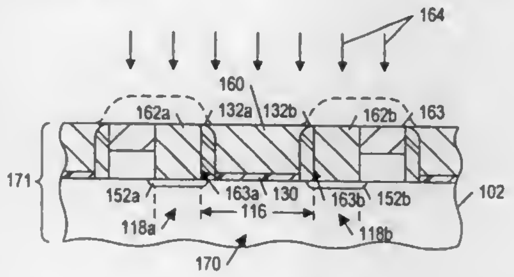
HIGH DENSITY INTEGRATED CIRCUIT PROCESS

Mark I. Gardner, Cedar Creek; Daniel Kadosh, and Fred N. Hause, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Filed Apr. 23, 1997, Ser. No. 844,975

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 438—275 **15 Claims**



1. A semiconductor process, comprising:

providing a semiconductor substrate, wherein an upper region of said semiconductor substrate comprises a silicon base layer;

forming a dielectric layer on an upper surface of said silicon base layer;

forming an upper silicon layer on an upper surface of said dielectric layer;

patterning said dielectric layer and said upper silicon layer to form first and second silicon-dielectric stacks on said upper surface of said base silicon layer and to expose portions of said silicon base layer not covered by said silicon-dielectric stacks, wherein said first and second silicon-dielectric stacks are laterally displaced on either side of a channel region of said silicon substrate, and wherein said silicon-dielectric stacks each include a proximal sidewall and a distal sidewall wherein said proximal sidewalls are approximately coincident with respective boundaries of said channel region;

forming proximal and distal spacer structures on said proximal and distal sidewalls respectively of said first and second silicon-dielectric stacks, wherein each said proximal spacer structure includes an interior sidewall in contact with said proximal sidewall respectively of said silicon-dielectric stack;

forming a gate dielectric layer on said exposed portions of said silicon base layer;

selectively removing portions of said first and said second silicon-dielectric stacks over respective source/drain regions of said base silicon layer, wherein said source/drain regions are laterally displaced on either side of said channel region, each said source/drain region extending laterally from a position approximately coincident with a lateral position of said interior sidewall of said proximal spacer structure to a lateral position intermediate between said proximal spacer structure and its corresponding distal spacer structure;

depositing silicon to fill first and second voids created by said selective removal of said first and second silicon-dielectric stacks and to fill a silicon gate region above said gate dielectric over said channel region;

introducing an impurity distribution into said deposited silicon; and

planarizing said deposited silicon to physically isolate silicon within said gate region from silicon within said first and second voids whereby a silicon gate structure and first and second source/drain structures are formed.

5,851,884

STRUCTURE AND MANUFACTURING METHOD FOR ROM

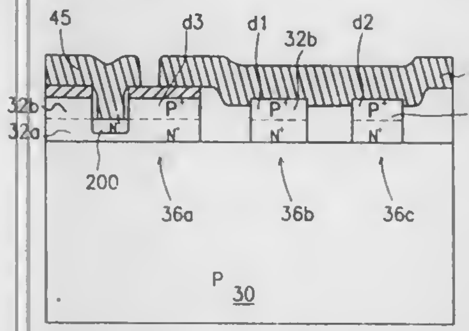
Jemmy Wen, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed May 16, 1997, Ser. No. 857,857

Claims priority, application Taiwan, Jan. 17, 1997, 86100118

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 438—275 **17 Claims**



1. A manufacturing method for ROM, comprising the steps of:

(a) forming sequentially a first conductivity type silicon layer and a second conductivity type silicon layer on a substrate;

(b) forming a first insulating layer above the second conductivity type silicon layer;

(c) etching selectively the first insulating layer, the second conductivity type silicon layer and the first conductivity type silicon layer so as to form a plurality of bit lines;

(d) forming a second insulating layer over and in between the bit lines;

(e) etching sequentially the second insulating layer, the first insulating layer and the second conductivity type silicon layer so as to form contact windows in the bit lines;

(f) forming a third insulating layer on a peripheral sidewalls of the contact windows;

(g) performing an ion implantation operation for implanting first conductivity type carrier into a surface of the first conductivity type silicon layer through the contact windows and removing the second insulating layer over the bit lines for forming first conductivity type carrier contact windows;

(h) etching selectively the first insulating layer at selected locations above the bit lines in a program coding procedure comprising the sub-steps of:

(I) forming a conducting layer; and

(II) etching the conducting layer so as to form word lines crossing over the bit lines and resulting in electrical connections with the bit lines at locations where the first insulating layer was selectively etched.

5,851,885

MANUFACTURING METHOD FOR ROM COMPONENTS HAVING A SILICON CONTROLLED RECTIFIER STRUCTURE

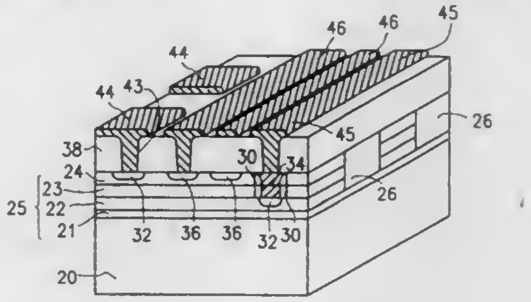
Jemmy Wen, Hsinchu City, Taiwan, assignor to United Microelectronics Corp., Hsinchu City, Taiwan

Filed May 30, 1997, Ser. No. 866,320

Claims priority, application Taiwan, Mar. 26, 1997, 86103880

Int. Cl.^{6} H01L *21/8234;21/8246*

U.S. Cl. 438—275 **31 Claims**



1. A method for manufacturing a ROM component having a silicon controlled rectifier structure, comprising the steps of:

(a) providing a substrate having a planar surface and forming a first insulating layer over the planar surface;

(b) forming in sequence, a heavily doped first type impurity layer, a lightly doped second type impurity layer and a lightly doped first type impurity layer over a surface of the first insulating layer;

(c) processing the lightly doped first type impurity layer, the lightly doped second type impurity layer and the heavily doped first type impurity layer to form a plurality of generally parallel and separate strips of bit lines lying in a first direction;

(d) forming a second insulating layer on the first insulating layer and on the bit lines;

(e) removing part of the second insulating layer so that a remainder of the second insulating layer is leveled with the lightly doped first type impurity layer;

(f) processing the lightly doped first type impurity layer and the lightly doped second type impurity layer of the bit lines to form a plurality of first contact windows in the bit lines;

(g) forming a plurality of spacers on sidewalls of the first contact windows;

(h) applying a first photoresist layer having a pattern to expose the first contact windows and part of the lightly doped first type impurity layer;

(i) doping first type ions into the heavily doped first type impurity layer at a bottom of the first contact windows and an exposed portion of the lightly doped first type impurity layer, using the first photoresist layer and the spacers as masks, to

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form a plurality of first type diffusion regions and thereafter removing the first photoresist layer;

(j) filling a first conducting layer into the first contact windows so that a top surface of the first conducting layer is leveled with the lightly doped first type impurity layer;

(k) applying a second photoresist layer on the lightly doped first type impurity layer, the second photoresist layer having a pattern to expose part of the lightly doped first type impurity layer;

(l) doping second type ions into an exposed portion of the lightly doped first type impurity layer, using the second photoresist layer as a mask, to form a plurality of second type diffusion regions, and thereafter removing the second photoresist layer to expose an intermediate top surface;

(m) forming a third insulating layer over the intermediate top surface;

(n) forming a plurality of second contact windows in the third insulating layer to expose the first conducting layer, the first type diffusion regions and part of the second type diffusion regions;

(o) forming a second conducting layer on a surface of the third insulating layer such that the second conducting layer fills the second contact windows; and

(p) forming in the second conducting layer a plurality of triggering word line electrodes above the first type diffusion regions, a plurality of common electrodes above the first conducting layer, and a plurality of generally parallel and separate strips of bit line electrodes lying in a second direction, so that the first and second directions cross each other at an angle.

5,851,886

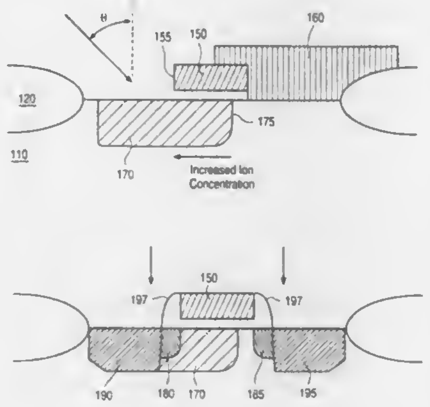
METHOD OF LARGE ANGLE TILT IMPLANT OF CHANNEL REGION

Jack Zezhong Peng, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 23, 1995, Ser. No. 546,738

Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—289 **14 Claims**



1. A method of doping a semiconductor substrate, comprising the steps of:

forming a gate over said substrate, said gate having a first edge and said gate having a length;

forming a masking layer extending over a first part of said gate, said masking layer positioned a maximum overlay distance from said first edge of said gate such that a second part of said gate is exposed, wherein said maximum overlay distance is defined by max(OL, $L_g/2$), where OL is a predefined overlay value, and L_g is said gate length, and where max(x,y) is a function defining the maximum value of x and y; and

forming a variantly doped channel region under said gate.

5,851,887

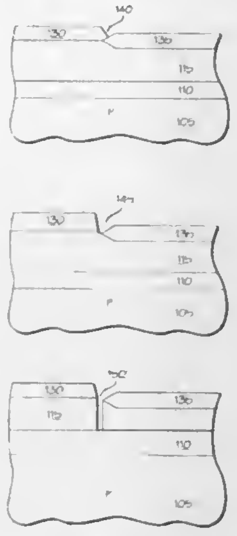
DEEP SUB-MICRON POLYSILICON GAP FORMATION

Roger F. Caldwell, Milpitas, and Jeffrey T. Watt, Mountain View, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Continuation of Ser. No. 302,615, Sep. 7, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,916

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 438—295 **18 Claims**



12. A method of forming a transistor comprising the steps of:

a. growing an oxide layer over a polysilicon layer to form two bird's beaks in regions over said polysilicon layer, said oxide layer being adjacent to a nitride layer disposed over said polysilicon layer, said bird's being further disposed beneath said nitride layer, said polysilicon layer being disposed over a gate oxide disposed on a substrate;

b. etching said oxide layer to expose said polysilicon layer at said regions;

c. forming gaps in said polysilicon layer by etching all of said polysilicon layer at said regions;

d. patterning said polysilicon layer into a gate electrode; and

e. forming drain and source regions in said substrate adjacent to said gate electrode.

5,851,888

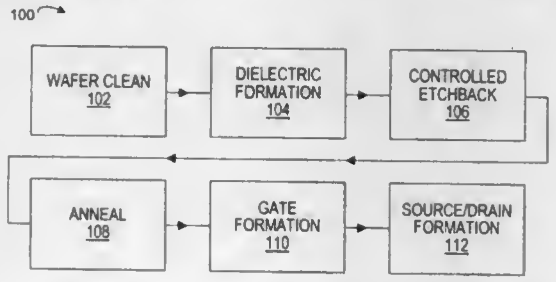
CONTROLLED OXIDE GROWTH AND HIGHLY SELECTIVE ETCHBACK TECHNIQUE FOR FORMING ULTRA-THIN OXIDE

Mark I. Gardner, Cedar Creek, and Mark C. Gilmer, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 15, 1997, Ser. No. 784,195

Int. Cl.^{6} H01L *21/31;21/469*

U.S. Cl. 438—301 **17 Claims**



12. A method of fabricating a semiconductor transistor comprising:

providing a semiconductor substrate, wherein said semiconductor substrate includes a channel region laterally displaced between a pair of source/drain regions;

forming an initial dielectric layer having a thickness in the range of approximately 40 to 80 angstroms on an upper surface of said semiconductor substrate over said channel region, said initial dielectric layer comprising a sacrificial portion formed on a permanent portion;

etching back said initial dielectric layer to remove said sacrificial portion wherein a gate dielectric consisting of said permanent portion of said initial dielectric layer and having a thickness less than approximately 30 angstroms is formed over said channel region of said semiconductor substrate,

forming a conductive gate structure on said gate dielectric, wherein said conductive gate structure is aligned over said channel region of said semiconductor substrate; and

forming a pair of source/drain structures within said pair of source/drain regions.

5,851,889

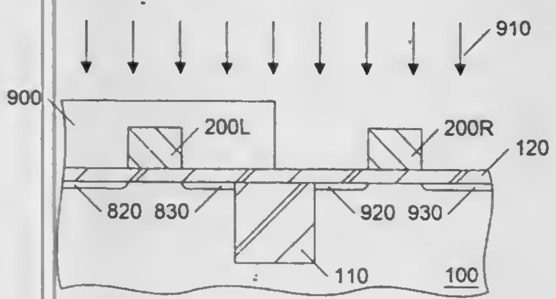
SEMICONDUCTOR GATE CONDUCTOR WITH A SUBSTANTIALLY UNIFORM DOPING PROFILE HAVING MINIMAL SUSCEPTIBILITY TO DOPANT PENETRATION INTO THE UNDERLYING GATE DIELECTRIC

Mark W. Michael, Cedar Park, and Robert Dawson, Austin, both of Tex., assignors to Advanced Micro Devices, Inc.

Filed Jan. 30, 1997, Ser. No. 792,714

Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—301 **10 Claims**



1. A method of forming a doping a polysilicon gate conductor, comprising:

forming a gate oxide upon a semiconductor substrate;

depositing a layer of polysilicon upon and across said gate oxide;

implanting a first impurity into said layer of polysilicon such that a peak concentration of said first impurity is at a first distance from a bottom surface of said layer of polysilicon;

selectively removing select regions of said layer of polysilicon to form a gate structure upon said gate oxide interposed between exposed regions of said semiconductor substrate; and

implanting a second impurity into both said gate structure and the exposed regions of said semiconductor substrate.

5,851,890

PROCESS FOR FORMING INTEGRATED CIRCUIT STRUCTURE WITH METAL SILICIDE CONTACTS USING NOTCHED SIDEWALL SPACER ON GATE ELECTRODE

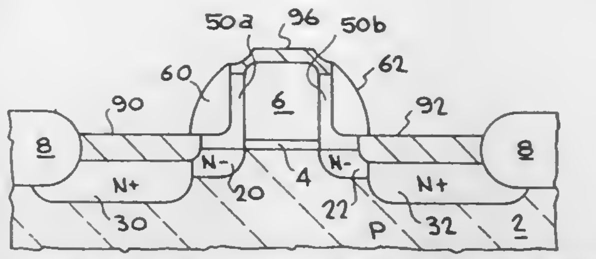
Jiunn-Yann Tsai, San Jose; John Haywood, Santa Clara, and Ming Yi Lee, Fremont, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 28, 1997, Ser. No. 919,394

Int. Cl.^{6} H01L *21/335*

U.S. Cl. 438—303 **16 Claims**

1. A process for forming improved metal silicide contacts on an MOS device of an integrated circuit structure formed in a silicon substrate comprising the steps of:



a) forming a silicon oxide layer over said silicon substrate and over said polysilicon gate electrode;

b) forming silicon nitride sidewall spacers over said oxide on sidewalls of said polysilicon gate electrode;

c) forming source/drain regions in said silicon substrate adjacent said silicon nitride spacers;

d) conducting an oxide etch on said structure comprising:

  i) removing said oxide from an upper surface of said gate electrode and a surface over said source/drain regions; and

  ii) forming notches in the exposed edges of said oxide respectively between said silicon nitride spacers and said substrate, and between said silicon nitride spacers and said gate electrode, said notches each having aspect ratios of 1 or less;

e) depositing over said structure and into said notches a metal layer capable of reacting with exposed silicon to form metal silicide contacts; and

f) reacting said metal layer with said silicon surfaces with which said metal layer is in contact to form said metal silicide contacts;

whereby a metal silicide gate contact is formed on the upper surface of said polysilicon gate electrode, as well as on those upper portions of said sidewall of said gate electrode exposed by forming said notch in said oxide layer on said sidewall of said gate electrode, and metal silicide source/drain contacts of enlarged area are formed over said silicon substrate surfaces over said source/drain regions and those portions of said silicon substrate beneath said nitride spacers exposed by said notches formed in said oxide layer beneath said nitride spacers.

5,851,891

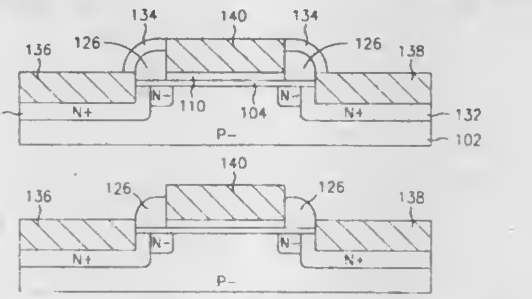
IGFET METHOD OF FORMING WITH SILICIDE CONTACT ON ULTRA-THIN GATE

Robert Dawson; H. Jim Fulford, Jr., both of Austin; Mark I. Gardner, Cedar Creek; Frederick N. Hause, Austin; Mark W. Michael, Cedar Park; Bradley T. Moore, and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 21, 1997, Ser. No. 837,521

Int. Cl.^{6} H01L *21/336;21/4763;21/3205*

U.S. Cl. 438—305 **40 Claims**



1. A method of forming an IGFET that includes producing an ultra-thin polysilicon gate, comprising the following steps in the sequence set forth:

providing a semiconductor substrate of first conductivity type;

forming a gate oxide on the substrate;

forming a polysilicon gate with a first thickness on the gate oxide;

implanting a dopant of second conductivity type into the polysilicon gate and the substrate;

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forming a source and a drain of second conductivity type in the substrate, wherein the source and drain include the dopant;

depositing a refractory metal over the polysilicon gate; and

applying a thermal cycle to react the refractory metal with the polysilicon gate and form a silicide contact on the polysilicon gate, wherein reacting the refractory metal with the polysilicon gate consumes at least one-half of the polysilicon gate without entirely consuming the polysilicon gate such that the polysilicon gate has a second thickness of at most 500 angstroms, the first thickness is at least twice the second thickness, and the silicide contact has a greater thickness than the second thickness, and reacting the refractory metal with the polysilicon gate pushes a peak concentration of the dopant in the polysilicon gate towards the substrate in snowplow fashion.

5,851,892

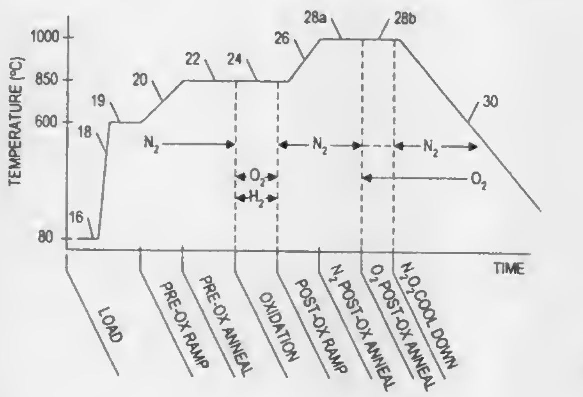
FABRICATION SEQUENCE EMPLOYING AN OXIDE FORMED WITH MINIMIZED INDUCTED CHARGE AND/OR MAXIMIZED BREAKDOWN VOLTAGE

Bohumil Lojek, Round Rock, and Joseph M. McRae, Austin, both of Tex., assignors to Cypress Semiconductor Corp.

Filed May 7, 1997, Ser. No. 852,695

Int. Cl.⁶ H01L ***21/336;21/31***

U.S. Cl. 438—305 **21 Claims**



1. A method for forming an oxide, comprising:

heating a silicon-based surface at a first temperature in the presence of an oxidizing atmosphere to form an oxidized, silicon-based surface;

heating the oxidized, silicon-based surface at a second temperature in an inert atmosphere anid at a temperature sufficient to anneal the oxidized, silicon-based surface, wherein the second temperature is greater than the first temperature;

introducing an oxidizing agent into said inert atmosphere while maintaining said second temperature; and

cooling the oxidized, silicon-based surface in the presence of both said inert atmosphere and said oxidizing agent.

5,851,893

METHOD OF MAKING TRANSISTOR HAVING A GATE DIELECTRIC WHICH IS SUBSTANTIALLY RESISTANT TO DRAIN-SIDE HOT CARRIER INJECTION

Mark I. Gardner, Cedar Creek, and H. Jim Fulford, Jr., Austin, both of Tex., assignors to Advanced Micro Devices, Inc.

Filed Jul. 18, 1997, Ser. No. 896,680

Int. Cl.⁶ H01L ***21/336***

U.S. Cl. 438—305 **13 Claims**

1. A method for forming a transistor, comprising:

providing a gate dielectric interposed between a silicon substrate and a gate conductor, said gate conductor being defined between a pair of opposed sidewall surfaces, and further providing a first exposed region and a second exposed region of said silicon substrate, said first exposed region being spaced from said second exposed region by said gate dielectric;

implanting a first dopant into said first exposed region and said second exposed region to form lightly doped drain areas within said silicon substrate;

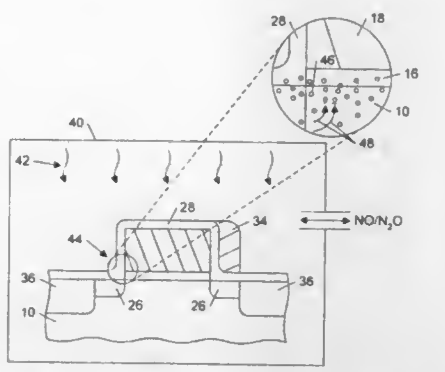
forming an etch stop material upon said pair of sidewall surfaces to a first pre-defined thickness;

forming a pair of spacers upon said etch stop material to a second pre-defined thickness, thereby covering select portions of said first exposed region and said second exposed region;

implanting a second dopant into said first exposed region and said second exposed region exclusive of said select portions, thereby forming source and drain areas within said silicon substrate;

removing one of said pair of spacers from said etch stop material in close proximity to said drain area, thereby exposing the etch stop material; and

incorporating barrier atoms into an area of said semiconductor substrate adjacent said drain area and beneath a portion of said gate dielectric.



5,851,894

METHOD OF VERTICALLY INTEGRATING MICROELECTRONIC SYSTEMS

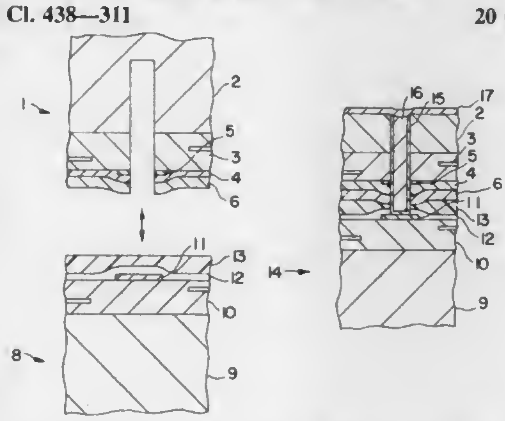
Peter Ramm, Obermuehlenweg, Germany, assignor to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

Filed May 3, 1996, Ser. No. 642,047

Claims priority, application Germany, May 5, 1995, 195 16 487.3

Int. Cl.⁶ H01L ***21/283;21/304***

U.S. Cl. 438—311 **20 Claims**



1. A method of vertically integrating microelectronic systems, comprising the steps of:

providing a first substrate comprising a first side which in an area of a first major surface comprises at least one first layer containing circuit structures and at least one first metallized metallization level;

opening in the area of said first major surface a plurality of via holes of a depth sufficient for penetrating said at least one first circuit structure containing layer;

providing a second substrate comprising a side which in an area of a second major surface comprises at least one second layer containing circuit structures and at least one second metallized metallization level;

connecting said first substrate to said second substrate by putting together said side of said first major surface and said side of said second major surface in aligned relationship, thereby to provide a stack of substrates;

thinning the stack of substrates at a side of said first substrate opposite said first side for opening said via holes therein;

increasing said depth of said via holes down to the metallization of said metallization level of said second substrate; and

providing means extending through said via holes for forming an electrically conductive connection between said metallization of said first and said metallization of said second metallization level.

5,851,895

METHOD OF MAKING RC ELEMENT

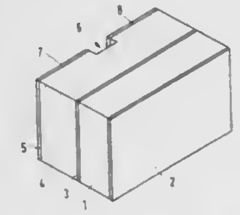
Johannes W. Weekamp, and Gerjan F. A. Van De Walle, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

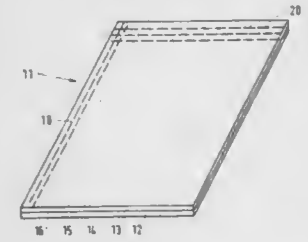
Filed Sep. 27, 1996, Ser. No. 721,917

Claims priority, application European Pat. Off., Sep. 27, 1995, 95202597

Int. Cl.⁶ H01L ***21/20;*** **B05D** ***5/12***

U.S. Cl. 438—384 **4 Claims**





1. A method of manufacturing a number of hybrid RC elements, each comprising a capacitor body and a resistor body, said method comprising:

a) providing a first and a second electrically conductive contact layer on surfaces of a plate-shaped body of a dielectric material;

b) providing a first and a second electrically conductive contact layer on surfaces of a plate-shaped body of a resistance material;

c) bringing said first contact layers into contact with each other;

d) alloying together said thus contacted first layers to thereby form a double-layer of said plate-shaped bodies; and

e) dividing said double-layer into a number of hybrid RC elements, each element comprising a block-shaped capacitor body and a block-shaped resistor body.

5,851,896

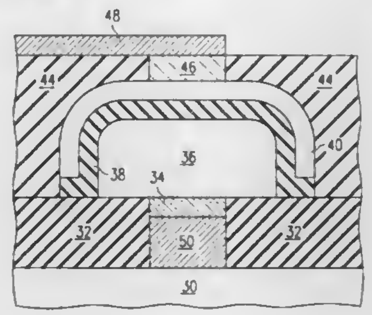
CONDUCTIVE EXOTIC-NITRIDE BARRIER LAYER FOR HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 283,873, Aug. 1, 1994, Pat. No. 5,504,041. This application Jun. 7, 1995, Ser. No. 485,177

Int. Cl.⁶ H01L ***29/12***

U.S. Cl. 438—396 **10 Claims**



1. A method of forming a microelectronic structure, said method comprising:

(a) providing a semiconductor substrate having a conductive oxidizable layer;

(b) forming a conductive nitride layer on said conductive oxidizable layer, said conductive nitride selected from the group consisting of: titanium aluminum nitride, Zr nitride, Hf nitride, Y nitride, Sc nitride, La nitride, other rare earth nitrides, N deficient Al nitride, doped Al nitride, Mg nitride, Ca nitride, Sr nitride, Ba nitride, and combinations thereof;

(c) forming an oxygen stable layer on said conductive nitride layer, wherein said conductive nitride layer and said conductive oxidizable layer have different compositions and are in direct contact with each other; and

(d) forming a layer of a high-dielectric-constant material on said oxygen stable layer, wherein the conductive nitride layer substantially inhibits diffusion of oxygen to the conductive oxidizable layer, whereby deleterious oxidation of the conductive oxidizable layer is minimized.

5,851,897

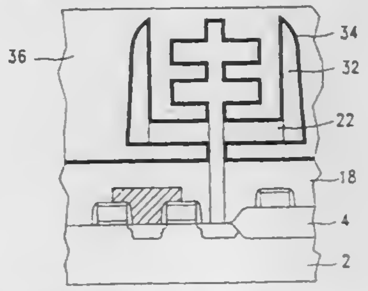
METHOD OF FORMING A DRAM CELL WITH A CROWN-FIN-PILLAR STRUCTURE CAPACITOR

Shye Lin Wu, Hsinchu, Taiwan, assignor to Powerchip Semiconductor Corp., Taiwan

Filed Nov. 18, 1996, Ser. No. 752,194

Int. Cl.⁶ H01L ***21/8242***

U.S. Cl. 438—397 **36 Claims**



1. A method for manufacturing an integrated circuit capacitor, the method comprising the steps of:

forming a first conductive layer over a semiconductor substrate;

forming a composition layer with a plurality of sublayers on said first conductive layer, said composition layer including a plurality of sublayers, at least two of said sublayers having a susceptibility to etching that differs;

forming a contact hole in said composition layer and said first conductive layer to said substrate;

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selectively etching said composition layer through said contact hole to etch one of said at least two of said sublayers;

forming a second conductive layer on said composition layer, in said contact hole;

patterning a photoresist on said second conductive layer;

etching said second conductive layer, said composition layer and said first conductive layer using said photoresist as an etching mask;

removing said photoresist; then

forming a third conductive layer on said second conductive layer, said composition layer, and said first conductive layer;

etching said second conductive layer, said third conductive layer to expose a top sublayer of said composition layer;

removing said composition layer;

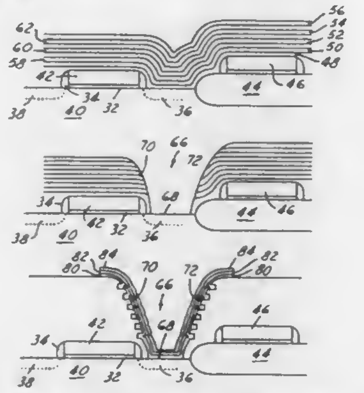
forming a dielectric film on the surface of said first conductive layer, second conductive layer and said third conductive layer; and

forming a forth conductive layer over said dielectric film.

5,851,898

METHOD OF FORMING STACKED CAPACITOR HAVING CORRUGATED SIDE-WALL STRUCTURE

Liang-Choo Hsia, Taipei, and Thomas Chang, Hsin-Chu, both of Taiwan, assignors to Mosel Vitelic, Inc., Hsinchu, Taiwan
Filed Aug. 23, 1996, Ser. No. 697,442
Int. Cl.^{6} H01L *21/70*
U.S. Cl. 438—398 **12 Claims**



1. A method of forming a capacitor having improved charge storage capability comprising the steps of:

providing a semiconductor substrate,

forming a gate and an isolation on the surface of the substrate,

depositing a plurality of oxide layers overlying the gate and the isolation by a deposition method alternating between thermal chemical vapor deposition (CVD) and plasma CVD,

etching through said plurality of oxide layers to form a capacitor cell contact by a plasma etching technique,

etching said plurality of oxide layers by an etchant having sufficient etch selectivity between thermal CVD and plasma CVD oxide layers such that a corrugated sidewall is formed in said capacitor cell after said etching step, and

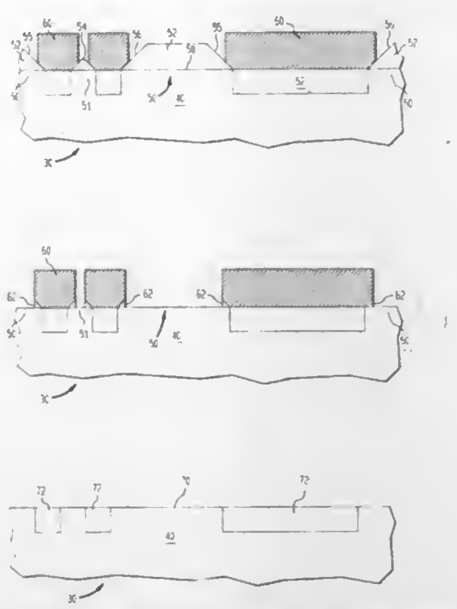
depositing semiconducting and insulating layers in said capacitor cell to form said capacitor.

5,851,899

GAPFILL AND PLANARIZATION PROCESS FOR SHALLOW TRENCH ISOLATION

Peter Weigand, Croton on Hudson, N.Y., assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 8, 1996, Ser. No. 694,072
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 438—427 **23 Claims**

1. A method for fabricating devices including the step of forming isolation between device structures fabricated on a substrate comprising:



defining active and non-active regions on a surface of the substrate;

forming isolation trenches of varying widths the active regions comprising active regions of varying width in the non-active regions;

forming a layer of HDP-CVD insulating material of silicon oxide, wherein the HDP-CVD silicon oxide layer is non-planar and protrudes angularly above isolation trench edges forming sloping edges that slope away from the trench on the substrate by high density plasma-enhanced chemical vapor deposition (HDP-CVD), the HDP-CVD layer substantially filling the trenches and covering the active regions;

removing at least a portion of the insulating material covering the active regions; and

planarizing the surface of said substrate to expose the active regions, the removal of at least a portion of insulating material from the active regions providing a planar topography; wherein removing of at least a portion of the insulating material from the active regions includes:

depositing a mask layer over the insulating material;

patterning the mask layer to expose at least a portion of the insulating material over the active regions; and

removing the exposed portion of the insulating material over the active regions, leaving unexposed portions of the insulating materials; and wherein the mask layer is deposited using an inverse active area mask that is biased so that the mask layer after patterning covers the non-active regions and at least a portion of the active regions.

5,851,900

METHOD OF MANUFACTURING A SHALLOW TRENCH ISOLATION FOR A SEMICONDUCTOR DEVICE

Chih-Hsun Chu, Hsinchu, and Ching-Nan Yang, Hsinchu Hsien, both of Taiwan, assignors to Mosel Vitelic Inc., Hsinchu, Taiwan
Filed Apr. 28, 1997, Ser. No. 848,583
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 438—434 **14 Claims**

1. A method of forming a shallow trench isolation on a silicon wafer, a P-well and an N-well being formed in said silicon wafer, said method comprising:

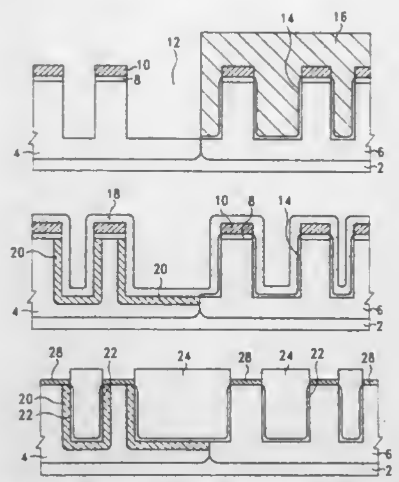
forming a pad layer on said silicon wafer;

forming a silicon nitride layer on said pad layer;

forming a plurality of trenches in said silicon wafer by etching said silicon nitride layer, said pad layer and said silicon wafer;

forming a first sacrificial (SAC) oxide layer on the surface of said trenches and on the surface of said pad oxide layer;

removing said first SAC oxide layer that is formed on said P-well;



forming a BSG layer along the surface of said trenches, said BSG layer being on said pad oxide layer, said silicon nitride layer and said first SAC oxide layer;

performing a thermal process for driving the boron ions that is in said BSG layer to diffuse into said P-well, therefore a channel stop layer being formed in said P-well;

removing said BSG layer;

removing said first SAC oxide layer;

forming an oxide layer along the surface of said trenches and on the surface of said pad oxide layer;

forming a liquid phase deposition (LPD) oxide layer in said trenches for isolation;

performing a CMP process to remove a portion of said LPD oxide layer to the surface of said silicon nitride layer for planarization;

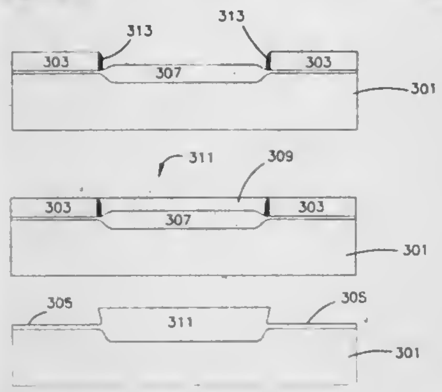
removing said silicon nitride layer; and

removing said pad oxide layer.

5,851,901

METHOD OF MANUFACTURING AN ISOLATION REGION OF A SEMICONDUCTOR DEVICE WITH ADVANCED PLANARIZATION

Mark I. Gardner, Cedar Creek, and Mark C. Gilmer, Austin, both of Tex., assignors to Advanced Micro Devices, Austin, Tex.
Filed Apr. 11, 1997, Ser. No. 832,706
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 438—439 **34 Claims**



1. A process of forming a semiconductor device, comprising:

forming a mask over a portion of a substrate to define an exposed region;

forming spacers from a nitride on sidewalls of the mask prior to growing a first oxide;

growing the first oxide in the exposed region of the substrate;

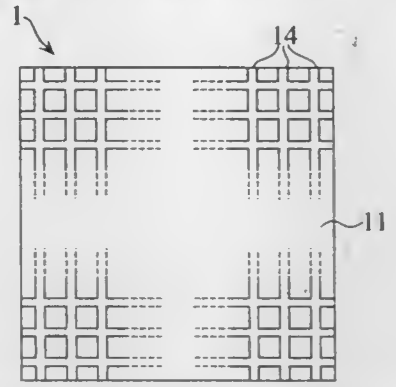
forming a second oxide region over the first oxide region to form a composite oxide region; and

selectively removing the mask while leaving at least a portion of the composite oxide region.

5,851,902

SEMICONDUCTOR LAYER STRUCTURE AND RECORDING MEDIUM FOR A LARGE CAPACITY MEMORY

Ikuo Sakai, Shizuoka, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 8, 1996, Ser. No. 598,299
Claims priority, application Japan, Feb. 8, 1995, 7-043401
Int. Cl.^{6} H01L *21/030;21/46*
U.S. Cl. 438—459 **4 Claims**



1. A method for forming a semiconductor structure, comprising the steps of:

providing a semiconductor substrate; and

forming a beam structure consisting of a wall or rib of vertical beams formed as a rectangular lattice or honeycomb on a back surface of said semiconductor substrate to reinforce the flexural rigidity of said substrate in accordance with a process comprising the steps of:

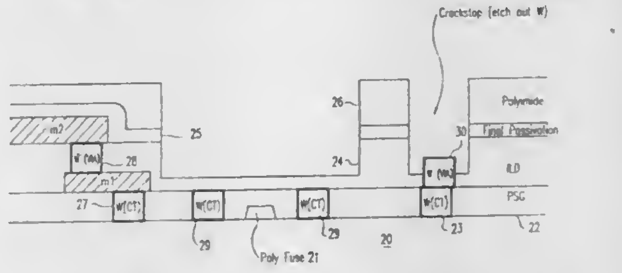
providing an etching mask in the form of a photoresist on a back surface of said substrate that defines a pattern describing the wall or rib of vertical beams formed as a rectangular lattice or honeycomb; and

etching said substrate back surface to form said beam structure.

5,851,903

METHOD OF FORMING CLOSELY PITCHED POLYSILICON FUSES

Anthony K. Stamper, Williston, Vt., assignor to International Business Machine Corporation, Armonk, N.Y.
Continuation of Ser. No. 699,830, Aug. 20, 1996, abandoned.
This application Feb. 21, 1997, Ser. No. 805,023
Int. Cl.^{6} H01L *21/326;21/479*
U.S. Cl. 438—467 **4 Claims**



1. A method of forming a semiconductor device comprising the steps of:

forming a polysilicon fuse on a top surface of a substrate in an area having a periphery;

depositing a first dielectric material on top of both the fuse and the substrate;

removing the first dielectric material in barrier areas positioned on either side of the fuse and in a first ring shaped area near said periphery;

filling both the barrier areas and the first ring shaped area with a first tungsten fill;

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- depositing a second dielectric material on top of the first dielectric material and the first tungsten fill;
- removing the second dielectric material from above the first ring shaped area to expose the first tungsten fill, thereby forming a second ring;
- filling the second ring with a second tungsten fill;
- depositing a final passivation layer on top of the second dielectric material and the second tungsten fill;
- depositing a polyimide layer on top of the final passivation layer;
- removing the polyimide, final passivation layer, and a portion of the second dielectric material over the polysilicon fuse and the second ring; and
- etching the second tungsten fill and the first tungsten fill in said first ring shaped area to form a crack stop.

5,851,904

METHOD OF MANUFACTURING MICROCRYSTALLINE LAYERS AND THEIR UTILIZATION

Reinhard Schwarz, Daxenackerweg 23b, D-85748 Garching, Germany; Svetoslav Koynov, Veliko Tarnovo 9, 1504 Sofia, Bulgaria, and Thomas Fischer, Freimanner Weg 7, D-85748 Garching, Germany

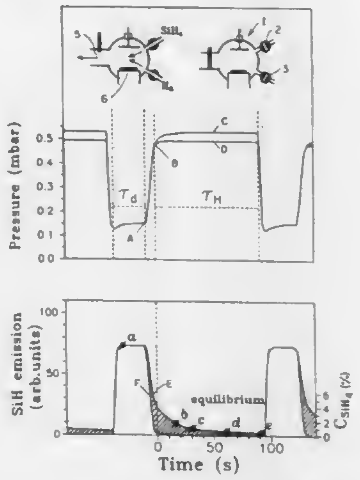
PCT No. PCT/DE94/01158, § 371 Date May 17, 1996, § 102(e) Date May 17, 1996, PCT Pub. No. WO95/09435, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 29, 1994, Ser. No. 624,403

Claims priority, application Germany, Sep. 30, 1993, 43 33 416.4

Int. Cl.^{6} H01L *21/20;21/36;* **C30B** *00/00*

U.S. Cl. 438—482 **19 Claims**



1. A method of manufacturing microcrystalline layers from an element of the principal group IV with cyclic CVD in a reactor connected to a pump, the method comprising separately supplying hydrogen and a process gas into the reactor and producing an amorphous layer of the element under CVD conditions, and interrupting the supply of hydrogen, the supply of process gas and the connection to the pump and treating the amorphous layer with the hydrogen and the process gas present in the reactor in a closed CVD process to form a microcrystalline layer.

5,851,905

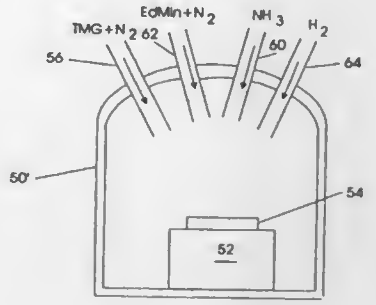
METHODS OF FORMING INDIUM GALLIUM NITRIDE OR ALUMINUM INDIUM GALLIUM NITRIDE USING CONTROLLED HYDROGEN GAS FLOWS

Forrest Gregg McIntosh; Salah Mohamed Bedair; Nadia Ahmed El-Masry, and John Claassen Roberts, all of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Continuation of Ser. No. 678,346, Jul. 11, 1996, Pat. No. 5,684,309. This application Aug. 12, 1997, Ser. No. 909,718

Int. Cl.^{6} H01L *29/205*

U.S. Cl. 438—492 **13 Claims**



8. A method of controlling the percentage of indium which is incorporated into indium gallium nitride or aluminum indium gallium nitride during formation thereof in a reaction chamber comprising the step of:

- flowing precursors of indium gallium nitride or aluminum indium gallium nitride in the deposition chamber while introducing a controlled hydrogen gas flow in the deposition chamber.

5,851,906

IMPURITY DOPING METHOD

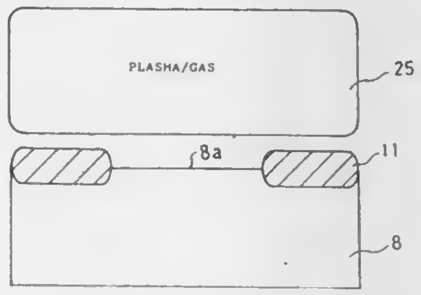
Bunji Mizuno, Ikoma; Hiroaki Nakaoka, Katano; Michihiko Takase, Neyagawa, and Ichiro Nakayama, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 7, 1996, Ser. No. 698,154

Claims priority, application Japan, Aug. 10, 1995, 7-204256

Int. Cl.^{6} H01L *21/263*

U.S. Cl. 438—513 **3 Claims**



1. An impurity doping method for doping impurities near the surface of a solid sample, comprising the steps of:

- feeding inert gas or inert gas containing reducing gas into a vacuum cell containing the solid sample, exciting the gas, and generating plasma near the surface of the solid sample,
- exposing an active sample surface on the surface of the solid sample by irradiating with plasma,
- stopping the plasma irradiation, and then doping the impurities by contacting gas or vapor containing the impurities, without active irradiation of plasma, with the active sample surface of the solid sample.

5,851,907

METHOD FOR REMOVAL OF BINDING PROTEINS FROM LIGANDS

Subburaman Mohan, 1414 Diamond Ct., Redlands, Calif. 92374, and David J. Baylink, 1428 Serpentine, Redlands, Calif. 92373

Continuation of Ser. No. 171,069, Dec. 20, 1993, abandoned. This application Feb. 23, 1996, Ser. No. 606,234

Int. Cl.^{6} G01N *33/543*

U.S. Cl. 436—518 **23 Claims**

21. A method for determining a ratio of the concentration of free insulin-like growth factor (free IGF) to the concentration of total insulin-like growth factor (total IGF) in a sample, comprising:

- buffering a first portion of the sample in a neutral buffer;
- applying the buffered first portion to a neutral gel centrifugation column;
- centrifuging the neutral column to elute a first elution fraction of the first portion;
- applying a neutral buffer to the neutral column and centrifuging to provide a second or more elution fractions;
- collecting all of the eluted fractions that contain the free IGF;
- quantifying the amount of the free IGF in the collected fractions by an immunoassay using at least one antibody or by a receptor assay;
- determining therefrom the concentration of the free IGF in the sample;
- acidifying a second portion of the sample to dissociate the IGF from any insulin-like growth factor binding protein (IGFBP) which may be present in the sample;
- applying the acidified second portion of the sample to an acidic gel centrifugation column, which comprises a gel which has been pretreated with a non-specific binding protein, wherein the column comprises a void volume;
- centrifuging the column to elute the contents of the void volume;
- discarding the eluted contents of the void volume;
- applying an acidic buffer to the column and centrifuging to elute the total IGF in one or more elution fractions;
- collecting those fractions eluted from the second portion that contain the IGF, thereby effecting a recovery of at least 89% of the total IGF in the acidified second portion of the sample;
- quantifying the amount of the total IGF in the collected fractions from the acidified second portion of the sample by an immunoassay using at least one antibody or by a receptor assay;
- determining therefrom the concentration of the total IGF in the sample; and
- calculating the ratio of the concentration of the free IGF to the concentration of the total IGF in the sample.

5,851,908

METHOD FOR INTRODUCTION OF AN IMPURITY DOPANT IN SIC, A SEMICONDUCTOR DEVICE FORMED BY THE METHOD AND A USE OF HIGHLY DOPED AMORPHOUS LAYER AS A SOURCE FOR DOPANT DIFFUSION INTO SIC

Christopher Harris, Sollentuna; Andrei Konstantinov, Linköping, and Erik Janzén, borensberg, all of Sweden, assignors to ABB Research Ltd., Zurich, Switzerland

Filed May 8, 1995, Ser. No. 436,488

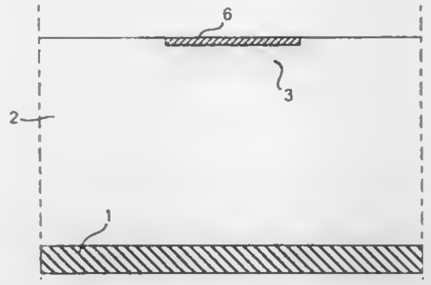
Claims priority, application Sweden, Apr. 10, 1995, 9501310

Int. Cl.^{6} H01L *21/265*

U.S. Cl. 438—520 **12 Claims**

1. A method for introducing an impurity dopant into a semiconductor layer of SiC, said method comprising the steps of:

- a) implanting dopant ions into said semiconductor layer at a concentration limit below the amorphization limit of SiC to from a doped near-surface layer; and then
- b) implanting inert species into said semiconductor layer such that said near surface layer of said semiconductor layer becomes doped and amorphous; and



- c) annealing said semiconductor layer at such a temperature that said dopant diffuses into a non-implanted sub-layer of said semiconductor layer below said near surface layer.

5,851,909

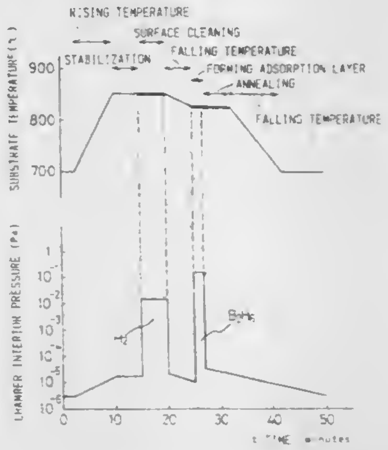
METHOD OF PRODUCING SEMICONDUCTOR DEVICE USING AN ADSORPTION LAYER

Masaaki Kamiya; Kenji Aoki, and Naoto Saito, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Chiba, Japan

Continuation of Ser. No. 821,318, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 565,221, Aug. 10, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 6,152

Int. Cl.^{6} H01L *21/225*

U.S. Cl. 438—567 **28 Claims**



1. A method of producing a semiconductor device comprising:

- a) forming a gate insulating film on a substrate at a surface of a semiconductor region of the substrate, the region being of a first conductivity type, and forming a gate electrode on the gate insulating film;
- b) evacuating a chamber at a pressure of less than 1×10^{-4} Pa;
- c) removing an inert film from the substrate in the chamber by a reduction reaction in order to expose an active face on two sections of the semiconductor region spaced from each other by the gate electrode;
- d) applying to the surface of the substrate in the chamber a gas containing an impurity component of a second conductivity type while heating the substrate to a temperature greater than 800° C. and not higher than a temperature of 825° C. to form an impurity adsorption layer composed of impurity component atoms or of a compound containing at least impurity component atoms and constituting a diffusion source substantially only on the active face, and introducing the impurity component atoms into the semiconductor region of the first conductivity type from the diffusion source to thereby form a first impurity layer of low density in the surface of the two semiconductor region sections; and
- e) forming a second impurity layer having an impurity density higher than that of the first impurity layer in each section so that the second layer is contiguous to the first impurity layer.

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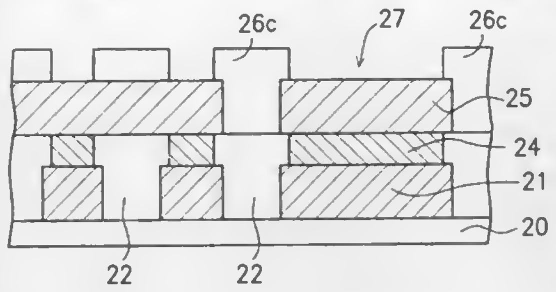
5,851,910
METHOD OF FABRICATING A BONDING PAD WINDOW

Chen-Chung Hsu, Taichung, and Larry Lin, Hsinchu, both of Taiwan, assignors to United Microelectronics Corp., Taiwan
Filed Sep. 11, 1997, Ser. No. 927,324
Claims priority, application Taiwan, Jun. 23, 1997, 86108732
Int. Cl.^{6} H01L *21/44*
U.S. Cl. 438—612 **9 Claims**

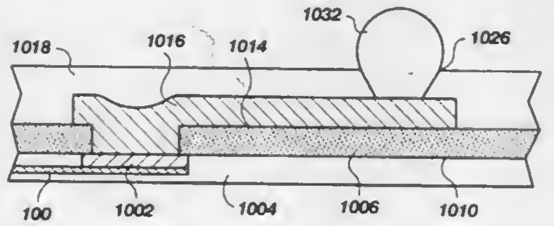


1. A method of fabricating a bonding pad window, comprising:

providing a substrate metallized with a first metallization layer;
forming a dielectric layer over the first metallization layer;
defining the dielectric layer using a first mask to form a via;
forming a plug in the via;
forming a second metallization layer over the plug and the dielectric layer;
forming a silicon nitride layer over and directly on the second metallization layer;
defining the second metallization layer and the silicon nitride layer by patterning and etching to expose the dielectric layer;
forming a passivation layer over and directly on the dielectric layer; and
forming a bonding pad window in registration with the plug by etching the silicon nitride layer to expose the second metallization layer.

5,851,911
MASK REPATTERN PROCESS

Warren M. Farnworth, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation-in-part of Ser. No. 612,059, Mar. 7, 1996, and a continuation-in-part of Ser. No. 682,141, Jul. 17, 1996, Pat. No. 5,736,456. This application Dec. 16, 1996, Ser. No. 767,162
Int. Cl.^{6} H01L *21/44*
U.S. Cl. 438—614 **19 Claims**

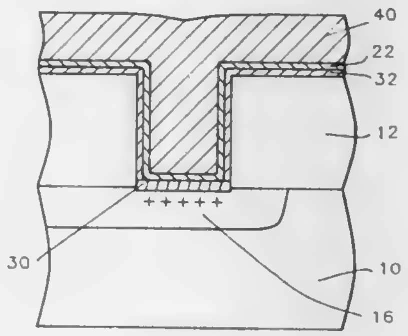


1. A method of relocating a conductive element of a semiconductor substrate, said method comprising the steps of:

forming a semiconductor substrate carrying integrated circuitry on at least one surface thereof, and at least one conductive element on said at least one substrate surface in communication with said circuitry and terminating in a bond pad, said at least one conductive element bounded by a first passivation layer over said at least one surface covering said at least one conductive element except for said bond pad;
forming a conductive trace of solder wettable material from said bond pad of said at least one conductive element to an alternative conductive element location on said at least one surface, said conductive trace of solder wettable material in contact with said bond pad of said at least one conductive element and extending over said first passivation layer;
forming a second passivation layer over said at least one surface and said conductive trace; and
etching a sloped-wall via through said second passivation layer extending to an upper surface of said conductive trace at said alternative conductive element location.

5,851,912
MODIFIED TUNGSTEN-PLUG CONTACT PROCESS

Jhon-Jhy Liaw, Taipei; Jin-Yuan Lee, and Ming-Chang Teng, both of Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan
Continuation of Ser. No. 583,790, Jan. 11, 1996, abandoned. This application Mar. 10, 1997, Ser. No. 824,190
Int. Cl.^{6} H01L *21/283*
U.S. Cl. 438—621 **12 Claims**

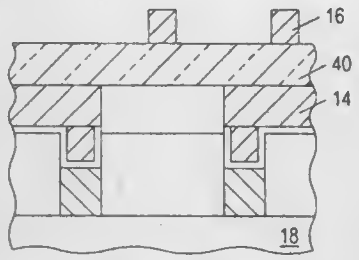


7. A method of forming void free tungsten plug contacts to silicon semiconductor devices with both n and p type active areas on the same semiconductor substrate and providing connection from these active areas to a metallic interconnection network comprising:

providing a semiconductor substrate;
forming semiconductor devices with both n and p type active areas within the surface of said semiconductor substrate;
forming a layer of silicate glass, which is flowable within the temperature range of between about 800° and 900° C., over said semiconductor substrate;
flowing said layer of silicate glass by heating;
depositing a first photoresist layer over said layer of silicate glass;
patterning said first photoresist layer to define contact hole openings;
etching said layer of silicate glass with a unidirectional dry etching technique thereby forming contact openings with an vertical walled profile;
implanting a first dose of dopant atoms into the contact openings;
depositing a second photoresist layer over said first photoresist layer;
patterning said second photoresist layer to expose only the contact openings to n-type active areas;
implanting a second dose of dopant atoms;
removing said first photoresist layer and said second photoresist layer;
forming a titanium layer over said layer of silicate glass;
forming a barrier metal layer over said titanium layer;
subjecting said semiconductor substrate to rapid thermal annealing after said barrier metal layer has been formed whereby said vertical walled profile is sustained;
depositing a tungsten layer over said semiconductor substrate; and
etching said tungsten layer to form tungsten plug contacts.

5,851,913
METHOD FOR FORMING A MULTILEVEL INTERCONNECT STRUCTURE OF AN INTEGRATED CIRCUIT BY A SINGLE VIA ETCH AND SINGLE FILL PROCESS

William S. Brennan; Robert Dawson; H. Jim Fulford, Jr.; Fred N. Hause; Basab Bandyopadhyay, all of Austin, and Mark W. Michael, Cedar Park, all of Tex., assignors to Advanced Micro Devices, Inc.
Filed Jun. 5, 1996, Ser. No. 655,246
Int. Cl.^{6} H01L *21/4763*
U.S. Cl. 438—622 **20 Claims**

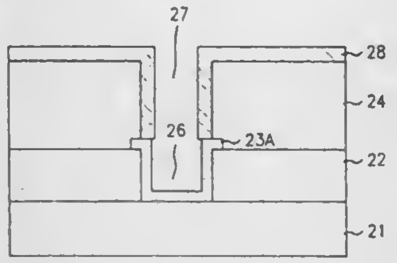


1. A method for forming a multilevel interconnect structure having a first, a second and a third set of conductors formed on substantially separate elevational levels from each other, comprising:

forming a first set of substantially coplanar conductors across a semiconductor topography;
depositing a first dielectric across said first set of conductors;
depositing a barrier layer upon said first dielectric and thereafter forming an opening through said barrier layer directly above a region arranged laterally between a pair of said first set of conductors;
depositing a second dielectric within said opening and, using said second dielectric as a partial masking layer, thereafter etching through said barrier layer and said first dielectric in a region directly above said first set of conductors to form a via which is aligned with an edge of said second dielectric;
forming a conductive layer within said via, wherein the conductive layer includes an upper surface commensurate with an upper surface of said second dielectric to form a second set of substantially coplanar conductors laterally spaced from each other by said second dielectric;
depositing a third dielectric upon said conductive layer; and
forming a third set of conductors upon said third dielectric.

5,851,914
METHOD OF FABRICATING A METAL CONTACT STRUCTURE

Sang Jun Han; Won Taik Kwon, and Jeong Hoe Kim, all of Bubaleub, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Apr. 23, 1997, Ser. No. 842,038
Claims priority, application Rep. of Korea, Jun. 29, 1996, 1996-26552
Int. Cl.^{6} H01L *21/28*
U.S. Cl. 438—622 **5 Claims**

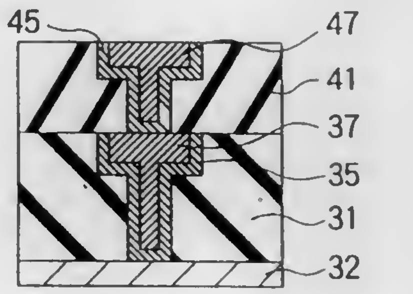


1. A method of fabricating a contact structure of semiconductor devices, comprising the steps of:

preparing a first conducting layer on a substrate;
forming a first insulating layer on said substrate and said first conducting layer;
forming a first vertical contact opening exposing a specific region of said first conducting layer, using a first mask, wherein a width of an under portion of said first vertical contact opening is the same as that of the lower portion thereof:
depositing a dummy conducting layer on an upper surface of said first insulating layer and on the sidewalls of said first insulating layer within said first vertical contact opening, to electrically contact said dummy conducting layer with said first conducting layer;
patterning said dummy conducting layer to form a patterned dummy conducting layer, wherein said patterned dummy conducting layer has an extending part positioned on a top surface of said first insulating layer and covers said first vertical contact opening;
forming a second insulating layer on a top surface of said first insulating layer and on said patterned dummy conducting layer;
etching said second insulating layer to form a second vertical contact opening, using a second mask, wherein said second mask is the same as said first mask, and further wherein a width of an upper portion of said second vertical contact opening is the same as that of the lower portion thereof; and
depositing a second conducting layer on an upper surface of said second insulating layer and on the sidewalls of said second insulating layer, and on said extending part of said patterned dummy conducting layer, to form a metal contact.

5,851,915
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE THROUGH A REDUCED NUMBER OF SIMPLE PROCESSES AT A RELATIVELY LOW COST

Kuniko Miyakawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 351,180, Nov. 30, 1994, abandoned. This application Jun. 9, 1997, Ser. No. 871,439
Claims priority, application Japan, Nov. 30, 1993, 5-300255
Int. Cl.^{6} H01L *21/4763*
U.S. Cl. 438—622 **21 Claims**



1. A method of manufacturing a semiconductor device including first and second insulator films and first and second wiring layers formed on said first and second insulator films, respectively, said first insulator film extending between first main and first supplementary surfaces opposite each other, said second insulator film extending between a second main surface facing said first supplementary surface and a second supplementary surface opposite said second main surface, said method comprising, in the order recited, the steps of:

(a) forming a first insulator film extending between first main and first supplementary surfaces opposite each other;
(b) forming a first wiring trench along said first supplementary surface of said first insulator film;
(c) forming a first through hole extending from said first wiring trench to said first main surface;
(d) depositing a first inner portion of a first conductive material in said first wiring trench and said first through hole of said

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first insulator film and a first outer portion of the first conductive material on said first supplementary surface;
(e) removing said first outer portion by polishing and leaving said first inner portion to form a first wiring layer;
(f) forming a second insulator film on said first supplementary surface, said second insulator film extending between a second main surface facing said first supplementary surface and a second supplementary surface opposite said second main surface;
(g) forming a second wiring trench along said second supplementary surface of said second insulator film in alignment with said first wiring trench;
(h) forming a second through hole extending from said second wiring trench to said first wiring layer in alignment with said first through hole;
(i) depositing a second inner portion of a second conductive material in said second wiring trench and said second through hole of said second insulator film with said second inner portion in contact with said first wiring layer, and a second outer portion of the second conductive material on said second supplementary surface;
(j) exposing said first wiring layer and said second conductive material to a temperature at which reflowing of each of said first wiring layer and said second conductive material occurs to place said second inner portion in close contact with said first wiring layer; and
(k) removing said second outer portion by polishing and leaving said second inner portion to form a second wiring layer.

5,851,916

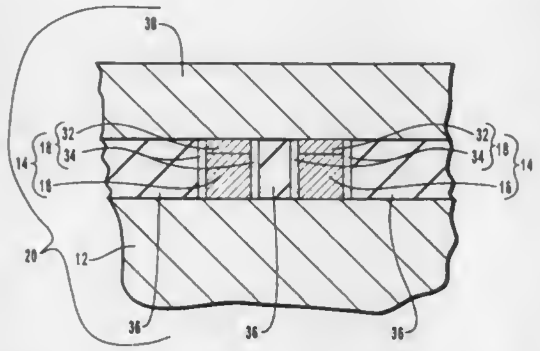
FORMATION OF A SELF-ALIGNED INTEGRATED CIRCUIT STRUCTURES USING PLANARIZATION TO FORM A TOP SURFACE

Bradley J. Howard, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 3, 1995, Ser. No. 552,824

Int. Cl.⁶ H01L *21/302*

U.S. Cl. 438—626 **30 Claims**



1. A method of forming a structure comprising:
forming a raised structure on a substrate, said raised structure including a protective layer having a upper surface that extends to a lateral surface below the upper surface, the lateral surface projecting towards the substrate, said raised structure being adjacent to and overlaid by a removable layer; wherein said raised structure is formed by:
forming an object on said substrate including a top layer of a protective material;
forming a spacer of said protective material laterally enclosing said object, said spacer of said protective material having diagonal facets at top outward facing edges thereof;
forming a first layer of a first material over and between said object enclosed by said spacer;
planarizing said first layer of said first material down to the top surface of said object;
removing said first layer of said first material at least down to the lowest extent of said facets;
planarizing said object and said spacer down to the level of said first layer of said first material to remove said facets; and
forming a second layer of said first material over said object enclosed by said spacer and said first layer of said first material:
depositing a layer of photoresist over said removable layer;
patterning said layer of photoresist;
removing said removable layer adjacent to said raised structure without breaching said protective layer; and
forming a fill layer over said substrate and said raised structure thereon.

5,851,917

METHOD FOR MANUFACTURING A MULTI-LAYER WIRING STRUCTURE OF A SEMICONDUCTOR DEVICE

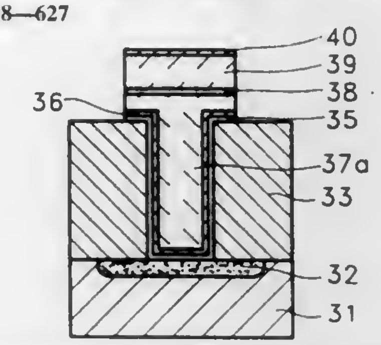
Sang-in Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 172,216, Dec. 23, 1993, abandoned. This application Apr. 1, 1996, Ser. No. 625,114

Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26603

Int. Cl.⁶ H01L *21/28*

U.S. Cl. 438—627 **24 Claims**



1. A method for manufacturing a wiring structure of a semiconductor device having a semiconductor substrate and an insulating layer formed thereon, comprising the steps of:
forming an opening in said insulating layer, said opening exposing a portion of an upper surface of said substrate;
forming a diffusion barrier layer on said exposed portion of said upper surface of said substrate and surface portions of said insulating layer defining said opening;
annealing said diffusion barrier layer in such a manner as to form an oxide layer on said diffusion barrier layer;
forming a nucleation layer on said oxide layer;
forming a first metal layer on said nucleation layer by CVD to fill said opening;
heat-treating said first metal layer to planarize a rough surface of said first metal layer at a temperature of which is at least 0.7 Tm and less than Tm;
forming an intermediate layer on said first metal layer; and
forming a second metal layer on said intermediate layer.

5,851,918

METHODS OF FABRICATING LIQUID CRYSTAL DISPLAY ELEMENTS AND INTERCONNECTS THEREFOR

Jin-ho Song, Kyungki-do, and Won-joo Kim, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

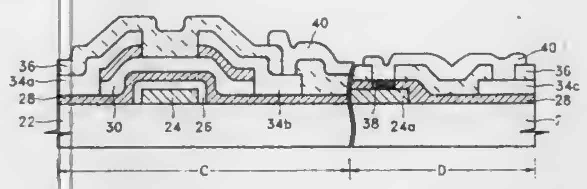
Filed Nov. 22, 1996, Ser. No. 754,886

Claims priority, application Rep. of Korea, Nov. 23, 1995, 95-43201

Int. Cl.⁶ H01L *21/44*

U.S. Cl. 438—627 **35 Claims**

1. A method of fabricating a liquid crystal display element on a substrate, the method comprising the steps of:



forming a thin film transistor on the substrate, the thin film transistor including a gate electrode covered by a channel region and a gate pad conductively connected to the gate electrode;
forming a pad electrode on the substrate, spaced apart from the gate pad;
exposing a portion of the gate pad and a portion of the pad electrode;
selectively plating the exposed portion of the gate pad to thereby form a conductive barrier layer on the exposed portion of the gate pad; and
forming a pixel electrode contacting the conductive barrier layer and the exposed portion of the pad electrode to thereby connect the gate pad and the pad electrode.

5,851,919

METHOD FOR FORMING INTERCONNECTIONS IN AN INTEGRATED CIRCUIT

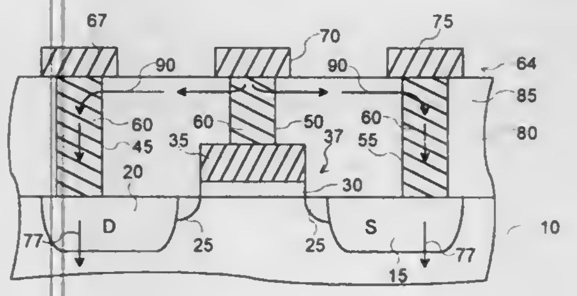
Constantin Papadas, Gieres, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed May 6, 1997, Ser. No. 851,803

Claims priority, application France, May 7, 1996, 96 06018

Int. Cl.⁶ H01L *21/4763*

U.S. Cl. 438—635 **52 Claims**



1. A method for producing wirings and contacts in an integrated circuit comprising the steps of:
a) forming an insulated gate component on a semiconductor substrate;
b) applying a dielectric layer to cover the insulated gate component, said dielectric layer including a photo-reducible material and an upper portion;
c) etching holes in the dielectric layer to expose portions of the insulated gate component;
d) filling the holes with a conductive material to form contact plugs;
e) photo reducing at least said upper portion of said dielectric layer to increase conductive properties of said dielectric layer;
f) covering said dielectric layer with an interconnect layer;
g) etching said interconnect layer to define wirings, said wirings electrically contacting said contact plugs; and
h) oxidizing said dielectric layer to reduce conductivity of said dielectric layer.

5,851,920

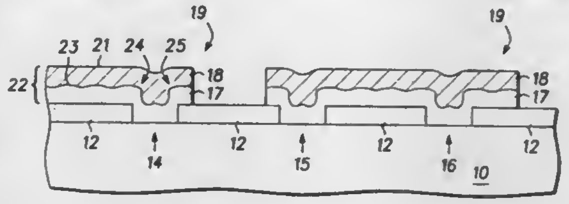
METHOD OF FABRICATION OF METALLIZATION SYSTEM

Donald S. Taylor; Gordon M. Grivna, both of Mesa; Wayne A. Cronin, Tempe, and Kirby F. Koetz, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 22, 1996, Ser. No. 589,693

Int. Cl.⁶ H01L *21/28*

U.S. Cl. 438—648 **20 Claims**



1. A method of making a semiconductor component comprising:
providing a substrate;
providing a first metal layer comprised of aluminum and a material that reduces aluminum mobility, the first metal layer overlying the substrate; and
providing a second metal layer consisting essentially of aluminum and copper, the second metal layer overlying the first metal layer,
wherein the step of providing the first metal layer includes providing the first metal layer includes providing a homogeneous layer of aluminum and the material at a first temperature greater than approximately half of a plastic deformation temperature of the first metal layer and wherein the step of providing the second metal layer includes providing a homogeneous layer of aluminum and copper at a second temperature greater than approximately half of a plastic deformation temperature of the second metal layer.

5,851,921

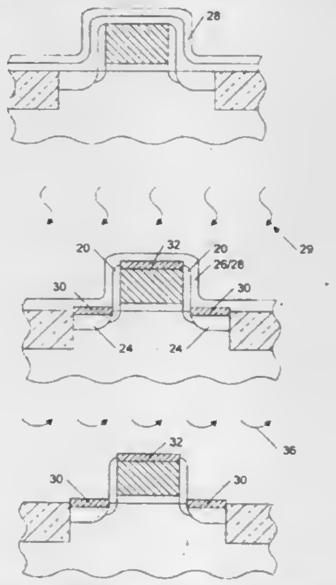
SEMICONDUCTOR DEVICE AND METHOD FOR FORMING THE DEVICE USING A DUAL LAYER, SELF-ALIGNED SILICIDE TO ENHANCE CONTACT PERFORMANCE

Mark I. Gardner, Cedar Creek, and Fred N. Hause, Austin, both of Tex., assignors to Advanced Micro Devices, Inc.

Filed Apr. 4, 1997, Ser. No. 832,747

Int. Cl.⁶ H01L *21/44*

U.S. Cl. 438—655 **20 Claims**



1. A method for forming a silicide, comprising:
providing a source region and a drain region spaced from said source region by a gate conductor;

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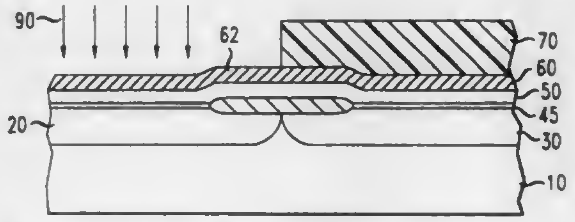
depositing a layer of titanium upon the source and drain regions and the gate conductor;
depositing a layer of cobalt upon the layer of titanium; and
interdiffusing the source and drain regions with the layers of cobalt and titanium, wherein said interdiffusing occurs in the absence of nitrogen in the ambient.

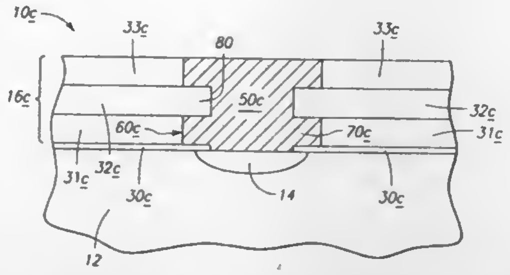
5,851,922
PROCESS FOR FABRICATING A DEVICE USING NITROGEN IMPLANTATION INTO SILICIDE LAYER
Joze Bevk, Summit, N.J.; Matthias Werner Fuertsch, Gomaringen, Germany; George E. Georgiou, Gillette, and Steven James Hillenius, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 557,761, Nov. 13, 1995, abandoned. This application May 29, 1997, Ser. No. 865,548
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 438—655 **12 Claims**



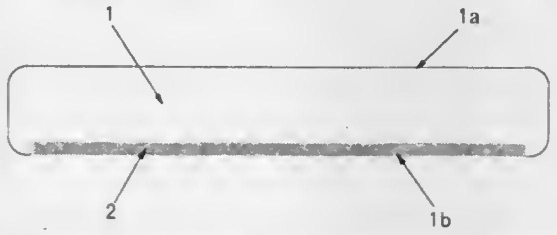
1. A process for device fabrication comprising:
forming a layer of dielectric material on a silicon substrate with n-type and p-type regions therein;
forming a silicon layer of amorphous or polysilicon over the dielectric layer;
forming a refractory metal silicide layer over said amorphous or polysilicon layer;
directing an n-type dopant species at a first portion of the refractory metal silicide layer thereby causing the n-type dopant species to implant in the silicide;
directing a nitrogen dopant at the first portion of the refractory metal silicide layer thereby causing the nitrogen dopant species to implant in the silicide;
directing a p-type dopant at a second portion of the refractory metal silicide layer thereby causing the p-type dopant species to implant in the silicide; and
performing an anneal at a temperature that is sufficient to cause at least some of both the n-type dopant and the p-type dopant to migrate from the silicide layer to the underlying layer of amorphous silicon or polysilicon,
wherein the nitrogen dopant reduces diffusion of the p-type dopant in the first portion of the refractory metal silicide layer.

5,851,923
INTEGRATED CIRCUIT AND METHOD FOR FORMING AND INTEGRATED CIRCUIT
J. Brett Rolfson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jan. 18, 1996, Ser. No. 588,574
Int. Cl.^{6} H01L *23/48;21/44*
U.S. Cl. 438—668 **3 Claims**

1. A method for forming an integrated circuit comprising:
providing a substrate comprising a node to which electrical connection is to be made;
providing a layer of material outwardly of the node, and wherein the layer of material comprises a composite of a first layer which is provided outwardly by the node, a second layer which is provided outwardly of the first layer, and a third layer which is provided outwardly of the second layer; wherein the first and third layers are electrically conductive, and the second layer is electrically insulative; and isotropically etching the second layer substantially selectively relative to the first and third layers to provide a discontinuity in the second layer of material; and
providing an electrically conductive plug through the layer of material in electrical connection with the underlying node and which forms an interlocking discontinuity which effectively prevents displacement of the electrically conductive plug from the node.



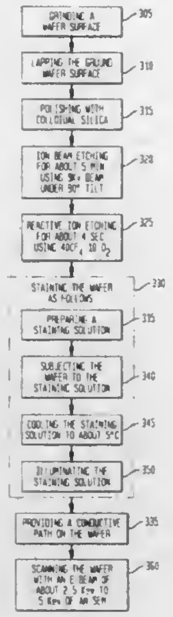
5,851,924
METHOD FOR FABRICATING SEMICONDUCTOR WAFERS
Atsuo Nakazawa, Minamiashigara; Yuuichirou Mukai, and Tomoaki Tajiri, both of Hiratsuka, all of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Hiratsuka, Japan
Filed Dec. 11, 1996, Ser. No. 763,013
Int. Cl.^{6} H01L *21/302*
U.S. Cl. 438—691 **3 Claims**



1. A method for fabricating a semiconductor wafer, which comprises the steps of
slicing a semiconductor ingot into semiconductor wafers;
chamfering the semiconductor wafers;
grinding a front surface and back surface of the semiconductor wafer by using different grain sizes respectively for the front and back surfaces and chemical polishing so that the front surface has a surface roughness where the deformation layer formed by the front surface grinding is removed, and the back surface has a surface roughness where the deformation layer formed by the back surface grinding remains after the chemical polishing.

5,851,925
STAINING TECHNIQUE FOR SEMICONDUCTOR DEVICE FOR SEM EXPOSURE
Michelle Beh, Blk 472 Jurong West St. #08-405, Singapore, Singapore, 640472, and Donald Grant, #03-03 Balmeg Court, Block 6C, Balmeg Hill, Singapore, 119909
Filed Jul. 2, 1996, Ser. No. 678,390
Claims priority, application Singapore, Feb. 15, 1996, 9601719-9
Int. Cl.^{6} H01L *21/00*
U.S. Cl. 438—708 **21 Claims**

1. A method for staining a wafer containing a semiconductor device comprising the steps of:
(1) ion beam etching a polished surface of the semiconductor device;
(2) reactive ion etching the ion beam etched surface of the semiconductor device;


GRINDING A WAFER SURFACE
305
LAPPING THE GROUND WAFER SURFACE
310
POLISHING WITH COLLOIDAL SILICA
315
ION BEAM ETCHING FOR ABOUT 5 MIN USING 5Kv BEAM UNDER 90° TILT
320
REACTIVE ION ETCHING FOR ABOUT 4 SEC USING 40CF4 10 O2
325
STAINING THE WAFER AS FOLLOWS
330
PREPARING A STAINING SOLUTION
335
SUBJECTING THE WAFER TO THE STAINING SOLUTION
340
COOLING THE STAINING SOLUTION TO ABOUT 5°C
345
ILLUMINATING THE STAINING SOLUTION
350
PROVIDING A CONDUCTIVE PATH ON THE WAFER
355
SCANNING THE WAFER WITH AN E-BEAM OF ABOUT 2.5 Kev TO 5 Kev OF AN SEM
360

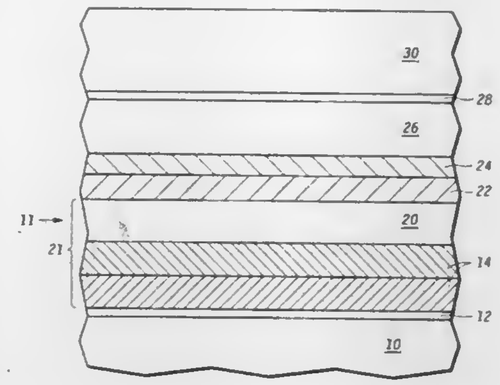
(3) staining the semiconductor device by cooling a staining solution; and
(4) illuminating the cooled staining solution to control a reaction of said staining solution with said semiconductor device.

5,851,926
METHOD FOR ETCHING TRANSISTOR GATES USING A HARDMASK
Ajay Kumar, Sunnyvale; Jeffrey Chinn, Foster City; Shashank C. Deshmukh, Sunnyvale; Weinan Jiang, Santa Clara; Rolf Adolf Guenther, Monte Sereno; Bruce Minaee, Campbell, and Mark Wiltse, Redwood City, all of Calif., assignors to Applied Materials, Inc, Santa Clara, Calif.
Filed Oct. 1, 1996, Ser. No. 724,383
Int. Cl.^{6} H01L *21/3065*
U.S. Cl. 438—714 **5 Claims**

1. An etch composition for etching transistor gates on a silicon oxide layer comprising a layer of tungsten silicide over a layer of polysilicon adjacent to said silicon oxide layer, using a silicon oxide hardmask, comprising a mixture of nitrogen trifluoride, hydrogen bromide and chlorine.

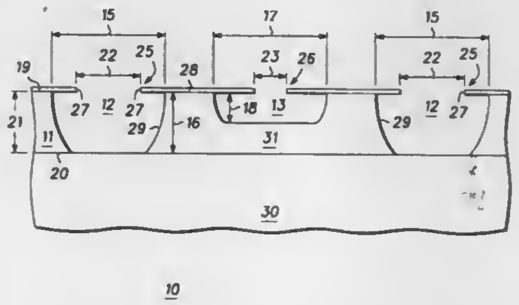
5,851,927
METHOD OF FORMING A SEMICONDUCTOR DEVICE BY DUV RESIST PATTERNING
Paul Kevin Cox, Austin, Tex.; Thy Ngu-Uyen Tran, Vancouver, Wash.; Samuel Jay Wright, Austin, and Judith Sobresky, Dripping Springs, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 29, 1997, Ser. No. 920,656
Int. Cl.^{6} H01L *21/285;21/311;21/336;21/8244*
U.S. Cl. 438—744 **23 Claims**

1. A method of forming a semiconductor device comprising the steps of:
providing a silicon substrate;
forming a gate stack on the silicon substrate comprising the steps of:
  forming a gate electrode on the silicon substrate;
  forming a silicon nitride layer on the gate electrode; and
  forming an adhesive oxide layer on the silicon nitride layer;
forming a DUV photoresist on the gate stack;



exposing the DUV photoresist to DUV energy and developing the DUV photoresist to remove portions thereof to leave exposed regions of the gate stack; and
etching the exposed regions of the gate stack.

5,851,928
METHOD OF ETCHING A SEMICONDUCTOR SUBSTRATE
Jerry D. Cripe, Tempe; Jerry L. White, Glendale, and Carl E. D'Acosta, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 27, 1995, Ser. No. 562,865
Int. Cl.^{6} H01L *21/302*
U.S. Cl. 438—748 **26 Claims**



1. A method of etching a semiconductor substrate, the method comprising the steps of:
providing the semiconductor substrate;
providing an etch mask over the semiconductor substrate to expose a portion of the semiconductor substrate, the etch mask having a first opening with a first width and a second opening with a second width less than the first width; and
wet etching a hole through the semiconductor substrate while simultaneously wet etching a first trench into the semiconductor substrate wherein the first trench has a depth less than a thickness of the semiconductor substrate, wherein the first opening overlies the hole, wherein the second opening overlies the first trench, wherein the hole and the first trench have an approximately equal width, and wherein the hole and first trench are physically separated from each others.
wherein the step of wet etching includes using a mixture of hydrofluoric acid, nitric acid, phosphoric acid, sulfuric acid, and a wetting agent.

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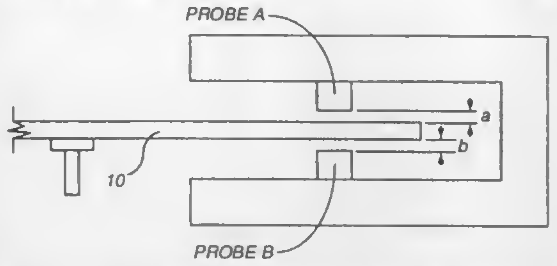
5,851,929
CONTROLLING SEMICONDUCTOR STRUCTURAL WARPAGE IN RAPID THERMAL PROCESSING BY SELECTIVE AND DYNAMIC CONTROL OF A HEATING SOURCE

Randhir P. S. Thakur, and Annette L. Martin, both of Boise, Id., assignors to Micron Technology, Inc.

Filed Jan. 4, 1996, Ser. No. 582,728

Int. Cl.^{6} H01L *21/66*

U.S. Cl. 438—795 **7 Claims**



1. A method of fabricating semiconductors, said method comprising the steps of:

(a) applying heat radiation of nonuniform intensities to different regions of a semiconductor structure to effect substantially isothermal conditions within said structure, and processing said structure at said isothermal conditions; and

(b) applying heat radiation of nonuniform intensities to different regions of said structure to effect non-isothermal conditions within said structure to thereby reduce deformities in the shape of said structure.

5,851,930
RIGID FIBER NETWORK STRUCTURES HAVING IMPROVED POST-YIELD DIMENSIONAL RECOVERY, METHOD OF MAKING SAME, AND ARTICLES INCORPORATING SAME

William E. Bessey, Charlotte, N.C.; Gerald Peter Rumierz, Tega Cay, S.C., and Clinton Dale Felton, Charlotte, N.C., assignors to Hoechst Celanese Corp., Warren, N.J.

Filed Nov. 24, 1997, Ser. No. 976,648

Int. Cl.^{6} D03D *3/00*

U.S. Cl. 442—60 **25 Claims**

1. A rigid three-dimensionally shaped fiber network structure having improved post-yield dimensional recovery, comprising a deformed sheet-like textile fabric having a base region and a plurality of deformations formed as a two-dimensional array on the base region, wherein the deformed fabric contains:

(A) at least one oriented, semi-crystalline monofilament yarn containing a thermoplastic polymer, the monofilament yarn being disposed in the deformed fabric so as to provide a plurality of monofilament cross-over points therein; and

(B) a cured crosslinkable resin impregnating the deformed fabric so as to effect bonding of all or substantially all of the monofilament cross-over points.

5,851,931
PAINTABLE SUBSTRATE OF NONWOVEN FABRIC AND EXTRUDED RESIN

Bonnie DeRenzo, Exeter, and Robert Mahoney, Hampstead, both of N.H., assignors to Foss Manufacturing Co., Inc., Hampton, N.H.

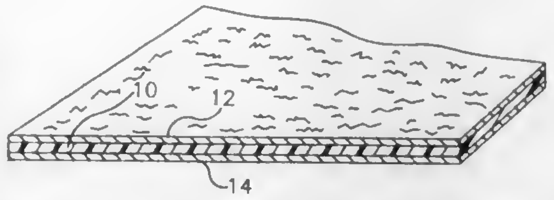
Filed Sep. 3, 1997, Ser. No. 927,139

Int. Cl.^{6} B32B *27/00*

U.S. Cl. 442—62 **6 Claims**

1. Decorative arts product comprising a laminate as made by adhering one or two non-woven fabrics to faces of a freshly extruded plastic film core layer, the laminate as a whole having characteristics of cutting without fraying, overall thickness between 0.005 and 0.020 in. including surface layer thickness(es) of 0.005–0.01 in. each, and characteristics of paintability and adhesive bondability of the fabric covered surface(s) and controllable thermoformability of the product as a whole,

the product as a whole being usable as a decorative arts substrate.



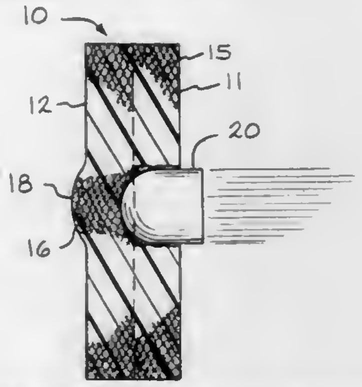
5,851,932
BALLISTIC ARMOR LAMINATE

Lawrence J. Dickson, Granville, and Donald L. Blake, Newark, both of Ohio, assignors to Isorco, Inc.

Filed Oct. 6, 1997, Ser. No. 958,127

Int. Cl.^{6} B32B *5/26*

U.S. Cl. 442—135 **15 Claims**



1. A ballistic impact resistant laminate structure comprising stacked layers of glass filament fabrics,

said layers of glass fabrics each having been impregnated with heat curable resin bonding material,

said stacked layers of impregnated fabrics having been integrated under heat and pressure to produce said structure,

a portion of the thickness of said structure comprising fabrics of "E" glass roving filaments to provide a front face for said structure, and

the remainder backside portion of the thickness of said structure comprising fabrics of "S" glass roving filaments.

5,851,933
METHOD FOR MAKING FIBER GLASS MATS AND IMPROVED MATS USING THIS METHOD

Paul Russell Swartz, Perrysburg, and George Nicholas Ello, Toledo, both of Ohio, assignors to Johns Manville International, Inc., Denver, Colo.

Filed Sep. 14, 1995, Ser. No. 528,284

Int. Cl.^{6} B32B *5/16;17/06*

U.S. Cl. 442—180 **7 Claims**

1. In a method of making a fiber glass mat wherein an aqueous mixture comprising a modified urea formaldehyde resin binder is applied to a wet, nonwoven mat of unbonded glass fibers saturating the wet mat, excess binder is removed, and said mat containing said binder is dried and said resin binder is cured to form a modified urea formaldehyde bonded glass fiber mat, the improvement comprising modifying the aqueous urea formaldehyde binder by adding 5–8 weight percent modifier, based on the dry weights of the urea formaldehyde resin and the modifier, to the aqueous urea formaldehyde resin binder before applying this binder mixture to said wet nonwoven mat; the modifier selected from the group consisting of an aqueous self-crosslinking vinyl acrylic copolymer

emulsion having a pH in the range of 4.2–5.5 and being nonionic to slightly cationic and an aqueous self-crosslinking vinyl acetate and acrylic copolymer having a glass transition temperature of +30 degrees C.

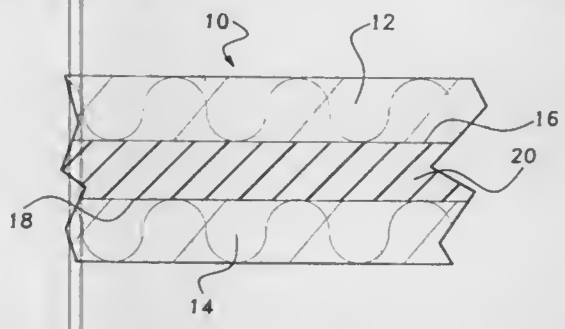
5,851,934
COMPOSITE CURTAIN

Edward Lehnert, Westerville, Ohio, assignor to ASC Incorporated, Southgate, Mich.

Filed Jan. 2, 1997, Ser. No. 778,280

Int. Cl.^{6} B32B *27/12*

U.S. Cl. 442—288 **3 Claims**



1. A curtain for use in transportation vehicles, comprising:

first and second textile fabric sheets;

a vinyl sheet disposed between said first and second fabric sheets, said first and second textile fabric sheets being laminated to opposite surfaces of said vinyl sheet, said vinyl sheet being substantially non-translucent and substantially impermeable; and

hardware for suspending said curtain in a vertical condition.

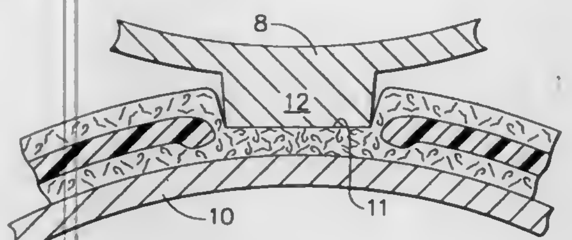
5,851,935
CROSS-DIRECTIONALLY STRETCHABLE ELASTOMERIC FABRIC LAMINATED BY THERMAL SPOT BONDING

Ramesh Srinivasan, Billerica; W. Andrew Coslett, Medfield, and Angelo Colace, Walpole, all of Mass., assignors to BBA Nonwovens Simpsonville, Inc., Simpsonville, S.C.

Filed Aug. 29, 1996, Ser. No. 705,208

Int. Cl.^{6} B32B *3/26*

U.S. Cl. 442—328 **5 Claims**



1. A laminated fabric comprising:

a film of elastomeric material having a first melting temperature, said film having a multiplicity of spaced apertures; and

first and second carded nonwoven webs sandwiching said film, each of said first and second carded nonwoven webs comprising substantially 100% of staple fibers made of a particular thermoplastic material having a second melting temperature higher than said first melting temperature,

wherein thermoplastic fibers which overlap said apertures in said film are fused to each other across said apertures to form densified web portions, leaving undensified web portions consisting of unfused fibers in regions not overlapping said film apertures.

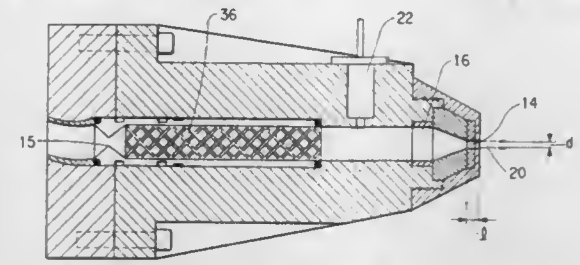
5,851,936
ELONGATION FOR FLASH SPUN PRODUCTS

Larry Ray Marshall, Chesterfield, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 699,281, Aug. 19, 1996, abandoned. This application Mar. 27, 1997, Ser. No. 825,266

Int. Cl.^{6} D01D *5/11*

U.S. Cl. 442—334 **25 Claims**



1. A flash spun polymeric sheet material having an opacity of greater than 85%, a basis weight greater than 30 g/m^2 but less than 100 g/m^2, and an average break elongation of greater than about 30%.

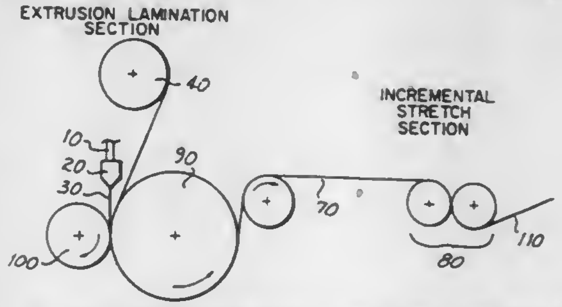
5,851,937
CLOTH-LIKE TOTALLY BIODEGRADABLE AND/OR COMPOSTABLE COMPOSITES AND METHOD OF MANUFACTURE

Pai-Chuan Wu, Cincinnati, Ohio, and Philippe Ehret, Fortschwihr, France, assignors to Clopay Plastic Products Company, Inc., Cincinnati, Ohio, and Fiberweb France S.A., Biesheim, France

Filed Mar. 27, 1997, Ser. No. 826,007

Int. Cl.^{6} B32B *27/12*

U.S. Cl. 442—394 **12 Claims**



1. A totally biodegradable and/or compostable soft cloth-like composite comprising one or more plies of a totally biodegradable and/or compostable plastic film and one or more plies of a totally biodegradable and/or compostable nonwoven web, said composite having incrementally stretched portions substantially across its length and width and throughout its depth to provide a soft cloth-like feel to the composite.

5,851,938
GLASS MATERIAL VARIABLE IN VOLUME BY IRRADIATION WITH ULTRAVIOLET LIGHT

Junji Nishii, and Hiroshi Yamanaka, both of Ikeda, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 753,601, Nov. 27, 1996, abandoned. This application Nov. 10, 1997, Ser. No. 966,858

Claims priority, application Japan, Dec. 8, 1995, 7-345688

Int. Cl.^{6} C03C *3/04;* **B32B** *17/06*

U.S. Cl. 501—54 **4 Claims**

1. A glass material expansible in volume by irradiation thereof with ultraviolet light, said glass material being reducible in refractive index by irradiation thereof with ultraviolet light, said glass material having a GeO_2—SiO_2 glass composition having a GeO_2

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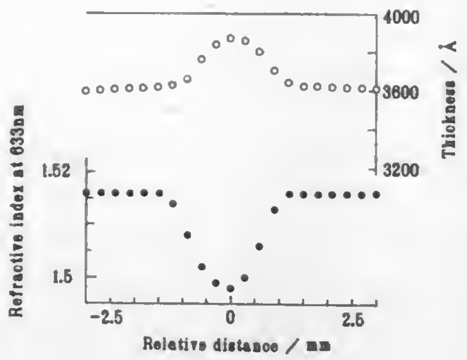


content of 0.5 to 90 mol %, and is in the form of a thin film formed on a substrate in an argon-oxygen mixed gas atmosphere having an oxygen content of at most 10 vol % by a high-frequency sputtering method, said ultraviolet light having a wavelength of at most 400 nm.

5,851,939

ALKALI-FREE GLASS SUBSTRATE

Shinkichi Miwa, Nishinomiya, Japan, assignor to Nippon Electric Glass Co., Ltd., Otsu, Japan

PCT No. PCT/JP96/02751, § 371 Date May 23, 1997, § 102(e) Date May 23, 1997, PCT Pub. No. WO97/11920, PCT Pub. Date Apr. 3, 1997

PCT Filed Sep. 25, 1996, Ser. No. 849,043

Claims priority, application Japan, Sep. 28, 1995, 7-276760

Int. Cl.^{6} C03C *3/093*

U.S. Cl. 501—70 **1 Claim**

1. An alkali-free glass substrate consisting essentially of, by weight, 58.0–68.0% SiO_2, 10.0–25.0% Al_2O_3, 3.0–15.0% B_2O_3, 0–2.9% MgO, 0–8.0% CaO, 0.1–5.0% BaO, 0.1–10.0% SrO, 0–5.0% ZnO, 5.0–20.0% MgO+CaO+SrO+BaO+ZnO, 0–5.0% ZrO_2, and 0–5.0% TiO_2, said substrate being essentially free of alkali metal oxide, having a density not exceeding 2.55 g/cm^3, and a chemical resistance so that the glass surface does not change after the glass is immersed for 30 minutes in a buffered hydrofluoric acid solution held at 20° C., said buffered hydrofluoric acid solution comprising, by weight, 38.7% ammonium fluoride and 1.6% hydrofluoric acid.

5,851,940

BLUE GLASS WITH IMPROVED UV AND IR ABSORPTION

Edward Nashed Boulos, Troy, Mich., and James Victor Jones, Toledo, Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 11, 1997, Ser. No. 891,684

Int. Cl.^{6} C03C *3/087;4/08*

U.S. Cl. 501—71 **15 Claims**

1. A blue colored ultra violet and infra red absorbing glass composition. having a base glass composition comprising: 68 to 75% SiO_2, 10 to 18% Na_2O. 5 to 15% CaO, 0 to 10% MgO, 0 to 5% Al_2O_3, and 0 to 5% K_2O. where CaO+MgO is 6 to 15% and Na_2O+K_2O is 10 to 20%; and colorants consisting essentially of: 0.4 to 2.0% total iron oxide as Fe_2O_3; 0.15 to 2.00% manganese oxide as MnO_2; 0.005 to 0.025% cobalt oxide as Co, and 0 to 1.00% titanium oxide as TiO_2, all percentages being based on the weight percent of the total blue glass composition; the blue glass having at a 4.0 mm. thickness: 477–494 dominant wavelength and 6–40% purity of excitation.

5,851,941

SI/SIC-BASED SINTERED MATERIAL HAVING EXCELLENT CORROSION RESISTANCE AND KILN FURNITURE

Shigeru Hanzawa, Kagamihara, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Feb. 20, 1997, Ser. No. 803,442

Claims priority, application Japan, Mar. 1, 1996, 8-44729

Int. Cl.^{6} C04B *35/565;35/577;35/64;* **F27D** *1/00*

U.S. Cl. 501—88 **5 Claims**

1. A Si/SiC-based sintered material comprising Si and SiC as constituents, said sintered material having a SiO_2 content of 0.5% by weight or less and an oxygen content of 0.25% by weight or less, and the Si/SiC-based sintered material being corrosion-resistant in a temperature range of 800°–1,400° C. and an atmosphere containing at least one element selected from the group consisting of Ge, As, Se, In, Sn, Sb, Te, Tl, Pb, Bi, Cl and F.

5,851,942

PREPARATION OF BORON-DOPED SILICON CARBIDE FIBERS

Michael D. Sacks; William Toreki; Christopher D. Batich, all of Gainesville, Fla., and Guang J. Choi, Seoul, Rep. of Korea, assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 683,475, Jul. 18, 1996, Pat. No. 5,792,416. This application Aug. 20, 1997, Ser. No. 915,181

Int. Cl.^{6} C04B *35/565;35/52*

U.S. Cl. 501—95.1 **14 Claims**

1. A, homogeneously boron doped, polymer derived, silicon carbide fiber produced by the process comprising the steps of providing a spin dope solution comprising a silicon carbide forming organosilicon polymer, a solvent, a soluble boron precursor and a nitrogen containing precursor which reacts with said soluble boron precursor to form a boron compound such that boron remains in said fiber after heat treating; forming green fibers from said spin dope solution by spinning; and heat treating to sinter said green fibers to produce, homogeneously doped, boron containing fibers having a tensile strength of at least 2.0 GPa, wherein the fiber retains at least 90% of the original tensile strength after being heated treated at a temperature of up to 1800° C.

5,851,943

CERAMIC PRODUCTION PROCESS

Glen Clifton Barris, Wellington, and Gregory Michael Hodren, Auckland, both of New Zealand, assignors to Industrial Research Limited, New Zealand, and Pryotek Products Limited, Netherlands

PCT No. PCT/NZ95/00050, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO95/33700, PCT Pub. Date Dec. 14, 1995

PCT Filed Jun. 6, 1995, Ser. No. 750,272

Claims priority, application New Zealand, Jun. 3, 1994, 260686; Jul. 18, 1994, 264034

Int. Cl.^{6} C04B *35/599*

U.S. Cl. 501—98.1 **32 Claims**

1. A process for the production of O'—SiAlON from silicon metal, nitrogen, and clay, the process comprising heating a component mixture comprising the silicon metal and the clay in a flowing nitrogen atmosphere to a temperature sufficient to react the components to form O'—SiAlON and wherein the clay participates in the reaction as a source of aluminum and silicon.

5,851,944

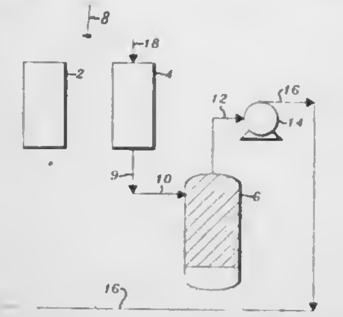
PROCESS FOR PERFORMING A SWING BED REGENERATION OPERATION WITH MINIMAL DOWNSTREAM UPSETS

Charles P. Luebke, Mount Prospect; William A. Leet, Napervile; Joseph E. Zimmermann, Arlington Heights; Ronald J. Vangelisti, Marseilles, and Terry L. Marker, Warrenville, all of Ill., assignors to UOP LLC, Des Plaines, Ill.

Filed Nov. 1, 1996, Ser. No. 742,021

Int. Cl.^{6} B01J *20/34;38/48;38/52*

U.S. Cl. 502—22 **10 Claims**



1. A process for regenerating solid treating particles utilizing swing bed regeneration, said swing bed regeneration having at all times at least one vessel on-line and at least one vessel off-line, comprising:

a) conducting at least a portion of liquid effluent from said on-line vessel(s) to a displacement surge drum, said liquid effluent from said on-line vessel(s) being a diisopropyl ether production reactor effluent;

b) discharging a liquid effluent from said displacement surge drum to at least one downstream unit;

c) regenerating the solid treating particles in said off-line vessel(s) using an aqueous liquid regeneration fluid immiscible with the effluent from said displacement surge drum;

d) displacing the aqueous liquid regeneration fluid from said off-line vessel(s) using a portion of the liquid effluent from said displacement surge drum or a portion of the liquid effluent from said on-line vessel(s);

e) increasing the discharge of liquid effluent from said displacement surge drum during the displacement of aqueous liquid regeneration fluid by an amount equal to that portion of liquid effluent used for said displacement; and

f) said process characterized by having said displacement surge drum at all times at least partially filled with the liquid effluent from said on-line vessel(s) and by having a substantially constant flowrate of liquid effluent from said process to said at least one downstream unit.

5,851,945

OLEFIN POLYMERIZATION CATALYST COMPOSITIONS COMPRISING GROUP 5 TRANSITION METAL COMPOUNDS STABILIZED IN THEIR HIGHEST METAL OXIDATION STATE

Howard William Turner, and Vincent John Murphy, both of Cupertino, Calif., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Filed Feb. 7, 1997, Ser. No. 798,412

Int. Cl.^{6} B01J *31/00;37/00;* **C08F** *4/02;4/60*

U.S. Cl. 502—103 **8 Claims**

1. An olefin polymerization catalyst composition comprising the reaction product of:

1) a Group 5 metal compound stabilized in its highest metal oxidation state comprising one Group 15 element polyanionic ancillary ligand and three single or multidentate univalent ligands comprising Group 14–16 elements bound to the Group 5 metal, but excluding cyclopentadienyl ligands wherein at least one of said univalent ligands comprises a Group 14 element bound to the Group 5 metal, and 2) a catalyst activator compound.

5,851,946

COORDINATION CATALYST SYSTEMS COMPRISING INTRAMOLECULARLY STABILIZED ORGANOMETALLIC COMPOUNDS

Ludwig Pohl, Darmstadt; Eike Poetsch, Mühltal; Hans-Ludwig Hirsch, Reinheim; Herbert Schumann, Berlin, and Karin Weiss, Bayreuth, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

PCT No. PCT/EP94/00805, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/22576, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 15, 1994, Ser. No. 525,720

Claims priority, application Germany, Mar. 26, 1993, 43 09 821.5

Int. Cl.^{6} C08F *4/22*

U.S. Cl. 502—131 **12 Claims**

1. A coordination catalyst system which comprises an intramolecularly stabilized organometallic compound of the formula I

$$X^1{}_l—M—(Z)_m \qquad (I).$$

wherein

M is an element selected from the group consisting of Mg, B, Al, Ga, In, Sn, Zn, Ti, Zr and lanthanides,

l is the number 0, 1, 2 or 3,

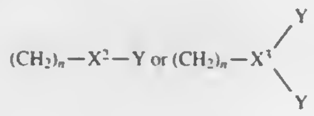
m is the number 1, 2, 3 or 4,

where l+m corresponds to the oxidation state of M,

X^1 is $CR^1R^2R^3$, NR^1R^2 or OR^1,

R^1, R^2 and R^3 are H, C_{1-6}-alkyl, where, in the case where l=2, two radicals R^1 together can also form a C_{2-6}-alkylene bridge,

Z is



$$(CH_2)_n—X^2—Y \text{ or } (CH_2)_n—X^3\begin{matrix} / Y \\ \backslash Y \end{matrix}$$

n is the number 0, 1, 2 or 3,

X^2 is CH_2, NH or a 5- or 6-membered aromatic, cycloaliphatic or heteroaromatic ring, in each case substituted by Y in the o-position,

X^3 is CH, N or a 5- or 6-membered aromatic, cycloaliphatic or heteroaromatic ring, in each case di-substituted with Y in the o,o'-positions,

Y is $(CH_2)_o—NR^4R^5$, $(CH_2)_o—PR^4R^5$, $(CH_2)_o—OR^4$, or $(CH_2)_o—SR^4$,

o is the number 1, 2 or 3, and

R^4 and R^5 are hydrogen or C_{1-6}-alkyl,

with the proviso that in the case where M=B, Al, Ga or In and $Z=(CH_2)_n—X^2—Y$, m is not 1.

5,851,947

INCORPORATION OF NOBLE METALS INTO AEROGELS

Lucy M. Hair; Robert D. Sanner, and Paul R. Coronado, all of Livermore, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 16, 1996, Ser. No. 767,012

Int. Cl.^{6} B01J *23/38*

U.S. Cl. 502—258 **19 Claims**

1. An inorganic aerogel containing at least one atomically dispersed noble metal.

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SUPPORTED CATALYST AND PROCESS FOR CATALYTIC OXIDATION OF VOLATILE ORGANIC COMPOUNDS

Karl T. Chuang; Mingqian Zhang, and Bing Zhou, all of Edmonton, Canada, assignors to Hydrocarbon Technologies, Inc., Lawrenceville, N.J.

Filed Aug. 20, 1996, Ser. No. 700,201
Int. Cl.^{6} B01J *23/00;8/00;* **A62D** *3/00*

U.S. Cl. 502—314 **16 Claims**

1. A catalyst composition useful for catalytic oxidative destruction of volatile organic compounds, the catalyst comprising:

an inert porous support material having total surface area of 10–400 m^2/g;

a transition metal oxide selected from the metals group consisting of chromium, cobalt, copper, cerium and iron provided on the porous support material in concentration of 0.5–15 wt. % of the catalyst; and

an active noble metal selected from the group consisting of palladium, platinum, rhodium, and ruthenium additionally provided on said support material in concentration of 0.010–2.0 wt. % of the catalyst in a thin outer layer having thickness not exceeding about 0.10 mm; whereby at least the active noble metal exists in the thin layer on only the outer surface of the support material so as to minimize mass transfer resistance from reactant compounds and provide high catalytic activity while also minimizing the weight percent of the active metals in the catalyst.

7. A method for making a catalyst useful for effective catalytic oxidative destruction of volatile organic compounds, comprising the steps of:

(a) providing an aqueous solution of chromium nitrate, adding the solution to a porous support material having surface area of 10–400 m^2/g, then drying and calcining the metal loaded support material;

(b) mixing ammonium platinum nitrate aqueous solution with an alcohol carrier liquid;

(c) contacting the metal loaded support material with the platinum nitrate solution so as to form clusters and limit diffusion of the platinum solution into the porous support material, and restrict the platinum to only a thin outer layer on the support material, and evaporating the carrier liquid;

(d) reducing the metal loaded support material with a hydrogen-containing gas and converting the platinum oxide to its metal state; and

(e) calcining the metal loaded support material in air so as to produce the active oxidative catalyst.

13. A process for catalytically oxidizing volatile organic compounds (VOCs) having a concentration of between about 1 ppm and 5 vol % in an oxygen-containing gas which is free of any catalyst poisoning material, the process comprising:

providing a feedstream containing dilute concentration of at least one volatile organic compound in gaseous form and contacting the feedstream under reaction conditions with a catalyst containing:

an inert porous support material having total surface area of 10–400 m^2/g, a transition metal oxide selected from the group consisting of chromium, cobalt and copper provided on the porous support material in concentration of 0.5–15 wt. % of the catalyst; and

an active noble metal consisting of platinum having concentration of 0.010–2.0 wt. % of the catalyst in a thin outer layer having thickness not exceeding about 0.10 mm and in interaction with the transition metal oxide, wherein at least the active noble metal exists in the thin layer on only the outer surface of the support material so as to minimize mass transfer resistance from reactant compounds and provide high catalytic activity while also minimizing the weight percent of the active metal in the catalyst, the feedstream contacting the catalyst under reaction conditions of 50°–500° C. temperature, 0–600 psig pressure, and space velocity of 1000–200,000 hr^{-1}; and

oxidizing the volatile organic compounds contained in the feedstream to yield essentially only carbon dioxide and water products.

5,851,949
SULFUR TOLERANT HYDROCARBON CONVERSION CATALYST

Leonid B. Galperin, Wilmette, and Robert L. Bedard, McHenry, both of Ill., assignors to UOP LLC, Des Plaines, Ill.

Continuation-in-part of Ser. No. 685,763, Jul. 24, 1996, Pat. No. 5,716,897. This application Sep. 2, 1997, Ser. No. 922,016
Int. Cl.^{6} B01J *23/44;29/068;29/12*

U.S. Cl. 502—333 **18 Claims**

1. A process for preparing a catalytic composite consisting essentially of a molecular sieve support having dispersed thereon palladium and a modifier, and a binder, the support selected from the group consisting of Me_xAPSO, zeolite Y and mixtures thereof, where Me is a metal selected from the group consisting of magnesium, manganese, cobalt, iron, zinc, and mixtures thereof, x has a value from greater than zero to about 0.5, the modifier selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, terbium, and mixtures thereof and the binder is selected from the group consisting of alumina, silica, silica/alumina, and mixtures thereof, the process comprising impregnating the support with an aqueous solution containing a palladium compound and a modifier compound, drying the impregnated support at a temperature of about 600° C. to about 300° C. to give a dried catalytic composite and treating the dried catalytic composite at a temperature of about 300° C. to about 500° C. with a H_2/H_2S gas mixture for a time of about 1 to about 10 hours thereby providing said composite.

5,851,950
CATALYTIC OXIDATION OF ORGANIC NITROGEN CONTAINING COMPOUNDS

Joseph A. Rossin, Forest Hill, and Jeffrey M. Campbell, Perry Hall, both of Md., assignors to Guild Associates, Inc., Hilliard, Ohio

Continuation of Ser. No. 505,800, Jul. 21, 1995. This application Feb. 18, 1997, Ser. No. 802,388
Int. Cl.^{6} B01J *33/00*

U.S. Cl. 502—349 **15 Claims**

T°C	[HCN]	[CO_2]	[CO]	[N_2]	[N_2O]	[NO_x]
450	<0.1 ppm	2024 ppm	<5 ppm	778 ppm	127 ppm	112 ppm
440	<0.1 ppm	2043 ppm	<5 ppm	846 ppm	140 ppm	141 ppm
430	<0.1 ppm	2035 ppm	<5 ppm	878 ppm	160 ppm	48 ppm
420	<0.1 ppm	2053 ppm	<5 ppm	898 ppm	182 ppm	5 ppm
410	<0.1 ppm	2061 ppm	<5 ppm	867 ppm	211 ppm	<1 ppm
400	<0.1 ppm	2062 ppm	<5 ppm	835 ppm	251 ppm	<1 ppm
390	<0.1 ppm	2089 ppm	<5 ppm	822 ppm	275 ppm	<1 ppm
380	<0.1 ppm	2079 ppm	<5 ppm	842 ppm	256 ppm	<1 ppm
370	<0.1 ppm	2091 ppm	<5 ppm	885 ppm	211 ppm	<1 ppm
360	<0.1 ppm	2114 ppm	<5 ppm	914 ppm	183 ppm	<1 ppm
350	<0.1 ppm	2103 ppm	<5 ppm	915 ppm	174 ppm	<1 ppm

1. A catalyst for the catalytic oxidation of VNC's with limited production of NO_x compounds, said catalyst comprising:

at least one compound selected from the group consisting of titanium oxide and zirconium oxide,

from about 1% to about 20% by weight of an element selected from the group consisting of molybdenum, tungsten, and vanadium,

from about 0.03% to about 5% by weight of a metal selected from the group consisting of platinum or palladium, and

from about 1% to about 10% by weight lanthanum.

5,851,951
HEAT SENSITIVE RECORDING MATERIAL

Tsunefumi Yamori; Shigeji Matsuzawa, and Yutaka Isu, all of Amagasaki, Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 806,857
Claims priority, application Japan, Feb. 29, 1996, 8-071241; Aug. 30, 1996, 8-249313
Int. Cl.^{6} B41M *5/30*

U.S. Cl. 503—216 **9 Claims**

1. A heat sensitive recording material wherein a transparent substrate is formed with a heat sensitive recording layer thereon, the heat sensitive recording material being characterized in that the heat sensitive recording layer comprises at least a layer containing a color acceptor and a layer containing a basic dye, the color acceptor-containing layer being formed by a binder-containing solvent coating method and/or vapor deposition effected with a plasma generated, the dye-containing layer being formed by vapor deposition or vapor deposition effected with a plasma generated.

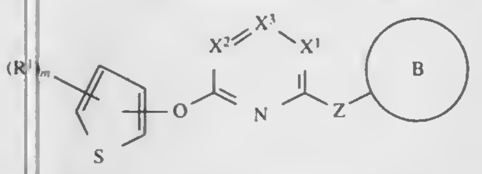
5,851,952
HERBICIDAL THIENYLOXYAZINES

Gary Mitchell Karp; Michael Edward Condon, both of Mercer, N.J.; Axel Kleeman, Hanau, Germany; Stefan Scheiblich; Thomas Maier, both of Mainz, Germany, and Halmut Siegfried Baltruschat, Schweppenhausen, Germany, assignors to American Cyanamid Company, Madison, N.J.

Filed Nov. 7, 1997, Ser. No. 966,486
Int. Cl.^{6} C07D *409/12;* **A01N** *43/40*

U.S. Cl. 504—251 **17 Claims**

1. A compound consisting essentially of formula (I)



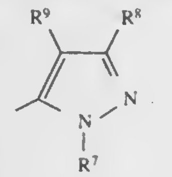
(I)

wherein

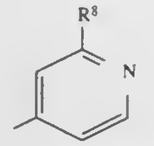
the groups X^1, X^2 and X^3 represent CY, in which Y each independently represent a hydrogen atom or have the meaning given for R^1;

R^1 represents a halogen atom; an optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkoxyalkyl or alkoxyalkoxy group; a haloalkyl, haloalkoxy, cyano, nitro or SF_5 group; $—S(O)_p—R^3$, in which p is 0, 1 or 2, and R^3 represents an alkyl or haloalkyl group; NR^4R^5, in which R^4 and R^5 each independently represent a hydrogen atom, an alkyl, alkenyl, aralkyl or aryl group; or $R^6O—CY'—$, in which R^6 represents an alkyl group, and Y' represents O or S;

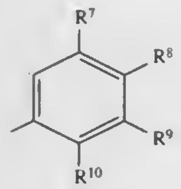
B represents a radical selected from the group consisting of



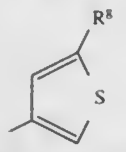
(a)



(b)



(c)



(d)

wherein R^7 to R^{10} each independently represent a hydrogen or halogen atom, or an optionally substituted alkyl or alkoxy group;

Z represents an oxygen or sulfur atom or a $—OCH_2—$ or $—SCH_2—$ group; and

m is 0 or an integer from 1 to 3.

5,851,953
YIELD OF PLANTS

Eija Pehu; Erkki Virtanen, both of Helsinki, and Kirsti Jutila, Espoo, all of Finland, assignors to Cultor OY, Finland

PCT No. PCT/FI95/00482, § 371 Date Apr. 11, 1997, § 102(e) Date Apr. 11, 1997, PCT Pub. No. WO96/41531, PCT Pub. Date Dec. 27, 1996
PCT Filed Sep. 7, 1995, Ser. No. 793,737
Claims priority, application Finland, Jun. 9, 1995, 952864
Int. Cl.^{6} A01N *37/00;37/02;37/30*

U.S. Cl. 504—320 **8 Claims**

1. A method for improving the yield of tobacco plants growing under stress conditions, wherein an effective amount of betaine is exogenously applied to growing tobacco plants.

5,851,954
SUPERCONDUCTING OXIDE-BASED COMPOSITE MATERIAL

Michel Ribes, Clapiers, and Christian Belouet, Sceaux, both of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France

Filed Jan. 3, 1992, Ser. No. 816,715
Claims priority, application France, Jan. 4, 1991, 91 00072
Int. Cl.^{6} H01B *12/00*

U.S. Cl. 505—120 **4 Claims**

1. A superconducting oxide-based composite material produced by a process comprising the steps of:

preparing a powdered mixture of a glass having a vitreous transition temperature T_g of less than 750°K and of superconducting oxide crystallites selected from the group consisting of $YBa_2Cu_3O_7$ compounds, compounds containing $Tl_2Ba_2Cu_3O_{10}$, compounds containing $Bi_2Sr_2\ CaCu_2O_8$ and $Bi_2Sr_2Ca_2Cu_3O_{10}$, the percentage of the glass by volume being in the range of 2% to 40%;

uniaxially compressing said powdered mixture at a temperature of T_g and T_x, wherein T_x is the glass-crystallization temperature, said compression producing orientation of said superconducting oxide crystallites;

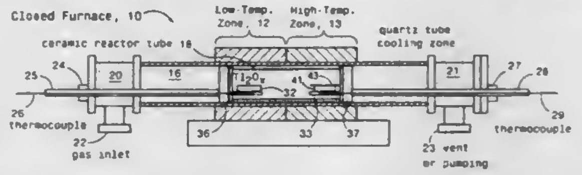
and furthermore subjecting the resulting composite material to an additional stretching or rolling operation at a temperature between T_g and T_x, to thereby provide shaping of the composite material.

5,851,955
EFFICIENT GROWTH OF HTS FILMS WITH VOLATILE ELEMENTS

Michael P. Siegal; Donald L. Overmyer, and Frank Dominguez, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Jul. 1, 1997, Ser. No. 886,243
Int. Cl.^{6} H01L *39/24;* **B05D** *5/12*

U.S. Cl. 505—120 **11 Claims**



1. A method for converting a nonsuperconducting precursor into a volatile element (VE)-high temperature superconducting (HTS) layer on a substrate in a furnace, said method comprising:

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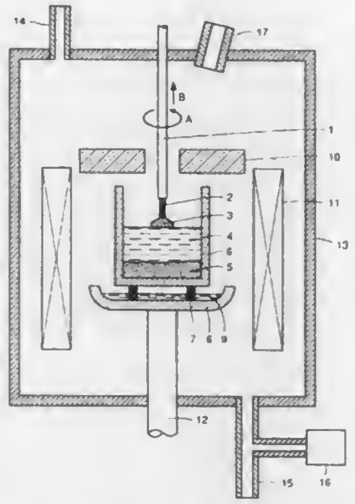
heating a substrate including a precursor and adjacent first source of VE-HTS material at a high temperature, wherein VE-oxide sublimates from the source to the precursor; and

heating a secondary source of VE-oxide at a lower temperature than the high temperature, wherein VE-oxide from said secondary source replenishes the VE in the first source.

5,851,956
METHOD OF MANUFACTURING OXIDE CRYSTAL

Yasuo Namikawa, Osaka; Xin Yao, Tokyo; Masahiro Egami, Tokyo, and Yuh Shiohara, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka; Ishikawajima-Harima Heavy Industries Co., Ltd., and International Superconductivity Technology Center, both of Tokyo, all of Japan

Filed Oct. 7, 1996, Ser. No. 726,917
Claims priority, application Japan, Oct. 6, 1995, 7-260471
Int. Cl.^{6} C30B *15/02*
U.S. Cl. 505—450 8 Claims



1. A method of manufacturing an oxide crystal for growing an oxide crystal having a structure of $R_{1+x}Ba_{2-x}Cu_3O_{7-z}$ (where R is an element selected from the group consisting of yttrium and lanthanoids group elements, $0\leqq x\leqq 1$, $0\leqq z\leqq 1$)by heating and melting a raw material put in a crucible, keeping it at a prescribed temperature and pulling up a seed crystal while rotating the same with the seed crystal being in contact with a surface of a melt, wherein

an atmosphere for growing said oxide crystal has an oxygen partial pressure higher than oxygen partial pressure in ambient atmosphere.

5,851,957
OXIDE SUPERCONDUCTOR PRECURSORS

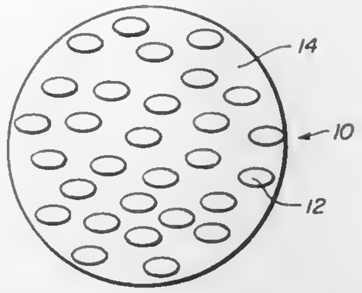
Eric R. Podtburg, Natick, Mass.; Kenneth H. Sandhage, Columbus, Ohio; Alexander Otto, Chelmsford, Mass.; Lawrence J. Masur, Needham, Mass.; Christopher A. Craven, Bedford, Mass., and Jeffrey D. Schreiber, Middleton, Mass., assignors to American Superconductor Corporation, Westhorough, Mass.

Continuation-in-part of Ser. No. 881,675, May 12, 1992. This application Aug. 5, 1993, Ser. No. 102,561
Int. Cl.^{6} C22C *9/00;5/00*
U.S. Cl. 505—510 18 Claims

1. A composite for use in the preparation of an oxide superconductor composite, comprising;

a primary alloy phase comprising a portion of the constituent metallic elements of an oxide superconductor and a noble metal, said primary alloy phase deficient in copper; and

a secondary metallic phase comprising copper,



wherein substantially all of the copper of the composite is present in the secondary phase,

wherein said secondary phase is positioned in intimate contact with the primary alloy phase to permit exchange of elements between the phases, and

wherein the constituent metallic elements of the primary alloy phase and the copper of the secondary phase are, in combination, present in a substantially stoichiometric amount to form the oxide superconductor.

5,851,958
OLEFINS AND LUBRICANTS, RATE OF PENETRATION ENHANCERS, AND SPOTTING FLUID ADDITIVES FOR WATER-BASED DRILLING FLUIDS

William S. Halliday, 12923 Lemur, Cypress, Tex. 77429, and David Schwertner, 10600 Six Pines Dr., Apt. 611, The Woodlands, Tex. 77380

Continuation of Ser. No. 423,150, Apr. 17, 1995, Pat. No. 5,605,879. This application Jan. 8, 1997, Ser. No. 780,553
Int. Cl.^{6} C09K *7/02*
U.S. Cl. 507—103 30 Claims

1. A drilling fluid comprising:

water as a continuous phase; and

a non-aqueous component in an amount sufficient to perform a function selected from the group consisting of reducing drag on an operating drill pipe, enhancing penetration of an operating drill pipe, reducing torque, dislodging a stuck drill pipe from a well-bore, and combinations thereof;

wherein said non-aqueous component comprises olefins consisting essentially of olefins having in the range of from about 14 to about 30 carbon atoms, a majority of said olefins comprising linear alpha olefins having at least 16 carbon atoms.

5,851,959
HIGH TEMPERATURE STABLE MODIFIED STARCH POLYMERS AND WELL DRILLING FLUIDS EMPLOYING SAME

Cory J. Bernu, Farmington, Minn., assignor to Chemstar Products Company, Minneapolis, Minn.

Filed Jan. 3, 1997, Ser. No. 778,555
Int. Cl.^{6} C09K *7/02;* C08B *31/00*
U.S. Cl. 507—111 21 Claims

17. In a well treating process comprising the step of providing a treating fluid comprising a mixture of brine, clay and a fluid loss polymer to a bore hole, the improvement that at least a portion of the fluid loss polymer is a modified starch polymer obtained from an unmodified starch or blend of starches having a content of amylopectin of at least 80% by weight, the starch polymer being crosslinked with epichlorohydrin and carboxymethylated, the amount of epichlorohydrin crosslinking being equivalent to that which is obtained when a crosslinking reaction is subjected to a Brabender viscosity which reaches a maximum value and then is reduced with further crosslinking from its maximum to a value which is no more than 50% of the maximum value, and the degree of carboxymethyl substitution being at least 0.1 carboxymethyl groups per anhydroglucose unit.

5,851,960
METHOD OF PERFORMING WELL DRILLING OPERATIONS WITH A FOAMABLE DRILLING FLUID

Patty L. Totten; Bobby L. King, and James E. Griffith, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 525,885, Sep. 8, 1995, Pat. No. 5,716,910. This application Oct. 23, 1997, Ser. No. 957,268
Int. Cl.^{6} C09K *7/00;* E21B *21/14*
U.S. Cl. 507—118 34 Claims

1. A method of performing drilling operations comprising the steps of:

drilling a wellbore;

providing a foamable drilling fluid comprising a prehydrated clay, water, a foaming surfactant present in an amount sufficient to foam said drilling fluid, a stabilizing surfactant present in an amount sufficient to reduce breakdown of said drilling fluid when foamed, and a hydraulic material:

foaming said drilling fluid; and

circulating said foamed drilling fluid in said wellbore.

5,851,961
ANTI-SETTLING LUBRICITY AGENT FOR WATER/OIL DISPERSION COMPOSITIONS

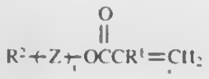
James S. Magyar, Bedford, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 10, 1996, Ser. No. 669,864
Int. Cl.^{6} C09K *7/02;* C10M *113/00;* B01J *13/00*
U.S. Cl. 507—119 36 Claims

1. An oil in water dispersion emulsion composition, comprising a mixture of water and

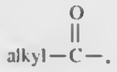
(A) an overbased non-Newtonian colloidal disperse system comprising
  (1) solid metal-containing colloidal particles predispersed in
  (2) a disperse medium of at least one inert organic liquid and
  (3) at least one member selected from the class consisting of organic compounds which are substantially soluble in the disperse medium, where the molecules of said organic compound have polar substituents and hydrophobic portions;

(B) a water soluble associative thickener comprising a base-neutralized copolymer having copolymerized therein about 90 to about 99 mole percent of a carboxyl-containing, ethylenically unsaturated hydrocarbon and about 1 to about 10 mole percent of a nonionic surfactant acrylate having the formula:



$$R^2\text{+}Z\text{+}_x OC(=O)CR^1=CH_2$$

wherein R is hydrogen or methyl, R^2 is a hydrophobe selected from the group consisting of alkyl and



$$\text{alkyl}-C(=O)-,$$

wherein the alkyl contains 4 to 30 carbon atoms, Z is a divalent radical selected from the group consisting of oxyethylene units or mixed oxyalkylene units having the general formula:

$$\text{+}OC_nH_{2n}\text{+}$$

where n is an integer having values from 2 to 4 and x is an integer having values of about 5 to 40;and

(C) at least one dispersant.

5,851,962
LUBRICANT COMPOSITION FOR WET CLUTCH OR WET BRAKE

Kuniaki Kaga, Yokkaichi, Japan, assignor to Ethyl Japan Corporation, Tokyo, Japan

Continuation of Ser. No. 211,647, Jun. 20, 1994, abandoned. This application Jun. 23, 1997, Ser. No. 879,674
Claims priority, application Japan, Aug. 18, 1992, 4-219200
Int. Cl.^{6} C10M *129/24;141/02;129/08;* C10N *40/04*
U.S. Cl. 508—162 23 Claims

1. A lubricant oil composition for a wet clutch or a wet brake lubricant comprising a base oil having added thereto (i) from 0.005 wt % to 0.1 wt % of an inorganic phosphorus compound selected from the group consisting of phosphoric acid and phosphorous acid or an amine salt thereof, and (ii) from 0.01 wt % to 4 wt % of at least one member selected from the group consisting of an organic polyol compound having at least two hydroxyl groups in the molecule and a partially-esterified organic polyol compound having at least two hydroxyl gr oups in the molecule.

5,851,963
ORGANIC LUBRICANT

Jeffrey Charles O'Bryant, 23707 13th Pl. S. Apt. 2, Des Moines, Wash. 98198

Filed Jul. 21, 1997, Ser. No. 897,891
Int. Cl.^{6} C10M *9/00;173/02*
U.S. Cl. 508—216 9 Claims

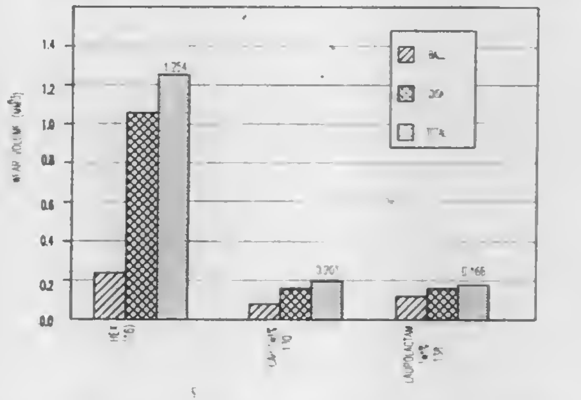
1. A process for making an organic lubricant, comprising:

(a) providing a volume of water;
(b) providing an amount of okra;
(c) said amount of okra in said volume of water for a length of time;
(d) straining said okra from the mixture of water and okra; and
(e) adding a sufficient amount of a preservative to the remaining strained mixture, to help inhibit decomposition of the organic lubricant.

5,851,964
WEAR REDUCTION USING CYCLIC AMIDE COMPOUNDS

Michael J. Furey, Blacksburg, Va., and Czeslaw Kajdas, Plock, Poland, assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Jan. 31, 1997, Ser. No. 792,137
Int. Cl.^{6} C10M *133/16*
U.S. Cl. 508—243 13 Claims



7. A method for reducing wear in rubbing parts comprising the steps of:

providing a first solid material having a first surface which will be exposed to rubbing contact with a second surface of a second solid material;

contacting at least said first surface of said first solid material with a lubricating composition comprising a carrier medium

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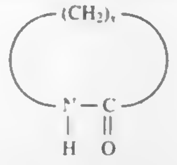
and cyclic amide, wherein said carrier medium is selected from the group consisting of a liquid, a gas, and a semi-solid, and

wherein said cyclic amide has the formula:



where x is a positive integer ranging from 5 to 11;

providing said rubbing contact between said first solid material and said second solid material, whereby said lubricating composition reduces wear and friction of at least one of said first solid material at said first surface or said second solid material at said second surface exposed to said rubbing contact, wherein said first solid material and second solid material are each independently selected from the group consisting of metals, ceramics, fiber-reinforced polymeric composites, plastics, and wood.

5,851,965

DISPERSANT COMPOSITIONS HAVING POLYALKYLENE SUCCINIMIDES

James J. Harrison, Novato, and William R. Ruhe, Jr., Benicia, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

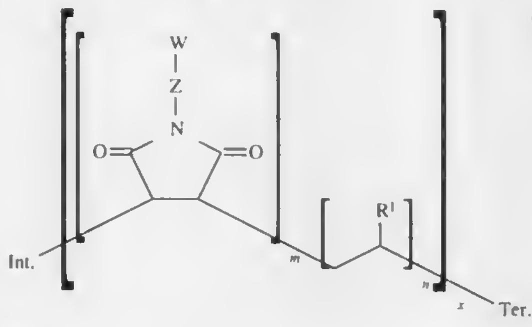
Division of Ser. No. 566,231, Dec. 1, 1995, abandoned. This application Jul. 29, 1997, Ser. No. 902,427

Int. Cl.^{6} C10M *133/44*

U.S. Cl. 508—291 **6 Claims**

1. A dispersant composition comprising

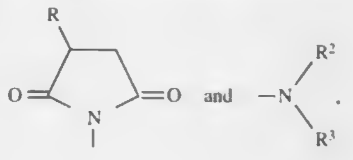
(a) a polymer having the general formula:



(I)

wherein:

W is a mixture of nitrogen-containing groups consisting of



R is a polyalkyl or polyalkylene having a number average molecular weight of at least 1000,

R^1 is an alkyl having from 10 to 24 carbon atoms;

Z is a polyalkylene polyamine linking radical;

m is a whole integer of from 1 to 3

n is a whole integer of from 1 to 3;

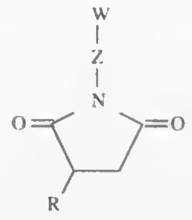
x is a whole integer of from 1 to 100;

Int. is an initiating radical;

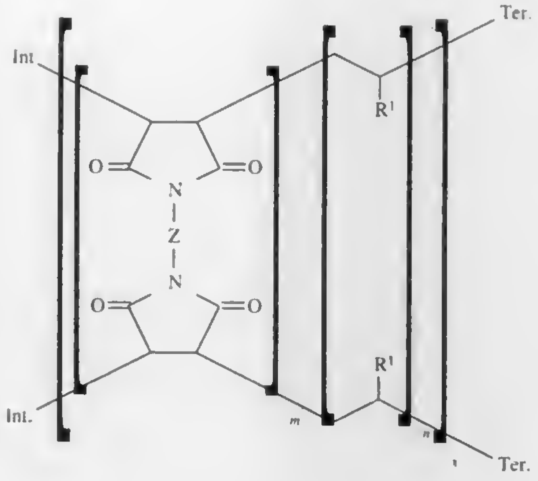
Ter. is a terminating group; and

wherein R^2 and R^3 are independently hydrogen, alkyl, phenyl, or taken together are alkylene to give a ring group; and

(b) and at least one compound of the formulas:



(II)



(III)

5,851,966

REACTION PRODUCTS OF SUBSTITUTED CARBOXYLIC ACYLATING AGENTS AND CARBOXYLIC REACTANTS FOR USE IN FUELS AND LUBRICANTS

Mark R. Baker, Lyndhurst; Paul E. Adams, Willoughby Hills, and Jeffry G. Dietz, University Hts., all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 5, 1997, Ser. No. 870,350

Int. Cl.^{6} C10M *145/00*

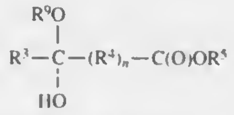
U.S. Cl. 508—452 **22 Claims**

1. A composition of matter, said composition comprising:

(C) carboxylic reaction products formed by reacting

(A) a substituted carboxylic acylating agent, with

(B) a carboxylic reactant represented by the following formulae (III) or



$$R^3-\overset{\overset{\displaystyle R^9O}{|}}{\underset{\underset{\displaystyle HO}{|}}{C}}-(R^4)_n-C(O)OR^5 \qquad (IV)$$

wherein each of R^3, R^5 and R^9 is independently H or a hydrocarbyl group, R^4 is a divalent hydrocarbylene group, and n is 0 or 1.

5,851,967

DISPERSANT VISCOSITY INDEX IMPROVING ADDITIVE FOR LUBRICATING OILS

Claude C. Schauber, 85 rue Principale, 67160 Riedseltz, France; Nguyen Dinh Truong, Villa no 6, 1 Chemin du Castellet, 06450 Le Rouret, France, and David Sterett Moorman, 5311 Bayway Dr., Baytown, Tex. 77520

Filed Jan. 29, 1997, Ser. No. 790,183

Int. Cl.^{6} C10N *145/10*

U.S. Cl. 508—469 **4 Claims**

1. A graft copolymer, which comprises:

from 92 weight percent to 98 weight percent of a polymer backbone, said polymer backbone comprising from 65 parts by weight to 95 p)arts by weight, per 100 parts by weight polymer backbone, of repeating units derived from one or more (C_1–C_{24})alkyl (meth)acrylate monomer; and from 5 parts by weight to 35 -parts by weight, per 100 parts by weight Polymer backbone, of repeating units derived from one or more styrenic monomer; and

from 2 weight per cent to 8 weight percent of branches grafted onto the polymer backbone, said branches comprising one or more hydroxy(C_2–C_8)alkyl (meth)acrylate monomer.

5,851,968

INCREASING THE ELECTRICAL RESISTIVITY OF ESTER LUBRICANTS, ESPECIALLY FOR USE WITH HYDROFLUOROCARBON REFRIGERANTS

Nicholas E. Schnur, Cincinnati, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 247,790, May 23, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,444

Int. Cl.^{6} C09K *5/04;* **H01B** *3/20;* **C10M** *105/38*

U.S. Cl. 508—485 **29 Claims**

1. The process for increasing the electrical resistivity of a liquid mixture consisting essentially of esters of hindered polyols with organic carboxylic acids, which is used with chlorine-free hydrofluorocarbon refrigerants, said process comprising the steps of:

(1) pretreating the liquid mixture by alkali refining in order to reduce the acid value of the mixture;

(2) mixing the pretreated liquid mixture with solid activated alumina so as to form a solid-liquid mixture and maintaining mutual contact between the liquid and the alumina in said solid-liquid mixture at a temperature of at least 30° C. for a period of time;

(3) separating the solid material from the liquid in the solid-liquid mixture formed at the end of step (2) to produce a second liquid consisting essentially of esters of hindered polyols with organic carboxylic acids;

(4) mixing the second liquid mixture with solid activated alumina so as to form a solid-liquid mixture and maintaining mutual contact between the liquid and the alumina in said solid-liquid mixture at a temperature of at least 30° C. for a period of time; and

(5) separating the solid material from the liquid in the solid-liquid mixture formed at the end of step (4) to produce a third liquid consisting essentially of esters of hindered polyols with organic carboxylic acids and having an electrical resistivity that is higher than that of the first liquid mixture.

5,851,969

GREASE CONTAINING DIAMINE CORROSION INHIBITORS

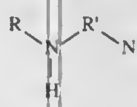
David Leslie Andrew, Strathroy, and Brian Leslie Slack, Sarnia, both of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 14, 1997, Ser. No. 815,018

Int. Cl.^{6} C10M *133/06;133/54*

U.S. Cl. 508—556 **9 Claims**

1. A lubricating grease comprising a major portion of a base oil of lubricating viscosity and a minor portion of additives comprising a thickener and a diamine of the formula



wherein R and R' are the same or different and are C_1–C_{30} hydrocarbyl group and the thickener is simple or complex lithium soap, simple or complex calcium soap, mixed lithium and calcium simple or complex soaps, aluminum soaps, urea, di-urea, tri-urea or polyurea.

5,851,970

DETERGENT COMPOSITION

Hiroshi Saito; Chie Takahashi; Masahiro Nishizawa, all of Tokyo; Hiroshi Yamamoto, Yokohama, and Kiyobumi Takahashi, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1996, Ser. No. 772,988

Claims priority, application Japan, Dec. 25, 1995, 7-350042

Int. Cl.^{6} C11D *1/10*

U.S. Cl. 510—181 **3 Claims**

1. An aqueous solution of a detergent composition for hard surface cleaning comprising an alkali metal hydroxide, and an alkali metal salt of L-aspartic-N,N-diacetic acid, said aqueous solution comprising 0.5–4% by weight of an alkali metal hydroxide, 0.1–2% by weight of an alkali metal salt of L-aspartic-N,N-diacetic acid and 0.1–0.4% by weight of an alkali metal salt of gluconic acid.

5,851,971

LIQUID CLEANING COMPOSITIONS

Patrick Durbut, Verviers, and Guy Broze, Grace-Hollogne, both of Belgium, assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Sep. 25, 1997, Ser. No. 937,752

Int. Cl.^{6} C11D *1/66;3/50*

U.S. Cl. 510—191 **7 Claims**

1. A cleaning composition comprising:

(a) about 0.5 wt. % to about 40 wt. % of a nonionic surfactant;

(b) about 0.1 wt. % to about 50 wt. % of a glycol ether or a C3–C6 aliphatic carboxylic acid cosurfactant;

(c) about 0.4 wt. % to about 10 wt. % of a water insoluble hydrocarbon, essential oil or a perfume;

(d) 0.25% to 4% of a foam control agent wherein said foam control agent is selected from the group consisting of organic monoesters, organic diesters and C8–C12 organic diols; and

(e) the balance being water, wherein the composition does not contain an anionic surfactant or a zwitterionic surfactant, and the composition further contains a multivalent salt of a multivalent metal cation wherein the multivalent metal cation is magnesium or aluminum.

5,851,972

WATER IN OIL EMULSIONS CONTAINING ANISOLE

John Distaso, Orange, and Azucena G. De Guzman, Cerritos, both of Calif., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Feb. 25, 1997, Ser. No. 805,783

Int. Cl.^{6} C09D *9/00;9/04;* **B08B** *3/08*

U.S. Cl. 510—206 **12 Claims**

1. In a paint stripper formulation containing a water-in-oil emulsion having a water phase and a continuous benzyl alcohol phase, the improvement comprising incorporating anisole and d-limonene in the benzyl alcohol phase in an amount effective to increase the rate of stripping.

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5,851,973

MANUAL DISHWASHING COMPOSITION COMPRISING AMYLASE AND LIPASE ENZYMES

Peter Robert Foley, Newcastle upon Tyne, United Kingdom, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/09966, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO95/07980, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 1, 1994, Ser. No. 605,124

Claims priority, application European Pat. Off., Sep. 14, 1993, 93307240.7

Int. Cl.^{6} C11D *3/386;3/37;3/20*

U.S. Cl. 510—235 **16 Claims**

10. A manual dishwashing composition comprising the following:

(A) a surfactant;
(B) an ion selected from the group consisting of calcium ion in an amount of 0.15% to 2% by weight of the composition, magnesium ion in an amount of 0.15% to 0.9% by weight of the composition, and mixtures thereof;
(C) amylase enzymes;
(D) lipase enzymes; and
(E) 0.05% to 10% by weight of the composition of a calcium stabilizing agent selected from the group consisting of malic acid, malic acid salts, maleic acid, maleic acid salts, and mixtures thereof.

5,851,974

LIGHT DUTY LIQUID CLEANING COMPOSITION

Sukhvinder Sandhu, Plainsboro, N.J., assignor to Colgate Palmolive Company, Piscataway, N.J.

Filed Oct. 28, 1997, Ser. No. 959,356

Int. Cl.^{6} C11D *1/83;1/12;1/75;3/48*

U.S. Cl. 510—235 **3 Claims**

1. A clear light duty liquid cleaning composition which consisting essentially of approximately by weight:

(a) 6% to 36% of an alkali metal or ammonium salt of a C_{8-18} ethoxylated alkyl ether sulfate;
(b) 0.5% to 15% of a sodium salt of a C_{10}–C_{16} alkyl benzene sulfonate surfactant;
(c) 5% to 20% of a magnesium salt of a C_{10}–C_{16} alkyl benzene sulfonate surfactant;
(d) 0 to 10% of a solubilizing agent;
(e) 2% to 16% of an alkyl polyglucoside surfactant;
(f) about 0.5% to 8% of a C_{12}–C_{14} alkyl monoalkanol amide;
(g) about 4% to 22% of an amine oxide surfactant;
(h) 5% to 25% of a C_1–C_4 alkanol;
(i) 0.1% to 1.5% of an alkali metal halide;
(j) 0.1% to 0.4% of trichlorohydroxydiphenyl ether; and
(k) the balance being water.

5,851,975

ENZYME-CONTAINING GRANULATED SUBSTANCE AND PREPARATION PROCESS THEREOF

Toshihiro Kiuchi, Ibaraki; Kohtaro Sano, Wakayama; Manabu Sato, Ibaraki; Jyo Kawamura, Ibaraki, and Naoto Yamada, Ibaraki, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP96/01400, § 371 Date Jan. 28, 1997, § 102(e) Date Jan. 28, 1997, PCT Pub. No. WO96/38527, PCT Pub. Date Dec. 5, 1996

PCT Filed May 24, 1996, Ser. No. 776,437

Claims priority, application Japan, May 29, 1995, 7-130255

Int. Cl.^{6} C11D *3/386*

U.S. Cl. 510—320 **17 Claims**

1. An enzyme-containing granulated substance comprising an enzyme-containing particulate substance and a coating layer which is formed on the particulate substance and comprises (a) water-insoluble or hardly water-soluble inorganic particles having an average particle diameter of 1 to 100 μm, (b) water-insoluble or hardly water-soluble inorganic particles having an average particle diameter of 0.01 to 0.8 μm and (c) a binder.

5,851,976

MICROEMULSION ALL PURPOSE LIQUID CLEANING COMPOSITIONS

Baudouin Mertens, Jambes, Belgium, assignor to Colgate Palmolive Company, Piscataway, N.J.

Filed Dec. 8, 1997, Ser. No. 986,520

Int. Cl.^{6} C11D *1/83;3/50*

U.S. Cl. 510—365 **5 Claims**

1. A cleaning composition consisting of:

(a) 0.1 wt. % to 10 wt. % of an anionic surfactant;
(b) 0.02 to 10 wt. % of an amine oxide surfactant;
(c) 0.05% to 2% of a fatty acid;
(d) 0.4 to 10 wt. % of a water insoluble hydrocarbon, essential oil or a perfume;
(e) 0.5 to 15% of a water-mixable cosurfactant; and
(g) the balance being water.

5,851,977

NONFLAMMABLE ORGANIC SOLVENT COMPOSITIONS

Earl M. Gorton, Sulphur; Tommy G. Taylor, and Ronald D. Olinger, both of Lake Charles, all of La., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 26, 1997, Ser. No. 920,098

Int. Cl.^{6} C11D *7/50;7/30;7/26;* **B08B** *3/08*

U.S. Cl. 510—412 **18 Claims**

1. An organic solvent composition comprising:

(a) from 30% to 75% by weight of 1,2-dichloroethylene; and
(b) from 25% to 70% y weight of a halocarbon selected from the group consisting of 1,1,1,3,3,3-hexafluoroisopropanol, perfluoro-tert-butyl alcohol, 1,1,2,3,3-pentafluoropropane, 1-bromo-2-chloro-1,1,2-trifluoroethane, 1,2-dichloro-1,1,2,3,3,3-hexafluoropropane and mixtures thereof, said halocarbon being present in amounts sufficient to render nonflammable a homogenous mixture of 1,2-dichloroethylene and said halocarbon.

5,851,978

SOAP COMPOSITION

May Shana'a, Fort Lee, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 469,949, Jun. 6, 1995, abandoned. This application Oct. 10, 1996, Ser. No. 728,583

Claims priority, application United Kingdom, Jul. 19, 1994, 9414572

Int. Cl.^{6} C11D *3/02;3/16*

U.S. Cl. 510—417 **3 Claims**

1. An aqueous liquid cleansing and moisturizing composition comprising the following:

(A) from 5% to 35% by weight of fatty acids wherein said fatty acids comprise at least three fatty acids selected from the consisting of oleic acid, lauric acid, myristic acid, stearic acid, palmitic acid, and caproic acid;
(B) from 1% to 8% of a surface active agent;
(C) from 1% to 15% of silicone oil having an average particle size in the range of 15 to 500 microns which acts as a benefit agent; and
(D) clay which acts as a structurant wherein said aqueous liquid cleansing and moisturizing composition being substantially free of insoluble solid fatty acid and fatty acid soaps.

5,851,979

PSEUDOPLASTIC AND THIXOTROOPIC CLEANING COMPOSITIONS WITH SPECIFICALLY DEFINED VISCOSITY PROFILE

Stefano Scialla; Sergio Cardola, and Giulia Ottavia Bianchetti, all of Rome, Italy, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 424,311, Apr. 26, 1995, abandoned. This application Mar. 27, 1997, Ser. No. 826,321

Claims priority, application European Pat. Off., Nov. 16, 1992, 92870188; Jun. 1, 1993, 93870091

Int. Cl.^{6} C11D *17/00;3/20;3/395*

U.S. Cl. 510—417 **4 Claims**

1. A pseudoplastic and thixotropic aqueous composition comprising a detergent system, said detergent system comprising an emulsion of from about 2% to about 9% of at least two nonionic surfactants which are alkoxylated alcohols of the formula $RO(E)_e(P)_pH$ where R is a hydrocarbon chain of from about 6 to about 20 carbon atoms with at least one being from about 8 to about 13 carbon atoms, E is ethylene oxide, and P is propylene oxide, and e and p which represent the average degree of, respectively ethoxylation and propoxylation, are from about 0 to about 6, and wherein the sum of e plus p is at least 2.5, said nonionic surfactants having different HLB values, wherein the difference between said HLB values is at least 6.5, and wherein said composition further comprises a stabilizing amount of from about 1% to about 20%, by weight of the total composition, of citric acid; said composition having a viscosity of from about 60 cps to about 1500 cps at 12 rpm, from about 40 cps to about 800 cps at 30 rpm, and from about 20 cps to about 500 cps at 60 rpm, and said composition has a pH of from 0 to about 6.

5,851,980

LIQUID HARD SURFACE CLEANER COMPRISING A MONOCARBOXYLATE ACID AND AN AMPHOLYTIC SURFACTANT HAVING NO CARBOXYL GROUPS

Richard W. Avery, High Wycombe, England, assignor to S. C. Johnson & Sons, Inc., Racine, Wis.

Filed Jul. 10, 1996, Ser. No. 680,337

Int. Cl.^{6} C11D *1/92;3/43;7/08*

U.S. Cl. 510—424 **12 Claims**

1. A hard surface cleaner, comprising

a. at least 50% by weight of water;
b. a monocarboxylic acid selected from the group consisting of lactic acid, valeric acid, hexanoic acid, and glycolic acid,
c. at least 1% by weight of an ampho hydroxypropyl sulplionate surfactant and,
d. an amount of organic solvent soluble in the cleaner sufficient to assist in the removal of soap scum from a hard surface, said cleaner having an acidic pH.

5,851,981

REDUCED RESIDUE HARD SURFACE CLEANER

Clement K. Choy, Alamo; Aram Garabedian, Jr., Fremont; Jennifer C. Julian, Dublin, and Gary L. Robinson, Livermore, all of Calif., assignors to The Clorox Company, Oakland, Calif.

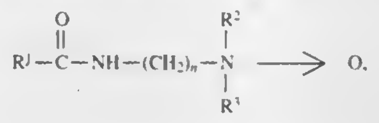
Division of Ser. No. 768,246, Dec. 16, 1996, Pat. No. 5,714,448, which is a division of Ser. No. 410,470, Mar. 24, 1995, Pat. No. 5,585,342. This application Aug. 22, 1997, Ser. No. 916,893

Int. Cl.^{6} C11D *1/75*

U.S. Cl. 510—433 **11 Claims**

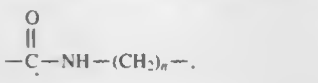
1. A method of cleaning soil, without substantial residue remaining, from a hard surface, comprising applying to said surface an aqueous, hard surface cleaner with significantly improved residue removal and substantially reduced filming/streaking, said cleaner comprising:

(a) about 1–50% of at least one organic solvent with a vapor pressure of at least 0.001 mm Hg at 25° C., and mixtures of such solvents;
(b) about 0.001–2% of at least one semi-polar nonionic surfactant, said surfactant having the structure:



$$R^1-\overset{\overset{\displaystyle O}{\|}}{C}-NH-(CH_2)_n-\underset{\underset{\displaystyle R^3}{|}}{\overset{\overset{\displaystyle R^2}{|}}{N}}\longrightarrow O,$$

wherein R^1 is C_{5-20} alkyl, R^2 and R^3 are both C_{1-4} alkyl,



$$R^1-\overset{\overset{\displaystyle O}{\|}}{C}-NH-(CH_2)_n-,$$

or $-(CH_2)_p$-OH, although R^2 and R^3 do not have to be equal, and n is 1–5, and p is 1–6;
(c) about 0.01–2% of a buffering system which comprises ammonium or alkaline earth carbamate, wherein the total amount of semi-polar nonionic surfactant and any optional surfactants does not exceed 2%; and
(d) the remainder as substantially all water; and
(e) removing said soil and soil cleaner from said surface.

5,851,982

LIQUID SOFTENER COMPOSITIONS AND QUATERNARY AMMONIUM SALT

Yuushi Sakata; Junichi Inokoshi; Osamu Tachizawa; Tohru Katoh; Uichiro Nishimoto; Yasuki Ohtawa; Akira Sakaguchi, all of Wakayama; Kohshiroh Sotoya, deceased, late of Wakayama, by Yoko Sotoya, Hidetsugu Sotoya, Shigehiko Sotoya, legal representatives, and Noriko Yamaguchi, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP95/01498, § 371 Date Jul. 5, 1996, § 102(e) Date Jul. 5, 1996, PCT Pub. No. WO96/03370, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 27, 1995, Ser. No. 619,644

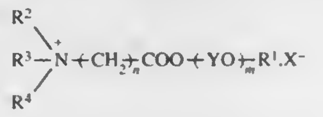
Claims priority, application Japan, Jul. 27, 1994, 6-175227; Feb. 16, 1995, 7-28196

Int. Cl.^{6} D06M *13/46;* **C07C** *211/62*

U.S. Cl. 510—515 **35 Claims**

7. A liquid softener composition comprising the following component (7-A) and water, wherein component (7-A) is present in the composition in an amount of 3 to 40% by weight:

component (7-A): a quaternary ammonium salt represented by the formula (7-1):



(7-1)

$$R^3-\overset{+}{N}(R^2)(R^4)+CH_2\!+_n COO+YO+_m R^1.X^-$$

wherein

R^1 : branched C_{20}–C_{44} alkyl or alkenyl group;
R_2, R_3, R_4: C_1–C_5 alkyl or hydroxyalkyl group, wherein R_2, R_3 and R_4 may be the same or different from each other;
Y: linear or branched C_2–C_4 alkylene group;
m: an average number of 0 to 20 moles of alkylene oxide;
n: an integer of 1 to 6; and
X^-: an anion group.

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5,851,983
ELASTASE INHIBITORY POLYPEPTIDE AND PROCESS FOR PRODUCTION THEREOF BY RECOMBINANT GENE TECHNOLOGY

Takashi Sugiyama; Takashi Kamimura, both of Hino; Kenichi Masuda, Hachioji; Masahiro Okada, Hino; Eiko Ohtsuka, Sapporo; Atsushi Imaizumi, Hino; Kunihito Watanabe, Hino; Tetsuya Suga, Hino; Yohichi Matsumoto, Musashino, and Akiko Takeuchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 843,359, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 408,483, Aug. 22, 1989, abandoned. This application Oct. 20, 1992, Ser. No. 963,538

Claims priority, application Japan, Dec. 28, 1987, 62-330219; Dec. 24, 1991, 3-355553; Jul. 17, 1992, 4-212398; Jul. 17, 1992, 4-212399

Int. Cl.^{6} A61K *38/16;* C12N *15/41;* C07K *14/81*

U.S. Cl. 514—2 **15 Claims**

1. An isolated and purified elastase inhibitory polypeptide consisting of an amino acid sequence represented by SEQ ID NO:2, wherein the polypeptide has a trypsin-inhibitory activity, the polypeptide trypsin-inhibitory activity being less than trypsin-inhibitory activity exhibited by SLPI.

5,851,984
METHOD OF ENHANCING PROLIFERATION OR DIFFERENTIATION OF HEMATOPOIETIC STEM CELLS USING WNT POLYPEPTIDES

William Matthews, Woodside, and Timothy W. Austin, Morgan Hill, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Aug. 16, 1996, Ser. No. 696,566

Int. Cl.^{6} A61K *38/18*

U.S. Cl. 514—2 **20 Claims**

1. A method for enhancing proliferation or differentiation of a hematopoietic stem/progenitor cell comprising exposing the cell to an amount of isolated Wnt polypeptide which is effective for enhancing proliferation or differentiation of the cell.

5,851,985
TREATMENT OF TUMORS BY ARGININE DEPRIVATION

Slobodan Tepic, and Pawel Pyk, both of Oberestrasse 20, CH-7270 Davos, Switzerland

Filed Aug. 16, 1996, Ser. No. 698,876

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—2 **13 Claims**

1. A method for the treatment of tumors in a patient comprising systemic removal of an essential amino acid from the blood by extracorporeal treatment of the patient's blood comprising the steps of:

removing blood from the patient;

treating the blood to remove at least one essential amino acid by molecular exchange between the blood and a dialyzing fluid;

returning the blood to the patient, wherein concurrent with said treatment of the blood, the patient is administered an effective amount of a composition which limits the release of muscular protein amino acids.

5,851,986
PROMOTING BONE FORMATION AND INHIBITING BONE RESORPTION WITH HIGH MOBILITY GROUP PROTEIN-1 (HMG-1)

Yukihiro Takada; Junichi Yamamura, both of Kawagoe; Masaaki Goto, Shimotsuga-gun, and Seiichiro Aoe, Sayama, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Japan

Filed Feb. 20, 1997, Ser. No. 803,545

Claims priority, application Japan, Feb. 23, 1996, 8-061987

Int. Cl.^{6} A01N *37/18;* A61K *31/70;35/20;35/55*

U.S. Cl. 514—2 **2 Claims**

1. A method for promoting osteoblast proliferation or inhibiting bone resorption comprising administering to a subject in need thereof, a composition comprising High Mobility Group Protein-1 (HMG-1), with the proviso that said composition is not milk, milk products or milk-containing products.

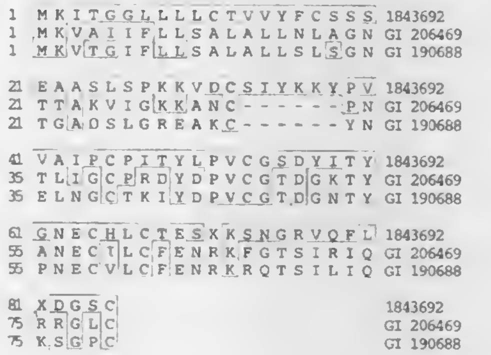
5,851,987
HUMAN TUMOR-ASSOCIATED KAZAL INHIBITOR-LIKE POLYPEPTIDES AND ENCODING POLYNUCLEOTIDES

Olga Bandman, Mountain View; Karl J. Guegler, Menlo Park, and Purvi Shah, Sunnyvale, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Apr. 14, 1997, Ser. No. 839,709

Int. Cl.^{6} C07K *14/435;* C12N *15/12;15/70;15/79*

U.S. Cl. 514—2 **11 Claims**



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1  M K I T G G L L L L C T V V Y F C S S S  1843692
1  M K V A I I F L L S A L A L L N L A G N  GI 206469
1  M K V T G I F L L S A L A L L S L S G N  GI 190688

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41 V A I P C P I T Y L P V C G S D Y I T Y  1843692
35 T L I G C P R D Y D P V C G T D G K T Y  GI 206469
35 E L N G C T K I Y D P V C G T D G N T Y  GI 190688

61 G N E C H L C T E S X K S N G R V Q F L  1843692
55 A N E C I L C F E N R K F G T S I R I Q  GI 206469
55 P N E C V L C F E N R K R Q T S I L I Q  GI 190688

81 X D G S C                                1843692
75 R R G L C                                GI 206469
75 K S G P C                                GI 190688
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1. A substantially purified polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,851,988
NONPEPTIDE INSULIN RECEPTOR AGONISTS

Richard Sportsman, San Francisco; Hugo O. Villar, Newark; Lawrence M. Kauvar, San Francisco, and Wayne R. Spevak, Albany, all of Calif., assignors to Terrapin Technologies, Inc., South San Francisco, Calif.

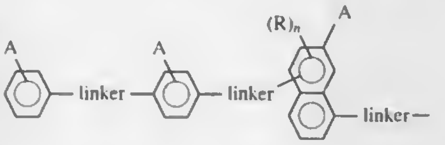
Filed Jan. 15, 1997, Ser. No. 784,854

Int. Cl.^{6} A61K *31/05;31/10;31/17;31/655*

U.S. Cl. 514—4 **25 Claims**

1. A method to modulate the kinase activity of insulin receptor which method comprises contacting said insulin receptor or the kinase portion thereof with a compound of the formula

Formula (1)



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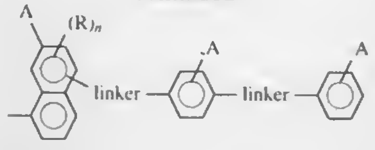


wherein
- each A is independently a proton-accepting substituent;
- each R is independently a noninterfering substituent;
- each n is independently 0, 1, or 2; and
- each linker is independently an isostere of —NHCONH— or of —N=N— or of —NHCO—;

said compound provided in an amount effective to modulate said kinase activity.

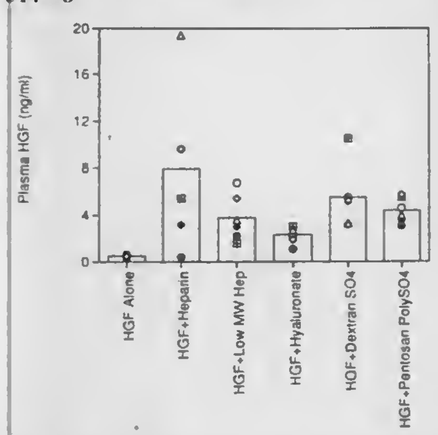
5,851,989
METHOD OF EXTENDING THE PLASMA HALF-LIFE OF VASCULAR ENDOTHELIAL CELL GROWTH FACTOR

Steven Chamow, San Mateo; Nishit Modi, San Bruno; Ralph Schwall, Pacifica, and Thomas Zioncheck, Montara, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 254,390, Jun. 6, 1994, Pat. No. 5,464,815, which is a continuation-in-part of Ser. No. 118,162, Sep. 8, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 465,895

Int. Cl.^{6} A61K *38/18*

U.S. Cl. 514—8 **14 Claims**



1. A method of extending the plasma half-life of vascular endothelial cell growth factor (VEGF) comprising coadministering a therapeutically effective amount of VEGF with a polyanionic compound comprising heparin, a heparin-derived oligosaccharide, or a heparin-like oligosaccharide.

5,851,990
BFGF MUTEIN AND ITS PRODUCTION

Akira Fujishima, Sanda, and Tsunehiko Fukuda, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 873,907, Apr. 24, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 231,894

Claims priority, application Japan, Apr. 26, 1991, 3-097655; Mar. 24, 1992, 4-066381

Int. Cl.^{6} C12N *15/18;* A61K *38/18;* C07K *14/50*

U.S. Cl. 514—12 **13 Claims**

1. A mutein of basic fibroblast qrowth factor (bFGF) wherein at least one amino acid is replaced with a cysteine residue so as to form an intramolecular disulfide bond between

(a) amino acids 20 and 52,

(b) amino acids 21 and 142,

(c) amino acids 27 and 135,

(d) amino acids 33 and 50,

(e) amino acids 49 and 69 or

(f) amino acids 81 and 126,

wherein the amino acid positions refer to the amino acid sequence of FIG. 1 (SEQ ID NO: 11) and wherein scold mutein possesses increased stability under acidic conditions or increased temperature as compared to native bFGF.

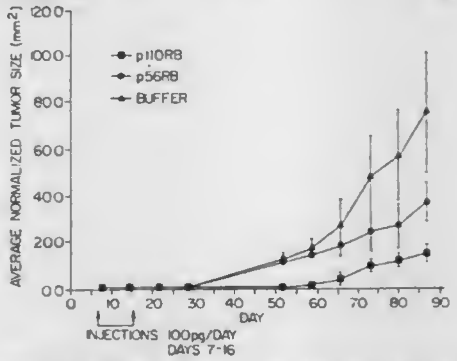
5,851,991
THERAPEUTIC USE OF THE RETINOBLASTOMA SUSCEPTIBILITY GENE PRODUCT

Wen-Hwa Lee; Eva Y-H.P. Lee, both of San Antonio; David W. Goodrich, Houston, all of Tex.; H. Michael Shepard, Rancho Santa Fe, Calif.; Nan Ping Wang, Seattle, Wash., and Duane Johnson, Encinitas, Calif., assignors to The Regents of the University of California, Oakland, and Canji, Inc., San Diego, both of Calif.

Continuation-in-part of Ser. No. 121,108, Sep. 13, 1993, abandoned, Ser. No. 956,472, Oct. 2, 1992, abandoned, and Ser. No. 126,810, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 778,510, Oct. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 91,547, Aug. 31, 1987, Pat. No. 5,011,773, Ser. No. 98,612, Sep. 17, 1987, Pat. No. 4,942,123, Ser. No. 550,877, Jul. 11, 1990, abandoned, Ser. No. 553,892, Jul. 16, 1990, abandoned, Ser. No. 108,748, Oct. 15, 1987, abandoned, Ser. No. 265,829, Oct. 31, 1988, abandoned, and Ser. No. 553,905, Jul. 16, 1990, abandoned, said Ser. No. 121,108 is a continuation-in-part of Ser. No. 79,207, Jun. 17, 1993, abandoned, which is a continuation of Ser. No. 914,039, Jul. 14, 1992, abandoned, which is a continuation of Ser. No. 550,877, which is a division of Ser. No. 98,612, said Ser. No. 956,472 is a continuation of Ser. No. 553,892, which is a continuation-in-part of Ser. No. 91,547, Ser. No. 98,612, Ser. No. 108,748, Ser. No. 265,829, and Ser. No. 553,905. This application Sep. 13, 1994, Ser. No. 306,513

Int. Cl.^{6} A61K *38/17*

U.S. Cl. 514—12 **24 Claims**



1. A method of treating pathologically proliferating cells lacking endogenous functional retinoblastoma protein, the method comprising contacting the proliferating cells with an effective amount of a retinoblastoma polypeptide comprising a C-terminal retinoblastoma polypeptide, the polypeptide having a molecular weight of about 56 kD, whereby cellular proliferation is inhibited.

5,851,992
TREATMENT OF GROWTH HORMONE DEFICIENCY

Hans Holmegaaard Sørensen, Virum, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation-in-part of Ser. No. 827,178, Jan. 28, 1992. This application Jun. 6, 1995, Ser. No. 469,283

Claims priority, application Denmark, Dec. 20, 1991, 2047/91

Int. Cl.^{6} A61K *38/00;38/24;9/50*

U.S. Cl. 514—12 **7 Claims**

1. A method for treating a disorder associated with growth hormone deficiency comprising administering a pharmaceutical

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formulation comprising human growth hormone and asparagine, in which asparagine is present in an amount effective to stabilize human growth hormone.

5,851,993
SUPPRESSION OF TUMOR CELL GROWTH BY SYNDECAN-1 ECTODOMAIN

Markku Jalkanen, Piispanristi, and Marku Mali, Salo, both of Finland, assignors to BioTie Theraples Ltd., Turku, Finland

Continuation-in-part of Ser. No. 258,862, Jun. 13, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 488,199

Int. Cl.^{6} A61K *38/17;38/16;* **C07K** *14/47;14/705*

U.S. Cl. 514—12 **24 Claims**

1. A method of decreasing the growth of a tumor cell wherein said method comprises providing efficacious levels of syndecan ectodomain to the extracellular environment of said cell, wherein said syndecan ectodomain causes said cell to develop a more differentiated phenotype than is displayed by said cell in the absence of said efficacious levels of said syndecan ectodomain.

5,851,994
COMPOSITIONS THAT INHIBIT WOUND CONTRACTION AND METHODS OF USING SAME

Ronda Schreiber, Ramona, and James Polarek, Aptos, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 234,979, Apr. 28, 1994, Pat. No. 5,510,328. This application Jun. 6, 1995, Ser. No. 473,025

Int. Cl.^{6} A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—13 **11 Claims**

1. A method of reducing or inhibiting wound contraction in a subject, comprising administering to said subject a pharmaceutical composition comprising a peptide having more than three consecutive basic amino acid residues and a pharmaceutically acceptable carrier.

5,851,995
ANTI-OBESITY PROTEINS

Margret B. Basinski, Indianapolis; Richard D. DiMarchi, Carmel; David B. Flora, Greenfield; William F. Heath, Jr., Fishers; James A. Hoffmann, Greenwood; Brigitte E. Schoner, Monrovia; James E. Shields, Noblesville, and David L. Smiley, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 728,087, Oct. 9, 1996, abandoned, which is a continuation of Ser. No. 442,916, May 17, 1995, Pat. No. 5,605,886, which is a continuation-in-part of Ser. No. 383,648, Feb. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 381,265, Jan. 31, 1995, abandoned. This application Aug. 4, 1997, Ser. No. 905,694

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—12 **2 Claims**

1. A method of treating obesity, which comprises administering to a mammal in need thereof a protein of SEQ ID NO: 1 or a pharmaceutically acceptable salt thereof.

5,851,996
MATERIALS AND METHODS FOR TREATMENT OF PLAQUING DISEASES

Ellis L. Kline, Pendelton, S.C., assignor to Milkhaus Laboratory, Inc., Delanson, N.Y.

Continuation of Ser. No. 689,528, Aug. 8, 1996, Pat. No. 5,753,624, which is a continuation-in-part of Ser. No. 574,021, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 598,383, Oct. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 874,719, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 249,175, May 25, 1994, abandoned. This application Feb. 13, 1998, Ser. No. 23,607

Int. Cl.^{6} A61K *38/00;38/55*

U.S. Cl. 514—12 **14 Claims**

1. A method for alleviating the symptoms of disease states associated with amyloid plaque formation comprising administering to a patient in need there of a composition comprising an effective amount of an amyloid protein or a therapeutically active fragment thereof.

5,851,997
USE OF HUMAN CHORIONIC GONADOTROPIN AS AN IMMUNE-POTENTIATING ANTIVIRAL AGENT

Pamela Jo Harris, 1810 Calvert St. NW. Suite #5, Washington, D.C. 20009

Continuation-in-part of Ser. No. 338,166, Nov. 10, 1994, Pat. No. 5,700,781, which is a continuation-in-part of Ser. No. 317,909, Oct. 4, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 676,518

Int. Cl.^{6} A61K *38/00;39/21;* **C07K** *1/00*

U.S. Cl. 514—21 **11 Claims**

1. A method of treating or reducing the likelihood of a viral infection in a human patient suffering or at risk for suffering said infection, comprising (A) administering to said subject a clinically effective amount of human chorionic gonadotropin (HCG), wherein said effective amount is at least 10,000 IU, and then (B) monitoring said patient for parameters of said infection.

5,851,998
INHIBITORS OF LEADERLESS PROTEIN EXPORT

Robert Z. Florkiewicz, Ramona, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Filed Feb. 12, 1996, Ser. No. 599,895

Int. Cl.^{6} A61K *31/705;* **A01N** *45/00;* **C07K** *1/00*

U.S. Cl. 514—26 **17 Claims**

1. A method of inhibiting the export of a translated leaderless protein from a cell expressing the protein, comprising contacting the cell with a cardiac glycoside, therefrom inhibiting the export of the leaderless protein.

5,851,999
FLK-1 IS A RECEPTOR FOR VASCULAR ENDOTHELIAL GROWTH FACTOR

Axel Ullrich, München; Werner Risau, Grafelfing; Birgit Millauer, München, all of Germany; Aviv Gazit, and Alex Levitzki, both of Jerusalem, Israel, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften ev., Martinsried, Germany, and Yissum Research, Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Division of Ser. No. 193,829, Feb. 9, 1994, which is a continuation-in-part of Ser. No. 38,596, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 975,750, Nov. 13, 1992, abandoned. This application May 22, 1995, Ser. No. 443,861

Int. Cl.^{6} A61K *48/00;* **C12N** *5/00;15/00*

U.S. Cl. 514—44 **32 Claims**

1. A pharmaceutical composition comprising

(a) an expression vector containing a polynucleotide encoding a polypeptide having a functional FLK-1 extracellular and transmembrane domain, and a deleted or mutated cytoplasmic domain so that the. encoded polypeptide is signaling-incompetent and renders endogenous wild-type FLK-1 unresponsive to VEGF, wherein said polynucleotide is operatively associated with a regulatory element that controls expression of said polynucleotide in a host cell; and

(b) a pharmaceutically acceptable carrier.

5,852,000
CARDIAC REHABILITATION AGENT

Kazuo Ichihara, Hokkaido, and Hiroomi Yokoyama, Tolushima-ken, both of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

Continuation of Ser. No. 416,850, Apr. 14, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 665,505

Claims priority, application Japan, Aug. 25, 1993, 5-210096

Int. Cl.^{6} A61K *31/70*

U.S. Cl. 514—45 **8 Claims**

1. A method of restoring cardiac function following ischemia-reperfusion comprising administering to a subject in need thereof a pharmaceutically effective amount of a cardiac rehabilitation composition consisting essentially of:

(i) at least one purine nucleoside, with the proviso that the purine nucleoside is not adenosine, and
(ii) at least one purine nucleotide or salt thereof; or
(i) at least one purine nucleoside, with the proviso that the purine nucleoside is not adenosine, and
(ii) at least one purine nucleotide or salt thereof and
(iii) at least one pyrimidine nucleoside.

5,852,001
METHOD AND COMPOUNDS FOR INHIBITION OF RIBONUCLEASES

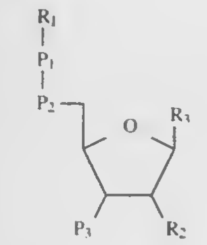
Bert L. Vallee, and Aniello Russo, both of Brookline, Mass., assignors to The Endowment for Research in Human Biology, Boston, Mass.

Filed Dec. 23, 1996, Ser. No. 772,620

Int. Cl.^{6} A61K *31/70;* **C07H** *19/207*

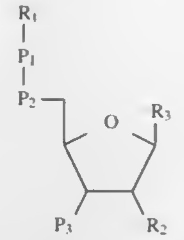
U.S. Cl. 514—47 **16 Claims**

1. A compound of the formula:



wherein:
P_1 is a phosphate group;
P_2 is a phosphate group;
P_3 is a phosphate or phosphorothioate group;
R_1 is a 3'-linked nucleoside or 5'-phospho-nucleotide;
R_2 is hydrogen or hydroxyl: and
R_3 is a purine.

9. A method of inhibiting a ribonuclease of the mammalian pancreatic ribonuclease superfamily comprising contacting the ribonuclease with an inhibiting amount of a compound of formula I



Formula I

wherein:
P_1 is a phosphate group;
P_2 is a phosphate group;
P_3 is a phosphate or phosphorothioate group;
R_1 is hydrogen or a 3'-linked nucleoside or 5'-phospho-nucleotide;
R_2 is hydrogen or hydroxyl; and
R_3 is a purine.

5,852,002
TREATMENT OF CONDITIONS AND DISEASE

Rudolf Edgar Falk, and Samuel S. Asculai, both of Toronto, Canada, assignors to Hyal Pharmaceutical Corporation, Mississauga, Canada

Division of Ser. No. 675,908, Jul. 3, 1991. This application Jun. 5, 1995, Ser. No. 462,147

Claims priority, application Canada, Sep. 21, 1989, 612307

Int. Cl.^{6} A61K *31/70*

U.S. Cl. 514—54 **11 Claims**

10. A method of (preventing) treating a topical infection resulting from a condition or disease in a human involving underperfused tissue and pathological tissue in humans, the method comprising the administration of an effective amount of an anti-metabolite agent and a sufficient amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and its non-toxic salts and combinations thereof to facilitate the transport and penetration of the agent at a site to be treated by the agents passing through the tissue through the cell membranes into the individual cells to be treated wherein the molecular weight of the form of hyaluronic acid is in the range of 150,000 to 750,000 daltons, and said amount of the form of hyaluronic acid is sufficient to provide a dosage greater than 10 mg and less than 3000 mg.

5,852,003
DRUG AND PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF MUSCLES

Denis Barritault, Paris; Jean-Pierre Caruelle, Saint Maur; Pascal Desgranges, Paris; Jean Gautron, Vitry sur Seine, and Anne Meddahi, Creteil, all of France, assignors to Societe Valbiofrance, Creteil Cedex, France

PCT No. PCT/FR95/00398, § 371 Date Jan. 3, 1997, § 102(e) Date Jan. 3, 1997, PCT Pub. No. WO95/26736, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 29, 1995, Ser. No. 714,176

Claims priority, application France, Mar. 30, 1994, 94 03803

Int. Cl.^{6} A61K *31/715;* **C08B** *37/00*

U.S. Cl. 514—54 **14 Claims**

1. A method for treating skeletal or cardial muscular tissue in a mammal, which comprises administering to the mammal a therapeutically effective amount of a polymer or bipolymer which is a HBGFPP (heparin binding growth factor protector and promoter).

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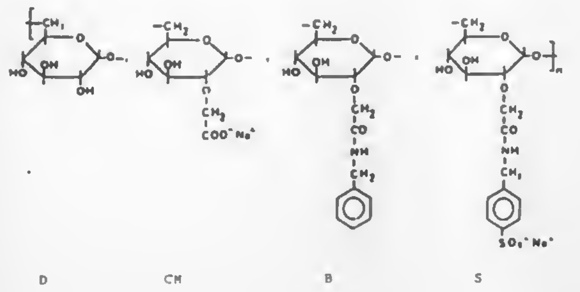


5,852,004
DRUG AND PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF LESIONS OF THE DIGESTIVE TRACT

Denis Barritault, Paris; Jean-Pierre Caruelle, Saint Maur, and Anne Meddahi, Creteil, all of France, assignors to Societe Valbiofrance, Creteil Cedex, France

PCT No. PCT/FR95/00399, § 371 Date Dec. 30, 1996, § 102(e) Date Dec. 30, 1996, PCT Pub. No. WO95/26737, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 29, 1995, Ser. No. 714,178

Claims priority, application France, Mar. 30, 1994, 94 03804

Int. Cl.^{6} A61K *31/715;31/73;31/725;31/70*

U.S. Cl. 514—54 **14 Claims**

1. A method of treating a lesion of the digestive tract or of primary or secondary derived tissue of the endoderm or the mesoderm, which comprises administering to a human or other animal in need of such treatment an effective amount of a pharmaceutical composition containing a) at least one polymer or one biopolymer, called HBGFPP, with the exception of mesoglycan, specifically protecting the growth factors of families of FGFs and beta TGFs from tryptic degradation and not significantly inhibiting coagulation, in association with b) at least one pharmacologically acceptable excipient.

5,852,005
TETRACYCLIC TRITERPENES

Peter Hiestand, Allschwil; Reto Naef, Rheinfelden; Hans-Ulrich Naegeli, Arlesheim; Lukas Oberer, Tenniken; Laszlo Revesz, Therwil, and Hans-Jörg Roth, Gipf-Oberfrick, all of Switzerland, assignors to Novartis AG, Basel, Switzerland

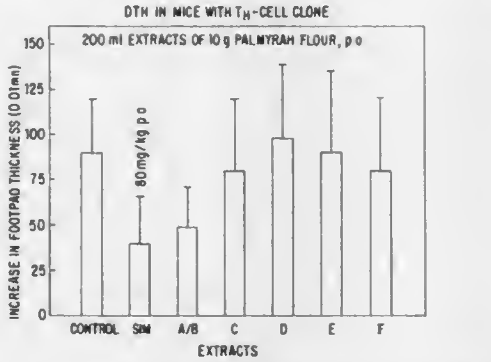
PCT No. PCT/EP95/02913, § 371 Date Jan. 24, 1997, § 102(e) Date Jan. 24, 1997, PCT Pub. No. WO96/03419, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 24, 1995, Ser. No. 776,442

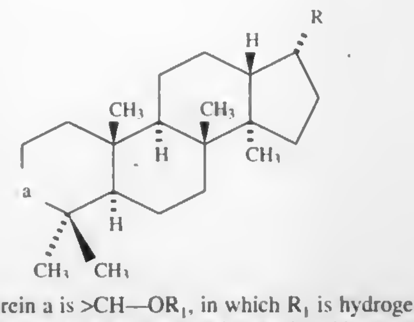
Claims priority, application United Kingdom, Jul. 27, 1994, 941516

Int. Cl.^{6} C07J *9/00;1/00;* **A61K** *31/565;31/575*

U.S. Cl. 514—169 **15 Claims**



1. A 17 α-carbonyl-dammara compound containing the ring system of formula



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wherein a is >CH—OR$_1$, in which R$_1$ is hydrogen or a physiologically cleavable and acceptable acyl residue, or C=O and R is a C$_{1-8}$ aliphatic group, said ring system optionally containing unsaturation and optionally further substituted.

5,852,006
N-AMINOALKYL-SUBSTITUTED NITROGEN-CONTAINING SIX MEMBERED HETEROCYCLIC COMPOUNDS

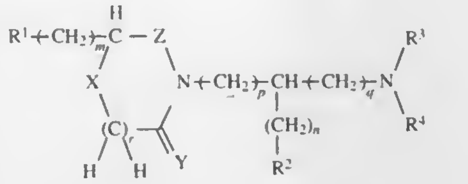
Mitsuo Masaki, Chiba; Norihisa Miyake, Saitama; Atsushi Tendo, Saitama; Hiromitsu Takeda, Saitama; Michiko Ishida, Saitama, and Haruhiko Shinozaki, Saitama, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Division of Ser. No. 91,219, Jul. 13, 1993, Pat. No. 5,574,030, which is a continuation-in-part of Ser. No. 55,969, Apr. 30, 1993, abandoned. This application Oct. 4, 1996, Ser. No. 725,247

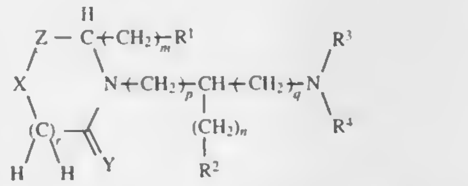
Int. Cl.^{6} C07D *265/30;279/12;* **A61K** *31/54;31/535*

U.S. Cl. 514—183 **8 Claims**

1. An alkylenediamine derivative represented by the formula (1) or (2):



(1)



(2)

wherein

R^1 represents a hydrogen atom, an alkyl group, or a phenyl, naphthyl or aromatic heterocyclic group, wherein each of the phenyl, napthyl or aromatic heterocyclic groups is unsubstituted or substituted with the same or different 1 to 5 substituent groups selected from those consisting of alkyl groups, halogen atoms, haloalkyl groups, hydroxyl group, alkoxyl groups, aryloxy groups, aralkyloxy groups, nitro group, amino group, cyano group, alkylamino groups, aralkylamino groups, arylamino groups, acylamino groups, carboxyl group, alkoxycarbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, carbamoyl group, sulfo group, alkoxysulfonyl groups, aralkyloxysulfonyl groups, aryloxysulfonyl groups, sulfonamide group and 1H-tetrazol-5-yl group, R^2 represents a phenyl, naphthyl or aromatic heterocyclic group each of which is unsubstituted or substituted with the same or different 1 to 5 substituent groups selected from those consisting of alkyl groups, halogen atoms, haloalkyl groups, hydroxyl group, alkoxyl groups, aryloxy groups, aralkyloxy groups, nitro group, amino group, alkylamino groups, aralkylamino groups, arylamino groups, acylamino groups, carboxyl group, alkoxycarbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, carbamoyl group, sulfo group, alkoxysulfonyl groups, aralkyloxysulfonyl groups, aryloxysulfonyl groups, sulfonamide group and 1H-tetrazol-5-yl group; each of R^3 and R^4 independently represents a hydrogen atom, an alkyl group, an aralkyl group or an aryl group, or R^3 and R^4 are combined to form one of 5–6 or 7-membered cyclic groups which may contain oxygen atom, sulfur atom or nitrogen atom besides the nitrogen atom connected to both of R$_3$ or R$_4$; wherein each of the 5–6- or 7-membered cyclic groups is unsubstituted or substituted with the same or different 1 to 5 substituent groups selected from those consisting of alkyl groups, aralkyl groups, phenyl group, hydroxyl group, alkoxyl groups, carboxyl group, alkoxycarbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, acyl groups, and carbamoyl group; X represents oxygen atom, sulfur atom or imino group; Y represents oxygen atom or sulfur atom; Z represents —CH$_2$—, —CO— or —CS—; m is an integer of 0–4; n is an integer of 0–4; r is 1; and p represents an integer of 0–4 and q represents an integer of 1–5 provided that p plus q is 1–5.

5,852,007
CYSTEINE AND SERINE PROTEASE INHIBITORS CONTAINING D-AMINO ACID AT THE P2 POSITION, METHODS OF MAKING SAME, AND METHODS OF USING SAME

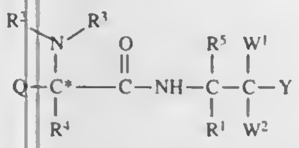
Sankar Chatterjee, Wynnewood, Pa., assignor to Cephalon, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 755,839, Nov. 26, 1996, abandoned. This application Feb. 6, 1997, Ser. No. 795,546

Int. Cl.^{6} A61K *31/27;31/195;31/16;31/40;31/395;31/445;* **C07D** *205/04;207/16;401/12;401/06;401/14;333/16*

U.S. Cl. 514—183 **43 Claims**

1. A compound of the Formula I:



$$Q-\underset{R^4}{\overset{R^2\;\;N\;\;R^3}{C^*}}-\overset{O}{\overset{\|}{C}}-NH-\underset{R^1}{\overset{R^5}{C}}-\underset{W^2}{\overset{W^1}{C}}-Y$$

wherein:

C* denotes a carbon atom having a D-configuration;

Q has the formula G-B-(CHR^{20})$_q$— where R^{20} is independencly H or alkyl having from 1 to 4 carbons;

q is 0, 1, or 2:

B is selected from the group consisting of C(=O), S(=O) , S(=O)$_2$, S, CH$_2$, a bond, NH and O;

G is selected from the group consisting of aryl having from about 6 to about 14 carbons, heteroaryl having from about 5 to about 14 ring atoms, aralkyl having from about 7 to about 15 carbons, alkyl having from 1 to about 10 carbons, heteroalkyl having from 2 to about 7 carbons, alkoxy having from 1 to about 10 carbons, arylsulfonyl, alkylsulfonyl, aralkyloxy having from about 7 to about 15 carbons, amino, a carbohydrate moiety and a carbohydrate moiecy containing one or more alkylaced hydroxyl groups, where any available hydrogen atom of said aryl, hecaroaryl, aralkyl, alkyl and amino groups is replaceable with a K group;

K is selected from the group consisting of halogen, CN, NO$_2$, lower alkyl, aryl, heteroaryl, aralkyl, aralkyloxy, guanidino, alkoxycarbonyl, alkoxy, hydroxy, carboxy, and amino, where any available hydrogen atom of said amino group is replaceable with a substicuent selected from the group consisting of an acyl group, 1 to 3 aryl and lower alkyl groups;

R^1 is selected from the group consisting of H, alkyl having from one to about 14 carbons, cycloalkyl having from 3 to about 10 carbons, aralkyl having from about 7 to about 15 carbons, heteroarylalkyl in which the heteroaryl ring contains from about 5 to about 14 ring atoms, a natural side chain of a D- or L-amino acid, and an unnatural side chain of a D- or L-amino acid, where any available hydrogen atom of said alkyl, cycloalkyl, aralkyl, and heteroarylalkyl groups is replaceable with a K group;

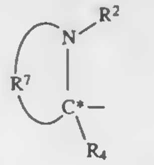
R^2 is selected from the group consisting of C(=O)R^6, S(=O)$_2$R^6, and a protecting group;

R^6 is selected from the group consisting of aryl having from about 6 to about 14 carbons, heteroaryl having from about 5 to about 14 ring atoms, aralkyl having from about 7 to about 15 carbons, alkyl having from 1 to about 10 carbons, where any available hydrogen atomn of said aryl, heteroaryl, aralkyl and alkyl groups is replaceable with a K group, heteroalkyl having from 2 to about 7 carbons alkoxy having from 1 to about 10 carbons, and amino where any available hydrogen atom of said amino is replaceable with 1 or more alkyl groups;

R^3 is selected frotn the group consisting of H, lower alkyl, aralkyl, and a group of formula —CO$_2$—R^{21} where R^{21} is a lower alkyl group;

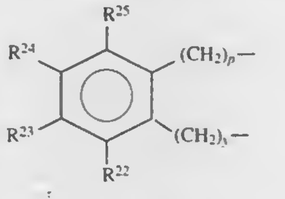
or R^3 taken together with R^2 form a phshalimido group;

or Q and R^3 taken together with —C* and —N(R^2)—form a group of formula:



where R^7 is alkylene having from 2 to 5 carbons, where said alkylene group can comprise a carbon-carbon double bond, where any available hydrogen atom of said alkylene group is replaceable with a group selected from the group consisting of aryl, azide, CN, a protected amino group and OSO$_2$-aryl, wherein any available hydrogen atom of said aryl group is replaceable with a K group, where any available hydrogen atom of said aryl portion of said OSO$_2$-aryl group is replaceable with one or more K groups;

or R^7 has a structure represented by the formula:



where p and y are independently 0 or 1, and R^{22}, R^{23}, R^{24}, and R^{25} are indepenedently H or a K group;

R^4 and R^5 are each independently selected from the group consisting of H and lower alkyl;

W^1 and W^{2}are selected such that W^1 is H and W^2 is OC(=O)NH—R^{26} where R^{26} is alkyl, or W^1 and W^2 are both alkoxy, or W^1 is OH and W^2 is selected from the group consisting of aralkyl, aralkyloxy, aryloxy, heteroaryloxy, heteroaralkyloxy, and SO$_3$Z^1 where Z^1 is a Group I or Group II counterion; or

W^1 and W^2 taken together form a group selected from the group consisting of =O, =NR^8, =N(—O) R^9 —S(CH$_2$)$_2$O—, and —N (R^{12}) (CH$_2$)$_2$N (^{12})—;

R^8 is selected from the group consisting of NH(C=O)NH$_2$, hydroxyl, and lower alkoxy;

R^9 is selected from the group consisting of alkyl and aralkyl;

R^{12} is selected from the group consisting of alkyl having from 1 to 4 carbons, and phenyl;

Y is selected from the group consisting of H, C(=C)NR^{10}R^{11}, C(=O)OR^{10}, CH=N$_2$, and CH$_2$R^{13}; or

Y and R^1 taken together form —(CH$_2$)$_4$N(Pr)— is where Pr is H or a protecting group, provided that when Y and R^1 are taken together to form —(CH$_2$)$_4$N(Pr)—, then W^1 and W^2 form =O;

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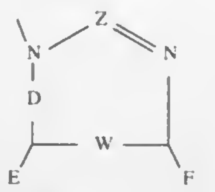
R^{10} and R^{11} are each independently selected from the group consisting of H, alkyl having from 1 to about 10 carbons, where any available hydrogen atom of said alkyl groups is replaceable with a K group, aryl having from about 6 to about 14 carbons, and aralkyl having from about 7 to about 15 carbons;

R^{13} is selected from the group consisting of L, lower alkyl, aralkyl, halogen, and a group O-M, wherein M has the structure:



wherein:

Z is selected from the group consisting of N and CR^{14};

W is selected from the group consisting of a double bond and a single bond;

D is selected from the group consisting of C═O and a single bond;

E and F are independently selected from the group consisting of R^{14}, R^{15}, and J;

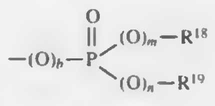
or E and F taken together comprise a joined moiety, said joined moiety being selected from the group consisting of an aliphatic carbocyclic ring having from 5 to 7 carbons, an aromatic carbocyclic ring having from 5 to 7 carbons, an aliphatic heterocyclic ring having from 5 to 7 atoms and containing from 1 to 4 heteroatoms, and an aromatic heterocyclic ring having from 5 to 7 atoms and containing from 1 to 4 heteroatoms, said aliphatic carbocyclic ring, aromatic carbocyclic ring, aliphatic heterocyclic ring, and aromatic heterocyclic ring where any available hydrogen atom of said joint moiety it replaceable with J;

R^{14} and R^{15} are independently selected from the group consisting of H, alkyl having from 1 to 10 carbons, heteroaryl having from 1 to 10 carbons, alkanoyl having from 1 to 10 carbons, and aroyl, where any available hydrogen atom of said alkyl, heteroaryl, alkanoyl and aroyl groups is replaceable with J;

J is selected from the group consisting of halogen, $C({=}O)OR^{16}$, $R^{16}OC({=}O)$, $R^{16}OC({=}O)NH$, OH, CN, NO_2, $NR^{16}R^{17}$, $N{=}C(R^{16})R^{17}$, $N{=}C(NR^{16}R^{17})_2$, SR^{16}, OR^{16}, phenyl, napththyl, heceroaryl, and a cycloalkyl group having from 3 to 8 carbons;

R^{16} and R^{17} are independently H, alkyl having from 1 to 10 carbons, aryl, or heteroaryl, where any available hydrogen atom of said alkyl, aryl and heteroaryl groups is replaceable with K; and

L is a phosphorus-containing enzyme reactive group having the formula:



wherein;

m, n, and b are each indenendently 0 or 1;

R^{18} and R^{19} are each independently selected from the group consisting of H, lower alkyl, aryl, and hecrotaryl wherein any available hydrocrea atom of said lower alkyl, aryl, and heteroaryl group is replaceable with K;

or R^{18} and R^{19} taken together with $-(O)_m-P({=}O)-(O)_n-$ form a 5–8 membered ring containing up to 3 hetero atoms,

or R^{16} and R^{19} taken together with $-(O)_m-P({=}O)-(O)_n-$ form a 5–8 membered ring, wherein any available hydrogen atom of said 5–8 membered ring is replaceable with K.

33. A composition for inhibiting a protease selected from the group consisting of serine proteases and cysteine proteases comprising a compound of claim 1 in an enantiomerically enriched amount.

37. A composition for inhibiting a protease selected from the group consisting of serine proteases and cysteine proteases consisting essentially of a compound of claim 1.

5,852,008

HETEROATOM SUBSTITUTED BENZOYL DERIVATIVES THAT ENHANCE SYNAPTIC RESPONSE MEDIATED BY RECEPTORS

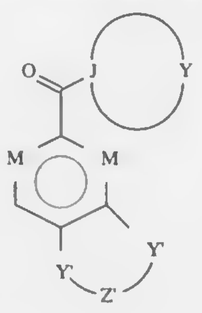
Gary S. Lynch, Irvine, and Gary A. Rogers, Santa Barbara, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 374,584, Jan. 24, 1995. This application Jun. 5, 1995, Ser. No. 465,301

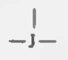
Int. Cl.^{6} A61K *31/55;* **C07D** *403/10*

U.S. Cl. 514—212 **10 Claims**

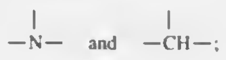
1. A compound having the structure:



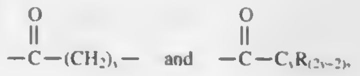
wherein:


$-\overset{|}{J}-$

is selected from:


$-\overset{|}{N}-$ and $-\overset{|}{C}H-$;

—Y— is selected from:


$-\overset{\overset{O}{\|}}{C}-(CH_2)_y-$ and $-\overset{\overset{O}{\|}}{C}-C_yR_{(2y-2)}$,

wherein y is 3, 4, or 5; and

$-(CR_2)_x-$ and $-C_xR_{(2x-2)}-$, wherein x is 4, 5, or 6;

—R is hydrogen or a straight chain or branched chain alkyl group having 1–6 carbon atoms;

each —M— is independently selected from:

—C(H)— and

—C(Z)—, wherein Z is selected from: —R and —OR;

each —Y'— is independently selected from:

—O—,

—Z'— is selected from:

$-(CR_2)_z-$, wherein z is 1, 2, or 3, and

$-C_{z'}R_{(2z'-1)}-$, wherein z' is 1 or 2, or

$-C_2R_2-$

with the proviso that:

if each M is —C(H)—, each Y' is —O— and Z' is $-(CR_2)_z-$, wherein R is H, methyl or ethyl then Y is not $-(CH_2)_{4,5}-$.

5,852,009

COMPOSITIONS, INCLUDING PHARMACEUTICAL COMPOSITIONS, FOR INHIBITING THE ADVANCED GLYCOSYLATION OF PROTEINS, AND THERAPEUTIC METHODS BASED THEREON

Anthony Cerami, New York, N.Y.; Peter C. Ulrich, Old Tappan, N.J., and Michael A. Brownlee, New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 487,059, Jun. 7, 1995, Pat. No. 5,612,332, which is a division of Ser. No. 274,243, Jul. 13, 1994, abandoned, which is a division of Ser. No. 889,141, May 27, 1992, Pat. No. 5,356,895, which is a division of Ser. No. 605,654, Oct. 30, 1990, Pat. No. 5,140,848, which is a continuation-in-part of Ser. No. 264,930, Nov. 20, 1988, Pat. No. 4,983,604, which is a continuation-in-part of Ser. No. 119,958, Nov. 13, 1987, Pat. No. 4,908,446, which is a continuation-in-part of Ser. No. 798,032, Oct. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Jan. 16, 1997, Ser. No. 784,861

Int. Cl.^{6} A61K *31/535;31/155;31/15;31/415;31/495;* **C07C** *133/10*

U.S. Cl. 514—212 **37 Claims**

1. A composition for inhibiting the advanced glycosylation of a target protein comprising an agent capable of reacting with a carbonyl moiety of an early glycosylation product formed by the initial glycosylation of the target protein, together with a carrier therefor, wherein said agent consists essentially of a compound selected from the group consisting of aminoguanidine, its pharmaceutically acceptable salts, and mixtures thereof.

5,852,010

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

Samuel L. Graham, Schwenksville; Neville J. Anthony, Hatfield, and John S. Wai, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 25, 1997, Ser. No. 823,920

Int. Cl.^{6} C07D *243/24;* **A61K** *31/395*

U.S. Cl. 514—221 **4 Claims**

1. A compound which inhibits farnesyl-protein transferase which is:

3(R)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-methylamino]-5-phenyl-1-(2,2,2 -trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one;

3(S)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-methylamino]-5-phenyl-1-(2,2,2 -trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one;

3(R)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-acetylamino]-5-phenyl-1-(2,2,2 -trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one;

3(S)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-acetylamino]-5-phenyl-1-(2,2,2 -trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one;

3(R)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-acetylamino]-5-(4-fluorophenyl-1 -(2,2,2 trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one;

3(R)-3-[1-(4-Cyanobenzyl)imidazol-5-yl-ethylamino -5-phenyl-1-(2,2,2 -trifluoroethyl)-H-benzo[e]1,4]diazepine-2-one; and

3(S)-3-[1-(4-Cyanobenzyl)imidazol-5-yl]-ethylamino -5-phenyl-1 -(2,2,2-trifluoroethyl)-H-benzo[e][1,4]diazepine-2-one.

5,852,011

BENZIMIDAZOLE DERIVATIVES

Akio Matsunaga; Yuki Nakajima; Hiroshi Kohno, all of Mobara, Japan; Hironori Komatsu, San Diego, Calif.; Hajime Edatsugi, Mobara, Japan; Daiji Iwata, Mobara, Japan, and Kimiko Takezawa, Mobara, Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP95/01034, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/32960, PCT Pub. Date Dec. 7, 1995

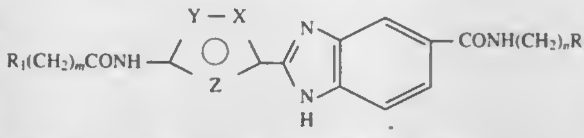
PCT Filed May 30, 1995, Ser. No. 581,608

Claims priority, application Japan, May 31, 1994, 6-118984; Feb. 23, 1995, 7-035562; Apr. 17, 1995, 7-090522

Int. Cl.^{6} C07D *403/04;409/04;* **A61K** *31/44;31/415*

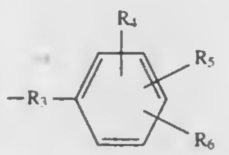
U.S. Cl. 514—228.2 **18 Claims**

1. A compound represented by the following chemical formula (1) or a pharmacologically acceptable salt thereof:



(1)

wherein X, Y and Z each independently means CH, N, NH, $N(CHD)_tCH_3$, S or O with the proviso that X, Y and Z do not al have the same meaning at the same time and t is an integer of 0–5, m and n are integers of 0–5, R_1 and R_2 each independently means a hydrogen atom, a $C_{1\text{-}20}$ alkyl group, a $C_{1\text{-}10}$ haloalkyl group, a $C_{1\text{-}10}$ alkoxyl group, a hydroxyl group, a $C_{1\text{-}10}$ alkylthio group, a substituted or unsubstituted amino group, a substituted or unsubstituted ammonium group, a substituted or unsubstituted sulfonium group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted 5-membered heteroring; a substituted or unsubstituted 6-membered heteroring, a substituted or unsubstituted fused heteroring substituted or unsubstituted amindino group, a substituted or unsubstituted guanidino group, an amino acid residual group, or a group represented by the following chemical formula (2)



(2)

wherein R_3 means $(CH_2)_r$ or $(CH_2)_rO$ in which r stands for an integer of 0–5 and the O atom is located closer to the phenyl group, R_4 means a hydrogen atom, a $C_{1\text{-}10}$ alkyl group, a $C_{1\text{-}10}$ alkoxyl group, a halogen atom, a trifluoromethyl group, a cyano group, an amidino group, a guanidino group, a carboxyl group or $-COR_7$ in which R_7 means $C_{1\text{-}5}$ alkyl group, an alkylamino group which may be substituted by a substituted amino group, an amino group which may be substituted by a substituted or unsubstituted phenyl group, or a substituted or unsubstituted benzylamino group, R_5 means a hydrogen atom, a $C_{1\text{-}10}$ alkyl group, a $C_{1\text{-}10}$ alkyoxyl group, a halogen atom, or $-(CH_2)_pN(R_8)_2$ or $-(CH_2)_pNR_8R_9$ in which p stand for an integer of 0–5 or R_4 or R_5 may form a ring when R_4 and R_5 take mutually adjacent positions, R_6 means a hydrogen atom, $-(CH_2)_pN(R_8)_2$ or $-(CH_2)_pNR_8R_9$ wherein in each case of R_5 and R_6, R_8 means $-CH_2CH_2W$, R_9 means a $C_{1\text{-}5}$ alkyl group or a mesyl group, W means a halogen atom, a hydroxyl group, a mesyloxy group, a tosyloxy group or $-OCOR_7$ in which R_7 and p have the same meanings as defined above.

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5,852,012
OXADIAZINE DERIVATIVES

Peter Maienfisch, Rodersdorf, and Laurenz Gsell, Basel, both of Switzerland, assignors to Novartis Corporation, Summit, N.J.

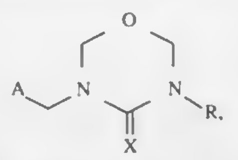
Division of Ser. No. 270,612, Jul. 5, 1994, abandoned, which is a division of Ser. No. 91,801, Jul. 14, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,931

Claims priority, application Switzerland, Jul. 22, 1992, 2315/92

Int. Cl.^{6} A01N *43/88*

U.S. Cl. 514—229.2 **10 Claims**

1. Pest-resistant plant propagation material comprising plant propagation material selected from the group consisting of seeds and plant cuttings treated with a pesticidally effective amount of a pesticidal composition, wherein said pesticidal composition comprises a pesticidally effective amount of a pesticidally active ingredient in an inert carrier, said pesticidally active ingredient being selected from the group, consisting of a compound of the formula



(I)

an agrochemically utilizable salt of said compound of the formula I, a tautomer of said compound of the formula I, and an agrochemically utilizable salt of said tautomer,

wherein in formula I

A is a 2-chloropyrid-5-yl, 2-methylpyrid-5-yl, 1-oxido-3-pyridinio, 2-chloro-1-oxido-5-pyridinio, 2,3-dichloro-1-oxido-5-pyridinio or 2-chlorothiazol-5-yl group,

R is hydrogen, C_1–C_6alkyl, phenyl-C_1–C_4alkyl, C_3–C_6cycloalkyl, C_2–C_6 alkenyl or C_2–C_6alkynyl; and

X is N—NO_2 or N—CN.

5,852,013
SUBSTITUTED ARYLAZADIOXACYCLO ALKENE FUNGICIDES

Peter Gerdes, Aachen; Herbert Gayer, Monheim; Dietmar Kuhnt, Burscheid; Ralf Tiemann, Leverkusen, and Klaus Stenzel, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP96/00069, § 371 Date Jul. 16, 1997, § 102(e) Date Jul. 16, 1997, PCT Pub. No. WO96/22983, PCT Pub. Date Aug. 1, 1996

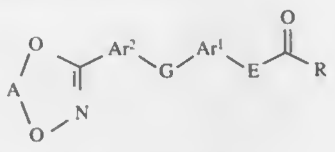
PCT Filed Jan. 10, 1996, Ser. No. 875,032

Claims priority, application Germany, Jan. 23, 1995, 19501842.7

Int. Cl.^{6} A01N *43/88;* **C07D** *273/02*

U.S. Cl. 514—224.2 **10 Claims**

1. Compounds of the formula (I)



(I)

in which

A represents optionally substituted alkylene.

Ar^1, Ar^2 independently of one another each represent optionally substituted arylene or heteroarylene.

E represents a 1-alkene-1,1-diyl grouping which contains a radical R^1 in position 2, or represents a 2-aza-1-alkene-1,1-diyl grouping which contains a radical R^2 in position 2, or represents an optionally substituted imino grouping N—R^3, or represents a 3-aza-1-propene-2,3-diyl grouping which contains a radical R^4 in position 1 and a radical R^5 in position 3, or represents a 3-aza-1-propene-2,3-diyl grouping which contains a radical R^4 in position 1, or represents a 3-thia-1-propene-2,3-diyl grouping which contains a radical R^4 in position 1, or represents a 1-aza-1-propene-2,3-diyl grouping which contains a radical R^6 in position 1 and a radical R^5 in position 3, or represents a 1-aza-1-propene-2,3-diyl grouping which contains a radical R^4 in position 1 and a radical R^5 in position 3, or represents a 1,3-diaza-1-propene -2,3-diyl grouping which contains a radical R^6 in position 1 and a radical R^5 in position 3, or represents a 1-aza-3-oxa-1-propene-2,3-diyl grouping which contains a radical R^6 in position 1, or represents a 1-aza-3-thia-1-propene-2,3-diyl grouping which contains a radical R^6 in position 1, wherein

R^1, R^4 each represent hydrogen, halogen, cyano or represent optionally substituted alkyl, alkoxy, alkylthio, alkylamino or dialkylamino,

R^2, R^6 each represent hydrogen, amino, cyano or represent optionally substituted alkyl, alkoxy, alkylamino or dialkylamino, and

R^3 represents hydrogen, cyano or represents optionally substituted alkyl, alkenyl, alkinyl, cycloalkyl or cycloalkylalkyl,

R^5 represents alkyl,

G represents a single bond, represents oxygen, sulphur, or represents optionally halogen-, hydroxyl-, alkyl-, halogenoalkyl- or cycloalkyl-substituted alkanediyl, alkenediyl, alkinediyl or represents a substitustent selected from the group of consisting of

—Q—CQ—, —CQ—Q—, —CH_2—Q—; —Q—CH_2—, —CQ—Q—CH_2—, —CH_2—Q—CQ—, —Q—CQ—CH_2—, —Q—CQ—Q—CH_2—, —N=N—, —$S(O)_n$—, —CH_2—$S(O)_n$—, —CQ—, —$S(O)_n$—CH_2—, —C(R^7)=N—O—, —C(R^7)——N—O—CH_2—, —N(R^8)—, —CQ—N(R^8)—, —N(R^8)—CQ—, —Q—CQ—N(R^8)—, —N=C(R^7)—Q—CH_2—, —CH_2—O—N=C(R^7)—, —N(R^8)—CQ—Q—, —CQ—N(R^8)—CQ—Q—, —N(R^8)—CQ—Q—CH_2—,—Q—C(R^7)=N—O—CH_2—, —N(R^8)—C(R^7)=N—O—CH_2—, O—CH_2—C(R^7)=N—O—, —N=N—C(R^7)—N—O—, —T—Ar^3—and —T—Ar^3—Q—, wherein

Ar^3 represents optionally substituted arylene, heteroarylene, cycloalkylene or heterocycloalkylene,

n represents the numbers 0, 1 or 2,

Q represents oxygen or sulphur,

R^7 represents hydrogen, cyano or respectively optionally substituted alkyl, alkoxy, alkylthio, alkylamino, dialkylamino or cycloalkyl, and

R^8 represents hydrogen, hydroxyl, cyano or respectively optionallysubstituted alkyl, alkoxy or cycloalkyl and

T represents a single bond, represents oxygen, sulphur, —CH_2—O—, CH_2—S— or represents optionally substituted alkanediyl and

R represents alkyl, alkoxy, hydroxylamino, alkoxamino, alkylamino or dialkylamino.

5,852,014
CONDENSED INDOLE DERIVATIVES AS 5HT$_4$-RECEPTOR ANTAGONISTS

Laramie Mary Gaster, Bishop's Stortford, and Paul Adrian Wyman, Epping, both of England, assignors to SmithKline Beecham p.l.c., Brentford, England

Continuation-in-part of Ser. No. 302,784, Sep. 12, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,168

Claims priority, application United Kingdom, Mar. 12, 1992, 9205428; Sep. 5, 1992, 9218846; Dec. 29, 1992, 9227045

Int. Cl.^{6} H61K *31/535;* **C07D** *498/04*

U.S. Cl. 514—230.2 **6 Claims**

1. N-[(1-^{n}Butyl-4-piperidyl)methyl]-3,4-dihydro-2H-[1,3]oxazino[3,2-a]indole-10-carboxamide or a pharmaceutically acceptable salt thereof.

5,852,015
TRIAZINE CONTAINING ANIONIC COMPOUNDS USEFUL AS ANTIVIRAL AGENTS

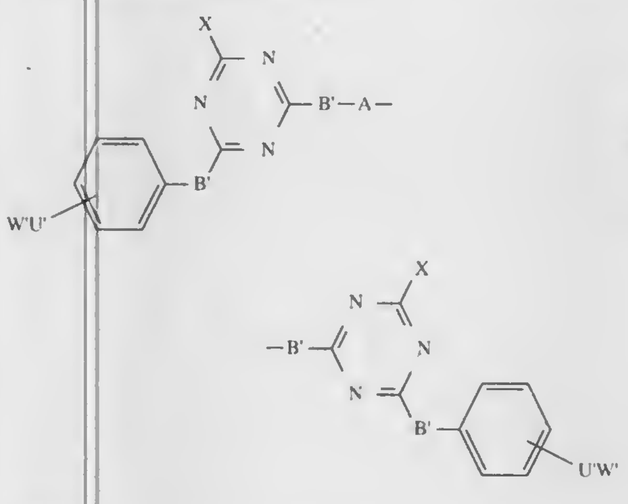
Yakov Gluzman, deceased, late of Upper Saddle River, N.J., by Ilan Gluzman, executor; James P. LaRocque, Highland Mills, N.Y.; Bryan M. O'Hara, Pearl River, N.Y.; John E. Morin, Cold Spring, N.Y.; George A. Ellestad, Pearl River, N.Y.; Boris Mitsner, Nanuet, N.Y.; Wei-Dong Ding, Nanuet, N.Y.; Yuri E. Raifeld, and Antonina A. Nikitenko, both of Tarrytown, N.Y., assignors to American Cyanamid Company, Madison, N.J.

Filed Jan. 27, 1997, Ser. No. 789,038

Int. Cl.^{6} C07D *403/10;* **A61K** *31/53*

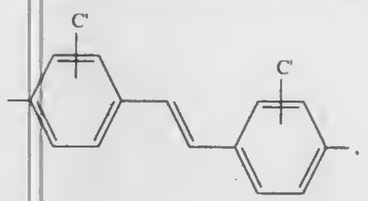
U.S. Cl. 514—245 **39 Claims**

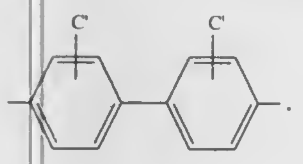
1. A compound having the structure:



wherein:

A is a moiety selected from the group consisting of





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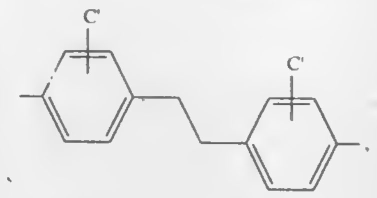
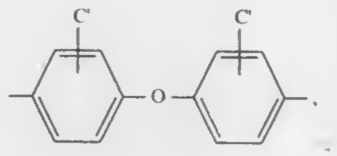
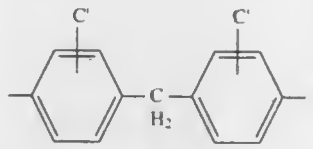
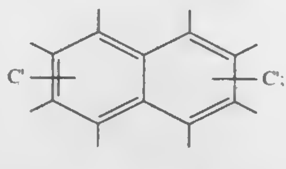






and

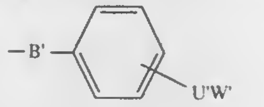


C' is selected from —SO_3H, —OSO_3H, —OH, or —COOH;

B' is selected from —NH, —NR^1 or O:

R^1 is selected from H, (C_1–C_6)lower alkyl straight or branched wherein the carbon atoms may be optionally substituted with Cl, Br, F, OH or CN;

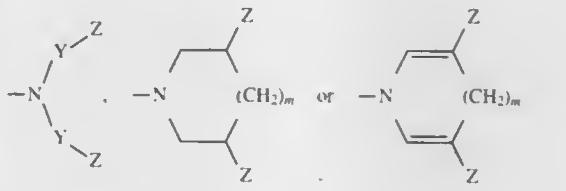
X is selected from Cl, F or the moiety



where

U' is selected from the group of —SO_2, —CO, —NC(O), or —NC(S):

W' is selected from the moieties:

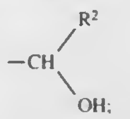


Y is —$(CH_2)_n$—:

n is 0 to 6;

m is 0 to 2;

Z is selected from H, CH_3, CF_3, —CH_2—(halogen), where halogen is Cl, Br, F or I, —CH_2OH, —COOH, —COO(C_1–C_6)lower alkyl straight or branched, —$CONR^2R^2$, CN or



$$-CH(R^2)OH;$$

R^2, in each occurrence, is independently selected from H or (C_1–C_6)lower alkyl; or a pharmaceutically acceptable salt or ester thereof.

5,852,016

QUINOXALINE DERIVATIVES USEFUL IN THERAPY

Michael Jonathan Fray; Charles Eric Mowbray, and Alan Stobie, all of Sandwich, United Kingdom, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP95/03559, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO96/09295, PCT Pub. Date Mar. 28, 1996

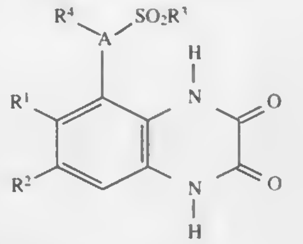
PCT Filed Sep. 8, 1995, Ser. No. 809,337

Claims priority, application United Kingdom, Sep. 24, 1994, 9419318

Int. Cl.⁶ A01N *43/58;* **A61K** *31/495*

U.S. Cl. 514—249 **13 Claims**

1. A compound of formula I,



I

wherein

A represents N or CH;

R^1 and R^2 independently represent C_{1-4} alkyl, halo or CF_3;

R^3 represents C_{1-4} alkyl (optionally substituted by C_{3-7} cycloalkyl or aryl), C_{3-7} cycloalkyl, CF_3 or aryl;

R^4 represents H, C_{3-7} cycloalkyl or C_{1-6} alkyl;

R^5 and R^6 independently represent H or C_{1-4} alkyl, or taken together with the nitrogen atom to which they are attached they may represent a pyrrolidino, piperidino or morpholino group; and

n represents 2, 3 or 4;

or a pharmaceutically acceptable salt thereof.

5,852,017

2,3(1H, 4H)-QUINOXALINEDIONES

Wilfried Lubisch, Mannheim; Berthold Behl, Ludwigshafen, and Hans Peter Hofmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

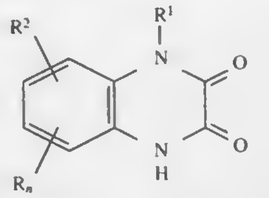
Continuation of Ser. No. 512,282, Aug. 8, 1995, Pat. No. 5,714,489, which is a continuation of Ser. No. 261,873, Jun. 17, 1994, abandoned, which is a continuation of Ser. No. 67,873, May 27, 1993, abandoned. This application Jun. 23, 1997, Ser. No. 880,507

Claims priority, application Germany, May 30, 1992, 42 17 952.1

Int. Cl.⁶ A61K *31/495*

U.S. Cl. 514—249 **2 Claims**

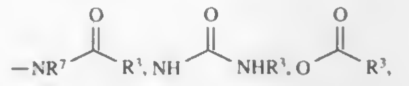
1. A method for treating a host in need of spasmolytic or anxiolytic treatment which comprises administering to said host a therapeutically effective amount of a 2,3(1H,4H)-quinoxalinedione of the formula I



(I)

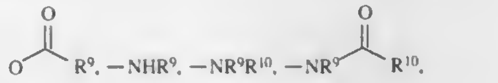
or its tautomer or enantiomer or its physiologically tolerated salt, where

R^1 is hydrogen, a cycloaliphatic radical having up to 8 carbons, phenyl, an alkyl radical having up to 12 carbons and which can carry one or two identical or different substituents selected from the group consisting of phenyl, cyclopentyl, cyclohexyl, $—CO—R^3$, $—CO—OR^3$, $—CO—NH—R^3$, $—OR^3$, $—NR^7R^8$,



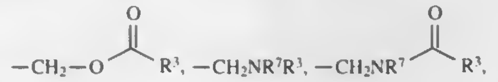
$=N—OR^3$, $—CN$, where R^3 and

R^7 are each, independently of one another, hydrogen, C_1–C_4-alkyl, phenyl, benzyl, 1-phenylethyl or 2-phenylethyl, and where the cycloaliphatic radical having up to 8 carbon atoms and aromatic rings present in R^1 can carry up to three substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, halogen, nitro, cyano, $—CO—OR^9$, $—CO—NH—R^9$, $—OH$,



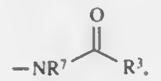
$=N—OR^9$, $=O$; where R^9 and R^{10} are each, independently of one another, hydrogen, C_1–C_4-alkyl, phenyl, benzyl, 1-phenylethyl and 2-phenylethyl,

R^2 is 1-pyrrolyl which can carry one or two of the following substituents: C_1–C_4-alkyl, phenyl, phenylsulfonyl, nitro, cyano or $—CO—R^3$, $—CO—NH—R^3$, $—NH_2—O—R^3$, $—OR^3$, $—CH{=}NO—R^3$, $—C(O)—R^3$,



$—CH{=}CH—R^8$, $—CH{=}N—R^3$, where R^8 is $—COOR^3$, $—CONH—R^3$, CN or phenyl;

R is C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, trichloromethyl, trifluoromethoxy, trichloromethoxy, fluorine, chlorine, bromine, nitro, cyano or $—CO—OR^3$, $—CO—NHR^3$, $—SO_2R^3$ or



and

n is an integer from 0 to 3, where the radicals R are identical or different when n is 2 or 3.

5,852,018

PHARMACEUTICAL PIPERAZINE COMPOUNDS

Justin Stephen Bryans; Christopher John Latham, both of Slough, United Kingdom, and Stephen James Brocchini, Highland Park, N.J., assignors to Xenova Limited, United Kingdom

PCT No. PCT/GB95/00300, § 371 Date Nov. 4, 1996, § 102(e) Date Nov. 4, 1996, PCT Pub. No. WO95/21830, PCT Pub. Date Aug. 17, 1995

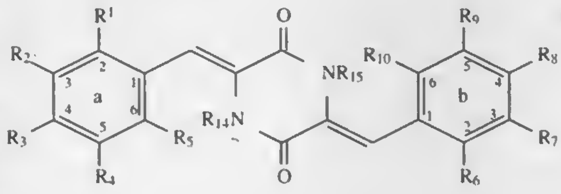
PCT Filed Feb. 14, 1995, Ser. No. 693,171

Claims priority, application United Kingdom, Feb. 14, 1994, 9402809

Int. Cl.⁶ A61K *31/495;* **C07D** *241/08;403/06*

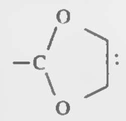
U.S. Cl. 514—252 **10 Claims**

2. A compound selected from the group consisting of a piperazine of formula (Aa):



(Aa)

wherein each of R_{14} and R_{15} is independently selected from hydrogen and C_2–C_6 alkyl which is unsubstituted or substituted by a group selected from halogen, phenyl, C_1–C_6 alkenylene, cyano, hydroxy, $—OC(O)R_{11}$, $—N(R_{11}R_{12})$, $—CON(R_{11}R_{12})$, $—COOR_{11}$, a group succinimidyl, phthalimidyl or



provided that at least one of R_{14} and R_{15} is C_1–C_6 alkyl substituted as defined above; and each of R_1 to R_{10}, which may be the same or different, is independently selected from hydrogen, C_1–C_6 alkyl unsubstituted or substituted by one or more halogen atoms, C_1–C_6 alkoxy, C_1–C_6 alkylthio, halogen, hydroxy, nitro, phenyl, cyano, $—CH_2OH$, $—CH_2COOH$, $—CO_2R_{11}$, $—NHCOR^{11}$, $—NHSO_2R^{13}$, $—SO_2R^{13}$, $—CON(R^{11}R^{12})$, $—SOR^{13}$, $—SO_2N(R^{11}R^{12})$, $—N(R^{11}R^{12})$, $—O(CH_2)_nN(R^{11}R^{12})$, $—O(CH_2)_nCO_2R^{11}$, $—OCOR^{11}$, $—CH_2OCOR^{11}$, $—CH_2NHCOR^{11}$, $—CH_2NHCOOR^{13}$, $—CH_2SR^{11}$, $—CH_2SCOR^{11}$, $—CH_2S(O)_mR^{13}$ wherein m is 1 or 2, $—CH_2NHCO(CH_2)_nCO_2R^{11}$, $—N(R^{11})COR^{12}$, $—NHCOCF_3$, $—NHCO(CH_2)_nCO_2R^{11}$, $—NHCO(CH_2)_nOCOR^{11}$ and $—NHCO(CH_2)_nOR^{11}$,

wherein n is 0 or is an integer of from 1 to 6, each of R^{11} and R^{12} is independently H or C_1–C_6 alkyl or, when R^{11} and R^{12} are attached to the same nitrogen atom, they may alternatively form with the nitrogen atom an N,N-tetramethylene group; and R^{13} is C_1–C_6 alkyl; the pharmaceutically acceptable salts thereof and the pharmaceutically acceptable esters thereof selected from the group consisting of branched and unbranched, saturated and unsaturated C_1–C_6 alkyl esters.

5,852,019

PYRIMIDINYLPYRAZOLE DERIVATIVES

Akio Ejima: Masamichi Sugimori, and Ikuo Mitsui, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01934, § 371 Date Feb. 4, 1998, § 102(e) Date Feb. 4, 1998, PCT Pub. No. WO96/01124, PCT Pub. Date Apr. 4, 1996

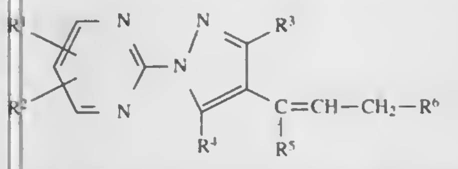
PCT Filed Sep. 25, 1995, Ser. No. 821,076

Claims priority, application Japan, Sep. 26, 1994, 6-229422; Jun. 1, 1995, 7-135010

Int. Cl.⁶ A61K *31/495;,* **C07D** *401/14;403/14;413/14*

U.S. Cl. 514—252 **11 Claims**

1. A compound represented by the following formula (I) or its salt:



(I)

wherein R^1 and R^2 may be either the same or different and each represents an atom or a substituent selected from the group consisting of:

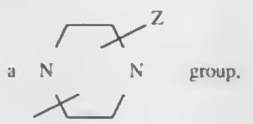
(1) a hydrogen atom,
(2) a halogen atom,
(3) an amino group,
(4) an alkylamino group,
(5) a dialkylamino group,
(6) a hydroxyl group,
(7) a thiol group,
(8) an alkylthio group,
(9) an alkoxyl group,
(10) a cyano group,
(11) a carbamoyl group,
(12) an alkyl group optionally-substituted by a halogen atom, an amino group, an alkylamino group, a dialkylamino group, a hydroxyl group, an alkoxyl group or a thiol group, and
(13) an alkenyl group optionally substituted by a halogen atom, an amino group, an alkylamino group, a dialkylamino group, a hydroxyl group, an alkoxyl group or a thiol group;

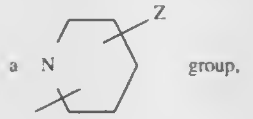
R^3 represents a hydrogen atom or an alkyl group;

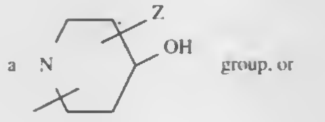
R^4 represents a hydrogen atom, an alkyl group, a phenyl group or a benzyl group;

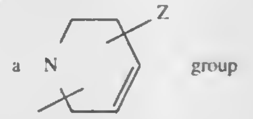
R^5 represents a hydrogen atom or an alkyl group; and

R^6 represents a tetrahydroisoquinolyl group,
a morpholinyl group,
a piperidyl group,
a piperazinyl group,

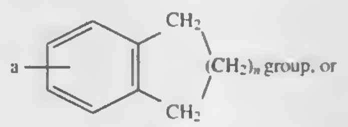


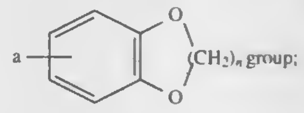






wherein Z represents a phenyl group,
a pyridyl group,
a pyrimidinyl group,
a pyrazinyl group,
a pyridazinyl group,
a piperidyl group,
a benzyl group,
a benzhydryl group,





and

n represents an integer of from 1 to 3;

and R^6 is optionally substituted by one or more atom(s) and/or substituent(s) selected from a group consisting of:
a halogen atom,
an amino group,
an alkylamino group,
a dialkylamino group,
an acetylamino group,
a nitro group,
a hydroxyl group,
a thiol group,
an alkylthio group,
an alkoxyl group,
a cyano group,
a carbamoyl group,
an alkyl group optionally substituted by a halogen atom, an amino group, an alkylamino group, a dialkylamino group, a hydroxyl group, an alkoxyl group or a thiol group, and

an alkenyl group optionally substituted by a halogen atom, an amino group, an alkylamino group, a dialkylamino group, a hydroxyl group, an alkoxyl group or a thiol group.

5,852,020

NEFAZODONE: USE IN TREATING POST TRAUMATIC STRESS DISORDER

Ronald N. Marcus, and Brenda Martini, both of Hamden, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jul. 31, 1997, Ser. No. 904,011

Int. Cl.^{6} A61K *31/449*

U.S. Cl. 514—252 **7 Claims**

1. A method for alleviation of post traumatic stress disorder (PTSD) which comprises administering a non-toxic therapeutically effective dose of nefazodone or a pharmaceutically acceptable acid addition salt thereof to a patient in need of such treatment.

5,852,021

POLYMORPH B OF 1-(DIPHENYLMETHYL)-4-[3-(2-PHENYL-1,3-DIOXOLAN-2-YL) PROPYL] PIPERAZINE

Rafael Foguet Ambros; Lluis Anglada Burniol; Manuel Raga Carreño; Jose A. Ortiz Hernandez; Aurelio Sacristan Munoz, and Josep M. Castello Barenys, all of Barcelona, Spain, assignors to Ferrer Internacional, S.A., Barcelona, Spain

PCT No. PCT/ES95/00033, § 371 Date Dec. 27, 1996, § 102(e) Date Dec. 27, 1996, PCT Pub. No. WO96/30366, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 28, 1995, Ser. No. 750,131

Int. Cl.^{6} A61K *31/495;* **C07D** *405/06*

U.S. Cl. 514—255 **4 Claims**

1. Polymorph B of 1-(diphenylmethyl)-4-[3-(2-phenyl-1,3-dioxolan-2-yl)propyl]piperazine exhibiting IR bands at 2961, 2883, 2812, 2777, 2760, 1448, 1283, 1058, 1042, 1029, 1006, 978, 951, 758 and 703 cm^{-1} as presented in FIGS. 5 and 6.

5,852,022

ANTIPSYCHOTIC AGENTS, COMPOSITION AND METHOD OF USE

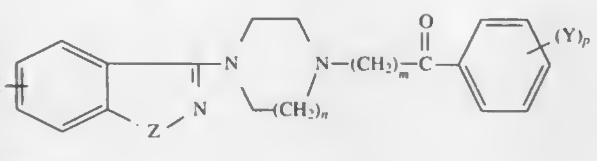
Mark G. Palermo, Netcong; Lawrence L. Martin, Lebanan, and Peter A. Nemoto, Raritan, all of N.J., assignors to Hoechst Roussel Pharmaceuticals Inc., Bridgewater, N.J.

Continuation of Ser. No. 470,400, Jun. 6, 1995. This application Sep. 2, 1997, Ser. No. 921,480

Int. Cl.^{6} A61K *34/495;* **C07D** *413/00;417/00;419/00*

U.S. Cl. 514—255 **21 Claims**

1. A compound of the formula



wherein

X is —OH, —OC(=O)(C_1–C_{18})alkyl, —OC(=O)(C_6–C_{10})aryl, —OC(=O)(C_1–C_{12})alkyl(C_6–C_{10})aryl, —OC(=O)NH(C_1–C_{18})alkyl, —OC(=O)(C_1–C_{12})alkyl(C_3–C_8)cycloalkyl, —OC(=O)O(C_1–C_{18})alkyl, or —OC(=O)—(C_3–C_{12})cycloalkyl;

Y is H, halogen, trifluoromethyl, (C_1–C_6)alkoxy, cyano or nitro;

Z is O;

m is 1,2,3 or 4;

n is 1; and

p is 1 or 2;

and its pharmaceutically acceptable acid addition salts.

5,852,023

CYCLOHEXYLAMINO AND CYCLOALKOXY NITROGEN HETEROCYCLES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS PESTICIDES AND FUNGICIDES

Wolfgang Schaper, Schaper; Gerhard Krautstrunk, Frankfurt; Werner Knauf, Eppstein; Ulrich Sanft, Hofheim; Manfred Kern, Lörzweiler; Sergej Pasenok, Liederbach; Dieter Bernd Reuschling, Butzbach; Adolf Heinz Linkies, Frankfurt, and Werner Bonin, Kelkheim, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

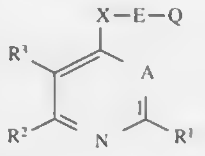
Filed Mar. 27, 1996, Ser. No. 622,741

Claims priority, application Germany, Mar. 29, 1995, 195 11 562.7

Int. Cl.^{6} A61K *31/505;* **C07D** *239/02;415/00*

U.S. Cl. 514—256 **19 Claims**

1. A compound of the formula I



(I)

in which

R^1 is hydrogen, halogen, (C_1–C_4)-alkyl, or (C_3–C_5)-cycloalkyl;

R^2 and R^3 are identical or different and are each hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, (C_2–C_4)alkenyl, (C_2–C_4)-haloalkenyl, (C_2–C_4)-alkynyl, (C_2–C_4)-haloalkynyl, (C_1–C_8)-trialkylsilylalkynyl, phenyl-(C_1–C_8)-dialkylsilylalkynyl, aryl-(C_1–C_2)-alkyl-(C_1–C_8)-dialkyl-silylalkynyl, (C_3–C_8)-cycloalkyl-(C_1–C_8)-dialkylsilylalkynyl, (1-methylsila-(C_3–C_8)-cycloalk-1-yl)alkynyl, triphenylsilylalkynyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_1–C_4)-haloalkoxy-(C_1–C_4)-alkyl, (C_1–C_4)-alkoxy-(C_1–C_4)-haloalkyl, (C_1–C_4)-haloalkoxy-(C_1–C_4)-haloalkyl, halogen, hydroxyl, (C_1–C_4)-hydroxyalkyl, (C_1–C_4)-alkanoyl, (C_1–C_4)-alkanoyl-(C_1–C_4)-alkyl, (C_1–C_4)-haloalkanoyl, (C_3–C_5)-cycloalkyl, (C_3–C_5)-halocycloalkyl, cyano, (C_1–C_4)-cyanoalkyl, nitro, (C_1–C_4)-nitroalkyl, thiocyano, (C_1–C_4)-thiocyanoalkyl, (C_1–C_4)-alkoxycarbonyl, (C_1–C_4)-alkoxycarbonyl-(C_1–C_4)-alkyl, (C_1–C_4)-haloalkoxycarbonyl, (C_1–C_4)-alkanoyloxy-(C_1–C_4)-alkyl, (C_1–C_4)-alkylthio, (C_1–C_4)-alkylthio-(C_1–C_4)-alkyl, (C_1–C_4)-haloalkylthio, (C_1–C_4)-alkylsulfynyl, (C_1–C_4)-haloalkylsulfynyl, (C_1–C_4)-alkylsulfonyl or (C_1–C_4)-haloalkylsulfonyl; where if R_2 is hydrogen, (C_1–C_4)-alkyl, halogen, (C_1–C_4)-haloalkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_1–C_4)-alkylthio or (C_1–C_4)-alkylthio-(C_1–C_4)-alkyl;

R^3 is not simultaneously hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, halogen or (C_1–C_4)-alkylthio;

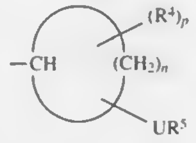
A is nitrogen;

X is NH, oxygen or $S(O)_q$ where q is 0, 1 or 2;

E is a direct bond or a straight-chain or branched (C_1–C_4)-alkanediyl group;

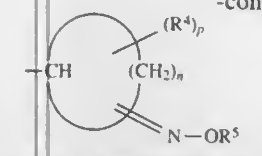
Q is defined for Q^1, and

Q^1 is a cycloalkyl group of the formula II or II'



(II)

-continued



(II')

in which n is an integer from 2 to 7;

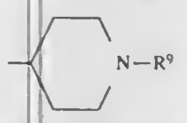
$(R^4)_p$ and UR^5 are substituents of the isocyclic ring formed with the participation of $(CH_2)_n$;

p is 1 or 2;

R^4 is hydrogen, halogen, (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, (C_1–C_4)alkoxy, or (C_1–C_4)-alkylthio;

U is a direct bond, oxygen or a group $S(O)_m$ where m=0, 1 or 2;

R^5 is alkyl, alkenyl, alkynyl, aryl or heterocyclyl, and, if Q^1 is a radical of the formula II and U is a direct bond, R^5 is also hydroxyl, cyano, thiocyano, nitro or halogen, wherein the aryl or heterocyclyl radicals are optionally substituted up to three—AND in the case of fluorine up to the maximum number of—by identical or different substitutents and for one or more nonadjacent saturated carbon units in the alkyl, alkenyl or alkynyl radicals mentioned to be replaced by a carbonyl group or by a heteroatom unit selected from the group consisting of oxygen; $S(O)_x$ where x=0, 1 or 2; NR^6; or SiR^7R^8, in which R^6 is hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)alkoxy, or (C_1–C_4)-alkanoyl and R^7 and R^8 are (C_1–C_4)-alkyl; and in which, furthermore, 3 to 12 atoms of these hydrocarbon radicals, which radicals are modified as above if desired, optionally form a ring and these hydrocarbon radicals, with or without the variations indicated, are optionally substituted by one or more identical or different radicals selected from the group consisting of halogen, aryl, aryloxy, arylthio, cycloalkoxy, cycloalkylthio, heterocyclyl, heterocyclyloxy, heterocyclylthio, alkanoyl, cycloalkanoyl, haloalkanoyl, aroyl, arylalkanoyl, cycloalkylalkanoyl, heterocyclylalkanoyl, alkoxycarbonyl, haloalkoxycarbonyl, cycloalkoxycarbonyl, cycloalkylalkoxy-carbonyl, arylalkoxycarbonyl, heterocyclylalkoxycarbonyl, aryloxycarbonyl, heterocyclyloxycarbonyl, alkanoyloxy, haloalkoyloxy, cycloalkanoyloxy, cycloalkylalkanoyloxy, aroyloxy, arylalkanoyloxy, heterocycloylalkanoyloxy, alkylsulfonyloxy, arylsulfonyloxy, hydroxyl, cyano, thiocyano or nitro, wherein said cycloaliphatic, aromatic or heterocyclic ring systems among the substituents just mentioned are optionally substituted by up to three and in the case of fluorine up to the maximum number of identical or different substituents, or Q is as defined for Q^2 and Q^2 is a radical of the formula III



(III)

in which R^9 is aryl or heteroaromatic ring system and the aryl or heteroaromatic ring system are optionally substituted by up to three—and in the case of fluorine up to the maximum number of—identical or different substituents, or a salt thereof, wherein the substituents for the aromatic and heterocyclic ring systems are halogen, nitro, cyano, di-(C_1–C_4)-alkylamino, (C_1–C_4)-alkyl, (C_1–C_4)-trialkylsilyl, (C_1–C_4)-alkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_1–C_2)-alkoxy-$(CH_2CH_2)_{1,2}$-ethoxy, (C_1–C_4)-alkylthio (C_1–C_4)-alkylsulfinyl, (C_1–C_4)-alkylsulfonyl, phenyl, benzyl, phenoxy, phenylthio, halophenoxy, (C_1–C_4)-alkylphenoxy, (C_1–C_4)-alkylthiophenoxy, phenylthio, heterocyclyl, heterocyclythio, heterocyclyloxy, haloheterocyclyloxy, alkylheterocyclyloxy or alkoxyheterocyclyloxy, wherein said alkyl radicals and the radicals derived therefrom are optimally substituted one or more times—and in the case of fluorine up to the maximum number of—by halogen and provided that if R^3 is halogen, R^2 is not (C_3–C_5)-cycloalkyl

wherein heterocyclyl means a heteroaromatic or heteroaliphatic ring system, where a heteroaromatic ring system is a (C_6–C_{14}) aryl group in which at least one CH group is replaced by N and/or at least two adjacent CH groups are replaced by S, NH or O and heteroaliphatic ring system is a (C_3–C_8)-cycloalkyl radical in which at least one carbon unit has been replaced by O, S or a group N^{11}, and R^{11} is hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy or aryl.

5,852,024

TREATMENT AND PREVENTION OF ADHESIONS

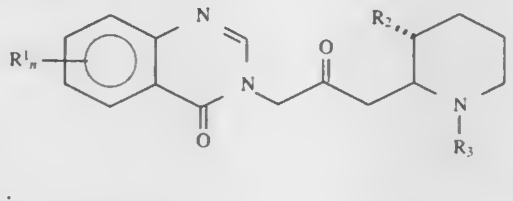
Mark Pines, Rehovot, and Arnon Nagler, Jerusalem, both of Israel, assignors to Hadasit, Jerusalem, and Agricultural Research Organization, Bet Pagan, both of Israel

Filed Feb. 11, 1997, Ser. No. 797,701

Int. Cl.^{6} A61K *31/505*

U.S. Cl. 514—259 **20 Claims**

1. A method for the treatment of an adhesion in a subject, the adhesion forming a fibrous bridge between normally separated tissues, with the proviso that the adhesion is not a fibrous peritendinous adhesion, the method comprising the step of administering to the subject a pharmaceutically effective amount of a compound having a formula:



wherein:,

R_1 is a member of the group consisting of hydrogen, halogen, nitro, benzo, lower alkyl, phenyl and lower alkoxy;

R_2 is a member of the group consisting of hydroxy, acetoxy and lower alkoxy, and

R_3 is a member of the group consisting of hydrogen and lower alkenoxy-carbonyl, such that the fibrous bridge is treated.

5,852,025

COMPOSITIONS AND METHODS FOR CONTROLLING PEST INSECTS

Heather N. Wren, New Castle, Va., assignor to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 457,705, Jun. 1, 1995, Pat. No. 5,620,982, which is a division of Ser. No. 291,072, Aug. 17, 1994, Pat. No. 5,514,681. This application Apr. 9, 1997, Ser. No. 833,758

Int. Cl.^{6} A01N *25/00;43/54;43/60;43/90*

U.S. Cl. 514—262 **30 Claims**

1. A composition for controlling an insect pest which salvages, stores, or excretes its nitrogenous wastes via the purine metabolic pathway, comprising a purine selected from the group consisting of xanthine, hypoxanthine, guanine, and mixtures thereof, in an amount of about 1.0%, by weight, and a dihydrofolate reductase inhibitor selected from the group consisting of trimethoprim, methotrexate, and mixtures thereof, in an amount of about 0.1% to about 6.0%, by weight.

5,852,026

Patent Not Issued For This Number

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5,852,027

ANTIVIRAL 1,3-DIOXOLANE NUCLEOSIDE ANALOGUES

Dennis C. Liotta, McDonough; Raymond F. Schinazi, Decatur, both of Ga., and Woo-Baeq Chol, North Brunswick, N.J., assignors to Emory University, Atlanta, Ga.

PCT No. PCT/US92/01393, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO92/14729, PCT Pub. Date Sep. 3, 1992

Continuation-in-part of Ser. No. 659,760, Feb. 22, 1991, Pat. No. 5,210,085, Ser. No. 803,028, Dec. 6, 1991, Pat. No. 5,276,151, and Ser. No. 736,089, Jul. 26, 1991, abandoned. This PCT application Feb. 21, 1992, Ser. No. 150,012

Int. Cl.^{6} A61K *31/505;* **C07D** *239/02*

U.S. Cl. 514—274 **7 Claims**

1. (±)-2'-Deoxy-5-fluoro-3'-oxacytidine.

4. A pharmaceutical composition that comprises 2'-deoxy-5-fluoro-3'-oxacytidine, its (−) or (+) enantiomer or a pharmaceutically acceptable salt thereof in combination with a pharmaceutically acceptable carrier.

5. A method for the treatment of HIV infection in human cells, comprising administering an HIV-effective amount of β-2'-deoxy-5-fluoro-3'-oxacytidine or its pharmaceutically acceptable salt, optionally in a pharmaceutically acceptable carrier.

5,852,028

PYRIMIDINE CARBOXYLATES AND RELATED COMPOUNDS AND METHODS FOR TREATING INFLAMMATORY CONDITIONS

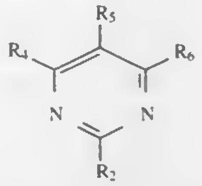
Mark J. Suto; Leah M. Gayo, both of San Diego; Moorthy S. S. Palanki, Encinitas, and Lynn J. Ransone-Fong, San Diego, all of Calif., assignors to Signal Pharmaceuticals, Inc., San Diego, Calif.

Filed Dec. 18, 1995, Ser. No. 574,406

Int. Cl.^{6} C07D *239/24;* **A61K** *31/505*

U.S. Cl. 514—275 **39 Claims**

1. A compound having the structure:

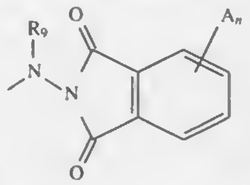


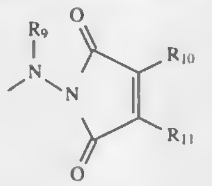
wherein

R_2 is R_{2a} when R_4 is R_{4a}, and R_2 is R_{2b} when R_4 is R_{4b};

R_{2b} and R_{4a} are selected from hydrogen, halogen and an unsubstituted or substituted C_{1-8}alkyl, C_{6-12}aryl, C_{7-12}aralkyl, C_{3-12}heterocycle or C_{4-16}heterocycle;

R_{2a} and R_{4b} are selected from the following chemical moieties:





R_5 is selected from —C(=)OR_7 and —C(=O)R_8;

R_6 is selected from hydrogen, —CH_3, —$CH_2C_6H_5$, —F and —CF_3;

R_7 is selected from hydrogen and a unsubstituted or substituted C_{1-8}alkyl, C_{6-12}aryl and C_{7-12}aralkyl;

R_8 is an unsubstituted or substituted C_{1-8}alkyl, C_{6-12}aryl or C_{7-12}aralkyl;

R_9 is selected from hydrogen and an unsubstituted C_{1-8}alkyl or C_{7-14}aralkyl;

R_{10} and R_{11} are the same or different and independently selected from hydrogen and an unsubstituted or substituted C_{1-8}alkyl or C_{6-12}aryl; and

n is an integer from 0 to 4 and each occurrence of A is a substituent independently selected from halogen, —OH, —R, —OR, —COOH, —COOR, —COR, —$CONH_2$, —NH_2, —NHR, —NRR, —SH, —SR, —SOOR, —SOOH and —SOR, where each occurrence of R is independently selected from an unsubstituted or substituted C_{1-8}alkyl, C_{6-12}aryl or C_{7-12}aralkyl.

5,852,029

AZA SPIRO COMPOUNDS ACTING ON THE CHOLINERGIC SYSTEM WITH MUSCARINIC AGONIST ACTIVITY

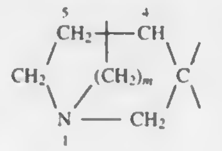
Abraham Fisher, Holon; Yishal Karton, Ness-Ziona; Daniele Marciano, Ramat-Hasharon; Dov Barak, Rehnvot, and Haim Meshulam, Bat Yam, all of Israel, assignors to Israel Institute for Biological Research, Nessziona, Israel

Continuation-in-part of Ser. No. 94,855, Jul. 20, 1993, Pat. No. 5,534,520, which is a continuation-in-part of Ser. No. 685,397, Apr. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 507,708, Apr. 10, 1990, abandoned. This application Jan. 18, 1996, Ser. No. 627,222

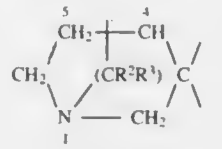
Int. Cl.^{6} C07D *491/10;491/20;* **A61K** *31/445;31/46*

U.S. Cl. 514—278 **9 Claims**

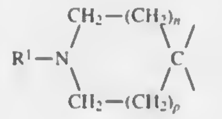
1. A spiro-compound, including pharmaceutically acceptable salts thereof, enantiomers and racemates thereof and quaternary compounds derived therefrom when said compound has a tertiary nitrogen atom, wherein said spiro-compound contains a five-membered moiety in which a spiro-junction exists at a carbon atom thereof and simultaneously at a carbon atom of a saturated ring system containing one nitrogen atom, wherein said five-membered moiety is selected from the group consisting of 3-ethylhydantoin, 1-acetylhydantoin, 3-methylhydantoin, 3-propargylhydantoin, 2,4-dithiohydantoin, 2-thiohydantoin, oxazolidine-2-thione, 3-ethyloxazolidine-2-one, oxazolidine-2,4-dione, 3-ethyloxazolidine-2,4-dione, 2-methyl-1,4-oxazolidine-3-one, 2-methyl-1,4-thiazolidine-3-one, 2,4-dimethyl-1,4-thiazolidine-3-one, 2-ethyl-1,4-thiazolidine-3-one, 2-ethyl-1,4-thiazolidine-3-one, 2-methyl-3-oxo-1,4-thiazolidine-1-oxide, 5-methyl-1,3-dioxolane-4-one, N-methylsuccinimide, N-ethyl-succinimide, 3-t-butylhydantoin, 3-(4-pyrrolidino-2 -butynyl)hydantoin, 3-(2-butynyl)-hydantoin, 2,5-bis(methylthio)-1H-imidazole, 3-ethyl-4 -thiohydantoin, 4-methylthioimidazoline-2-thione, 3-ethyl-2,4-dithiohydantoin, 4-ethylthio-3-imidazoline-2-thione, 1-ethyl-2-ethylthio-2-imidazoline-5 -thione, 2-thio-4β-hydroxyethyliminohydantoin, 2,5-bis(aminomethyl)-4H-imidazole, 2-methyl-2-thiazoline, 2-methyl-2-imidazoline, 2-methyl-2-oxazoline-4-one, 2-methyl-4H(5H)-imidazole-5(4)-one, 2-methylthio-5-methoxy-4H-imidazole, 2-methylthio-5-amino-4H-imidazole, 2-methylthio-5-aminomethyl-4H-imidazole, 2-thione-3-ethylhydantoin, 2-thione-3-t-butylhydantoin, 2-methylthio-2-imidazoline-5(4)-one), 1-ethyl-2-ethylthio-2-imidazoline-5-one and 1-ethyl-2-imidazoline-5-one; and wherein said saturated ring system containing one nitrogen atom is selected from the group consisting of moieties K, L, M, N and P:



(K)



(L)



(M)

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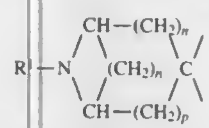
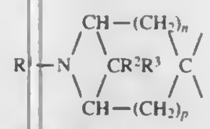


(N)



(P)

wherein each such moiety is unsubstituted or substituted by 1–3 substituents selected from C_{1-6} alkyl and hydroxyl; wherein the bridge in structures K and L is attached at one end to position 1 and at the other end to position 4 or 5; wherein m is 1, 2 or 3, and n and p are each independently 0, 1, 2, or 3, provided that n+p=1–3; wherein R^1 is hydrogen, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl, C_{3-7}-cycloalkyl, C_{1-6}-alkyl substituted by 1–6 halogen atoms, hydroxy-C_{1-6}-alkyl, C_{1-6}-alkoxy, C_{1-6}alkylthio, C_{1-6}alkyl, carboxy-C_{1-6}alkyl, (C_{1-6}alkoxy)carbonyl-C_{1-6}alkyl, amino-C_{1-6}-alkyl, mono(C_{1-6}-alkyl) amino C_{1-6}-alkyl, di-C_{1-6}-alkyl, 2-oxo-pyrrolidin-1-yl-methyl, aryl, diarylmethylol, C_{1-6}-alkyl substituted by one or two aryl groups C -alkanoyl or arylcarbonyl; wherein aryl is phenyl or phenyl substituted by 1–3 substituents selected from the group consisting of halogen, C_{1-6}-alkyl, C_{1-6}-alkoxy and CF_3; and wherein R^2 and R^3 are independently C_{1-4} alkyl; wherein when said saturated ring system is M, n is 1, p is 1 and R^1 is hydrogen or methyl, said five-membered moiety is not 3-ethylhydantoin, 1-acetylhydantoin, 3-methylhydantoin, 3-propargylhydantoin, 2,4-dithiohydantoin, 2-thiohydantoin, oxazolidine-2-thione, 3-ethyloxazolidine-2-one, 3-ethyl-4-thiohydantoin, 4-methylthiomidazoline-2-thione, 3-ethyl-2,4-dithiohydantoin, 4-ethylthio-3-imidazoline-2-thione, 1-ethyl-2-ethylthio-2-imidazoline-5-thione, 2-thio-4β-hydroxyethyliminohydantoin, 2-methyl-2-thiazoline, 2-methyl-2-imidazoline, 2-methyl-2-oxazoline-4-one.

5,852,030

INDOLE DERIVATIVES, PROCESS FOR PRODUCING THE SAME AND MEDICINAL USES OF THE SAME

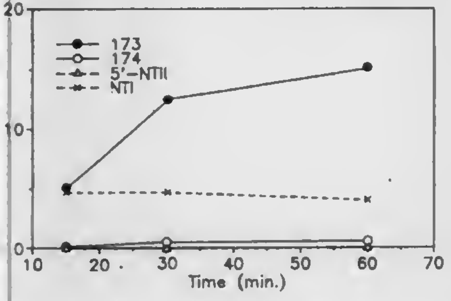
Hiroshi Nagase; Akira Mizusuna; Koji Kawai, all of Kamakura, and Izumi Nakatani, Yokohama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 244,198, May 27, 1994. This application Sep. 10, 1996, Ser. No. 709,835

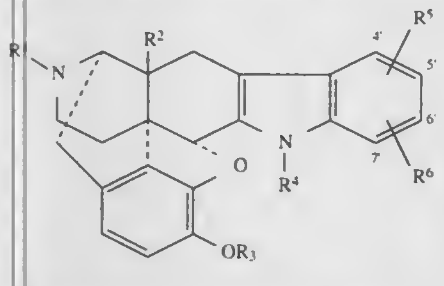
Claims priority, application Japan, Sep. 29, 1992, 4-259841

Int. Cl.^{6} C07D *489/10;* **A61K** *31/485*

U.S. Cl. 514—279 **3 Claims**



1. An indole derivative represented by the formula (I):



wherein R^1 represents cyclopropylmethyl or allyl;

R^2 represents hydrogen, hydroxy, C_1–C_5 alkanoyloxy or C_1–C_5 alkoxy;

R^3 represents hydrogen, C_1–C_5 alkyl, C_1–C_5 alkanoyl or benzyl;

R^4 represents hydrogen, C_1–C_5 alkyl or benzyl;

R^5 represents $(CH_2)_nNR^8R^9$ or $CONR^8R^9$ wherein n represents an integer of 1–3, R^8 and R^9 are the same or different and represent C_1–C_5 alkyl, or C_4–C_6 cycloalkylalkyl and

R^6 represents hydrogen

or pharmaceutically acceptable acid addition salts thereof.

5,852,031

2,7-SUBSTITUTED OCTAHYDRO-1H-PYRIDO[1,2-A]PYRAZINE DERIVATIVES

Kishor A. Desai, Ledyard; Anton F. J. Fliri, Norwich, and Mark A. Sanner, Old Saybrook, all of Conn., assignors to Pfizer Inc., New York, N.Y.

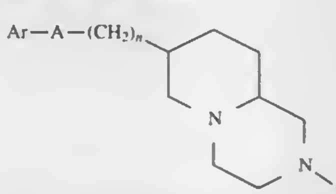
PCT No. PCT/IB95/00689, § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO96/10571, PCT Pub. Date Apr. 11, 1996

Continuation of Ser. No. 315,470, Sep. 20, 1994, abandoned. This PCT application Aug. 24, 1995, Ser. No. 809,145

Int. Cl.^{6} C07D *471/04;* **A61K** *31/505*

U.S. Cl. 514—279 **17 Claims**

1. A compound of the formula



I

wherein Ar is phenyl, naphthyl, benzoxazolonyl, indolyl, indolonyl, benzimidazolyl, quinolyl, furyl, benzofuryl, thienyl, benzothienyl, oxazolyl, benzoxazolyl;

Ar^1 is phenyl, pyridinyl, pyridazinyl, pyrimidinyl, or pyrazinyl;

A is O, S, SO, SO_2, C=O, CHOH, or -(CR^3R^4)-;

n is 0, 1 or 2;

each of Ar and Ar^1 may be independently and optionally substituted with one to four substituents independently selected from the groups consisting of fluoro, chloro, bromo, iodo, cyano, nitro, thiocyano, —SR, —SOR, —SO_2R, —NHSO_2R, -(C_1–C_6)alkoxy, —NR^1R^2, —NRCOR^1, —CONR^1R^2, Ph, —COR, COOR, -(C_1–C_6)alkyl, -(C_1– C_6)alkyl substituted with one to six halogens, -(C_3–C_6)cycloalkyl, and trifluoromethoxy;

each and every R, R^1, and R^2 is independently selected from the group consisting of hydrogen, -(C_1–C_6)alkyl, -(C_1–C_6)alkyl substituted with one to thirteen halogens selected from fluorine, chlorine, bromine and iodine, phenyl, benzyl, -(C_2–C_6)alkenyl, -(C_3– C_6)cycloalkyl, and -(C_1–C_6)alkoxy;

each and every R^3 and R^4 is independently selected from a group consisting of hydrogen, methyl, ethyl, n-propyl, and i-propyl;

diastereomeric and optical isomers thereof; and

pharmaceutically acceptable salts thereof.

5,852,032

METHOD OF TREATING NICOTINE DEPENDENCE

Barbara J. Mason, Coconut Grove, Fla., assignor to The University of Miami, Miami, Fla.

Filed Nov. 20, 1996, Ser. No. 752,955

Int. Cl.^{6} A61K *31/485*

U.S. Cl. 514—282 **19 Claims**

1. A method of treating a human subject afflicted with nicotine dependence comprising administration of nalmefene to decrease the nicotine dependence of the human subject.

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5,852,033
METHODS OF TREATMENT USING LAMELLARIN-CLASS ALKALOIDS

Jose Luis Fernandez Puentes, Leon; Dolores Garcia Gravalos, Madrid, and Ana Rodriguez Quesada, Malaga, all of Spain, assignors to Pharma Mar, s.a., Madrid, Spain

Filed Jun. 29, 1995, Ser. No. 496,465
Int. Cl.^{6} A61K *31/44*
U.S. Cl. 514—283 **15 Claims**

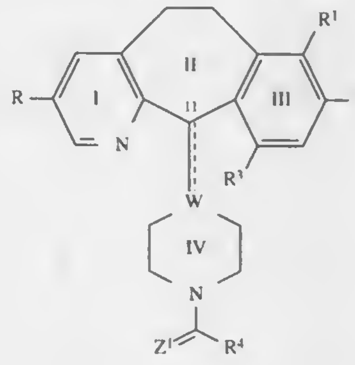
1. A method of treating multidrug resistant tumors in mammals, comprising administering to a patient in need of such treatment, an effective MDR inhibiting amount of an anti-MDR lamellarin compound selected from the group consisting of lamellarin A, B, D-triacetate, I, I-acetate, l-methylate, J, K, K-triacetate, L, L-triacetate, M, M-triacetate, and N-triacetate or mixtures thereof.

5,852,034
BENZO(5,6)CYCLOHEPTAPYRIDINE CYCLIC UREAS AND LACTAMS USEFUL AS FARNESYL PROTEIN TRANSFERASE INHIBITORS

F. George Njoroge, Union; Bancha Vibulbhan, Kenilworth; Patrick A. Pinto, Morris Plains, and Viyyoor M. Girijavallabhan, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 17, 1997, Ser. No. 877,399
Int. Cl.^{6} A61K *31/44;31/445;* **C07D** *401/04;403/04*
U.S. Cl. 514—290 **14 Claims**

1. A compound represented by the structural formula



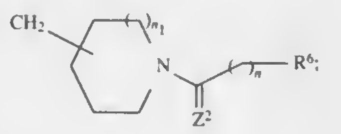
or an N-oxide thereof, or a pharmaceutically acceptable salt or solvate thereof, wherein:

R and R^2 are independently selected from halo;

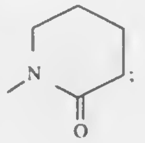
R^1 and R^3 are independently selected from the group consisting of H and halo, provided that at least one of R^1 and R^3 is H;

W is CH or C when the double bond is present at the C-11 position;

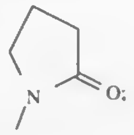
R^4 is —$(CH_2)_n$—R^5 or



R^5 is



R^6 is R^5 or

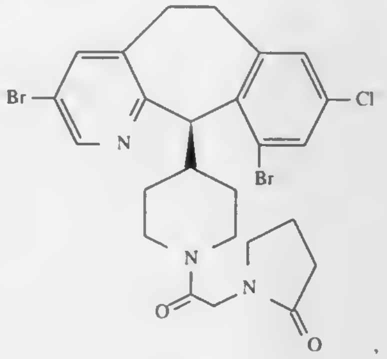


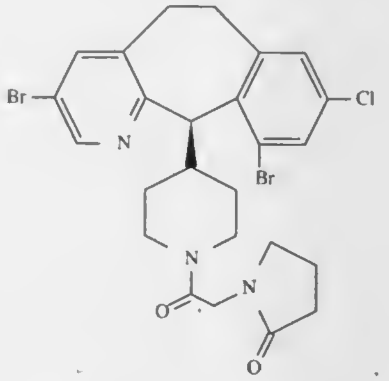
Z^1 and Z^2 are independently selected from the group consisting of =O and =S;

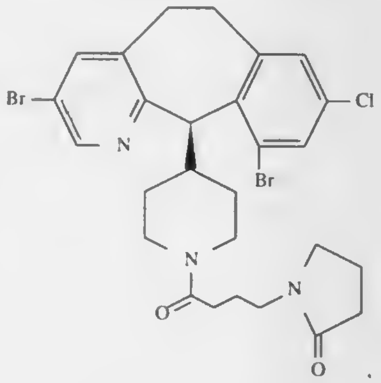
n is 1–6; and

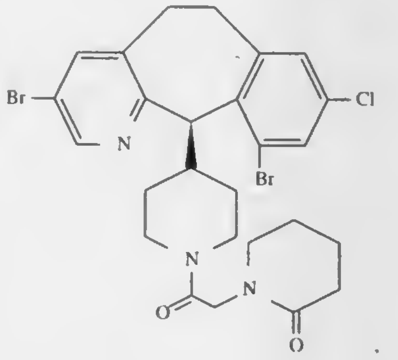
n_1 is 0 or 1.

13. A compound of claim 1 selected from the group consisting of









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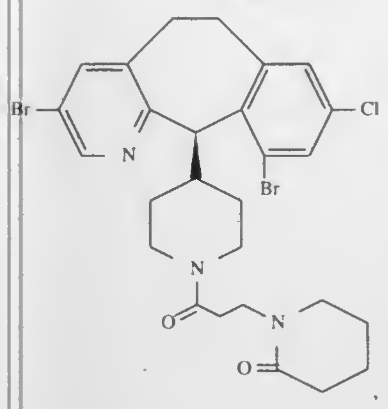

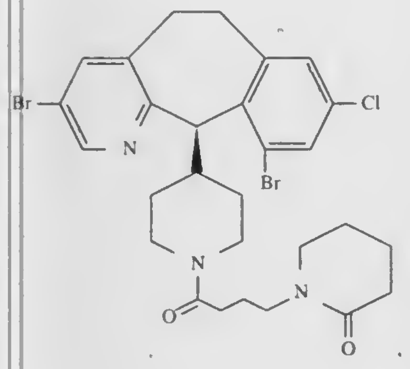

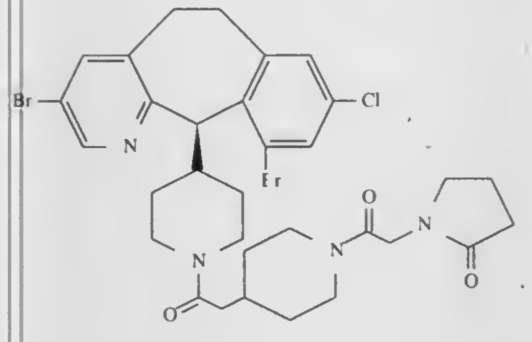

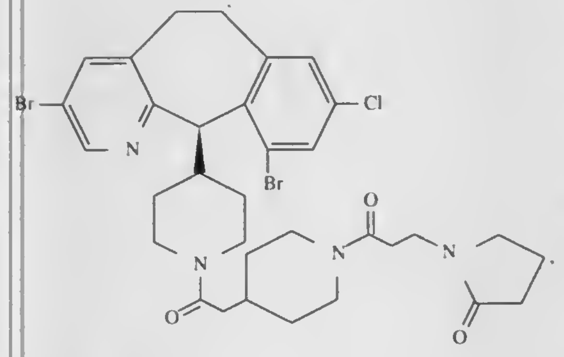

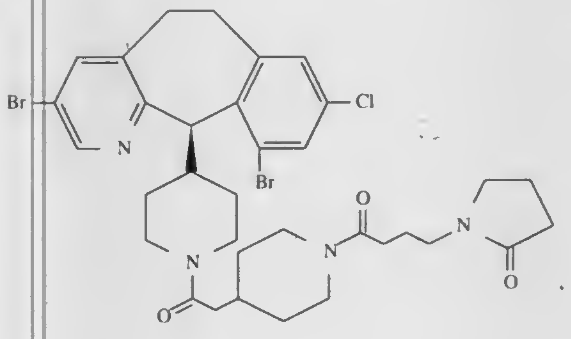

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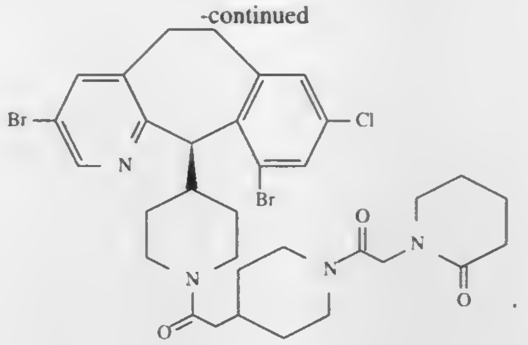
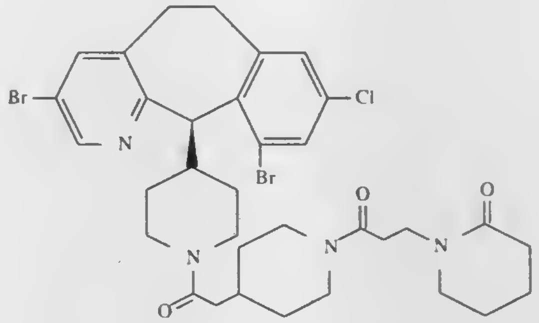
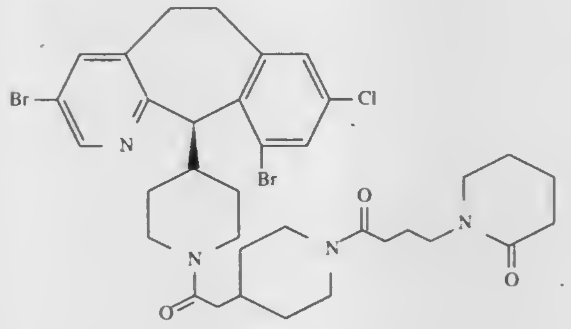




and

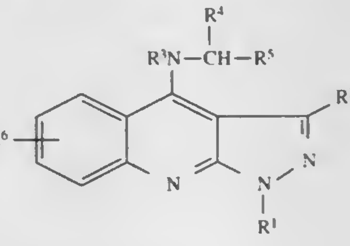


5,852,035
METHOD FOR INHIBITING NEOPLASTIC CELLS AND RELATED CONDITIONS BY EXPOSURE TO SUBSTITUTED N- ARYLMETHL AND HETEROCYCLMETHYL-1H-PYRAZOLO (3,4-B) QUINOLIN-4-AMINES

Rifat Pamukcu, Spring House, and Gary A. Piazza, Doylestown, both of Pa., assignors to Cell Pathways, Inc., Horsham, Pa.

Filed Dec. 12, 1997, Ser. No. 989,357
Int. Cl.^{6} A61K *31/44;31/535*
U.S. Cl. 514—293 **15 Claims**

1. A method for inhibiting the growth of neoplastic cells comprising exposing the cells sensitive to such a compound to a growth inhibiting effective amount of a compound of Formula I:



I

wherein:

R_1 is lower-alkyl;

R_2 is hydrogen, or lower-alkyl;

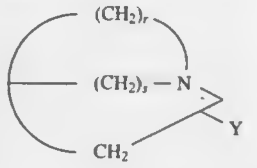
R_3 is hydrogen, or lower-alkyl;
R_4 is hydrogen, or lower-alkyl;
R_5 is phenyl (or phenyl substituted by from one to three, the same or different, substituents selected from the group consisting of lower-alkoxy, cyano, hydroxy, 4-morpholinylloweralkoxy, lower-alkyl, and halogen), phenyl-lower-alkyl, pyridinyl, furanyl, isoxazolyl, thienyl, oxazolyl, thiazolyl, pyridazinyl, pyrazinyl, and pyrirmidinyl; or R_4 and R_5 together with the CH group to which they are bonded form an indanyl ring; and
R_6 is from one to three, the same or different, substituents selected from the group consisting of hydrogen, lower-alkoxy, hydroxy, lower-alkyl, and halogen; or a pharmaceutically acceptable acid-addition salt and/or hydrate thereof, or, where applicable, enantiomer or a racemic mixture.

5,852,036
METHOD FOR TREATING ANXIETY

Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 333,088, Oct. 31, 1994, Pat. No. 5,574,028. This application May 23, 1995, Ser. No. 448,278
Int. Cl.^{6} A61K *31/44*
U.S. Cl. 514—299 **4 Claims**

1. A method for treating anxiety comprising administering to a human in need thereof an antianxiety dose of a compound of the formula:



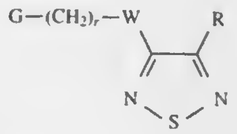
wherein
one of X and Y is hydrogen and the other is Z;
Z is a 5-membered aromatic ring comprising a 3-membered divalent residue and two or three nitrogen atoms, wherein any amino nitrogen can be substituted by a C_{1-2} alkyl, cyclopropyl or propargyl group;
r is 2 or 3; and
s is 1 or 2;
provided that, when Y is hydrogen, s is 1; or a pharmaceutically acceptable salt or solvate of the compound.

5,852,037
METHOD FOR TREATING ANXIETY

Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

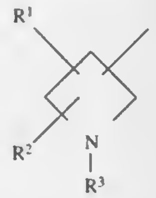
Filed Oct. 22, 1996, Ser. No. 735,359
Int. Cl.^{6} A61K *31/44;31/41;31/42;31/45*
U.S. Cl. 514—305 **34 Claims**

1. A method for treating anxiety in a human comprising administering to the human an antianxiety dose of a compound of formula I

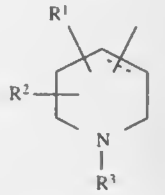


(I)

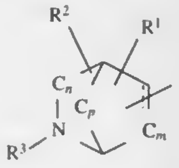
wherein
W is oxygen or sulfur;
R is hydrogen, amino, halogen, NHR^6, NR^{6}R^7, R^4, —OR^4, —SR^4, —SOR^4, —SO$_2$R^4, C_{3-10}-cycloalkyl, C_{4-12}-(cycloalkyalkyl), —Z—C_{3-10}-cycloalkyl, —Z—C_{4-12}-(cycloalkylalkyl) , —OR^{5}Y, —SR^{5}Y, —OR^{5}ZY, —SR^{5}ZY, —OR^{5}ZR^4, —S—R^5—Z—R^4, or phenyl or benzyloxycarbonyl, each of which is optionally substituted with one or more substituents independently selected from halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF$_3$, —CF$_3$, —CONH$_2$ or —CSNH$_2$;
R^4 is C_{1-15}-alkyl, C_{2-15}-alkenyl, or C_{2-15}-alkynyl, each of which is optionally substituted with one or more substituents independently selected from halogen, —CF$_3$, —CN, Y, phenyl and phenoxy, wherein phenyl or phenoxy is optionally substituted with one or more substituents independently selected from halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF$_3$, —CF$_3$, —CONH$_2$ and —CSNH$_2$;
Z is oxygen or sulphur,
R^5 is C_{1-15}-alkylene, C_{2-15}-alkenylene, or C_{2-15}-alkynylene;
Y is a 5 or 6 membered heterocyclic group;
G is an azacyclic or azabicyclic ring system selected from:



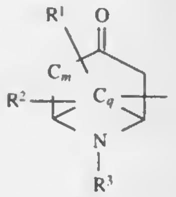
het-1



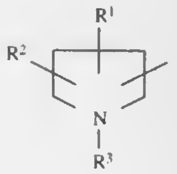
het-2



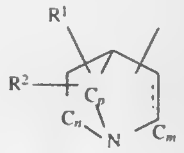
het-3



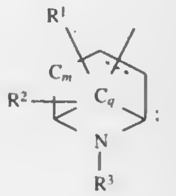
het-4



het-5



het-6



het-7

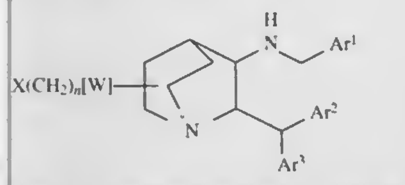
or G is C_3–C_8 cycloalkyl optionally substituted with R^1 substituents; or C_{1-6}-alkyl optionally substituted with —NR^{6}R^7;
R^1 and R^2 independently are hydrogen, C_{1-15}-alkyl, C_{2-5}-alkenyl, C_{2-5}-alkynyl, C_{1-10}-alkoxy, or C_{1-5}-alkyl having one or more —OH, —COR$^{6'}$, CH$_2$OH, halogen, —NH$_2$, carboxy or phenyl substituents;
R^3 is hydrogen, C_{1-5}-alkyl, C_{2-5}-alkenyl or C_{2-5}-alkynyl;
R^6 and R^7 independently are hydrogen or C_{1-6}-alkyl; or R^6 and R^7 together with the nitrogen atom form a 4- to 6-membered ring;
R$^{6'}$ is hydrogen or C_{1-6}-alkyl;
m, n, p, and r, independently, are 0, 1 or 2;
q is 1 or 2; and
- - - is a single or double bond; or
a pharmaceutically acceptable salt or solvate thereof.

5,852,038
SUBSTITUTED 3-AMINOQUINUCLIDINES

Fumitaka Ito, Chita-Taketoyo; Toshihide Kokura, Handa; Masami Nakane, Showakyu; Kunio Satake, Handa, and Hiroaki Wakabayashi, Kiriya, all of Japan, assignors to Pfizer Inc, New York, N.Y.

Division of Ser. No. 175,353, Dec. 20, 1993, Pat. No. 5,716,965. This application Nov. 18, 1996, Ser. No. 950,043
Claims priority, application Japan, May 22, 1991, 2-46826
Int. Cl.^{6} A61K *31/445;* C07D *453/02*
U.S. Cl. 514—305 **23 Claims**

1. A compound having the formula



(I)

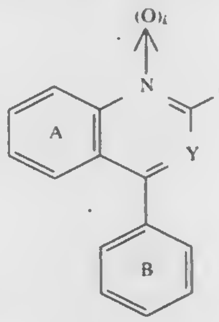
wherein X is optionally substituted CONR^{1}R^2 or CONR^{1}OR^2; and n is an integer from zero to six;
Ar^1, Ar^2 and Ar^3 are each, independently, optionally substituted aryl, wherein said aryl is selected from phenyl, naphthyl, pyridyl, quinolyl, thienyl, furyl, phenoxyphenyl, oxazolyl, tetrazolyl, thiazolyl, imidazolyl and pyrazolyl;
R^1 and R^2 are independently selected from hydrogen, optionally substituted (C_1–C_6)alkyl, optionally substituted (C_1–C_6)alkoxy, optionally substituted (C_3–C_8)cycloalkyl, optionally substituted aryl, wherein said aryl is selected from phenyl, naphthyl, pyridyl, quinolyl, thienyl, furyl, phenoxyphenyl, oxazolyl, tetrazolyl, thiazolyl, imidazolyl and pyrazolyl; and optionally substituted (C_1–C_5)heterocyclic groups, wherein said heterocyclic groups are selected from pyrrolidino and piperidino and when X is CONR^{1}R^2, R^1 and R^2 may form, together with the nitrogen to which they are attached, a morpholino or thiamorpholino group;
and wherein the substituents on the foregoing substituted alkyl, cycloalkyl and alkoxy groups are independently selected from halo, nitro, amino, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, trifluoromethyl and trifluoromethoxy;
and wherein the substituents on the foregoing substituted (C_1–C_5) heterocyclic groups are attached to a sulfur or nitrogen atom on the ring and are independently selected from oxygen, di-oxygen and (C_1–C_4)alkyl when attached to a ring sulfur atom, and are independently selected from oxygen and (C_1–C_4)alkyl when attached to a ring nitrogen atom;
and wherein the substituents on said substituted Ar^1 groups are independently selected from (C_1–C_6)alkyl optionally substituted with from one to three halo groups, (C_1–C_6)alkoxy optionally substituted with from one to three halo groups, (C_1–C_6)alkylsulfinyl, (C_2–C_6)alkenyl, (C_1–C_6)alkylthio, (C_1–C_6)alkylsulfonyl, (C_1–C_6)alkylsulfonylamino, and di-(C_1–C_6)alkylamino wherein one or both of the alkyl groups may be optionally substituted with a (C_1–C_6)alkylsulfonyl, or (C_1–C_6)alkylsulfinyl group;
and wherein the substituents on said substituted Ar^2 and Ar^3 groups are independently selected from (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkylthio, (C_1–C_4)alkylsulfinyl, di-(C_1–C_4)alkylamino, trifluoromethyl and trifluoromethoxy;
or a pharmaceutically acceptable salt of such compound.

5,852,039
PHARMACEUTICAL COMPOSITION CONTAINING QUINOLINE OR QUINAZOLINE DERIVATIVES

Takashi Sohda, Takatsuki; Shigehisa Taketomi, Ikeda, and Atsuo Baba, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

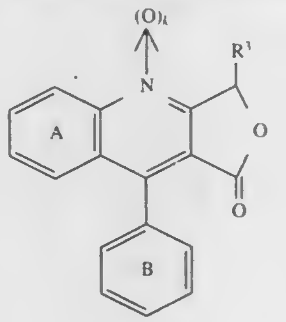
Continuation of Ser. No. 756,189, Nov. 25, 1996, Pat. No. 5,719,157, which is a continuation of Ser. No. 265,793, Jun. 27, 1994, abandoned. This application Jan. 15, 1997, Ser. No. 783,079
Claims priority, application Japan, Jun. 29, 1993, 5-158652
Int. Cl.^{6} A61K *31/47;* C07D *215/14;215/00*
U.S. Cl. 514—311 **35 Claims**

1. A compound of the formula (I'):

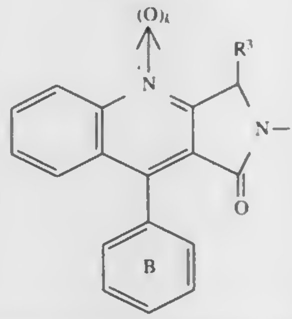


(I')

wherein
Y is C-G in which G is an amidated carboxyl group, or hydroxymethyl group;
R is an optionally substituted hydrocarbon group or optionally substituted heterocyclic group;
X is an oxygen atom or optionally oxidized sulfur atom;
n is 1;
k is 0 or 1;
each of the rings A and B may optionally be substituted; and



(II)



(III)

or a pharmaceutically acceptable salt thereof.

5,852,040

NEUROPROTECTIVE 3,4-DIHYDRO-2(1H)-QUINOLONE COMPOUNDS

Bertrand Leo Chenard, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

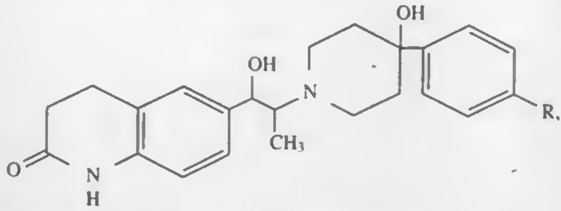
PCT No. PCT/US93/06827, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/10166, PCT Pub. Date May 11, 1994

Continuation of Ser. No. 969,642, Oct. 30, 1992, abandoned. This PCT application Jul. 23, 1993, Ser. No. 416,804

Int. Cl.^{6} A61K *31/47;* **C07D** *401/06*

U.S. Cl. 514—312 **15 Clalms**

1. A compound having the formula I



(I)

the optical isomers of compounds of formula I, and the pharmaceutically acceptable salts thereof wherein

R is selected from the group consisting of CF_3, —$O(C_1)$alkyl substituted by 1 to 3 fluoro atoms, —$O(C_2)$alkyl substituted by 1 to 5 fluoro atoms, and —$O(C_3)$alkyl substituted by 1 to 7 fluoro atoms.

5,852,041

SUBSTITUTED PYRIDINES USEFUL AS MODULATORS OF ACETHYLCHOLINE RECEPTORS

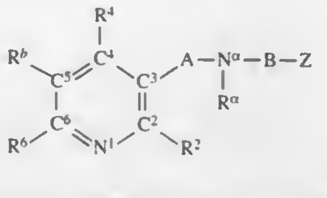
Nicholas D. Cosford, La Jolla, and Jean-Michel Vernier, San Diego, both of Calif., assignors to SIBIA Neurosciences, Inc., La Jolla, Calif.

Division of Ser. No. 419,597, Apr. 7, 1993, Pat. No. 5,585,388. This application Jun. 7, 1995, Ser. No. 486,324

Int. Cl.^{6} A61K *31/44;* **C07D** *213/02*

U.S. Cl. 514—351 **23 Claims**

1. A compound having the structure:



1

wherein:

A is a 2, 3, 4, 5 or 6 atom bridging species linking C^3 of the pyridine ring with N^α,

wherein A is selected from a —O—, —C(O)—, —C(S)—, —S—, —S(O)— and/or —$S(O)_2$— containing alkylene moiety; provided, however, that the heteroatom contained in A is separated from Na by at least two carbon atoms; and further provided that when A is a —C(O)— or —C(S)— containing alkylene moiety, at least one methylene unit intervenes between the —C(O)— or —C(S)— moiety of A and N^α;

B is a 1, 2, 3 or 4 atom bridging species linking No with Z,

wherein B is selected from a straight chain or branched chain alkylene moiety having up to four atoms in the backbone thereof, or a substituted alkylene moiety, a straight chain or branched chain alkenylene moiety having up to four atoms in the backbone thereof, or a substituted alkenylene moiety, an alkenylene moiety having up to four atoms in the backbone thereof, or a substituted alkynylene moiety, —O—, —C(O)—, —C(S)—, —$N^\beta(R^\beta)$—, —S—, —S(O)— and/or —$S(O)_Z$— containing alkylene moiety, wherein R^β is hydrogen or a lower alkyl moiety; provided however, that any heteroatom contained in B is separated from N^α by at least 2 carbon atoms, and further provided that when B is a —C(O)— or —C(S)— containing alkylene moiety, at least one methylene unit intervenes between the —C(O)— or —C(S)— moiety and N^α; and further provided that N^α is not conjugated with an alkenyl or aklynyl moiety;

Z is selected from hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, hydroxyalkyl, alkenyl, substituted alkonyl, alkynyl, substituted alkynyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl arylaikyl, substituted arylalkyl, arylalkenyl, substituted arylalkenyl, arylalkynyl, substituted arylalkynyl, heterocyclic, substituted heterocyclic, trifluoromethyl, cyano, cyanomethyl, nitro, carboxyl, carbamate, sulfonyl, sulfonamide, aryloxyalkyl, or —OR^Z, wherein R^Z is hydrogen, lower alkyl or aryl;

R^α is selected from hydrogen or lower alkyl; and

R^2, R^4, R^5 and each independently selected from hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenoyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, arylalkenyl, substituted arylalkenyl, arylalkynyl, substituted arylalkynyl, heterocyclic, substituted heterocyclic, trifluoromethyl, halogen, cyaro, nitro;

—S(O)R', —$S(O)_2$R', —$S(O)_2$OR' or —$S(O)_2$NHR', wherein each R' is independently hydrogen, lower alkyl, alkenyl, alkynyl or aryl; provided, however, that when R^2, R^4, R^5 or R^6 is —S(O)R', R' is not hydrogen; and further provided that when R' is alkenyl or alkynyl, the site of unsaturation is not conjugated with a heteroatom;

—C(O)R", wherein R" is selected from hydrogen, alkyl, substituted alkyl, alkoxy, alkylamino, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, aryloxy, arylamino, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, arylalkenyl, substituted arylalkenyl, arylalkynyl, substituted arylalkynyl, heterocyclic, substituted heterocyclic or trifluoromethyl, provided, however, that the carbonyl functionality is not conjugated with an alkenyl or alkynyl functionality;

—OR'" —NR'''_2, wherein each R'" is independently selected from hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, arylalkenyl, substituted arylalkenyl, arylalkynyl, substituted arylalkynyl, aroyl, substituted aroyl, heterocyclic, substituted heterocyclic, acyl, trifluoromethyl, alkylsulfonyl or aryleulfonyl, provided, however, that the —OR'" —NR'''_2 functionality is not conjugated with an alkenyl or alkynyl functionality;

—SR"", wherein R"" is selected from hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, arylalkenyl, substituted arylalkenyl, arylalkynyl, substituted arylalkynyl, heterocyclic, substituted heterocyclic or trifluoromethyl, provided, however, that the —SR"" functionality is not conjugated with an alkenyl or alkynyl functionality; or

—SiR'''''_3, wherein R'"" is selected from alkyl or aryl;

provided, however, that the following compounds are excluded from the definition of Formula 1: compounds wherein A is —O—CH_2CH_2— or —O—$CH_2CH_2CH_2$—, B is —CH_2—, Z is H, R^α is —CH_3—, and each of R^2, R^4, R^5 and R^6 are H; compounds wherein A is —C(O)—$(CH_2)_{1-5}$—, B is alkyl, Z is absent or H, R" is H or alkyl, and each of R^2, R^4, R^5 and R^6 are alkyl or halo; and compounds wherein A is —C(O)—O—$(CH_2)_{1-4}$—, B is —CH_2— or —CH_2—CH_2—, Z is H, R" is —CH_3— (when B is —CH_2—) or —CH_2CH_3 (when B is —CH_2—CH_2—), and the R^2, R^4, R^5 and R^6 substituents are (1) methyl, hydrogen, hydrogen and hydrogen, respectively; or (2) hydrogen, hydrogen, hydrogen and tnethyl; respectively; or (3) hydrogen, hydrogen, phenyl and hydrogen or methyl, respectively; or (4) methyl, hydrogen, phenyl and methyl, respectively.

5,852,042

SUBSTITUTED PYRIDINES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS PESTICIDES AND FUNGICIDES

Harald Jakobi, Frankfurt; Werner Knauf, Eppstein; Ulrich Sanft, Hofheim; Manfred Kern, Lörzweiler; Dieter Bernd Reuschling, Butzbach; Adolf Heinz Linkies, Franfurt, and Werner Bonin, Kelkheim, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

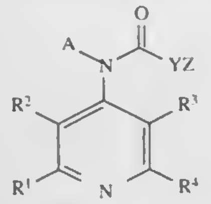
Filed Sep. 26, 1995, Ser. No. 534,238

Clalms priority, application Germany, Sep. 28, 1994, 44 34 637.9

Int. Cl.^{6} C07D *413/12;213/68;* **A01N** *43/40;43/42*

U.S. Cl. 514—352 **16 Claims**

1. A compound of the formula I or an N-oxide or salt thereof



(I)

in which

R^1 is R—$O(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkoxy$(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkoxy-halo$(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxyhalo$(C_1–C_4)$alkyl, halo$(C_2–C_4)$alkenyloxy$(C_1–C_4)$alkyl, $(C_1–C_4)$alkylthio$(C_1–C_4)$alkylthio$(C_1–C_4)$alkyl, $(C_2–C_4)$alkenylthio$(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkylthio$(C_1–C_4)$alkyl, $(C_1–C_4)$alkylthio-halo$(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkylthio-halo$(C_1–C_4)$ or halo$(C_2–C_4)$alkenylthio$(C_1–C_4)$alkyl, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, fluorine, chlorine, bromine, $(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkyl, $(C_3–C_7)$cycloalkyl, $(C_1–C_4)$alkoxy or halo$(C_1–C_4)$alkoxy;

R^2 is $(C_2–C_4)$alkenyloxy, $(C_2–C_4)$alkynyloxy, $(C_3–C_7)$cycloalkenyloxy, halo$(C_2–C_4)$alkenyloxy, halo$(C_3–C_7)$cycloalkyloxy, R—O—CO—, $(C_3–C_7)$cycloalkylthio, halo$(C_1–C_4)$alkylthio, $(C_3–C_7)$cycloalkylsulfinyl, halo$(C_1–C_4)$alkylsulfinyl, $(C_3–C_7)$cycloalkylsulfonyl, halogen$(C_1–C_4)$alkylsulfonyl, $(C_2–C_4)$alkenylthio, $(C_3–C_7)$cycloalkenylthio, $(C_2–C_4)$alkenylsulfinyl, $(C_3–C_7)$cycloalkenylsulfinyl, $(C_2–C_4)$alkenylsulfonyl, $(C_3–C_7)$cycloalkenylsulfonyl, iodine, cyano, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, fluorine, chlorine, bromine, $(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkyl, $(C_3–C_7)$cycloalkyl, $(C_1–C_4)$alkoxy or halo$(C_1–C_4)$alkoxy;

with the proviso that R^1 and R^2 are not both from the group consisting of $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, fluorine, chlorine, bromine, $(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkyl, $(C_3–C_7)$cycloalkyl, $(C_1–C_4)$alkoxy and halo$(C_1–C_4)$alkoxy;

R^3 and R^4 are identical or different and independently of one another are hydrogen, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl, $(C_3–C_5)$cycloalkyl and/or halo$(C_3–C_5)$cycloalkyl;

R is $(C_1–C_{10})$alkyl, $(C_2–C_{10})$alkenyl, $(C_2–C_{10})$alkynyl, $(C_3–C_8)$cycloalkyl or aralkyl;

A is hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$acyl, aryl or aryl$(C_1–C_4)$alkyl wherein aryl is a phenyl group which is optionally substituted by one or more identical or different radicals selected from the group consisting of halogen, $(C_3–C_8)$cycloalkyl, $(C_3–C_8)$cycloalkenyl, phenoxy, substituted phenoxy, phenylthio, substituted phenylthio, phenyl, substituted phenyl, nitro, —CO—R^8, acetoxy, hydroxyl, cyano, $SiR^9R^{10}R^{11}$, O—$SiR^9R^{10}R^{11}$, $NR^{12}R^{13}$, $S(O)R^{14}$, SO_2R^{14}, optionally substituted $(C_1–C_{12})$alkyl, optionally substituted $(C_2$–C12)alkenyl, optionally substituted $(C_2–C_{12})$alkoxy, $(C_3–C_7)$cycloalkoxy, optionally substituted $(C_1–C_{12})$alkylthio and $(C_3–C_7)$cycloalkylthio, where in the above $(C_1–C_{12})$alkyl, $(C_2–C_{12})$alkenyl, $(C_1–C_{12})$alkoxy and $(C_1–C_{12})$alkylthio radicals one or more CH_2 groups are optionally replaced by CO and/or heteroatoms or heteroatom groups selected from the group consisting of O, S, SO, SO_2, NR^5 or SiR^6R^7 and where the optional substitutes are one or more identical or different radicals selected from the group consisting of halogen, halo$(C_1–C_4)$alkoxy, hydroxyl, $(C_3–C_8)$cycloalkyl, $(C_3–C_8)$cycloalkenyl, $(C_1–C_4)$acyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, phenylthio and substituted phenylthio; and

R^8 is $(C_1–C_7)$alkyl, halo$(C_1–C_7)$alkyl, $(C_3–C_7)$cycloalkyl, halo$(C_3–C_7)$cycloalkyl, $(C_1–C_7)$alkoxy, $(C_1–C_7)$alkylthio, phenyl or substituted phenyl;

R^9, R^{10} and R^{11} are identical or different and independently of one another are $(C_1–C_4)$alkyl, phenyl and/or substituted phenyl;

R^{12} and R^{13} are identical or different and independently of one another are hydrogen, $(C_1–C_4)$alkyl and/or $(C_1–C_4)$acyl;

R^{14} is $(C_1–C_{10})$alkyl, phenyl or substituted phenyl;

R^5 is hydrogen, $(C_1–C_4)$alkyl or $(C_1–C_4)$acyl;

R^6 and R^7 identical or different, each independently are $(C_1–C_4)$alkyl, phenyl and/or substituted phenyl;

Y-Z together is an optionally substituted (C_1C_{15})-hydrocarbon radical which is unbranched or branched and in which one or more CH_2 groups are optionally replaced by a heteroatom group, selected from the group consisting of O, NR^5, S, SO, SO_2 or Si^6R^7 wherein said radical is optionally substituted by one or more identical or different substituents and the substituents are selected from the group consisting of $(C_1–C_7)$alkyl, $(C_2–C_4)$alkenyl, $(C_2–C_4)$alkynyl, $(C_3–C_7)$cycloalkyl, $(C_3–C_7)$cycloalkenyl, halogen, halo$(C_1–C_4)$alkyl, halo$(C_3–C_7)$cycloalkyl, halo$(C_1–C_4)$alkoxy, halo$(C_3–C_7)$cycloalkoxy, hydroxyl, cyano and $(C_1–C_4)$acyl;

or, if not embraced by the above definitions,

Y is a bond or a bivalent hydrocarbon radical having 1 to 6 carbon atoms which is optionally substituted by one or more identical or different radicals selected from the group consisting of $(C_1–C_7)$alkyl, $(C_2–C_4)$alkenyl, $(C_3–C_7)$alkynyl, $(C_3–C_7)$cycloalkyl, $(C_3–C_7)$cycloalkenyl, halogen, halo$(C_1–C_4)$alkyl, halo$(C_3–C_7)$cycloalkyl, halo$(C_1–C_4)$alkoxy, halo$(C_3–C_7)$cycloalkoxy, hydroxyl, cyano and $(C_1–C_4)$acyl; and

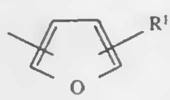
Z is aryl as defined above;

or O-aryl if Y is not a direct bond;

or $(C_3–C_7)$cycloalkyl or $(C_5–C_8)$cycloalkenyl wherein one CH_2 group of the carbocycle is optionally replaced by NR^{15} wherein R^{15} is phenyl or substituted phenyl; and the abovementioned $(C_3–C_8)$cycloalkyl or $C_5–C_8)$cycloalkenyl is optionally substituted by one or more identical or different radicals selected from the group consisting of $(C_1–C_{15})$alkyl, $(C_1–C_{16})$alkenyl, $(C_2–C_{18})$alkynyl, $(C_1–C_{12})$alkoxy, $(C_1–C_{12})$alkanoyloxy, $(C_2–C_{12})$acyl, $(C_1–C_{12})$alkyloxycarbonyl, $(C_1–C_{18})$alkanediyl, $(C_1–C_{18})$alkylidene, $SiR^9R^{10}R^{11}$, $NR^{16}R^{17}$, hydroxyl, oxo, halogen or aryl and wherein one or more CH_2 groups in the first 11 hydrocarbon radicals mentioned above are optionally replaced by a group selected from the group consisting of O, S, SO, SO_2, NR^5 or SiR^6R^7, where R^5, R^6 and R^7 are as defined above and where additionally three to six carbon atoms of these hydrocarbon radicals optionally form an optionally substituted cycle ring these hydrocarbon radicals, containing one or more identical or different substituents selected from the group consisting of halogen, haloalkyl, cycloalkyl, acyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio and substituted phenylthio;

R^9, R^{10}, R^{11} and aryl are as defined above and R^{16} and R^{17} are identical or different and independently of one another are $(C_1–C_4)$acyl, $(C_3–C_6)$cycloalkyl, phenyl and/or substituted phenyl; or

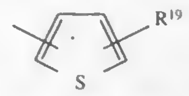
Z is a furyl radical of the formula II



(II)

in which R^{18} is hydrogen, halogen, halo$(C_1–C_4)$alkyl, cyano, nitro, $(C_1–C_4)$alkyl, phenyl, $(C_1–C_4)$alkoxy or halo$(C_1–C_4)$alkoxy; or

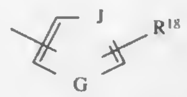
Z is a thienyl radical of the formula III



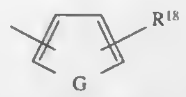
(III)

in which R^{19} is hydrogen, halogen, halo$(C_1–C_4)$alkyl, cyano, nitro, $(C_1–C_4)$alkyl, phenyl, $(C_1–C_4)$alkoxy, halo$(C_1–C_4)$alkoxy or thienyl; or

if not embraced by the above definitions, is a radical of the formula IV or V



(IV)



(V)

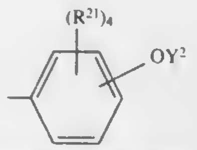
in which R^{19} is as defined above, J is N or CH and G is O, NR^{20} or S, with the proviso that, if J≠N, then G is NR^{20}, where R^{20} is hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$acyl, phenylsulfonyl or substituted phenylsulfonyl; or

Z is a radical selected from the group consisting of optionally substituted naphthyl, dihydronaphthyl, tetrahydronaphthyl and decahydronaphthyl; or

optionally substituted indolyl; or

1,3-benzodioxolyl, 2,6-dimethyl-4-morpholinyl and 1-adamantyl; or

Z is a radical of the formula VI

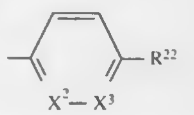


(VI)

in which R^{21} radicals are identical or different and independently of one another are hydrogen, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, halo$(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkoxy, NO_2, CN, $(C_1–C_4)$alkylcarbonyl, formyl, phenoxy and/or substituted phenoxy, with the proviso that at least two of the radicals R^{21} are selected from the group consisting of hydrogen and fluorine,

and Y^2 is pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, triazinyl, benzoxazolyl or benzothiazolyl, which are optionally substituted by one or more identical or different radicals selected from the group consisting of halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, halo$(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkoxy, nitro, cyano and $(C_1–C_4)$alkanoyl; or

Z is a radical of the formula VII



(VII)

in which one of the groups X^2 or X^3 is N, and the other group is CH;

R^{22} is —W—R^{23}, phenyl or substituted phenyl;

W is O or S; and

R^{23} is $(C_1–C_7)$alkyl, halo$(C_1–C_7)$alkyl, $(C_1–C_7)$alkoxy, halo$(C_1–C_7)$alkoxy, naphthyl or phenyl, where, if not embraced by the above definitions, each of the abovementioned radicals are optionally substituted by one or more identical or different radicals selected from the group consisting of halogen, $(C_1–C_{10})$alkyl, halo$(C_1–C_7)$alkyl, hydroxy$(C_1–C_7)$alkyl, $(C_1–C_4)$alkoxymethyl, $(C_1–C_4)$alkoxy, halo$(C_1–C_4)$alkoxy, phenoxy, substituted phenoxy, phenyl, substituted phenyl, cyano, nitro, hydroxyl, $(C_1–C_4)$alkanoyloxy or benzyloxy.

5,852,043

HIV PROTEASE INHIBITORS

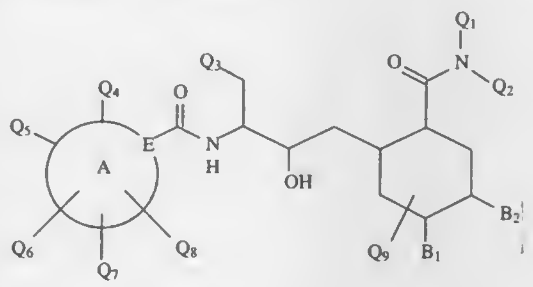
Vincent J. Kalish; Siegfried Heinz Reich, both of San Diego; John H. Tatlock, Poway, all of Calif., and Michael J. Rodriguez, Indianapolis, Ind., assignors to Agouron Pharmaceuticals, Inc.

Division of Ser. No. 190,764, Feb. 2, 1994, Pat. No. 5,484,926, which is a continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, Ser. No. 133,696, Oct. 7, 1993, abandoned, and Ser. No. 137,254, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,621, Dec. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,706

Int. Cl.^{6} A61K *31/425;31/44;31/445;31/47*

U.S. Cl. 514—307 **15 Claims**

1. A compound of the formula:



wherein:

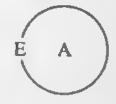
Q_1 and Q_2 are each independently selected from hydrogen and substituted and unsubstituted alkyl and aryl;

Q_3 is selected from mercapto and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, and aryl;

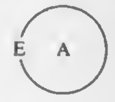
Q_4, Q_5, Q_6, Q_7, and Q_8 are each independently selected from hydrogen, hydroxyl, mercapto, nitro, halogen, —O—J, where J is a substituted or unsubstituted hydrolyzable group, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, sulfinyl, sulfonyl, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, aryl, and $L_6C(O)L_4$, where L_6 is a single bond, —O or —N, and further where L_4 is alkyl, hydroxyl, alkoxyl or hydrogen; and further wherein any one or more of Q_4, Q_5, Q_6, Q_7, and Q_8 may be a member of a spiro ring, and any two of Q_4, Q_5, Q_6, Q_7, and Q_8 may together be members of a ring;

E is carbon or nitrogen;

Q_9 is selected from hydrogen, halogen, hydroxyl, mercapto, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, and aryl, where Q_9 may form part of a ring;

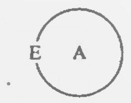


is a monocyclic or polycyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, each heterocyclic ring has one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; and

B_1 and B_2 form part of a ring having from 6 to 10 members, which ring is optionally further substituted and optionally has from one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; where when



is a carbocycle, the ring formed partly by B_1 and B_2 is a heterocycle;

or a prodrug or pharmaceutically acceptable salt of said compound.

5,852,044

USE OF NK_1 RECEPTOR ANTAGONISTS FOR PREPARING CARDIO-REGULATORY DRUGS

Christiane Gueudet; Vincent Santucci, both of Montpellier, and Philippe Soubrie, Saint-Mathieu-de-Treviers, all of France, assignors to Sanofi, Paris, France

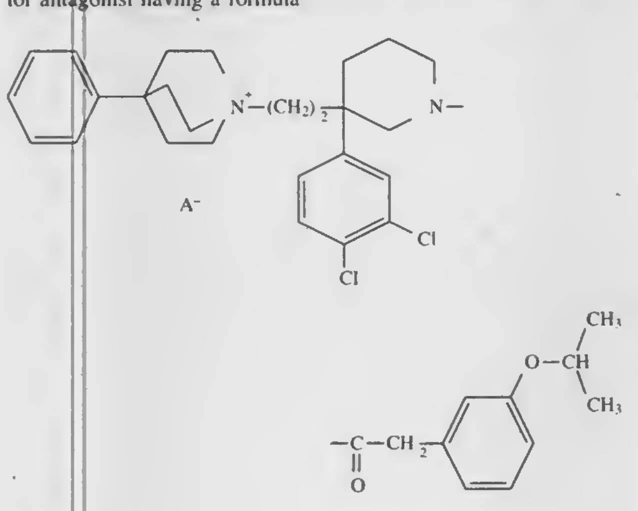
Filed Apr. 21, 1997, Ser. No. 845,136

Claims priority, application France, Oct. 21, 1994, 94 12589

Int. Cl.^{6} A01N *43/42*

U.S. Cl. 514—317 **5 Claims**

1. A method for controlling heart rate disorders in a patient in need thereof which comprises administering to the patient an effective amount for controlling heart rate disorders of NK_1 receptor antagonist having a formula



in which:

A is a pharmaceutically acceptable anion.

5,852,045

FIBRINOGEN RECEPTOR ANTAGONISTS

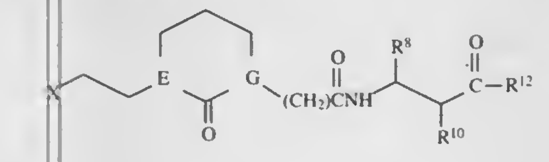
Ben C. Askew; George D. Hartman, both of Lansdale; Mark E. Duggan, Schwenksville; Steven D. Young, Lansdale; John H. Hutchinson, Philadelphia; John S. Wai, Harleysville; Melissa S. Egbertson, Ambler; Laura M. Vassallo, Haverton; Laura A. Libby, North Wales; Amy E. Krause, Blue Bell; Wasyl Halczenko, Lansdale, all of Pa., and Nathan C. Ihle, Seattle, Wash., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 15, 1996, Ser. No. 729,968

Int. Cl.^{6} A61K *31/445;31/495;* **C07D** *401/06;401/14*

U.S. Cl. 514—318 **13 Claims**

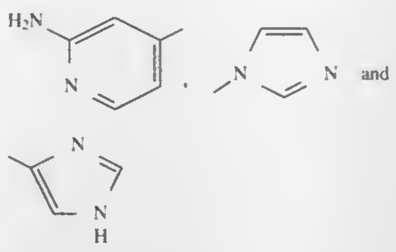
1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

X is

an aromatic heterocyclic ring selected from the group consisting of:



E is —CH— or —N—;

G is —CH— or —N—;

R^8 is

- hydrogen,
- C_{1-8} alkyl,
- aryl,
- aryl C_{1-6} alkyl,
- hydroxy C_{1-6} alkyl,
- C_{1-6} alkylsulfonyl,
- C_{1-6} alkylsulfonyl C_{1-6} alkyl,
- aryl sulfonyl C_{1-6} alkyl,
- aryl sulfonyl,
- aryl C_{1-6} alkylsulfonyl, or
- aryl C_{1-6} alkylsulfonyl C_{1-6} alkyl;

R^{10} is

- hydrogen
- —$NHCOR^2$,
- —NH_2,
- —$NH_2SO_2R^2$, or
- —OH;

R^{12} is

- —OR^2,
- —OCH_2OCOR^2, or
- —$OCH_2OCON(R^2)_2$; and

R^2 is

- hydrogen,
- halogen,
- C_{1-10} alkyl,
- C_{3-8} cycloalkyl,
- aryl,
- aryl C_{1-8} alkyl,
- amino,
- amino C_{1-8} alkyl,
- C_{1-3} acylamino,
- C_{1-3} acylamino C_{1-8} alkyl,
- C_{1-6} alkylamino,
- C_{1-6} alkylamino C_{1-8} alkyl,
- C_{1-6} dialkylamino,
- C_{1-6} dialkylamino C_{1-8} alkyl,
- C_{1-4} alkoxy,
- C_{1-4} alkoxy C_{1-6} alkyl,
- carboxy,
- carboxy $_{1-6}$ alkyl,
- C_{1-3} alkoxycarbonyl,
- C_{1-3} alkoxycarbonyl C_{1-6} alkyl,
- carboxy C_{1-6} alkyloxy,
- hydroxy, and
- hydroxy C_{1-6} alkyl.

5,852,046

BENZO-FUSED HETEROCYCLIC COMPOUNDS HAVING A 5-MEMBERED RING PROCESSES FOR THEIR PREPARATION THEIR USE AS MEDICAMENTS THEIR USE AS DIAGNOSTIC AGENTS AND MEDICAMENTS CONTAINING THEM

Hans-Jochen Lang, Hofheim/Ts; Andreas Weichert, Egelsbach; Jan-Robert Schwark, Frankfurt/Main; Wolfgang Scholz, Eschborn; Udo Albus, Florstadt, and Peter Crause, Offenbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

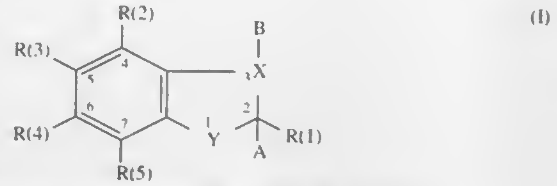
Continuation of Ser. No. 459,661, Jun. 2, 1995, abandoned, which is a continuation-in-part of Ser. No. 282,506, Aug. 1, 1994, abandoned. This application Jun. 10, 1997, Ser. No. 872,180

Claims priority, application Germany, Aug. 3, 1993, 43 26 005.5; Apr. 25, 1994, 44 14 316.8

Int. Cl.^{6} A61K *31/40;* **C07D** *209/10*

U.S. Cl. 514—419 **21 Claims**

1. A benzo-fused heterocyclic compound having a 5-membered ring of the formula (I)



(I)

or a pharmaceutical tolerated salt thereof, in which:

X is CR(6);
Y is NR(7);
A and B
  together are a bond or are both hydrogen;
one of the substituents R(1) to R(6) is a —CO—N=C$(NH_2)_2$ group;
the other respective substituents R(1) to R(6) are independently hydrogen, F, Cl, Br, I or $(C_1–C_6)$-alkyl;
up to two of the other substituents R(1) to R(6) are independently CN, NO_2, N_3, $(C_1–C_4)$-alkoxy or CF_3;
up to one of the other substituents is R(8)—C_nH_{2n}—Z;
  n is zero to 10;
    wherein the alkylene chain —C_nH_{2n}— is a straight-chain or is branched and
    wherein a carbon atom is optionally replaced by an oxygen atom, an S atom or an N atom;
  R(8) is hydrogen, $(C_2–C_6)$-alkenyl or $(C_3–C_{10})$-cycloalkyl, which is unsubstituted or substituted by 1 to 4 methyl groups or an OH group, or has an ethylene group —CH=CH—, and wherein a methylene group is optionally replaced by an oxygen atom, an S atom or an N atom;

or

  R(8) is phenyl, which is unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of F, Cl, Br, I, CF_3, CH_3—$S(O)_s$— and R(9)—W_y—;
    s is zero, 1 or 2;
    R(9) is H, methyl or ethyl;
    W is oxygen or NR(10);
    R(10) is H or methyl;
    y is zero or 1;

or

  R(8) is C_mF_{2m+1};
    m is 1 to 3;

or

  R(8) is 1- or 2-naphthyl, pyridyl, quinolyl or isoquinolyl;
  Z is —CO, CH_2— or $[CR(11)(OH)]_q$;
    q is 1, 2 or 3;
    R(11) is H or methyl;

or

  Z is oxygen or —NR(12)—;
    R(12) is H or methyl;

or

  Z is —$S(O)_s$—;
    s is zero, 1 or 2;

or

  Z is —SO_2—NR(13)—;
    R(13) is H or $(C_1–C_4)$-alkyl; and
R(7) is hydrogen, $(C_1–C_{10})$-alkyl, $(C_2–C_{10})$-alkenyl or R(8)—C_nH_{2n}—.

5,852,047

PHARMACEUTICAL PRODUCT COMPRISING A SALICYLATE OF AN ESTERIFIABLE ACE-INHIBITOR

William Byrne, Dublin, and Andrew Rynne, Clane, both of Ireland, assignors to Cal International Limited, Dublin, Ireland

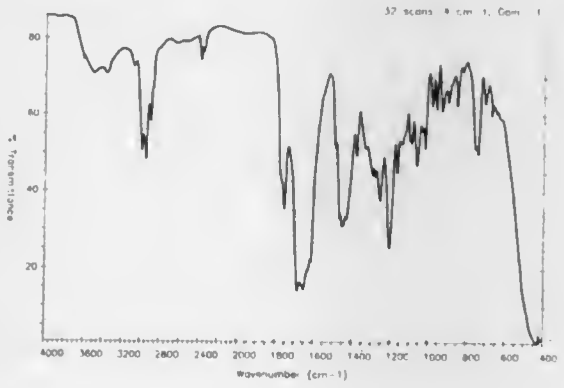
PCT No. PCT/IE95/00012, § 371 Date Jul. 29, 1996, § 102(e) Date Jul. 29, 1996, PCT Pub. No. WO95/20571, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 27, 1995, Ser. No. 682,663

Claims priority, application Ireland, Jan. 28, 1994, 940080

Int. Cl.^{6} A61K *31/40;* **C07D** *207/08;207/12*

U.S. Cl. 514—423 **13 Claims**



1. Captopril-S-aspirinate.

5,852,048

ESTER COMPOUND AND A PESTICIDAL AGENT CONTAINING THE SAME AS AN ACTIVE INGREDIENT

Takashi Furukawa; Kazunori Tsushima; Tomonori Iwasaki; Hirosi Kisida, all of Hyogo; Mikako Nakamachi, and Yoji Takada, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

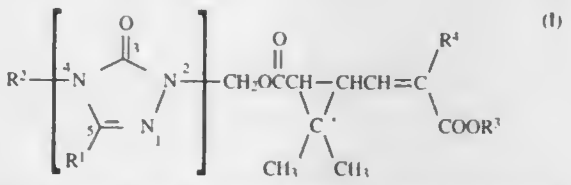
Filed Mar. 1, 1996, Ser. No. 609,624

Claims priority, application Japan, Mar. 1, 1995, 7-041890

Int. Cl.^{6} A61K *31/415;* **C07D** *249/12*

U.S. Cl. 514—384 **9 Claims**

1. An ester compound of the formula (I),



(I)

wherein R^1 represents a methyl group or a hydrogen atom, R^2 represents a propargyl group or an allyl group, and R^3 represents a $(C_1–C_5)$alkyl group, a $(C_1–C_5)$haloalkyl group or a $(C_3–C_5)$cycloalkyl group and R^4 represents a halogen atom or a hydrogen atom.

5,852,049

AROMATIC ETHERS DERIVED FROM INDOLES WHICH ARE USEFUL AS MEDICAMENTS

Michel Perez, Castres; Serge Halazy, Lagarrigue; Gareth John, Les Salvages; Jean-Pierre Valentin, Catanet-Tolosan, and Peter Pauwels, Lautrec, all of France, assignors to Pierre Fabre Medicament, Boulogne, France

PCT No. PCT/FR95/01220, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO96/09288, PCT Pub. Date Mar. 28, 1996

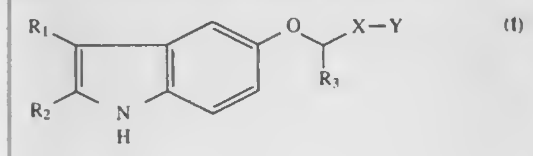
PCT Filed Sep. 22, 1995, Ser. No. 809,028

Claims priority, application France, Sep. 22, 1994, 94 11305

Int. Cl.^{6} A61K *31/40;* **C07D** *209/16*

U.S. Cl. 514—415 **28 Claims**

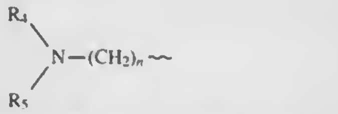
1. A compound corresponding to general formula (I);



(I)

in which

R$_1$ represents an amino residue corresponding to formula (i):



(i)

in which n represents an integer between 1 and 5,

R_4 represents a hydrogen, a linear or branched alkyl group comprising from 1 to 6 carbon atoms or a $(CH_2)_mOR'$ group in which m represents an integer between 1 and 5, and R' is a linear or branched alkyl group comprising from 1 to 6 carbon atoms,
R_5 represents a hydrogen, or a linear or branched alkyl group comprising from 1 to 6 carbon atoms,
R_2 represents hydrogen, or R_1 and R_2, taken together, form a ring with 6 carbon atoms substituted with an amine functional group (NR_4R_5) where R_4 and R_5 are as defined above,
R_3 represents hydrogen, an alkyl residue comprising from 1 to 5 carbon atoms or an aromatic group,
X may be omitted or may represent either a linear or branched alkyl chain comprising from 1 to 8 carbon atoms or an aromatic group or alternatively an arylalkyl group comprising from 1 to 10 carbon atoms which may be substituted at various positions with a linear or branched alkyl group comprising from 1 to 6 carbon atoms, an oxygen atom, an aryl group, a halogen atom, an alcohol group, an ether group, an ester group, a nitrile group, a nitro group, a ketone group, a thiol group, a thioether group, and an amine group, and
Y represents $NHSO_2R'_6$, where R'_6 represents a linear or branched alkyl chain from 1 to 8 carbon atoms, a cycloalkyl from 4 to 10 carbon atoms, an aromatic residue which are variously substituted, and salts, hydrates, solvates, tacemates and bioprecursors thereof.

5,852,050

PREPARATION FOR TREATING WOUNDS OR HEMORRHOIDS

Makoto Okumura; Toshiaki Okuda; Tsutomu Nakamura, and Motoyuki Yajima, all of Kyoto, Japan, assignors to Kaken Pharmaceutical Co., Ltd., and Toray Industries Inc., both of Japan

Division of Ser. No. 365,516, Dec. 27, 1994, Pat. No. 5,679,707, which is a division of Ser. No. 129,157, Nov. 30, 1993, Pat. No. 5,403,867. This application Jul. 9, 1997, Ser. No. 890,443

Claims priority, application Japan, Feb. 7, 1992, 4-22808; Jun. 24, 1992, 4-189867

Int. Cl.^{6} A61K *31/557*

U.S. Cl. 514—468 **5 Claims**

1. A method for treating wounds, which comprises administering orally to a person in need of same an effective amount of at least one prostaglandin I_2 compound.

5,852,051

DIPEPTIDE P-AMIDINOBENZYLAMIDES WITH N-TERMINAL SULFONYL OR AMINOSULFONYL RADICALS

Hans-Joachim Böhm, Limburgerhof; Stefan Koser; Helmut Mack, both of Ludwigshafen; Thomas Pfeiffer, Böhl-Iggelheim; Werner Seitz, Plankstadt; Hans Wolfgang Höffken, Ludwigshafen; Wilfried Hornberger, Neustadt, and Thomas Zierke, Böhl-Iggelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04646, § 371 Date Jun. 5, 1997, § 102(e) Date Jun. 5, 1997, PCT Pub. No. WO96/17860, PCT Pub. Date Jun. 13, 1996

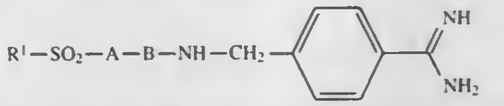
PCT Filed Nov. 25, 1995, Ser. No. 849,364

Claims priority, application Germany, Dec. 6, 1994, 44 43 390.5

Int. Cl.^{6} A61K *31/40;31/445;* **C07D** *207/00;401/00*

U.S. Cl. 549—423 **5 Claims**

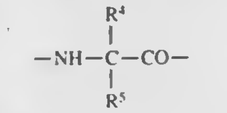
1. A compound of the formula I



I

and its stereoisomers and its salts with physiologically tolerated acids, in which the substituents have the following meanings:

R^1 is $C_1–C_{20}$-alkyl, $C_1–C_3$-fluoroalkyl, $C_3–C_8$-cycloalkyl, aryl-$C_1–C_{10}$-alkyl, aryl, hetaryl, OH or R^3R^2N where R^2 and R^3 are identical or different and are hydrogen, $C_1–C_{10}$-alkyl, aryl, aryl-$C_1–C_{10}$-alkyl or together are a $C_2–C_7$-alkylene chain to which an aryl or hetaryl radical can be fused or which can contain a hetero atom (O, S, NH or substituted N),
A is an α-amino acid residue of the formula II



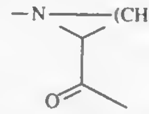
$$-NH-\underset{R^5}{\overset{R^4}{\underset{|}{\overset{|}{C}}}}-CO-$$

II

where

R^4 is hydrogen, $C_1–C_8$-alkyl, $C_3–C_7$-cycloalkyl, aryl or aryl-$C_1–C_3$-alkyl,
R^5 is hydrogen, $C_1–C_8$-alkyl, $C_3–C_7$-cycloalkyl, $C_3–C_7$-cycloalkyl-C_{1-3}-alkyl, aryl, aryl-$C_1–C_3$-alkyl, di($C_3–C_7$-cycloalkyl)-methyl or diphenylmethyl or—if R^4=H—a $C_1–C_8$-alkyl radical in which one hydrogen atom is replaced by OR^6 or CO—OR^6 (R^6=hydrogen, $C_1–C_8$-alkyl or aryl-$C_1–C_3$-alkyl), or
R^4 and R^5 together are a $C_2–C_6$-alkylene chain, which may contain a fused-on aryl radical,

B is a cyclic α-amino acid residue of the formula III



III

where m is 2, 3 or 4, and one hydrogen on the ring can be replaced by a hydroxyl or C_1–C_3-alkyl group and—if m=3 or 4—a CH_2 group in the ring can be replaced by oxygen, sulfur, NH— or N—C_1–C_4-alkyl and/or two adjacent hydrogen atoms can be replaced by a double bond.

5,852,052

TREATMENT OF LYSO PAF-MEDIATED MENTAL OR NEURONAL DISORDERS WITH LYSO PAF OR PAF ANTAGONISTS AND PROCEDURE FOR DETERMINING THEIR EFFICACY

Ruth Korth, Palestrinastr. 7A, D-80639 Munich, Germany, assignor to Ruth Korth, Munich, Germany

Division of Ser. No. 261,765, Jun. 17, 1994, Pat. No. 5,605,927, which is a continuation-in-part of Ser. No. 969,674, Oct. 28, 1992, Pat. No. 5,346,894, and Ser. No. 968,878, Oct. 30, 1992. This application Dec. 9, 1996, Ser. No. 761,938

Claims priority, application European Pat. Off., Nov. 4, 1991, 9118745

Int. Cl.⁶ A61K *31/36;31/34*

U.S. Cl. 514—470 **7 Claims**

1. A method of treating or preventing lyso paf-mediated mental or neuronal disorders in a patient in need thereof or at risk of developing such disorders, the method comprising administering to the patient a lyso paf-antagonizing effective amount of a composition comprising a ginkgoloid.

5,852,053

USE OF 2-4-AMINO-4-(4-FLUOROBENZYLAMINO) (-1-ETHOXY-CARBONYLAMINOBENZENE FOR THE PROPHYLAXIS AND TREATMENT OF THE NEURODEGENERATIVE DISORDERS

Angelika Rostock, Dresden; Chris Rundfeldt, Coswig; Christine Tober, Weinbohla, and Reni Bartsch, Dresden, all of Germany, assignors to Asta Medica Aktiengesellschaft, Dresden, Germany

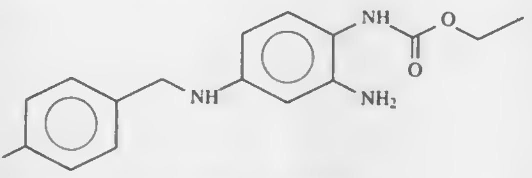
Filed Oct. 28, 1996, Ser. No. 736,166

Claims priority, application Germany, Oct. 26, 1995, 195 39 861.0

Int. Cl.⁶ A61K *31/27*

U.S. Cl. 514—485 **14 Claims**

1. A method for the treatment of a neurodegenerative disorder, said method comprising administering to an individual an effective amount of a compound of formula I



(I)

or a pharmaceutically utilizable salt thereof.

5,852,054

FUNGICIDAL TOXINS FROM BIOCONTROL BACTERIA

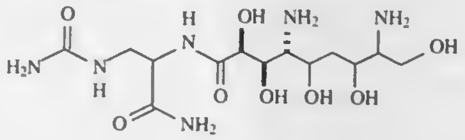
Jo Handelsman, Madison; Laura Silo-Suh, Middleton, both of Wis.; Jon Clardy, Ithaca, N.Y., and Haiyin He, Chapel Hill, N.C., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 878,800, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,644, Sep. 12, 1991, abandoned, which is a division of Ser. No. 194,399, May 16, 1988, Pat. No. 5,049,379, which is a continuation-in-part of Ser. No. 77,850, Jul. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 890,402, Jul. 25, 1986, Pat. No. 4,877,738. This application Mar. 8, 1994, Ser. No. 207,335

Int. Cl.⁶ A01N *47/28;* **C12N** *1/20*

U.S. Cl. 514—488 **3 Claims**

1. A compound having the following formula:



5,852,055

PHARMACEUTICAL COMPOSITIONS COMPRISING PARACETAMOL AND L-CYSTEINE OR A PRECURSOR THEREOF

Roger S. Jones, Brecon, United Kingdom, assignor to BTG International Limited, London, England

Division of Ser. No. 513,990, Sep. 5, 1995, Pat. No. 5,716,991. This application Mar. 25, 1996, Ser. No. 620,815

Claims priority, application United Kingdom, Mar. 12, 1993, 9305058

Int. Cl.⁶ A61K *37/12;* **A61L** *9/00*

U.S. Cl. 514—562 **9 Claims**

1. A solid ungranulated particulate mixture suitable for use in the manufacture of a shaped pharmaceutical product by direct compression without use of a granulation step comprising p-hydroxyacetanilide and L-cysteine or a compound which is converted thereto in vivo wherein the L-cysteine or its precursor is from 10 to 50% by weight of the amount of p-hydroxyacetanilide and is substantially of particle size less than 1,000 microns.

5,852,056

PHENYLACETATE AND DERIVATIVES ALONE OR IN COMBINATION WITH OTHER COMPOUNDS AGAINST NEOPLASTIC CONDITIONS AND OTHER DISORDERS

Dvorit Samid, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

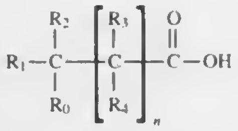
PCT No. PCT/US94/11492, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/10271, PCT Pub. Date Apr. 20, 1995

Continuation of Ser. No. 207,521, Mar. 7, 1994, Pat. No. 5,605,930, and Ser. No. 135,661, Oct. 12, 1993, Pat. No. 5,635,532, each which is a continuation-in-part of Ser. No. 779,744, Oct. 21, 1991, abandoned. This PCT application Oct. 12, 1994, Ser. No. 633,833

Int. Cl.⁶ A01N *37/12;37/44;* **A61K** *31/195;31/24*

U.S. Cl. 514—510 **11 Claims**

1. A method of inhibiting the production of IL-6 in a cell, comprising contacting the cell with an IL-6 inhibiting amount of a phenylacetic acid derivative of the formula:



$$R_1-\overset{\displaystyle R_2}{\underset{\displaystyle R_0}{\overset{|}{\underset{|}{C}}}}-\left[\overset{\displaystyle R_3}{\underset{\displaystyle R_4}{\overset{|}{\underset{|}{C}}}}\right]_n-\overset{\displaystyle O}{\overset{\|}{C}}-OH$$

; wherein

R_0=aryl, phenoxy, substituted aryl or substituted phenoxy;

R_1 and R_2 are, independently, H, lower alkoxy, hydroxy, lower straight and branched chain alkyl or halogen;

R_3 and R_4 are, independently, H, lower alkoxy, lower straight and branched chain alkyl or halogen; and

n=an integer from 0 to 2;

salts thereof, stereoisomers thereof; and mixtures thereof.

5,852,057

ANTICARCINOGENIC DRUG COMPOSITION

Yasutoshi Muto; Hisataka Moriwaki, both of Gifu; Mitsuo Ninomiya, Yamagata-gun; Sadashi Adachi, Takayama; Akiko Saito; Takeshi Takasaki, both of Shinjuku-ku; Takuji Tanaka, Gifu; Kaito Tsurumi, Gifu; Masataka Okuno, Gifu; Eiichi Tomita, Gifu; Toshiyuki Nakamura, Gifu, and Takao Kojima, Gifu, all of Japan, assignors to Yasutoshi Muto, Gifu, Japan

Filed Mar. 18, 1997, Ser. No. 819,321

Claims priority, application Japan, Dec. 12, 1996, 8-331816

Int. Cl.⁶ A61K *31/20*

U.S. Cl. 514—560 **5 Claims**

1. A method for preventing the recurrence of hepatocellular carcinoma or the occurrence of hepatocellular carcinoma in a patient with chronic hepatitis or liver cirrhosis comprising administering to a patient an effective amount of a medicant comprising 3, 7, 11, 15-tetramethyl-2,4,6,10,14-hexadecapentaenoic acid or a salt thereof.

5,852,058

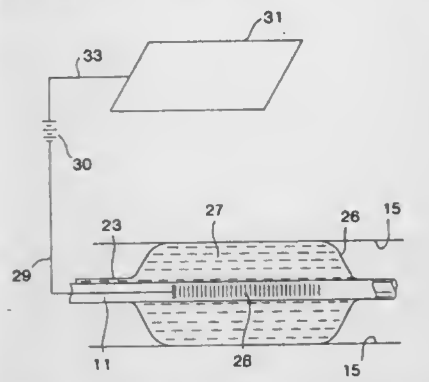
INTRAMURAL DELIVERY OF NITRIC OXIDE ENHANCER FOR INHIBITING LESION FORMATION AFTER VASCULAR INJURY

John P. Cooke, Palo Alto; Sverin Schwarzacher, Menlo Park, both of Calif.; Tai T. Lim, Gillman Heights, Singapore, and Alan C. Yeung, Hillsborough, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 556,035, Nov. 9, 1995, which is a continuation-in-part of Ser. No. 336,159, Nov. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 076,312, Jun. 11, 1993, Pat. No. 5,428,070. This application Aug. 12, 1996, Ser. No. 695,792

Int. Cl.⁶ A61K *31/195;38/02;* **A61M** *25/10;* **A61N** *1/30*

U.S. Cl. 514—564 **7 Claims**



1. In a method to perform angioplasty or atherectomy comprising introducing a balloon catheter into a vascular vessel proximal to a lesion site, inflating the balloon to expand the vessel proximal to said lesion site, deflating said balloon and removing said balloon catheter from said vascular vessel, the improvement which comprises:

introducing intramurally into the vascular vessel by means of said balloon catheter at least one of L-arginine or L-lysine, in an amount to increase the amount of nitric oxide formation of the cells proximal to said lesion site, prior to removal of said balloon catheter from said vascular vessel, whereby a reduced incidence of restenosis occurs.

5,852,059

USE OF DROLOXIFENE FOR THE TREATMENT OF PROTASTIC DISEASE, ENDOMETRIOSIS AND OBESITY

David D. Thompson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/IB95/00404, § 371 Date Jan. 6, 1997, § 102(e) Date Jan. 6, 1997, PCT Pub. No. WO96/02243, PCT Pub. Date Feb. 1, 1996

Continuation-in-part of Ser. No. 276,969, Jul. 19, 1994, Pat. No. 5,441,986. This PCT application May 26, 1995, Ser. No. 750,860

Int. Cl.⁶ A61K *31/135*

U.S. Cl. 514—648 **2 Claims**

1. A method of treating (a disease or condition selected from endometriosis.) prostatic carcinoma (and obesity) in mammals which comprises administering to a mammal in need of such treatment an amount of droloxifene or a pharmaceutically acceptable salt thereof which is effective in treating said (disease or condition) prostatic carcinoma.

5,852,060

ANTIPSORIATIC COMPOSITIONS, METHOD OF MAKING, AND METHOD OF USING

Marzook Moady, deceased, late of Casselberry, Fla., by Said Moady, executor, 3670 Derbyshire Rd., Apt. #208, Casselberry, Fla. 32707

Division of Ser. No. 621,043, Mar. 22, 1996. This application May 1, 1997, Ser. No. 848,816

Int. Cl.⁶ A61K *31/12*

U.S. Cl. 514—680 **6 Claims**

1. A composition for the treatment of psoriasis produced by the step comprising mixing together effective amounts of 3-methylanthralin, chrysophanol, aloe-emodin and aloe-emodin monoacetate.

5,852,061

HYDROCARBON SYNTHESIS WITH CRYOGENIC NITROGEN REMOVAL UPSTREAM OF THE SYNGAS GENERATION

Dennis G. Alexion, Succasunna, and Constantine A. Coulaloglou, Mendham, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 6, 1997, Ser. No. 851,867

Int. Cl.⁶ C07C *27/00*

U.S. Cl. 518—700 **21 Claims**

1. A hydrocarbon synthesis process which comprises the steps of:

(a) removing CO_2 from a natural gas which comprises methane. N_2, CO_2 and C_{2+} hydrocarbons, to produce a natural gas containing less than 0.1 mole % CO_2;

(b) cryogenically separating said C_{2+} hydrocarbons and N_2 from said CO_2 reduced gas to produce C_{2+} hydrocarbons and a substantially nitrogen free gas feed gas comprising methane and containing less than 100 vppm of N_2;

(c) converting said substantially nitrogen free gas feed to a synthesis gas comprising a mixture of H_2 and CO, and

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(d) reacting said H_2 and CO in said synthesis gas in the presence of a hydrocarbon synthesis catalyst under reaction conditions effective to form C_{5+} hydrocarbons.

5,852,062

APPARATUS AND METHODS FOR PROCESSING SCRAP TIRES

Roland K. Carpenter, 251 W. Canal Dr., Palm Harbor, Fla. 34684

PCT No. PCT/US93/07709, § 371 Date Jun. 8, 1994, § 102(e) Date Jun. 8, 1994, PCT Pub. No. WO94/08768, PCT Pub. Date Apr. 28, 1994

Continuation-in-part of Ser. No. 958,967, Oct. 8, 1992, Pat. No. 5,236,352. This PCT application Aug. 16, 1993, Ser. No. 244,919

Int. Cl.^{6} C08J *11/04;* **F27B** *14/00;* **B09B** *3/00*

U.S. Cl. 521—41 **25 Claims**

1. Apparatus for processing at least portions of scrap tires which have not been shredded or ground comprising, in combination: a first tank for holding a slurry of liquified rubber and fiber; means for heating the slurry in the first tank to a temperature to liquify the rubber and fiber of scrap tires which have not been shredded or ground immersed in the first tank; a second tank for holding the slurry; an overflow passage from the first tank to the second tank; and means for immersing the scrap tires which have not been shredded or ground in the slurry of the second tank to preheat the scrap tires which have not been shredded or ground and then for immersing the scrap tires which have not been shredded or ground in the slurry of liquified rubber and fiber of the first tank to liquify the rubber and fiber of the scrap tires which have not been shredded or ground.

5,852,063

PROCESS FOR PREPARING JOINTING FOAM

Stefan Meinhardt, Reutlingen, Germany, assignor to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung E.V., Stutgart, Germany

PCT No. PCT/EP92/02393, § 371 Date Jun. 16, 1994, § 102(e) Date Apr. 14, 1994, PCT Pub. No. WO93/08142, PCT Pub. Date Apr. 29, 1993

Continuation of Ser. No. 211,774, Jun. 6, 1994, abandoned.
This PCT application Oct. 19, 1992, Ser. No. 637,149

Claims priority, application Germany, Oct. 18, 1991, 41 34 550.9

Int. Cl.^{6} C08J *9/02*

U.S. Cl. 521—83 **14 Claims**

1. A process for forming an in situ jointing foam wherein two components A and B for forming the jointing foam are intimately mixed at the time of application to a joint comprising storing in a first compartment of a 2-compartment cartridge container as a first component A a thixotropic slurry containing 30 to 70 wt. % of gypsum dihydrate and 70 to 30 wt. % of water; and storing in a second compartment of the 2-compartment cartridge container as a second component B diphenylmethane-4,4'-diisocyanate pre-polymer, diphenylmethane-4,2'diisocyanate pre-polymer, 2,4-toluylene diisocyanate, 2,6-toluylene diisocyanate, or a mixture thereof; intimately mixing at the time of application to a joint 40 to 60 wt. % of the component A aqueous slurry of said first compartment with 60 to 40 wt. % of the component B of said second compartment wherein the weight percentages are with reference to total mixture; and introducing the intimate mixture into a joint and allowing the mixture to harden.

5,852,064

FOAMED AND CROSS-LINKED PHENOLIC RESIN AND METHOD FOR MAKING SAME

Roger Lamartine, Villeurbanne, France, and Philippe Choquard, Cologny, Switzerland, assignors to Transdiffusia S.A., Switzerland

PCT No. PCT/CH96/00192, § 371 Date Nov. 14, 1997, § 102(e) Date Nov. 14, 1997, PCT Pub. No. WO96/36659, PCT Pub. Date Nov. 21, 1996

PCT Filed May 17, 1996, Ser. No. 952,266

Claims priority, application Switzerland, May 18, 1995, 1466/95

Int. Cl.^{6} C08J *9/14*

U.S. Cl. 521—88 **12 Claims**

1. Cellular foam on the base of a phenol-formol resin, characterized in that it is constituted of a phenol formol resol cross-linked by means of a cross-linking agent selected from completely or partially sulfonated linear and cyclic phenolic oligomers, optionally containing sulfonated phenol, the foam containing a surface active agent and optionally a stabilizer, and in that the foam has a hydrophobic nature permitting its use for absorbing, retaining and transporting oleophilic fatty liquids.

5,852,065

LOW EMISSION, CELL OPENING SURFACTANTS FOR POLYURETHANE FLEXIBLE AND RIGID FOAMS

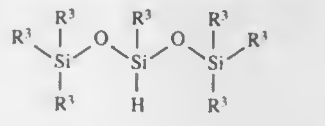
John Herbert Frey, Alburtis, Pa.; David Robert Battice, Prudenville, Mich.; Karla Asuncion Sabram, Macungie, Pa., and Lenin James Petroff, Bay City, Mich., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 15, 1998, Ser. No. 7,595

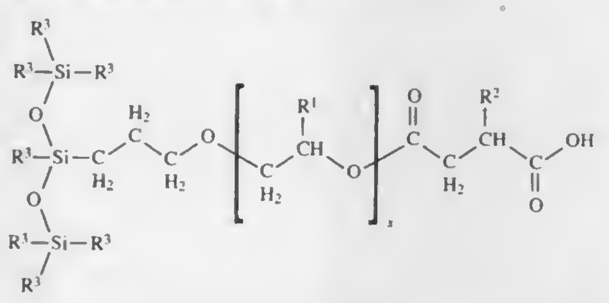
Int. Cl.^{6} C08G *18/00*

U.S. Cl. 521—112 **19 Claims**

1. A method for preparing a polyurethane flexible molded or rigid foam which comprises reacting an organic polyisocyanate with a polyol in the presence of urethane catalyst, water as a blowing agent, optionally a silicone surfactant cell stabilizer, and a cell opener comprising the reaction product of a 1,1,1,3,5,5,5-hepta(hydrocarbyl)trisiloxane of the general structure



coupled with a polyalkyleneoxide mono allyl ether and capped with a succinic anhydride, the reaction product comprising at least 90 wt % of a silicone compound, based on total silicone species, which is represented by the general structure



where R^1 is hydrogen or a C1–C2 alkyl group, R^2 is hydrogen or a C1–C65 hydrocarbyl group, R^3 is a C1–C20 hydrocarbyl group and x is an integer ranging from 2 to 30.

5,852,066

REGENERATED CELLULOSE BASED MATERIALS WITH IMPROVED RESISTANCE TO BLEACH, AND A PROCESS FOR THEIR PREPARATION

Christophe Chalvin, Beauvais; Jérôme Ducommun, Aumont en Halatte, and Jean-Luc Wertz, Beauvais, all of France, assignors to Financiere Elysees Balzac, Paris, France

Filed Sep. 25, 1995, Ser. No. 533,539

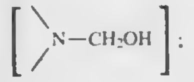
Claims priority, application France, Sep. 26, 1994, 94 11429

Int. Cl.^{6} C08L *1/00*

U.S. Cl. 521—134 **12 Claims**

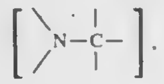
1. A cellular cellulosic material containing a cellulose lattice and 0.1 to 5% by weight, with respect to the weight of dry cellulose, of at least one cross-linked polymeric agent improving resistance of the cellulose lattice to bleach and contained in the lattice in a stable manner to ensure durable protection of the lattice aganst the bleach; said polymeric agent, prior to incorporation in the cellulosic material being selected from the group consisting of:

(a) cross-linkable polymers which contain in their formula N-methylol functions

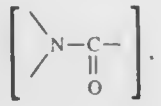


and

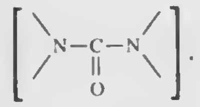
(b) cross-linkable polymers which contain functions in their formula which are an amine



an amide



an urea derivative



or a mixture thereof,
and wherein said polymers (b) contain azetidinium and/or epoxy groups which are able to react with the cellulose.

5,852,067

NEAR INFRARED RAYS-CURING PUTTY COMPOSITION

Hajime Sukejima; Shinji Tomita, both of Hiratsuka; Shuichi Sugita, and Kazuhiko Ooga, both of Chiba, all of Japan, assignors to Showa Denko K. K., Tokyo, and Kansai Paint Co., Ltd., Hyogo-Ken, both of Japan

Filed Nov. 15, 1996, Ser. No. 749,975

Claims priority, application Japan, Nov. 17, 1995, 7-322480

Int. Cl.^{6} C08L *1/12;63/12;67/06;67/07*

U.S. Cl. 522—53 **7 Claims**

1. A near infrared rays-curing putty composition comprising:

(A) a resin containing at least one polymerizable ethylenically unsaturated group,

(B) a polymerizable unsaturated compound comprising monomers or oligomers containing at least one ethylenically unsaturated group,

(C) a near infrared rays polymerization initiator, said near infrared rays polymerization initiator (C) being a near infrared rays-absorbing cationic dye, and

(D) a resin powder consisting of gelation polymer fine particles obtained by emulsion polymerization, said gelation polymer fine particles being contained in an amount of 1 to 100 parts by weight per 100 parts by weight of a total solid content in the resin (A) and compound (B).

5,852,068

HYDROPHILIC SILICONE DENTAL IMPRESSION COMPOSITION

Sivananda S. Jada, Cheshire, Conn., assignor to Jeneric/Pentron Incorporated, Wallingford, Conn.

Filed Dec. 12, 1996, Ser. No. 766,595

Int. Cl.^{6} A61K *6/10*

U.S. Cl. 523—109 **10 Claims**

1. A curable composition comprising a mixture of

(a) curable silicone prepolymer; and

(b) a polyester polysiloxane polymer having the formula:

$$A\{B-C\}_xA$$

wherein x is an integer greater than 1, and such that the fluorine content of the polysiloxane polyester is in the range from about 5% to about 30% by weight;

wherein A is a fluorinated alkoxy group having the formula

$$F_3C(CF_2)_n(CH_2)_mO—$$

wherein n is an integer from 3 to 17 and m is an integer from 2 to 4;

wherein B is a diacid; and

wherein C is a dimethicone-based polysiloxane copolyol having the following formula:

$$Me_3Si\{OSiMeR^1\}\{OSiMeR^1\}_o\{OSiMeR\}_qOSiMe_3$$

wherein Me is methyl, R is methyl or phenyl, o is an integer in the range from to 19, q is an integer in the range from 0 to 200, and R^1 is an oxyalkylene substituent having the formula

$$\{CH_2)_3O(DO)_a(EO)_b(CO)\}_c$$

$$\{CH_2\}_3O(DO)_a(EO)_b(CO)\}_c$$

wherein the propyl group is linked to the silicone atom and, DO, EO and FO are the same or different, being linear or branched polyoxyalkylene groups having from 2 to 6 carbons, a and b are each independently integers in the range from 0 to 20, and c is an integer in the range from 1 to 20;

and further wherein said polyester polysiloxane polymer is present in a sufficient amount to impart a three minute water contact angle at or below about 73° upon cure of the mixture.

5,852,069

BIODEGRADABLE PLASTICS AND COMPOSITES FROM WOOD

John J. Meister, 31675 Westlady Rd., Beverly Hills, Mich. 48025-3744, and Meng-Jiu Chen, 901 St. Louis, Apt. #25, Ferndale, Mich. 48220

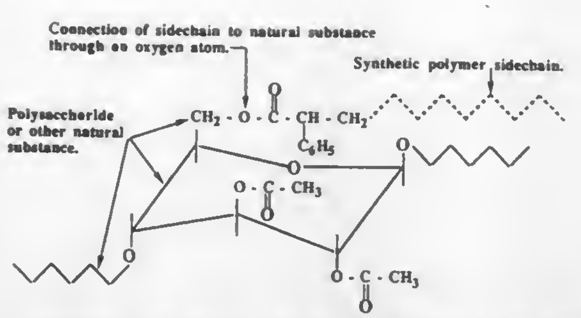
Division of Ser. No. 40,091, Mar. 8, 1995, Pat. No. 5,741,875, which is a continuation-in-part of Ser. No. 80,006, Jun. 21, 1993, Pat. No. 5,424,382, which is a continuation-in-part of Ser. No. 789,360, Nov. 8, 1991, abandoned. This application Oct. 2, 1997, Ser. No. 942,868

Int. Cl.^{6} C08K *5/00*

U.S. Cl. 523—128 **3 Claims**

1. A method of improving the adhesion between a wood phase and a polymer phase and improving the rate of degradation of such phases comprising:

a. applying a grafted lignin-containing material onto a surface of wood, the grafted lignin-containing material having a lignin-containing constituent with an aromatic ring and a graft


Connection of sidechain to natural substance through an oxygen atom.
Synthetic polymer sidechain.
Polysaccharide or other natural substance.
CH_2 - O - C - CH - CH_2
O
C_6H_5
O
O - C - CH_3
O
O
O - C - CH_3
O

constituent connected by carbon—carbon bond to the lignin aromatic ring or connected by carbon—carbon bond to a carbon bonded by one or more carbon bonds to the aromatic ring,

b. applying a polymer to the wood such that the polymer overlies the applied graft lignin-containing material.

5,852,070
(CO) POLYCARBONATES STABILISED AGAINST γ-RADIATION

Wolfgang Ebert, Krefeld; Ralf Hufen, Duisburg; Heidemarie Pantke, Ratingen, and Klaus Berg, Krefeld, all of Germany, assignors to Bayer AG, Germany

Filed Nov. 4, 1996, Ser. No. 742,292

Claims priority, application Germany, Nov. 13, 1995, 195 42 186.8

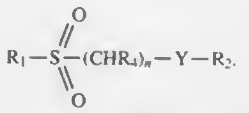
Int. Cl.⁶ C08K *5/41*

U.S. Cl. 523—136 **12 Claims**

1. A polycarbonate moulding composition comprising:

a) 97.5 wt. % to 99.9 wt. % of a polycarbonate;

b) a γ-radiation stabiliser composition comprising 0.1 wt. % to 2.5 wt. % of a stabiliser having the formula (I):

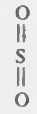


$$R_1-\overset{\overset{O}{/\!/}}{\underset{\underset{O}{\backslash\!\backslash}}{S}}-(CHR_4)_n-Y-R_2. \qquad (I)$$

R_1 and R_2, independently of each other, represent a methyl group, a C_7–C_{18} optionally branched and/or substituted alkylaryl group or a C_6 aryl group R_4 represents a methyl group, a C_2–C_{18} optionally branched and/or substituted alkylaryl group, a C_6 aryl group or H,

n is a number between 1 and 8, and

Y represents



$$\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}$$

or —S—; and

c) 0.05 wt. % to 5 wt. % of an optionally terminally capped and/or branched polypropylene glycol having an average molecular weight of 200 to 200,00, wherein the percentages by weight of each component are with reference to 100 wt. % of a)+b).

5,852,071
BIPHENYL ADDITIVE FOR IMPROVEMENT IN URETHANE FOUNDRY BINDERS

Michael M. Geoffrey, Lombard, Ill., assignor to Borden Chemical, Inc., Columbus, Ohio

Filed Aug. 3, 1994, Ser. No. 285,108

Int. Cl.⁶ C08K *5/01*

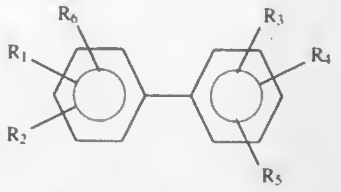
U.S. Cl. 523—143 **38 Claims**

1. A composition comprising:

i) a polyhydroxy resin solution;

ii) a polyisocyanate solution, said solutions i) and ii) present in amounts to produce a cured binder in the presence of a suitable catalyst;

iii) at least one biphenyl additive of the formula below



where R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, are selected from the group consisting of H and C_1-C_6 branched and unbranched alkyl and alkenyl substituents, with the proviso, that when R_1-R_6 are each hydrogen and the amount of such a compound is present in amounts of less than 1% by weight of a solution of i) or ii) a second additive of the formula as defined above is present except that R_1-R_6 are not each hydrogen; and

iv) foundry aggregate.

5,852,072
ERASABLE INK COMPOSITION CONTAINING A WATERBORNE POLYURETHANE UREA

Jeffery H. Banning, Spartanburg; Wayne A. Chandler, Mauldin; David C. Villiger, Greenville; Aiying Wang, and Barry W. Chadwick, both of Simpsonville, all of S.C., assignors to Bic Corporation, Milford, Conn.

Continuation of Ser. No. 357,601, Dec. 16, 1994, abandoned. This application May 20, 1996, Ser. No. 650,592

Int. Cl.⁶ C09D *5/00; 11/00*

U.S. Cl. 523—161 **22 Claims**

1. An erasable ink composition which comprises a waterborne polyurethane-urea obtained by effecting polymerization of a waterborne polyurethane-urea-forming reaction medium containing at least two coreactive polyfunctional monomers, said waterborne polyurethane urea containing dye moiety covalently bonded thereto, the erasable ink composition when applied to a substrate and upon drying thereon exhibiting less than about 30 weight percent flaking based on the weight of the dried ink and an erasability value delta E*ab of less than about 4.0.

5,852,073
ERASABLE INK COMPOSITION CONTAINING A POLYMER-ENCAPSULATED COLORANT OBTAINED BY POLYMERIZING MONOMER IN THE PRESENCE OF SOLID COLORANT PARTICLES

David C. Villiger, Greenville; Aiying Wang, Simpsonville; Jeffery H. Banning, Spartanburg; Wayne A. Chandler, Mauldin, and Barry W. Chadwick, Simpsonville, all of S.C., assignors to Bic Corporation, Milford, Conn.

Continuation of Ser. No. 360,415, Dec. 21, 1994, abandoned. This application May 20, 1996, Ser. No. 650,596

Int. Cl.⁶ C09D *11/18*

U.S. Cl. 523—161 **18 Claims**

1. An erasable ink composition which, prior to being applied to a substrate, comprises an aqueous dispersion of particles of water-insoluble polymer-encapsulated colorant obtained by polymerizing under emulsion polymerization conditions at least one emulsion-polymerizable monomer in the presence of solid colorant particles, the erasable ink composition when applied to a substrate and upon driving thereon exhibiting less than about 30 weight percent flaking based on the weight of the dried ink and an erasability value delta E*ab of less than about 4.0.

5,852,074
AQUEOUS INK FOR INKJET PRINTING

Takehiro Tsutsumi, and Michitaka Sawada, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 24, 1997, Ser. No. 806,236

Claims priority, application Japan, Feb. 22, 1996, 8-035081; Mar. 6, 1996, 8-048498

Int. Cl.⁶ C09D *11/10*

U.S. Cl. 523—161 **11 Claims**

1. An aqueous inkjet printing ink, comprising an aqueous dispersion (A) of particles of a vinyl polymer formed by copolymerizing:

at least one monomer (a) selected from the group consisting of:

a silicone macromer (a-1) having the formula (1),

$$X(Y)_nSi(R)_{3-m}(Z)_m \qquad (1)$$

wherein X is a polymerizable unsaturated group; Y is a divalent bond group; R is a hydrogen atom, a lower alkyl group, an aryl group or an alkoxy group, and a plurality of R's may be the same as or different from one another; Z is a monovalent group of a siloxane polymer having a number-average molecular weight of at least about 500; n is 0 or 1; and m is an integer of 1 to 3;

an acrylamide monomer (a-2), and

a methacrylamide monomer (a-3) not having a salt-forming group,

a polymerizable unsaturated monomer (c) having a salt-forming group, and

a monomer (d) capable of polymerizing with these monomers in the presence of a radical polymerization initiator (e),

wherein a hydrophobic dye (B) is contained in the particles of the aqueous dispersion (A).

5,852,075
SURFACTANT SYSTEM FOR INK JET INKS FOR PRINTING ON HYDROPHOBIC SURFACES

Robert Paul Held, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 2, 1997, Ser. No. 867,373

Int. Cl.⁶ C08K *5/54*

U.S. Cl. 523—161 **10 Claims**

1. An ink jet ink composition comprising:

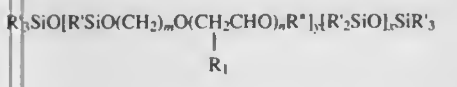
(a) an aqueous carrier medium;

(b) a colorant comprising a pigment and a polymeric dispersant; and

(c) 2.5 to 6%, based on the total weight of the ink composition, of a mixture of surfactants consisting essentially of

(i) at least one siloxane surfactant selected from the group consisting of

(1) a polyether modified siloxane of the formula:



$$R'_3SiO[R'SiO(CH_2)_mO(\underset{\underset{R_1}{|}}{CH_2CHO})_nR'']_y[R'_2SiO]_xSiR'_3$$

wherein R'=methyl; R"=hydrocarbon chain and R_1=H for ethylene oxide, CH_3 for propylene oxide

(2) a nonionic siloxane polyoxyalkylene copolymer, wherein each copolymer contains a siloxane polymer and at least one oxyalkylene polymer, comprising from 5% to 95% by weight of the block copolymer and having the general formula:

$$(R')(SiO_3)_x(R_2SiO)_y[(C_nH_{2n}O)_zR'']_a[R''']_{3x-a}$$

wherein R' is a hydrocarbon radical having a valence of x; R and R" are monovalent hydrocarbon radicals, R''' is a member of the group consisting of alkyl radicals and R_2Si-radicals; $x \geqq 1$; $y \geqq 3$;n=2-4; $1 \geqq a \leqq 3x$ and $z \geqq 2$,and

(3) block copolymers composed of:

(A) at least one siloxane unit represented by the formula:

$$R_bSiO_{(4-b)}$$

wherein R contains from one to about twenty-two carbon atoms inclusive and is selected from the class consisting of monovalent hydrocarbon groups and divalent hydrocarbon groups, and b has a value from 1 to 3 inclusive; said siloxane block containing at least one of said siloxane units wherein at least one R group is a divalent hydrocarbon group and

(B) at least one oxyalkylene block containing at least two oxyalkylene groups represented by the formula:

$$—R'O—$$

wherein R' is an alkylene group containing from 2 to about 10 carbon atoms inclusive said siloxane and oxyalkylene blocks being interconnected by said divalent hydrocarbon group;

(ii) at least one fluorinated surfactant of the formula:

$$[R(f)Q]_nA$$

wherein, R(f) is $F(CF_2CF_2)_{3-8}$; Q is selected from the group consisting of $CH_2CH_2SCH_2CH_2$ and CH_2CH_2; A is a water soluble group selected from the group consisting of CO_2A; $PO_4(A)_2$; PO_4A and $(OCH_2CH_2)_xOH$, where A is a counterion and x is 1-10; and n is 1 or 2;

(iii) wherein the at least one siloxane surfactant is present in the amount of 15 to 75% by weight, based on the total weight of the surfactant mixture.

5,852,076
PROCESS FOR PREPARING A DISPERSION OF HARD PARTICLES IN SOLVENT

Mark Serafin, Apple Valley; Richard D. Olmsted, Vadnais Heights; Richard M. Fuller, Lake Elmo; Bhaskar V. Velamakanni, Woodbury, and Zvi Rogovin, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 555,671, Nov. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 338,679, Nov. 14, 1994, abandoned. This application Nov. 7, 1997, Ser. No. 967,273

Int. Cl.⁶ C08J *3/02*

U.S. Cl. 523—315 **17 Claims**

1. A process for producing a dispersion comprising a liquid and a hard, non-compliant particle, in which the process comprises the steps of:

a) combining the dispersion components to form a semi-dispersed mixture;

b) pressurizing the mixture; and

c) forcing the pressurized mixture through a series of at least two impingement chamber assemblies, wherein the mixture is divided into at least two streams, each stream is forced through an orifice assembly comprising a small orifice with an inner diameter, and, on exit from the orifice assembly, the streams impinge upon each other,

wherein the inner diameters ofthe orifices of the first impingement chamber assembly are larger than the inner diameters of the orifices in the last impingement chamber assembly.

5,852,077
LIGHTWEIGHT, WATERPROOF, INSULATING, CEMENTITIOUS COMPOSITIONS AND METHODS FOR FORMING AND USING SUCH COMPOSITIONS

Joseph M. Zawada, and Sandra K. Zawada, both of Ashland, Mont., assignors to Composite Industries of America, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 367,878, Jan. 3, 1995, Pat. No. 5,782,970. This application Apr. 22, 1996, Ser. No. 635,588

Int. Cl.^{6} C08K *3/00*

U.S. Cl. 524—8 **25 Claims**

1. A lightweight, cementitious composition comprising:

a dry mix including:

1–6 parts of a filler material, said filler material including rubber chips,
1–4 parts bentonite,
1–3 parts Portland cement, and
1–3 parts diatomaceous earth; and
1–5 parts water mixed with said dry mix.

5,852,078
BIODEGRADABLE POLYESTER COMPOSITIONS WITH NATURAL POLYMERS AND ARTICLES THEREOF

Julious L. Willett; William M. Doane, both of Morton, Ill.; Wayne Xu, Montgomery, Ohio; Michael N. Mang, Midland, Mich., and Jerry E. White, Lake Jackson, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and Biotechnology Research and Development Corporation, Peoria, Ill.

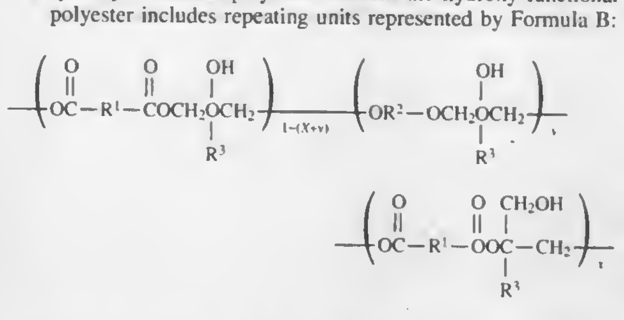
Filed Feb. 21, 1997, Ser. No. 804,376

Int. Cl.^{6} C08L *63/00;63/02;67/02;71/00*

U.S. Cl. 524—35 **13 Claims**

1. A composition, useful for formed articles, comprising:

a hydroxy-functional polyester wherein the hydroxy-functional polyester includes repeating units represented by Formula B:



$$-\!\left(O\overset{\overset{O}{\|}}{C}-R^1-\overset{\overset{O}{\|}}{C}OCH_2\underset{\underset{R^3}{|}}{\overset{\overset{OH}{|}}{O}}CH_2\right)_{1-(X+y)}\!\left(OR^2-OCH_2\underset{\underset{R^3}{|}}{\overset{\overset{OH}{|}}{O}}CH_2\right),$$

$$-\!\left(O\overset{\overset{O}{\|}}{C}-R^1-O\overset{\overset{O}{\|}}{O}\underset{\underset{R^3}{|}}{\overset{\overset{CH_2OH}{|}}{C}}-CH_2\right),$$

wherein each of R^1 and R^2 is individually a divalent organic moiety which is predominantly hydrocarbon, each R^3 is individually hydrogen or lower alkyl, y is a fraction from 0 to 0.5 and x is a fraction from about 0.05 to about 0.4; and,

granules of a natural polymer admixed with the polyester wherein the natural polymer granules are starch, a starch ester, a starch ether, a crosslinked starch, cellulose, or guar gum.

5,852,079
RUBBER COMPOSITION FOR TIRES

Wolfgang Loreth, Lauenau, Germany, assignor to Continental Aktiengesellschaft, Hanover, Germany

Filed Mar. 14, 1997, Ser. No. 816,995

Claims priority, application Germany, Mar. 16, 1996, 196103754

Int. Cl.^{6} C08L *1/00*

U.S. Cl. 524—35 **10 Claims**

1. A rubber composition for a tire tread, said rubber composition comprising:

a rubber mixture containing rubber and additives; and

a fiber mixture of cellulose fibers and keratin fibers in a weight ratio of 1:5 to 5:1 mixed into said rubber mixture;

said fiber mixture present in said rubber composition in 2 to 25 parts by weight per 100 parts by weight of rubber for improving winter driving performance of the tire tread.

5,852,080
HOT MELT ADHESIVES WITH COMPATIBLE HYDROXYL-CONTAINING ESTER WAXES

Michael T. Philbin, Hopewell; Robert L. Billmers, Stockton, and Charles W. Paul, Madison, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jul. 28, 1997, Ser. No. 901,305

Int. Cl.^{6} C08K *5/10;5/09;* **C08L** *51/00;3/06*

U.S. Cl. 524—51 **20 Claims**

1. A hot melt adhesive composition comprising:

1) a base polymer selected from the group consisting of:

a) a starch ester having from about 2 to 18 carbon atoms in the ester component and a degree of substitution (DS) of from about 0,3to 3.0, and

b) a graft copolymer of 40 to 85% wt. % of at least one vinyl monomer and 15 to 60 wt. % of at least one polyalkylene oxide polymer having a number average molecular weight greater than 3000 and a polymerized ethylene oxide content of at least 50% by weight, and

2) a compatible hydroxyl-containing ester or acid wax having the formula:

$R(OH)_nCOOR^1$

where R is a hydrocarbon group of 12 to 30 carbons, n is an integer of 2 to 6 and R^1 is H, C_1 to C_4 alkyl group or $(CH_2CH_2O)_x$ H where x is 1 or 4, with the ester or acid wax having a melting point of at least 80° C.

5,852,081
INK COMPOSITION FOR THERMAL TRANSFER SHEET AND THERMAL TRANSFER SHEET UTILIZING SAME

Masafumi Hayashi; Mitsuru Maeda, both of Tokyo-to, and Norikatsu Kobayashi, Yokohama, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo-to, Japan

Filed Apr. 23, 1997, Ser. No. 839,148

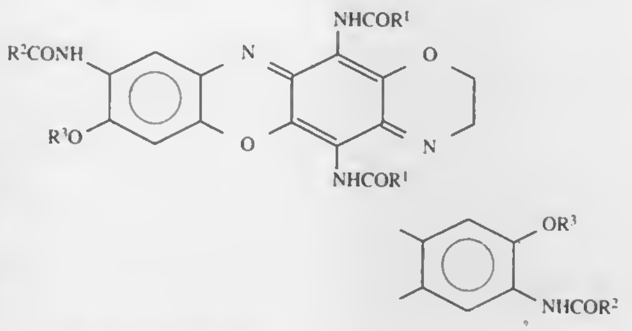
Claims priority, application Japan, Apr. 30, 1996, 8-130622

Int. Cl.^{6} C08K *5/34;* **B32B** *9/04*

U.S. Cl. 524—90 **7 Claims**

1. An ink composition for a thermal transfer sheet comprising:

a coloring agent comprising a violet pigment expressed by a following formula:



(in the formula, each of R^1 and R^3 is any one of a methyl and an ethyl and R^2 is a phenyl); and

a heat fusible binder mainly comprising a wax.

5,852,082
FLAME RETARDANT RESIN COMPOSITION

Kouji Uchida, and Miki Takahashi, both of Toyohashi, Japan, assignors to Aicello Chemical Co., Ltd., Aichi, Japan

PCT No. PCT/JP96/01358, § 371 Date Apr. 18, 1997, § 102(e) Date Apr. 18, 1997, PCT Pub. No. WO96/37548, PCT Pub. Date Nov. 28, 1996

PCT Filed May 23, 1996, Ser. No. 776,223

Claims priority, application Japan, May 23, 1995, 7-146896

Int. Cl.^{6} C08K *5/34;5/52*

U.S. Cl. 524—101 **12 Claims**

1. A flame retardant resin composition consisting essentially of:

100 parts by weight of polyolefine-based resin;

2 to 60 parts by weight of melamine cyanurate surface-treated with fine silica; and 1 to 30 parts by weight of phosphoric acid ester.

5,852,083
PROCESS FOR MAKING HOT MELT ADHESIVES USING WATER SOLUBLE SUBSTITUTED LACTAM/POLYMER SOLUTIONS AS FEEDSTOCKS

William C. Walsh, Archbold, Ohio, and Mark W. Waldrop, Royal Oak, Mich., assignors to BASF Corporation, Mount Olive, N.J.

Filed May 29, 1997, Ser. No. 865,167

Int. Cl.^{6} C08K *5/3415;* **C08J** *3/02;* **B01F** *1/00*

U.S. Cl. 524—104 **26 Claims**

1. An improved process for making hot melt adhesive compositions comprising the steps of:

(a) dissolving hot melt adhesive components into a 20° C. to 80° C. solution of a water soluble substituted lactam to form a water soluble substituted lactam/hot melt adhesive component solution;

(b) adding said solution formed in step (a) into water to form a solid;

(c) extracting out the water soluble substituted lactam from said solid formed in step (b);

(d) drying of said solid wherein the water soluble substituted lactam is leached out as in step (c) to form the hot melt adhesive.

5,852,084
CRYSTALLINE FORM OF TETRAKIS-(2,4-DI-T-BUTYLPHENYL)-4,4'-BIPHENYLENE

Carlo Neri, S. Donato Mil.se; Marco Bizzarri, Trezzo sull'Adda, and Luciano Pallini, S. Giuliano Miles, all of Italy, assignors to Great Lakes Chemical Italia S.r.l., Milan, Italy

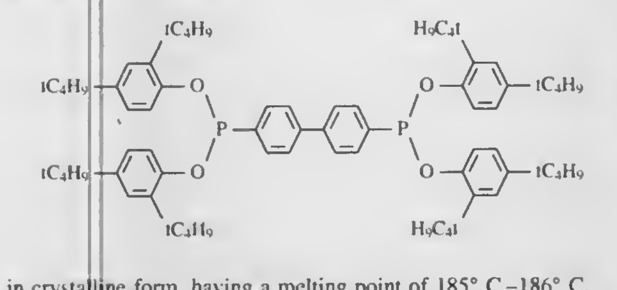
Filed Jul. 24, 1996, Ser. No. 685,491

Claims priority, application Italy, Sep. 14, 1995, MI95A1914

Int. Cl.^{6} C08K *5/5393;* **C07F** *9/48*

U.S. Cl. 524—126 **7 Claims**

1. Tetrakis-(2,4-di-t-butylphenyl)-4,4'-biphenylene diphosphonite having the formula:



in crystalline form, having a melting point of 185° C.–186° C.

3. Stabilized polymeric compositions which comprise an organic polymer and a stabilizing quantity of tetrakis-(2,4-di-t-butylphenyl)-4,4'-biphenylene diphosphonite in crystalline form according to claim 1.

5,852,085
TRANSPARENT BLENDS OF POLYETHERIMIDE RESINS

Sterling Bruce Brown, Niskayuna, N.Y.; Stephen Michael Copper, Newburgh, Ind., and Brenda A. Giles, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 31, 1996, Ser. No. 775,697

Int. Cl.^{6} C08K *5/5313;* **C08L** *77/06;69/00;67/03*

U.S. Cl. 524—128 **24 Claims**

1. A resin composition comprising:

(a) a polyetherimide resin;

(b) at least one resin selected from the group consisting of polycarbonate resins, poly(ester-carbonate) resins, and polyarylate resins, provided that the amount of polycarbonate resin is less than or equal to 50 percent by weight, based on the total weight of the composition; and

(c) an effective amount of a catalyst to provide transparency to the composition, wherein said catalyst is sodium phenylphosphinate.

5,852,086
POLYAMIDE-ACRYLONITRILE BUTADIENE BLENDS WITH REDUCED GEL AND ANTIGEL AGENT

James Walter Horvath, Cuyahoga Falls, and Faith Michelle Howard, Beachwood, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 30, 1996, Ser. No. 729,635

Int. Cl.^{6} C08K *5/53*

U.S. Cl. 524—130 **5 Claims**

1. A process of making a uniformly dispersed blend of acrylonitrile/butadiene polymer with a polyamide without gel formation comprising mixing the acrylonitrile/butadiene polymer with polyamide in the presence of a special chemical package consisting essentially of a mixture of alkylhydroquinone, thioester synergist, organic phosphite and an alkyl phenolic antioxidant at a temperature sufficient to melt the polyamide.

5,852,087
EASILY DYEABLE META-LINKAGE-CONTAINING AROMATIC POLYAMIDE FIBERS

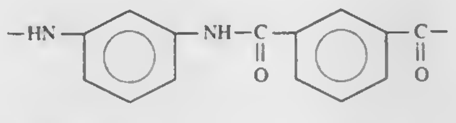
Akihiro Ohba, Matsuyama, and Koki Sasaki, Iwakuni, both of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 600,874, Feb. 13, 1996, abandoned. This application Dec. 20, 1996, Ser. No. 769,830

Int. Cl.^{6} C08L *77/10*

U.S. Cl. 524—154 **15 Claims**

1. Easily dyeable meta-linkage-containing aromatic polyamide fibers consisting of a composition which comprises a meta-linkage-containing aromatic polyamide incorporating a quaternary onium salt of an alkylbenzenesulfonic acid, wherein at least 85 mole percent of the repeating units of the meta-linkage-containing aromatic polyamide are a poly-m-phenylene isophthalamide consisting of repeating units represented by the following chemical formula:



and wherein the content of the quaternary onium salt of an alkylbenzenesulfonic acid is between 2.8 and 7.0 mole percent with respect to the repeating units of the meta-linkage-containing aromatic polyamide.

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5,852,088

NANOPOROUS CERAMICS WITH CATALYTIC FUNCTIONALITY

John P. Dismukes, Annandale; Jack Wayne Johnson, Clinton, both of N.J., and John Stewart Bradley, Anderruhr, Germany, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 27, 1995, Ser. No. 578,084

Int. Cl.^{6} C08K *5/00*

U.S. Cl. 524—175 **44 Claims**

1. A preceramic composite intermediate composition comprising a mixture of a ceramic precursor oligomer or polymer having a number average molecular weight in the range of from about 200 to about 100,000 g/mole having uniformly dispersed therein from about 0.5 up to about 65 wt % of an organometallic compound containing a metal of Group IB, II, III, IV, V, VIB, VIIA or VIII of the Periodic Table, including rare earth metals.

5,852,089

RUBBER COMPOSITION FOR TIRE TREADS

Tetsuji Kawazura, and Eri Miura, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co,, Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,363

Claims priority, application Japan, Apr. 30, 1992, 4-111306

Int. Cl.^{6} C08K *5/103*

U.S. Cl. 524—308 **7 Claims**

1. A rubber composition for automotive tire treads which comprises at least one base rubber selected from the group consisting of natural rubber, butadiene rubber, styrene-butadiene rubber and polyisoprene rubber, and a plasticizer in an amount of 5 to 40 parts by weight per 100 parts by weight of said at least one base rubber, said plasticizer being derived by reacting a glycerol dimer condensate or an alkylene oxide adduct of a polyhydric alcohol with at least one higher fatty acid of 12 to 22 in carbon number or a fatty acid mixture composed predominantly of said at least one higher fatty acid, said composition being vulcanizable and suitable for use in an automotive tire.

5,852,090

NORBORNENE-SUBSTITUTED BISPHENOL ANTIOXIDANTS

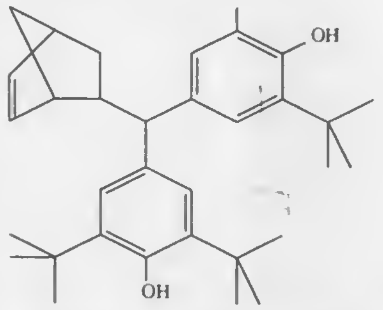
Hans Rudolf Meier, Marly, and Andreas Mühlebach, Belfaux, both of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Filed Jan. 29, 1997, Ser. No. 789,894

Int. Cl.^{6} C08K *5/13;* **C07C** *39/17*

U.S. Cl. 524—324 **7 Claims**

1. The compound of the formula:



2. A composition comprising an organic material sensitive to oxidative, thermal and/or light-induced degradation, and the compound according to claim 1.

5,852,091

SOLID ALCOHOL-FILLED PVC PIPE CEMENT

Mark W. Waldrop, Royal Oak, Mich., and William C. Walsh, Archbold, Ohio, assignors to BASF Corporation, Mt. Olive, N.J.

Filed Oct. 4, 1996, Ser. No. 726,888

Int. Cl.^{6} C08K *5/05;* **C08L** *27/06*

U.S. Cl. 524—388 **19 Claims**

1. A cement composition, consisting essentially of: (a) at least about 10% by weight of a poly(vinyl chloride) resin; (b) at least about 2% by weight of a solid alcohol having up to 20 carbon atoms; (c) at least about 10% by weight of an organic solvent or a mixture of organic solvents; and (d) optionally, a member selected from the group consisting of fillers, pigments, dyes, colorants, viscosity-modifying agents, stabilizers, plasticizers, and mixtures thereof.

5,852,092

ORGANOSILICON-CONTAINING COMPOSITIONS HAVING ENHANCED ADHESIVE PROPERTIES

My N. Nguyen, Poway, Calif., assignor to Johnson Matthey, Inc., Valley Forge, Pa.

Filed Feb. 11, 1997, Ser. No. 798,863

Int. Cl.^{6} C08K *3/38*

U.S. Cl. 524—404 **14 Claims**

1. An organosilicon-containing composition suitable for use as an adhesive and capable of rapid curing at low temperature comprising about 10 to 80 wt. % of an organic compound component, about 20 to 90 wt. % of one of boron nitride and silver and at least about 0.1 wt. % carbon fibers; said organic compound component comprising the reaction product of about 40 to 90 wt. % reaction product of cyclic olefin and cyclic siloxane and about 10 to 60 wt. % rubber in liquid form.

5,852,093

VULCANIZABLE RUBBER COMPOSITION, SEAL USED IN DYNAMIC STATE, AND SEALING MATERIAL

Yoshiaki Aimura, and Suguru Ito, both of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02440, § 371 Date May 29, 1997, § 102(e) Date May 29, 1997, PCT Pub. No. WO96/17015, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 30, 1995, Ser. No. 849,150

Claims priority, application Japan, Nov. 30, 1994, 6-321617

Int. Cl.^{6} C08K *5/22*

U.S. Cl. 524—432 **22 Claims**

1. A vulcanizable rubber composition comprising a highly saturated nitrile copolymer rubber having an iodine value of not larger than 80 and, based on 100 parts by weight of the highly saturated nitrile copolymer rubber:

(i) 3 to 30 parts by weight of a reinforcing filler,

(ii) 50 to 200 parts by weight of an oxide of a metal of group 2 of the periodic table,

(iii) 30 to 200 parts by weight of a non-reinforcing filler, and

(iv) 0.1 to 20 parts by weight of an organic peroxide vulcanizer, wherein the highly saturated nitrile copolymer rubber is a product obtained by hydrogenating a copolymer of an unsaturated nitrile, a conjugated diene and an optional ethylenically unsaturated monomer.

5,852,094

MOISTURE CURING COATING COMPOSITION

Arie Noomen, Voorhout; Petrus Johannes Maria van Kesteren, Sassenheim, and Nicolaas Antonius Maria Schoonderwoerd, Stompwijk, all of Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

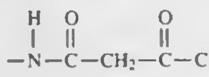
Filed Nov. 21, 1996, Ser. No. 755,383

Claims priority, application Netherlands, Nov. 22, 1995, 1001716

Int. Cl.^{6} C08K *3/22*

U.S. Cl. 524—433 **24 Claims**

1. A coating composition comprising a metal compound that is the oxide of a metal of Group IIa of the Periodic Table and an organic compound comprising at least two acetoacetate groups or acetamide groups of the formula



$$-\overset{\overset{\large H}{|}}{N}-\overset{\overset{\large O}{\|}}{C}-CH_2-\overset{\overset{\large O}{\|}}{C}-CH_3$$

or a combination of the two groups.

5,852,095

AQUEOUS, SILICONE-MODIFIED ACRYLATE POLYMER EMULSION

Toyoaki Yamauchi, Yokohama, and Yasuyuki Kamiyama, Zushi, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/01458, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO95/29196, PCT Pub. Date Nov. 2, 1995

PCT Filed Sep. 2, 1994, Ser. No. 669,544

Claims priority, application Japan, Apr. 20, 1994, 6-81855

Int. Cl.^{6} C08F *2/16*

U.S. Cl. 524—460 **17 Claims**

1. An aqueous, silicone-modified acrylate polymer emulsion, which is an acrylate polymer emulsion produced by subjecting a monomer system (A) to emulsion polymerization in an aqueous medium in the presence of an emulsifier (B), wherein said acrylate polymer emulsion is silicone-modified using a silicone structure-containing modifier (C) during or after said emulsion polymerization, and wherein each of the emulsion polymerization and the silicone modification of the acrylate polymer emulsion is performed at a pH of 4.0 or less;

wherein said monomer system (A) comprises an acrylate monomer selected from the group consisting of an acrylic ester, a methacrylic ester and a mixture thereof, said acrylate monomer containing 5% by weight or more based on the weight of said monomer system (A), of a C_5–C_{12} cycloalkyl ester of acrylic acid, a C_5–C_{12} cycloalkyl ester of methacrylic acid, or a mixture thereof;

wherein said emulsifier (B) is selected from the group consisting of a sulfonic acid group-containing ethylenically unsaturated monomer, a sulfonate group-containing ethylenically unsaturated monomer, and a mixture thereof;

wherein said silicone structure-containing modifier (C) comprises a silicone structure-containing silane (I) represented by the formula:

$$R^1\text{—Si—}(R^2)_3$$

wherein R^1 represents a hydrogen atom, a C_1–C_{16} aliphatic hydrocarbon group, a C_5–C_{10} aryl group, a C_5–C_6 cycloalkyl group, a vinyl group, an acrylic C_1–C_{10} alkyl group or a methacrylic C_1–C_{10} alkyl group, and each R^2 independently represents a C1-C8 alkoxyl group, an acetoxyl group or a hydroxyl group; and

wherein said monomer system (A) and said emulsifier (B) are, respectively, used in an amount of from 80% to 99.95% by weight and in an amount of from 0.05% to 20% by weight, based on the total weight of monomer system (A) and emulsifier (B), and said silicone structure-containing modifier (C) is used in an amount which satisfies the following relationship:

$$\frac{1}{2} \leqq \frac{(A)+(B)}{(C)} \leqq \frac{99}{1},$$

wherein (A), (B) and (C), respectively, represent the amount of monomer system (A), emulsifier (B) and modifier (C) in weight percent based on the total weight of materials (A), (B) and (C).

5,852,096

FILLER BASED ON SILICON DIOXIDE, METHOD FOR ITS PREPARATION, AND ITS USE

Detlef Heindl, Weinbach, and Albert Erdrich, Bad Nauheim, both of Germany, assignors to Heraeus Kulzer GmbH, Hanau, Germany

Filed Mar. 26, 1997, Ser. No. 824,394

Claims priority, application Germany, Apr. 20, 1996, 196 15 763.3

Int. Cl.^{6} C08K *3/00*

U.S. Cl. 524—492 **19 Claims**

1. Finely divided filler on a silicon dioxide basis comprising porous silicon dioxide glass having a particle size of 0.5–50 micrometers, a pore size of 20–120 nanometers, a pore volume of 200–1000 mm^3/g and a BET surface area of 10–100 m^2/g wherein the porous silicon dioxide glass is provided with an impregnant containing monomeric (meth)acrylic acid esters.

5,852,097

COMPOSITION FOR TREAD RUBBER OF TIRES

Naohiko Kikuchi, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 580,246, Dec. 28, 1995, abandoned. This application Aug. 8, 1997, Ser. No. 908,976

Claims priority, application Japan, Dec. 28, 1994, 6-329038

Int. Cl.^{6} C08K *3/00*

U.S. Cl. 524—492 **16 Claims**

1. A rubber composition suitable for tire treads comprising a rubber component consisting of a diene rubber, 20 to 60 parts of silica, 3 to 12 parts of a silane coupling agent, and 2 to 10 parts of an organic short fiber, wherein said organic short fiber has an average diameter of 0.1 to 0.5 μm, an average length of 50 to 500 μm and a length/diameter ratio of 100 to 5,000, said silane coupling agent is a member selected from the group consisting of a compound of the formula: RSiXn wherein R is an organic functional group having vinyl group, glycidoxy group, methacryloly group, amino group or mercapto group, X is a hydrolyzable group and n is 2 or 3, and bis(triethoxysilylpropyl)tetrasulfide, and said parts all being parts by weight per 100 parts by weight of said rubber component.

5,852,098

SHORT GLASS-FIBRE REINORCED POLYCARBONATES

Burkhard Köhler, Leverkusen; Klaus Horn, Dormagen; Jan Mazanek, Köln, and Karl-Heinz Käsler, Bergisch Gladbach, all of Germany, assignors to Bayer AG, United Kingdom

Filed Apr. 8, 1996, Ser. No. 629,366

Claims priority, application Germany, Apr. 21, 1995, 19 51 4770.7

Int. Cl.^{6} C08J *5/10;* **C08K** *3/40;* **C08L** *69/00*

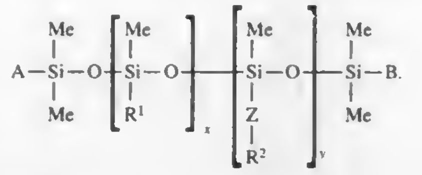
U.S. Cl. 524—494 **7 Claims**

1. A mixture comprising

A) 45 to 97 wt. % of polycarbonate,

B) 2 to 50 wt. % of short glass fibers, and

C) 0.1 to 5 wt. % of polyether silicone of the formula (I):



$$A-\overset{Me}{\underset{Me}{Si}}-O-\left[\overset{Me}{\underset{R^1}{Si}}-O\right]_x-\left[\overset{Me}{\underset{Z-R^2}{Si}}-O\right]_y-\overset{Me}{\underset{Me}{Si}}-B. \quad (I)$$

wherein:

R^1 signifies an alkyl group having 1 to 30 C atoms, wherein up to 20 wt. % of the alkyl groups can be replaced by phenyl groups and/or aralkyl groups, which groups can be substituted by one or more methyl groups, while the alkyl moieties of the aralkyl groups can contain 1 to 3 carbon atoms,

A signifies —CH_3 or R^2-Z-,

B signifies —CH_3 or R^2-Z-,

R^2 signifies a polyether radical having an average molecular weight of from 200 to 3,000, which is terminated by C_1–C_6 alkoxy, OH—, ester or carbamate groups,

Z signifies an alkylene group, which bonds the silicon atom to the group R^2,

x represents 1 to 20,

y represents 0 to 50, and

wherein the average molecule contains a group R^2-Z- and the ratio of the number of groups R^2-Z- to the number x amounts to 1:2 to 1:40;

in each case based on 100 wt. % of A)+B)+C).

5,852,099

RUBBER COMPOSITION FOR THE MANUFACTURE OF TIRES WHICH HAS A BASE OF PRECIPITATED SILICAS "DOPED" WITH ALUMINUM

Robert Vanel, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin—Michelin & Cie, Clermont-Ferrand Cedex, France

Filed Mar. 5, 1996, Ser. No. 611,244

Claims priority, application France, Mar. 29, 1995, 95 04077

Int. Cl.⁶ C08K *3/36;3/34*

U.S. Cl. 524—494 **19 Claims**

1. A sulfur vulcanizable rubber composition intended for the manufacture of tires, having a base of at least one diene polymer, characterized by the fact that it contains as reinforcing filler, a precipitated silica having an aluminum content of between 0.35% and 3% by weight (both inclusive), referred to the weight of the silica, prepared by reacting silicate with an acidifying agent to obtain a suspension of precipitated silica, performing a step selected from the group consisting of:

(a) adding at least one compound A of aluminum and then a basic agent; and

(b) adding a silicate and at least one compound A of aluminum simultaneously;

and then separating the resulting suspension by filtration to provide a cake.

5,852,100

THERMOPLASTIC RESIN COMPOSITION

Hajime Sadatoshi, Ichihara; Haruyuki Suzuki, Sodegaura; Yuichi Miyake, Nagoya; Takao Nomura, Toyota, and Takeyoshi Nishio, Okazaki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Apr. 23, 1996, Ser. No. 636,220

Claims priority, application Japan, Apr. 28, 1995, 7-106762; Apr. 28, 1995, 7-106763; Apr. 28, 1995, 7-106764; Apr. 28, 1995, 7-106765; Apr. 28, 1995, 7-106766

Int. Cl.⁶ C08L *53/00*

U.S. Cl. 524—505 **23 Claims**

1. A thermoplastic resin composition comprising:

(I) 10–40% by weight of a mixture of (a) 10–50% by weight of a propylene homopolymer and/or an ethylene-propylene block copolymer (an isotactic pentad fraction of a propylene homopolymer portion being 0.98 or above) and (b) 50–90% by weight of an olefin-based copolymer rubber, said mixture having been dynamically heat treated in the presence of an organic peroxide and a crosslinking agent;

(II) 20–85% by weight of a propylene homopolymer and/or an ethylene-propylene block copolymer (an isotactic pentad fraction of a propylene homopolymer portion being 0.98 or above and a melt index TJIS-K-6758, 230° C.) of the propylene homopolymer portion being 30–150 g/10 min); and

(III) 5–40% by weight of an inorganic filler.

5,852,101

POWDER COATING COMPOSITIONS AND THEIR USE FOR COATING HEAT-RESISTANT SUBSTRATES

Reinhard Halpaap, Odenthal; Christian Wamprecht, Neuss; Hans-Joachim Kreuder, Toenisvorst; Wolfgang Schultz, Krefeld; Manfred Bock, Leverkusen, all of Germany, and Rainer Rettig, Amagasaki, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 890,979, May 29, 1992, abandoned. This application Oct. 27, 1997, Ser. No. 958,227

Claims priority, application Germany, Jun. 1, 1991, 4 1 18 052.6

Int. Cl.⁶ C08J *3/00;* **C08K** *3/00;* **C08L** *75/00;* **C08F** *8/30*

U.S. Cl. 524—507 **17 Claims**

1. A powder coating composition for the production of glossy flexible coatings which is solid below 30° C. and liquid above 120° C. and comprises

A) a polyisocyanate component which

i) has a content of blocked isocyanate groups (expressed as NCO, molecular weight=42) of 3.0 to 14.0% by weight,

ii) has a functionality, based on the blocked isocyanate groups, of 1.9 to 2.3 and

iii) contains at least one ε-caprolactam-blocked polyisocyanate based on the reaction' product of 4,4'-diisocyanatodicyclohexyl methane with a polyol component having an average molecular weight of 90 to 400 and containing at least 50% by weight, based on the weight of the polyol component, of one or more (cyclo)aliphatic diols containing 4 to 12 carbon atoms,

B) a polyacrylate polyol component containing at least one polyhydroxy polyacrylate having an OH number of 40 to 120 and

C) an organotin catalyst for the reaction between hydroxyl groups and blocked isocyante groups,

wherein components A) and B) are present in qualities which correspond to an equivalent ratio of blocked isocyante groups of the polyisocyanate component to hydroxyl groups of the polyacrylate polyol component of 0.5:1 to 1.2:1.

5,852,102

BINDER COMPOSITION FOR PREPARING FIBER MATS

Stan Thyssen, Waalre, Netherlands, assignor to Teodur N.V., Breda, Netherlands

PCT No. PCT/EP95/01643, § 371 Date Jan. 28, 1997, § 102(e) Date Jan. 28, 1997, PCT Pub. No. WO95/30034, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 29, 1995, Ser. No. 737,049

Claims priority, application Germany, May 3, 1994, 44 15 470.4

Int. Cl.⁶ C08L *51/00*

U.S. Cl. 524—540 **13 Claims**

1. A mixture for producing moulded articles from fibre mats containing:

a) 20 to 45 wt. % of a powdered binder mixture, comprising

a1) 30 to 90% wt. % of phenol resin and

a2) 70 to 10 wt. % of powder coating waste, and

b) 80 to 55 wt. % of organic and/or inorganic fibres,

wherein the component a2) consists of powder coating waste which is not yet cross-linked, based on at least one member selected from the group consisting of epoxide, polyester, polyurethane and acrylate resins containing reactive groups.

5,852,103

TWO-PART MOISTURE CURABLE POLYURETHANE ADHESIVE

Shailesh S. Bhat, Troy, Mich., assignor to Essex Specialty Products, Inc., Clifton, N.J.

Continuation of Ser. No. 644,393, May 8, 1996, Pat. No. 5,672,562. This application Jul. 15, 1997, Ser. No. 892,572

Int. Cl.⁶ C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/10*

U.S. Cl. 524—590 **5 Claims**

1. A two-part adhesive comprising:

A. as a first part a polyurethane prepolymer having reactive isocyanate moieties;

B. as a second part a curative composition comprising:

i. a polyurea comprising the reaction product of a polyamine and a polyisocyanate dispersed in a polyether polyol-based polyurethane prepolymer having reactive hydroxyl moieties, and optionally, containing a plasticizer;

ii. a compound having at least one oxazolidine moiety capable of reacting with an isocyanate under curing conditions;

iii. a catalyst capable of catalyzing the reaction of isocyanate and hydroxyl moieties in the presence of moisture.

5,852,104

AQUEOUS POLYURETHANE DISPERSIONS CONTAINING STRUCTURAL UNITS DERIVED FROM ALKENYL- OR ALKYLSUCCINIC ACID

Nicholas Kokel, Ludwigshafen; Karl Häberle, Speyer; Kuno Beutler, Lambsheim; Jürgen Reichert, Limburgerhof; Peter Weyland, Frankenthal; Gabriele Dralle-Voss, Alsbach-Hähnlein; Knut Oppenländer, Ludwigsshafen; Michael Zirnstein, Shriesheim; Gerlinde Tischer, Ruhland; Bernd Guettes, Sallgast, and Ulrike Licht, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 27, 1997, Ser. No. 789,539

Claims priority, application Germany, Feb. 5, 1996, 19603989.4

Int. Cl.⁶ C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **B32B** *27/00*

U.S. Cl. 524—591 **4 Claims**

1. An aqueous dispersion containing a polyurethane built up from

a) diisocyanates having 4 to 30 carbon atoms,

b) diols, of which

b.1) from 10 to 100 mol %, based on the total amount of the diols (b), have a molecular weight of from 500 to 5000 and are built up from

b1.1) (C_4- to C_{30}-alkyl)succinic acid and/or (C_4- to C_{30}-alkenyl)succinic acid,

b1.2) from 0 to 60 mol %, based on component (b1.1), of a dicarboxylic acid which is different from component (b1.1), and

b1.3) a diol having a molecular weight of from 60 to 500 g/mol,

b.2) from 0 to 90 mol %, based on the total amount of the diols (b), have a molecular weight of from 60 to 500 g/mol, and

b.3) from 0 to 90 mol %, based on the total amount of the diols (b), have a molecular weight of from 500 to 5000 g/mol and are different from (b1),

c) monomers which are different from the monomers (a) and (b) and contain at least 2 isocyanate groups or at least 2 isocyanate-reactive groups and which in addition carry at least one hydrophilic group or a potentially hydrophilic group, thus achieving the water-dispersibility of polyurethanes,

d) if desired, further polyfunctional compounds which are different from the monomers (a) to (c) and contain reactive groups which are alcoholic hydroxyl groups, primary or secondary amino groups or isocyanate groups, and

e) if desired, monofunctional compounds which are different from the monomers (a) to (c) and contain one reactive group, which is an alcoholic hydroxyl group, a primary or secondary amino group or an isocyanate group.

5,852,105

AQUEOUS DISPERSIONS COMPRISING A POLYURETHANE, A POLYISOCYANATE AND A TERTIARY ALKANOLAMINE

Renate Wüstefeld, Schifferstadt, and Ulrike Licht, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 30, 1997, Ser. No. 841,391

Claims priority, application Germany, May 8, 1996, 196 18 389.8

Int. Cl.⁶ C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **9 Claims**

1. An aqueous two-component dispersion comprising

a) a polyurethane carrying anionic groups which make the polyurethane dispersible in water (component a),

b) from 0.04 to 1.5 mol of NCO groups in the form of a water-emulsifiable polyisocyanate (component b) per kg of component (a), and

c) from 0.05 to 40 mol of tertiary amino groups in the form of a tertiary alkanolamine (component c) per mole of NCO groups in the form of component (b).

5,852,106

COATING COMPOSITIONS FOR GLASS SUBSTRATES

Oswald Wilmes, Köln; Beate Baumbach, Leverkusen; Klaus Nachtkamp, Düsseldorf; Eberhard König, Leverkusen; Randall Dearth, Leverkusen; Manfred Bock, Leverkusen, and Wolfhart Wieczorrek, Köln, all of Germany, assignors to Bayer Aktiengesselschaft, Leverkusen, Germany

Filed May 1, 1997, Ser. No. 848,948

Claims priority, application Germany, May 15, 1996, 196 19 545.4

Int. Cl.⁶ C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **B32B** *27/00*

U.S. Cl. 524—591 **3 Claims**

1. An aqueous polyurethane coating composition wherein the binder comprises

a) a polyol component, which is soluble or dispersible in water and is the reaction product of

A1) 20 to 60 wt. % of a polyisocyanate component containing 50 to 100 wt. % of 4,4'-diisocyanatodicyclohexylmethane and 0 to 50 wt. % of other organic polyisocyanates having a molecular weight of 140 to 1500,

B1) 20 to 60 wt. % of a polyol component containing one or more polyether polyols and having an OH number of 25 to 350 mg KOH/g solids,

C1) 2 to 12 wt. % of an anionic or potential anionic component containing one or more compounds having at least one isocyanate-reactive group and at least one group capable of salt formation, which may optionally be present in at least partially neutralized form,

D1) 0 to 12 wt. % of a nonionic hydrophilic component containing one or more compounds which are mono- or difunctional for purposes of the isocyanate addition reaction and have at least one lateral or terminal hydrophilic polyether chain,

E1) 0 to 15 wt. % of one or more polyhydric alcohols having 2 to 4 hydroxyl groups and a molecular weight of 62 to 250,

F1) 0 to 15 wt. % of one or more (cyclo)aliphatic polyamines having 2 to 4 amino groups and a molecular weight of 60 to 300, G1) 0 to 30 wt. % of one or more (cyclo)aliphatic polyamino /hydroxyl compounds having a total of 2 to 4 hydroxyl and amino groups and a molecular weight of 61 to 300 and

H1) 0 to 15 wt. % of one or more stabilizing components which are mono- or difunctional for purposes of the isocyanate addition reaction and have 1 to 2 hydrazide groups and a molecular weight of 70 to 300,

wherein the percentages of A1) to H1) add up to 100 and

b) a polyisocyanate component, which is soluble or dispersible in water, has blocked isocyanate groups and is the reaction product of

A2) 40 to 80 wt. % of a polyisocyanate having an isocyanurate group content (calculated as $C_3N_3O_3$; molecular weight= 126) of 2 to 30 wt. % and prepared from one or more diisocyanates having a molecular weight of 140 to 350 with

B2) 5 to 30 wt. % of one or more reversible blocking agents for isocyanate groups which are monofunctional for purposes of the isocyanate addition reaction.

C2) 0 to 15 wt. % of an anionic or potential anionic component containing one or more compounds having at least one isocyanate-reactive group and at least one group capable of salt formation, which may optionally be present in at least partially neutralized form,

D2) 5 to 30 wt. % of a nonionic hydrophilic component containing one or more compounds which are mono- or difunctional for purposes of the isocyanate addition reaction and have at least one lateral or terminal hydrophilic polyether chain,

E2) 0 to 15 wt. % of one or more polyhydric alcohols having 2 to 4 hydroxyl groups and a molecular weight of 62 to 250,

F2) 0 to 15 wt. % of one or more (cyclo)aliphatic polyamines having 2 to 4 amino groups and a the molecular weight of 60 to 300 and

G2) 0.5 to 15 wt. % of one or more stabilizing components which are mono- or difunctional for purposes of the isocyanate addition reaction and have 1 to 2 hydrazide groups and a molecular weight of 70 to 300,

wherein the percentages of A2) to G2) add up to 100, provided that the equivalent ratio of blocked isocyanate groups of component b) to hydroxyl groups of component a) is at least 0.8:1.

5,852,107

INTERNAL MOLD RELEASE COMPOSITIONS

Herbert Russell Gillis, West Deptford, N.J., and Paul William Mackey, Sylvan Lake, Minn., assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 375,883, Jan. 20, 1995, which is a continuation-in-part of Ser. No. 245,994, May 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 202,303, Feb. 25, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,525

Int. Cl.^{6} C08L *75/04*

U.S. Cl. 524—724 **25 Claims**

1. A reaction system comprising:

(1) an organic polyisocyanate;

(2) at least one compound containing a plurality of isocyanate-reactive groups; and

(3) an internal mold release system which is added to component (2), said internal mold release system comprising (a) a polysiloxane compound and (b) an amine salt of carboxylic acid.

5,852,108

COMPOSITE PARTICULATE MATERIAL FOR RESIN REINFORCEMENT, PRODUCTION THEREOF, AND REINFORCED RESIN COMPOSITION INCORPORATED THEREWITH

Toru Yamanaka; Mitsunari Sotokawa, and Shinobu Nakashima, all of Nagoya, Japan, assignors to Toray Industries, Inc., Japan

Filed Feb. 7, 1996, Ser. No. 597,848

Claims priority, application Japan, May 10, 1995, 7-111374

Int. Cl.^{6} C08J *5/10;* **C08K** *3/34;9/04;* **C08L** *67/00*

U.S. Cl. 524—790 **27 Claims**

1. A composite particulate material for resin reinforcement which comprises an inorganic particulate material (A) and an elastic polymer (B) having a glass transition temperature of −10° C. or below and also having functional groups which form chemical bonds with resins to be reinforced, said components (A) and (B) accounting for 50–99 wt % and 50–1 wt %, respectively, of their total amount wherein the composite particulate material is obtained by polymerizing monomer as a raw material of the elastic polymer (B) in the presence of the inorganic particulate material (A).

5,852,109

POLY-α-AMINO ACID PARTICLES, EMULSIONS CONTAINING THE SAME AND PROCESS FOR PREPARING THE SAME

Kenya Makino, Tsuchiura; Seiji Fukuhara, Kawagoe; Kyoko Kuroda, Tsuchiura, and Toshio Hayashl, Kyoto, all of Japan, assignors to JSR Corporation, Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,694

Claims priority, application Japan, Sep. 9, 1994, 6-240751; Oct. 28, 1994, 6-287198

Int. Cl.^{6} C08L *37/00*

U.S. Cl. 524—811 **15 Claims**

1. A process for preparing poly-α-amino acid particles which comprises:

(a) preparing an oil-in-water emulsion comprising water, an organic solvent having a water solubility of 10 g/100 ml or less at 1 atm at 25° C., and an emulsifier;

(b) polymerizing an α-amino acid-N-carboxy anhydride by emulsion polymerization in said oil-in-water emulsion; and

(c) removing said organic solvent;

wherein said organic solvent is selected from the group consisting of halogenated aliphatic hydrocarbons, halogenated aromatic hydrocarbons, esters, ethers and hydrocarbons.

5,852,110

METHOD FOR MAKING AMINO FUNCTIONAL POLYSILOXANE EMULSIONS

Ronald Paul Gee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 24, 1996, Ser. No. 668,797

Int. Cl.^{6} C08L *83/08*

U.S. Cl. 524—837 **26 Claims**

1. A method for producing amino-functional polysiloxane emulsions comprising emulsion polymerization of a mixture comprising at least one cyclosiloxane and at least one aminosilane having an amino-functional group solubility parameter equal to or less than 10.0; wherein said emulsion polymerization is carried out in the presence of water, at least one cationic surfactant and a basic emulsion polymerization catalyst.

5,852,111

POLYISOCYANATE COMPOSITION HAVING HIGH EMULSIFIABILITY AND STABILITY, AND AQUEOUS COATING COMPOSITION COMPRISING THE COMPOSITION

Shinichiro Watanabe, and Ichiro Ibuki, both of Nobeoka, Japan, assignors to Asahi Kasel Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1997, Ser. No. 945,016

Claims priority, application Japan, Jun. 30, 1995, 7-164998

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—839 **15 Claims**

1. A polyisocyanate composition which comprises:

(a) a hydrophilic polyisocyanate comprising:

at least one base polyisocyanate selected from the group consisting of at least one diisocyanate selected from an aliphatic diisocyanate and an alicyclic diisocyanate, and a two or more terminal isocyanate groups-containing polyisocyanate derived from said at least one diisocyanate, and

a nonionic hydrophilic group, bonded to said polyisocyanate, containing therein 5 to 50 repeating ethylene oxide units in terms of the average number of the units, wherein said hydrophilic group is present in an amount of from 2 to 50% by weight, based on the total weight of said base polyisocyanate and said hydrophilic group; and

(b) 0.5 to 20% by weight, based on the total weight of component (a) and component (b), of a substantially water-free ionic surfactant.

5,852,112

POLYESTER RESIN-BASED HIGH INDEX OPHTHALMIC LENSES HAVING IMPROVED OPTICAL UNFORMITY AND/OR TINTABILITY

Thomas J. Engardio, Vista; Philip D. Dalsin, Carlsbad, and Dae Ki Kang, Escondido, all of Calif., assignors to Signet Armorlite, Inc., San Marcos, Calif.

Division of Ser. No. 315,598, Sep. 30, 1994, Pat. No. 5,694,195. This application Jun. 27, 1997, Ser. No. 884,076

Int. Cl.^{6} C08L *67/06*

U.S. Cl. 525—23 **21 Claims**

1. A cross-linkable casting composition capable of being cast and cured into a polymeric ophthalmic lens having an index of refraction of at least 1.50 comprising:

an unsaturated polyester resin in an amount of about 35% to about 63% by weight of the composition;

an additive selected from the group consisting of about 1% to about 20% by weight of an allylic ester monomer; about 1% to about 20% by weight of an acrylate; and mixtures thereof; and

an exotherm depressant selected from the group consisting of alpha-methyl styrene; terpinolene; gamma-terpinene; dilauryl thiodipropionate; 4-tert-butylpyrocatechol; 3-methyl catechol; and mixtures thereof, in an amount of about 0.01% to about 20% for depressing the rate of polymerization of said composition.

5,852,113

PREPARATION OF THERMOPLASTICS

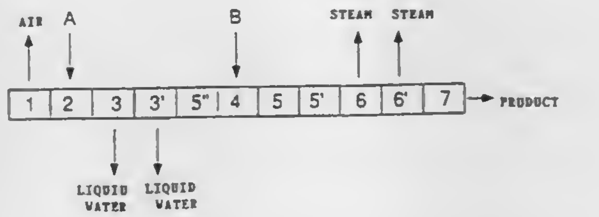
Norbert Güntherberg, Speyer; Jürgen Hofmann, Ludwigshafen; Elmar Mailahn, Worms; Hilmar Ohlig, Kaiserslautern; Sven Grabowski, Ludwigshafen; Bernhard Czauderna, Hirschberg, and Klaus Bus, Kaiserslautern, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 22, 1996, Ser. No. 620,309

Claims priority, application Germany, Mar. 27, 1995, 195 11 143.5

Int. Cl.^{6} C08G *63/48*

U.S. Cl. 525—53 **19 Claims**



1. A process for the preparation of toughened thermo-plastics composed of

a) a graft rubber A,

b) a thermoplastic polymer B, selected from the group consisting of styrene/acrylonitrile-copolymers, polystyrene, polymethyl methacrylate, polyvinyl chloride, polycarbonate, polybutylene terephthalate, polyethylene terephthalate, polyoxymethylene, polyphenylene sulfide, polysulfones, polyether sulfones, polyamides, imidated polymethyl methacrylate, and copolymers based on at least two of the monomers styrene, maleic anhydride, imidated maleic anhydride, methyl methacrylate and imidated methyl methacrylate, wherein in all of the thermo-plastic polymers B some or all of the styrene may be replaced by α-methylstyrene or by styrenes alkylated in the nucleus,

c) a further thermoplastic polymer C differing from B, and

d) optionally an additive selected from the group consisting of waxes, plasticisers, lubricants, mold release agents, pigments. dyes, flameproofing agents, antioxidants, light stabilizers and heat stabilizers, fibrous and pulverulent fillers and reinforcing agents, and antistatic agents, or mixtures thereof,

which comprises

mixing the graft rubber A, which is water-moist and contains up to 60% of residual water, the thermoplastic polymer B, the further thermoplastic polymer C and the additives D in a twin-screw extruder which has corotating screws and essentially comprises, in the transport direction,

at least one unheated metering section in which the water-moist graft rubber A is fed to the extruder by a metering means,

at least one unheated squeeze section which serves for mechanically dewatering the graft rubber A and contains at least one retarding element and at least one associated dewatering orifice,

at least one section in which the thermoplastic polymer B is introduced as a melt into the extruder,

at least one section provided with mixing, kneading or other plasticating elements or a combination of these elements.

at least one devolatilization section which is provided with at least one devolatilization orifice and in which the residual water is removed as steam, and

a discharge zone,

the water emerging from the dewatering orifices being present partially or completely in the liquid phase, and the components C or D or the mixtures thereof, together or separately from one another, being fed to one or more of the stated extruder sections, either together with the component A or B or mixtures thereof or separately from A and B.

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5,852,114
BIODEGRADABLE THERMOPLASTIC POLYMER BLEND COMPOSITIONS WITH ACCELERATED BIODEGRADATION

Gary L. Loomis, Morris Township; Michael J. Izbicki, Madison, and Anthony Flammino, Chester, all of N.J., assignors to Novon International, Inc., Buffalo, N.Y.

Continuation of Ser. No. 147,609, Nov. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,873, Jan. 8, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,083

Int. Cl.^{6} C08L *29/04;29/02;23/08*

U.S. Cl. 525—57 **17 Claims**

1. A biodegradable thermoplastic polymer blend composition suitable for use in the manufacture of shaped articles comprising
  at least one first polymer, wherein the first polymer is obtained by the co-polymerization of vinyl acetate and an alkene, with subsequent hydrolysis of all or substantially all of the vinyl ester groups to form vinyl alcohol groups and wherein the molar ratio of vinyl alcohol units to alkene units is within the range of from about 80:20 to about 50:50, and
  at least one second polymer, wherein the second polymer is polyvinyl alcohol which has been partially converted from polyvinyl acetate, with a degree of hydrolysis of within the range of from about 71% to about 98%,
  wherein the rate at which the second polymer biodegrades is greater than the rate at which the first polymer biodegrades, wherein the first polymer and the second polymer are processed in intimate association to form a uniform, substantially homogeneous blend composition, whereupon cooling the blend composition, co-continuous phases of the first polymer and of the second polymer may be observed and essentially all of the co-continuous phase of either of the polymers is extractable from the blend composition, and wherein when the blend composition is subjected to conditions favorable for biodegradation, the rate at which the first polymer biodegrades is enhanced by the second polymer.

5,852,115
RECYCLING OF CARPET SCRAP

Dennis C. Young, Mechanicsburg; Stanley J. Chlystek, Mountville, both of Pa.; Robert Malloy, Londonderry, N.H., and Ivan Rios, Washington, D.C., assignors to Lear Corporation, Southfield, Mich.

Continuation of Ser. No. 114,013, Aug. 30, 1993, abandoned. This application Jul. 14, 1995, Ser. No. 502,366

Int. Cl.^{6} C08J *3/20*

U.S. Cl. 525—64 **8 Claims**

1. A substantially homogeneous thermoplastic blend of carpet scrap comprising
  a carpet scrap having a mixture of
    between about 12% and 35% polyamide;
    between about 1% and 3% polyester;
    between about 1% and 3% polypropylene;
    between about 7% and 18% polyethylene;
    between about 15% and 36% poly(ethylene-co-vinyl acetate); and
    between about 34% and 60% filler; and
  a compatibilizing agent in an amount of up to about 60% for compatibilization of said carpet scrap mixture to form a substantially homogeneous thermoplastic blend, said compatibilizing agent is selected from the group consisting of
    (a) a mixture of polypropylene, and
      a modified polypropylene selected from the group consisting of
      polypropylene having acrylic acid grafted thereon, and a maleic anhydride modified polypropylene; and
    (b) a mixture of a maleic anhydride modified poly(ethylene-co-vinyl acetate) and a poly(ethylene-co-vinyl acetate) resin modifier containing
      between about 9% and 36% vinyl acetate.

5,852,116
CROSSLINKABLE BIMODAL POLYOLEFIN COMPOSITIONS

Stephen H. Cree, Terneuzen, Netherlands; John Penfold, St. Gallen; Line F. Fanichet, Schwyz, both of Switzerland, and Craig A. Wilson, Bois-Guillaume, France, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 538,689, Oct. 3, 1995. This application Aug. 26, 1996, Ser. No. 703,263

Int. Cl.^{6} C08L *23/26;51/06*

U.S. Cl. 525—72 **22 Claims**

1. A bimodal polyolefin composition comprising two or more ethylene polymer components and a crosslinking agent, activator, promoter or accelerator, said composition satisfying the following conditions:

$$M_{n1}/M_{n2}>7,$$

$$M_{n2}>3000 \text{ and}$$

$$0.7\geqq(A_1/(A_1+A_2))\geqq0.15,$$

wherein A_1, A_2, M_{n1}, and M_{n2} are derived from the molecular weight distribution of the composition obtained via gel permeation chromatography (GPC) by deconvoluting the relative response (RR) as function of the molecular weight (MW) to fit RR and MW to the following function which is a weighted sum of two log normal distribution functions:

$$RR=\frac{A_1}{\sigma_1\sqrt{2\pi}}\exp\left(-\left(\frac{\log(MW)-\mu_1}{\sigma_1\sqrt{2}}\right)^2\right)+\frac{A_2}{\sigma_2\sqrt{2\pi}}\exp\left(-\left(\frac{\log(MW)-\mu_2}{\sigma_2\sqrt{2}}\right)^2\right)$$

using a nonlinear regression technique to obtain values for A_1, A_2, μ_1, μ_2, σ_1, and σ_2, wherein
  MW is the GPC molecular weight value,
  RR is the relative response, which for an individual RR/M_w data set is

$$RR[i]=\frac{\text{Normalized Height }[i]}{\log(MW[i-1])-\log(MW[i])}$$

in which the Normalized Height [i] is the GPC output for the corresponding MW [i];
μ_1 and σ_1^2 represent the mean and standard deviation of the first log normal distribution;
μ_2 and σ_2^2 represent the mean and standard deviation of the second log normal distribution;

$$A_1+A_2=1 \text{ and } 0<A_1<1;$$

$$M_{n1}=10^{\mu 1}\exp(-0.5(\ln(10)\times\sigma_1)^2) \text{ and}$$

$$M_{n2}=10^{\mu 2}\exp(-0.5(\ln(10)\times\sigma_2)^2).$$

the composition having an overall density less than 0.907 g/cm^3.

5,852,117
PROCESS FOR MAKING LACTIDE GRAFT COPOLYMERS

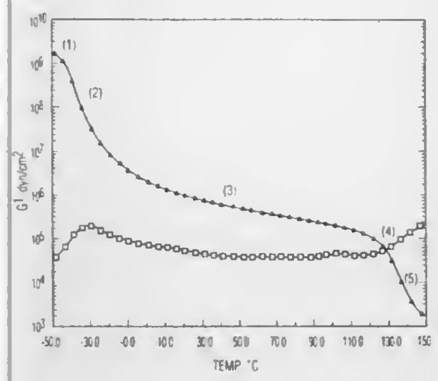
Jules E. Schoenberg, Bridgewater, and Robert D. Harlan, Somerville, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

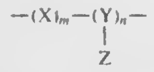
Filed Aug. 26, 1997, Ser. No. 918,879

Int. Cl.^{6} C08G *63/48;63/91*

U.S. Cl. 525—67 **9 Claims**

1. A process for making a graft copolymer, characterized as a thermoplastic elastomeric polymer, having the structure





$$-(X)_m-\underset{\displaystyle Z}{\underset{|}{(Y)_n}}-$$

in which
X represents the polymer units resulting from the polymerization of one or more monomers (the X monomers) selected from the group consisting of C_2–C_8 alkyl acrylate, C_2–C_8 alkyl methacrylate, ethylene and vinyl acetate;
Y represents the polymer units resulting from the polymerization with the X monomers of a monomer (the Y monomers) selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, hydroxypropyl methacrylate, allyl alcohol, and N-(t-butyl)aminoethyl methacrylate, the Y monomers present in an amount up to about 6%, but not 0%, by weight of the X monomers;
Z represents the polymer units resulting from the polymerization of lactide or glycolide, in which the total amount of the lactide or glycolide is present in an amount up to about 40%, but not 0%, by weight of the total polymer weight; and
m and n are integers designating the relative molar amounts of monomer units comprising the backbone chain of the polymer such that the backbone polymer has a number average molecular weight of 10,000–200,000,
the process comprising:
(a) preparing a backbone polymer from acrylate and/or methacrylate monomers and from one or more polymerizable monomers that contain a functional group unreactive in a free-radical polymerization, the backbone polymer being compatible with lactide or glycolide monomers or lactide or glycolide polymer;
(b) adding to the resulting polymer up to 40% by total polymer weight, but not 0%, of glycolide or of the D- or L-isomer of lactide in an enantiomeric excess of 84% or greater;
(c) heating the mixture of lactide and polymer to a temperature of 80°–175° C. in the presence of a transesterication catalyst for a period of time effective to polymerize the lactide and react the lactide with the functional group on the backbone polymer,
(d) adding a soluble fluoride salt to the product of step (c) in an amount effective to prevent gellation for at least 24 hours.

5,852,118
BLOCK COPOLYMERS OF POLYOLEFINS WITH POLYURETHANES, COPOLYESTERS OR COPOLYAMIDES AND THEIR USE

Jacques Horrion, Tilff, and Trazollah Ouhadi, Liege, both of Belgium, assignors to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed Aug. 25, 1997, Ser. No. 920,190

Claims priority, application European Pat. Off., Oct. 15, 1996, 96116483

Int. Cl.^{6} C08L *53/00*

U.S. Cl. 525—90 **3 Claims**

1. A blend comprising
(a) 60% to 99% by weight, based on (a)+(b), of a non-polar thermoplastic elastomer, and
(b) 1% to 40% by weight, based on (a)+(b), of a block copolymer comprising the reaction product of
  (i) 5% to 95% by weight, based on (i)+(ii), of an olefin copolymer having a functional group in the main or side chain thereof,
  (ii) 95% to 5% by weight, based on (i)+(ii), of a thermoplastic polyurethane, thermoplastic copolyester or thermoplastic copolyamide, and
  (iii) 0.05 to 5 parts by weight, based on 100 parts of (i)+(ii), of one or more isocyanates reactive with (i) and (ii).

5,852,119
PRESSURE-SENSITIVE ADHESIVE COMPOSITION AND PRESSURE-SENSITIVE ADHESIVE SHEETS

Makoto Kojima; Hironori Tamai; Yoshihide Kawaguchi; Yoshikazu Tanaka, and Katsuhide Kojima, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Jul. 10, 1997, Ser. No. 891,136

Claims priority, application Japan, Jul. 18, 1996, 8-189501

Int. Cl.^{6} C08F *8/30*

U.S. Cl. 525—123 **14 Claims**

1. A pressure-sensitive adhesive composition comprising
a reactive mixture of an acrylic prepolymer having highly reactive hydroxyl groups in the molecule thereof and a weight average molecular weight of 5,000 to 300,000 which is obtained by copolymerizing
  (a) 75 to 99.95% by weight of an acrylic monomer represented by formula (I):

$$CH_2{=}CH(R_1)COOR_2 \qquad (I)$$

wherein
R_1 represents a hydrogen atom or a methyl group; and
R_2 represents an alkyl group having 2 to 14 carbon atoms, and
  (b) 0.05 to 25% by weight of an acrylic monomer represented by formula (II):

$$CH_2{=}CH(R_1)COOR_3 \qquad (II)$$

wherein
R_1 represents a hydrogen atom or a methyl group; and
R_3 represents an alkyl group having 3 to 14 carbon atoms and at least one hydroxyl group,
provided that a positional number n of the carbon atom farthest from the ester bond in formula (I) and a positional number m of the farthest carbon atom from the ester bond that has a hydroxyl group bonded thereto in formula (II) satisfy the relationship: $m\geqq n-1$, and
a polyfunctional isocyanate mainly acting as a bifunctional chain extender.

5,852,120
AQUEOUS, HEAT CURABLE COATING COMPOUND, ITS PREPARATION AND ITS USE

Klaus Bederke, Sprockhövel; Volker Dücoffre, Wuppertal; Knut Gräf, Hattingen, and Walter Schubert, Wuppertal, all of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Continuation of Ser. No. 692,828, Jul. 30, 1996, abandoned, which is a continuation of Ser. No. 379,122, Jan. 27, 1995, abandoned, which is a continuation of Ser. No. 91,313, Jul. 14, 1993, abandoned. This application Oct. 8, 1997, Ser. No. 946,894

Claims priority, application Germany, Jul. 15, 1992, 42 23 182.5; Jul. 15, 1992, 42 23 183.3

Int. Cl.^{6} C08F *8/32;* **C08L** *33/14*

U.S. Cl. 525—124 **17 Claims**

1. Aqueous, heat-curable coating compound consisting essentially of

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- A) from 38.5 to 80% by weight of one or more film-forming copolymers and/or cocondensates which are emulsifiable in water or rendered water soluble by neutralisation with bases, having a number average molecular weight (Mn) of from 800 to 10,000, a hydroxyl number of from 60 to 390 and an acid number of from 15 to 60,
- B) from 3.5 to 25.5% by weight of one or more polyester oligomers having a calculated molecular weight of from 200 to 1000, a hydroxyl number of from 280 to 600 and an acid number of from 0 to 1.5,
- C) from 3.5 to 40% by weight of one or more amine resin cross-linking agents and
- D) from 0.5 to 28% by weight of one or more masked polyisocyanates,

the percentages by weight of components A) to D) being based in each case on the solids contents by weight of the resins and adding up to 100% by weight,
and water.

5,852,121

ELECTROSTATIC TONER RECEPTOR LAYER OF RUBBER MODIFIED THERMOPLASTIC

Ronald S. Steelman, Woodbury, Minn.; Eric J. Hanson, Hudson, Wis., and Jennifer Jeannette, St. Paul, Minn., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 459,154, Jun. 2, 1995, which is a continuation of Ser. No. 178,645, Jan. 7, 1994, abandoned. This application Jun. 9, 1997, Ser. No. 871,177

Int. Cl.^{6} C08F *8/30;* **C08L** *27/06;11/00;33/26*

U.S. Cl. 525—125 **1 Claim**

1. An electrostatic toner receptor layer comprising a blend of an acrylic resin, a vinyl resin, a chlorinated rubber or polyurethane dispersion rubber, and a plasticizer wherein the acrylic resin is a terpolymer of methyl methacrylate/ethylacrylate and N-t-butyl acrylamide, the vinyl resin is a vinyl chloride, vinyl acetate, or copolymers of vinyl chloride or vinyl acetate, wherein the chlorinated rubber or the polyurethane dispersion rubber is present in the range of 5 to 55% by weight.

5,852,122

HYDROXYL-FUNCTIONAL COPOLYMERS OF LOW MOLAR MASS WITH SUBSTANTIAL SIDE-CHAIN BRANCHING, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Ulrich Epple; Uwe Kubillus, both of Wiesbaden, and Harald Oswald, Hofheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 2, 1996, Ser. No. 641,734

Claims priority, application Germany, May 2, 1995, 195 15 919.5

Int. Cl.^{6} C08F *8/00*

U.S. Cl. 525—191 **4 Claims**

1. A polymer mixture comprising proportions by mass of:
- (a) from 5 to 95% of at least one low molecular weight copolymer prepared by reacting:
  - (aa) one or more glycidyl esters of saturated aliphatic monocarboxylic acids having a teritary or quaternary α carbon atom; and
  - (ab) at least two unsaturated copolymerizable monomers of which at least one comprises at least one COOH group; under the conditions of free-radical copolymerization, wherein the weight average molar mass of the copolymer is below 3500 g/mol and the proportion of branched side chains in the copolymer is at least 20% by mass; and
- (b) from 95 to 5% of at least one hydroxyl-containing copolymer or polyester having a weight-average molecular mass of greater than 3500 g/mol;

wherein the sum of the proportions by mass is 100%.

5,852,123

GRAFT COPOLYMER WITH A UREA OR IMID FUNCTIONAL GROUP AS A PIGMENT DISPERSANT

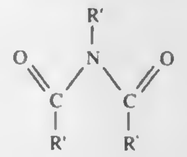
Jozef Huybrechts, Oud-Turnhqut, Belgium, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 17, 1996, Ser. No. 733,679

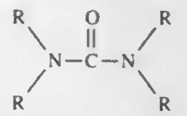
Int. Cl.^{6} C08F *265/10*

U.S. Cl. 525—282 **17 Claims**

1. A pigment dispersant, comprising:
- (a) from about 2 to 97 weight percent of a polymeric backbone of ethylenically unsaturated monomers;
- (b) from about 97 to 2 weight percent of a macromonomer having one terminal ethylenically unsaturated group, said macromonomer grafted onto said backbone by said terminal group; and
- (c) at least about 1 weight percent of a dispersing substituent attached at a location selected from the group consisting of the backbone, the macromonomer, and both the backbone and the macromonomer, said dispersing substituent selected from the group consisting of
  - i) imid functional compounds represented by the formula



  - ii) urea functional compounds represented by the formula



  - and iii) mixtures of i) and ii),

wherein each R and each R' is independently selected from the group consisting of hydrogen; saturated, substituted aliphatic and alicyclic compounds; saturated, unsubstituted aliphatic and alicyclic compounds; unsaturated, substituted aliphatic and alicyclic compounds; unsaturated, unsubstituted aliphatic and alicyclic compounds; substituted aromatic and heterocyclic compounds; unsubstituted aromatic and heterocyclic compounds; and divalent radicals including —NH—, oxygen and sulfur.

5,852,124

RUBBER-MODIFIED STYRENIC RESIN COMPOSITION

Ching-Liang Wang, and Dong-Bi Shiueh, both of Tainan, Taiwan, assignors to Chi Mei Corporation, Tainan Hsien, Taiwan

Filed Aug. 6, 1996, Ser. No. 692,762

Int. Cl.^{6} C08F *279/02*

U.S. Cl. 525—316 **5 Claims**

1. A rubber-modified styrenic resin composition comprising a matrix of styrenic-acrylic based copolymer and butadienic rubber particles dispersed in said matrix, said styrenic-acrylic based copolymer being prepared from an acrylonitrile monomer and/or a methacrylate monomer, a styrenic monomer and, optionally, other copolymerizable monomers, the rubber-modified styrenic resin composition further comprising residual styrene monomer and residual 4-vinyl cyclohexene, said residual styrene monomer being present in said composition in an amount below 1500 ppm and said residual 4-vinyl cyclohexene being present in said composition in an amount below 150 ppm,

the number average particle size of the butadienic rubber particles being 0.08 to 0.35 μm, the butadienic rubber particles being distributed such that the amount of the butadienic rubber particles having a particle size of below 0.1 μm is 19.5 to 99%, the amount of the butadienic rubber particles having a particle size of between 0.1 to 0.25 μm is 0.5 to 60%, and the amount of the butadienic rubber particles having a particle

size of greater than 0.25 μm is 0.5 to 80% based on the total number of the butadienic rubber particles, wherein the number average particle size of the butadienic rubber particles in the resin composition and the amounts of the residual styrene monomer and the residual 4-vinyl cyclohexane in the resin composition are limited so as to minimize unpleasant odor in said composition.

5,852,125

FLUORORUBBER, A PROCESS FOR ITS PRODUCTION AND ITS USE, AS WELL AS A PROCESS FOR PRODUCING FLUORORUBBER MOLDINGS AND/OR COATINGS

Ralf Krüger, Köln; Jürgen Ackermann, Leverkusen; Dieter Wrobel, Leverkusen, and Helmut Steinberger, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 30, 1997, Ser. No. 867,150

Claims priority, application Germany, Jun. 3, 1996, 196 22 188.9

Int. Cl.^{6} C08F *14/22*

U.S. Cl. 525—326.2 **10 Claims**

1. Fluororubber comprising a polymer of a) vinylidene fluoride and optionally further fluorine-containing and/or non-fluorine-containing monomers, and b) at least one compound from the group consisting of diiodomethane, 1,2-diiodo-1,1-difluoroethane, 1-iodo-2-bromo-1,1-difluoroethane, 1-bromo-2-iodo-1,1-difluoroethane and 1,2-dibromo-1,1-difluoroethane, in which at least 80% of the terminal groups in the polymer have the formula —CH_2—X where X=Br and/or I, wherein the fluororubber polymer contains iodine and/or bromine in amounts of 1–5 wt.% by weight of polymer and has a complex viscosity at 100° C. and $\omega=6.3\ s^{-1}$ of 0.01–30 kPa.s, as well as a temperature index, calculated as quotient of the viscosities at 40° and 100° C., of 3–250.

5,852,126

POLYMERISABLE COMPOSITION AND THE USE THEREOF

Steven Barnard, Wellesley Hills, Mass., and Marizel Rouilly, Gipf-Oberfrick, Switzerland, assignors to Novartis AG, Basel, Switzerland

PCT No. PCT/IB95/00301, § 371 Date Oct. 30, 1996, § 102(e) Date Oct. 30, 1996, PCT Pub. No. WO95/29959, PCT Pub. Date Nov. 9, 1995

PCT Filed Mar. 27, 1995, Ser. No. 737,029

Claims priority, application Switzerland, May 2, 1994, 1360/94; Apr. 11, 1995, 1068/95

Int. Cl.^{6} C08F *214/18;291/00;* **C09B** *69/10;* **B32B** *17/10*

U.S. Cl. 525—326.3 **43 Claims**

1. A composition, comprising:
- (a) at least one olefinic monomer (A),
- (b) at least one polymer prepared from at least one olefinic monomer,
- (c) an indicator dye to the basic structure of which an olefinic polymerisable group is covalently bonded directly or via a bridge group,
- (d) at least one diolefinic cross-linking agent; and
- (e) an effective amount of a polymerisation initiator, characterized in that upon polymerisation of the composition a polymerisate is prepared in the form of an interpenetrating network.

5,852,127

MODIFICATION OF POROUS AND NON-POROUS MATERIALS USING SELF-ASSEMBLED MONOLAYERS

Georges Belfort, Slingerlands, and Peter Boehme, Troy, both of N.Y., assignors to Rensselner Polytechnic Institute, Troy, N.Y.

Filed Jul. 9, 1996, Ser. No. 680,529

Int. Cl.^{6} C08F *8/14*

U.S. Cl. 525—327.7 **8 Claims**

1. A method of modifying the exposed surface of porous and non-porous organic polymer material by using self-assembled monolayers, comprising:
- providing a multiplicity of bifunctional organic molecules, each bifunctional organic molecule comprise a bolaamphiphile having opposite functional head groups and a chain between the head groups which each have mutual cooperative attraction selected from the group consisting of hydrogen bonding, π—π interaction and hydrophobic interaction with each other;
- self-assembling a monolayer by bonding one head group of the multiplicity of bifunctional organic molecules to the polymer material to form a self-assembled monolayer on the polymer material with opposite head groups of the multiplicity of bifunctional organic molecules forming a new exposed surface and self-assembly into the monolayer being effected by the mutual cooperative attraction between the chains of the bolaamphiphiles; and
- modifying the new exposed surface by chemical reaction of the outer head groups of the multiplicity of bifunctional organic molecules in the monolayer.

5,852,128

ACID-LABILE GROUP PROTECTED HYDROXYSTYRENE POLYMERS OR COPOLYMERS THEREOF AND THEIR APPLICATION TO RADIATION SENSITIVE MATERIALS

Munirathna Padmanaban; Georg Pawlowski; Yoshiaki Kinoshita; Hiroshi Okazaki; Seiya Masuda; Satoru Funato, and Tetsu Yamamoto, all of Saitama, Japan, assignors to Clariant AG, Muttenz, Switzerland

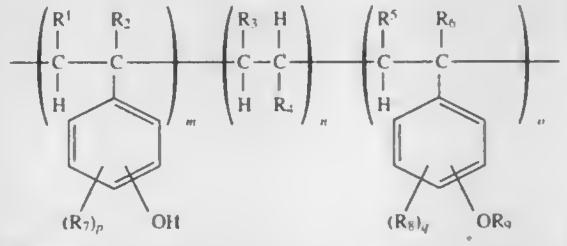
Filed Sep. 3, 1997, Ser. No. 922,321

Claims priority, application Japan, Sep. 10, 1996, 8-239141

Int. Cl.^{6} C08F *8/14*

U.S. Cl. 525—328.8 **8 Claims**

1. An acid-labile group protected hydroxystyrene polymer or copolymer thereof represented in formula I:



(I)

Wherein
- m and o are independently an integer of 1 or more provided that o/m+o=0.1 to 0.9; and n is zero or an integer of 1 or more, provided that when n is an integer of 1 or more, n/m+n+o=0.05 to 0.5,
- R_1, R_2, R_5, and R_6 represent independently hydrogen atom or an alkyl group with 1 to 6 carbon atoms,
- R_3 and R_4 represent independently hydrogen atom, a cyano group, an alkyl group with 1 to 6 carbon atoms, an aryl group with 6 to 10 carbon atoms, a substituted aryl group or a —$COOR_{10}$ group, or R_3 and R_4 together form a cyclic group represented by —C(O)OC(O)— or —C(O)NR_{10}C(O)—, with
- R_{10} being hydrogen atom, a linear, branched or cyclic alkyl group with 1 to 6 carbon atoms, an aryl group with 6 to 10 carbon atoms, or an alkaryl group with 7 to 10 carbon atoms,
- R_7 and R_8 represent independently hydrogen atom, chlorine atom, bromine atom, an alkyl group with 1 to 6 carbon atoms

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or a substituted alkyl group with 1 to 6 carbon atoms, p and q are an integer of 1 to 4 independently,

R_9 is represented by the formula II

$$—CH(CH_3)OR_{11}OXR_{12} \qquad (II)$$

wherein

R_{11} represents a linear or branched alkylene group with 2 to 6 carbon atoms,

X represents a direct bond, or a —C(O)—, —C(O)O—, —S(O_2)—, —C(O)NH— or —C(S)NH— group, and

R_{12} represents a linear, branched or cyclic alkyl group with 1 to 6 carbon atoms, a substituted alkyl group with 1 to 6 carbon atoms, an aryl group with 6 to 10 carbon atoms, a substituted aryl group with 6 to 10 carbon atoms, or an alkalyl group with 7 to 10 carbon atoms.

5,852,129

METHOD FOR PRODUCING HYDROXYL-TERMINATED (METH) ACRYLIC POLYMER

Masato Kusakabe; Kenichi Kitano, and Yoshiki Nakagawa, all of Kobe, Japan, assignors to Kaneka Corporation, Osaka, Japan

Filed Nov. 28, 1997, Ser. No. 980,407

Claims priority, application Japan, Nov. 28, 1996, 8-317195; Jul. 10, 1997, 9-184684

Int. Cl.^{6} C08F *20/10;2/46*

U.S. Cl. 525—330.3 **21 Claims**

1. A method for producing a hydroxyl-terminated (meth) acrylic polymer which comprises converting a halogen atom in a terminal structure of the general formula (1)

$$—CH_2—C(R^1)(CO_2R^2)(X) \qquad (1)$$

wherein R^1 is hydrogen or methyl, R^2 is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 20 carbon atoms or aralkyl containing 7 to 20 carbon atoms, and X is chlorine, bromine or iodine, of a (meth)acrylic polymer obtained by polymerizing a (meth)acrylic monomer using an organic halide or a halogenated sulfonyl compound as an initiator and, as a catalyst, a metal complex with a central metal selected from the elements belonging to the groups 8, 9, 10 and 11 in the periodic table, into a hydroxyl-containing substituent.

5,852,130

CATALYTIC COMPOSITION BASED ON TRANSITION METAL COMPLEXES, AND A PROCESS FOR THE HYDROGENATION OF UNSATURATED COMPOUNDS

Lothar Mussmann, Hanau-Wolgang, Germany; Yves Chauvin, Le Pecq, and Helene Olivier, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, France

Filed Jun. 17, 1996, Ser. No. 664,539

Claims priority, application France, Jun. 16, 1995, 95 07328

Int. Cl.^{6} C08F *8/04*

U.S. Cl. 525—338 **31 Claims**

1. A process for the hydrogenation of double or triple bonds between carbon atoms in unsaturated hydrocarbon compounds in the presence of a catalytic composition comprising a polar non-aqueous solvent which is ionic in nature and liquid at a temperature below 150° C. mainly containing at least one molten quaternary ammonium and/or phosphonium salt with general formula Q^+A^-, where Q^+ represents a quaternary ammonium and/or phosphonium cation, and A^- represents an anion, said composition also comprising at least one compound of at least one transition metal from groups 8, 9 or 10 dissolved in said non-aqueous solvent, said non-aqeuous solvent optionally further comprising an organic solvent in an amount less than said molten salt.

5,852,131

PROCESS FOR BROMINATING POLYSTYRENIC RESINS

Donald E. Balhoff; Billie B. Dadgar; Charles H. Kolich; Meng-Sheng Ao, and Homer C. Lin, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 721,398, Sep. 26, 1996, Pat. No. 5,686,538. This application Jun. 11, 1997, Ser. No. 872,718

Int. Cl.^{6} C08F *8/22*

U.S. Cl. 525—355 **12 Claims**

1. A process for the bromination of polystyrene, which process comprises:

a. providing a bromination catalyst and associated liquid in a reactor and feeding a portion of the bromination catalyst and associated liquid to a mixer external of the reactor;

b. feeding a brominating agent and a solution of polystyrene as separate streams to the external mixer, in which:

  i. the separate streams, prior to being fed to the external mixer, are substantially free of a bromination catalyst;

  ii. the solvent used in forming the polystyrene solution and the liquid associated with the catalyst contains less than 200 ppm water between the two of them; and

  iii. the brominating agent contains less than about 100 ppm water.

5,852,132

PROCESS FOR BROMINATING POLYSTYRENIC RESINS

Billie B. Dadgar; Donald E. Balhoff; Charles H. Kolich; Meng-Sheng Ao, and Homer C. Lin, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 727,341, Sep. 26, 1996, Pat. No. 5,677,390. This application Jun. 11, 1997, Ser. No. 872,985

Int. Cl.^{6} C08F *8/22*

U.S. Cl. 525—355 **29 Claims**

1. A process for the bromination of polystyrene, which process comprises:

a. feeding a mixture of a brominating agent and a solution of polystyrene to a reactor containing a bromination catalyst and associated liquid, in which

  i. the mixture is substantially free of a bromination catalyst;

  ii. the solvent used in forming the polystyrene solution and the liquid associated with the catalyst contains less than 200 ppm water between the two of them; and

  iii. the brominating agent contains less than about 100 ppm water.

5,852,133

CURABLE COMPOSITIONS CONTAINING 1,3,5-TRIAZINE CARBAMATES AND EPOXY COMPOUNDS

Ram Baboo Gupta, Bronx, N.Y., and Kuang Jong Wu, Easton, Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Aug. 29, 1996, Ser. No. 705,472

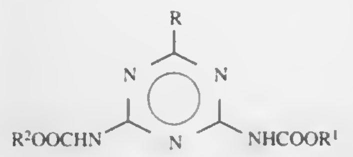
Int. Cl.^{6} C08F *8/32*

U.S. Cl. 525—375 **49 Claims**

1. A curable composition, comprising:

(1) a resin component comprising a polyfunctional epoxy compound containing, on average, at least two epoxy functionalities per molecule, such polyfunctional epoxy compound being a copolymer of an epoxy group containing unsaturated monomer with an unsaturated comonomer which does not contain epoxy groups; and

(2) a crosslinker component comprising a 1,3,5-triazine carbamate of the following general formula, as well as oligomers thereof:



wherein R is selected from the group consisting of —$NHCOOR^3$, hydrogen, hydrocarbyl, hydrocarbyloxy, hydrocarbylthio, amido, sulfonamido, amino, hydrocarbylamino, dihydrocarbylamino and cyclic amino; and wherein each R^1, R^2 and R^3 is independently selected from the group consisting of hydrocarbyl and hydrocarbyloxyhydrocarbyl;

wherein the resin component and the crosslinker component are present in an epoxy:carbamate equivalents ratio of from about 0.5:1 to about 2:1.

5,852,134

POLYMERIC ALLOYS FROM POLYESTER RESINS AND PROCESS FOR THEIR PRODUCTION

Hussain Ali Kashif Al Ghatta, Fiuggi, Italy, assignor to Sinco Engineering S.p.A., Italy

Continuation of Ser. No. 528,135, Sep. 14, 1995, abandoned, which is a continuation of Ser. No. 244,962, Aug. 1, 1994, abandoned. This application Dec. 5, 1996, Ser. No. 761,016

Claims priority, application Italy, Oct. 15, 1992, MI92A2373

Int. Cl.^{6} C08L *67/02;77/00*

U.S. Cl. 525—397 **2 Claims**

1. A process for the production of polymeric alloys, which comprises:

a) melt blending a polyester and a reactive polymer, selected from the group consisting of a polyamide, polycarbonate, polyphenyleneoxide and polysulphide resin, with a dianhydride of tetracarboxylic acid;

b) pelletizing the mixture;

c) solid state treating of the pellets at temperatures from 150° to 220° C. for a time sufficient to increase at least 0.1 dl/g the intrinsic viscosity of the alloy referred to the intrinsic viscosity value of the starting polyester resin.

5,852,135

THERMOPLASTIC RESIN COMPOSITIONS AND A METHOD OF PRODUCING THE SAME

Hiroyuki Kanai, Fuji; Hajime Serizawa, Mishima, and Mitsunori Matsushima, Shizuoka, all of Japan, assignors to Polyplastics Co., Ltd., Japan

PCT No. PCT/JP95/02139, § 371 Date Dec. 12, 1996, § 102(e) Date Dec. 12, 1996, PCT Pub. No. WO96/34053, PCT Pub. Date Oct. 31, 1996

PCT Filed Oct. 19, 1995, Ser. No. 750,523

Claims priority, application Japan, Apr. 19, 1995, 7/129432; Aug. 2, 1995, 7/218188; Aug. 18, 1995, 7/233263; Aug. 29, 1995, 7/245363; Sep. 28, 1995, 7/276645; Sep. 28, 1995, 7/276646; Oct. 4, 1995, 7/284635

Int. Cl.^{6} C08L *61/02*

U.S. Cl. 525—398 **36 Claims**

1. A thermoplastic resin composition which comprises (1) at least one thermoplastic resin and (2) a modified polyacetal which is introduced, to a base polyacetal, with a residue of a polymerizable compound having at least one functional group selected from the group consisting of an epoxy group, a carboxyl group, an acid anhydride group, an ester group, an ether group, an amide group, an amino group, a nitrile group, an isocyanate group, an imide group, a cycloalkyl group, an aryl group and a heterocyclic group containing a nitrogen atom as a hetero atom.

5,852,136

CURABLE COATING COMPOSITION

Marvin L. Green, Brighton, Mich., assignor to BASF Corporation, Southfield, Mich.

Filed Jul. 1, 1996, Ser. No. 673,935

Int. Cl.^{6} C08G *8/28*

U.S. Cl. 525—456 **21 Claims**

1. A curable coating composition comprising:

(A) a carbamate-functional component that is the reaction product of:

  (1) a compound comprising a plurality of hydroxyl groups, at least one of which is the result of a ring-opening reaction between an epoxy group and an organic acid group, and

  (2) cyanic acid or a compound comprising a carbamate group, and

(B) a component comprising a plurality of groups that are reactive with the carbamate functional groups on component (A).

5,852,137

POLYURETHANE SEALANT COMPOSITIONS

Harry W. Hsieh, Troy, and Syed Z. Mahdi, Rochester Hills, both of Mich., assignors to Essex Specialty Products, Auburn Hills, Mich.

Filed Jan. 29, 1997, Ser. No. 790,635

Int. Cl.^{6} C08L *75/04*

U.S. Cl. 525—458 **9 Claims**

1. A sealant composition comprising (1) a urethane prepolymer having an isocyanate functionality of at least about 2.0 and a weight average molecular weight of at least about 2,000; (2) a catalytic amount of a substantially active hydrogen free glycol acid salt of a tertiary amine and an organo metallic compound, and (3) (A) a silane, (B) an adduct of an isocyanate reactive silane and a polyisocyanate, or (C) the reaction product of (i) (a) an isocyanate reactive silane or (b) an adduct of an isocyanate reactive silane and a polyisocyanate with (ii) (a) a polyisocyanate and an active hydrogen containing compound or (b) a polyurethane prepolymer which has free isocyanate moieties, wherein the reaction product has an average of at least one silane group and at least one isocyanate group per molecule.

5,852,138

STABILIZER MIXTURES AND THEIR USE IN POLYCARBONATES

Helmut-Martin Meier, Ratingen; Hartmut Löwer; Wolfgang Ebert, both of Krefeld, and Wilfried Haese, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 6, 1997, Ser. No. 795,555

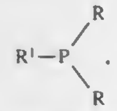
Claims priority, application Germany, Feb. 12, 1996, 196 04 990.3

Int. Cl.^{6} C08F *283/02*

U.S. Cl. 525—463 **10 Claims**

1. Mixtures comprising

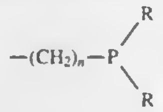
A) phosphines of formula (I)



$$R^1—PR_2 \qquad (I)$$

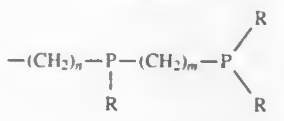
in which R is an unsubstituted or substituted C_6–C_{14}-aryl group and

in which R^1 is one of the following groups (Ia) to (Ih)

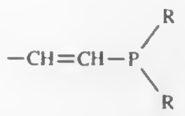


$$—(CH_2)_n—PR_2 \qquad (Ia)$$

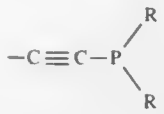
-continued



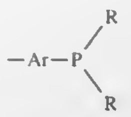
(Ib)



(Ic)

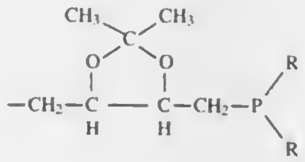


(Id)

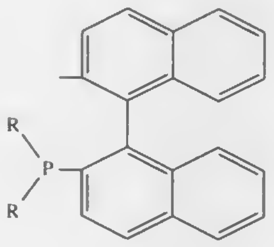


(Ie)

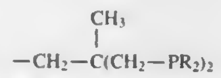
with Ar = C_6–C_{14}-arylene,



(If)



(Ig)

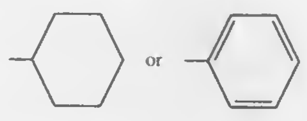


$-CH_2-\overset{\overset{\displaystyle CH_3}{|}}{C}(CH_2-PR_2)_2$ (Ih)

in which R has the meaning quoted for formula (I),

"n" and "m" are a whole number from 1 to 7, independently of each other in each case,

and wherein the H-atoms of the groups (Ia) to (Ic) can also be replaced by



and wherein R^1 can also be 4-phenyl-phenyl or α-naphthyl when both R's in formula (I) are also 4-phenyl-phenyl or α-naphthyl in each case,

wherein the 4-phenyl-phenyl and the α-naphthyl groups can also be substituted, and

B) silicon compounds of formula (II)

$R^2_a\text{—}Si(OR^3)_b$ (II)

in which a+b=4, b is at least 1, R^2 is H or C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, C_6–C_{24}-aryl, C_7–C_{24}-alkylaryl or C_7–C_{24}-aralkyl and R^3 is C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, C_5–C_{10}-cycloalkyl or C_7–C_{24}-aralkyl,

wherein the molar ratio of (A) to (B) is between 0.01 and 3.5.

5,852,139

MIXTURES OF THERMOPLASTICS AND OXIDIZED POLYARLENE SULFIDES

Di Helmut Scheckenbach, Langen, Germany, assignor to Ticona GmbH, Frankfurt am Main, Germany

Filed Apr. 8, 1997, Ser. No. 833,682

Claims priority, application Germany, Apr. 9, 1996, 196 13 979.1

Int. Cl.^{6} C08F *283/00;* **C08L** *81/00*

U.S. Cl. 525—537 **17 Claims**

1. A polymer mixture comprising:

A. from 40 to 99.5% by weight of at least one non-fluoropolymeric thermoplastic component, and, filled therewith,

B. from 0.5 to 60% by weight of at least one particulate, oxidized polyarylene sulfide having oxidized sulfur bridges, in which at least 10% of the sulfur bridges have been converted into sulfone bridges, sulfoxide bridges, or combinations thereof,

where the percentages by weight of said components A and B are based upon the total weight of the polymer mixture, and wherein the polymer mixture is processable by thermoplastic processing and the oxidized PAS is inert under the processing conditions.

5,852,140

SEMISUSPENSION POLYMERIZATION PROCESSES

Michael K. Georges, Guelph, and Raj D. Patel, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1993, Ser. No. 37,192

Int. Cl.^{6} C08F *2/02;2/16*

U.S. Cl. 526—82 **42 Claims**

1. A process for the preparation of a polymer comprising:

effecting bulk polymerization of a mixture comprised of at least one monomer, a free radical polymerization inhibitor, and a stable free radical agent wherein the stable free radical agent is comprised of nitroxide stable free radicals selected from the group consisting of 2,2,5,5-tetramethyl-1-pyrrolidinyloxy free radical, derivatives thereof, 2,2,6,6-tetramethyl-1-piperidinyloxy free radical, derivatives thereof 2,2,4,4-tetramethyl-3-oxazolidinyloxy free radical, derivatives thereof and mixtures thereof until from about 10 to about 50 weight percent of the monomer has been polymerized to form a bulk polymerization product;

optionally adding additional free radical initiator to said bulk polymerization product; optionally adding a colorant to said bulk polymerization product;

dispersing said bulk polymerization product with a high shear mixer into water containing a stabilizing component selected from the group consisting of non-ionic and ionic water soluble polymeric stabilizers to obtain a suspension of particles or droplets comprised of said bulk polymerization product with said particles having an average diameter of from about 0.1 to about 10 microns; and

polymerizing the resulting bulk polymerization product suspension in water to form said polymer.

5,852,141

PREPOLYMER FOR THE POLYMERIZATION OF OLEFINS COMBINING A NUMBER OF SOLID CATALYTIC COMPONENTS

Jean Malinge, Loubieng, France, assignor to Elf Atochem S.A., France

Filed Sep. 17, 1996, Ser. No. 710,438

Claims priority, application France, Sep. 19, 1995, 95 10942

Int. Cl.^{6} C08F *4/651*

U.S. Cl. 526—119 **9 Claims**

1. Process for the preparation of a substantially homogeneous prepolymer comprising:

a) preparation of a prepolymer A active for the polymerization of olefins by suspension or gas-phase prepolymerization of at least one olefin in the presence of a solid catalyst component A, then,

b) addition of a liquid organic aluminum compound and then of a solid catalytic component B on the prepolymer A active for the polymerization of olefins, to obtain an aggregate, then,

c) gas-phase prepolymerization AB of at least one olefin in the presence of the aggregate obtained in b).

6. Prepolymer obtained by the process of claim **1**.

7. Process for the polymerization of at least one olefin in the presence of the prepolymer of claim **6**.

5,852,142

PROCESS FOR THE PREPARATION OF AN OLEFIN POLYMER

Jürgen Rohrmann, Kelkheim, and Frank Küber, Oberursel, both of Germany, assignors to Targor GmbH, Germany

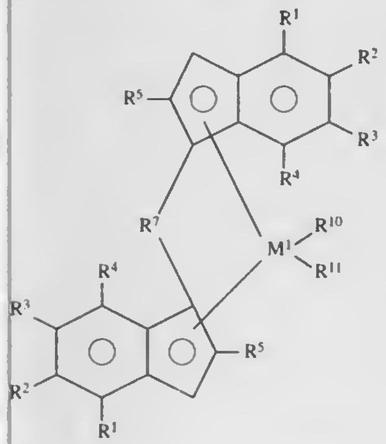
Division of Ser. No. 291,738, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 980,993, Nov. 24, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,588

Claims priority, application Germany, Nov. 30, 1991, 41 35 594.8

Int. Cl.^{6} C08F *4/64;* **C07F** *17/00*

U.S. Cl. 526—127 **65 Claims**

1. A process for the preparation of an olefin polymer by polymerization or copolymerization of an olefin with the formula R^a—CH=CH—R^b, in which R^a and R^b are identical or different and are a hydrogen atom or an alkyl radical having 1 to 14 carbon atoms or R^a and R^b, together with the carbon atoms adjoining them, can form a ring, in the presence of the catalyst system comprising a cocatalyst and a compound of the formula VI

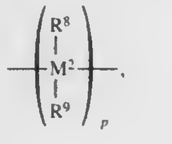


(VI)

in which

M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R^1, R^2, R^3, R^4 and R^5 are identical or different and are hydrogen; (C_1–C_{20})alkyl; (C_6–C_{14})aryl; (C_1–C_{10})alkoxy; (C_2–C_{10})alkenyl; (C_1–C_{20})arylalkyl: (C_7–C_{20})alkylaryl; (C_6–C_{10})aryloxy; (C_1–C_{10})fluoroalkyl; (C_6–C_{10})halogenoaryl; (C_2–C_{10})alkynyl; a radical—SiR^6_3, in which R^6 is (C_1–C_{10})alkyl; a halogen atom; or a hetero-aromatic radical which has 5 or 6 ring members and can contain one or more hetero atoms, or adjacent radicals R^2–R^4 with the atoms joining them, form one or more rings,



$$\left(-\overset{\overset{\displaystyle R^8}{|}}{\underset{\underset{\displaystyle R^9}{|}}{M^2}}-\right)_p,$$

R^7 is a radical

in which

M^2 is carbon, silicon, germanium or tin

R^8 is hydrogen, (C_1–C_{20})alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylalkyl, (C_7–C_{20})alkylaryl, (C_6–C_{10})aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10})halogenoaryl, (C_2–C_{10})alkynyl or halogen,

R^9 is hydrogen, (C_6–C_{20})alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylalkyl, (C_7–C_{10})aryloxy, (C_1–C_{10})fluoroalkyl, (C_6–C_{10})halogenoaryl, (C_2–C_{10})alkynyl or halogen or

R^8 and R^9, together with the atom joining them, form a ring, p is 0, 1, 2 or 3 and

R^{10} and R^{11} are identical or different and are hydrogen, (C_1–C_{10})alkyl, (C_1–C_{10})alkoxy, (C_6–C_{10})aryl; (C_6–C_{10})aryloxy, (C_2–C_{10})alkenyl, (C_7–C_{40})arylalkyl, (C_7–C_{40})alkylaryl, (C_6–C_{40})arylalkenyl, hydroxyl or a halogen atom, and the indenyl radicals in formula VI are substituted in the 2,6-; 2,4,6-; 2,4,5-; 2,4,5,6- or 2.4,5,6,7-position.

5,852,143

PRODUCTION OF POLYETHYLENE USING STEREOISOMERIC METALLOCENES

Purna Chand Sishta, Whitehouse; Eric Paul Wasserman, Hopewell, and Frederick John Karol, Belle Mead, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 442,279, May 16, 1995, abandoned. This application Apr. 16, 1997, Ser. No. 838,182

Int. Cl.^{6} C08F *4/64*

U.S. Cl. 526—127 **5 Claims**

1. A process for producing polyethylene, which comprises contacting under gas phase polymerization conditions ethylene and optionally a higher alpha-olefin with an unsupported, liquid catalyst composition comprising:

a) racemic and meso stereoisomers of a bridged metallocene catalyst containing two cycloalkadienyl ligands joined by a bridging linkage and complexed to a metal atom, each cycloalkadienyl ligand having facial chirality, and

b) a cocatalyst selected from the group consisting of methylaluminoxane and modified methylaluminoxane, wherein the polyethylene produced has a Polydispersity Index of at least about 3.0, a melt index, MI, and Relaxation Spectrum Index, RSI, such that (RSI)(MI^{α})>about 26 when α is about 0.7, a Crystallizable Chain Length Distribution Index, L_w/L_n, of less than about 3, and at least about 0.3 long chain branches per 1000 main chain carbon atoms.

5,852,144

CATALYST COMPOSITIONS AND CATALYTIC PROCESSES

Rickey D. Badley, Dewey, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 144,751, Oct. 27, 1993, abandoned. This application Sep. 11, 1997, Ser. No. 928,031

Int. Cl.^{6} C08F *4/24*

U.S. Cl. 526—128 **9 Claims**

1. A process comprising homopolymerizing ethylene or copolymerizing ethylene and a comonomer with a catalyst composition comprising:

(a) discrete silica particles, wherein said discrete silica particles are produced by the process consisting essentially of contacting together, in the absence of an acid, a tetraalkoxysilane composition, an alcohol composition, an ammonia composition, and water;

(b) chromium; and

(c) a support that comprises silica.

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5,852,145
POLYMERIZATION PROCESSES FOR OLEFINS

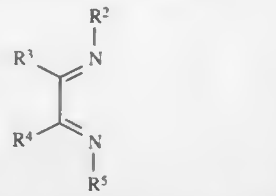
Stephan James McLain, Wilmington, and Jerald Feldman, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 21, 1997, Ser. No. 897,805

Int. Cl.^{6} C08F *4/70*

U.S. Cl. 526—133 **19 Claims**

1. A process for the polymerization of olefins, comprising, contacting, at a temperature of about −100° C. to about +200° C., a Ni (II) or Pd (II) complex of (I),



(I)

a metal containing hydrocarbylation compound, and a compound (II) selected from the group consisting of $B(C_6F_5)_3$, $AlCl_3$, $AlBr_3$, $Al(OTf)_3$, and $(R^{13}R^{14}R^{15}C)Y$, with an olefin, wherein:

said olefin is selected from the group consisting of ethylene, an olefin of the formula $R^{17}CH{=}CH_2$ or $R^{17}CH{=}CHR^{17}$, cyclobutene, cyclopentene, and a norbornene;

R^2 and R^5 are each independently aryl or substituted aryl, provided in both R^2 and R^5 at least one of the carbon atoms bound to a carbon atom bound directly to an imino nitrogen atom does not have any hydrogen atoms bound to it;

R^3 and R^4 are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl, or R^3 and R^4 taken together are hydrocarbylene or substituted hydrocarbylene to form a carbocyclic ring;

R^{13}, R^{14} and R^{15} are each independently aryl or substituted aryl;

each R^{17} is independently hydrocarbyl or substituted hydrocarbyl provided that any olefinic bond in said olefin is separated from any other olefinic bond or aromatic ring by a quaternary carbon atom or at east two saturated carbon atoms; and

Y is a relatively noncoordinating anion.

5,852,146
CATALYST FOR THE PRODUCTION OF OLEFIN POLYMERS

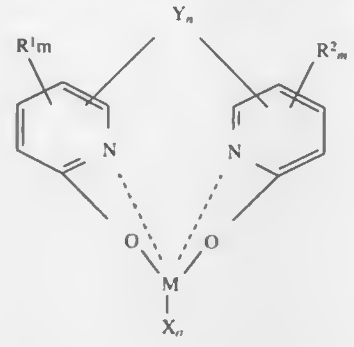
Walter Thomas Reichle, Warren, and Frederick John Karol, Belle Mead, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 27, 1996, Ser. No. 670,507

Int. Cl.^{6} C08F *4/64*

U.S. Cl. 526—172 **9 Claims**

5. A process for producing an olefin polymer, which comprises contacting at least one olefin monomer under polymerization conditions with a catalyst composition comprising: a) a catalyst precursor having a formula selected from the group consisting of:



(I)

and

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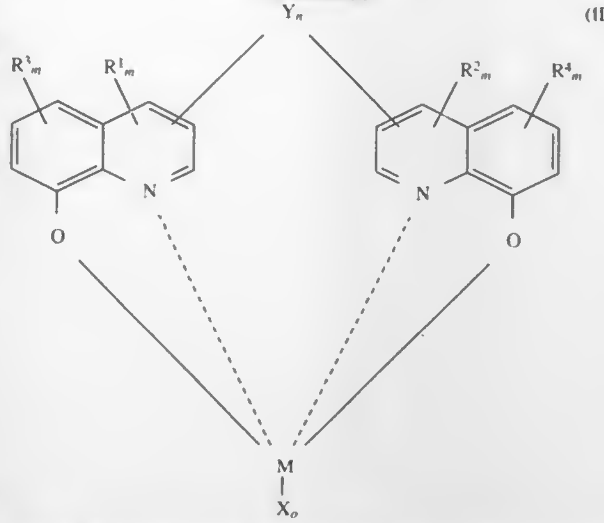


(II)

wherein M is a metal selected from the group consisting of Group IIIB to VIII and Lanthanide series elements; each X is a monovalent or bivalent anion; o is 0, 1, 2, or 3 depending on the valence of M; each R^1, R^2, R^3, and R^4 is a hydrocarbon group containing 1 to 20 carbon atoms and two or more adjacent R^1, R^2, R^3, or R^4 groups may be joined to form an aliphatic or aromatic ring; Y is a bivalent bridging group or a bond; and each m is independently from 0 to 4; and n is 1; and b) an activating cocatalyst.

5,852,147
PROCESS FOR PREPARING DEODORIZED RESIN FOR DRY TONER

Jin-Nyoung Yoo; Myung-Man Kim, and Yeong-Rae Chang, all of Daejeon, Rep. of Korea, assignors to LG Chemical Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR96/00065, § 371 Date Dec. 26, 1996, § 102(e) Date Dec. 26, 1996, PCT Pub. No. WO96/35148, PCT Pub. Date Nov. 7, 1996

PCT Filed May 2, 1996, Ser. No. 765,022

Claims priority, application Rep. of Korea, May 2, 1995, 95-10694

Int. Cl.^{6} C08F *2/38*

U.S. Cl. 526—224 **9 Claims**

1. A process for preparing a deodorized resin for a dry toner, comprising the steps of:

(a) polymerizing a monomeric mixture of an aromatic vinylic monomer and an acrylic monomer in the presence of a molecular weight-controlling agent, an initiator and an emulsifier in a two-step emulsion polymerization process to obtain a latex having a high molecular weight part and a low molecular weight part, wherein the amounts of the molecular weight-controlling agent used in the steps of preparing the high molecular weight part and the low molecular weight part range from 0.001 to 1.0 part and from 1.0 to 8.0 parts, respectively, based on 100 parts by weight of the monomeric mixture employed in the polymerization; and

(b) treating the latex with an oil-soluble peroxide.

5,852,148
PERFLUOROALKYL HALIDES AND DERIVATIVES

Frederick E. Behr, Woodbury, Minn.; Rudolf J. Dams, Zwijndrecht; Johan E. DeWitte, Moerbeeklaan, both of Belgium, and Donald F. Hagen, Woodbury, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 489,094, Jun. 9, 1995, abandoned, which is a division of Ser. No. 314,939, Sep. 29, 1994, abandoned, which is a continuation of Ser. No. 728,184, Jul. 10, 1991, abandoned. This application Feb. 4, 1997, Ser. No. 794,828

Int. Cl.^{6} C08F *18/20*

U.S. Cl. 526—245 **42 Claims**

1. A method for treating a substrate, comprising the steps of:

providing a substrate;

providing a polymer comprising a plurality of pendant saturated perfluoroalkyl groups, wherein some of said perfluoroalkyl groups are straight chain and some are branched chain; and

applying the polymer to the substrate;

wherein about 65 to about 85% of the perfluoroalkyl groups are straight chain and about 15 to about 35% of the perfluoroalkyl groups are branched chain.

5,852,149
FLUOROELASTOMERS SUBSTANTIALLY FREE FROM POLAR TERMINALS AND RELATED PREPARATION PROCESS

Julio A. Abusleme, Saronno, and Margherita Albano, Milan, both of Italy, assignors to Ausimont S.p.A., Italy

Continuation of Ser. No. 638,378, Apr. 26. 1996, abandoned. This application Aug. 4, 1997, Ser. No. 904,886

Claims priority, application Italy, Apr. 28, 1995, MI95A0854

Int. Cl.^{6} C08F *16/24*

U.S. Cl. 526—247 **18 Claims**

1. A fluoroelastomer comprising vinylidene fluoride (VDF) and/or tetrafluoroethylene (TFE) and at least another fluorinated monomer ethylenically unsaturated, said fluoroelastomer having polar terminal groups in an amount of less than 3% by moles with respect to the total amount of terminal groups.

5,852,150
BASE RESISTANT FLUORINATED POLYMERS

Paul Gregory Bekiarian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US96/09754, § 371 Date Dec. 3, 1997, § 102(e) Date Dec. 3, 1997, PCT Pub. No. WO96/41823, PCT Pub. Date Dec. 27, 1996

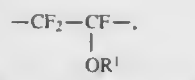
PCT Filed Jun. 7, 1996, Ser. No. 973,382

Int. Cl.^{6} C08F *16/24*

U.S. Cl. 526—247 **16 Claims**

1. A polymer comprising the following repeat units:

$-CF_2-CF_2$ (I)

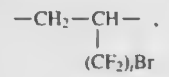


(II)

$$-CF_2-\underset{OR^1}{\underset{|}{CF}}-,$$

and (III), a repeat unit that is crosslinkable by exposure to free radicals, wherein (III) is selected from the four member group (a)–(d) consisting of

(a) a repeat unit having a pendant alkyl group having at least one methine hydrogen atom,



(b)

$$-CH_2-\underset{(CF_2)_iBr}{\underset{|}{CH}}-\ ,$$

(IIIA)

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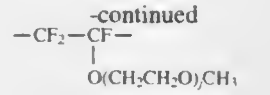
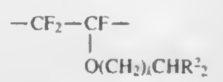


(c)

$$-CF_2-\underset{O(CH_2CH_2O)_jCH_3}{\underset{|}{CF}}-$$

(IIIB)

and



(d)

$$-CF_2-\underset{O(CH_2)_kCHR^2_2}{\underset{|}{CF}}-$$

(IIIC)

wherein i and k is an integer in the range of 2 to 10, j is an integer in the range of 1 to 4, and each R^2 is independently an alkyl group containing 1 to 4 carbon atoms;

by means of which the polymer is readily crosslinked upon exposure of said polymer to free radicals;

wherein R^1 is an alkyl containing 1 to 6 carbon atoms;

provided that (I)+(II)+(III) are at least about 50 mole percent of the repeat units in said polymer.

5,852,151
TONER RESIN WITH IMPROVED ADHESION PROPERTIES

Gary Lee Burroway, Doylestown, and Gordon Edward Hardy, Jr., Hudson, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 6, 1997, Ser. No. 869,604

Int. Cl.^{6} C08F *220/12*

U.S. Cl. 526—329.1 **21 Claims**

1. A process for preparing a toner resin, which comprises (1) emulsion copolymerizing a vinyl aromatic monomer and a second monomer selected from the group consisting of conjugated diene monomers and acrylate monomers selected from the group consisting of alkyl acrylate monomers and alkyl methacrylate monomers in the presence of a diacid cycloaliphatic emulsifier to produce the toner resin, wherein the toner resin has a glass transition temperature which is within the range of about 45° C. to about 80° C.; and (2) recovering the toner resin from the aqueous emulsion by coagulation with sulfuric acid, wherein said coagulation is carried out without utilizing salts or amines as coagulating agents.

5,852,152
PACKAGING AND WRAPPING FILM

Kim L. Walton; Rajen M. Patel, and Pak-Wing Steve Chum, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 55,063, Apr. 28, 1993, Pat. No. 5,562,958, which is a continuation-in-part of Ser. No. 776,130, Oct. 15, 1991, Pat. No. 5,272,236, and a continuation-in-part of Ser. No. 961,269, Oct. 14, 1992, abandoned, and a continuation-in-part of Ser. No. 24,563, Mar. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,273

Int. Cl.^{6} C08F *10/02;10/14*

U.S. Cl. 526—348.1 **53 Claims**

1. A monolayer heat-shrinkable, flexible biaxially oriented film comprising an ethylene polymer and having free shrink in both the machine and transverse directions, wherein the ethylene polymer is at least one substantially linear ethylene polymer which is characterized as having:

(A) a melt flow ratio, I_{10}/I_2, ≧5,63.

(B) a molecular weight distribution, M_w/M_n, defined by the equation:

$$M_w/M_n \leqq (I_{10}/I_2)-4.63,\ \text{and}$$

(C) a gas extrusion rheology such that the critical shear rate at onset of surface melt fracture for the substantially linear ethylene polymer is at least 50 percent greater than the critical

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shear rate at the onset of surface melt fracture for a linear olefin polymer, wherein the linear olefin polymer has a homogeneously branched short chain branching distribution and no long chain branching, wherein the substantially linear ethylene polymer and the linear olefin polymer are simultaneously ethylene homopolymers or interpolymers of ethylene and at least one C_3–C_{20} α-olefin and have essentially the same I_2 and M_w/M_n and wherein the respective critical shear rates of the substantially linear ethylene polymer and the linear olefin polymer are measured at the same melt temperature using a gas extrusion rheometer.

5,852,153

TRIMETHYSILOXY GROUP-CONTAINING POLYSILOXANE AND A PROCESS FOR PRODUCING THE SAME

Michihiro Sugo, Annaka, and Hisashi Aoki, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

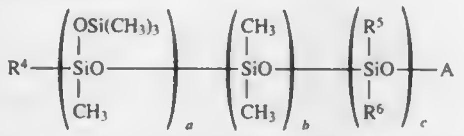
Division of Ser. No. 678,755, Jul. 11, 1996, Pat. No. 5,693,735. This application Sep. 4, 1997, Ser. No. 923,082

Claims priority, application Japan, Jul. 12, 1995, 7-199012; Jul. 14, 1995, 7-201505

Int. Cl.^{6} C08G *77/08*

U.S. Cl. 528—14 **3 Claims**

1. An organosiloxane copolymer represented by the following general formula (4):



$$R^4 - \left(\underset{CH_3}{\overset{OSi(CH_3)_3}{SiO}}\right)_a - \left(\underset{CH_3}{\overset{CH_3}{SiO}}\right)_b - \left(\underset{R^6}{\overset{R^5}{SiO}}\right)_c - A \qquad (4)$$

wherein R^4 is a monovalent hydrocarbon group; R^5 and R^6 are independently a monovalent hydrocarbon group or a halogenated alkyl group; A is a hydrogen atom or an organosilyl group represented by the following general formula:

$—Si(R^7)_3$

wherein plural R^7 are independently a hydrogen atom or a monovalent organic group, provided that at least one of plural R^7 is a monovalent organic group; a is an integer of 4 or more; b is an integer of 2 or more; and c is an integer of 0 or more.

5,852,154

COLD-CURING, LOW-SOLVENT OR SOLVENT-FREE 2-COMPONENT POLYURETHANE/POLYUREA COMPOSITIONS

Rainer Gras, Bochum; Felix Schmitt, Herten, and Elmar Wolf, Recklinghausen, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 318,446, Oct. 5, 1994, abandoned. This application Nov. 15, 1996, Ser. No. 749,555

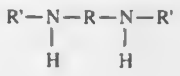
Claims priority, application Germany, Oct. 30, 1993, 43 37 236.8

Int. Cl.^{6} C08G *18/10*

U.S. Cl. 528—61 **4 Claims**

1. A cold-curing 2-component polyurethane/polyurea composition having a solvent content of at most 20% by weight comprising a reaction product consisting essentially of a diamine component (a) and an NCO prepolymer component (b), wherein

a) the diamine component is of the following composition



$$R'-\underset{H}{N}-R-\underset{H}{N}-R'$$

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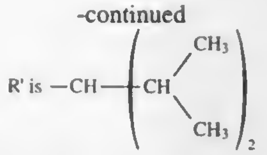
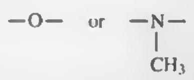


wherein R is a linear, branched or cyclic alkylene radical having 2–16 carbon atoms which may be optionally substituted by C_1–C_4 alkyl, wherein in said alkylene radical 1–3 CH_2 groups may optionally be replaced by



$$—O— \text{ or } —\underset{CH_3}{N}—$$

b) the NCO prepolymer component is composed of one or more NCO prepolymers prepared from reaction of one or more linear, branched or cyclic aliphatic isocyanates and one or more polyetherpolyol or hydroxyl group containing polyester, wherein the NCO prepolymer has an NCO functionality ≧2;

wherein reactants a) and b) are reacted in an NCO:NH equivalent ratio of (1.5–1):1.

5,852,155

COMPOSITIONS OF POLYESTERAMIDES

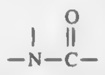
Jan Bussink, Kapelle, Belgium; Reinoud Jaap Gaymans, Enschede; Johannes Hubertus G. M. Lohmeijer, Hoogerheide, both of Netherlands; Ilias Nicholas Mamalis, Brasschat, Belgium; Gary F. Smith, Evansville, Ind., and Antoinette Cornelia Maria van Bennekom, Enschede, Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 1, 1995, Ser. No. 397,324

Int. Cl.^{6} C08G *69/44;73/16;63/16*

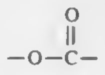
U.S. Cl. 528—170 **5 Claims**

1. A polyesteramide resin composition having units represented by the amide formula (I):



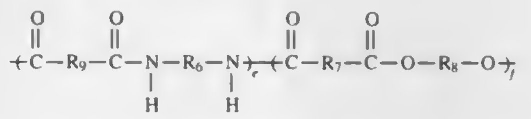
$$—\overset{|}{N}—\overset{\overset{O}{\|}}{C}— \qquad (I)$$

adjacent units of the ester formula (II):



$$—O—\overset{\overset{O}{\|}}{C}— \qquad (II)$$

according to the following formula:



$$\left(\overset{\overset{O}{\|}}{C}—R_9—\overset{\overset{O}{\|}}{C}—\underset{H}{N}—R_6—\underset{H}{N}\right)_e \left(\overset{\overset{O}{\|}}{C}—R_7—\overset{\overset{O}{\|}}{C}—O—R_8—O\right)_f$$

wherein R_6 and R_8 are the same and are C_2 or C_6 alkylene provided that R_8 is not butylene, R_7 and R_9 are the same and are a para-phenylene radical, the ratio of e/f is between about 0.05 and 0.5, said polyesteramide resin having a degree of uniformity of greater than 85 percent as determined by the following formula:

$$\text{(Degree of) uniformity} = \frac{(\text{units with } e = 1)}{(\text{units with } e = 1) + (\text{units with } e = 2) + (\text{units with } e = 3) \text{ etc.}}$$

whereby said resin has a rapid crystallization rates.

5,852,156

POLYCARBONATE COMPOSITION

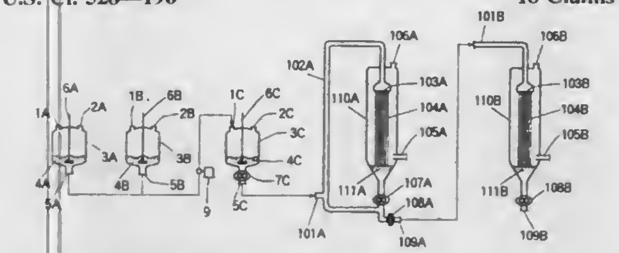
Hiroshi Hachiya; Kyosuke Komiya, both of Kurashiki, and Tetsuo Hamada, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1996, Ser. No. 696,481

Claims priority, application Japan, Aug. 14, 1995, 7-207126

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—196 **18 Claims**



1. A polycarbonate composition comprising:

(a) a substantially chlorine-atom free, aromatic dihydroxy compound/carbonic diester transesterification polycarbonate, wherein said polycarbonate (a) satisfies the following two requirements:

(1) the chlorine atom content of the polycarbonate (a) is 0.5 ppm or less in terms of the chlorine ion content as measured by potentiometric titration using an aqueous 1/500N silver nitrate solution or by ion chromatography and (2) the chlorine atom content of the polycarbonate (a) is 10 ppm or less as measured by the combustion method,

(b) at least one metal selected from the group consisting of an alkali metal and an alkaline earth metal,

(c) an aromatic monohydroxy compound, and

(d) at least one member selected from the group consisting of:

an aromatic dihydroxy compound/carbonic diester transesterification oligomer having a weight average molecular weight of 1,000 or less; and

a residual monomer selected from the group consisting of said aromatic dihydroxy compound, said carbonic diester and a mixture thereof,

said components (b), (c) and (d) being, respectively, present in amounts of not more than 800 ppb by weight, not more than 200 ppm by weight, and not more than T_2% by weight, each based on the total weight of said components (a), (b), (c) and (d), wherein T_2 is defined by the following formula:

$$T_2 = 1{,}520{,}000 \times (\text{weight average molecular weight of said polycarbonate})^{-1.44}.$$

5,852,157

PROCESS FOR THE PRODUCTION OF POLYCARBONATE AGGLOMERATE

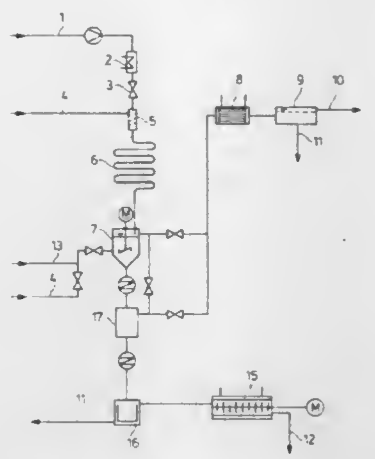
Gottfried Zaby, Leverkusen; Clemens Casper, Krefeld; Klemens Kohlgrüber, Kürten, and Hugo Obermann, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 3, 1997, Ser. No. 810,263

Claims priority, application Germany, Mar. 6, 1996, 196 08 521.7

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—196 **10 Claims**



1. A process for the production of polycarbonate agglomerate from polycarbonate solutions by the steam treatment of polycarbonate solutions and subsequent drying, characterised in that a solution (1) of 3 to 30% by weight of polycarbonate in an organic solvent is mixed in a nozzle (5) with steam (4) at 100° to 300° C. and at a pressure of 2 to 100 bar, the mixture is conveyed in a tube or in a tubular heat exchanger (6) with a length/diameter ratio of 100 to 10,000 to a separator (7), the volume of which is from 80 to 200 litres with respect to a throughput of 10 kg polycarbonate per hour, the height of which is 0.5 to 1.5 times its diameter and which is filled to 50 to 75% of its volume with water, and in which the gaseous components of the mixture flowing in are separated at a pressure of 0.9 to 7 bar and at a temperature of 120° to 180° C., the resulting mixture of polycarbonate particles and water is removed via a pressure lock from the separator bottom at intervals of 5 to 30 minutes, is depressurised to ambient pressure and is separated by straining or centrifuging, the polycarbonate is dried and the water removed from the separator (7) is optionally recycled to the process.

5,852,158

THERMOPLASTICALLY MOLDABLE COMPOSITIONS

Johannes Joachim De Bont, Wouw, and Johanes Martinus Dina Goossens, Bergen Op Zoom, both of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 29, 1997, Ser. No. 920,967

Int. Cl.^{6} C08G *64/00*

U.S. Cl. 528—198 **12 Claims**

1. A thermoplastically moldable, synthetic resin composition, which consisting essentially of:

a thermoplastically moldable aromatic polycarbonate resin;

an effective mold release proportion of an ester of pentaerythritol; and

a mold release enhancing proportion of an ester of dipentaerythritol.

5,852,159

PLASTIC WITH REDUCED SULFUR UPTAKE RATE

Matthias Zäh, Gersthofen; Gerhard Pfahler, Augsburg; Karl Gaa, Burtenbach, all of Germany, and Klaus Keck-Antoine, Charlotte, N.C., assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed May 10, 1996, Ser. No. 646,679

Claims priority, application Germany, May 10, 1995, 195 16 701.5

Int. Cl.^{6} C08G *63/44*

U.S. Cl. 528—363 **14 Claims**

1. An organic, polymeric plastic containing a sulfur uptake inhibiting amount of sterically hindered amine, wherein said sterically hindered amine is at least an oligomerized 2,2,4,4-tetramethyl-20-(oxiranyl-methyl)-7-oxa-3,20-diazadispiro{5.1.11.2}heneicosan-21-one.

5,852,160

PHOSGENATED OXIME RESINS AND THEIR PREPARATION

Mark Andrew Scialdone, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

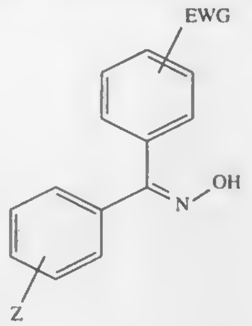
Filed Aug. 19, 1997, Ser. No. 914,831

Int. Cl.^{6} C08G *2/00;* **C07C** *49/00;281/00*

U.S. Cl. 528—220 **4 Claims**

1. The process for preparing a solid phase reagent useful in chemical synthesis comprising:

reacting an excess of phosgene with a ketoxime of the formula



wherein Z is the recurring part of a carbonaceous polymeric backbone or side chain thereof and EWG is at least one electron-withdrawing group, to produce the corresponding oxime-derived chloroformate.

5,852,161

PROCESS FOR THE PREPARATION OF UNDOPED POLYANILINE VIA PARA-HALOANILINE

Brian K. Cheng, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 25, 1997, Ser. No. 918,948

Int. Cl.^{6} C08G *73/00;* **C08F** *283/00*

U.S. Cl. 528—228 **29 Claims**

1. A method for producing low molecular weight polyaniline comprising homopolymerizing a para-haloaniline at a temperature in excess of about 180° C. in the presence of a vanadium catalyst and a solvent, thereby to produce polyaniline having a number average molecular weight of from about 300 to about 8,000 and a hydrogen halide.

5,852,162

LOW MOLECULAR WEIGHT HYDROXY FUNCTIONAL POLYESTERS FOR COATINGS

Marc L. Smith, Highland, Calif.; Ronald J. Lewarchik, Sleepy Hollow, Ill.; Joseph J. Zupancic, Glen Ellyn, Ill., and Donald J. Algrim, Palatine, Ill., assignors to Morton International, Inc., Chicago, Ill.

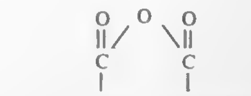
Filed Jun. 27, 1997, Ser. No. 883,984

Int. Cl.^{6} C08G *63/02*

U.S. Cl. 528—272 **8 Claims**

1. A polyester composition having a number average molecular weight M_n of between about 500 and about 1000, a weight average molecular weight M_w of between about 600 and about 2000, a polydispersity below about 2, a hydroxyl functionality of between 2 and 3, a hydroxyl value of between about 160 and about 260, and an acid number less than about 10, not more than about 5% of the hydroxyl groups being pendent,

between about 10 and about 50 wt % of the monomers used to form the polyester composition are anhydrides having the formula:



(1)

where R^1 is a non-aromatic, saturated or unsaturated hydrocarbon chain having between 6 and 30 carbon atoms, R^2 is hydrogen or a non-aromatic saturated or unsaturated hydrocarbon having between 1 and 8 carbon atoms, and R^1 and R^2 have, in total, between 8 and 30 carbon atoms.

5,852,163

PROCESS FOR PREPARING HYDROXY-FUNCTIONALIZED POLYESTERS

H. David Chen, Buena Park, Calif.; Michael N. Mang, Midland, Mich., and Jerry E. White, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 10, 1997, Ser. No. 926,954

Int. Cl.^{6} C08G *63/00*

U.S. Cl. 528—274 **15 Claims**

1. A process for preparing thermoplastic hydroxy-functionalized polyesters which comprises contacting a dicarboxylic acid or a mixture of dicarboxylic acids with a diepoxide in the presence of a monofunctional carboxylic acid and a catalyst, and in the absence of a solvent under conditions sufficient to form the hydroxy-functionalized polyesters.

5,852,164

POLYESTER, PROCESS FOR PRODUCING THE SAME AND MOLDING PRODUCT THEREFROM

Hideko Akal; Katsuji Tanaka, both of Yokohama; Masahiko Fujimoto, and Noboru Sato, both of Yokkaichi, all of Japan, assignors to Mitsubishi Chemical Corporation, Japan

Filed Apr. 15, 1997, Ser. No. 842,651

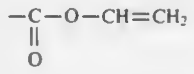
Claims priority, application Japan, Apr. 16, 1996, 8-093858; Jul. 9, 1996, 8-179117; Aug. 5, 1996, 8-206059; Aug. 5, 1996, 8-206060

Int. Cl.^{6} C08G *63/78;* **C08K** *3/02*

U.S. Cl. 528—279 **18 Claims**

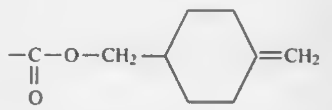
1. A polyester comprising a dicarboxylic acid moiety comprising terephthalic acid or its ester forming derivative and a diol moiety comprising ethylene glycol and 1,4-cyclohexanedimethanol of 10 to 60 mol % based on the whole diol moiety;

the intrinsic viscosity of the polyester being 0.68 to 0.95 dl/g, the "b" value of color tone of the produced pellets of polyester being −5 to 5, the number of the carboxylic acid terminals being not more than 30 eq/ton, and the sum of the numbers of the vinyl terminals represented by the following formula (1), the vinylidene terminals represented by the following formula (2) and the methylcyclohexene terminals represented by the following formula (3) being not more than 25 eq/ton.

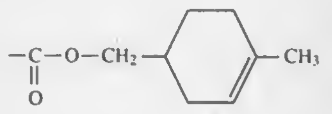


$$-\underset{\underset{\displaystyle O}{\|}}{C}-O-CH=CH_2$$

(1)



(2)



(3)

5,852,165

TERPOLYMER POLYAMIDE, POLYAMIDE RESIN COMPOSITION CONTAINING THE SAME, AND AUTOMOTIVE PARTS OBTAINING FROM THESE

Tatsuo Tsumiyama, and Tadahisa Kanayama, both of Yamaguchi, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed May 30, 1995, Ser. No. 453,410

Claims priority, application Japan, May 31, 1994, 6-118393; Jun. 17, 1994, 6-135917; Jul. 29, 1994, 6-178619

Int. Cl.^{6} C08G *69/26;* **C08L** *77/00*

U.S. Cl. 528—332 **12 Claims**

1. A crystalline terpolymer polyamide produced from and consisting essentially of:

(a) 20 to 80% by weight of an equimolar salt of hexamethylenediamine with adipic acid,
(b) 20 to 80% by weight of an equimolar salt of hexamethylenediamine with terephthalic acid, and
(c) 1 to 30% by weight of 12-aminododecanoic acid or ω-laurolactam.

5,852,166

PAPER HAVING A MELT-STABLE LACTIDE POLYMER COATING AND PROCESS FOR MANUFACTURE THEREOF

Patrick Richard Gruber, St. Paul; Jeffrey John Kolstad, Wayzata; Christopher M. Ryan, Dayton; Eric Stanley Hall, Crystal, and Robin Sue Eichen Conn, Minneapolis, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 521,923, Aug. 31, 1995, Pat. No. 5,665,474, which is a continuation of Ser. No. 34,099, Mar. 22, 1993, Pat. No. 5,475,080, which is a continuation-in-part of Ser. No. 955,690, Oct. 2, 1992, Pat. No. 5,338,822. This application Jul. 14, 1997, Ser. No. 892,051

Int. Cl.^{6} C08G *63/08*

U.S. Cl. 528—354 **22 Claims**

1. A lactide polymer composition comprising:

(a) polymer resulting from co-polymerizing a polymerizable mixture comprising L-lactide and at least one other polymerizable material; the polymerizable mixture comprising at least 90%, by wt., L-lactide;
(b) the polymer having a number average molecular weight of at least 40,000 and no greater than about 150,000, and a ratio of weight average molecular weight to number average molecular weight of at least 1.9;
(c) the polymer further resulting from co-polymerizing a polymerizable mixture including a catalyst and wherein the catalyst is added at a catalyst-to-monomer ratio of 1:10,000 or less, on a molar basis;
  (i) the catalyst comprising a ring opening polymerization catalyst;
(d) the lactide polymer composition further comprising no more than 1% by wt. residual lactide monomer, if any residual lactide monomer is present; and,
(e) the lactide polymer composition including an antioxidant.

5,852,167

TOTALLY SYNTHETIC AFFINITY REAGENTS

Brian K. Kay, and Dana M. Fowlkes, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 176,500, Dec. 30, 1993, Pat. No. 5,498,538, which is a continuation of Ser. No. 13,416, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,133, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 480,420, Feb. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,800

Int. Cl.^{6} C07K *14/00*

U.S. Cl. 530—300 **3 Claims**

1. A peptide which binds specifically to the 7E11-C5 monoclonal antibody produced by hybridoma cell line ATCC HB-10494 and having an amino acid sequence selected from the group consisting of SEQ ID NOs. 22–31.

5,852,168

SULFURIZATION OF PHOSPHORUS-CONTAINING COMPOUNDS

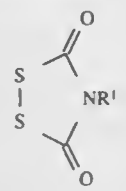
George Barany, Falcon Heights, Minn.; Robert P. Hammer, Baton Rouge, La.; Karin Musier-Forsyth, Roseville, Minn.; Qinghong Xu, Lauderdale, Minn., and Lin Chen, Minneapolis, Minn., assignors to Regents of the University of Minesota, Minneapolis, Minn., and The Board of Supervisors of LA State University, Baton Rouge, La.

Filed Apr. 30, 1996, Ser. No. 641,920

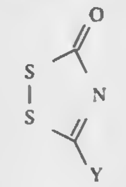
Int. Cl.^{6} C07F *9/02;1/00;1/107*

U.S. Cl. 530—345 **27 Claims**

1. A method of sulfurizing a phosphorus-containing compound, comprising contacting the phosphorus-containing compound with a compound of the formula (Formula I):



or a compound of the formula (Formula II):



wherein:

(a) Y=R^2, OR^3, $NR^{16}R^{17}$, or SR^{18};
(b) each R^1, R^{16}, and R^{17} is independently H or an organic group; and
(c) each R^2, R^3, and R^{18} is independently an organic group.

5,852,169

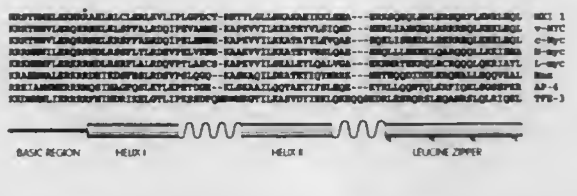
MAX-INTERACTING PROTEINS AND RELATED MOLECULES AND METHODS

Roger Brent, Cambridge, and Antonis S. Zervos, Boston, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 11,398, Jan. 29, 1993, Pat. No. 5,512,473. This application Jun. 5, 1995, Ser. No. 462,498

Int. Cl.^{6} C07K *14/47*

U.S. Cl. 530—350 **6 Claims**



1. A substantially pure polypeptide comprising the sequence of SEQ ID NO: 2.

5. A substantially pure polypeptide comprising the sequence of SEQ ID NO: 4.

5,852,170

ICAM-4 MATERIALS AND METHODS

Patrick D. Kilgannon, Bothell, and W. Michael Gallatin, Mercer Island, both of Wash., assignors to ICOS Corporation, Bothell, Wash.

Continuation-in-part of Ser. No. 245,295, May 18, 1994, Pat. No. 5,700,658, which is a continuation-in-part of Ser. No. 102,852, Aug. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,266, Jan. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 894,061, Jun. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 889,724, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,689, Jan. 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,595

Int. Cl.^{6} C07K *14/00*

U.S. Cl. 530—350 **1 Claim**

1. A purified and isolated human neuronal ICAM-4 polypeptide comprising the ICAM-4 amino acid sequence set out in SEQ ID NO: 28.

5,852,171

CLONING AND REGULATION OF AN ENDOTHELIAL CELL PROTEIN C/ACTIVATED PROTEIN C RECEPTOR

Kenji Fukudome, and Charles T. Esmon, both of Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Division of Ser. No. 289,699, Aug. 12, 1994, Pat. No. 5,695,993. This application Jun. 18, 1997, Ser. No. 878,283

Int. Cl.^{6} C07K *14/705*

U.S. Cl. 530—350 **5 Claims**

1. An isolated endothelial cell protein C/activated protein C receptor having the amino acid sequence of Sequence ID No. 2 or a sequence having conservative substitutions, additions or deletions thereof, having functionally equivalent receptor binding activity to activated Protein C.

5,852,172

COLD TOLERANCES IN PLANTS

Marilyn Griffith, Waterloo, Canada, assignor to University of Waterloo, Ontario, Canada

Continuation of Ser. No. 60,425, May 11, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,061

Claims priority, application United Kingdom, Jun. 13, 1991, 9112774; Dec. 13, 1991, 9126485

Int. Cl.^{6} C07K *14/415;* **C12N** *9/32;9/34;9/42*

U.S. Cl. 530—379 **6 Claims**

1. Purified antifreeze polypeptides isolated from the extracellular spaces between the cells of winter rye where said polypeptides control ice crystal growth in the intercellular plant spaces, such control of ice crystal growth providing a degree of plant frost tolerance,

said purified polypeptides having the following properties of:

- i) being developed in extracellular spaces between plant cells of frost tolerant winter rye plant leaves by low temperature induction of frost tolerant winter rye plant to produce said polypeptides:
- ii) being isolated from said extracellular spaces and purified; and
- iii) being selected from a group of purified antifreeze polypeptides consisting of polypeptides having respectively apparent molecular weights as determined by SDS-PAGE Gel separation under non-reducing conditions, of about 11 kD, about 15 kD, about 23 kD, about 27 kD, about 31 kD, about 32 kD, about 33 kD, about 93 to 99 kD and about 161 kD.

5,852,173

TNF RECEPTOR DEATH LIGAND PROTEINS AND INHIBITORS OF LIGAND BINDING

Lih-Ling Lin, Concord; Jennifer Chen, Chestnut Hill; Andrea R. Schievella, Winchester, and James Graham, Somerville, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 494,440, Jun. 19, 1995, which is a continuation-in-part of Ser. No. 327,514, Oct. 19, 1994, abandoned. This application Sep. 26, 1995, Ser. No. 533,901

Int. Cl.^{6} C07K *17/47;14/52;* **C12N** *15/10*

U.S. Cl. 530—350 **7 Claims**

7. TNF-R1-DD ligand protein produced according to a method comprising:

- (a) transforming a host cell with a composition comprising an isolated polynucleotide operably linked to an expression control sequence and encoding a TNF-R1-DD ligand protein comprising the amino acid sequence of SEQ ID NO:14;
- (b) growing a culture of the host cell in a suitable culture medium; and
- (c) purifying the TNF-R1-DD ligand protein from the culture.

5,852,174

ANTIBODIES TO LIVER DERIVED RECEPTORS FOR ADVANCED GLYCOSYLATION ENDPRODUCTS AND USES THEREFOR

Helen Vlassara, Shelter Island, N.Y.; Zhi Yang, Menlo Park, Calif., and Anthony Cerami, New York, N.Y., assignors to The Rockefeller University, N.Y., N.Y.

Division of Ser. No. 749,438, Aug. 23, 1991, Pat. No. 5,585,344, which is a continuation-in-part of Ser. No. 453,958, Dec. 20, 1989, abandoned, which is a division of Ser. No. 91,534, Sep. 3, 1987, Pat. No. 4,900,747, which is a continuation-in-part of Ser. No. 907,747, Sep. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Jun. 7, 1995, Ser. No. 479,149

Int. Cl.^{6} C07K *16/28;* **C12N** *5/12*

U.S. Cl. 530—387.9 **10 Claims**

1. An isolated antibody that binds a receptor protein, said receptor protein to which said antibody is raised comprising a protein in purified form derived from rat liver cell membranes, that recognizes and binds advanced glycosylation endproducts (AGE) and that possesses the following characteristics:

- A. said protein recognizes and binds with the ligands AGE-RNase and AGE-Collagen I;
- B. said protein does not recognize and bind with the ligands FFI-BSA, formaldehyde-treated BSA, glucosamide-BSA, and acetyl LDL-BSA in solid phase ligand blotting assay; and
- C. said protein has a molecular mass of about 90 kD or about 60 kD as determined by protein migration on SDS-PAGE.

5,852,175

P-SELECTIN GLYCOPROTEIN LIGAND BLOCKING ANTIBODIES

Richard D. Cummings, Edmond; Kevin L. Moore, and Rodger P. McEver, both of Oklahoma City, all of Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

Division of Ser. No. 278,551, Jul. 21, 1994, Pat. No. 5,464,778, which is a continuation of Ser. No. 976,552, Nov. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 650,484, Feb. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,199, Jul. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 320,408, Mar. 8, 1989, Pat. No. 5,378,464. This application May 10, 1995, Ser. No. 438,280

Int. Cl.^{6} C07K *16/28;16/18*

U.S. Cl. 530—388.73 **4 Claims**

1. An antibody to P-selectin glycoprotein ligand, the glycoprotein ligand comprising a fucosylated sialylated glycoprotein containing sialyl Lewis X antigen and having an apparent relative molecular weight of approximately 120,000 as assessed by SDS-PAGE under reducing condition, and wherein the antibody is effective in specifically blocking the binding of P-selectin to P-selectin glycoprotein ligand.

5,852,176

ANTIBODIES TO RECEPTORS FOR HUMAN INTERLEUKIN-12

Ulrich Andreas Gubler, and David Howard Presky, both of Glen Ridge, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 685,118, Jul. 23, 1996. This application Aug. 20, 1997, Ser. No. 915,495

Int. Cl.^{6} C07K *16/28*

U.S. Cl. 530—389.2 **1 Claim**

1. An antibody directed against a interleukin-12 (IL-12) beta2 receptor protein which protein

- (a) has low binding affinity for human IL-12, and
- (b) when complexed with a human IL-12 beta1 receptor protein forms a complex having high binding affinity to human IL-12.

5,852,177

BASIC FIBROBLAST GROWTH FACTOR (BFGF) MUTEINS

Masaharu Senoo, Toyonaka; Reiko Sasada, Nagaokakyo; Tsutomu Kurokawa, Kawanishi, and Koichi Igarashi, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 161,123, Feb. 18, 1988, abandoned. This application Jan. 24, 1989, Ser. No. 301,460

Claims priority, application Japan, Feb. 24, 1987, 62-042218; Feb. 25, 1987, 62-04344; Apr. 2, 1987, 62-081977; Jun. 12, 1987, 62-147511; Aug. 11, 1987, 62-201510; Nov. 17, 1987, 62-290283; Jan. 26, 1988, 63-016260; Aug. 19, 1988, 63-206968; Sep. 20, 1988, 63-235842

Int. Cl.^{6} C07K *14/50*

U.S. Cl. 530—399 **13 Claims**

1. A mutein of basic fibroblast growth factor (bFGF) wherein at least one constituent cysteine of bFGF is replaced by another amino acid so that the mutein has greater stability under acidic conditions than the bFGF in at least one of the following properties:

fibroblast growth promoting activity, growth stimulating activity of capillary endothelial cells or angiogenic activity.

5,852,178

PHENYLBORONIC ACID COMPLEXING REAGENTS FOR CONJUGATING BIOLOGICALLY ACTIVE MOLECULES

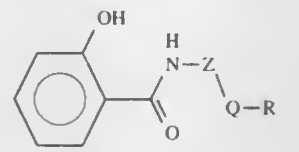
Mark L. Stolowitz, Long Beach, Calif., assignor to Prolinx, Inc., Bothell, Wash.

Continuation of Ser. No. 188,460, Jan. 28, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 577,068

Int. Cl.^{6} C07K *17/06:1/10;* **C12N** *11/06;* **G01N** *33/549*

U.S. Cl. 530—402 **5 Claims**

1. A phenylboronic acid complexing reagent (PBCR) for conjugating biologically active molecules through a boronic acid complex, said phenylboronic acid complexing reagent having General Formula II:



wherein group Z is selected from O and CH_2; group Q is a spacer which is from 2 to 12 carbon equivalents in length, and which may contain intermediate amide and/or ether functionalities; and group R is a reactive electrophilic moiety suitable for conjugation of the phenylboronic acid complexing reagent with a biological macromolecular species, low molecular weight species or solid phase support having a reactive pendant nucleophilic moiety.

5,852,179

PREPARATION OF DISPERSE AZO DYESTUFFS IN THE PRESENCE OF ALKOXYLATED ACETYLENIC DIOLS

Gregory Paul Dado, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 27, 1998, Ser. No. 85,452

Int. Cl.^{6} C09B *41/00;67/10;67/48*

U.S. Cl. 534—581 **20 Claims**

1. A process for the preparation of a disperse azo dye by reacting a diazonium salt of an aromatic or heteroaromatic amine with a coupling component in an aqueous media to afford an aqueous slurry of the azo dye and optionally heat treating the aqueous slurry, characterized by incorporating an alkoxylated acetylenic diol into the process.

5,852,180

CHEMICAL SYNTHESIS OF 6-O-ALKYL ERYTHROMYCIN A

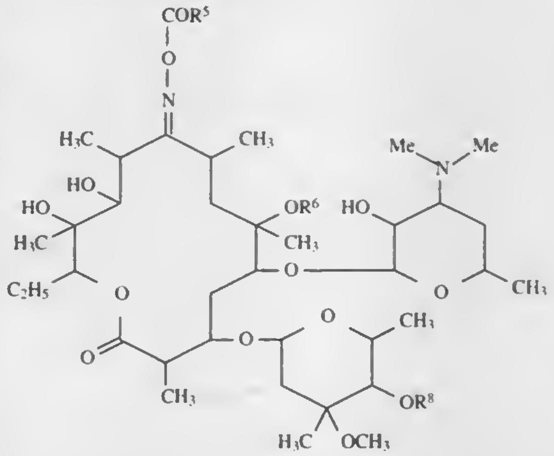
Hemantkumar H. Patel, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 17, 1997, Ser. No. 972,155

Int. Cl.^{6} C07H *1/00:17/08*

U.S. Cl. 536—7.4 **14 Claims**

11. A compound of the structure (1).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wherein R^5 is disubstituted benzene, R^6 is hydrogen or alkyl and R^7 and R^8 are each independently hydrogen, trimethylsilyl or an O-protecting group.

5,852,181

Patent Not Issued For This Number

5,852,182
THIOL-DERIVATIZED OLIGONUCLEOSIDES

Phillip Dan Cook, San Marcos, and Muthiah Manoharan, Carlsbad, both of Calif., assignors to ISIS Pharmaceuticals Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 116,801, Sep. 3, 1993, Pat. No. 5,578,718, which is a continuation-in-part of Ser. No. 782,374, Oct. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 463,358, Jan. 11, 1990, abandoned, and a continuation-in-part of Ser. No. 566,977, Aug. 13, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,396

Int. Cl.⁶ C07H *21/00*

U.S. Cl. 536—23.1 **8 Claims**

1. A compound comprising a plurality of linked nucleosides, wherein:

each nucleoside comprises a ribofuranosyl sugar portion and a base portion; and

at least one of said nucleosides bears at a 2'—O— position, a 3'—O—position, or a 5'—O—position a substituent having formula:

$$-R_s-S-R_1$$

where:

R_s has formula R_A, $R_A-C(O)-Q-R_A$, $R_A-Q-R_A-Q-R_A$;

each R_A is independently selected from alkyl having from 1 to about 10 carbon atoms;

each Q is, independently, NH, O or S;

R_1 is H or a thiol protecting group or has formula

$$S-R_2,\ CH_2C(O)-NH-R_2,\ CH_2-CH{=}CH-C(O)-R_2,\ -CH_2-CH_2-NH-S(O)_2-R_2,$$

or (maleimido)—R_2; and

R_2 comprises a steroid molecule, a reporter molecule, a lipophilic molecule, a reporter enzyme, a peptide, a protein, a reporter group, an alkylator, an intercalator, a cell receptor binding molecule, a crown ether, a crown amine, a porphyrin, a crosslinking agent, a peptide nucleic acid, or a thiol attached to a poly(ethylene glycol).

5,852,183
DOG-MOUSE HETEROHYBRIDOMA AND GENE FRAGMENT CODING FOR CONSTANT REGION OF CANINE IMMUNOGLOBULINS

Hiroaki Maeda; Yasuyuki Eda; Kazuhiko Kimachi; Yoichi Ono, and Sachio Tokiyoshi, all of Kumamoto, Japan, assignors to Juridical Foundation The Chemo-Sero-Therapeutic Research Institute, Kumamoto-ken, Japan

Division of Ser. No. 306,520, Sep. 15, 1994, Pat. No. 5,593,861, which is a continuation of Ser. No. 46,903, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 571,215, Aug. 23, 1990, abandoned. This application May 8, 1996, Ser. No. 646,981

Claims priority, application Japan, Aug. 25, 1989, 1-219889; Sep. 30, 1989, 1-255425; Jun. 7, 1990, 2-150673

Int. Cl.⁶ C07H *2/04;21/02*

U.S. Cl. 536—23.1 **12 Claims**

1. A gene fragment which comprises a DNA sequence coding for an amino acid sequence of a constant region of a canine immunoglobulin lambda chain, wherein the amino acid sequence is selected from the group consisting of an amino acid sequence such that the 8th and 7th amino acid residues at the N-terminal region of the first cysteine counted from the N-terminus of a polypeptide of the constant region of said lamda chain are glycine and alanine, respectively, an amino acid sequence such that the 11th, 10th and 9th amino acid residues at the N-terminal region of the second cysteine counted from the C-terminus of the polypeptide of the constant region of said lambda chain are proline, aspartic acid and lysine, respectively, or both.

5,852,184
PROTEIN TYROSINE KINASE

Andrew Frederick Wilks, Doneaster East, and Ailsa Harpur, Mooroolbark, both of Australia, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

PCT No. PCT/US91/08889, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO92/10519, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 26, 1991, Ser. No. 64,067

Claims priority, application Australia, Nov. 28, 1990, PK3594/90

Int. Cl.⁶ C15N *15/54*

U.S. Cl. 536—23.2 **5 Claims**

1. A purified isolated nucleic acid molecule which codes for a human protein tyrosine kinase like molecule which has multiple protein kinase catalytic domains, but no SH2 domains, the complementary sequence of which hybridizes to the nucleotide sequence set forth in SEQ ID NO; 1 at a temperature of 65° C. 6xSSC, 1% SDS, with a final wash of 0.2xSSC, 0.1% SDS, at 65° C.

5,852,185

Patent Not Issued For This Number

5,852,186
REACTIVE NEUTRALIZING HUMAN ANTI-GP120 RECOMBINANT ANTIBODY, DNA CODING THE SAME AND USE THEREOF

Joseph G. Sodroski, Medford; Wayne A. Marasco, Wellesley; Marshall R. Posner, Dedham, and William A. Haseltine, Cambridge, all of Mass., assignors to Dana-Farber Cancer Insitute, Boston, and New England Deaconess Hospital Corp., Dedham, bothof, Mass.

Division of Ser. No. 400,674, Mar. 8, 1995, abandoned, which is a continuation of Ser. No. 804,652, Dec. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,774

Int. Cl.⁶ C07H *21/04;* **A61K** *39/42;* **C07K** *16/10*

U.S. Cl. 536—23.53 **6 Claims**

1. An isolated DNA segment comprising a nucleotide sequence as defined in the Sequence Listing by SEQ ID NO:1 or SEQ ID NO:3.

2. An isolated DNA sequence containing a promoter operably linked to the DNA sequence of SEQ ID NO:1 and SEQ ID NO:3, wherein expression of the sequence results in expression of an antibody having affinity for a HIV-1 gp120 epitope or neutralizing ability in an in vitro assay for HIV-1.

5,852,187
MOLECULAR CLONING OF THE OVINE PITUITARY GROWTH HORMONE RELEASING HORMONE RECEPTOR

Michael O. Thorner, North Garden; Bruce D. Gaylinn, Trevilians, both of Va.; Reiko Horikawa, Tokyo, Japan, and Charles E. Lyons, Jr., Charlottesville, Va., assignors to The University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 902,826, Jun. 23, 1992, and a continuation-in-part of Ser. No. 432,043, May 1, 1995, Pat. No. 5,644,046. This application Jun. 12, 1996, Ser. No. 660,963

Int. Cl.⁶ C12N *15/12;15/10;* **C07K** *14/72*

U.S. Cl. 536—23.5 **3 Claims**

3. A nucleic acid molecule having the nucleic acid sequence SEQ ID NO:9 encoding an ovine growth hormone releasing hormone receptor, prepared according to the following process:

(a) preparing an ovine pituitary library;

(b) subdividing the library into pools;

(c) performing PCR on each pool to identify a pool that exhibits a growth hormone releasing hormone receptor signal; and

(d) performing hybridization screening on the pool identified in step (c) using a hybridization buffer and a detectable labeled growth hormone releasing hormone receptor DNA oligonucleotide probe to obtain the nucleic acid molecule encoding the ovine growth hormone releasing hormone receptor.

5,852,188
OLIGONUCLEOTIDES HAVING CHIRAL PHOSPHORUS LINKAGES

Phillip Dan Cook, Carlsbad, Calif., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 463,358, Jan. 11, 1990, abandoned, and Ser. No. 566,977, Aug. 13, 1990, abandoned. This application Apr. 19, 1996, Ser. No. 635,009

Int. Cl.⁶ C07H *21/04*

U.S. Cl. 536—24.5 **16 Claims**

1. An oligonucleotide comprising a plurality of nucleoside units linked together via phosphate linkages, wherein:

at least one of the nucleoside units is a non-naturally occurring nucleoside unit; and

at least two of the nucleoside units are linked via chiral phosphate linkages.

5,852,189
TERTIARYAMINOALKYLLITHIUM INITIATORS AND THE PREPARATION THEREOF

William L. Hergenrother, Akron; Michael L. Kerns, Elyria, and David F. Lawson, Uniontown, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 31, 1996, Ser. No. 777,646

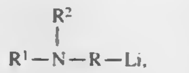
Int. Cl.⁶ C07D *223/06;* **C08F** *4/48*

U.S. Cl. 540—582 **15 Claims**

1. An initiator solution, comprising;

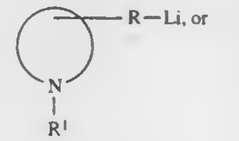
a moderate temperature stable anionic initiator composition contained in a hydrocarbon solution, said moderate temperature being from about −20° C. to about 60° C.,

said anionic initiator being an aminoalkyllithium initiator of the formula

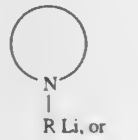


$$R^1-\overset{\overset{\displaystyle R^2}{|}}{N}-R-Li,$$

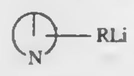
Formula I



Formula II

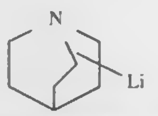


Formula III



or

Formula IV



Formula V

wherein R^1 and R^{22}, independently, are an alkyl having from 1 to 12 carbon atoms, wherein R is an alkylene or cycloalkylene having 1 to 10 carbon atoms, and optionally including from 1 to 4 alkyl substituents on each ring wherein said alkyl contains from 1 to 4 carbon atoms, wherein the amount of said anionic initiator in said composition is at least a 60 percent yield based upon a starting material which is a halide of said Formulas I, II, III, IV, or V, or combinations thereof.

11. An anionic initiator solution made by reacting a tertiaryaminoalkylhalide with an excess of lithium in the presence of an organic ether at or below the boiling point of said ether and replacing said ether with a hydrocarbon solvent, said organic ether having the formula R^3-O-R^4 where R^3 and R^4, independently, are an alkyl having from 1 to 4 carbon atoms,

wherein said initiator is stable in said hydrocarbon solvent at a moderate temperature, wherein the stability of said anionic initiator is less than 1 percent mole decay per week at 20° C., and wherein the purity of said anionic initiator solution is at least 80 percent by weight.

5,852,190
DIAZEPINOINDOLES AS PHOSPHODIESTERASE IV INHIBITORS

Yves Pascal, Rueil-Malmaison; Indres Moodley, Versailles; Alain Calvet, L'Hay-les-Roses, and Jean-Louis Junien, Sevres, all of France, assignors to Institut de Recherche Jouveinal SA, Fresnes, France

Filed Feb. 22, 1995, Ser. No. 391,865

Claims priority, application France, Oct. 14, 1994, 94 12282

Int. Cl.⁶ C07D *243/24*

U.S. Cl. 540—496 **5 Claims**

1. The compounds:

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(3R,S)-2-Chloro-4-trifluoromethylpyrimidine-5-carboxylic acid (4-oxo- 1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3-yl)amide;
(3R,S)-Imidazo[1,2-a]pyridine-2-carboxylic acid N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino-[6,7,1 -hi]indol-3 -yl)amide;
(3R)-2-Fluoro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1 -hi]indol-3-yl)-benzamide;
(3R)-3-Fluoro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1 -hi]indol-3-yl)-benzamide
(3R)-4-Fluoro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3-yl)-benzamide;
(3R)-2-Chloro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3-yl)-benzamide;
(3R)-3-Chloro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3 -yl)-benzamide;
3(R)-2-Iodo-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3 -yl)-benzamide;
(3R)-3-Chloro-4-fluoro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3-yl)-benzamide; and
(3R)-3,4-Dichloro-N-(4-oxo-1-phenyl-3,4,6,7-tetrahydro[1,4]diazepino[6,7,1-hi]indol-3-yl)-benzamide.

5,852,191

RIGIDIZED MONOMETHINE CYANINES

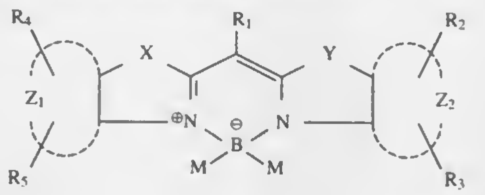
Bhalchandra M. Karandikar, Tigard, Oreg.; Alan S. Waggoner, Pittsburgh, and Ratnakar B. Mujumdar, Glenshaw, both of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Jun. 7, 1995, Ser. No. 474,056

Int. Cl.^{6} C07D *498/16*

U.S. Cl. 546—13 **11 Claims**

1. A fluorescent molecule having the structure



wherein:

X and Y are selected from the group consisting of —C(CH$_3$)$_2$—, oxygen, sulfur, —CH═CH—, and >N—W—K where N is nitrogen;

dotted lines Z$_1$ and Z$_2$ represent the atoms necessary to complete a structure selected from the group consisting of one ring, two fused rings, and three fused rings, each said ring having five or six atoms, and each said ring comprising carbon atoms and, optionally, no more than two atoms selected from oxygen, nitrogen and sulfur;

R$_1$, R$_2$, R$_3$, R$_4$ and R$_5$ are selected from the group consisting of —K and —W—K;

M is selected from the group consisting of F and Cl;

W is a linker selected from the group consisting of branched alkyl chains of 1–27 carbon atoms, straight alkyl chains of 1–27 carbon atoms, monoethers containing 2–20 carbon atoms, and polyethers containing 2–20 carbon atoms; and

K is a group conferring desired properties and is selected from the group consisting of:

neutral groups that reduce water solubility selected from the group consisting of hydrogen and halogen atoms;

polar groups that increase water solubility selected from the group consisting of amide, sulfonate, sulfate, phosphate, quaternary ammonium, hydroxyl and phosphonate;

functional groups that can be used in labeling reactions selected from the group consisting of amino, hydroxyl, sulfhydryl, carboxyl and carbonyl;

reactive groups selected from the group consisting of succinimidyl ester, isothiocyanate, isocyanate, iodoacetamide, maleimide, sulfonyl halide, phosphoramidite, alkylimidate, arylimidate, acid halide, substituted hydrazines, substituted hydroxylamines, carbodiimides; and

electron donating and withdrawing groups that shift the absorption and emission wavelengths of the fluorescent molecule.

5,852,192

CYCLIC UREA DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

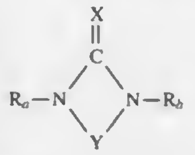
Frank Himmelsbach, Mittelbiberach; Helmut Pieper; Volkhard Austel, both of Biberach; Guenter Linz, Mittelbiberach; Johannes Weisenberger, Biberach; Wolfgang Eisert, Biberach, and Thomas Mueller, Biberach, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach, Germany

Continuation-in-part of Ser. No. 521,338, Aug. 29, 1995, Pat. No. 5,650,424, which is a division of Ser. No. 144,909, Oct. 28, 1993, Pat. No. 5,478,942, which is a division of Ser. No. 849,557, Mar. 11, 1992, Pat. No. 5,276,049. This application May 1, 1997, Ser. No. 847,048

Int. Cl.^{6} C07D *233/32;233/36*

U.S. Cl. 546—210 **10 Claims**

1. A cyclic urea derivative of the formula



(I)

wherein

X, represents a carbonyl group;

Y represents an ethylene group;

one of the groups R$_a$ or R$_b$ represents a group of the formula

A—B——C—

wherein A represents a straight-chained or branched C$_{1-5}$-aminoalkyl group, an amino, amidino or guanidino group, whilst in each of the above-mentioned groups at one of the nitrogen atoms, one or two hydrogen atoms may be replaced by a C$_{1-4}$-alkyl or one hydrogen atom may be replaced by a C$_{2-5}$-alkoxycarbonyl group or by an alkylcarbonyl, arylcarbonyl, aryloxycarbonyl or aralkoxycarbonyl group, or A may represent a cyano group or a cyanoalkyl group having 1 to 4 carbon atoms in the alkyl moiety;

B represents a bond, and

C represents a phenylene group which may be mono- or disubstituted by fluorine, chlorine or bromine atoms, by C$_{1-4}$-alkyl groups, by trifluoromethyl, hydroxy, alkoxy, alkylsulphenyl, alkylsulphinyl, alkylsulphonyl, (R$_1$)$_2$N—,(R$_1$)$_2$NCO—,(R$_1$)$_2$NSO$_2$— or nitro groups or by R$_1$NH-groups substituted by an alkylcarbonyl, aralkylcarbonyl, arylcarbonyl, heteroarylcarbonyl, alkylsulphonyl, aralkylsulphonyl or arylsulphonyl group, whilst the substituents may be identical or different;

the other of the groups R$_a$ or R$_b$, represents a group of the formula

F—E—D—

wherein D represents a cyclohexaline group optionally substituted by an alkyl, aralkyl or aryl group, wherein one CH moiety is replaced by a nitrogen atom, whilst additionally one methylene group adjacent to the nitrogen atom may be replaced by a carbonyl group;

E represents

a C$_{1-5}$-alkylene group or a C$_{2-5}$-alkenylene group, each of which may be substituted by one or two alkyl groups, or by a hydroxy, alkoxy, amino, alkylamino, aralkylamino, dialkylamino, bis(aralkyl)amino, carboxyalkyl, alkoxycarbonylalkyl or aralkoxycarbonylalkyl group; and

F represents a carbonyl group substituted by a hydroxy or C$_{1-6}$-alkoxy group, whilst a C$_{1-3}$-alkoxy group may be substituted in the 1-, 2- or 3-position by an aryl group, whilst if A represents a cyano group or an amino or aminoalkyl group optionally benzoylated or benzyloxycarbonylated at the nitrogen atom, the shortest spacing between the nitrogen atom of these groups and group F is at least 10 bonds;

or a tautomer or salt thereof,

and, wherein, unless otherwise specified,

the above-mentioned alkyl, alkylene, alkenylene or alkoxy moieties may each contain 1 to 3 carbon atoms, and

the term "an aryl group" used above denotes a phenyl group which may be monosubstituted by a trifluoromethyl, carboxy, (R$_3$)$_2$NCO—, alkoxycarbonyl, alkylcarbonyl, alkylsulphenyl, alkylsulphinyl, alkylsulphonyl, nitro, (R$_3$)$_2$N—, alkylcarbonyl-NR$_3$-, aralkylcarbonyl-NR$_3$-, arylcarbonyl-NR$_3$-, heteroarylcarbonyl-NR$_3$-, alkylsulphonyl-NR$_3$-, aralkylsulphonyl-NR$_3$-, arylsulphonyl-NR$_3$- or (R$_3$)$_2$N-sulphonyl group or may be mono-, di- or trisubstituted by fluorine, chlorine or bromine atoms or by hydroxy, alkoxy or alkyl groups having 1 to 4 carbon atoms.

5,852,193

PROCESS FOR PREPARING BENZOIC ACID DERIVATIVE INTERMEDIATES AND BENZOTHIOPHENE PHARMACEUTICALS

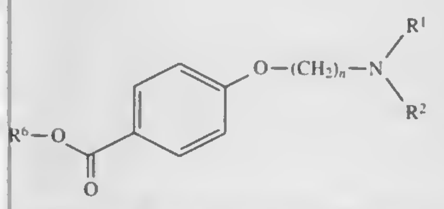
Erik Christopher Chelius, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 29, 1998, Ser. No. 69,277

Int. Cl.^{6} C07D *295/108*

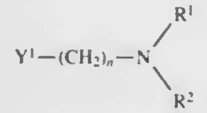
U.S. Cl. 546—238 **7 Claims**

1. A process for preparing a compound of formula Ib



Ib

which comprises preparing a compound of formula VI



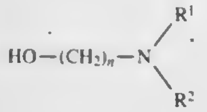
VI

wherein:

R^1 and R^2 each are independently C$_1$–C$_4$ alkyl, or R^1 and R^2 together with the nitrogen to which they are attached form a piperidinyl, pyrrolidinyl, methylpyrrolidinyl, dimethylpyrrolidinyl, morpholino, dimethylamino, diethylamino, or 1 hexamethyleneimino ring;

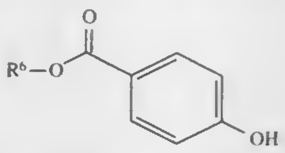
n is 2 or 3; and

Y^1 is p toluenesulfonyl O, methylsulfonyl O, trifluoromethylsulfonyl-O-, 2,2,2-trifluoroethylsulfonyl-O-, or trifluoroacetyl-O-; or a salt or solvate thereof, by reacting a hydroxylamine of formula III



III

with a compound selected from the group consisting at W$_2$O, and W-halo, wherein W is selected from the group consisting of p toluenesulfonyl, methylsulfonyl, trifluoromethylsulfonyl, 2,2,2-trifluoroethylsulfonyl, and trifluoroacetyl; and further reacting a compound of formula VI with a compound of formula IV



IV

wherein R^6 is a carboxy protecting group, in the presence of an alkyl acetate solvent and a suitable base.

5,852,194

N-SUBSTITUTED CIS-N-PROPENYL-ACETAMIDES, AND PROCESS FOR THEIR PREPARATION

Reinhard Lantzsch, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

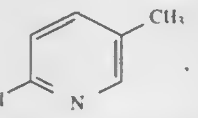
Filed Jun. 7, 1996, Ser. No. 660,433

Claims priority, application Germany, Jun. 14, 1995, 195 21 588.5

Int. Cl.^{6} C07D *213/08*

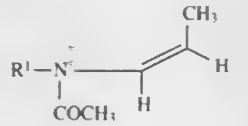
U.S. Cl. 546—250 **14 Claims**

3. A method for the preparation of 2-chloro- 5-methyl-pyridine, of the formula (IV)



(IV)

by reaction of an N-substituted cis-N-propenyl-acetamide of the formula

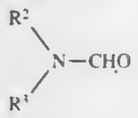


(I)

in which

R^1 represents in each case optionally substituted alkyl, -C(alkyl)$_2$-alkenyl, alkinyl, cycloalkyl, cycloalkylalkyl, aralkyl or hetarylalkyl

with a formamide derivative of the formula (III)



(III)

in which

R^2 and R^3 are identical or different and represent alkyl or cycloalkyl, or together represent alkanediyl,

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and with a chlorinating agent, at temperatures between 20° and 150° C., if optionally in the presence of a diluent.

5,852,195
PYRANONE COMPOUNDS USEFUL TO TREAT RETROVIRAL INFECTIONS

Karen Rene Romines, Paw Paw; Gordon L. Bundy, Portage; Theresa M. Schwartz, Kalamazoo, all of Mich.; Ruben A. Tommasi, Whitehouse Station, N.J.; Joseph W. Strohbach, Mendon, Mich.; Steven Ronald Turner, Kalamazoo, Mich.; Suvit Thaisrivongs, Kalamazoo, Mich.; Paul Adrian Aristoff, Kalamazoo, Mich.; Paul D. Johnson, Portage, Mich.; Harvey Irving Skulnick, Kalamazoo, Mich.; Louis L. Skaletzky, Kalamazoo, Mich.; David John Anderson, Kalamazoo, Mich.; Joel Morris, Kalamazoo, Mich.; Ronald B. Gammill, Portage, Mich., and George P. Luke, Lexington, Mass., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

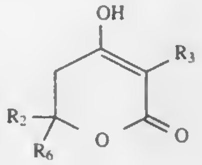
PCT No. PCT/US95/05219, § 371 Date Nov. 4, 1996, § 102(e) Date Nov. 4, 1996, PCT Pub. No. WO95/30670, PCT Pub. Date Nov. 16, 1995

Continuation of Ser. No. 349,361, Jan. 2, 1994, abandoned, which is a continuation of Ser. No. 238,817, May 6, 1994, abandoned. This PCT application May 4, 1995, Ser. No. 809,224

Int. Cl.^{6} C07D *417/12;401/12;403/12;* **A61K** *31/44*

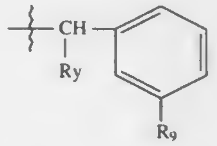
U.S. Cl. 546—282.1 **5 Claims**

1. The compound of the formula VI



VI

wherein R_2 is
  a) $H_3C—CH_2—$, or
  b) phenyl-$(CH_2)_2—$;
wherein R_3 is the moiety of formula X



X

wherein R_6 is
  a) $H_3C—(CH_2)_2—$, or
  b) phenyl-$(CH_2)_2—$;
wherein R_7 is $H_3C—CH_2—$;
wherein R_9 is $—NHSO_2—$het;
wherein het is 2-pyridinyl substituted at the 5-position by zero (0) or one (1) R_{10};
wherein R_{10} is
  a) —CN,
  b) $—CF_3$,
  c) —NH2, or
  d) $—CONH_2$;
or a pharmaceutically acceptable salt thereof.

5,852,196
12,13,17-TRIHYDROXY-9(Z)-OCTADEOENOIC ACID AND DERIVATIVES AND MICROBIAL ISOLATE FOR PRODUCTION OF THE ACID

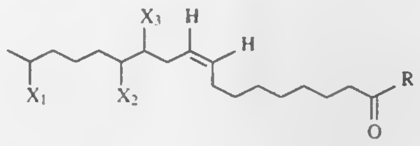
Ching T. Hou, Peoria, Ill., assignor to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Filed Mar. 11, 1997, Ser. No. 814,674

Int. Cl.^{6} C07C *229/00*

U.S. Cl. 554—103 **6 Claims**

1. A compound having the formula:



wherein:
  R is $—(O)_n—R_1$,
  n is 0,1, and
  R_1 is H, or a hydrocarbon selected from the group consisting of substituted or unsubstituted alkyl, phenyl, or alkyl phenyl hydrocarbons, wherein the alkyl moiety may be branched or straight chain; and
wherein:
  X_1, X_2, and X_3 are independently selected from hydroxyl, halogen, or NR_2R_3, wherein R_2 and R_3 are independently selected from the group consisting of hydrogen, substituted or unsubstituted alkyl, phenyl, or alkyl phenyl hydrocarbons, wherein tbe alkyl moiety may be branched or straight chain.

5,852,197
CYCLIC DISPHOSPHORIC ESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Horst Staendeke, Lohmar, Germany, assignor to Hoechst Aktiengellschaft, Frankfurt, Germany

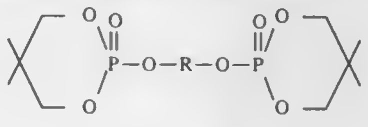
Filed Jul. 15, 1996, Ser. No. 680,133

Claims priority, application Germany, Jul. 17, 1995, 195 25 950.5

Int. Cl.^{6} C07F *9/6574*

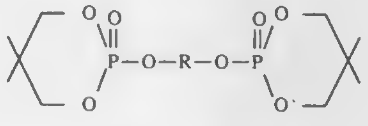
U.S. Cl. 558—79 **2 Claims**

1. A cyclic diphosphoric ester of the formula



with R=1,3-phenylene.

2. A cyclic disphosphoric ester of the formula



with R=1,3-cyclohexylene or 1,4-cyclohexylene.

5,852,198
WITTIG REAGENTS AND METHOD FOR PREPARING α,β-UNSATURATED PHOSPHONATES

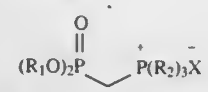
Yibo Xu, Chicago, and Michael T. Flavin, Darien, both of Ill., assignors to Medichem Research, Inc., Lemont, Ill.

Filed Apr. 2, 1997, Ser. No. 831,233

Int. Cl.^{6} C07F *9/54*

U.S. Cl. 558—87 **6 Claims**

1. A compound of formula:



$$(R_1O)_2\overset{O}{\overset{\|}{P}}CH_2\overset{+}{P}(R_2)_3\overset{-}{X}$$

I

wherein X represents triflate, halide, BF_4, SbF_6, or ClO_4; R_1 represents alkyl, aryl or arylalkyl; and R_2 represents alkyl, aryl or arylalkyl, provided that R_1 and R_2 not represent phenyl at the same time and that R_1 not represent aryl when X is halide.

5,852,199
METHOD FOR MAKING CARBAMAZEPHINE DERIVATIVE

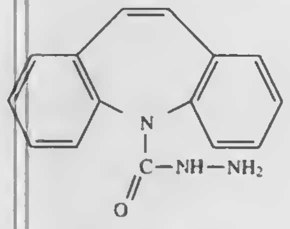
Chengrong Wang, Hockessin, Del., assignor to Dade Behring Inc., Deerfield, Ill.

Division of Ser. No. 473,810, Jun. 7, 1995, Pat. No. 5,688,944. This application Jul. 25, 1997, Ser. No. 900,769

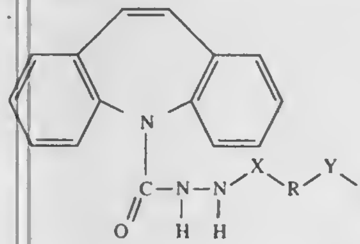
Int. Cl.^{6} C07C *205/00;207/00;229/00;261/00*

U.S. Cl. 560—27 **6 Claims**

1. A method comprising the steps of:
reacting triphosgene with iminostilbene in a substantially oxygen free environment;
adding hydrazine monohydrate and refluxing in a substantially free environment for a period of time sufficient to permit the formation of a precipitate having the structural formula:



filtering the precipitate; and,
reacting the precipitate in the presence of a base with a reactant selected from the group consisting of succinic anhydride, bromoacetic acid and halogen substituted aliphatic sulfonic acid at a temperature and for a period of time sufficient to permit the formation of a carbamazepine-acid having the structural formula



where X is selected from the group consisting of C═O, CH2 and SO2; Y is selected from the group consisting of C═O, CH2 and SO2; and R is an aliphatic alkyl group with straight or branched chains.

5,852,200
CROSS-COUPLING OF ORGANIC COMPOUNDS USING CUPROUS IODIDE

Reuben D. Rieke, Lincoln, Nebr., assignor to Rieke Metals, Inc., Lincoln, Nebr.

Filed Aug. 22, 1996, Ser. No. 701,628

Int. Cl.^{6} C07C *69/76*

U.S. Cl. 560—51 **6 Claims**

1. A process for coupling a carboxylic acid halide, an allylic halide or an α,β-unsaturated carbonyl containing compound with an organozinc compound, consisting of reacting under an inert atmosphere said acid halide, allylic halide or α,β-unsaturated carbonyl containing compound with said organozinc compound at between about −100° C. to about 25° C. in the presence of an organic solvent and in the presence of cuprous iodide as a catalyst.

5,852,201
PROCESS FOR THE DISTILLATION OF CRUDE ESTER IN THE DMT/PTA PROCESS

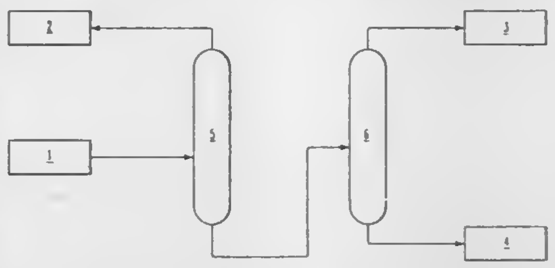
Udo Lenz, Steinstrasse; Ulrich Neutzler, Deipenbecker Weg; Anton Schoengen, In den Espeln, and Reinhard Sigg, Leverkusener Strasse, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Jan. 17, 1997, Ser. No. 784,519

Claims priority, application Germany, Apr. 22, 1996, 196 15 886.9

Int. Cl.^{6} C07C *67/39;67/54;* **B01D** *3/00*

U.S. Cl. 560—77 **4 Claims**



1. A process for preparing crude dimethyl terephthalate, comprising:
  oxidizing a mixture comprising para-xylene and methyl paratoluate, thereby forming an oxidized mixture;
  esterifying the oxidized mixture with methanol, thereby forming a crude ester;
  separating the crude ester into a plurality of fractions, comprising:
    (a) a crude dimethyl terephthalate fraction;
    (b) a high-boiling residue fraction; and
    (c) a low-boiling recyclable fraction; wherein
  said separating is performed with a distillation column comprising structured packing; and
  said column is operated at an overhead temperature of 100°–220° C., at a pressure of 30–200 mbar, and at a bottom temperature of 180°–260° C.; wherein a pressure difference between the top and the bottom of said column is at most 30 mbar.

5,852,202
PROCESS FOR ISOLATING N-(4-FLUOROPHENYL)-N-(1-METHYLETHYL)-2-[(5-TRIFLUOROMETHYL)-1,3,4-THIADIAZOL-2-YL)OXY]ACETAMIDE

Vidyanatha A. Prasad, Leawood, Kans.; Jonathan D. Spicher, Parkville, and Warren A. Fischer, Blue Springs, both of Mo., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1997, Ser. No. 989,486

Int. Cl.^{6} C07D *285/13*

U.S. Cl. 548—136 **16 Claims**

1. A process for isolating N-(4-fluorophenyl)-N-(1-methylethyl)-2-[(5-trifluoromethyl)-1,3,4-thiadiazol-2-yl)oxy]acetamide from a

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solution of N-(4-fluorophenyl)-N-(1-methylethyl)-2-[(5-trifluoromethyl)-1,3,4-thiadiazol-2-yl)oxy]acetamide in an aprotic, aromatic solvent, comprising the steps of:

(a) removing the solvent from the solution to form a substantially solvent-free material;

(b) melting the material from step (a) to form a molten material; and

(c) isolating N-(4-fluorophenyl)-N-(1-methylethyl)-2-[(5-trifluoromethyl)-1,3,4-thiadiazol-2-yl)oxy]acetamide from the molten material by flaking.

5,852,203

HYDROXY-FUNCTIONAL POLYHYDANTOIN PREPOLYMERS AND THEIR USE IN COATING COMPOSITIONS

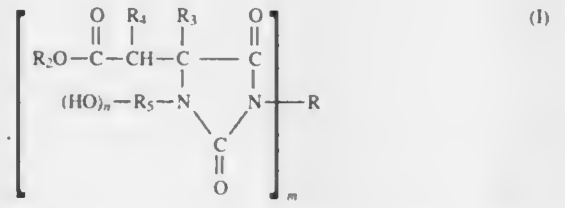
E. Haakan Jonsson, Coraopolis; Douglas A. Wicks, Mt. Lebanon; Philip E. Yeske, and Lyuba K. Gindin, both of Pittsburgh, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 444,321, May 18, 1995, abandoned. This application Mar. 11, 1997, Ser. No. 815,058

Int. Cl.^{6} C07D *233/78;23/72*

U.S. Cl. 548—314.1 16 Claims

1. A hydroxy-functional hydantoin prepolymer corresponding to the formula



(I)

wherein

R represents the residue obtained by removing the isocyanate groups from an organic monomeric diisocyanate, a polyisocyanate adduct or an NCO prepolymer containing hydantoin groups, wherein said NCO prepolymer is prepared by reacting a polyisocyanate with a polyaspartate at a minimum equivalent ratio of isocyanate groups to aspartate groups of 2.1:1,

R_2 represents an organic group which is inert towards isocyanate groups at a temperature of 100° C. or less,

R_3 and R_4 are identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of 100° C. or less,

R_5 represents the hydrocarbon radical obtained by removing the amino and hydroxyl groups from an amino alcohol,

n has a value of 1 to 3 and

m has a value of 2 to 6.

5,852,204

PYRROLO[3,2-B-]-CARBAZOLES AND 1H[1]BENZOTHIENO [2,3-F] INDOLES HAVING ANTI-TUMOR ACTIVITY

David Drysdale Miller; Sadie Vile, both of Stevenage; Patrick Vivian Richard Shannon, Penarth, all of United Kingdom; Laddawan Chunchatprasert, Khon Kaen, Thailand, and Alan Thomas Hudson, Otford, United Kingdom, assignors to University College Cardiff Consultants Limited, United Kingdom

PCT No. PCT/GB95/00190, § 371 Date Aug. 16, 1996, § 102(e) Date Aug. 16, 1996, PCT Pub. No. WO95/21170, PCT Pub. Date Aug. 10, 1995

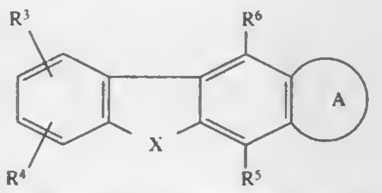
PCT Filed Jan. 31, 1995, Ser. No. 687,347

Claims priority, application United Kingdom, Jan. 2, 1994, 9401921

Int. Cl.^{6} C07D *487/04;495/04;* **A61K** *31/40:31/695;* **C07F** *7/10;* **C07H** *9/04*

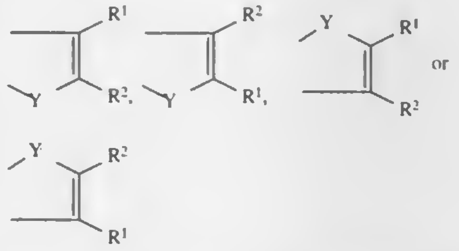
U.S. Cl. 548—421 7 Claims

1. A compound of the formula (I)



(I)

and salts and physiologically functional derivatives thereof, wherein A is



X is O, S, SO, SO_2, CH_2, CO or NR^7 wherein R^7 is H, C_{1-10} alkyl, aralkyl containing from 1 to 4 atoms in the alkyl portion the aryl portion being a carbocyclic or heterocyclic aryl group, aryl selected from the group consisting of a carbocyclic aryl group and a heterocyclic aryl group containing a maximum of 10 ring atoms, alkenyl, C_{1-10} acyl, alkynyl, sulphonyl or substituted sulphonyl;

Y is O, S, SO, SO_2, CH_2, CO or NR^7, with the proviso that Y is not O when X is O;

R^1 is $COOR^8$, $CONHR^8$, $CONR^8R^9$, $CSOR^8$, $CSSR^8$, $COSR^8$, $CSNHR^8$, $CSNR^8R^9$, $CNHOR^8$, wherein R^8 and R^9 are independently C_{1-10} unsubstituted or substituted hydrocarbyl group which does or does not contain one or two oxygen atoms in the chain; the hydrocarbyl group being selected from the group consisting of straight-chain or branched C_{1-10} alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkynyl, aralkyl containing from 1 to 4 carbon atoms in the alkyl portion and the aryl portion being a carbocyclic or heterocyclic group containing a maximum of 10 ring atoms, aralkenyl and aralkynyl groups where the C_{1-10} alkyl, alkenyl or alkynyl portion is straight-chain or branched; said hydrocarbyl groups are unsubstituted or substituted by hydroxy, azido, alkenyl, halo, hydroxy, nitro, amino, alkylamino unsubstituted or substituted by one or two alkyl groups, cyano, carboxylate, alkyl ester, aralkyl ester, aryl ester wherein the alkyl ester, aralkyl ester and aryl ester are unsubstituted or substituted, alkyl, aryl, aralkyl, aryloxy, arylalkoxy, substituted arylalkoxy, sulphinyl, sulphonyl, thio, alkylthio, alkoxy, hydroxyalkyl, halo, alkyl, phosphate, phosphonate, silyl, silyloxy, wherein silyl and silyloxy are unsubstituted or substituted by one or more C_{1-4} alkyl or aryl, keto, formyl; any substituent present on alkyl esters, aralkyl esters and aryl esters being nitro, amino, hydroxy, alkoxy, halogen, cyano and alkyl or R^8 and R^9 are independently alkoxyalkyl, heterocycloalkyl containing between 3 and 6 ring atoms, heteroaralkyl, or R^8 and R^9 are a sugar group,

with the proviso that R^1 is not $COOR^8$, $CONHR^9$, $CONR^9R^{10}$

wherein R^8 is alkyl or aralkyl, R^9 and R^{10} are alkyl, R^2 is H, halo, cyano, $COOR^8$, C_{1-10} alkyl, aryl, selected from the group consisting of a carbocyclic aryl group and a heterocyclic aryl group containing a maximum of 10 ring atoms, alkenyl, alkynyl, alkoxy, wherein alkyl, aryl, alkenyl, alkynyl and alkoxy are unsubstituted or substituted or $CH_2CH_2CO_2R^{12}$ wherein R^{12} is C_{1-10} alkyl or aryl selected from the group consisting of a carboxycyclic aryl group and a heterocyclic aryl group containing a maximum of 10 ring atoms,

R^3 and R^4 are independently H, hydroxy, C_{1-10} alkyl, haloalkyl, alkoxy, halo, cyano, nitro, amino, alkyl amino, dialkyl amino, substituted C_{1-10} alkyl, carboxyl or CO_2R^{12},

R^5 is H, C_{1-10} alkyl, aralkyl containing from 1 to 4 atoms in the alkyl portion and the aryl portion being a carbocyclic or heterocyclic aryl group, nitro, amino, halo, cyano or CHO; and

R^6 is H, aryl selected from the group consisting of a carbocyclic aryl group and a heterocyclic aryl group containing a maximum of 10 ring atoms, C_{1-10} alkyl, aralkyl containing from 1 to 4 atoms in the alkyl portion and the aryl portion being a carbocyclic or heterocyclic aryl group, nitro, halogen, CHO or COR^{13} wherein R^{13} is C_{1-10} or aryl selected from the group consisting of a carbocyclic aryl group and a heterocyclic aryl group containing a maximum of 10 ring atoms.

6. A method of treatment of tumours in animals, which comprises the administration of an effective amount of a compound of claim 1 or a salt thereof.

5,852,205

CATALYTIC PROCESS

Donald Bethell, Wirral; Graham John Hutchings, Osmotherley; Christopher Langham, Newark; Philip Charles Bulman Page, Loughborough, and Darren Frank Lee, West Derby, all of United Kingdom, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Sep. 22, 1997, Ser. No. 935,331

Claims priority, application United Kingdom, Sep. 20, 1996, 9719725

Int. Cl.^{6} C07D *203/06*

U.S. Cl. 548—965 10 Claims

1. A process for the production of aziridines by heterogeneous catalysis comprising reacting an ethylenically unsaturated compound with a nitrene donor in the presence of an acidic zeolitic material impregnated, or exchanged, with ions of at least one metal selected from Groups VIA, VIIA, VIII, IB and IIB of the 4th to the 6th periods of the Periodic Table and having a pore size large enough for the reactants to enter and the aziridination product to leave, a zeolite supercage.

5,852,206

PROCESS FOR REMOVING RESIDUAL ACIDIC CHLORINE FROM ACYLOXYSILANES

Michael Horn; Hartwig Rauleder; Claus-Dietrich Seiler, and Jaroslaw Monklewicz, all of Rheinfelden, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 26, 1997, Ser. No. 980,116

Claims priority, application Germany, Nov. 27, 1996, 196 49 023.5

Int. Cl.^{6} C07F *7/08*

U.S. Cl. 556—466 19 Claims

1. A process for removing residual acidic chlorine from acyloxysilanes, comprising:

reacting a metal carboxylate with a composition comprising an acyloxysilane and acidic chlorine, to form a metal chloride.

5,852,207

PROCESS FOR PRODUCING CYANOFORMATE ESTERS

Thomas V. John, Yardley; Gerald L. Larson, Newton, both of Pa., and Chitoor S. Subramaniam, East Brunswick, N.J., assignors to Creanova Inc., Somerset, N.J.

Filed Jul. 22, 1997, Ser. No. 898,571

Int. Cl.^{6} C07C *229/00*

U.S. Cl. 560—155 22 Claims

1. A process for producing a C_1–C_{20} alkyl, aralkyl or aryl cyanoformate ester comprising reacting stoichiometric amounts of a corresponding C_1–C_{20} alkyl, aralkyl or aryl haloformate and an organosilyl nitrile selected from the group consisting of dimethyldicyanosilane and methyltricyanosilane, in the presence of a catalytic amount of a tertiary amine base.

5,852,208

METHOD OF PRODUCING COMPOUNDS CONTAINING ACYLOXYALKOXY GROUPS FROM ALCOHOLS

Joseph C. Rongione, Webster, Tex., assignor to Dixie Chemical Company, Inc., Pasadena, Tex.

Filed Aug. 30, 1996, Ser. No. 705,713

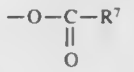
Int. Cl.^{6} C07C *69/02;409/00*

U.S. Cl. 560—231 24 Claims

1. A process of preparing a compound of the formula

$$R—O—CH_2O—COR^1 \qquad (I)$$

wherein R is a C_1–C_6 alkyl, a C_3–C_8 cycloalkyl, an aryl or a benzyl group, the R group being optionally substituted with one or more phenoxy groups, benzyloxy groups, halogen atoms, a group of the formula:



$$—O—\underset{\underset{\displaystyle O}{\|}}{C}—R^7$$

and $—R^8—O—R^9$; wherein R^7 and R^9 independently are a C_1–C_6 alkyl or haloalkyl group; R^8 is of the formula $—(CH_2)_y$ wherein y is 0 to about 6; and R^1 is a C_1–C_6 alkyl, R^1 being an organic moiety from a carboxylic acid anhydride, said process comprising reacting a polyoxymethylene of the formula:

$$R—O—CH_2(OCH_2)_xOR \qquad (V)$$

wherein x is between 1 and 5 with a carboxylic acid anhydride containing about 2 to about 8 carbon atoms for a time and at a temperature sufficient to generate the compound of formula (I).

5,852,209

PROCESS FOR OPTICALLY RESOLVING 2-(3-BENZOYLPHENYL) PROPIONIC ACID

Hiroyuki Nohira, Urawa; Shigeya Saijo, Nishinomiya; Masafumi Moriwaki, Kobe; Shunji Kamiyama, Kobe; Kazutoshi Toyoda, Kobe; Jun Matsumoto, Kobe; Kohichi Maruo, Akashi, and Taizo Fujimoto, Osaka, all of Japan, assignors to Nagase & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 413,869, Mar. 29, 1995, abandoned. This application Jun. 9, 1997, Ser. No. 897,500

Claims priority, application Japan, Sep. 26, 1994, 6-229362; Jan. 24, 1995, 7-008908

Int. Cl.^{6} C07B *57/00*

U.S. Cl. 562—401 14 Claims

1. A process for separating (S)- or (R)-2-(3-benzoylphenyl)propionic acid from a mixture of (S)- and (R)-2-(3-benzoylphenyl)propionic acid, which comprises the steps of:

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(1) reacting the mixture of (S)- and (R)-2-(3-benzoylphenyl)propionic acid with (S)- or (R)-3-methyl-2-phenylbutylamine in a suitable ether solvent in the presence of water to form a diastereomer salt of (S)-2-(3-benzoylphenyl)propionic acid with (S)-3-methyl-2-phenylbutylamine or a diastereomer salt of (R)-2-(3-benzoylphenyl)propionic acid with (R)-3-methyl-2-phenylbutylamine;

(2) separating the diastereomer salt from the reaction mixture; and

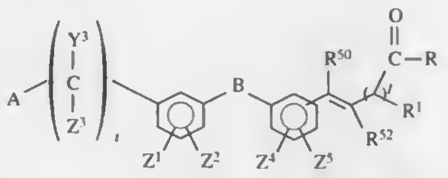
(3) liberating the separated diastereomer salt to give (S)- or (R)-2-(3-benzoylphenyl)propionic acid.

5,852,210
CINNAMIC ACID DERIVATIVES

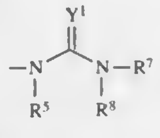
Barbara B. Chen, Glenview, Ill.; Helen Y. Chen, Livingston, N.J.; Michael Clare, Skokie, Ill.; Stephen H. Docter, Chicago, Ill.; Ish Kumar Khanna, Vernon Hills, Ill.; Francis Jan Koszyk, Prospect Heights, Ill.; James W. Malecha, Libertyville, Ill.; Julie Marion Miyashiro, Skokie, Ill.; Thomas D. Penning, Elmhurst, Ill.; Joseph G. Rico; Peter G. Ruminski, both of Ballwin, Mo.; Mark A. Russell, Gurnee, Ill.; Richard Mathias Weier, Lake Bluff, Ill.; Xiangdong Xu, Gurnee, Ill.; Stella S. Yu, Morton Grove, Ill., and Yi Yu, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Mar. 27, 1997, Ser. No. 825,080
Int. Cl.⁶ C07C *241/00;205/00;* **C07D** *233/44;239/02*
U.S. Cl. 562—439 **32 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein
A is



wherein y^1 is selected from the group consisting of N—R^2, O, and S;

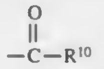
R^2 is selected from the group consisting of H; alkyl; aryl; hydroxy; alkoxy; cyano; nitro; amino; aminocarbonyl; alkenyl; alkynyl; alkyl optionally substituted with one or more substituent selected from lower alkyl, halogen, hydroxyl, haloalkyl, cyano, nitro, carboxyl, amino, alkoxy, aryl or aryl optionally substituted with one or more halogen, haloalkyl, lower alkyl, alkoxy, cyano, alkylsulfonyl, alkylthio, nitro, carboxyl, amino, hydroxyl, sulfonic acid, sulfonamide, aryl, fused aryl, monocyclic heterocycles, or fused monocyclic heterocycles; aryl optionally substituted with one or more substituent selected from halogen, haloalkyl, hydroxy, lower alkyl, alkoxy, methylenedioxy, ethylenedioxy, cyano, nitro, alkylthio, alkylsulfonyl, sulfonic acid, sulfonamide, carboxyl derivatives, amino, aryl, fused aryl, monocyclic heterocycles and fused monocyclic heterocycle; monocyclic heterocycles; and monocyclic heterocycles optionally substituted with one or more substituent selected from halogen, haloalkyl, lower alkyl, alkoxy, amino, nitro, hydroxy, carboxyl derivatives, cyano, alkylthio, alkylsulfonyl, sulfonic acid, sulfonamide, aryl or fused aryl; or

R^2 taken together with R^7 forms a 4–12 membered dinitrogen containing heterocycle optionally substituted with one or more substituent selected from the group consisting of lower alkyl, hydroxy, carboxyl derivatives and phenyl;

or R^2 taken together with R^7 forms a 5 membered heteroaromatic ring;

or R^2 taken together with R^7 forms a 5 membered heteroaromatic ring fused with á phenyl group;

R^7 (when not taken together with R^2) and R^8 are independently selected from the group consisting of H; alkyl; alkenyl; alkynyl; aralkyl; cycloalkyl; bicycloalkyl; aryl; acyl; benzoyl; alkyl optionally substituted with one or more substituent selected from lower alkyl, halogen, hydroxy, haloalkyl, cyano, nitro, carboxyl derivatives, amino, alkoxy, thio, alkylthio, sulfonyl, aryl, aralkyl, aryl optionally substituted with one or more substituent selected from halogen, haloalkyl, lower alkyl, alkoxy, methylenedioxy, ethylenedioxy, alkylthio, haloalkylthio, thio, hydroxy, cyano, nitro, carboxyl derivatives, aryloxy, amido, acylamino, amino, alkylamino, dialkylamino, trifluoroalkoxy, trifluoromethyl, sulfonyl, alkylsulfonyl, haloalkylsulfonyl, sulfonic acid, sulfonamide, aryl, fused aryl, monocyclic heterocycles, fused monocyclic heterocycles; aryl optionally substituted with one or more substituent selected from halogen, haloalkyl, lower alkyl, alkoxy, methylenedioxy, ethylenedioxy, alkylthio, haloalkylthio, thio, hydroxy, cyano, nitro, carboxyl derivatives, aryloxy, amido, acylamino, amino, alkylamino, dialkylamino, trifluoroalkoxy, trifluoromethylsulfonyl, alkylsulfonyl, sulfonic acid, sulfonamide, aryl, fused aryl, monocyclic heterocycles, or fused monocyclic heterocycles; monocyclic heterocycles; monocyclic heterocycles optionally substituted with one or more substituent selected from halogen, haloalkyl, lower alkyl, alkoxy, aryloxy, amino, nitro, hydroxy, carboxyl derivatives, cyano, alkylthio, alkylsulfonyl, aryl, fused aryl; monocyclic and bicyclic heterocyclicalkyls; $—SO_2R^{10}$ wherein R^{10} is selected from the group consisting of alkyl, aryl and monocyclic heterocycles, all optionally substituted with one or more substituent selected from the group consisting of halogen, naloalkyl, alkyl, alkoxy, cyano, nitro, amino, acylamino, trifluoroalkyl, amido, alkylaminosulfonyl, alkylsulfonyl, alkylsulfonylamino, alkylamino, dialkylamino, trifluoromethylthio, trifluoroalkoxy, trifluoromethylsulfonyl, aryl, aryloxy, thio, alkylthio, and monocyclic heterocycles; and



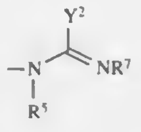
$$-\overset{O}{\overset{\parallel}{C}}-R^{10}$$

wherein R^{10} is defined above;

or NR^7 and R^8 taken together form a 4–12 membered mononitrogen containing monocyclic or bicyclic ring optionally substituted with one or more substituent selected from lower alkyl, carboxyl derivatives, aryl or hydroxy and wherein said ring optionally contains a heteroatom selected from the group consisting of O, N and S;

R^5 is selected from the group consisting of H, alkyl, alkenyl, alkynyl, benzyl, and phenethyl; or

A is



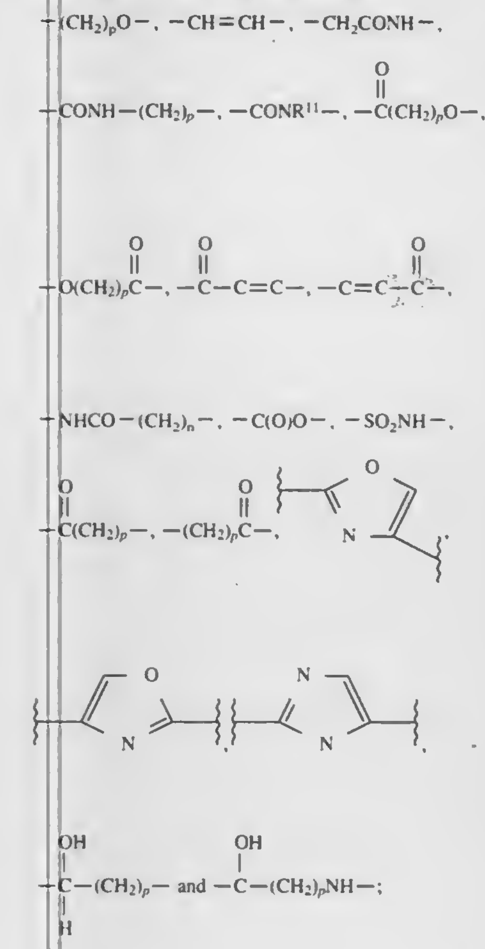
wherein y^2 is selected from the group consisting of alkyl; cycloalkyl; bicycloalkyl; aryl; monocyclic heterocycles; alkyl optionally substituted with aryl which can also be optionally substituted with one or more substituent selected from halo, haloalkyl, alkyl, nitro, hydroxy, alkoxy, aryloxy, aryl, or fused aryl; aryl optionally substituted with one or more substituent selected from halo, haloalkyl, hydroxy, alkoxy, aryloxy, aryl, fused aryl, nitro, methylenedioxy, ethylenedioxy, or alkyl; alkynyl; alkenyl; $—S—R^9$ and $—O—R^9$ wherein R^9 is selected from the group consisting of H; alkyl; aralkyl; aryl; alkenyl; and alkynyl; or R^9 taken together with R^7 forms a 4–12 membered mononitrogen containing sulfur or oxygen containing heterocyclic ring; and

R^5 and R^7 are as defined above;

or y^2 (when y^2 is carbon) taken together with R^7 forms a 4–12 membered mononitrogen containing ring optionally substituted with alkyl, aryl or hydroxy;

z^1, z^2, Z^4 and Z^5 are independently selected from the group consisting of H; alkyl; hydroxy; alkoxy; aryloxy; arylalkoxy; halogen; haloalkyl; haloalkoxy; nitro; amino; aminoalkyl; alkylamino; dialkylamino; cyano; alkylthio; alkylsulfonyl; carboxyl derivatives; carboxylalkenyl; alkoxycarbonylalkenyl; alkoxycarbonylamino; acetamide; aryl; fused aryl; cycloalkyl; thio; monocyclic heterocycles; fused monocyclic heterocycles; and A, wherein A is defined above;

B is selected from the group consisting of



$$-(CH_2)_pO-,\ -CH=CH-,\ -CH_2CONH-,$$

$$-CONH-(CH_2)_p-,\ -CONR^{11}-,\ -\overset{O}{\overset{\parallel}{C}}(CH_2)_pO-,$$

$$-O(CH_2)_p\overset{O}{\overset{\parallel}{C}}-,\ -\overset{O}{\overset{\parallel}{C}}-C=C-,\ -C=C-\overset{O}{\overset{\parallel}{C}}-,$$

$$-NHCO-(CH_2)_n-,\ -C(O)O-,\ -SO_2NH-,$$

$$-\overset{O}{\overset{\parallel}{C}}(CH_2)_p-,\ -(CH_2)_p\overset{O}{\overset{\parallel}{C}}-,$$

$$-\underset{H}{\overset{OH}{C}}-(CH_2)_p-\ \text{and}\ -\overset{OH}{\overset{|}{C}}-(CH_2)_pNH-;$$

wherein p is an integer selected from the group consisting of 0, 1 and 2; wherein R^{11} is selected from the group consisting of H, alkyl, alkenyl, alkynyl, benzyl and phenethyl; wherein n is an integer selected from the group consisting of 0, 1, 2 and 3;

or B is CONR" wherein R" together with Z^4 forms a 5 or 6-membered ring fused to the phenyl;

l is an integer 0, 1, 2, or 3;

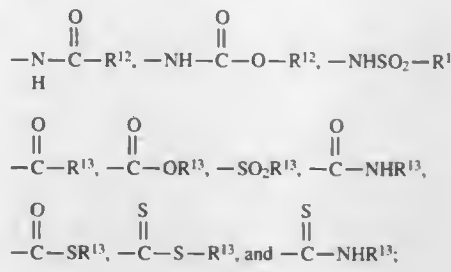
t is an integer 0, 1 or 2;

R^{50} is selected from the group consisting of H, alkyl, aryl and aryl optionally substituted with one or more substituent selected from the group consisting of halo, haloalkyl, hydroxy, alkoxy, aryloxy, aryl, nitro and alkyl;

R is X—R^3 wherein X is selected from the group consisting of O, S and NR^4, wherein R^3 and R^4 are independently selected from the group consisting of hydrogen; alkyl; alkenyl; alkynyl; haloalkyl; dialkylaminocarbonylalkoxy; aryl; arylalkyl; sugars; steroids and in the case of the free acid, all pharmaceutically acceptable salts thereof;

Y^3 and Z^3 are independently selected from the group consisting of H, alkyl, aryl, cycloalkyl and aralkyl;

R^1 is selected from the group consisting of hydrogen; alkyl; amino,



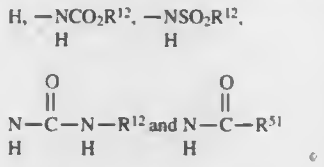
$$\underset{H}{-N}-\overset{O}{\overset{\parallel}{C}}-R^{12},\ -NH-\overset{O}{\overset{\parallel}{C}}-O-R^{12},\ -NHSO_2-R^{12},$$

$$-\overset{O}{\overset{\parallel}{C}}-R^{13},\ -\overset{O}{\overset{\parallel}{C}}-OR^{13},\ -SO_2R^{13},\ -\overset{O}{\overset{\parallel}{C}}-NHR^{13},$$

$$-\overset{O}{\overset{\parallel}{C}}-SR^{13},\ -\overset{S}{\overset{\parallel}{C}}-S-R^{13},\ \text{and}\ -\overset{S}{\overset{\parallel}{C}}-NHR^{13};$$

R^{12} is selected from the group consisting of H, alkyl, cycloalkyl, alkylaryl and aryl;

R^{52} is selected from the group consisting of



$$H,\ -\underset{H}{N}CO_2R^{12},\ -\underset{H}{N}SO_2R^{12},$$

$$\underset{H}{N}-\overset{O}{\overset{\parallel}{C}}-\underset{H}{N}-R^{12}\ \text{and}\ \underset{H}{N}-\overset{O}{\overset{\parallel}{C}}-R^{51}$$

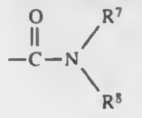
wherein R^{12} is as defined above;

R^{51} is selected from the group consisting of N-substituted pyrrolidinyl, piperidinyl, phenyl and morpholinyl;

R^{13} is selected from the group consisting of hydrogen; alkyl; alkenyl; alkynyl; aryl; carboxyl derivatives; haloalkyl; monocyclic heterocycles; monocyclic heterocycles optionally substituted with alkyl, halogen, haloalkyl, cyano, hydroxy, aryl, fused aryl, nitro, alkoxy, aryloxy, alkylsulfonyl, arylsulfonyl, sulfonamide, thio, alkylthio, carboxyl derivatives, amino, amido;

alkyl optionally substituted with halo, haloalkyl, hydroxy, alkoxy, aryloxy, thio, alkylthio, arylthio, alkylsulfoxide, alkylsulfonyl, arylsulfoxide, arylsulfonyl, cyano, nitro, amino, alkylamino, dialkylamino, alkylsulfonamide, arylsulfonamide, acylamide, carboxyl derivatives, sulfonamide, sulfonic acid, phosphonic acid derivatives, phosphinic acid derivatives, aryl, arylthio, arylsulfoxide, or arylsulfone all optionally substituted on the aryl ring with halo, haloalkyl, cyano, nitro, hydroxy, carboxyl derivatives, alkoxy, aryloxy, amino, alkylamino, dialkylamino, amido, aryl, fused aryl, monocyclic heterocycles; and fused monocyclic heterocycles, monocyclic heterocyclicthio, monocyclic heterocyclicsulfoxide, and monocyclic heterocyclic sulfone, which can be optionally substituted with halo, haloalkyl, nitro, hydroxy, alkoxy, fused aryl, or alkyl;

aryl optionally substituted in one or more positions with halo, haloalkyl, alkyl, alkoxy, aryloxy, methylenedioxy, ethylenedioxy, alkylthio, haloalkylthio, thio, hydroxy, cyano, nitro, carboxyl derivatives, amido, acylamino, amino, alkylamino, dialkylamino, trifluoroalkoxy, trifluoromethylsulfonyl, alkylsulfonyl, sulfonic acid, sulfonamide, aryl, fused aryl, monocyclic heterocycles and fused monocyclic heterocycles; and



wherein R^7 and R^8 are as defined above and provided that taken together with the nitrogen, R^7 and R^8 comprise an amino acid.

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5,852,211

PROCESS FOR THE CONVERSION OF THE SODIUM SALT OF 2-KETO-L-GULONIC ACID TO THE FREE ACID

Ralf Dümpelmann, Sisseln, Switzerland, and Tomislav Keglevic, Gumpoldskirchen, Austria, assignors to Roche Vitamins Inc., Parsippany, N.J.

Filed Apr. 17, 1997, Ser. No. 842,923

Claims priority, application European Pat. Off., Apr. 30, 1996, 96106829; Feb. 20, 1997, 97102766

Int. Cl.^{6} C07C *51/42*

U.S. Cl. 562—580 **18 Claims**

1. A process for the conversion of the sodium salt of 2-keto-L-gulonic acid from aqueous fermentation solutions into an alcoholic solution of the free acid comprising:

a) crystallizing sodium 2-keto-L-gulonate monohydrate from an aqueous fermentation solution;

b) separating the sodium 2-keto-L-gulonate monohydrate crystals from the aqueous fermentation solution;

c) suspending the sodium 2-keto-L-gulonate monohydrate in a lower alcohol with acid at a pH in a range from about 1.5 to about 3.5 whereby the acid is converted to the insoluble sodium salt of the acid and the sodium 2-keto-L-gulonate monohydrate is converted to free 2-keto-L-gulonic acid; and

d) removing the sodium salt of the acid to obtain an alcoholic solution of 2-keto-L-gulonic acid.

5,852,212

PROCESS FOR PREPARATION OF OPTICALLY ACTIVE α-BROMO AND α-CHLOROCARBOXYLIC COMPOUNDS

Emil Albin Broger, Magden; Richard Buchecker, Zürich; Yvo Crameri, Oberwil, and Teodor Lukàc, Allschwil, all of Switzerland, assignors to Rolic AG, Zug, Switzerland

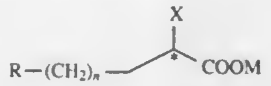
Filed Jun. 12, 1996, Ser. No. 662,855

Claims priority, application Switzerland, Jun. 21, 1995, 1820/95

Int. Cl.^{6} C07C *53/15*

U.S. Cl. 562—602 **9 Claims**

1. A process for the preparation of an optically active α-bromo- or α-chlorocarboxylic compound of the formula



I

wherein

X is bromine or chlorine;

M is hydrogen, NR_4^{+1} or a cation of an alkali or alkaline earth metal;

R^1 is hydrogen or lower alkyl;

n is 0 or 1;

R is hydrogen, C_1–C_{20} alkyl, or C_1–C_{20} alkyl substituted in the terminal position with — NR^2_2, —$COOR^2$, —OR^3, a free or protected —CHO group or a ring A;

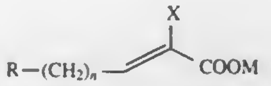
R^2 is hydrogen or a lower alkyl;

R^3 is hydrogen or a protecting group;

ring A is an unsubstituted or substituted ring; and

* is a center of chirality,

which process comprises enantioselectively hydrogenating, in the presence of a ruthenium complex of an optically active diphosphine ligand, a (Z)-α,β-unsaturated compound of the general formula



II

wherein R, n, X and M are as defined above.

5,852,213

MERCAPTOKETONES AND MERCAPTOALCOHOLS AND A PROCESS FOR THEIR PREPARATION

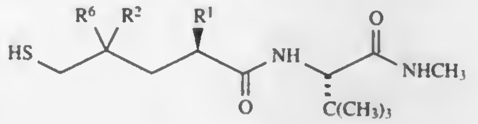
Jeremy Ian Levin, Nannet, N.Y., assignor to American Cyanamid Company, Madison, N.J.

Filed Jul. 2, 1997, Ser. No. 887,000

Int. Cl.^{6} C07C *321/12;231/02*

U.S. Cl. 564—154 **4 Claims**

1. A process for the preparation of a diastereomerically and enantiomerically pure compound according to the formula



where R^1 is C_1–C_{12} alkyl, straight or branched and optionally substituted by halogen, hydroxy, C_1–C_6 alkoxy, amino, carboxyl, C_1–C_6 alkoxycarbonyl, carboxamido, nitrile, mono- or di-(C_1–C_6)alkylamino, thio, C_1–C_6 alkylthio, aryl, —Oaryl or —OCH_2aryl where aryl is optionally substituted with C_1–C6 alkyl, C_1–C_6 alkoxy, carboxy, halogen, cyano, nitro, carboxamido, or hydroxy; and C_1–C_6 alkanesulfonyloxy where aryl is a 5 to 10 membered carbocyclic or heterocyclic mono or bicyclic aromatic group selected from the benzene, furan, thiophene, imidazole, naphthalene, quinoline, indole, benzothiophene, benzimidazole, pyridine, pyrimidine, and benzofuran; R^2 is (S)—OH and R^6 is H, which comprises:

(1) reacting a (3R,5S)-5-iodomethyl-3-R^1-dihydrofuran-2-one with the anion of HSW, where W is defined as phenyl, —C(O)aryl and —C(O)-substituted aryl where aryl is a 5 to 10 membered carbocyclic or heterocyclic mono or bicyclic aromatic group selected from the benzene, furan, thiophene, imidazole, naphthalene, quinoline, indole, benzothiophene, benzimidazole, pyridine, pyrimidine, and benzofuran, optionally substituted with C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, halogen, cyano, nitro, carboxamido, or hydroxy; —C(O)—C_1–C_{12}alkyl and —$CR^3R^4R^5$ where R^3, R^4, and R^5 are independently selected from H, methyl, —O—C_1–C_{12}alkyl, O-tetrahydrophyranyl, —S-benzyl and phenyl optionally substituted with methoxy, hydroxy, nitro, or methyl, to provide lactone iiia,

(2) deprotection of the sulfur of lactone iiia of step (1) under reducing conditions, acid hydrolysis or base hydrolysis to provide compound iva (Z═H),

(3) protection of the free thiol of step (2) above to provide compound iva where Z is H, phenyl, —$CR^3R^4R^5$ where R^3, R^4 and R^5 are independently H, methyl, —O—C_1–C_{12}alkyl, O-tetrahydropyranyl, —S-benzyl, phenyl optionally substituted with methoxy, hydroxy, nitro, or methyl; disulfides or any other group suitable for protecting sulfur,

(4) hydrolysis of the furanone of step (3) with aqueous acid or base to give compound va, a thiol-protected (2R)-2-R^1-(4R)-4-hydroxy-5-mercaptopentanoic acid, where

Z is as defined above,

(5) protection of the hydroxy group of compound va of step (4) with a protecting group Y to give compound via where Y is selected from trimethylsilyl, tert-butyldimethylsilyl, triethylsilyl, isopropyldimethylsilyl, trityldimethylsilyl, tert-butyldiphenylsilyl, methyldiisopropylsilyl, methyldi-tert-butylsilyl, triisopropylsilyl, triphenylsilyl, benzyl optionally substituted with methoxy, nitro, halogen or cyano; substituted methyl or ethyl ethers including triphenylmethyl, methoxymethyl, methoxyethoxymethyl, tetrahydropyranyl, or allyl,

(6) amidation of carboxylic acid via of step (5) with (2S)-t-butylglycine N-methylamide and a peptide coupling reagent, to provide compound viia where Y and Z are as defined above,

(7) removal of the protecting group Y from the hydroxyl group of compound viia of step (6) to provide alcohol viiia, where Z is as defined above,

(8) removal of the thiol protecting group of compound viiia of step (7) to provide a compound of the above formula.

5,852,214

PROCESS FOR PRODUCING N-(1-ALKOXYETHYL) CARBOXYLIC AMIDES

Toshiyuki Aizawa; Hitoshi Nakamura; Tetsuo Kudo, and Etsuko Mitarai, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 4, 1997, Ser. No. 832,667

Claims priority, application Japan, Apr. 5, 1996, 8-084031

Int. Cl.^{6} C07C *231/12;233/05*

U.S. Cl. 564—215 **12 Claims**

1. (Amended) A process for producing an N-(1-alkoxyethyl)carboxylic amide comprising reacting at least two starting materials with each other in the presence of an acidic catalyst to produce an N-(1-alkoxyethyl)carboxylic amide, wherein the starting materials comprise an alcohol having 1–5 carbon atoms and an N-vinylcarboxylic amide.

5,852,215

PROCESS FOR THE PRODUCTION OF AZOMETHINES AND ALPHA-HALOACETANILIDES

Kambiz Javdani; Louie A. Nady, both of Daphne, and Gilbert Rodriguez, Semmes, all of Ala., assignors to Zeneca Limited, London, England

Filed Sep. 19, 1996, Ser. No. 719,298

Int. Cl.^{6} C07C *249/02*

U.S. Cl. 564—277 **10 Claims**

1. In a process for the production of an aromatic azomethine by reaction of an aniline with formaldehyde in which the formaldehyde is provided in the form of a product produced by contacting paraformaldehyde with from about 0.25 to about 3 mole equivalents of an aliphatic alcohol having from one to four carbon atoms in the presence of a catalytic amount of a base, the steps comprising (a) conducting the reaction continuously and (b) continuously evaporating water of reaction from the reaction mixture, wherein steps (a) and (b) are conducted by passing the reaction mixture through one or more evaporators.

5,852,216

PREPARATION AND USE OF (3-ALKOXY-PHENYL) MAGNESIUM CHLORIDES

Michael Finkam, Aachen; Thomas Kohnen, Stolberg, and Werner Winter, Aachen, all of Germany, assignors to Gruenenthal GmbH, Aachen, Germany

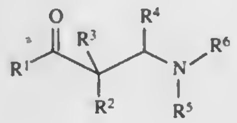
Filed Feb. 14, 1997, Ser. No. 800,879

Claims priority, application Germany, Feb. 16, 1996, 196 05 778.7

Int. Cl.^{6} C07C *215/00*

U.S. Cl. 564—443 **5 Claims**

1. A method comprising reacting a (3-alkoxyphenyl)magnesium chloride wherein the alkoxy group contains one to five carbon atoms with a β-aminoaldehyde or β-aminoketone corresponding to formula I



wherein

R^1 represents H or C_{1-4} alkyl;

R^2 represents H or C_{1-4} alkyl, or

R^2 together with R^1 represents —$(CH)_4$—, or

R^2 together with R^3 represents a C_{4-7} cycloalkyl, or

R^2 together with R^4 represents a C_{5-8} cycloalkyl, or

R^2 together with R^5 represents a five- to eight-membered heterocycle;

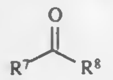
R^3 represents H or straight chain C_{1-4} alkyl;

R^4 represents H;

R^5 represents C_{1-3} alkyl, and

R^6 represents C_{1-3} alkyl; or with

an aldehyde or ketone corresponding to formula II



wherein R^7 and R^8 are the same or different and each represent H, C_{1-6} alkyl or C_{3-6} cycloalkyl.

5,852,217

PROCESS FOR THE PRODUCTION OF PRIMARY AND/OR SECONDARY AMINES FROM OXO COMPOUNDS

Thomas Haas, Frankfurt; Dietrich Arntz, Oberursel; Karl-Ludwig Weber, Dieburg; Willi Hofen, Rodenbach, and Stefan Wieland, Offenbach, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 7, 1997, Ser. No. 888,394

Claims priority, application Germany, Jul. 6, 1996, 196 27 265.3

Int. Cl.^{6} C07C *209/48*

U.S. Cl. 564—448 **14 Claims**

1. In a process for the production of a primary amine from an oxo compound selected from the group consisting of aliphatic, cycloaliphatic, aromatic and heteroaromatic aldehydes and ketones, which oxo compound may optionally contain further groups capable of reduction, which comprises iminating the oxo compound in the presence of a imine-forming catalyst and in the presence or absence of an organic solvent with excess ammonia to produce the primary amine and hydrogenating the resultant reaction product with hydrogen in the presence of a hydrogenation catalyst at a temperature in the range from 20° to 250° C. and a pressure in the range from 0.5 to 25 MPa,

the improvement wherein

an organopolysiloxane containing sulphonate groups and which is resistant to partial or complete dissolution in the reaction medium is used as the imination catalyst.

5,852,218

ALKANOLYSIS OF POLYETHER POLYOL ESTERS BY REACTIVE DISTILLATION

Suriyanarayan Dorai, Missouri City, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1995, Ser. No. 572,556

Int. Cl.^{6} C07C *41/04*

U.S. Cl. 568—621 **8 Claims**

1. A method for converting the diester of a polyether polyol to a corresponding dihydroxy polyether polyol comprising the steps of:

(a) feeding to the upper portion of a distillation column at least one diester of polyether polyol and an effective amount of at least one alkali metal or alkaline earth metal oxide, hydroxide or alkoxide catalyst and with a C_1 to C_4 alkanol to convert said diester of polyether polyol to dihydroxy polyether polyol;

(b) adding to the lower portion of said distillation column hot alkanol vapor to sweep any alkanol ester formed by alkanolysis of said diester of polyether polyol upwardly in said distillation column;

(c) recovering overhead of said distillation column alkanol and alkanol ester formed by alkanolysis; and

(d) recovering from the bottom of said distillation column dihydroxy polyether polyol free of alkanol ester formed by alkanolysis at a conversion rate of PTMEA to PTMEG in excess of 99.99%.

5,852,219

CATALYST, PROCESS FOR ITS PREPARATION, AND USE FOR SYNTHESIS OF METHYL MERCAPTAN

Joerg Sauer, Rodenbach; Wolfgang Boeck, Langenselbold; Lukas von Hippel, Alzenau; Werner Burkhardt, Brachttal; Stephan Rautenberg, Hanau; Dietrich Arntz, Oberursel, and Willi Hofen, Rodenbach, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 30, 1997, Ser. No. 885,045

Claims priority, application Germany, Sep. 26, 1996, 196 39 584.4

Int. Cl.^{6} C07C *319/08*

U.S. Cl. 568—71 **12 Claims**

1. A catalyst composition comprising aluminum oxide particles containing cesium tungstate as the activator, wherein the cesium tungstate is present in a proportion of from more than 15% to 40% by weight, based on the total weight of the finished catalyst.

5,852,220

PROCESS FOR PREPARING A MIXTURE OF TERTIARY ALKYL ETHERS

Harri Järvelin, Helsinki; Petri Lindqvist, Porvoo, and Esa Tamminen, Espoo, all of Finland, assignors to Neste Oy, Espoo, Finland

Filed Dec. 20, 1996, Ser. No. 771,417

Claims priority, application Finland, Dec. 22, 1995, 956254

Int. Cl.^{6} C07C *41/05*

U.S. Cl. 568—697 **13 Claims**

1. A process for producing tertiary alkyl ethers by reacting an olefinic hydrocarbon feedstock, which contains a mixture of reactive C_4–C_7 isoolefins, with an alkanol in the presence of a catalyst that will enhance the reaction between the isoolefins and the alkanol, wherein the weight ratio of the isobutylene to the reactive C_6 isoolefins of the feed is 0.2 to 10.

5,852,221

OPTICALLY ACTIVE β-AMINOALKYXYBORANE COMPLEX

Hiroshi Kashihara; Mikio Suzuki, and Yoshio Ohara, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 481,505, Jul. 19, 1995, Pat. No. 5,663,348.

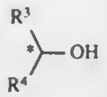
This application Apr. 29, 1997, Ser. No. 848,174

Claims priority, application Japan, Jan. 20, 1993, 5-07827; Mar. 25, 1993, 5-66825

Int. Cl.^{6} C07C *45/39;29/36*

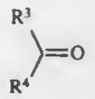
U.S. Cl. 568—814 **25 Claims**

1. A process for producing an optically active alcohol of the formula (IV):



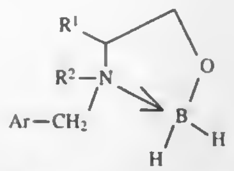
(IV)

wherein R^3 and R^4 differ from each other and represent C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl, C_3–C_{10} cycloalkenyl, C_7–C_{11} aralkyl, and C_6–C_{14} aryl, or R^3 and R^4 together form a cyclic structure, and * indicates an optically active center, which comprises reducing a carbonyl compound of the formula (III):



(III)

wherein R^3 and R^4 are as defined above, with an optically active β-aminoalkoxyborane complex of the formula (I):



(I)

wherein R^1 is C_1–C_8 alkyl, C_3–C_7 cycloalkyl, C_7–C_{11} aralkyl or C_6-C_{10} aryl, R^2 is hydrogen, C_1–C_8 alkyl, C_3–C_7 cycloalkyl or C_7–C_{11} aralkyl, or R^1 and R^2 together form $(CH_2)_n$ wherein n is 3 or 4, and Ar is napthyl, anthryl or phenanthryl, which may be substituted by from 1 to 3 substituents selected from the group consisting of halogen, nitro, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_7–C_{11} aralkyl, C_6–C_{10} aryl, C_1–C_6 alkoxy and styrene polymer substituents.

5,852,222

PROCESS

Alfred Glyn Williams, Binfield; Martin Charles Bowden, Brighouse, and Stephen Martin Brown, Cumberworth, all of United Kingdom, assignors to Zeneca Limited, London, England

Filed Sep. 3, 1996, Ser. No. 706,948

Claims priority, application United Kingdom, Sep. 11, 1995, 9518525

Int. Cl.^{6} C07C *19/02*

U.S. Cl. 570—134 **10 Claims**

1. 1,1-Difluoro-1,4-dichlorobutane.

5,852,223

PURIFICATION METHODS OF PENTAFLUOROETHANE

Satoru Kohno, and Takashi Shibanuma, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/01488, § 371 Date Jan. 28, 1997, § 102(e) Date Jan. 28, 1997, PCT Pub. No. WO96/04226, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 25, 1995, Ser. No. 776,194

Claims priority, application Japan, Jul. 29, 1994, 6-198019

Int. Cl.^{6} C07C *17/38;19/08*

U.S. Cl. 570—178 **9 Claims**

1. A process for the purification of pentafluoroethane containing at least chloropentafluoroethane as an impurity, comprising

A: reacting said chloropentafluoroethane with hydrogen in the presence of a catalyst in gas phase so as to obtain a reaction mixture consisting of a non-organic mixture consisting essentially of hydrogen and hydrogen chloride and a product consisting essentially of pentafluoroethane;

B: separating said product from said non-organic mixture; and

C: removing said hydrogen chloride from said non-organic mixture until the molar ratio of hydrogen chloride to that of the chloropentafluoroethane in the unpurified mixture is 0.5 or less and recycling said non-organic mixture to the unpurified mixture.

5,852,224

α-LACTALBUMIN GENE CONSTRUCTS

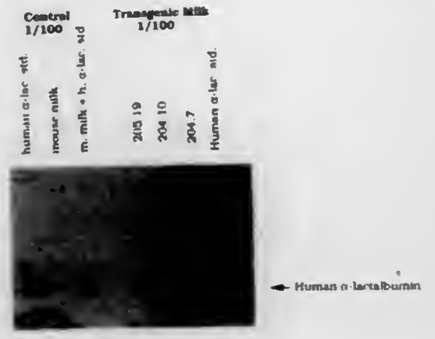
Julian David Cooper, Blacksburg, Va., and Angelika Elisabeth Schnieke, Edinburgh, United Kingdom, assignors to PPL Therapeutics (Scotland) Limited, Edinburgh, United Kingdom

Filed Jan. 31, 1995, Ser. No. 381,691

Claims priority, application United Kingdom, Dec. 15, 1994, 9425326

Int. Cl.^{6} C12N *15/09;15/11;15/12;* **C12P** *21/00*

U.S. Cl. 800—2 **5 Claims**



3. A transgenic non-human mammal whose somatic and germ cells contain a transgene construct, said transgene construct comprising, in the 5' to 3' direction and operatively linked:

(a) at least about 1.8 kb of 5'-flanking sequence from the human α-lactalbumin promoter:

(b) a DNA sequence encoding
  (1) a signal sequence; and
  (2) a α-lactalbumin selected from the group consisting of:
    (i) human α-lactalbumin; and
    (ii) a modified human α-lactalbumin having from one to four of the natural phenylalanine residues substituted by other amino acid residues;

(c) at least about 3 kb of 3'-flanking sequence from the human α-lactalbumin gene;

wherein said transgene construct is integrated into the genome of said mammal in such a way that said DNA sequence is expressed in the mammary gland of said mammal to produce α-lactalbumin in the milk of said mammal at a level of at least 2 mg/ml.

5,852,225

SOYBEAN VARIETY 92B91

David John Gebhardt, Gaylord; Michael Thomas Roach, Redwood, both of Minn., and John Soper, Urbandale, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 14, 1997, Ser. No. 783,136

Int. Cl.^{6} A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **14 Claims**

1. A soybean seed designated 92B91, representative seed of said soybean 92B91 have been deposited under ATCC Accession No. 209765.

2. A soybean plant, or its parts, grown from the seed of claim 1, representative seed having been deposited under ATCC Accession No. 209765.

5,852,226

SOYBEAN VARIETY 93B82

Peter Armstrong Fuller, Urbandale, Iowa; Herbert Schmidt, Fargo, N. Dak.; Debra Kay Steiger, Wauseon, Ohio, and Dorman John Grace, III, Urbandale, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 14, 1997, Ser. No. 783,137

Int. Cl.^{6} A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **14 Claims**

1. A soybean seed designated 93B82, representative seed of said soybean 93B82 have been deposited under ATCC Accession No. 209758.

2. A soybean plant, or its parts, grown from the seed of claim 1, representative seed having been deposited under ATCC Accession No. 209758.

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5,852,227

APPARATUS FOR MEASURING THE COMPOSITION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

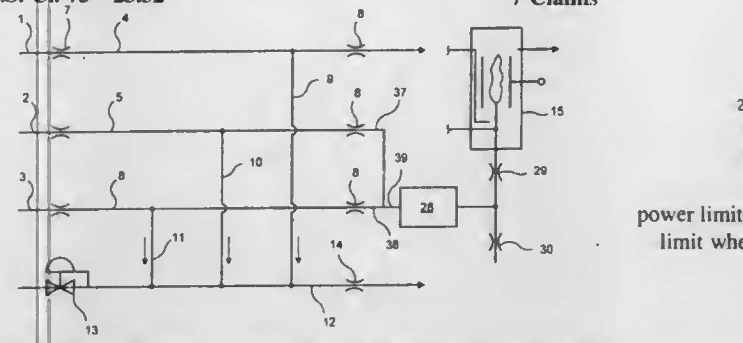
Christopher Garthe, Düsseldorf, Germany, assignor to Pierburg AG, Neuss, Germany

Filed May 27, 1997, Ser. No. 863,286

Claims priority, application Germany, May 25, 1996, 196 21 293.6

Int. Cl.^{6} G01M *15/00;* **G01N** *1/00*

U.S. Cl. 73—23.32 **7 Claims**



1. Apparatus for the measurement of components of exhaust gas of an internal combustion engine in which sample, test and operating gases are supplied to a flame ionization detector in which the gas components are measured, said apparatus comprising:

three connection lines respectively for receiving sample, test and operating gases for supplying the gases to the flame ionization detector,

a control line,

a pressure controller in said control line and an outlet nozzle in said control line which opens into ambient atmosphere, said control line having a section between said pressure controller and said outlet nozzle,

each of said connection lines having inlet and outlet pressure regulator means therein defining respective sections in said connection lines between the inlet and outlet regulator means, and

at least two further lines connecting the sections of two of said connection lines to said section of said control line,

said inlet and outlet pressure regulator means in each of said connection lines being set to provide higher gas flow at the inlet pressure regulator means than at the outlet pressure regulator means.

5,852,228

APPARATUS AND METHOD FOR CONTROLLING OXYGEN SENSOR HEATING

Yukihiro Yamashita; Hisashi Iida, and Jun Hasegawa, all of Kariya, Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jun. 26, 1997, Ser. No. 883,590

Claims priority, application Japan, Jul. 10, 1996, 8-180771; Apr. 23, 1997, 9-105960

Int. Cl.^{6} F02D *41/14*

U.S. Cl. 73—23.32 **11 Claims**

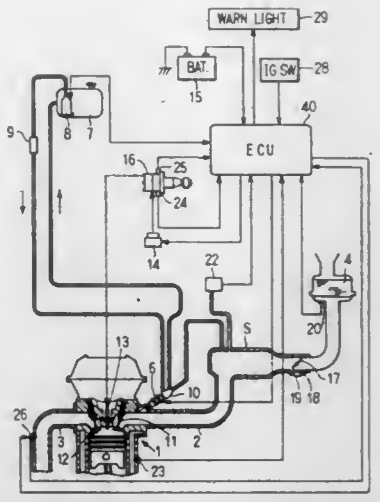
1. An oxygen sensor heating control apparatus comprising:

an oxygen sensor having a sensing element and a heater for heating the sensing element;

power supply means for supplying the heater with heater supply power thereby to heat the sensing element;

power determining means for determining a required power;

limit setting means for setting a limit indicative of a maximum of the heater supply power to be supplied to the heater; and



power limiting means for limiting the heater supply power to the limit when the required power exceeds the limit.

5,852,229

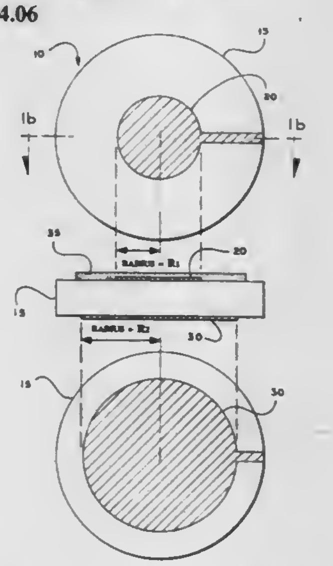
PIEZOELECTRIC RESONATOR CHEMICAL SENSING DEVICE

Fabien J. Josse, Milwaukee, Wis., and Dennis S. Everhart, Alpharetta, Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed May 29, 1996, Ser. No. 654,993

Int. Cl.^{6} G01N *27/00*

U.S. Cl. 73—24.06 **29 Claims**



1. A sensing device for measuring an analyte in a medium comprising:

a piezoelectric resonator having a first side and a second side, the first side having a first electrode thereon and the second side having a second electrode thereon wherein the first electrode has a different geometry than the second electrode whereby the sensing device has a group of resonant frequencies comprising a frequency of maximum admittance, a series resonant frequency and a resonant frequency and a group of antiresonant frequencies comprising a frequency of maximum admittance, a parallel resonant frequency and an antiresonant frequency;

a polymeric layer on the first side of the piezoelectric resonator, at least a portion of the polymeric layer being disposed on the electrode; and

means for sensing at least one resonant frequency and at least one antiresonant frequency.

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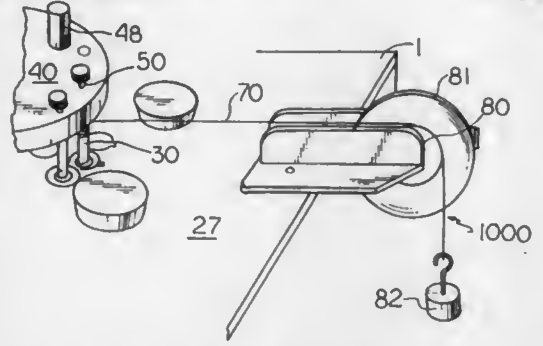
5,852,230
DEVICE TO TEST PUMPABILITY OF OILS AT LOW TEMPERATURE

Theodore W. Selby, Midland; Stephanie J. Resio, Reese; Robert H. Seer, Midland, and James R. Cotter, Bay City, all of Mich., assignors to Savant, Inc., Midland, Mich.

Filed Apr. 9, 1997, Ser. No. 831,561

Int. Cl.^{6} G01N *11/14*

U.S. Cl. 73—54.35 **15 Claims**



1. A device useful for testing pumpability of an oil, which comprises a sample carousel having a lower base containing a plurality of stator accommodating orifices in a first array; an upper base connected to the lower base, the upper base having a plurality of rotor control member accommodating orifices in a second array, wherein the upper base is mounted to the lower base such that the second array of orifices in the upper base is disposed in registry with the first array of orifices in the lower base; and a rotor control member mounted in one of the rotor control member accommodating orifices, which can be moved into controlling contact with a rotor inserted in a stator—wherein the first array is such that, when a plurality of stators are mounted in the stator accommodating orifices, one for each of the orifices in the first array, and the carousel is positioned in a temperature control bath having a temperature control fluid, the fluid can be circulated between any two of the mounted stators among the stators mounted in complete array.

5,852,231
ELUTION LIQUID CONTROL FOR A LIQUID CHROMATOGRAPH

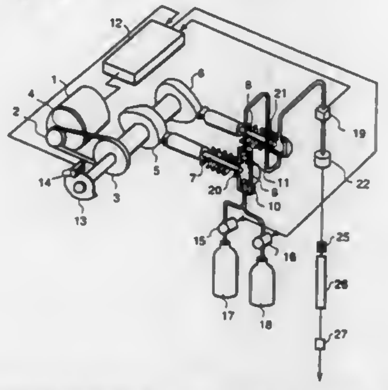
Hironori Kaji, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1997, Ser. No. 814,845

Claims priority, application Japan, Mar. 29, 1996, 8-075679

Int. Cl.^{6} G01N *30/34*

U.S. Cl. 73—61.56 **5 Claims**



1. A liquid chromatograph, comprising a column, a liquid transferring pump for mixing and supplying a plurality of eluting liquids through respective opening-and-closing valves to said column so as to elute a sample to separate components thereof from each other when said sample is injected into said column, a sample detector for detecting said separated components, a pressure detector for detecting discharge pressure of said liquid transferring pump, and a controller for controlling a mixing ratio of said eluting liquids by varying opening-and-closing timings of said opening-and-closing valves according to a value of the discharge pressure detected by said pressure detector such as to shorten the period of time during which each opening-and-closing valve is opened as the value to the detected discharge pressure becomes larger.

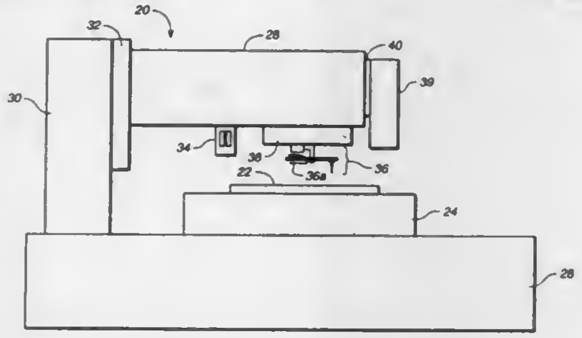
5,852,232
ACOUSTIC SENSOR AS PROXIMITY DETECTOR

Amin Samsavar, San Jose; Thomas McWald, and Sergey Yudin, both of Fremont, all of Calif., assignors to Kla-Tencor Corporation, San Jose, Calif.

Filed Jan. 2, 1997, Ser. No. 775,617

Int. Cl.^{6} G01B *5/28;17/00*

U.S. Cl. 73—105 **42 Claims**



1. An instrument for sensing a sample, comprising:

a first sensor, the first sensor being a profiling device for sensing the sample;

a separate acoustic sensor having a known positional relation to the first sensor, the acoustic sensor adapted to produce an acoustic sensor signal, the acoustic sensor signal being indicative of the distance from the sample to the acoustic sensor;

positioning means causing relative motion between the sample and the first sensor; and

a controller adapted to receive the acoustic sensor signal and control the positioning means.

5,852,233
ACOUSTIC MICROSCOPE WITH A CONTROL AND DATA CAPTURING DEVICE

Walter Arnold, and Ute Rabe, both of Saarbrucken, Germany, assignors to Fraunhofer-Gesellschaft Zur Forderurg der Angewandten Forschung E.V., Germany

Division of Ser. No. 545,849, Nov. 13, 1995. This application Jul. 2, 1997, Ser. No. 886,929

Claims priority, application Germany, Jul. 26, 1993, 43 24 983.3

Int. Cl.^{6} G01B *9/04;11/30*

U.S. Cl. 73—105 **2 Claims**

1. An acoustic microscope for the examination of a specimen, with a tip fastened to a cantilever, said tip being in the surface-near-zone of the specimen, said microscope comprising an ultrasonic transducer, a scanning device for positioning the specimen relative to the tip, and with a device for control and data acquisition, wherein

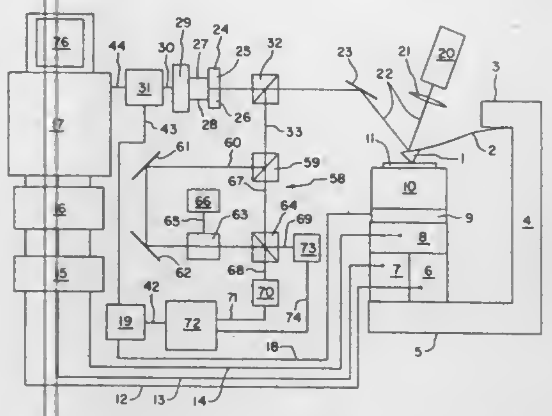
a) the ultrasonic transducer includes a transmitter with means for providing ultrasound coupled to the specimen,

b) the ultrasound has a frequency which exceeds the lowest resonance frequency of the cantilever with the tip fixed to the cantilever,

c) the cantilever, a clamp with a resonance frequency lower than the ultrasonic frequency, the scanning device, the transmitter, and the specimen are mechanically rigidly coupled to one another, and

d) with a detection unit installed which measures the deflections of the tip caused by the topography of the specimen, the deflections being of lower frequency in relation to the ultrasonic frequency in a first detection signal, and the detection unit also measuring high-frequency displacements of the tip caused by the ultrasound in the specimen in a second detection signal, and means for maintaining a constant distance between the tip and the surface of the specimen by utilizing a feedback loop in the control and data acquisition device, the feedback loop serving to average the first detection signal using a time large as compared to the period of the ultrasonic frequency and with a scanning rate small as compared to the ultrasonic frequency, and

a light beam reflected by the cantilever can be coupled, via optical devices for beam deflection, into a detection unit which comprises a first optical detection unit connected with the feedback loop and a second optical detection unit for generation of the second detection signal, said second detection unit contains a heterodyne time-of-flight interferometer whose long reference arm contains a frequency shifter in order to shift the frequency of the light-beam in the long reference arm.



5,852,234
KNOCKING DETECTING SENSOR

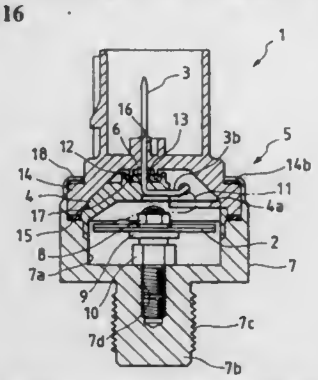
Nobuhiro Inoue; Sadamitsu Harada, and Osamu Imamura, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Mar. 27, 1997, Ser. No. 826,145

Claims priority, application Japan, Mar. 29, 1996, 8-103859

Int. Cl.^{6} G01L *23/22;* **G01M** *15/00*

U.S. Cl. 73—116 **10 Claims**



1. A knocking detecting sensor for detecting knocking generated in an internal combustion engine, comprising:

a casing including a first section and a second section having a terminal through-hole, said first and second sections being coupled with each other;

a vibration detecting element for detecting vibrations from knocking and producing an output, said vibration detecting element being securely mounted in said first section;

a terminal holder having a groove portion and placed between said first section and said second section;

a terminal having a first end and a second end, said terminal being inserted through said terminal through-hole, said terminal being disposed through said groove portion and fixedly held by said terminal holder, said first end being connected to said vibration detecting element to receive said output; and

a sealing member disposed in said groove portion and integrally formed with said terminal and terminal holder, said sealing member for preventing fluid from entering into said casing through said terminal through-hole.

5,852,235
METHOD AND SYSTEM FOR REAL-TIME ESTIMATION OF AT LEAST ONE PARAMETER LINKED WITH THE DISPLACEMENT OF A DRILL BIT

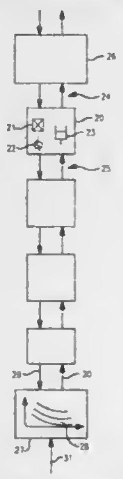
Didier Pavone, Ecully, and Jean-Pierre Desplans, St Garmain les Corbeil, both of France, assignors to Institut Francais du Petrole, France

Filed Jun. 23, 1997, Ser. No. 880,801

Claims priority, application France, Jun. 24, 1996, 96 07915

Int. Cl.^{6} E21B *45/00*

U.S. Cl. 73—152.45 **13 Claims**



1. A method for estimating the instantaneous rotational speed of a drill bit fastened to the end of a drill string and driven into rotation in a well by surface driving means, wherein a non-linear physical model of the drilling process based on general mechanics equations is used, said well having physical parameters, said method comprising the steps of:

identifying parameters of said model, said parameters of said model comprising the physical parameters of said well, wherein said model is represented by a state matrix having specific modes,

linearizing said model about a working point,

reducing said linearized model, keeping pertinent modes of said state matrix of said model, and

computing in real-time the rotational speed of the bit by means of the reduced model and of at least one parameter measured at the surface.

5,852,236
FLUID MEASURING PROBE

Hideyuki Honda, Kyoto, Japan, assignor to Honda Engineering Co., Ltd., Osaka, Japan

Filed May 14, 1997, Ser. No. 856,236

Claims priority, application Japan, May 15, 1996, 8-119836

Int. Cl.^{6} G01F *1/68*

U.S. Cl. 73—170.15 **12 Claims**

1. A fluid measuring probe, comprising:

a plurality of conductive lines;

a contact type sensor element connected to said conductive lines; and

a support member covering said conductive lines,

wherein when a pressure that is not less than a predetermined pressure is applied to said support member in a direction

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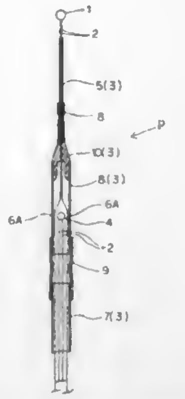


perpendicular to a longitudinal direction of said support member, said support member may be bent,

wherein when the pressure is released, said support member may be restored,

wherein when the pressure that is not less than the predetermined pressure is not applied, said support member may maintain a predetermined posture,

wherein said support member is comprised of a plurality of cylindrical members arranged at a predetermined interval along a straight line, and

wherein said adjacent cylindrical members are connected to each other by at least one bendable member, said bendable member determining the predetermined pressure in which the support member bends.

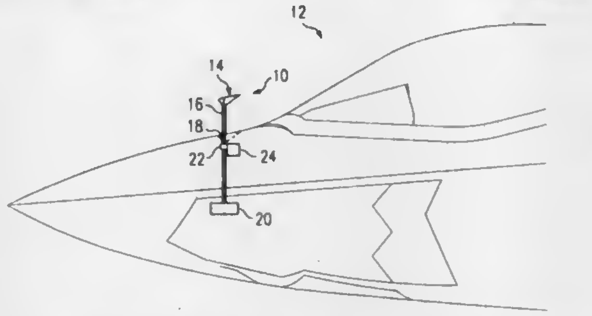
5,852,237
APPARATUS AND METHOD FOR MEASURING THE SIDE SLIP OF A LOW OBSERVABLE AIRCRAFT

Kevin J. Renshaw, Fort Worth, Tex., assignor to Lockheed Martin Corporation, Fort Worth, Tex.

Filed May 28, 1997, Ser. No. 864,652

Int. Cl.⁶ G01C *21/00*

U.S. Cl. 73—180 20 Claims



11. An apparatus for measuring airflow to determine angle of sideslip for a low observable aircraft, the apparatus comprising:

a tetrahedron-shaped probe rotationally coupled to the aircraft, the probe extending into the airflow; and

a sensor associated with the probe for measuring the rotational position of the probe to determine the aircraft's angle of sideslip.

5,852,238
MEASURING DEVICE AND MEASURING METHOD

Rimantas Vaitkus, Vilnius, Lithuania, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Nov. 18, 1994, Ser. No. 343,969

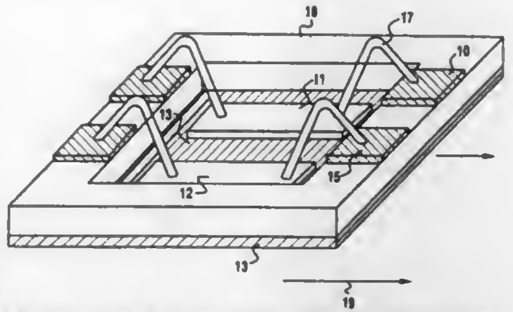
Claims priority, application Japan, Nov. 26, 1993, 5-320936

Int. Cl.⁶ G01F *1/68*

U.S. Cl. 73—204.11 11 Claims

1. A measuring device comprising:

a plurality of sensors each having a thin-film material, means for pulsedly heating said thin-film material, means for measuring



a response characteristic of said thin-film material according to said pulsedly heating, in which among said plurality of sensors, at least one sensor is a temperature measuring sensor which functions to measure temperature of fluid and/or temperature of measurement environment, and at least another sensor is a fluid measuring sensor disposed in contact with the flow of said fluid; and

means for processing an output from said temperature measuring sensor and an output from said fluid measuring sensor on the basis of a predetermined functional relationship,

wherein said predetermined functional relationship is represented by the following expression (Ex. 2), using a function f(R) of the output R from said temperature measuring sensor and the output S from said fluid measuring sensor, where F is a value of flow rate or flow velocity of said fluid,

$$F=f(R)-S \qquad \text{(Ex. 2).}$$

5,852,239
FLOW SENSOR HAVING AN INTERMEDIATE HEATER BETWEEN TWO TEMPERATURE-SENSING HEATING PORTIONS

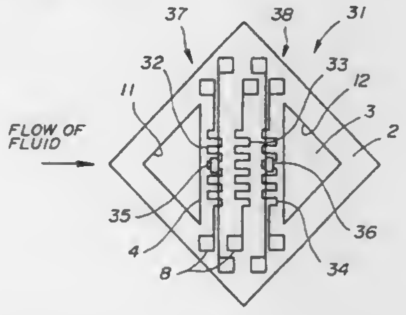
Yukito Sato; Takayuki Yamaguchi; Hiroyoshi Shoji; Junichi Azumi, all of Sendai, and Morimasa Kaminishi, Shiroishi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo; Ricoh Elemex Corporation, Nagoya, and Ricoh Seiki Company, Ltd., Tokyo, all of Japan

Filed Jun. 12, 1997, Ser. No. 873,455

Claims priority, application Japan, Jun. 12, 1996, 8-150643

Int. Cl.⁶ G01F *1/68*

U.S. Cl. 73—204.26 8 Claims



1. A flow sensor for sensing a flow rate of a fluid, comprising:

a first heating portion, provided at a first position in a flow of the fluid, for heating the fluid and for outputting a voltage in response to a temperature of the first position;

a second heating portion, provided at a second, downstream position in the flow of the fluid, for heating the fluid and for outputting a voltage in response to a temperature of the second position, the first position and the second position being spaced from each other in a direction parallel to the flow of the fluid; and

an intermediate heater, provided between the first heating portion and the second heating portion, for heating the fluid at an intermediate position between the first position and the second position.

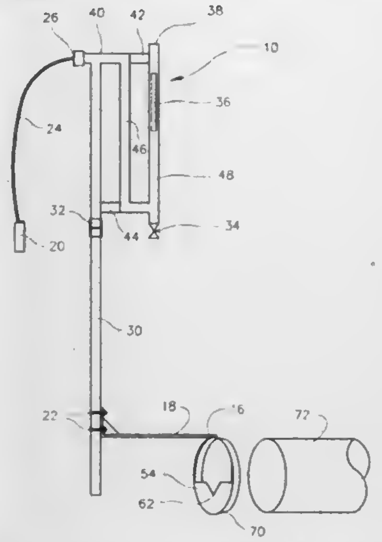
5,852,240
PORTABLE FLOW MEASURING DEVICE

David P. LeBlanc, 7 Barbara Ct., Long Beach, Miss. 39560

Filed Jun. 1, 1995, Ser. No. 456,828

Int. Cl.⁶ G01F *1/20*

U.S. Cl. 73—215 1 Claim



1. A portable secondary flow measuring device for integral use with a primary flow measuring device to be temporarily installed outside of an open channel fluid flow configuration, comprising:

(a) a manometer type flow indicating apparatus, a portable air supply means, and

(b) a substantially cylindrical flow sensing probe attached to one end of said manometer type flow indicating apparatus, and

(c) a right angular support frame attached to one end of said flow sensing probe, and

(d) a substantially circular device located at one end of said support frame, and

(e) a weir shaped opening of predetermined dimensions within said circular device, and

(f) an attachment means on one side of said circular device used in conjunction therewith for positioning said weir opening outside of a circular conduit.

5,852,241
METHOD AND DEVICE FOR FEEDING COMPONENTS FOR BONE CEMENT INTO A MIXING VESSEL FOR THESE

Sten Fagerdahl, Orebro, and Lars-Erik Skagerlund, Karlskoga, both of Sweden, assignors to Josam Lastbiltenik AB, and Optab Optronikinnovation, both of Sweden

PCT No. PCT/SE95/00415, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/29378, PCT Pub. Date Nov. 2, 1995

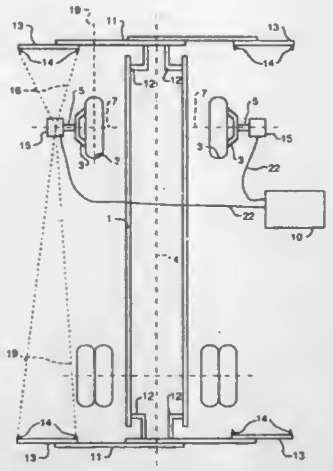
PCT Filed Apr. 18, 1995, Ser. No. 702,727

Claims priority, application Sweden, May 10, 1993, 9301599

Int. Cl.⁶ G01P *15/00*

U.S. Cl. 73—487 12 Claims

1. Apparatus for measuring wheel alignment angles of a wheeled vehicle in relation to the longitudinal axis of such vehicle, said apparatus comprising at least one measuring unit for mounting to the outside of a vehicle wheel, said measuring unit including a radiation source for emitting a thin, parallel beam towards a target mounted adjacent a respective end of said vehicle, said target having a plurality of sensitized marks, a drive device for imparting to the beam a rotary, sweeping movement in the horizontal plane, an angle measuring device connected to the drive device and arranged to sense rotary movement of the beam, and a detection unit for detecting changes in the amount of light reflected from the sensitized marks and for generating signals representative of the



instantaneous angular position of the beam with reference to the longitudinal axis of the vehicle.

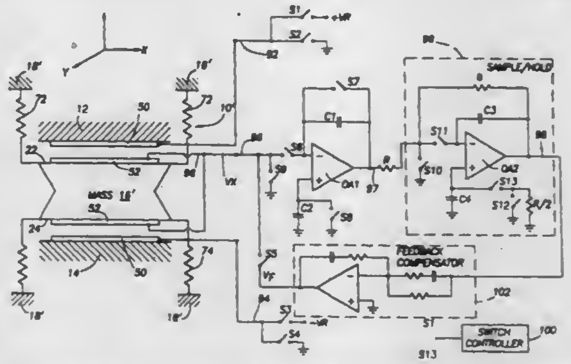
5,852,242
APPARATUS WITH MECHANICAL AND ELECTRIC SPRINGS AND METHOD FOR ITS MANUFACTURE

Burton A. Devolk, Cedar Park; Matthew W. Ip; Bing F. Fung, both of Austin; Franklin W. Mayo, Houston, all of Tex., and Raymond K. Erickson, Troy, Mich., assignors to I/O Sensors, Inc., Stafford, Tex.

Filed Dec. 4, 1995, Ser. No. 566,998

Int. Cl.⁶ G01P *15/13*

U.S. Cl. 73—514.17 8 Claims



1. Apparatus for measuring a characteristic of motion comprising

a sensor structure including a mass carried from a support structure by a connecting arrangement, said mass arranged to move with respect to said support structure with mass movement being opposed by a mechanical spring force of said connecting arrangement, said mechanical spring force being characterized by a mechanical spring constant,

means for generating a displacement signal as a function of time which is representative of distance said mass has moved with respect to said support structure in response to force applied to said support structure,

means responsive to said displacement signal for applying an electromagnetic feedback force as a function of time on said mass in a direction to move said mass to a predetermined position with respect to said support structure, said electromagnetic feedback force being characterized for small amplitudes of said displacement signal by an electric spring constant which is in a direction opposite that of said mechanical spring force,

said sensor structure characterized by a high value of mechanical spring constant of said connecting arrangement and by an effective spring constant characterized by a small positive difference between said mechanical spring constant and said electric spring constant,

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whereby said sensor structure is characterized by high sensitivity to low frequency forces as compared to sensor structures having no electromagnetic feedback force but with a high mechanical spring constant, and by a connecting arrangement less susceptible to breaking as compared to a connecting arrangement characterized by a low mechanical spring constant.

5,852,243

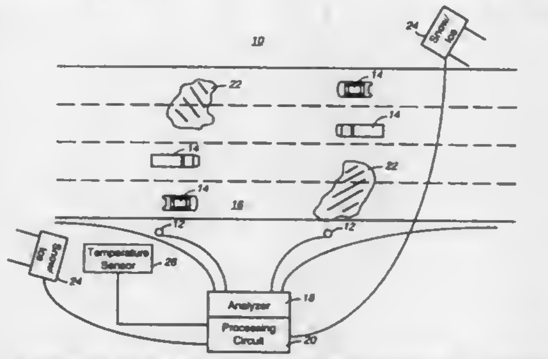
METHOD AND APPARATUS FOR DETECTING A ROAD PAVEMENT SURFACE CONDITION

James Shih-Tsih Chang, and James Jay Fanning, both of Colorado Springs, Colo., assignors to J-Squared, LLC

Filed Jul. 21, 1997, Ser. No. 896,865

Int. Cl.⁶ G01N *19/02*

U.S. Cl. 73—659 **20 Claims**



1. A method of detecting a road pavement surface condition comprising the steps of:

(a) detecting a road noise created by a vehicle traveling along a road;

(b) determining a temporal frequency content of the road noise; and

(c) analyzing the temporal frequency content to determine the road pavement surface condition.

5,852,244

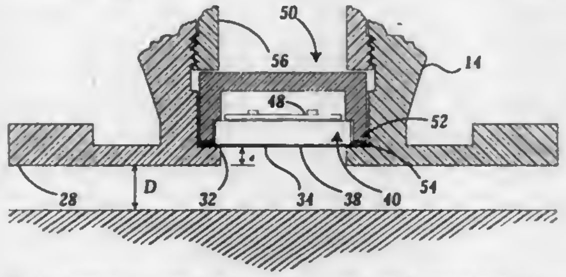
NON-FLUID CONDUCTING PRESSURE SENSOR MODULE HAVING NON-CONTAMINATING BODY AND ISOLATION MEMBER

Diane L. Englund, and Gerald R. Cucci, both of Minneapolis, Minn., assignors to NT International, Inc., Fridley, Minn.

Continuation of Ser. No. 538,478, Oct. 3, 1995, Pat. No. 5,693,887. This application Dec. 1, 1997, Ser. No. 980,744

Int. Cl.⁶ G01L *7/08;9/00*

U.S. Cl. 73—706 **32 Claims**



22. A chemically inert pressure transducer module adapted to be connected in-line with a fluid flow circuit, comprising:

(a) a housing having a bore extending through at least a portion of said housing, wherein an inlet end of said bore is coupled in-line to a fluid flow circuit, said housing further having a cavity formed therein;

(b) an isolation member separating the bore and cavity of said housing;

(c) a non-fluid conducting pressure sensor at least partially contained within the cavity of said housing and in contact with said isolation member; and

(d) means for producing a signal proportionate to a measured pressure within the bore.

5,852,245

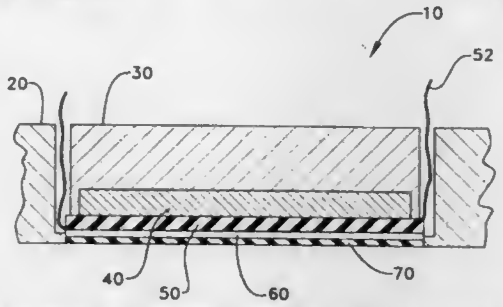
PIEZOELECTRIC PRESSURE SENSOR SUITABLE FOR SENSING PRESSURE AT HIGH TEMPERATURES

J. Gregory Wesling, Peoria; Kurtis C. Kelley, Washington, and Chuong Q. Dam, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 13, 1996, Ser. No. 768,012

Int. Cl.⁶ G01L *9/08;7/08*

U.S. Cl. 73—723 **15 Claims**



1. A piezoelectric pressure sensor for detecting pressure in a combustion chamber of an internal combustion engine, comprising:

a backing plate having a planar surface, said backing plate being secured within a housing;

a resilient prestress plate having a planar surface and being stacked on said backing plate, said resilient plate being formed of silicone elastomer;

a sensor element having a planar surface and being stacked on said resilient plate, said sensor element being composed of a piezoelectric material formed by mixing lead titanate and lead zirconate in a molar ratio in the range of from about 40:60 lead titanate:lead zirconate to about 60:40 lead titanate:lead zirconate;

a thermally insulating plate having a planar surface and being stacked on said sensor element; and

a diaphragm plate having a planar surface and being stacked on said thermally insulating plate, said diaphragm plate also being secured to said housing, and said diaphragm plate being exposed to combustion atmosphere and being adapted to transmit a pressure being determined onto said sensor element.

5,852,246

PROCESS FOR THE ADAPTIVE ACTUAL-VALUE CORRECTION IN FATIGUE STRENGTH TESTS

Bernhard Fiedler, Munich, and Dieter Schütz, Reinheim, both of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Filed Jul. 14, 1997, Ser. No. 892,173

Claims priority, application Germany, Jul. 12, 1996, 196 28 100.8

Int. Cl.⁶ G01N *3/32*

U.S. Cl. 73—811 **19 Claims**

1. A process for adaptively correcting actual values during fatigue strength tests, the process comprising the steps of:

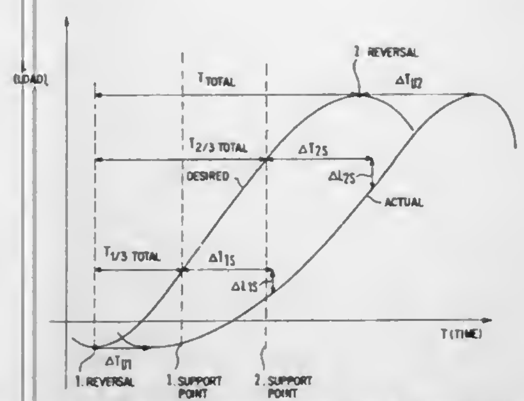
separating signals which correspond to desired values and the actual values into, in each case, at least one individual event defined by two reversal points and described by:

a first load measurement in a first reversal point;

a second load measurement in a second reversal point;

a time interval between said two reversal points; and

a connection curve form between said two reversal points;



comparing said desired values and said actual values of a mutually corresponding one of said at least one individual event;

forming desired correction values based on said comparison step; and

controlling said process based on said desired correction values instead of previous desired values,

whereby said actual values are controlled in a direction of said desired correction values.

5,852,247

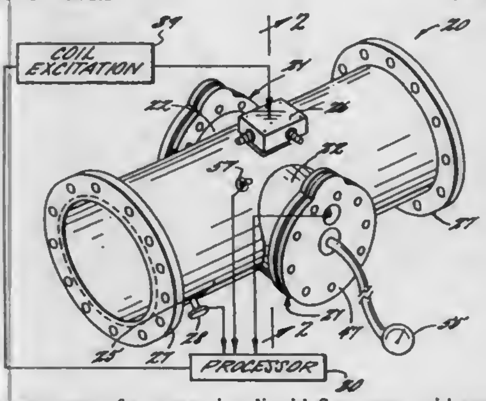
APPARATUS FOR SENSING LIQUID FLOW AND PRESSURE IN A CONDUIT OR OPEN CHANNEL AND ASSOCIATED

Robert H. Batey, Apollo Beach, Fla., assignor to AMJ Equipment Corporation, Lakeland, Fla.

Division of Ser. No. 641,615, May 1, 1996, Pat. No. 5,693,892. This application Aug. 28, 1997, Ser. No. 919,709

Int. Cl.⁶ G01F *1/00*

U.S. Cl. 73—861.17 **24 Claims**



1. An apparatus for measuring liquid flow rate, said apparatus comprising:

an open channel for carrying a liquid flow, said open channel having an open upper portion, a cross-section of a predetermined width, a bottom wall, and an opening in the bottom wall;

means for measuring the fluid height in the open channel; and

a liquid flow sensor positioned in the opening in said open channel, said liquid flow sensor comprising

a housing comprising a liquid contacting portion extending generally parallel to an axis of said open channel and being positioned to extend into an interior of said open channel, wherein said liquid contacting portion comprises a generally planar central portion and a downwardly sloping annular portion surrounding the central portion,

an electromagnetic coil positioned in said housing for generating a magnetic field within the liquid flow, and

a pair of spaced apart electrodes carried by said downwardly sloping annular portion adjacent respective opposite edges thereof, wherein said electrodes extend outwardly from the downwardly sloping annular portion and are exposed on the liquid contacting portion for generating a signal related to liquid flow rate, said electrodes defining a distance therebetween being in a range of about 0.10 to 0.95 times the predetermined width of the open channel.

5,852,248

METHOD FOR ACCURATE REPLICATION OF SHAPED ARTICLES USING SINTERABLE POWDERS

Thomas Chadwick, Nipomo, Calif., assignor to Den-Mat Corporation, Santa Maria, Calif.

Filed May 21, 1998, Ser. No. 82,547

Int. Cl.⁶ B22F *3/10;* **C04B** *35/48;* **A61C** *13/08*

U.S. Cl. 75—228 **43 Claims**

4. A method for producing a dimensionally accurate replica of a shaped article which is equal in size to said shaped article which comprises:

a) preparing a cavity mold of said shaped article by encapsulating said shaped article in a swellable polymer,

b) immersing said swellable polymer cavity mold in a swelling agent system at a temperature and for a sufficient period of time to swell said swellable polymer cavity mold to a predetermined extent in an essentially uniform manner,

c) preparing an enlarged casting of said shaped article by filling said cavity mold with a castable substance,

d) forming a solid casting mold by immersing said enlarged casting in a liquid or moldable composition capable of solidifying for a time sufficient for solidification to take place,

e) separating said enlarged casting from said solid casting mold,

f) forming a sinterable powder compact in said solid casting mold,

g) heating said sinterable powder compact in a selected atmosphere for a predetermined time or times and at such predetermined temperature or temperatures as will result in an overall shrinkage of said powder compact as will essentially equal the expansion of said swellable polymer.

41. A replica of a shaped article produced by the method of claim **4**.

5,852,249

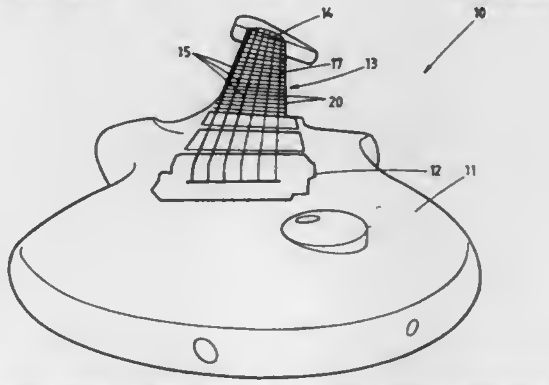
ELONGATED STRING SUPPORT FOR A STRINGED MUSICAL INSTRUMENT

Grant Kenneth Steinberg, Plympton Park; John Phillip Dunlop Chaplin, Fullarton, both of Australia, and Scott N. Quinn, Huntington Beach, Calif., assignors to Actodyne General, Inc., Actodyne-Huntington Beach, Calif., and Integral Developments Pty. Ltd., Sydney, Australia

Continuation-in-part of Ser. No. 657,158, Jun. 3, 1996, abandoned. This application Jul. 3, 1997, Ser. No. 888,166

Int. Cl.⁶ G10D *3/00*

U.S. Cl. 84—293 **19 Claims**



1. An elongated string support for a stringed musical instrument comprising:

a finger-board surface having a bass side and a treble side and extending between a proximal end and a distal end relative to the stringed musical instrument to support strings in close proximity thereto;

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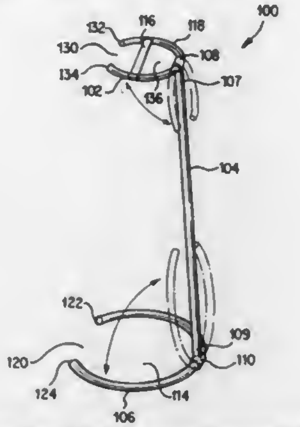
said finger-board surface following a longitudinally twisted path with an angle of twist increasing progressively from said proximal end to said distal end; and
said finger-board surface having a non-uniform radius extending between at least either one of said bass side and said treble side and one of said proximal end and said distal end.

5,852,250
PORTABLE INSTRUMENT STAND

Jennifer Cha, 1425 Blue Heron, Virginia Beach, Va. 23454
Filed May 16, 1997, Ser. No. 857,493
Int. Cl.⁶ G10D ***7/10***
U.S. Cl. 84—327 **19 Claims**

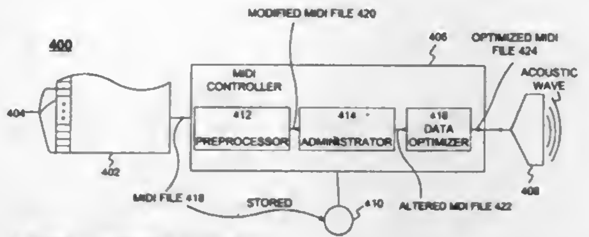


1. An instrument stand for a stringed musical instrument comprising:
a first member having a base end and a head end;
a base member connected to the base end of the first member and moveable from a base member deployed position to a base member collapsed position, the base member forming an acute angle with respect to the first member when the base member is in said base member deployed position and the base member residing generally within a same plane as the first member when the base member is in said base member collapsed position; and
a head member connected to the head end of the first member and moveable from a head member deployed position to a head member collapsed position, the head member generally residing within the same plane as the first member when the head member is in said head member collapsed position, said head member and said base member being located on a same side of a plane containing said first member when said base member is in said base member deployed position and when said head member is in said head member deployed position; and
the head member including means for supporting the stringed musical instrument in a suspended manner when said base member is in said base member deployed position and when said head member is in said head member deployed position.

5,852,251
METHOD AND APPARATUS FOR REAL-TIME DYNAMIC MIDI CONTROL

Alvin Wen-Yu Su, Hwa-Tang Hsiang; Ching-Min Chang, Hsinchu; Liang-Chen Chien, Meisan Hsiang, and Der-Jang Yu, Changhua, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan
Filed Jun. 25, 1997, Ser. No. 882,236
Int. Cl.⁶ G10H ***7/00***
U.S. Cl. 84—645 **16 Claims**

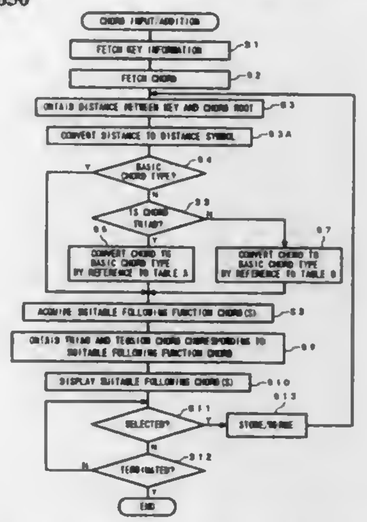
4. An apparatus for processing musical instrument digital interface (MIDI) files, comprising:
a memory for storing MIDI files in one of formats 0, 1, and 2; and



a MIDI controller including
a pre-processor for converting the MIDI files into a predetermined format,
a control process administrator for selectively changing MIDI parameters of each converted MIDI file, and
a data optimizer to ensure each converted MIDI file processed by the control process administrator has a size within a predetermined transmission capacity.

5,852,252
CHORD PROGRESSION INPUT/MODIFICATION DEVICE

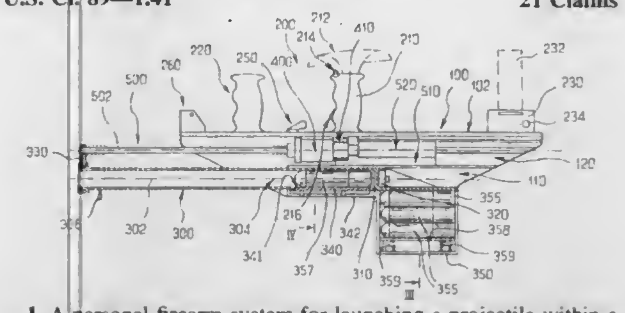
Junichi Takano, Hamamatsu, Japan, assignor to Kawai Musical Instruments Manufacturing Co., Ltd., Hamamatsu, Japan
Filed Jun. 18, 1997, Ser. No. 877,778
Claims priority, application Japan, Jun. 20, 1996, 8-179980; Jun. 24, 1996, 8-181646
Int. Cl.⁶ G09B ***15/02;*** **G10H** ***1/38***
U.S. Cl. 84—650 **19 Claims**


CHORD INPUT/ADDITION
FETCH KEY INFORMATION
S1
FETCH CHORD
S2
OBTAIN DISTANCE BETWEEN KEY AND CHORD ROOT
S3
CONVERT DISTANCE TO DISTANCE SYMBOL
S3A
BASIC CHORD TYPE?
S4
Y
N
IS CHORD TRIAD?
S5
N
Y
S6
S7
CONVERT CHORD TO BASIC CHORD TYPE BY REFERENCE TO TABLE A
CONVERT CHORD TO BASIC CHORD TYPE BY REFERENCE TO TABLE B
ACQUIRE SUITABLE FOLLOWING FUNCTION CHORD(S)
S8
OBTAIN TRIAD AND TENSION CHORD CORRESPONDING TO SUITABLE FOLLOWING FUNCTION CHORD
S9
DISPLAY SUITABLE FOLLOWING CHORD(S)
S10
S13
SELECTED?
S11
Y
STORE/DEFINE
N
TERMINATED?
S12
N
Y
END

19. A method for modifying or inputting a chord progression, the method comprising the steps of:
obtaining a reference function chord corresponding to a reference chord designated by a user,
acquiring a group of suitable following function chords which can follow the reference function chord in consonance with musical theory, and
obtaining at least one of a plurality of triads, basic chords and tension chords corresponding to each function chord in the group of suitable following function chords as a group of suitable following chords.

5,852,253
PERSONAL FIREARM SYSTEM

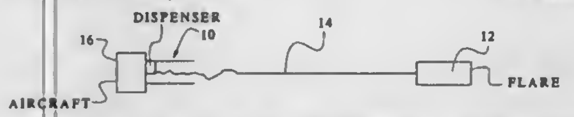
Jean Baricos, Ramonville Saint Agne; Guy Valembois, Blagnac, and Michel Castarede, Saint-Orens, all of France, assignors to Etienne Lacroix Tous Artificess.A., France
PCT No. PCT/FR95/00773, § 371 Date Jun. 5, 1997, § 102(e) Date Jun. 5, 1997, PCT Pub. No. WO95/34796, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 13, 1995, Ser. No. 765,168
Claims priority, application France, Jun. 14, 1994, 94/07230
Int. Cl.⁶ F41A ***19/68***
U.S. Cl. 89—1.41 **21 Claims**



1. A personal firearm system for launching a projectile within a main cartridge of a round of ammunition, said firearm system comprising:
a support base;
at least two launch barrels in form of a main barrel and a secondary barrel mounted on said support base, at least said main barrel being guided to slide on said support base along a longitudinal axis, said at least two launch barrels being adapted to fire respective projectiles and being subject to a recoil force when a projectile is fired;
means for damping associated with at least said main barrel to limit said recoil force generated thereby on firing, said means for damping being provided between said support base and said main barrel and comprising means for absorbing kinetic energy of said main barrel upon said main barrel sliding on said support base upon firing a projectile; and
means for supporting said firearm system in relation to a forearm of a user, wherein said means for supporting said firearm system is adapted to support said firearm system beneath said forearm of said user.

5,852,254
PROTECTIVE MEANS FOR FAST-MOVING OBJECTS

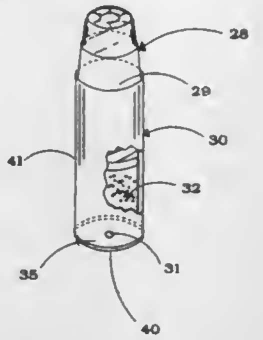
Norbert Wardecki, Heuweiler, Germany, assignor to Buck Werke GmbH & Co., Bad Ueberkingen, Germany
Filed Nov. 22, 1996, Ser. No. 754,154
Claims priority, application Germany, Nov. 22, 1995, 195 43 489.7
Int. Cl.⁶ F42B ***4/20;*** **F41H** ***13/00***
U.S. Cl. 102—342 **18 Claims**



1. A protective device for fast-moving objects against homing heads that react to emitted radiation, comprising:
a dispenser arranged on the object to be protected, from which at least one effective body having a decoy charge is launchable; and
a mooring line connecting the effective body with the dispenser and being deployed upon launching of said decoy charge, whereby the effective body ignites upon leaving the dispenser in close proximity of the object to be protected, is towed along for a short time in a burning state both with said mooring line not being fully employed and with fully deployed mooring line, and is subsequently released in the burning state through detachment of the mooring line.

5,852,255
NON-TOXIC FRANGIBLE BULLET CORE

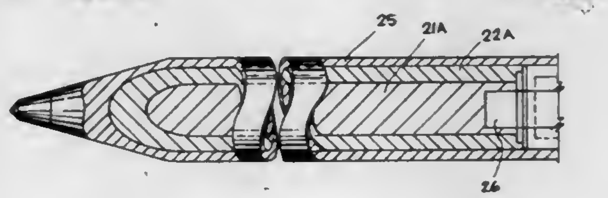
John M. Hallis, Buffalo, and Richard W. Proulx, Forest Lake, both of Minn., assignors to Federal Hoffman, Inc., Anoka, Minn.
Filed Jun. 30, 1997, Ser. No. 885,887
Int. Cl.⁶ F42B ***5/02:12/34***
U.S. Cl. 102—439 **25 Claims**



1. In a non-toxic, highly frangible, soft-point training round bullet core which will disintegrate upon striking its target, for use in a training round in training exercises for law enforcement personnel, comprising:
(a) a slug member made of zinc;
(b) said member having a cylindrically shaped rear portion, an inwardly tapering forward nose portion, and a soft-point nose;
(c) said member being comprised of an elongated heart made of zinc extending longitudinally and centrally of said member, and a plurality of strands of zinc wrapped around said heart in tight encircling inter-engaging relation at an acute angle thereto;
(d) said heart and said strands of zinc having had separate original physical boundaries and having been swaged into shapes with 36,000–50,000 psi pressure to cause said strands to inter-engage said heart and deform each other while retaining their individuality at least to a limited extent, and to cause each of said strands, upon said member being fired and striking a target, to disintegrate along at least some of their original physical boundaries into discrete fragments smaller than the original size of said strands.

5,852,256
NON-FOCUSING ACTIVE WARHEAD

Howard C. Hornig, Castro Valley, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 16, 1979, Ser. No. 24,641
Int. Cl.⁶ F42B ***12/08***
U.S. Cl. 102—473 **12 Claims**



1. A non-nuclear, non-focused blast explosive device comprising a central charge of high explosive enclosed in a continuously convex casing made of material which exhibits substantial reactivity with respect to a component of the environment in which said blast explosive is to be detonated, wherein said casing is made of a continuous metallic body of aluminum, magnesium, titanium, zirconium, or cerium.

5,852,257

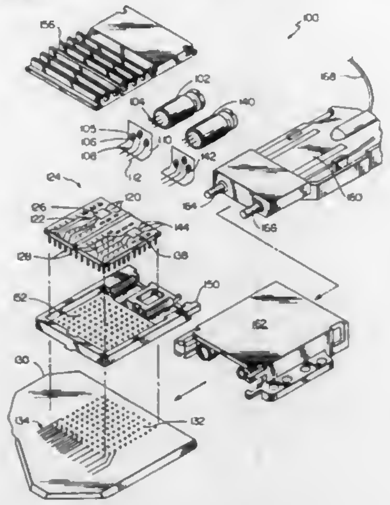
OPTICAL MODULE WITH FLUXLESS LASER REFLOW SOLDERED JOINTS

Eberhard Siegfried Dittman, Leger Granby, Canada, and Mukund Kantilal Saraiya, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 976,620, Nov. 16, 1992, Pat. No. 5,604,831. This application May 30, 1996, Ser. No. 794,761

Int. Cl.^{6} H01R *13/46*

U.S. Cl. 174—59 **19 Claims**



1. An electrical assembly, comprising:

an interconnect structure having an electric circuit including an electrically conductive pad for soldered connection on a surface of the interconnect structure and an electrically conductive pathway connected to the conductive pad;

a solder pad of Pb and 3–20% Sn connected to the surface of the conductive pad;

a lead of an electrical component positioned across a surface of the solder pad; and

a laser reflow soldered joint connecting between the solder pad and the lead.

5,852,258

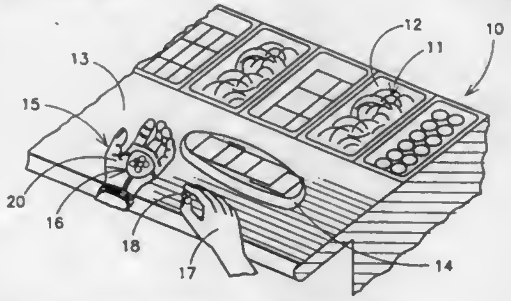
GLOVE WEIGHING APPARATUS AND METHOD

Gene L. Tribou, 7728 Daetwyler Dr., Orlando, Fla. 32812

Filed Oct. 6, 1997, Ser. No. 944,630

Int. Cl.^{6} G01G *19/00*

U.S. Cl. 177—126 **12 Claims**



1. A glove weighing apparatus comprising:

weighing means for weighing a material, said weighing means being removably attachable to a the palm side of a person's hand;

a hand glove removably attachable over a person's hand and over said weighing means;

a scale operatively connected to said weighing means and removably attachable adjacent a person's hand whereby a person having said weighing means, glove and scale attached to a hand can determine the weight of material held in the hand.

5,852,259

CAPSULE WEIGHT MEASURING APPARATUS

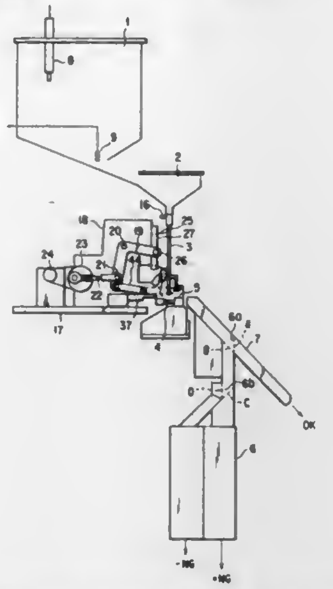
Yukichi Yanase, Atsugi, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Filed Jul. 23, 1997, Ser. No. 898,971

Claims priority, application Japan, Aug. 5, 1996, 8-205966

Int. Cl.^{6} G01G *19/00;* **B65B** *1/32*

U.S. Cl. 177—145 **11 Claims**



1. A capsule weight measuring apparatus comprising:

a capsule supply unit for supplying a plurality of capsules one by one;

a capsule receiving unit including a first guide portion having a shape by which one of the capsules supplied one by one from said capsule supply unit can be received in a lying state, rolling of the capsule can be inhibited, and the capsule can be discharged along a longitudinal direction thereof while being held in the lying state;

a weighing unit including a second guide portion having a shape by which the capsule discharged from said first guide portion of said capsule receiving unit can be received while being held in the lying state, a weight of the capsule can be measured, and a measured capsule can be discharged;

a transfer unit for pushing the capsule, received in the lying state by said first guide portion of said capsule receiving unit, to said second guide portion of said weighing unit while holding the capsule in the lying state; and

a discharge unit for discharging the measured capsule from said second guide portion of said weighing unit.

5,852,260

PRESSURE SENSITIVE THREE-DIMENSIONAL TABLET AND MANIPULATION DATE DETECTING METHOD THEREFOR

Osamu Yoshikawa, Tokyo, Japan, assignor to SMK Corporation, Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 824,355

Claims priority, application Japan, Mar. 26, 1996, 8-094719

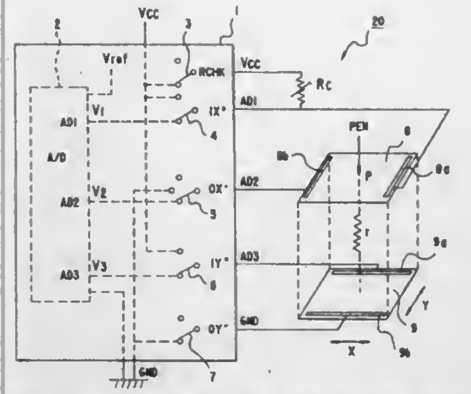
Int. Cl.^{6} G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18.01 **8 Claims**

1. A pressure sensitive 3D tablet comprising:

an X-coordinate resistance sheet (**8**) having an X-side positive electrode (**8***a*) and an X-side negative electrode (**8***b*) formed thereon along opposite marginal edges thereof in an X-direction;

a Y-coordinate resistance sheet (**9**) having a Y-side positive electrode (**9***a*) and a Y-side negative electrode (**9***b*) formed thereon along opposite marginal edges in a Y-direction crossing said X-direction at right angles thereto, said Y-coordinate resistance sheet (**9**) being held opposite said X-coordinate resistance sheet (**8**) with a slight insulating gap defined therebetween;



a reference resistor R_C connected at a first end to either one of said X- and Y-side positive electrodes (**8***a*) and (**9***a*);

reference voltage applying means for selectively applying a reference detecting voltage V_{CC} to any one of a second end of said reference resistor R_C, said X-side positive electrode (**8***a*) and said Y-side positive electrodes (**9***a*);

grounding means for selectively grounding either one of said X- and Y-side negative electrodes (**8***b*) and (**9***b*);

an X-coordinate detection mode in which said reference detecting voltage V_{CC} is applied to said X-side positive electrode (**8***a*) or said second end of said reference restore R_C connected thereto and said X-side negative electrode (**8***b*) is grounded to form a uniform potential gradient in said X-coordinate resistance sheet (**8**), then a potential V_{xp} at a position of contact (x_p, y_p) between said X- and Y-coordinate resistance sheets (**8**) and (**9**) is read out via said Y-coordinate resistance sheet (**9**), and an X coordinate (x_p) of said contact position is detected from said potential V_{xp};

a Y-coordinate detection mode in which said reference detecting voltage V_{CC} is applied to said Y-side positive electrode (**9***a*) or said second end of said reference resistor R_C connected thereto and said Y-side negative electrode (**9***b*) is grounded to form a uniform potential gradient in said Y-coordinate resistance sheet (**9**), then a potential V_{yp} at said contact position (x_p, y_p) between said X- and Y-coordinate resistance sheets (**8**) and (**9**) is read out via said X-coordinate resistance sheet (**8**), and a Y-coordinate (y_p) of said contact position is detected from said potential V_{yp};

a contact resistance detection mode in which said reference detecting voltage V_{CC} is applied to said second end of said reference resistor R_C connected to said positive electrode of either one of said X- and Y-coordinate resistance sheets (**8**) and (**9**), then said negative electrode of any of said X- and Y-coordinate resistance sheet (**8**) or (**9**) not having said positive electrode connected to said second end of reference resistor R_C is grounded, and said potentials V_{xp}, V_{yp} of said positive and negative electrodes of said resistance sheet supplied with said detecting voltage V_{CC} and said positive electrode of said grounded resistance sheet are read out, and in which, letting a first potential difference between a potential V_1 of said positive electrode of said resistance sheet supplied with said detecting voltage V_{CC} and said reference detecting voltage V_{CC} be represented by V_A, a second potential difference between a potential V_2 of said negative electrode of said resistance sheet supplied with said detecting voltage V_{CC} and said potential V_1 of said positive electrode of said grounded resistance sheet by V_B and a resistance value of said reference resistor R_C by r_C, a contact resistance r_p at said contact position (x_p, y_p) is detected by $r_p = r_C * V_B / V_A$; and

wherein said X- and Y-coordinates (x_p) and (y_p) that have been detected and said contact resistance r_p at said contact position are used to output tablet manipulation data.

5,852,261

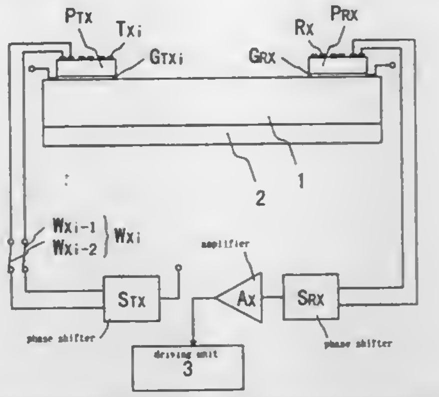
SURFACE ACOUSTIC WAVE TOUCH-POSITION SENSING DEVICE

Kohji Toda, 1-49-18 Futaba, Yokosuka 239, Japan

Filed Aug. 9, 1996, Ser. No. 694,983

Int. Cl.^{6} G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18.04 **17 Claims**



1. A surface acoustic wave touch-position sensing device comprising:

at least two surface acoustic wave transducing units X and Y, each thereof consisting of

a piezoelectric substrate P_T having two end surfaces running perpendicular to the direction of the thickness d thereof,

a piezoelectric substrate P_R having two end surfaces running perpendicular to the direction of the thickness d thereof,

N interdigital transducers I_{Ti} (i=1, 2, . . . , N) formed on one end surface of said piezoelectric substrate P_T, said thickness d of said piezoelectric substrate P_T being smaller than an interdigital periodicity p of each interdigital transducer I_{Ti},

an interdigital transducer I_R formed on one end surface of said piezoelectric substrate P_R and having an interdigital periodicity equal to said interdigital periodicity p, said thickness d of said piezoelectric substrate P_R being smaller than said interdigital periodicity p, and

N switches C_i (i=1, 2, . . . , N), an output terminal of each thereof being connected with an input terminal of each of said interdigital transducers I_{Ti};

a nonpiezoelectric plate having an upper- and a lower end surfaces running perpendicular to the thickness direction thereof, the thickness of said nonpiezoelectric plate being larger than three times said interdigital periodicity p, said piezoelectric substrates P_T and P_R being mounted on said upper end surface of said nonpiezoelectric plate; and

a controlling system connected with said surface acoustic wave transducing units X and Y,

said interdigital transducer I_{Ti} receiving an electric signal E_T with a frequency approximately corresponding to said interdigital periodicity p, exciting the surface acoustic wave of the first mode and the higher order modes in said piezoelectric substrate P_T, and transmitting said surface acoustic wave having the wavelength approximately equal to said interdigital periodicity p to said piezoelectric substrate P_R through said upper end surface of said nonpiezoelectric plate, the phase velocity of said surface acoustic wave of said first mode and said higher order modes being approximately equal to the phase velocity of the Rayleigh wave traveling on said nonpiezoelectric plate alone,

said interdigital transducer I_R transducing said surface acoustic wave in said piezoelectric substrate P_R to an electric signal E_R with a frequency approximately corresponding to said interdigital periodicity p,

said nonpiezoelectric plate being made of a material such that the phase velocity of the surface acoustic wave traveling on said nonpiezoelectric plate alone is higher than that traveling on said piezoelectric substrates P_T and P_R alone,

said controlling system turning on and off said switches C_i with a fixed period in turn, keeping a check on a magnitude of said electric signal E_R, sensing a touch with a finger or others on said upper end surface of said nonpiezoelectric plate by a decrease or a disappearance in magnitude of said electric signal E_R, picking out one of said switches C_i turned on when said decrease or said disappearance in magnitude of said electric signal E_R happens,

said surface acoustic wave transducing unit X having N propagation lanes U_{Xi} (i=1, 2, . . . , N) of said surface acoustic wave between said interdigital transducers l_{Ti} and l_R, two neighbors of said propagation lanes U_{Xi} being closed or partially overlapping each other,

said surface acoustic wave transducing unit Y having N propagation lanes U_{Yi} (i=1, 2, . . . , N) of said surface acoustic wave between said interdigital transducers l_{Ti} and I_R, two neighbors of said propagation lanes U_{Yi} being closed or partially overlapping each other, said propagation lanes U_{Xi} being vertical to said propagation lanes U_{Yi}.

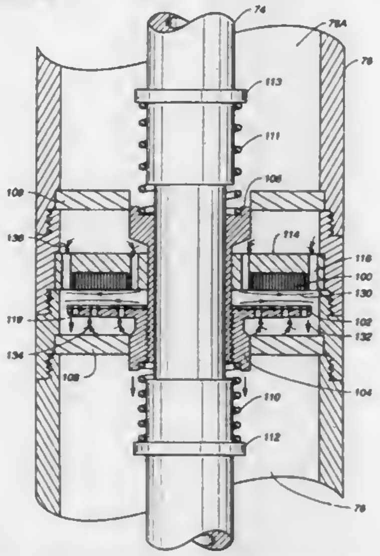
5,852,262
ACOUSTIC FORMATION LOGGING TOOL WITH IMPROVED TRANSMITTER

Stephen P. Gill, Atherton; Timothy Prowten, San Jose, and Marek Z. Kozak, Fremont, all of Calif., assignors to Magnetic Pulse, Inc., Fremont, Calif.

Filed Sep. 28, 1995, Ser. No. 535,968

Int. Cl.^{6} G01V *1/40*

U.S. Cl. 181—106 16 Claims



1. An acoustic well logging apparatus including a tool for use in a borehole within an earth formation containing a liquid that surrounds said tool as it is moved through the borehole, said tool comprising;

- a transmitter section including means for generating and transmitting pressure waves that are directed outwardly from the tool and also undesirable tube waves that travel through the liquid surrounding the tool, said wave generating means in said transmitter section comprising:
- a central tube member;
- a second tube member concentric with and spaced outwardly from said central member to form a first annular passage;
- a third concentric tube member spaced outwardly from said second tube member to form a second annular passage;
- a liquid within said first and second passages;
- actuator means for producing a wave pulse in said liquid, said actuator means extending between said central tube member and said second tube member;
- transverse reflector means spaced longitudinally from said actuator means and extending between said central tube member and said third tube member;
- a first opening in said second tube member located near said reflector means;
- a second opening in said third concentric tube member and spaced longitudinally from said first opening;
- a flexible elastomeric cover extending around said third tube member and said second opening;

whereby waves produced by said actuator means travel through said liquid in said first annular passage to said reflector means, through said first opening and through said second annular passage before being emitted through said second opening and said elastomeric cover; said apparatus further comprising:

- a receiver section for receiving at least a portion of the outwardly directed transmitted waves;
- means for mechanically connecting said transmitter and receiver sections;
- absorber means in combination with said connecting means for absorbing and attenuating the tube waves created by said wave generating means and transmitted through the liquid surrounding the tool within the borehole;
- data analysis means connected to said receiver section for analyzing wave energy that passes through the earth formation around the borehole.

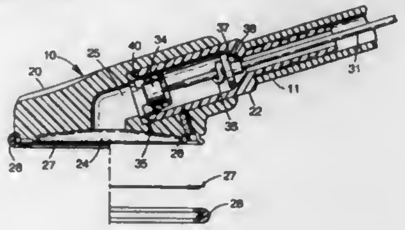
5,852,263
STETHOSCOPE HAVING MICROPHONE IN STEM OF CHEST PIECE

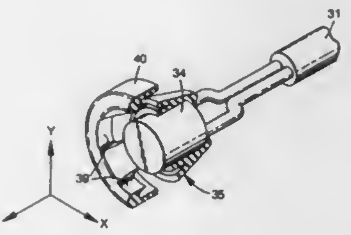
Alan P. Dieken, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 976,328, Nov. 13, 1992. This application May 31, 1995, Ser. No. 455,868

Int. Cl.^{6} A61B *7/02*

U.S. Cl. 181—131 14 Claims





1. A stethoscope chestpiece capable of transmitting auscultatory sounds both acoustically and electrically, comprising:

(a) a stethoscope housing having a stem and forming an acoustic pathway for acoustic auscultation;

(b) a mounting in the stem

(c) a cable mounted within the acoustic pathway that is capable of transmitting electrically generated information: and

(d) an acoustic to electrical transducer

within the mounting in the stem of the chestpiece, wherein the transducer is electrically connected to the cable, and

wherein the transducer is positioned within the same acoustic pathway as employed for acoustic auscultation.

5,852,264
METHOD AND APPARTUS FOR THE MEASUREMENT OF THE LOAD IN AN ELEVATOR

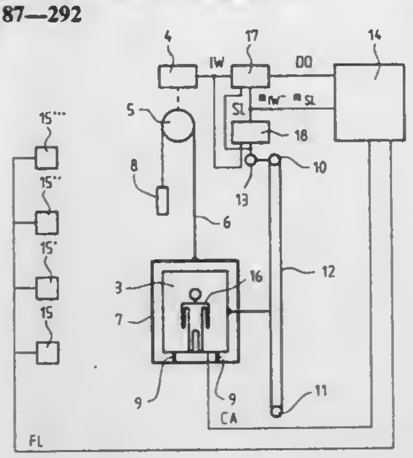
Jurgen Muller, Ebikon, Switzerland, assignor to Inventio Ag, Hergiswil, Switzerland

Filed Jul. 18, 1996, Ser. No. 683,220

Claims priority, application Switzerland, Jul. 26, 1995, 02187/95

Int. Cl.^{6} B66B *1/04*

U.S. Cl. 187—292 23 Claims



1. A method for the measurement of the load in an elevator cage supported in a carrying frame by spring elements, the cage being movable with respect to the frame and the cage and frame together are movable in an elevator shaft by a hoist cable guided over a drive pulley, a motor control drives the drive pulley and executes travel commands received from an elevator control, said method comprising:

- moving the elevator cage relative to the carrying frame and relative to an elevator shaft by passenger loading and unloading measuring the movement of the cage relative to the shaft;
- converting the measured movement of the elevator cage into a travel signal; and
- forming a first load magnitude from the travel signal, the first load magnitude influencing a motor current controlled by the motor control.

5,852,265

Patent Not Issued For This Number

5,852,266
VACUUM CIRCUIT BREAKER AS WELL AS VACUUM VALVE AND ELECTRIC CONTACT USED IN SAME

Katsuhiro Komuro; Yoshitaka Kojima; Yukio Kurosawa, all of Hitachi; Yoshio Koguchi, Hitachioota; Toru Tanimizu, Hitachi; Yoshimi Hakamata, and Shunkichi Endo, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 490,607, Jun. 7, 1995, Pat. No. 5,697,150, which is a continuation of Ser. No. 265,733, Jun. 27, 1994, Pat. No. 5,557,083. This application May 5, 1997, Ser. No. 851,173

Claims priority, application Japan, Jul. 14, 1993, 5-173943

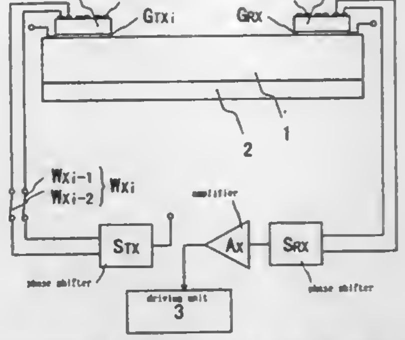
Int. Cl.^{6} H01H *33/66;1/02*

U.S. Cl. 218—119 10 Claims

1. A vacuum circuit breaker including:

- a vacuum switch having a fixed electrode and a movable electrode both within an insulating vessel;
- conductor terminals connected outside said vacuum switch to said fixed electrode and said movable electrode, respectively, disposed within the vacuum switch; and
- opening/closing means for driving said movable electrode through an insulated rod connected to the movable electrode,
- said fixed electrode and said movable electrode each having at an entire surface opposed to one another an arc electrode formed by an alloy of a refractory metal and a highly electroconductive metal and also having an arc electrode support member which supports said arc electrode and which is formed of the highly electroconductive metal, said arc electrode and said arc electrode support member being formed integrally with each other by melting of the highly electroconductive metal, said fixed electrode and said movable electrode each having a plurality of grooves extending from the inside to the outside of said fixed electrode and said movable electrode at a surface opposed to one another, said grooves passing through said arc electrode and said arc electrode support member.

4. A vacuum circuit breaker according to claim 1, including three sets of said vacuum switches, said three sets of vacuum switches being arranged side by side and mounted integrally within an insulating resin cylinder.



5,852,267
INJECTION NEEDLE SAFETY DISPOSAL APPARATUS

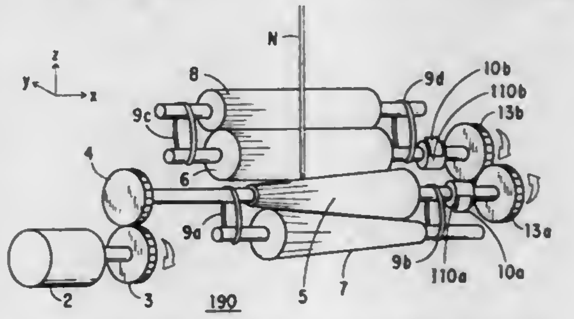
Toshio Yanobu, Kyoto, Japan, assignor to Taiyo Elecs Co., LTD., Kyoto, and OKI Customer Advanced-Technology Co., LTD., Tokyo, both of Japan

Continuation of Ser. No. 565,427, Nov. 30, 1995, Pat. No. 5,676,859. This application Sep. 30, 1996, Ser. No. 720,505

Claims priority, application Japan, Jun. 26, 1996, 8-165527

Int. Cl.^{6} B23K *11/22;* A61G *12/00;* A61L *11/00*

U.S. Cl. 219—68 21 Claims



1. An injection needle safety disposal apparatus comprising:

- a first roller electrode with constant diameter that touches the tip of the injection needle;
- a second roller electrode with constant diameter that touches a part on said injection needle slightly away from the tip and toward the root of the needle;
- impetus means for giving impetus at at least one roller electrode of said first roller electrode and said second roller electrode toward the other roller electrode so that the clearance between said first roller electrode and said second roller electrode can be adjusted to suit the thickness of the injection needle;

roller-rotation driving means for rotating said first roller electrode and said second roller electrode;
power supply means for supplying power to said first roller electrode and said second roller electrode capable of fusing a part of said injection needle when it comes in contact with said fist roller electrode and said second roller electrode.

5,852,268
METHOD AND APPARATUS FOR FINE MACHINING WITH SPARK EROSION USING A WIRE ELECTRODE

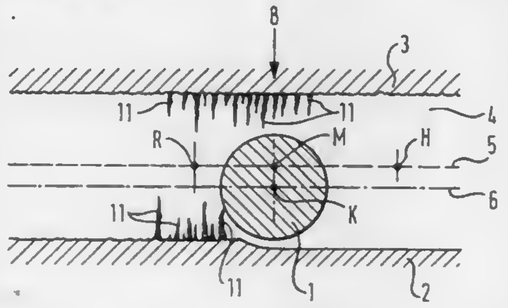
Ernst Bühler, Losone; Marco Boccadoro, Verscio, both of Switzerland; Pierangelo Locati, Canobbio; Adriano Gironi, Verbania, both of Italy; Stefano Angelella, Losone, and Livio Mazzolini, Capriasca, both of Switzerland, assignors to Agie Sa, Losone, Switzerland

Filed May 9, 1996, Ser. No. 647,238

Claims priority, application Germany, May 9, 1995, 195 16 990.5

Int. Cl.^{6} B23H *7/02;7/16*

U.S. Cl. 219—69.12 **27 Claims**



1. A method for trim cutting by fine machining with spark erosion of a workpiece with a wire electrode, comprising the steps of:

a) continuously monitoring at least one gap parameter for detecting a short circuit;
b) arresting the forward motion of the wire electrode upon detecting a short circuit at a point (K) where the short circuit occurred;
c) moving the electrode away from the workpiece to an intervention point (M) upon persisting of the short circuit, in the direction perpendicular to a trim cutting path;
d) carrying out at least a first measure to eliminate the short circuit at the intervention point (M) at least one time;
e) upon detecting the elimination of the short circuit, moving the electrode back to the point (K) where the short circuit occurred; and continuing machining.

5,852,269
METHOD AND INSTRUMENT FOR DETERMINING POSITION WIRE ELECTRODE IS IN CONTACT WITH WORKPIECE

Tatsuo Toyonaga, and Yuji Kaneko, both of Kanagawa, Japan, assignors to Sodick Co., Ltd., Japan

PCT No. PCT/JP96/03309, § 371 Date Jul. 28, 1997, § 102(e) Date Jul. 28, 1997, PCT Pub. No. WO97/18052, PCT Pub. Date May 22, 1997

PCT Filed Nov. 11, 1996, Ser. No. 809,414

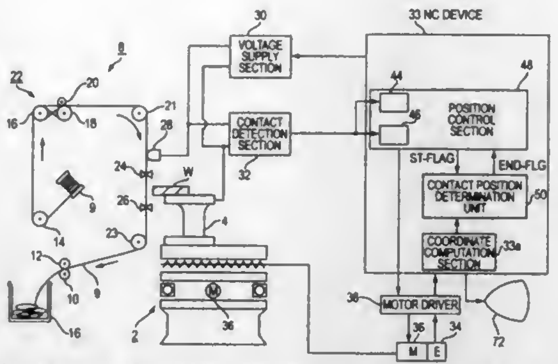
Claims priority, application Japan, Nov. 11, 1995, 7-317536

Int. Cl.^{6} B23H *7/10*

U.S. Cl. 219—69.12 **6 Claims**

1. A method for measuring a contact position of a wire electrode, which forms a tool, and said workpiece, a contact position measurement method comprising:

(a) positioning a wire electrode generally perpendicular to a plane in which either the wire electrode or the workpiece moves with respect to the other;



(b) applying a voltage between the wire electrode and the workpiece;
(c) moving either the wire electrode or the workpiece within the plane, whereby the wire electrode is caused to approach a reference position on the workpiece;
(d) detecting contact between the workpiece reference position and the wire electrode;
(e) positioning the workpiece reference position at approximately the center of vibration of the wire electrode as determined according to the number of occurrences of the detected contacts;
(f) generating coordinate data indicating the position of the wire electrode with respect to the workpiece, and;
(g) determining the contact position of the wire electrode with respect to the workpiece when the workpiece reference position has been placed at the center of the wire of vibration of the wire electrode as determined based on the coordinate data.

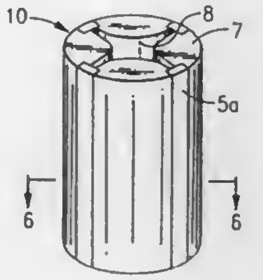
5,852,270
METHOD OF MANUFACTURING A MINIATURE QUADRUPOLE USING ELECTRODE-DISCHARGE MACHINING

David H. Holkeboer, Byron Center, Mich., assignor to Leybold Inficon Inc., E. Syracuse, N.Y.

Filed Jun. 3, 1997, Ser. No. 868,253

Int. Cl.^{6} B23H *9/00;7/02;* **H01J** *49/42*

U.S. Cl. 219—69.12 **6 Claims**



1. A method for manufacturing a miniature quadrupole, comprising the steps of:

providing a single blank;
forming slots in a surface of said blank, said slots being parallel to a long axis of said blank;
affixing four insulating strips into said slots, one strip per slot; and
machining said blank lengthwise into four electrodes such that said electrodes are spaced apart in a widthwise direction and each electrode is connected to an adjacent electrode by one of said insulating strips.

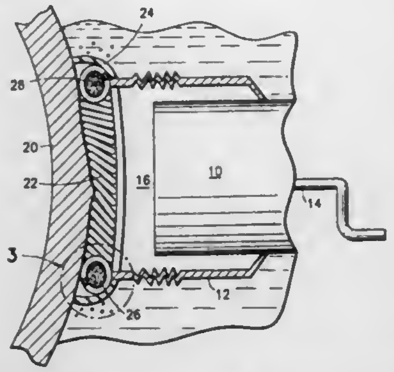
5,852,271
WATER EXCLUSION DEVICE FOR UNDERWATER THERMAL PROCESSING

Henry Peter Offer, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Apr. 12, 1996, Ser. No. 631,188

Int. Cl.^{6} B23K *9/16*

U.S. Cl. 219—72 **20 Claims**



1. A submersible thermal processing apparatus comprising:

a torch comprising a heat source, a torch housing and an inlet for pressurized gas;
a shielding gas nozzle mounted to said torch housing and surrounding at least a portion of said heat source, said shielding gas nozzle having a distal end; and
a baffle enclosure made of elastic, heat-resistant spring material arranged in a closed loop and supported by said distal end of said shielding gas nozzle, wherein said baffle enclosure comprises a multiplicity of portions which can flex apart to form a multiplicity of openings for passage of gas through said baffle enclosure.

5,852,272
WEAR-RESISTANT OVERLAY FORMING METHOD AND WEAR-RESISTANT COMPOSITE MEMBERS

Masaharu Amano, Hirakata, Japan, assignor to Komatsu Ltd., Tokyo, Japan

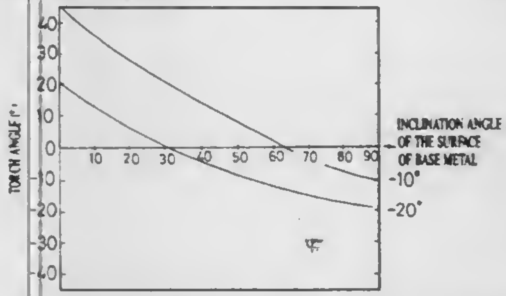
PCT No. PCT/JP95/01522, § 371 Date Apr. 2, 1996, § 102(e) Date Apr. 2, 1996, PCT Pub. No. WO96/04097, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 31, 1995, Ser. No. 624,554

Claims priority, application Japan, Aug. 2, 1994, 6-201410; Aug. 11, 1994, 6-189614

Int. Cl.^{6} B23K *9/04*

U.S. Cl. 219—76.14 **12 Claims**



1. A wear-resistant overlay forming method wherein hard particles are supplied to a molten weld pool that is that is formed on a surface of a base material by an arc generated from a tip of an arc electrode to form a wear resistant overlay containing the hard particles on the surface of the base material, comprising:

inclining the surface of the base material with respect to a horizontal plane by an angle α, wherein $25° \leqq \alpha \leqq 90°$;
establishing a welding direction of the base material with respect to the tip of the arc electrode wherein the molten material flows downward away from the tip due to gravity;
generating the arc from the tip of the arc electrode while the tip is oriented at an angle θ, wherein $\theta \geqq 90°$ with respect to the welding direction to create the molten weld pool, which molten weld pool flows by gravity downwardly with respect to the weld direction;
supplying the hard particles to the molten metal at a location upstream of the location of impingement of the arc with the molten metal pool when $25° \leqq \alpha < 90°$; and
supplying the hard particles to the molten metal at a location coincident with the location of impingement when $\alpha = 90°$.

5,852,273
RESISTANCE WELDING CONTROLLER AND METHOD INCLUDING THERMAL CONDUCTION SIMULATION OF WELD NUGGET CONDITION

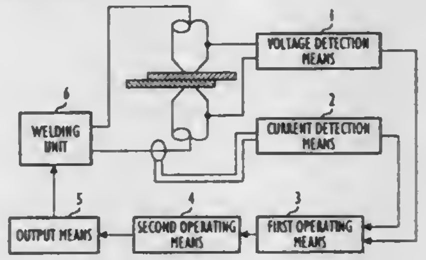
Makoto Ryudo; Koji Fujii, both of Osaka, and Yasuhiro Goto, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1996, Ser. No. 723,711

Claims priority, application Japan, Sep. 29, 1995, 7-253120

Int. Cl.^{6} B23K *11/25*

U.S. Cl. 219—110 **9 Claims**



2. A method of controlling resistance welding, comprising the steps of:

obtaining an estimated condition value which represents a condition of nugget formation, by applying a thermal conduction simulation to a welding part;
outputting a modification to a welding condition based on the result of comparison between said estimated condition value and a predetermined standard condition value needed for forming a desired nugget;
changing said welding condition in accordance with said modification to welding condition,
wherein said predetermined standard condition value is a change rate of the temperature at a standard point.

5,852,274
ELECTRICALLY HEATABLE CATALYTIC CONVERTER

Kiyohiko Watanabe; Tohru Yoshinaga, both of Okazaki; Akihiro Izawa, Sapporo, and Osamu Fujishiro, Nagoya, all of Japan, assignors to Nippon Soken, Inc., Japan

Filed Sep. 7, 1995, Ser. No. 525,459

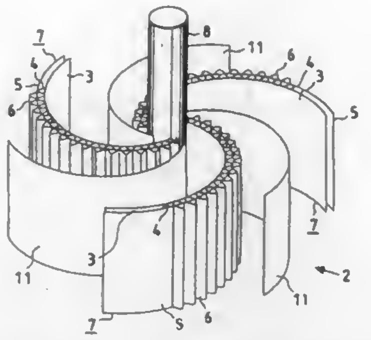
Claims priority, application Japan, Sep. 7, 1994, 6-213695

Int. Cl.^{6} B23K *11/00;* **B01D** *53/34;* **F01N** *3/10*

U.S. Cl. 219—117.1 **1 Claim**

1. A method for manufacturing an electrically heatable catalytic converter comprising the steps of:

providing an electrode;
providing a plurality of flat metal foil sheets and a plurality of corrugated metal foil sheets which are arranged alternately;
interposing a sheet of paper between one of the flat metal foil sheets and adjacent corrugated metal foil sheet so as to form a plurality of multi-layered members separated by the paper each multi-layered member including at least two of the flat metal foil sheets and at least two of the corrugated metal foil sheets;
winding said multi-layered members around the electrode;



applying a voltage across the wound multi-layered members to weld the flat metal foil sheets and the corrugated metal foil sheets of each of the multi-layered members together and
disposing the welded multi-layered members within a cylindrical converter casing.

5,852,275

HEATING SYSTEM, VACUUM PROCESS CHAMBER COMPRISING SUCH A HEATING SYSTEM AND OPERATION OF SUCH A VACUUM PROCESS CHAMBER

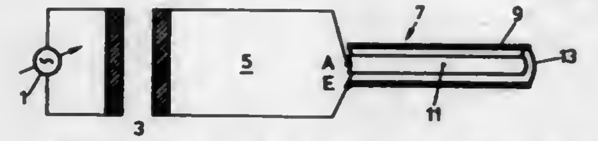
Hans Signer, Nesslau, Switzerland, assignor to Balzers Aktiengesellschaft, Liechtenstein, Liechtenstein

Filed Dec. 21, 1995, Ser. No. 576,236

Claims priority, application Germany, Dec. 23, 1994, 44 46 297.2

Int. Cl.^{6} B23K *10/00*

U.S. Cl. 219—121.43 25 Claims



1. A heating system for a vacuum process chamber having heating circuit with a heating electrode, and a transformer transmitter for generating, on a secondary side thereof, a heating current in the heating current circuit looped between adjacent current connections, wherein the heating electrode comprises a process electrode for an electrode-supported process in a process chamber, and the heating current circuit is connected by a process-electrode operating source to an electric operating potential, and wherein the operating source and a shielding between primary and secondary windings of the transformer transmitter, are connected to a reference potential.

5,852,276

LASER MACHINING RESUMING METHOD

Etsuo Yamazaki, Kitatsuru-gun, and Teruo Masuda, Minamitsuru-gun, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP93/01778, § 371 Date Aug. 16, 1994, § 102(e) Date Aug. 16, 1994, PCT Pub. No. WO94/14566, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 7, 1993, Ser. No. 290,737

Claims priority, application Japan, Dec. 28, 1992, 4-348183

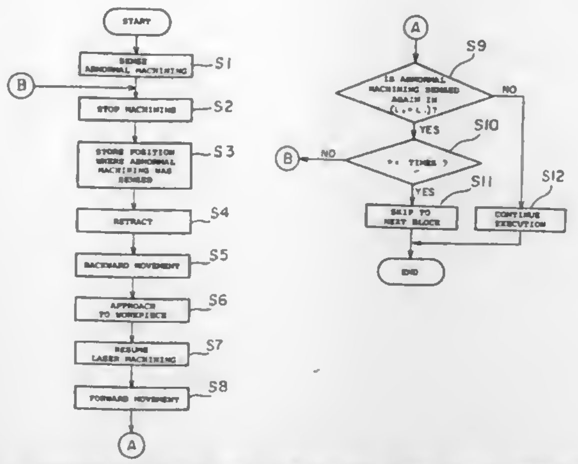
Int. Cl.^{6} B23K *26/08*

U.S. Cl. 219—121.62 5 Claims

1. A laser machining resuming method of resuming laser machining when the laser machining is interrupted while it is being performed, comprising the steps of:

a) performing a laser machining of a workpiece in a machining block along a machining path;

b) sensing an abnormal machining operation at a first machining position in said machining block along said machining path during said laser machining;



c) interrupting said laser machining when said abnormal machining operation is sensed;

d) storing said first machining position;

e) retracting a machining head a first predetermined distance from said first machining position;

f) moving said machining head backward a second predetermined distance from a position of said machining head at said first predetermined distance along said machining path;

g) advancing said machining head toward said workpiece from a position of said machining head at said second predetermined distance to a second machining position in said machining block along said machining path before said first machining position;

h) resuming said laser machining from said second machining position and moving said machining head forward in said machining block along said machining path;

i) sensing an abnormal machining operation at a new machining position along said machining path during said laser machining;

j) determining whether said new machining position is before or after said first machining position;

k) performing a retry process by repeating steps c)–j) for said new machining position when it is determined that said new machining position is before said first machining position; and

l) skipping said machining block and starting said laser machining from a next machining block when said retry process is repeated a predetermined number of times.

5,852,277

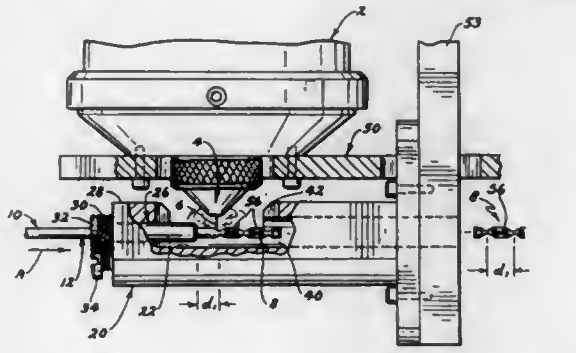
LASER CUTTING TOOL FOR CUTTING ELONGATED HOLLOW WORKPIECES

Gary E. Gustafson, Darwin, Minn., assignor to Spectralytics, Inc., Litchfield, Minn.

Filed Oct. 24, 1996, Ser. No. 736,533

Int. Cl.^{6} B23K *26/08*

U.S. Cl. 219—121.67 5 Claims



1. An apparatus for manufacturing a hollow, generally tubular workpiece having a pattern cut around the circumference and along the length thereof, which comprises:

(a) a laser cutting tool, the laser cutting tool having means for generating a laser beam used as a cutting implement; and

(b) a workpiece fixture rigidly carried on the cutting tool in a fixed spatial arrangement during use of the fixture, the fixture having a cantilever support for supporting a piece of stock tubing beneath the laser cutting tool in a cantilever manner with the cantilever support being located on just one side of the laser beam with the tubing extending from the cantilever support past the laser beam and the tubing being unsupported on the other side of the laser beam, and wherein the workpiece fixture comprises:

(i) a fixture body secured to the cutting tool; and

(ii) a generally horizontal bushing carried on the fixture body and extending beneath the cutting tool, the bushing having a central bore which is sized to be slightly greater than an outside diameter of the stock tubing.

5,852,278

ARC WELDING AND ARC PLASMA CUTTING MACHINES HAVING IMPROVED DC HIGH-VOLTAGE GENERATOR

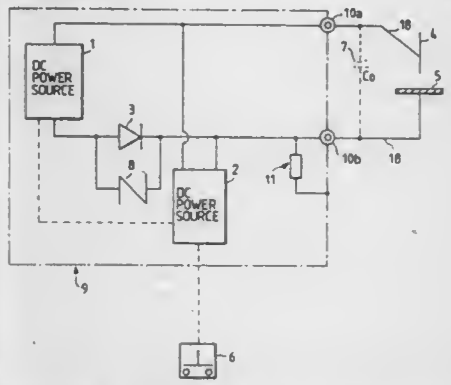
Yoshiaki Tanaka, Takarazuka; Seigo Hagiwara, Kawanishi; Norikazu Osaki, Ikoma-gun; Kazuo Kimoto, Sakai, and Naoki Kawai, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 27, 1996, Ser. No. 773,853

Claims priority, application Japan, Dec. 28, 1995, 7-342820; Sep. 4, 1996, 8-234012

Int. Cl.^{6} B23K *9/067*

U.S. Cl. 219—130.4 18 Claims



1. An arc welding or arc plasma cutting machine comprising:

a pair of electrodes;

a first dc power source applying dc voltage across first and second output terminals connected to said electrodes;

a one-way rectifying circuit disposed between said first dc power source and the first output terminal;

a second dc power source connected across the first and second output terminals, said second dc power source superimposing dc voltage on power produced by said first dc power source for developing an arc discharge across said electrodes; and

a voltage clamping circuit connected in parallel to said one-way rectifier.

5,852,279

CLOTHES IRON WITH AUTOMATIC SHUT OFF SYSTEM CONTROLLED BY MULTIPLE SWITCHES

Chi Kin Mak, Wan Chai; Ka Hong Wo, Lei King Wan, and Wai Man Yeung, Kowloon, all of Hong Kong, assignors to Windmere Corporation, Miami Lakes, Fla.

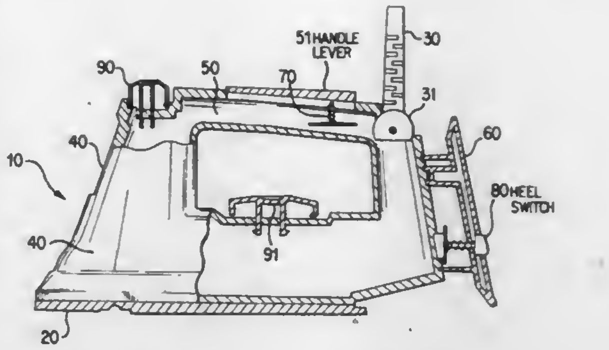
Filed Oct. 2, 1996, Ser. No. 725,677

Int. Cl.^{6} D06F *75/00*

U.S. Cl. 219—257 20 Claims

1. An iron comprising:

(a) a sole plate defining the bottom surface of the iron,



(b) a heater mounted in the iron to heat the sole plate,

(c) a handle at the top of the iron sized to be gripped during use,

(d) a heel stand at the back of the iron to support the iron in an upright resting position,

(e) a timer electrically coupled to a heater switch for removing power from the heater after one of a plurality of timing periods including a short timing period and a long timing period,

(f) a first switch for turning on said timer, and

(g) a second switch for selecting from among the plurality of timing periods.

5,852,280

CERAMIC HEATER

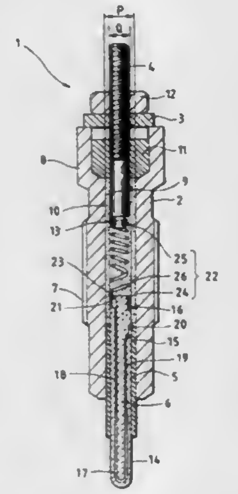
Takanori Mizuno, Seto, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Mar. 23, 1998, Ser. No. 45,677

Claims priority, application Japan, Mar. 31, 1997, 9-079517; Mar. 3, 1998, 10-050380

Int. Cl.^{6} F23Q *7/00*

U.S. Cl. 219—270 12 Claims



1. A ceramic heater comprising:

a main metal shell having an inner hole in an axial direction;

a ceramic sintered body in which an intermediate portion is fitted into the inner hole and a front end portion is protruded out from the main metal shell, the ceramic sintered body having a heating portion provided with a heating element embedded in the front end side, a small-diameter portion provided in the rear end side and having a smaller outer diameter than the outer diameter of the heating portion, a first electrode electrically connected to one end portion of the heating portion and bent to expose to the outer periphery itself, and a second electrode electrically connected to the other end portion of the heating portion and bent to expose to the outer periphery of the small-diameter portion, the bending of the second electrode being smaller than that of the first electrode; and an electric conductive portion electrically connected to the second electrode exposed to the outer periphery of the small-diameter portion of the ceramic sintered body.

5,852,281

APPARATUS FOR HEATING LIQUIDS WITH STEAM SENSOR AND MULTIPLE STEAM PASSAGES

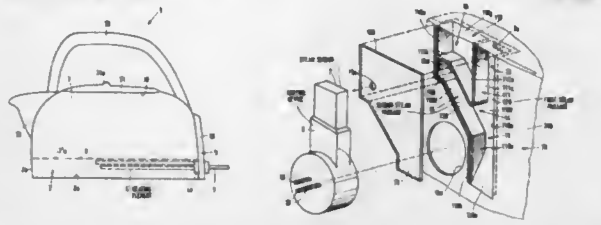
Klaus Melgaard, and Michael J. Wenden, both of Hastings, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 566,028, Dec. 1, 1995, abandoned. This application Sep. 22, 1997, Ser. No. 935,253

Claims priority, application United Kingdom, Dec. 2, 1994, 9424350

Int. Cl.^{6} A47J *27/21*

U.S. Cl. 219—441 **11 Claims**



1. An apparatus for heating liquids comprising a hollow body defining a receptacle for liquid to be heated, a heating element for heating liquid within the receptacle, a spout for enabling liquid to be poured into or out of the receptacle, a control chamber containing a control device carrying a steam sensor and being responsive to the steam sensor to control operation of the heating element, a steam outlet provided in an upper part of the receptacle in a location remote from said spout and a steam passage arrangement provided between the steam outlet and the steam sensor, the steam passage arrangement comprising a first steam passage separate from the spout and communicating with and extending downwardly from the steam outlet of the receptacle to an outlet positioned away from the control device and a second steam passage branching from the first steam passage at a branching location below the steam outlet of the receptacle and extending to a location higher than the branching location, the steam sensor being provided adjacent a steam aperture within the second steam passage above the branching location.

5,852,282

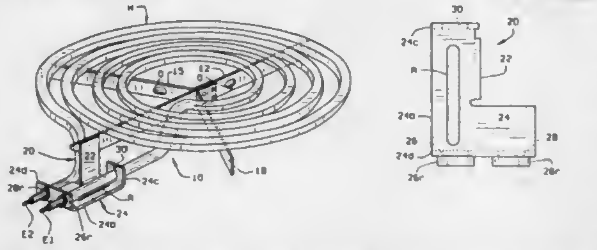
SPIDER BRACKET ASSEMBLY

Mark Moore, Fayette County; Stacy Springer; Randall Markum, both of Lamar County, all of Ala., and Ryan Taylor, Lowndes County, Miss., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 17, 1997, Ser. No. 818,426

Int. Cl.^{6} H05B *3/68*

U.S. Cl. 219—467 **16 Claims**



12. A spider bracket supporting a spiral wound electrical heating element having respective first and second terminal ends adapted for connection in an electrical circuitry by which current flows through the heating element comprising:

- a plurality of spider arms supporting the heating element, a first of said spider arms extending across a diameter of the heating element and including a pair of openings therein configured for attachment of a center medallion, and a second and third spider arm each being attached to said first spider arm and extending radially outwardly therefrom, each including an opening therein configured for attachment of said center medallion, the length said second and third spider arms extend corresponding to a radius of the heating element; and
- support means to which said terminal ends of the heating element are affixed, said support means including a bracket arm attached to one end of said first spider arm and depending therebeneath, and a wiring support fixture connected to said bracket arm, said wiring support bracket having a longitudinally extending strengthening rib, and a pair of apertures located at one end thereof through which with one of said terminal ends being inserted through each respective aperture, said apertures each having a circumferential rim projecting outwardly from said end of said wiring support fixture and extending circumferentially about said aperture, each said rim being deformable such that a portion of said rim is pressed into an associated terminal end of said heating element during a swaging operation to affix said end of said heating element to said support means.

5,852,283

ELECTRICAL HEATING ELEMENTS AND CONTROLS THEREFOR

Robert Andrew O'Neill, Buxton, England, assignor to Ottes Controls Limited, Derbyshire, England

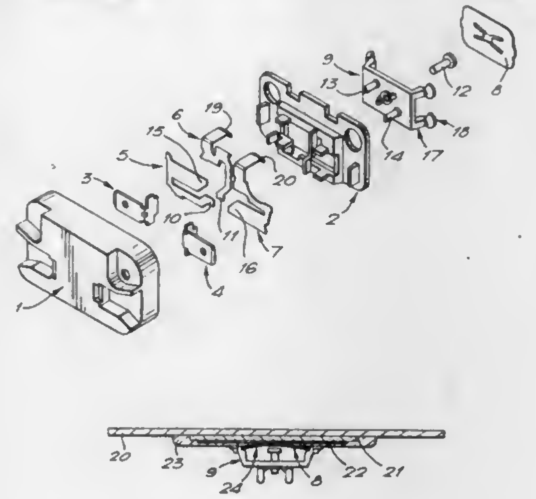
PCT No. PCT/GB94/02324, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/11516, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 21, 1994, Ser. No. 632,507

Claims priority, application United Kingdom, Oct. 21, 1993, 9321681; Jan. 27, 1994, 9401559

Int. Cl.^{6} H05B *3/68;* **H01H** *37/02;* **H02H** *5/04*

U.S. Cl. 219—449 **19 Claims**



1. A generally planar electrical heating element which is designed for use with an element protector control having a primary thermally-responsive actuator and a secondary thermally-responsive actuator operable in response to the element temperature rising significantly above the temperature at which the primary actuator is designed to operate, said electrical heating element comprising a substrate defining an electrically-insulating surface, an electrical conductor formed on said electrically-insulating surface, said electrical conductor being formed of a material having such an electrical resistance as to constitute an electrical resistance heating element proper, and an electrically-insulating layer form said electrical conductor, said electrically-insulating layer having an opening therethrough whereat, in use of the electrical heating element with the element protector control aforesaid, the primary thermally-responsive actuator may access the said electrical conductor so as to be responsive directly to the temperature thereof, the secondary thermally-responsive actuator being prevented from accessing the said electrical conductor directly and being responsive to the temperature thereof by conduction of heat through the electrically-insulating layer.

5,852,284

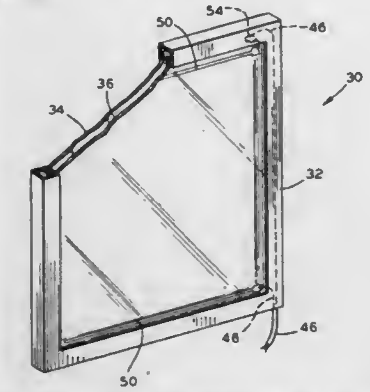
INSULATING GLASS WITH CAPACITIVELY COUPLED HEATING SYSTEM

Rein S. Teder, Bloomington, Minn.; Peter F. Gerhardinger, Toledo, and Fred A. Millett, Perrysburg, both of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Jan. 7, 1997, Ser. No. 779,470

Int. Cl.^{6} H05B *3/06*

U.S. Cl. 219—522 **21 Claims**



1. A heated glass system for heating glass sheet surfaces, said heated glass system comprising:

- a sheet of glass having a generally rectangular shaped configuration;
- a transparent, conductive coating applied to a surface of said sheet of glass, said coating having a hemispheric emissivity of less than 0.50;
- a pair of bus bars mounted along opposite edges of said sheet of glass and electrically connected to said conductive coating, said bus bars each including a connector for connecting said bus bar to an alternating current power supply to form a circuit through said conductive coating; and
- a capacitor connected in series between one of said bus bars and the power supply, said capacitor increasing an impedance of the circuit to reduce current flowing through and to reduce power dissipated by said conductive coating.

5,852,285

HONEYCOMB HEATER WITH PARALLEL CIRCUITS

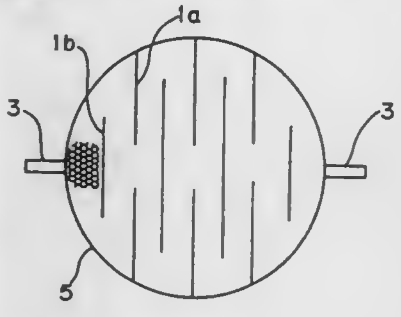
Yasushi Kato, Handa, Japan, and Shigeharu Hashimoto, Farmington Hills, Mich., assignors to NGK Insulators, Ltd., Japan

Filed Oct. 4, 1996, Ser. No. 726,220

Claims priority, application Japan, Oct. 13, 1995, 7-265258

Int. Cl.^{6} H05B *3/02*

U.S. Cl. 219—553 **5 Claims**



1. A honeycomb heater comprising

- a single piece honeycomb structure made of an electroconductive material, the honeycomb structure having slits for resistance adjustment and
- electrodes fitted thereto for electrification thereof, wherein said slits are formed in the honeycomb structure in such a manner that parallel electric circuits are formed in the honeycomb structure upon electrification of the structure.

5,852,286

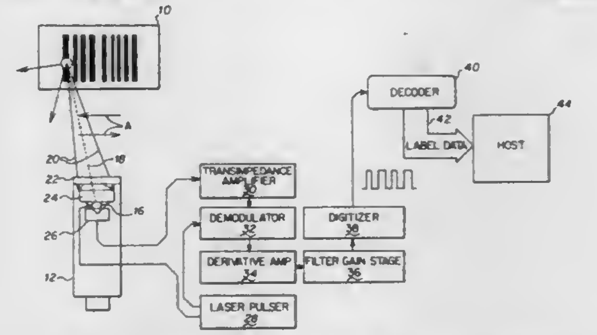
METHOD AND APPARATUS FOR REDUCING BANDWIDTH LIMITED NOISE IN BAR CODE SCANNER

Edward P. Coleman, Fairport, N.Y., assignor to PSC, Inc., Webster, N.Y.

Filed Mar. 20, 1996, Ser. No. 622,234

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 235—462 **13 Claims**



1. A bar code scanner system comprising:

- a laser light source that periodically produces a light beam that is swept across a bar code label, the laser light source being periodically turned "on" and "off" according to a duty cycle;
- a detector that produces a first electric signal representative of received ambient light and light reflected from the bar code label when the light source is "on" and produces a second electric signal representative of received ambient light when the light source is "off";
- a demodulator circuit, coupled to the detector, that provides a first gain to the first electric signal and provides a second gain to the second electric signal;
- a filter, coupled to the demodulator circuit, that receives the electric signals from the demodulator circuit and reduces out-of-band signal components; and
- a laser pulser coupled to the laser light source and the demodulator circuit, that controls the duty cycle of the laser light source.

5,852,287

SEMICONDUCTOR OPTICAL DEVICE FOR CODE READER

Tadashi Taniguchi, and Chiaki Kojima, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 416,733, May 25, 1995, Pat. No. 5,708,174. This application May 5, 1997, Ser. No. 851,556

Claims priority, application Japan, Aug. 17, 1993, 5-223859

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 235—462 **11 Claims**

1. An optical device for a code reader, comprising:

- a light emitting element in which is fixed relative to a semiconductor substrate and emits light for irradiating a code;
- a prism which comprises first and second surfaces and is fixed relative to said semiconductor substrate and provided with a light reflecting film on said first surface that, by reflecting said light emitted from said light emitting element, irradiates said code;
- a light absorbing film which is provided on said second surface of said prism; a light converging element which has a larger numerical aperture than that of said reflecting film and con-

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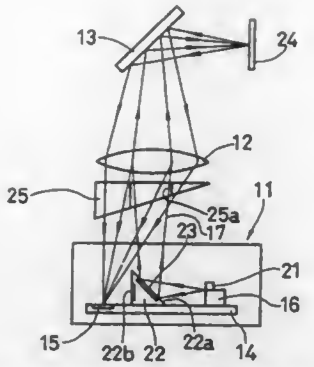


verges both said light reflected by said light reflecting film and scattered light reflected by said code;
- a light receiving element which is fixed relative to said semiconductor substrate and receives said scattered light reflected by said code and converged by said light converging element;
- wherein said prism is placed relative to said light receiving element such that said light absorbing film prevents light from traveling through said second surface to said light receiving element.

5,852,288
BAR CODE SCANNING APPARATUS

Atsushi Nakazawa, and Mitsuru Nishikawa, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

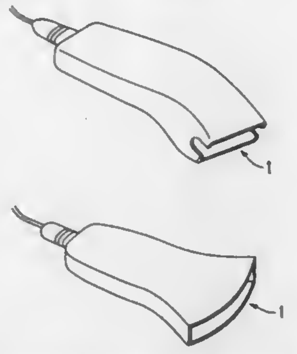
PCT No. PCT/JP95/01827, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO96/09596, PCT Pub. Date Mar. 23, 1996

PCT Filed Sep. 13, 1995, Ser. No. 676,244

Claims priority, application Japan, Sep. 19, 1994, 6-223611

Int. Cl.⁶ G06K *7/10*

U.S. Cl. 235—472 **14 Claims**



1. A bar code scanning apparatus for forming an image of a bar code disposed on a read surface, comprising:
- a case body having an opening;
- an image sensor housed in the case body;
- a lens system housed in the case body, the lens system having a focusing point at the opening;
- wherein a visual field of the lens system at the focusing point extends outwardly exceeding a width of the opening of the case body, and
- wherein the case body has lateral sides having slits which communicate with the opening so as not to interrupt optical paths in the visual field of the lens system, thereby enabling the image to be formed on the image sensor when the apparatus is positioning so that the opening is in contact at the read surface.

5,852,289
NON-CONTACT TYPE IC CARD AND METHOD OF PRODUCING THE SAME

Tsumori Masahiko, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

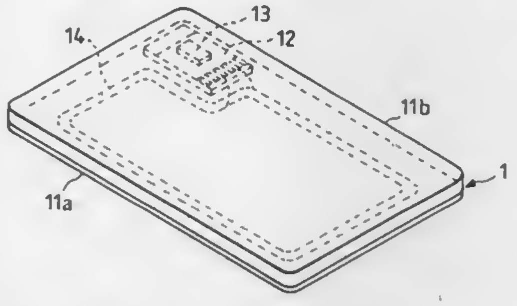
PCT No. PCT/JP95/01910, § 371 Date Dec. 4, 1996, § 102(e) Date Dec. 4, 1996, PCT Pub. No. WO96/09175, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 21, 1995, Ser. No. 750,291

Claims priority, application Japan, Sep. 22, 1994, 6-227703; Dec. 27, 1994, 6-325072; Apr. 13, 1995, 7-087859

Int. Cl.⁶ G06K *19/06*

U.S. Cl. 235—492 **8 Claims**



1. A non-contact type IC card comprising:
- a flat rectangle card body;
- a loop antenna coil mounted on said flat rectangle card body substantially along an outer circumference of said card body; and
- an electric part mounted on said card body;
- wherein said electric part is disposed outside the loop of said antenna coil when said card body is viewed in a plane.

5,852,290
SMART-CARD BASED ACCESS CONTROL SYSTEM WITH IMPROVED SECURITY

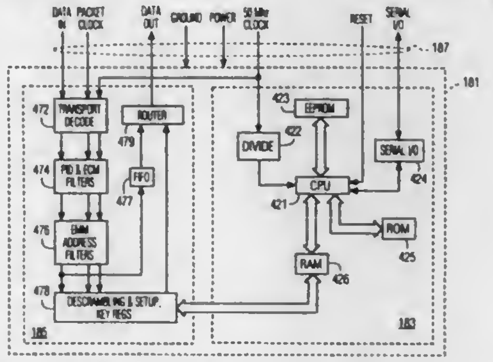
John William Chaney, Gilroy, Calif., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US95/09953, § 371 Date Jan. 30, 1997, § 102(e) Date Jan. 30, 1997, PCT Pub. No. WO96/06504, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 4, 1995, Ser. No. 776,555

Int. Cl.⁶ G06K *19/06*

U.S. Cl. 235—492 **19 Claims**



1. A smart card comprising:
- a first terminal for receiving an input signal including first and second scrambled signal components;
- a second terminal for providing an output signal;
- means for processing said first scrambled signal component for producing a first descrambled processed signal, and being responsive to said first descrambled processed signal for processing said second scrambled signal component for producing a second descrambled processed signal; and
- means for combining said first scrambled signal component of said input signal and said second descrambled processed signal to produce said output signal.

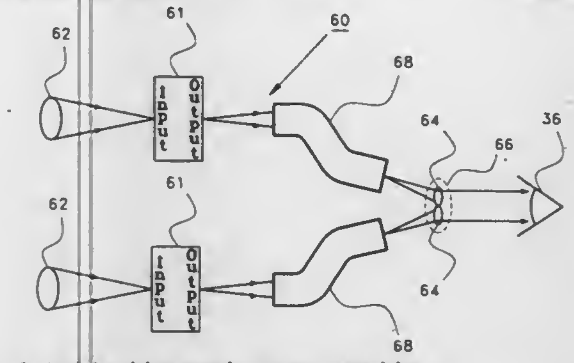
5,852,291
LOW PROFILE NIGHT VISION GOGGLE HAVING A FIBER OPTIC ELEMENT

Nils Ian Thomas, Roanoke, Va., assignor to ITT Manufacturing Enterprises, Inc., Wilmington, Del.

Filed Jul. 31, 1997, Ser. No. 903,641

Int. Cl.⁶ H01J *40/14*

U.S. Cl. 250—214 VT **20 Claims**



1. A night vision goggle system comprising:
- an objective lens for viewing an image scene;
- an image intensifier tube for amplifying a received image scene, said image intensifier tube having an input for receiving the image scene viewed by said objective lens and an output for producing an amplified image scene;
- an eyepiece lens for presenting the amplified image scene produced at said output of said image intensifier tube to a user's eye; and
- a fiber-optic element for folding an optical path between said image intensifier tube and one of said eyepiece lens and said objective lens thereby minimizing the length and weight of said system.

5,852,292
METHOD OF OPERATING AS OPTICAL LIGHT SENSOR

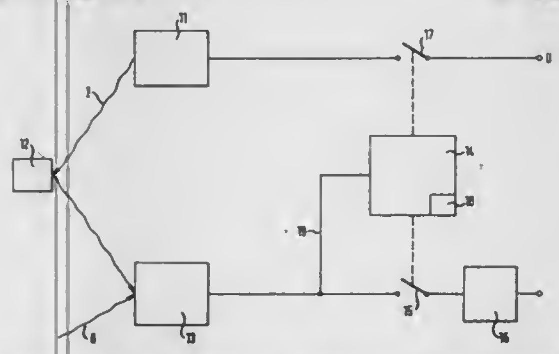
Thomas Blümcke, Gutach; Jürgen Bürger, Emmendingen; Fritz Kuhn, Waldkirch, and Klaus-Jürgen Leiting, Teningen, all of Germany, assignors to Sick AG, Waldkirch/Breisgau, Germany

Filed Oct. 8, 1996, Ser. No. 727,061

Claims priority, application Germany, Oct. 9, 1995, 195 37 615.3

Int. Cl.⁶ H01J *40/14*

U.S. Cl. 250—221 **42 Claims**



39. An optical light sensor for the detection of objects present in a monitored region comprising a light transmitter for the transmission of light signals in specific time intervals, a light receiver for receiving the transmitted light signals and also any occurring interference signals, an object signal evaluation unit for evaluating the received signals during the duration of the transmission of the light signal and for producing an object detection signal if an object is located in the monitored region, an interference signal unit for evaluating the received interference signal in the time interval between two sequentially transmitted light signals and for controlling the light transmitter, with the interference signal evaluation unit including a counter for at least one of determining the length of the negative halfwaves of an alternating interference signal or for generating a control signal for the transmission of a light signal by the light transmitter on reaching a specific count after the occurrence of a once-only-interference signal.

5,852,293
RASTER DATA DRAWING APPARATUS FOR CORRECTING IMAGE STARTING POSITION

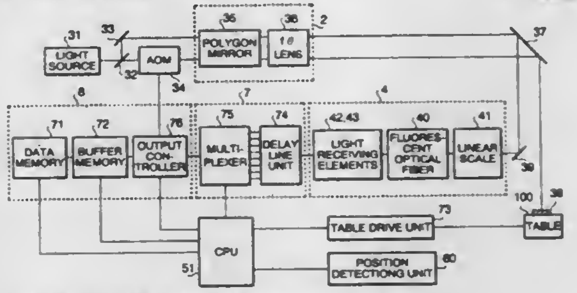
Etsuo Iwasaki, and Takashi Okuyama, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1997, Ser. No. 912,845

Claims priority, application Japan, Aug. 20, 1996, 8-237156

Int. Cl.⁶ H01J *3/14*

U.S. Cl. 250—235 **7 Claims**



1. A raster data drawing apparatus, comprising:
- means for providing raster data;
- a light source that emits a light beam;
- a scanning system that scans said light beam in a main scanning direction on an image drawing plane;
- a reference clock generator that generates a reference clock pulse signal having a predetermined period;
- a delayed clock generator that outputs a delayed clock signal representing said reference clock signal delayed by a period of time shorter than said predetermined period; and
- an image drawing controller, that modulates said light beam, based on said raster data in synchronism with said delayed clock signal, for each scan of said light beam in said main scanning direction.

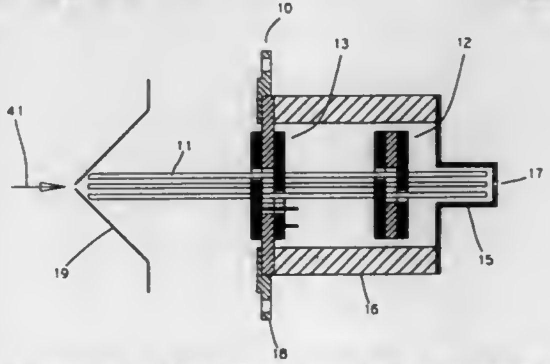
5,852,294
MULTIPLE ROD CONSTRUCTION FOR ION GUIDES AND MASS SPECTROMETERS

Erol E. Gulcicek, Chesire; Craig M. Whitehouse, Branford; Allan G. Burt, East Haven; Michael A. Sansone, Hamden, and Clement Catalano, Clinton, all of Conn., assignors to Analytica of Branford, Inc., Branford, Conn.

Filed Jul. 3, 1997, Ser. No. 887,730

Int. Cl.⁶ H01J *1/88*

U.S. Cl. 250—292 **2 Claims**



1. A multipole rod assembly for producing electric fields for directing ions, comprising:

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(a) a plurality of aligned and equally spaced rigid rods, each of said rods having a diameter less than approximately 2.5 mm; and,

(b) a plurality of rod attachment assemblies along said rods, said rod attachment assemblies supporting and maintaining said rods, said attachment assemblies comprising two metal discs, said two metal disks having an insulator disc between said metal disks.

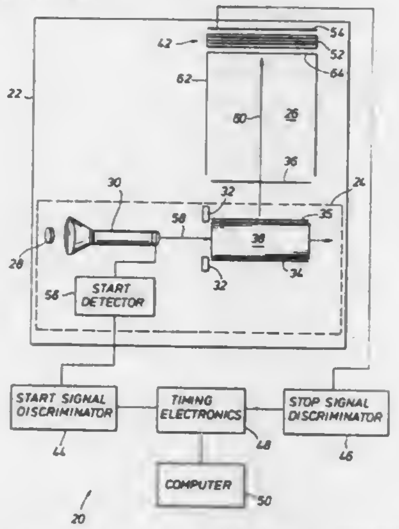
5,852,295
ION SOURCE FOR COMPACT MASS SPECTROMETER AND METHOD OF MASS ANALYZING A SAMPLE

Enio Frota Da Silveira, Brazos, Tex.; Kevin Bernard Ray, St. Louis, Mo.; Emile Alfred Schweikert, Brazos, Tex., and Melvin Andrew Park, Raleigh, N.C., assignors to The Texas A&M University System, College Station, Tex.

Division of Ser. No. 357,510, Dec. 16, 1994, Pat. No. 5,659,170. This application Apr. 7, 1997, Ser. No. 838,431

Int. Cl.⁶ H01J *49/00*

U.S. Cl. 250—423 R 5 Claims



1. An ion source for producing ions pulses, comprising:

a low pressure enclosure having an ionization region and a sample inlet for introducing a sample into the ionization region;

an electron multiplier within the enclosure for producing an electron avalanche directed into the ionization region; and

first and second electrodes adjacent the ionization region for accelerating ions produced by the sample out of the ionization region.

5,852,296
X-RAY IMAGING APPARATUS

Akira Tsukamoto, and Takayuki Tomisaki, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 20, 1997, Ser. No. 879,186

Claims priority, application Japan, Jun. 21, 1996, 8-161977; Dec. 6, 1996, 8-326993

Int. Cl.⁶ G01T *1/24;* A61B *6/00*

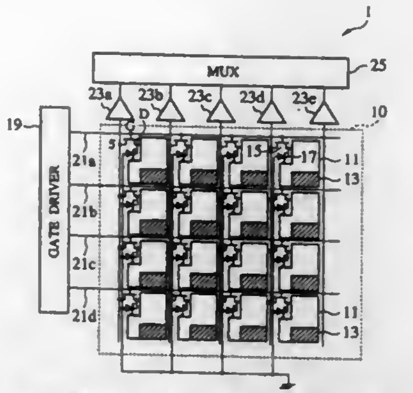
U.S. Cl. 250—370.09 26 Claims

1. An X-ray imaging apparatus comprising:

a plurality of charge conversion means corresponding to a plurality of pixels arranged on a detection surface, each of said plurality of charge conversion means directly converting incident X rays into a charge;

a plurality of charge storage means for storing the charge converted by each of said plurality of charge conversion means;

a plurality of charge reading means for reading the charge stored in each of said plurality of charge storage means; and



a plurality of sweeping means, each of the plurality of sweeping means having one end thereof connected to a terminal of each of said plurality of charge reading means, each of the plurality of sweeping means sweeping the charge stored in said charge storage means from the one end connected to the terminal through each of the plurality of sweeping means to an opposite end thereof when a voltage applied thereto exceeds a predetermined voltage level.

5,852,297
FOCUSED ION BEAM APPARATUS AND METHOD FOR IRRADIATING FOCUSED ION BEAM

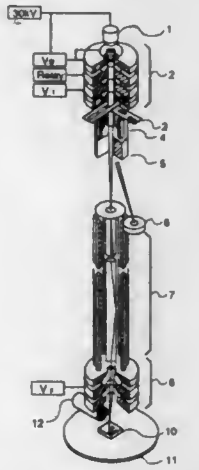
Tohru Ishitani, Hitachi Wing 230, 11-1 Aoba-cho, and Tsuyoshi Ohnishi, Tsukubadai Apartment 3-202, 663, Ichige, both of Hitachinaka-shi, Ibaraki 312, Japan

Filed Mar. 22, 1996, Ser. No. 620,764

Claims priority, application Japan, Mar. 24, 1995, 70-65511

Int. Cl.⁶ H01J *37/317*

U.S. Cl. 250—492.21 5 Claims



1. A focused ion beam apparatus, comprising:

an ion source having an emitter emitting an ion beam;

a condenser lens and objective lens set for focusing the emitted ion beam from said ion source on a sample;

a deflector for scanning said focused ion beam on said sample; and

a beam defining aperture for defining said focused ion beam, wherein an optical path length from a tip of the emitter of said ion source to said sample is within a range of from 450 mm and a distance from the center of said objective lens to said sample is 40 mm or less and wherein the optical path length from the tip of the emitter of said ion source to said condenser lens center is 45 mm or less.

5,852,298
MICRO-PROCESSING APPARATUS AND METHOD THEREFOR

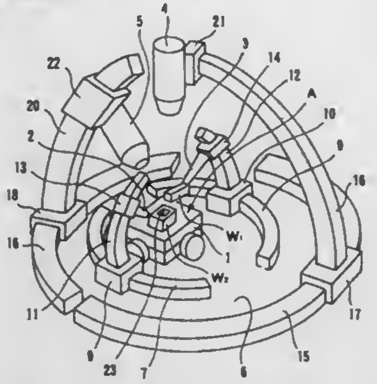
Masahiro Hatakeyama; Katsunori Ichiki, both of Fujisawa; Takao Kato, Tokyo; Masaaki Kajiyama, Yokohama; Takashi Tsuzuki, Tokyo; Yotaro Hatamura, 2-12-11 Kohinata, Bunkyo-ku, Tokyo, and Masayuki Nakao, Matsudo, all of Japan, assignors to Ebara Corporation, and Yotaro Hatamura, both of Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 621,990

Claims priority, application Japan, Mar. 30, 1995, 7-097932; Mar. 30, 1995, 7-097933; Mar. 30, 1995, 7-097934; Feb. 8, 1996, 8-046632

Int. Cl.⁶ H01J *37/00*

U.S. Cl. 250—492.2 32 Claims



1. A micro-working apparatus for performing micro-processing and/or assembling operations on a workpiece or workpieces to be disposed in a working area, said apparatus comprising:

a working device disposed in a working space surrounding said working area to perform an operation on at least one workpiece to be disposed in said working area;

positioning means for adjusting a relative position between said working device and the at least one workpiece disposed in said working area;

observation means for providing magnified images of the at least one workpiece disposed in said working area; and

protection means for preventing contamination of said observation means caused by operation of said working device.

5,852,299
IRREGULAR FEEDING DETECTION DEVICE FOR PRINTING MACHINE AND A DETECTION METHOD OF IRREGULAR FEEDING FOR PRINTING MACHINE

Takashi Kimura, and Hideki Dohmoto, both of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima-ken, Japan

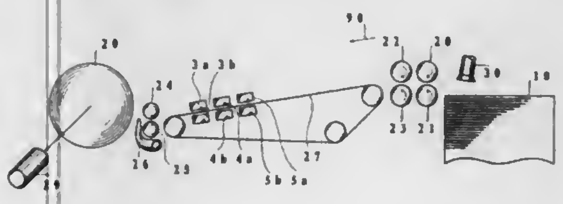
Continuation of Ser. No. 637,617, Apr. 25, 1996, abandoned. This application Jul. 21, 1997, Ser. No. 897,841

Claims priority, application Japan, Apr. 26, 1995, 7-101951

Int. Cl.⁶ G01N *21/86*

U.S. Cl. 250—559.4 11 Claims

(THE SECOND EMBODIMENT)



3a, 4a, 5a: LIGHT EMITTING PART
3b, 4b, 5b: TRANSPARENT LIGHT AMOUNT DETECTOR

1. An irregular feeding detection device for printing machine for detecting irregular feeding of printing papers fed at least two pieces under overlapped condition in basis of amount of transparent light which is emitted from a light source and through a printing paper fed to the printing machine comprising:

a starting position detector for detecting arrival of the printing paper at a starting position,

a transparent light amount detector for detecting the amount of transparent light of the printing paper detected at least two different detecting places, the different detecting places are determined by the starting position, and wherein the different detecting places are radiated by the light from the light source,

a reference light amount storing part for storing the amount of transparent light detected at the different detecting places of a piece of the printing paper as a reference light amount for each of the different detecting places, and

a judging part for outputting irregular feeding detection signal when the amount of transparent light detected at each of the detecting places being less than the reference light amount of corresponding detecting places.

5,852,300
DEVICE FOR SENSING A FLAT ZONE OF A WAFER FOR USE IN A WAFER PROBE TESTER

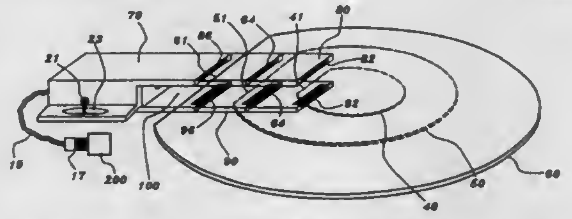
Sang-bae An, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 19, 1997, Ser. No. 825,222

Claims priority, application Rep. of Korea, Oct. 8, 1996, 96-44624

Int. Cl.⁶ G01N *21/86*

U.S. Cl. 250—559.22 14 Claims



1. A sensing device for use in discriminating wafers said device comprising:

a main body:

an upper member and a lower member extending from said main body and spaced apart to define an open area sized to receive any one of different sized wafers inserted between said members;

a plurality of light emitting devices spaced apart from one another in a direction of insertion of the wafers and disposed on one of said upper and lower members;

a plurality of light receiving devices spaced apart from one another in said direction of insertion and disposed on the other of said upper and lower members at respective locations opposed to said light emitting devices, respectively, said light receiving devices each being operative to generate a signal indicative of whether the light receiving device is receiving light emitted from the light emitting devices disposed across therefrom; and

a control circuit connected to said light receiving devices, said control circuit including

comparing means for comparing signals generated from each of said light receiving devices with a reference signal, respectively, and for outputting comparison signals representative of the comparisons,

differential controlling means for receiving the comparison signals produced by said comparing means, for differentiating the comparison signals, and for outputting control signals representative of the differentiating of the comparison signals, and

decision means for receiving the control signals from said differential control means and, based on the control signals, for outputting signals indicative of a location where a flat zone of a wafer, inserted into said area between said upper and lower members, lies with respect to said light receiving devices in said direction of insertion of the wafers.

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5,852,301
METHOD FOR FORMING NEUTRON IMAGES

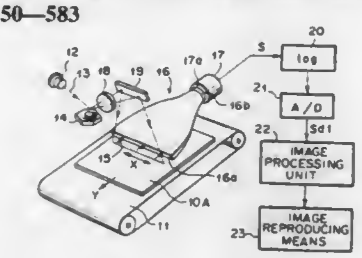
Nobuo Niimura; Yuuko Karasawa, both of Ibaragi-ken; Kenji Takahashi, and Hiroki Saito, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-Ken, and Japan Atomic Energy Research Institute, Tokyo, both of Japan

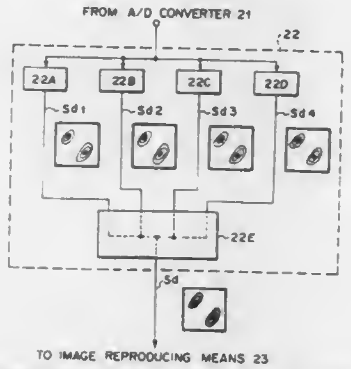
Continuation of Ser. No. 492,228, Jun. 19, 1995, Pat. No. 5,635,727. This application Dec. 18, 1996, Ser. No. 768,398

Claims priority, application Japan, Jul. 19, 1994, 166921

Int. Cl.⁶ G01N *23/05;* G01T *3/00;* G03B *42/08*

U.S. Cl. 250—583 **4 Claims**





1. A method for forming a neutron image, comprising the steps of:

- i) locating a plurality of stimulable phosphor sheets, which are superposed one upon another, wherein each of the stimulable phosphor sheets comprises a layer of a substance capable of absorbing neutrons and emitting secondary particles, and a layer of a stimulable phosphor capable of storing energy from the secondary particles, wherein said substance capable of absorbing neutrons and emitting secondary particles is selected from a group consisting of ^{6}Li and ^{10}B to allow generation of the secondary particles, said secondary particles having a short range of penetration into one of said plurality of stimulable phosphor sheets, such that the secondary particles do not reach an adjacent one of said plurality of stimulable phosphor sheets;
- ii) exposing the plurality of stimulable phosphor sheets to a neutron beam carrying image information for storing neutron images on the plurality of stimulable phosphor sheets;
- iii) sequentially exposing the plurality of stimulable phosphor sheets, on which the neutron images have been stored, to stimulating rays having wavelengths falling within a stimulation wavelength range for the stimulable phosphor of each stimulable phosphor sheet to cause the stimulable phosphor sheet to emit light in proportion to an amount of energy stored thereon during exposure to the neutron beam;
- iv) photoelectrically detecting light emitted by each of the plurality of stimulable phosphor sheets as a plurality of image signals which represent the neutron images stored on the plurality of stimulable phosphor sheets, wherein each image signal comprises a series of image signal components; and
- v) electrically adding the image signal components of the plurality of the image signals, obtained in said photoelectrically detecting step, to one another, wherein said image signal components represent corresponding picture elements in the neutron images, to obtain an image signal representing the neutron images stored on the plurality of the stimulable phosphor sheets.

5,852,302
CYLINDRICAL MULTIPLE-POLE MASS FILTER WITH CVD-DEPOSITED ELECTRODE LAYERS

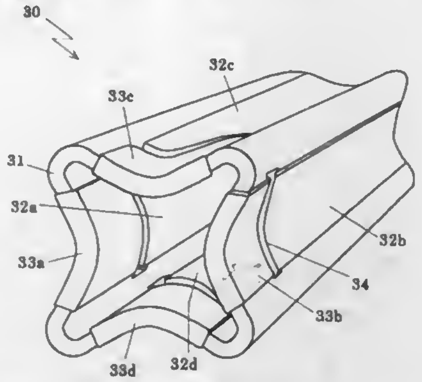
Masahiro Hiraishi, Kyoto; Toshihiko Yoshida, Uji; Hiroaki Waki; Sunao Yoshida, both of Kyoto, and Shinichi Kuroda, Ibaraki, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 21, 1997, Ser. No. 785,298

Claims priority, application Japan, Jan. 30, 1996, 8-037514; May 29, 1996, 8-158867

Int. Cl.⁶ H01J *49/42*

U.S. Cl. 250—292 **12 Claims**



1. A multiple-pole mass filter comprising:

a cylindrical main body made of an insulating material having a star-shaped cross-sectional profile whose inward bulges are curved substantially hyperbolic; and

an electrode layer of a high melting point metal deposited by a chemical vapor deposition (CVD) process on each of the inward bulges, wherein neighboring electrode layers are separated at an outward bulge of the star-shaped cross-sectional profile between the neighboring electrode layers, each of the electrode layers extending to an outside surface of the main body from an end of the main body for a lead wire to be bonded on the electrode layer.

5,852,303
AMORPHOUS MATRICES HAVING DISPERSED CESIUM

Jerome J. Cuomo, 78 Lovell St., Lincolndale, N.Y. 10540, and Seong I. Kim, 438 Andre Ave., Northvale, N.J. 07647

Filed Oct. 11, 1996, Ser. No. 731,349

Int. Cl.⁶ H01L *29/06*

U.S. Cl. 257—9 **8 Claims**

8. A composition of matter comprising a diamond-like carbon matrix having cesium dispersed in said matrix, said cesium being present in substantially non-crystalline form, wherein the percentage of cesium is between 0.01 and 25% of the carbon content of the matrix and the matrix has at least 50% sp^3 bonding.

5,852,304
OPTICAL COMMUNICATION SYSTEM

Makoto Suzuki, Kokubunji; Masahiro Aoki; Makoto Takahashi, both of Kokubunji, and Tsuyoshi Taniwatari, Hachioji, all of Japan, assignors to Hitachi, LTD., Tokyo, Japan

Division of Ser. No. 282,587, Jul. 29, 1994, Pat. No. 5,543,353. This application Jul. 16, 1996, Ser. No. 687,013

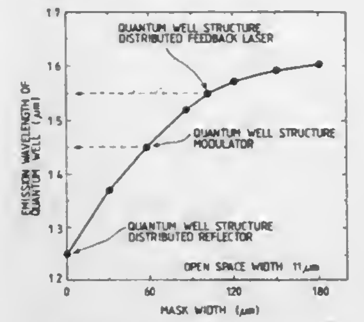
Claims priority, application Japan, Aug. 4, 1993, 5-193491

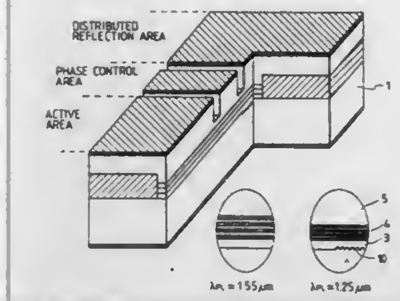
Int. Cl.⁶ H01L *29/06;* H01S *3/19*

U.S. Cl. 257—17 **1 Claim**

1. An optical communication system, comprising:

a light source emitting an optical signal, said light source having an active region including a quantum well structure comprising semiconductor layers, a phase control region including a quantum well structure comprising semiconductor layers, and





a passive distributed Bragg reflection region including a quantum well structure comprising semiconductor layers;

an optical fiber transmitting said optical signal;

wherein said active region, said phase control region, and said passive distributed Bragg reflection region are arranged in an order of said active region, said phase control region, and said passive distributed Bragg reflection region; and

wherein a gain peak wavelength of said active region including said quantum well structure is larger than a gain peak wavelength of said phase control region including said quantum well structure, and a gain peak wavelength of said phase control region including said quantum well structure is larger than a gain peak wavelength of said passive distributed Bragg reflection region including said quantum well structure.

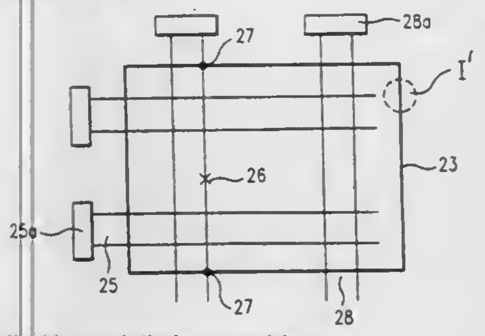
5,852,305
LIQUID CRYSTAL DISPLAY APPARATUS WITH REPAIR STRUCTURE

Seong Su Lee, Kyungki-do, and Woo Nam Jeong, Seoul, both of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Mar. 27, 1997, Ser. No. 825,180

Int. Cl.⁶ H01L *27/01*

U.S. Cl. 257—59 **3 Claims**



1. A liquid crystal display comprising:

a substrate

a plurality of parallel gate lines, each having first and second ends;

a plurality of data lines intersecting said gate lines, each of said data lines having first and second ends;

a gate pad coupled to one of said first ends of one of said plurality of gate lines;

a data pad coupled to one of said first ends of one of said plurality of data lines; and

a repair line formed on the periphery of said substrate, said repair line intersecting said first and second ends of said plurality of data lines, and said repair line intersecting only one of said first and second ends of each of said plurality of gate lines.

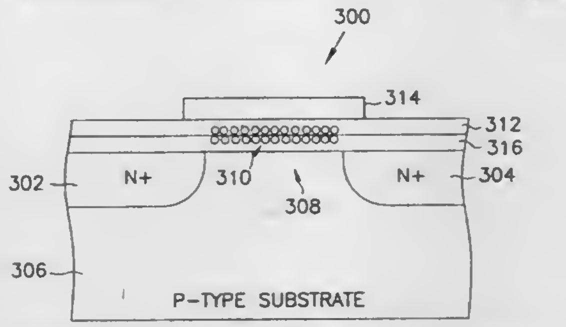
5,852,306
FLASH MEMORY WITH NANOCRYSTALLINE SILICON FILM FLOATING GATE

Leonard Forbes, Corvallis, Oreg., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 29, 1997, Ser. No. 790,500

Int. Cl.⁶ H01L *29/788*

U.S. Cl. 257—315 **7 Claims**



1. An integrated circuit memory cell comprising:

a transistor having a source, drain, control gate and a floating gate, the floating gate comprising a film of nanocrystalline silicon particles embedded in an insulating layer, the nanocrystalline silicon particles being in contact to form a conductive film, wherein the film of nanocrystalline silicon comprises a plurality of nanoscale silicon particles each have a general diameter in the range of about 10 Å to 100 Å.

5,852,307
SEMICONDUCTOR DEVICE WITH CAPACITOR

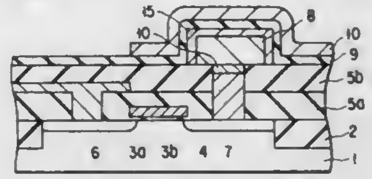
Tomonori Aoyama, and Keitaro Imai, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

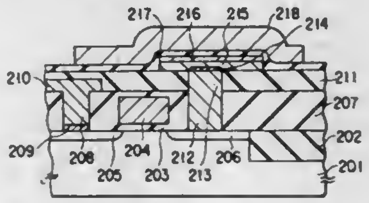
Filed Jul. 23, 1996, Ser. No. 681,537

Claims priority, application Japan, Jul. 28, 1995, 7-193677; Dec. 8, 1995, 7-320720

Int. Cl.⁶ H01L *29/78*

U.S. Cl. 257—295 **7 Claims**





1. A semiconductor device comprising:

a semiconductor substrate; and

a capacitor formed on the semiconductor substrate, said capacitor including,

a first electrode,

a second electrode,

a dielectric metal oxide film interposed between said first electrode and said second electrode, and

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wherein at least one of said first and second electrodes contains oxygen in a range of 0.004 to 5 atom % and at least one element selected from either one of Group 7A and Group 8 Periodic Table elements belonging to either one of fifth and sixth periods, the oxygen being contained in a quantity less than a stoichiometric quantity of oxygen that can exist in an oxide of said element.

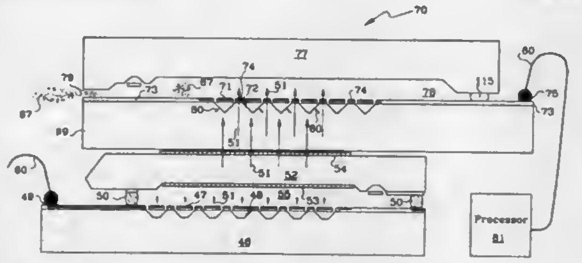
5,852,308
MICROMACHINED INFERENTIAL OPTO-THERMAL GAS SENSOR

R. Andrew Wood, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1997, Ser. No. 884,824

Int. Cl.^{6} H01L *23/58*

U.S. Cl. 257—252 **45 Claims**



1. A dual cavity gas/fluid sensor comprising:
a first wafer;
a radiation source formed on said first wafer;
a second wafer formed on said first wafer;
a radiation filter formed on said second wafer;
a third wafer formed on said radiation filter;
a temperature detector formed on said third wafer; and
a fourth wafer formed on said temperature detector; and wherein:
said third wafer comprises a radiation mask; and
said fourth wafer forms first and second cavities over said temperature detector.

5,852,309

Patent Not Issued For This Number

5,852,310
MULTI-LEVEL TRANSISTOR FABRICATION METHOD WITH A PATTERNED UPPER TRANSISTOR SUBSTRATE AND INTERCONNECTION THERETO

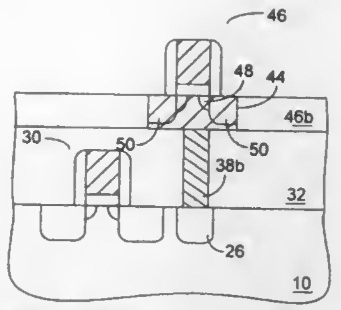
Daniel Kadosh, Austin; Mark I. Garnder, Cedar Creek, and Jon D. Cheek, Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Division of Ser. No. 727,049, Oct. 8, 1996, Pat. No. 5,770,482. This application Apr. 28, 1998, Ser. No. 67,793

Int. Cl.^{6} H01L *29/76;31/112;31/036*

U.S. Cl. 257—67 **9 Claims**

1. An integrated circuit comprising an interconnect arranged between a first substrate of a first transistor and a second substrate of a second transistor, said interconnect comprising:
a metal via extending along a vertical axis between opposed upper and lower via portions;
a lowermost surface of said lower portion configured to abut against an upper surface of a first transistor substrate; and
an uppermost surface of said upper portion configured to abut against a lower surface of a second transistor substrate directly beneath a channel region which separates a source and drain region of the second transistor.



5,852,311
NON-VOLATILE MEMORY DEVICES INCLUDING CAPPING LAYER CONTACT HOLES

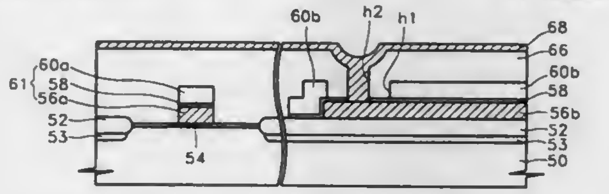
Ki-ho Kwon, and Dong-soo Jang, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 5, 1997, Ser. No. 869,703

Claims priority, application Rep. of Korea, Jun. 7, 1996, 96-20360; Jun. 7, 1996, 1996-20360

Int. Cl.^{6} H01L *29/788*

U.S. Cl. 257—315 **10 Claims**



1. A non-volatile memory device comprising:
a substrate having memory cell and peripheral circuit regions thereof;
a non-volatile memory cell gate on said memory cell region of said substrate, wherein said non-volatile memory cell gate includes a floating gate on said substrate, a first insulating layer on said floating gate opposite said substrate, and a control gate on said first insulating layer opposite said floating gate;
a resistor layer on said peripheral circuit region of said substrate;
a second insulating layer on said resistor layer opposite said substrate; and
a capping layer on said second insulating layer opposite said resistor layer wherein a contact hole is defined by said second insulating layer and said capping layer exposing a portion of said resistor layer.

5,852,312
FLASH EEPROM CELL

Byung Jin Ahn, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki, Rep. of Korea

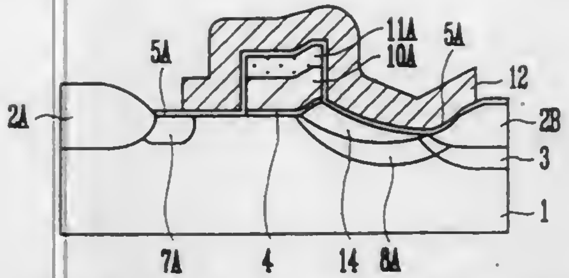
Division of Ser. No. 614,730, Mar. 13, 1996, Pat. No. 5,716,865. This application Oct. 22, 1997, Ser. No. 955,375

Claims priority, application Rep. of Korea, Mar. 14, 1997, 95-5205

Int. Cl.^{6} H01L *27/115*

U.S. Cl. 257—321 **5 Claims**

1. A flash EEPROM cell comprising:
a silicon substrate having a first and a second field oxide layers;
a gate oxide layer, a control gate and an interpoly insulating layer formed on a portion of said silicon substrate between said first and said second field oxide layers in stack structure;
a floating gate oxide layer on a surface of said silicon substrate between said control gate and said second field oxide layer,
so that portion of said silicon substrate adjacent to said second field oxide layer is exposed, wherein a portion of said floating gate oxide layer near said control gate is formed thicker than other portion of said floating gate oxide layer near said second field oxide layer;
a buried drain region formed under said second field oxide layer;
a drain region formed under said floating gate oxide layer, wherein said drain region is connected to said buried drain region;
a source region formed in a portion of said silicon substrate between said control gate and said first field oxide layer;
a tunnel oxide layer formed to isolate said silicon substrate, said interpoly insulating layer and said control gate; and
a floating gate formed on said tunnel oxide layer.



5,852,313
FLASH MEMORY CELL STRUCTURE HAVING A HIGH GATE-COUPLING COEFFICIENT AND A SELECT GATE

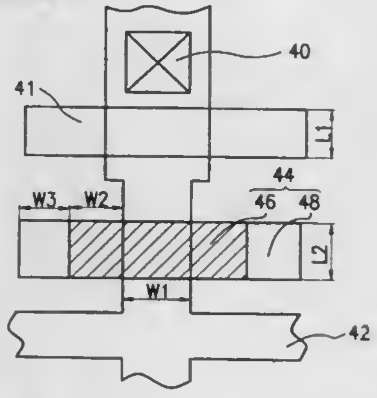
Gary Hong, Hsin-Chu; Patrick Wang, and Wenchi Ting, both of Taipei, all of Taiwan, assignors to United Semiconductor Corp., Taiwan

Filed Nov. 12, 1997, Ser. No. 967,940

Claims priority, application Taiwan, Jul. 21, 1997, 86110295

Int. Cl.^{6} H01L *29/792*

U.S. Cl. 257—326 **8 Claims**



1. A high gate-coupling coefficient flash memory cell structure comprising:
a semiconductor substrate;
a first transistor having a stacked gate and first source/drain regions above the semiconductor substrate, wherein the stacked gate includes a floating gate and a control gate, and that the control gate is formed above the floating gate, with the control gate and floating gate overlapping over an area about 3 micrometers long by 0.5 micrometers wide; and
a second transistor having a gate and second source/drain regions electrically connected in series with the first transistor such that the second transistor functions as a select transistor.

5,852,314
THIN EPITAXY RESURF INTEGRATED CIRCUIT CONTAINING HIGH VOLTAGE P-CHANNEL AND N-CHANNEL DEVICES WITH SOURCE OR DRAIN NOT TIED TO GROUND

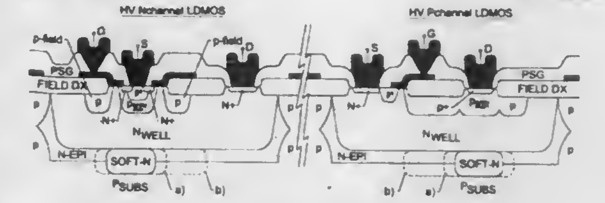
Riccardo Depetro, Domodossola; Claudio Contiero, Buccinasco, and Antonio Andreini, Usmate Velate, all of Italy, assignors to SGS—Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Apr. 30, 1996, Ser. No. 643,152

Claims priority, application Eurcpean Pat. Off., May 2, 1995, 95830176

Int. Cl.^{6} H01L *29/76;29/94;23/58*

U.S. Cl. 257—343 **6 Claims**



1. An integrated circuit, comprising:
a thin epitaxial layer having a first conductivity type, said epitaxial layer being grown on a substrate having a second conductivity type;
n-channel lateral double-diffused insulated gate field-effect-transistor and p-channel insulated gate field-effect-transistor devices for high voltages and bipolar and CMOS devices for signal processing;
wherein each of said lateral double-diffused insulated gate field-effect-transistor and insulated gate field-effect-transistor devices comprise a well region having said first conductivity type, a body region having said second conductivity type, and a buried region having said first conductivity type adjacent to said well region and projectively beneath at least said body region, said buried region having a dopant concentration intermediate between the concentration of said epitaxial layer and the concentration of said well region.

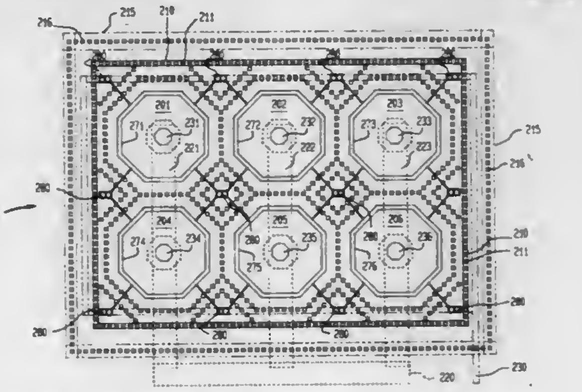
5,852,315
N-SIDED POLYGONAL CELL LAYOUT FOR MULTIPLE CELL TRANSISTOR

Ming-Dou Ker, 11, Ta-Pa, Kuei-Jen, Tainan; Tain-Shun Wu, 104, 3 Ling, Pei-Long, Hou-Long, Miou-Lee, and Kuo-Feng Wang, 3F, 26, Lane 43, Yang-Ming Rd., Kau-Shong, all of Taiwan

Continuation of Ser. No. 419,637, Apr. 6, 1995, abandoned. This application Feb. 25, 1997, Ser. No. 803,916

Int. Cl.^{6} H01L *21/335*

U.S. Cl. 257—355 **33 Claims**



1. A MOS cell, comprising:
(a) a drain region formed in a substrate and occupying a regular n-sided polygonal shape, where n≧8;

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(b) a channel region surrounding said drain region and occupying an annular shape with n-sided polygonal shaped boundaries;

(c) a source region formed in said substrate, surrounding said channel region and occupying an annular shape with n-sided polygonal shaped boundaries; and

(d) a well of the same conductivity type as said drain region formed in said substrate below said drain region and having n-sided polygonal shaped boundaries.

5,852,316

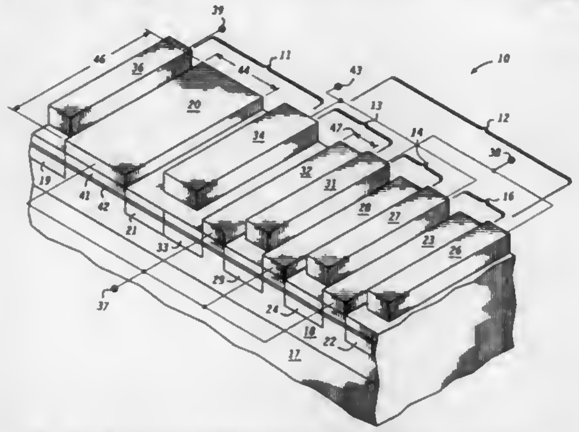
COMPLEMENTARY HETEROJUNCTION AMPLIFIER

Charles E. Weitzel, Mesa, and Carl Shurboff, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1994, Ser. No. 298,721

Int. Cl.^{6} H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—369 **12 Claims**



1. A complementary heterojunction amplifier comprising:

a P-channel heterojunction transistor having a first gate width, a first transconductance, and a first input impedance; and

an N-channel heterojunction transistor having a first gate length, a second transconductance, and a second input impedance wherein the first gate width has a value so that the first transconductance and the second transconductance are approximately equal and wherein the first gate length has a value so that the first input impedance is approximately equal to the second input impedance.

5,852,317

METHOD TO REDUCE GATE OXIDE DAMAGE DUE TO NON-UNIFORM PLASMAS IN READ ONLY MEMORY ARRAYS

Rina Berman, Herzlia, Israel, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 414,916, Mar. 31, 1995, abandoned. This application Jan. 24, 1997, Ser. No. 788,360

Int. Cl.^{6} H01L *27/112*

U.S. Cl. 257—390 **29 Claims**

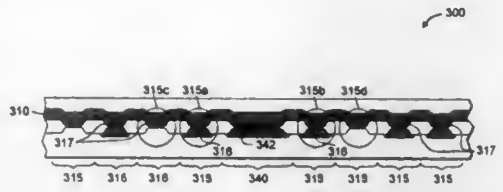
1. A method of reducing gate oxide damage in producing read-only-memory arrays, comprising:

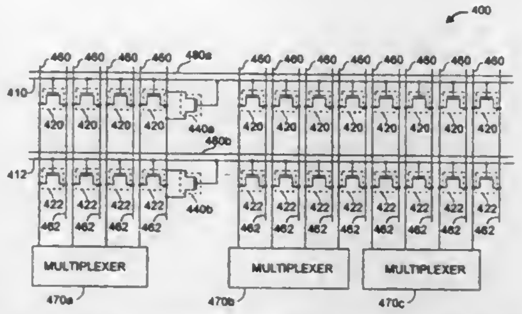
providing a read-only-memory array, said array including a bank of MOS transistor sites corresponding, respectively, to one bit of storage in the read-only-memory array;

selectively enabling a first number of MOS transistors in said MOS transistor sites having respective gate terminals, each of such gate terminals providing access to a corresponding gate region having dimensions defining a first are, the first area characterized by a first value indicative of a size of the first area;

providing a long conductive line having dimensions defining a second area, the second area characterized by a second value indicative of a size of the second area;

connecting said long conductive line to said gate terminals;





providing a load transistor site at a selected position along said long conductive line for a load transistor having a gate terminal, said load transistor gate terminal providing access to a gate region of the load transistor, said gate region of the load transistor having dimensions defining a third area, the third area characterized by a third value indicative of a size of the third area;

calculating a mathematical relationship between the second value, indicative of the second area, of the conductive line, and the first value, indicative of the first area, for selectively enabled transistors

deciding whether to enable said load transistor at said load transistor site in response to the calculated mathematical relationship;

enabling said load transistor at said load transistor site only if it is decided in said deciding step to enable said load transistor; and

connecting said load transistor gate terminal to said long conductive line.

5,852,318

SEMICONDUCTOR DEVICE

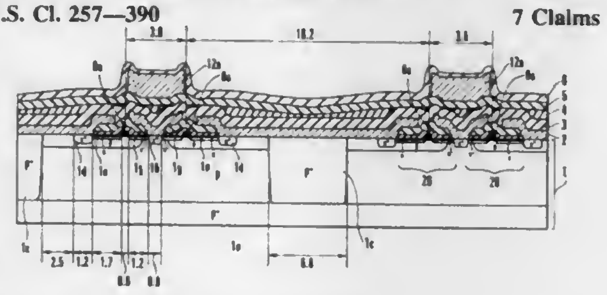
Kiyoshi Chikamatsu; Toshiro Watanabe; Toshiaki Inoue, and Yasushi Kose, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1998, Ser. No. 25,998

Claims priority, application Japan, Feb. 28, 1997, 9-045525

Int. Cl.^{6} H01L *29/76;23/62*

U.S. Cl. 257—390 **7 Claims**



1. A semiconductor device, comprising:

a plurality of first field effect transistors (FETs) having a gate formed on a main surface of a semiconductor substrate, and a drain and a source formed in regions on both sides of the gate, and disposed at a first predetermined interval;

a plurality of second FETs having a gate formed on the main surface of said semiconductor substrate, and a drain and a source formed in regions on both sides of the gate, and disposed at the first predetermined interval, said first and second FETs being disposed at a second predetermined interval narrower than the first predetermined interval to form a pair of FETs; and

an electrically conductive layer that penetrates the main surface and a back surface of said semiconductor substrate in a region between said pair of FETs,

wherein said first and second FETs that form said pair of FETs are disposed close to each other so that their drains are opposite to each other,

region widths of said first and second FETs in a direction of shorter sides of sources thereof are substantially identical with region widths of said first and second FETs in a direction of shorter sides of drains thereof,

all the drains of said first and second FETs are electrically connected to each other,

all the gates of said first and second FETs are electrically connected to each other, and

all the sources of said first and second FETs are electrically connected to each other on the back surface of said semiconductor substrate through said conductive layer.

5,852,319

GATE ELECTRODE FOR SEMICONDUCTOR DEVICE

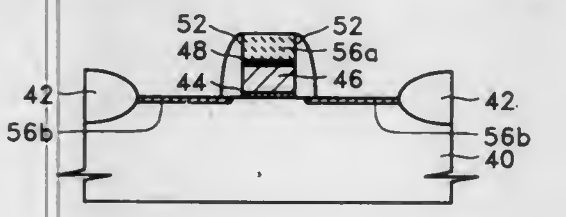
Young-sun Kim, Yongin-gun; Nae-in Lee, Suwon, and Dae-hong Ko, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 580,462, Dec. 28, 1995, abandoned. This application Oct. 17, 1997, Ser. No. 953,644

Claims priority, application Rep. of Korea, Dec. 28, 1994, 94-38281

Int. Cl.^{6} H01L *27/088*

U.S. Cl. 257—412 **5 Claims**



1. A gate electrode in a semiconductor device, comprising:

a gate oxide layer formed on a semiconductor substrate;

a polysilicon layer formed on the gate oxide layer;

a first silicide layer having a first melting point formed over the polysilicon layer; and

a second silicide layer having a second melting point formed between the polysilicon layer and the first silicide layer, to prevent metal particles from contaminating the gate oxide layer and to prevent silicon particles from contaminating the first silicide layer,

wherein the second melting point is higher than the first melting point.

5,852,320

SEMICONDUCTOR SENSOR WITH PROTECTIVE CAP COVERING EXPOSED CONDUCTIVE THROUGH-HOLES

Motomi Ichihashi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1996, Ser. No. 698,321

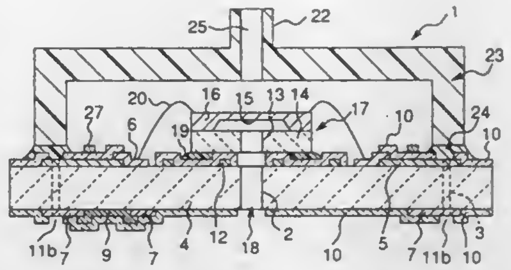
Claims priority, application Japan, Feb. 19, 1996, 8-030842

Int. Cl.^{6} H01L *29/82;23/02;23/04*

U.S. Cl. 257—419 **11 Claims**

1. A semiconductor sensor comprising:

a substrate having a mounting side, a non-mounting side, and through-holes pierced through said substrate to connect said mounting and non-mounting sides;



a semiconductor sensor chip with a pedestal mounted on a mounting surface of said substrate mounting side with die bond agent;

a pan-shaped cap bonded by an adhesive to said mounting surface to cover said semiconductor sensor chip;

thick-film conductors connected to each other by conductors formed on the walls of said through-holes and formed in a specific pattern on both sides of said substrate;

bonding electrodes connected to said thick-film conductors of the mounting side of said substrate, and connected to said semiconductor sensor chip by wire bonding; and

a protective glass film forming a protective layer directly over said through-holes and portions of said thick-film conductors, other portions of said thick-film conductors remaining uncovered by said protective glass film thus forming exposed conductors;

wherein the through-holes and exposed conductors formed on the mounting side are disposed at the position to which the cap is bonded to the substrate, and

the through-hole openings on the mounting side are each directly covered by and in contact with a protective composite formed of a portion of said protective glass film and the adhesive directly covering the portion of said protective glass film, and the exposed conductors on the mounting side are directly in contact with and covered by the adhesive.

5,852,321

THERMAL TYPE INFRARED RADIATION SOLID STATE IMAGE PICK-UP DEVICE

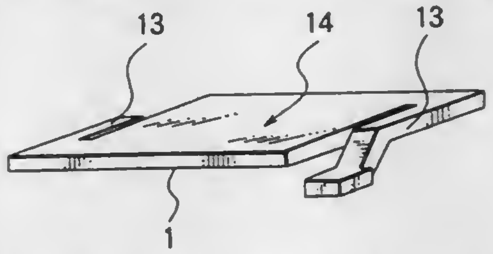
Shigeru Tohyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1997, Ser. No. 810,138

Claims priority, application Japan, Mar. 7, 1996, 8-049948

Int. Cl.^{6} H01L *31/058*

U.S. Cl. 257—443 **8 Claims**



1. A thermal type infrared radiation solid state image pick-up device comprising:

a temperature-electrical signal converting function element for converting a temperature variation into an electrical signal;

a heat isolation structural body having a porous structure and a photo receiving portion, in which said temperature-electrical signal converting function element is formed, and legs supporting said photo receiving portion such that said photo receiving portion is raised by said legs; and

an electronic scanning circuit element connected to said temperature-electrical signal converting function element and outputting said electrical signal as a time series signal.

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5,852,322

RADIATION-SENSITIVE DETECTOR ELEMENT AND METHOD FOR PRODUCING IT

Peter Speckbacher, Traunreut, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

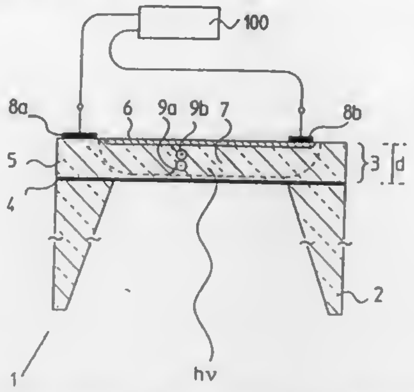
PCT No. PCT/EP96/01976, § 371 Date Jul. 25, 1997, § 102(e) Date Jul. 25, 1997, PCT Pub. No. WO96/36999, PCT Pub. Date Nov. 21, 1996

PCT Filed May 9, 1996, Ser. No. 776,288

Claims priority, application Germany, May 19, 1995, 195 18 423.8

Int. Cl.^{6} H01L *31/00*

U.S. Cl. 257—459 **21 Claims**



1. A radiation-sensitive detector element (1, 31, 41, 51, 61) with an active area (7, 27, 37, 47, 57, 67) formed between two adjoining layer areas (5, 6; 25, 26; 35, 36; 45, 46; 55, 56; 65, 66) of a layer arrangement (3, 33, 43, 53, 63) of different charge carriers, in which a conversion of incident electromagnetic radiation (hv) into electrical signals takes place, wherein, taking into consideration the penetration depth of the radiation (hv), the position of the active area (7, 27, 37, 47, 57, 67) in relation to the two delimiting surfaces is selected in such a way that at least two contact elements (8*a*, 8*b*; 38*a*, 38*b*; 48*a*, 48*b*; 58*a*, 58*b*; 68*a*, 68*b*) for connecting the detector element (1, 31, 41, 51, 61) to an evaluation circuit (100) can be mounted on a surface located opposite the radiation-sensitive surface on which the incident radiation (hv) impinges.

5,852,323

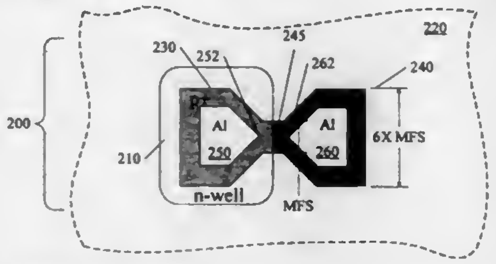
ELECTRICALLY PROGRAMMABLE ANTIFUSE USING METAL PENETRATION OF A P-N JUNCTION

Robert O. Conn, Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Jan. 16, 1997, Ser. No. 784,226

Int. Cl.^{6} H01L *29/00*

U.S. Cl. 257—530 **15 Claims**



1. An antifuse comprising:

a first diffusion region of a first conductivity type formed in a semiconductor layer, the first diffusion region having a first width in a dimension parallel to the semiconductor layer;

a second diffusion region of a second conductivity type formed in the semiconductor layer adjacent to the first diffusion region, the second diffusion region contacting the first diffusion region to form a P-N junction, the P-N junction having a second width in a dimension parallel to the semiconductor layer, wherein the second width is less than the first width;

a first metal electrical contact formed on the first diffusion region; and

a second metal electrical contact formed on the second diffusion region.

5,852,324

PLASTIC BODY SURFACE-MOUNTING SEMICONDUCTOR POWER DEVICE HAVING DIMENSIONAL CHARACTERISTICS OPTIMIZED FOR USE OF STANDARD SHIPPING AND TESTING MODES

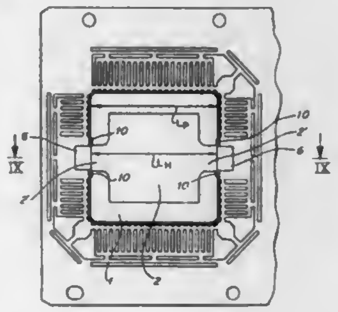
Renato Poinelli, Casatenovo, and Mauro Mazzola, Treviglio, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

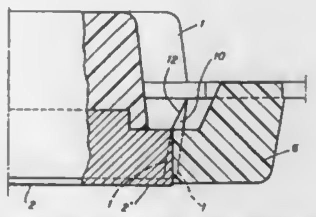
Filed Jan. 24, 1997, Ser. No. 788,014

Claims priority, application European Pat. Off., Jan. 25, 1996, 96830030

Int. Cl.^{6} H01L *23/433;23/31*

U.S. Cl. 257—675 **15 Claims**





1. A QFP plastic surface-mounting semiconductor power device, comprising

a plastic package inside which there is provided a chip which is connected by means of conductors to terminals that protrude from said plastic package, and a heat sink plate that is arranged on the bottom of said plastic package and has thinner ends, wherein a length of said heat sink plate is at most equal to a minimum length of said plastic package, channels being formed in said plastic package in a position that is adjacent to the thinner ends of said heat sink plate, wherein each of said channels includes two opposing channels that are adjacent to side edges of each one of the ends of said heat sink plate and inside said plastic package, said channels being adapted to allow the exposure of each one of said ends from said plastic package to avoid damage during the finishing of said power device.

5,852,325

Patent Not Issued For This Number

5,852,326

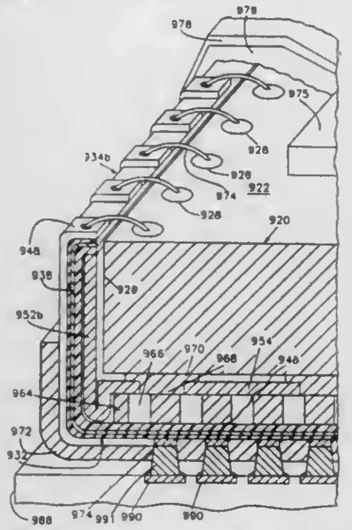
FACE-UP SEMICONDUCTOR CHIP ASSEMBLY

Igor Y. Khandros, Orinda, and Thomas H. Distefano, Monte Sereno, both of Calif., assignors to Tessera, Inc., San Jose, Calif.

Continuation of Ser. No. 861,280, May 21, 1997, which is a continuation of Ser. No. 319,966, Oct. 7, 1994, Pat. No. 5,685,885, which is a continuation of Ser. No. 30,194, Apr. 28, 1993, Pat. No. 5,679,977, which is a continuation-in-part of Ser. No. 586,758, Sep. 24, 1990, Pat. No. 5,148,266, and a continuation of Ser. No. 765,928, Sep. 24, 1991, Pat. No. 5,347,159, which is a continuation-in-part of Ser. No. 673,020, Mar. 21, 1991, Pat. No. 5,148,265, and Ser. No. 586,758. This application Jul. 6, 1998, Ser. No. 110,527

Int. Cl.^{6} H01L *23/48;23/52*

U.S. Cl. 257—692 **29 Claims**



1. A semiconductor assembly comprising:

a semiconductor chip having oppositely facing front and rear surfaces and edges extending between said front and rear surfaces, said chip further having contacts on a peripheral region of said front surface;

a backing element having electrically conductive terminals and lead portions thereon, wherein said lead portions are connected to said terminals, said backing element overlying said rear surface of said semiconductor chip such that at least some of said terminals overlie said rear surface of said chip;

bonding wires connected to said contacts on said front surface of said chip, said bonding wires extending downwardly alongside said edges of said chip and being connected to the lead portions on the backing element;

wherein said terminals are movable with respect to said chip.

5,852,327

SEMICONDUCTOR DEVICE

Shigeki Komori; Tomohiko Yamashita, and Masahide Inuishi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1996, Ser. No. 709,592

Claims priority, application Japan, Feb. 14, 1996, 8-026861

Int. Cl.^{6} H01L *23/48*

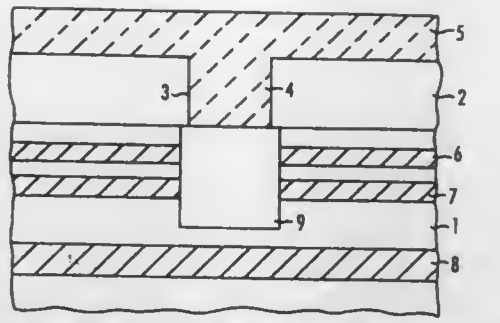
U.S. Cl. 257—748 **10 Claims**

1. A semiconductor device comprising a semiconductor substrate of a first conductivity type;

either: a single impurity layers or more than one spaced apart impurity layers of the first conductivity type formed in said semiconductor substrate, said single impurity layer or more than one spaced apart impurity layers of the first conductivity type having higher impurity concentration than said semiconductor substrate of a first conductivity type;

an impurity region of a second conductivity type penetrating one of said impurity layer or layers and extending to a predetermined depth from a main surface of said semiconductor substrate, said impurity region of a second conductivity type terminating in said semiconductor substrate apart from said impurity layer or layers;

a contact conductor formed on the main surface of said semiconductor substrate in contact with said impurity region.



5,852,328

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

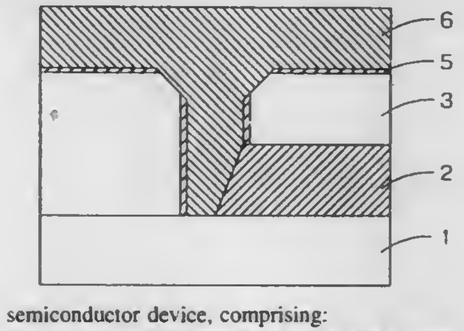
Hiroshi Nishimura, Toyama, and Shinichi Ogawa, Osaka, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Feb. 5, 1997, Ser. No. 795,427

Claims priority, application Japan, Feb. 5, 1996, 8-018887

Int. Cl.^{6} H01L *23/48;23/52;29/40*

U.S. Cl. 257—774 **5 Claims**



1. A semiconductor device, comprising:

a first wire which is formed on a semiconductor substrate, a side wall of said first wire having [comprising] a slanted surface which is at an obtuse angle with respect to a top surface of said semiconductor substrate;

an interlayer insulation film which is formed on the first wire;

a via hole which is opened in said interlayer insulation film in such a manner that said slanted surface of said first wire is exposed and a top end portion of said via hole is defined by a slanted surface of said interlayer insulation film, said slanted surface of said interlayer insulation film being at an obtuse angle with respect to said top surface of said interlayer insulation film; and

a second wire which is formed in the via hole and on said interlayer insulation film.

5,852,329

OPTICAL DISC MOLDING DEVICE AND MOLDING METHOD FOR OPTICAL DISC

Nobuyuki Arakawa, Kanagawa; Toshiyuki Kashiwagi, Tokyo; Asao Kurosu, Saitama; Yuji Akiyama, Tokyo, and Shinsuke Kishi, Shizuoka, all of Japan, assignors to Sony Corporation, Japan

Filed Apr. 14, 1997, Ser. No. 834,159

Claims priority, application Japan, Apr. 26, 1996, 8-107729; May 15, 1996, 8-144990

Int. Cl.^{6} B29D *17/00*

U.S. Cl. 264—1.33 **10 Claims**

1. An optical disc molding device comprising:

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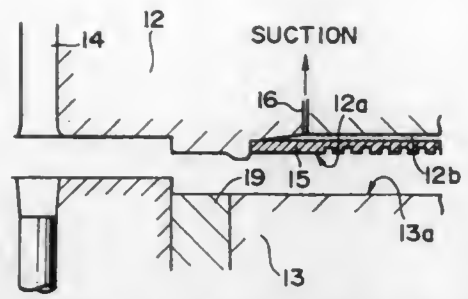


a pair of molds for injection molding a disc substrate within a cavity;

a stamper supported within the cavity of at least one mold, having a data recording surface consisting of fine irregularities for transferring recording information onto a disc and;

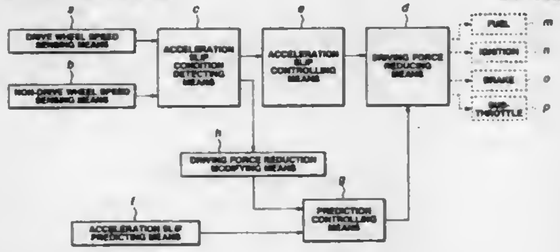
a stamper supporting surface within the cavity of said mold, having a horizontal portion, a sloping portion, and a protruding portion with which an inside diameter side of said stamper is brought into contact during molding of said disk, said protruding portion protruding inwardly in a disc thickness direction from said data recording surface of said stamper.

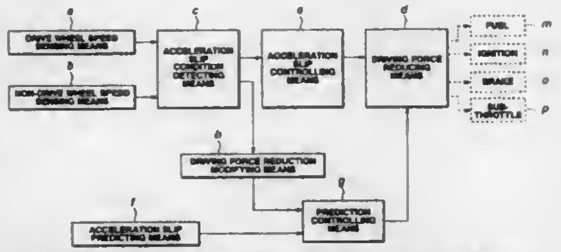
5,852,330
VEHICLE ACCELERATION SLIP CONTROL SYSTEM

Daijiro Yumoto, Zama, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Aug. 20, 1996, Ser. No. 699,852
Claims priority, application Japan, Aug. 23, 1995, 7-214476
Int. Cl.^{6} F02N *11/06*

U.S. Cl. 290—40 R **20 Claims**


a
DRIVE WHEEL SPEED SENSING MEANS
b
NON-DRIVE WHEEL SPEED SENSING MEANS
c
ACCELERATION SLIP CONDITION DETECTING MEANS
e
ACCELERATION SLIP CONTROLLING MEANS
d
DRIVING FORCE REDUCING MEANS
FUEL
m
IGNITION
n
BRAKE
o
SUB THROTTLE
p
h
DRIVING FORCE REDUCTION MODIFYING MEANS
g
PREDICTION CONTROLLING MEANS
f
ACCELERATION SLIP PREDICTING MEANS


a
DRIVE WHEEL SPEED SENSING MEANS
b
NON-DRIVE WHEEL SPEED SENSING MEANS
c
ACCELERATION SLIP CONDITION DETECTING MEANS
e
ACCELERATION SLIP CONTROLLING MEANS
d
DRIVING FORCE REDUCING MEANS
FUEL
m
IGNITION
n
BRAKE
o
SUB THROTTLE
p
h
DRIVING FORCE REDUCTION MODIFYING MEANS
g
PREDICTION CONTROLLING MEANS
f
ACCELERATION SLIP PREDICTING MEANS

1. A vehicle acceleration slip control system comprising:

a means for sensing a drive wheel speed of a vehicle;

a means for sensing a non-drive wheel speed of the vehicle;

an acceleration slip detecting means for detecting a drive wheel acceleration slip condition by comparing the drive wheel speed sensed by the drive wheel speed sensing means and the non-drive wheel speed sensed by the non-drive wheel speed sensing means;

a driving force reducing means for reducing a driving force of the vehicle;

an acceleration slip controlling means for performing a feedback control to control a driving force reduction quantity by commanding the driving force reducing means to restrain an acceleration slip when the acceleration slip detecting means detects the acceleration slip condition;

an acceleration slip predicting means for predicting an occurrence of a drive wheel acceleration slip of the vehicle;

a prediction controlling means for performing a feedforward control to prevent an occurrence of an acceleration slip by sending a command signal indicating an initial value of the driving force reduction quantity to said driving force reducing means when an occurrence of an acceleration slip is predicted by said acceleration slip predicting means, said initial value being a starting value used at a start of the feedforward control; and

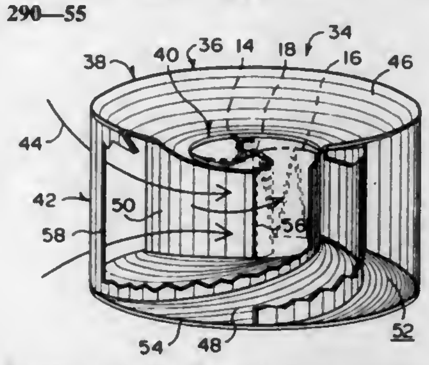
a driving force reduction modifying means for modifying said initial value of said driving force reduction quantity in accordance with the acceleration slip condition sensed by said acceleration slip detection means during the prediction control of said prediction controlling means.

5,852,331
WIND TURBINE BOOSTER

Roberto Giorgini, P.O. Box 2051, St. Maarten, Netherlands Antilles

Filed Jun. 21, 1996, Ser. No. 667,405
Int. Cl.^{6} F03D *3/04*

U.S. Cl. 290—55 **15 Claims**



1. A booster for a wind turbine of the type containing an impeller having a plurality of radial curved vanes mounted on a shaft connected to an electric generator, wherein wind directed at the vanes cause the vanes and shaft to rotate and thereby supply energy to power the electric generator causing the electric generator to convert the energy received from the wind turbine to electrical energy for output therefrom, said booster comprising means mounted in a stationary manner about the impeller for increasing a speed of rotation of the radial curved vanes on the shaft and thereby causing the electric generator to increase an amount of electrical energy output therefrom, said means for increasing a speed of rotation including:

a) a generally cylindrical housing having a central core opening to receive the impeller therein in a rotatable manner; and

b) means, in said housing, for directing wind in a condensed spiralling force towards said central core causing said the speed of rotation of the radial curved vanes of the impeller to increase, said wind directing means includes a top wall downwardly tapered towards said central core opening in said housing.

5,852,332
SHEER POWER SOURCE

John W. Shearer, Titusville, Fla., assignor to Sheer Power Source, Inc., Titusville, Fla.

Filed Sep. 9, 1996, Ser. No. 709,301
Int. Cl.^{6} H02J *7/00*

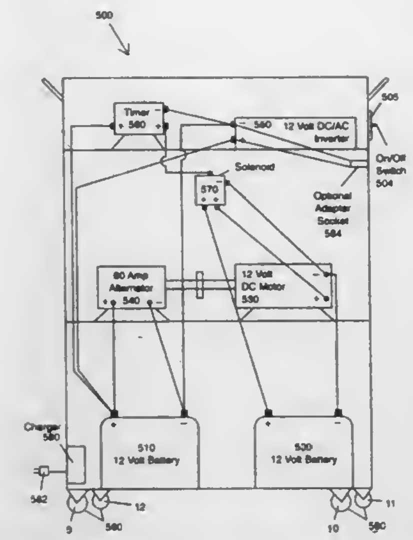
U.S. Cl. 307—43 **20 Claims**

1. A power supply for maximizing the life of batteries comprising:

a first battery having output terminals;

a relay timer clock connected to the first battery output terminals, the relay timer clock switching on for a first selected time after every down selected time;

a DC motor, connected to the first battery output terminals, the relay timer clock regulating when the DC motor is turned on and off;



an alternator outputting a DC charge connected to an output of the DC motor;

a second battery connected to and receiving the DC charge; and

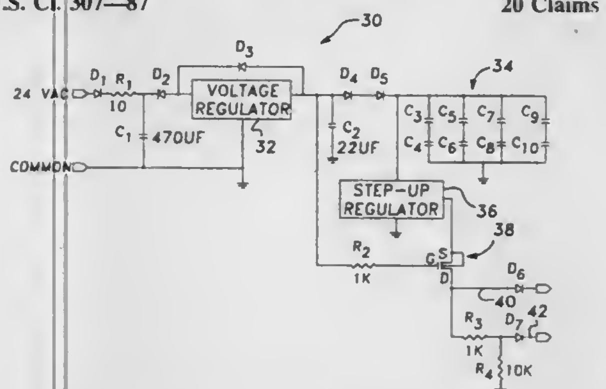
an invertor for outputting the voltage from the second battery to a load, wherein the relay timer clock continuously switches on the first battery for the first selected time after every down selected time again and again over the lifespan of the first battery and the second battery, and the first battery and the second battery have an increased lifespan compared to being used separately.

5,852,333
ELECTRIC ACTUATOR RETURN-TO-NORMAL USING CAPACITOR ENERGY STORAGE WITH REGULATED OUTPUT

Lawrence J. Strojny, Oostburg, and Gerald A. Duenkel, Grafton, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 24, 1996, Ser. No. 687,154
Int. Cl.^{6} H02P *1/26*

U.S. Cl. 307—87 **20 Claims**



1. An electronic device comprising:

a voltage input circuit, said voltage input circuit responsive to an input voltage signal;

a capacitor storage bank including at least one capacitor, said capacitor storage bank responsive to a voltage signal from the voltage input circuit so as to charge the at least one capacitor and provide a stored voltage signal; and

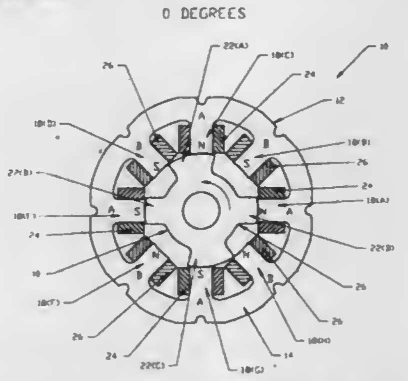
a first voltage regulator responsive to the stored voltage signal from the capacitor storage bank, said first voltage regulator providing a stable output voltage signal operable to drive an actuator, wherein the capacitor storage bank applies the stored voltage signal directly to the first voltage regulator so that in the event the voltage signal from the input voltage circuit is removed from the capacitor storage bank, the output signal from the first voltage regulator will move the actuator to a predetermined failsafe position.

5,852,334
STAGGERED POLE SWITCHED RELUCTANCE MOTOR

Wayne A. Pengov, Hillsboro, Ohio, assignor to Trideita Industries, Inc., Mentor, Ohio

Filed Oct. 19, 1995, Ser. No. 545,085
Int. Cl.^{6} H02K *1/24;19/06*

U.S. Cl. 310—168 **28 Claims**



1. A switched reluctance machine comprising:

a first element having a plurality of uniformly-spaced like poles;

a second element comprised of a first pole having a pole face of a first size and a second pole having a pole face of a second size, said first pole being spaced from said second pole in a predetermined direction; and

windings for two phases wound about poles of said first element such that each pole is separated by a winding and associated pole of a different phase;

said first element disposed relative to said second element wherein energization of one of said two phases causes said second element to be movable a predetermined distance in said predetermined direction in spaced relation relative to said first element, said first pole of said second element being in minimum reluctance relation with a first uniform pole of said first element when said second element has moved a first portion of said predetermined distance, and said second pole of said second element being in a minimum reluctance relation with a second uniform pole of said first element when said second element has moved another portion of said predetermined distance, said first pole of said second element remaining in a minimum reluctance relation with said first uniform pole of said first element when said second pole of said second element is in a minimum reluctance relationship with said second uniform pole of said first element.

5,852,335
STATOR STRUCTURE FOR ROTARY ELECTRIC MACHINE

Yuzuru Suzuki, Shizuoka, and Sakae Fujitani, Hamakita, both of Japan, assignors to Mineba Ceo., Ltd., Nagano, Japan

Continuation of Ser. No. 638,923, Apr. 25, 1996, abandoned.
This application Oct. 24, 1997, Ser. No. 960,080
Claims priority, application Japan, Apr. 26, 1995, 7-102433
Int. Cl.^{6} H02K *29/06;15/82*

U.S. Cl. 310—254 **10 Claims**

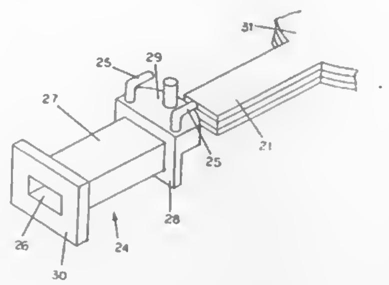
1. A motor structure for a rotary electric machine, comprising:

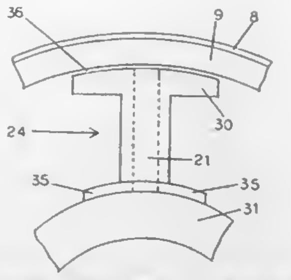
a rotational shaft;

a rotary disk connected to said rotational shaft having rotary poles consisting of a ring-shared permanent magnet;

a ring-shaped yoke made of soft magnetic material disposed at a circumferential side of said rotational shaft;

stator poles made of soft magnetic material radially extending from said ring-shaped yoke to outside said yoke, said stator poles having a unitary body and facing said rotary poles;





- a bobbin wound with windings such that the bobbin can be inserted with the windings into one of said stator poles;
- wherein, said bobbin has a collar part facing said ring-shaded permanent magnet rotary pole at one end thereof; and
- said collar part is formed of a material containing soft magnetic material; and
- the bobbin is provided with a pair of terminals for windings at an end thereof opposite the collar part.

5,852,336
VIBRATION ACTUATOR WHICH EFFECTIVELY TRANSMITS MICRO-AMPLITUDE VIBRATIONS

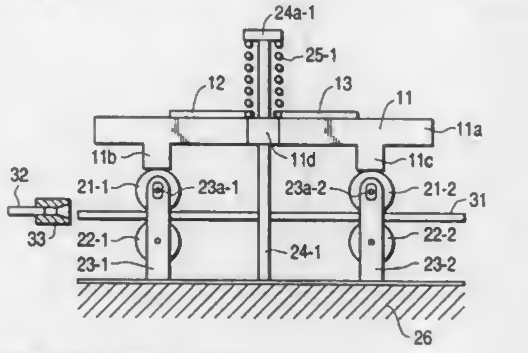
Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 377,782, Jan. 24, 1995, abandoned. This application May 13, 1996, Ser. No. 647,270

Claims priority, application Japan, Jan. 31, 1994, 6-009823

Int. Cl.^{6} H02N *2/00;* H01L *41/08*

U.S. Cl. 310—323 **15 Claims**



1. A vibration actuator, comprising:
- an elastic body;
- an electro-mechanical conversion element joined to the elastic body to harmonically produce a longitudinal oscillation and a bending oscillation on the elastic body, and to produce elliptical movement of a specified part of the elastic body;
- a first rotational member contacting the specified part of the elastic body and rotationally driven by the elliptical movement of the specified part of the elastic body;
- a relative movement member which is moved by the first rotational member;
- a second rotational member juxtaposed with the first rotational member, with the relative movement member in between the first rotational member and the second rotational member;
- a first support member to support at least one of the first and second rotational members;
- a second support member to support the elastic body; and
- a pressure application member connected to the second support member and to the elastic body to apply pressure in a direction to cause the elastic body and the first rotational member to come in contact.

5,852,337
PIEZOELECTRIC FILM-TYPE ELEMENT

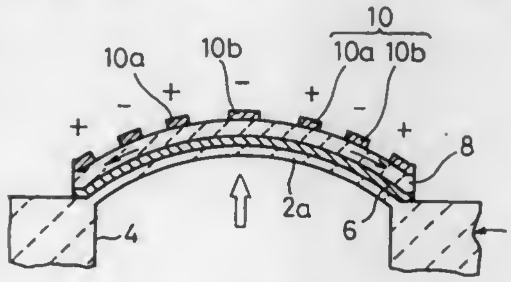
Yukihisa Takeuchi, Nishikamo-gun; Koji Kimura, Nagoya, and Masao Takahashi, Kuwana, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 27, 1997, Ser. No. 863,723

Claims priority, application Japan, May 27, 1996, 8-132045; May 9, 1997, 9-119598

Int. Cl.^{6} H01L *41/08*

U.S. Cl. 310—328 **14 Claims**



1. A piezoelectric film-type element, comprising:
- a ceramic substrate;
- a piezoelectric operating layer disposed on at least one surface of said ceramic substrate, said piezoelectric operating layer comprising a single piezoelectric layer having first and second electrodes arranged integrally on both sides, in a thickness direction thereof, said first electrode comprising a single electrode layer and said second electrode comprising a plurality of strip electrodes; and
- means for employing at least one of (i) said first and second electrodes, respectively, each having opposite polarity with respect to the other and (ii) individual strip electrodes of said second electrode, said individual strip electrodes having opposite polarities with respect to each other,
- wherein said piezoelectric operating layer is operable as a first piezoelectric operating means operable via said first and second electrodes and said piezoelectric layer, and said piezoelectric operating layer is operable as a second piezoelectric operating means operable via said piezoelectric layer and said plurality of strip electrodes of said second electrode only.

5,852,338
DYNAMOELECTRIC MACHINE AND METHOD FOR MANUFACTURING SAME

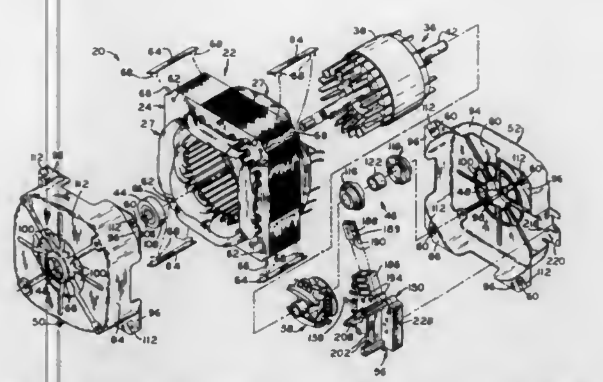
John H. Boyd, Jr., Holland, Mich.; Daniel M. Saban; Allen W. Scott, both of Fort Wayne, Ind., and Merle L. Kemp, Propetstown, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 139,578, Oct. 20, 1997. This application Feb. 3, 1997, Ser. No. 792,982

Int. Cl.^{6} H02K *5/16*

U.S. Cl. 310—89 **33 Claims**

1. A dynamoelectric machine comprising:
- a stator including a stator core having a pair of opposing end faces, a bore through the stator core extending from one end face to the other end face, windings including a start winding and at least one run winding on the stator core, each winding having winding leads extending outwardly from the stator;



- first and second opposite end frames mounted on respective end faces of the stator core, each end frame having a generally central opening therein;
- bearing means associated with the central openings of the first and second end frames;
- a rotor assembly comprising a shaft received in said bearing means, and a rotor fixedly mounted on the shaft for conjoint rotation therewith, the rotor being disposed at least in part in the stator core bore, the rotor and the stator being adapted for magnetic coupling upon activation of the windings for rotating the shaft and rotor relative to the stator and end frames;
- a plug and terminal assembly including a casing made of an insulator material, a plurality of lead terminals electrically connected to the winding leads and a plurality of electrical connectors protruding from the casing and electrically connected to the lead terminals, the electrical connectors being constructed for connecting the winding leads to a source of electrical power, and
- a ground tab formed as one piece out of the material of the second end frame, the around tab including an electrical connector portion;
- the casing having an opening therein receiving the ground tab with the electrical connector portion of the ground tab disposed adjacent to at least one of the electrical connectors for plug-in electrical connection to a ground remote from the dynamoelectric machine upon connection of the electrical connectors to said source of electrical power.

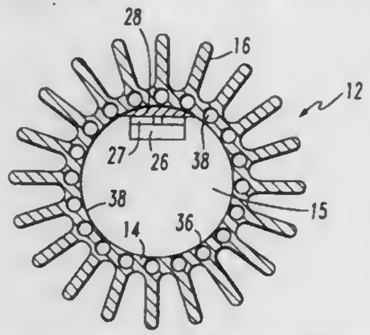
5,852,339
AFFORDABLE ELECTRODELESS LIGHTING

Robin E. Hamilton, Millersville; Paul G. Kennedy, Grasonville, and Raymond A. Smith, Severna Park, all of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 18, 1997, Ser. No. 878,441

Int. Cl.^{6} H01J *65/04;61/00*

U.S. Cl. 313—11 **20 Claims**



1. An electrodeless light bulb assembly, comprising:
- a heat sink including an inner body portion defining a hollow inner space region and a plurality of heat dissipating fins extending outwardly from said inner body portion;
- a threaded type lamp base located at one end of the heat sink for connection to an external source of electrical power;
- an electrodeless light bulb and excitation coil therefor located at the other end of the heat sink;
- a transparent cover for protecting the light bulb and the excitation coil secured to said other end of the heat sink;
- a driver circuit connected to the excitation coil for exciting the light bulb and being thermally coupled to the heat sink and being mounted thereon in said hollow inner space region of said inner body portion; and
- wherein said heat sink additionally includes at least one boiler/condenser element located interiorly of said inner body portion adjacent said hollow inner space region for transferring heat from said excitation coil and said driver circuit to said fins.

5,852,340
LOW-VOLTAGE TYPE IGNITER PLUG HAVING A SEMICONDUCTOR FOR USE IN JET AND OTHER INTERNAL COMBUSTION ENGINES AND A METHOD OF MAKING THE SEMICONDUCTOR

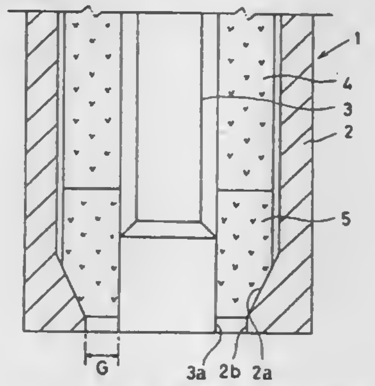
Yukihiko Ito, and Eigo Goto, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jun. 19, 1996, Ser. No. 665,874

Claims priority, application Japan, Jun. 19, 1995, 7-151341; Jun. 12, 1996, 8-151425

Int. Cl.^{6} H01T *13/20;13/39*

U.S. Cl. 313—141 **9 Claims**



1. In an igniter plug for jet and other internal combustion engines, which igniter plug comprises a center electrode having a firing tip, and mounted within an insulator which in turn is mounted within an exterior metal shell, a ground electrode integral or in electrical contact relationship with the metal shell and in spaced, spark gap relation with the firing tip of the center electrode, and an electrically semiconducting surface adjacent the spark gap and in electrical contact with the center electrode and with the ground electrode, the improvement wherein said electrically semiconducting surface is a sintered ceramic body having an actual density of more than 95 percent of its theoretical maximum density, and consisting essentially of 67–80 percent by weight of silicon carbide particles and 20–33 percent by weight of grain boundary phase of alumina particles, and selected from sintering aids selected from the group consisting of magnesia, silica, and calcia.

5,852,341
DIAMOND FILM WITH SHARP FIELD EMISSION TURN-ON

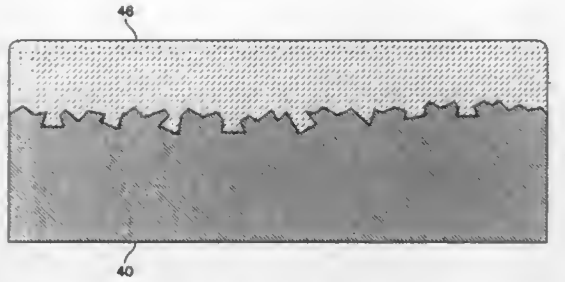
William Phillips, Belmont, and John M. Pinneo, Portola Valley, both of Calif., assignors to Crystallume, Santa Clara, Calif.

Continuation-in-part of Ser. No. 442,258, May 16, 1995, Pat. No. 5,571,615, which is a division of Ser. No. 339,989, Nov. 14, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 743,289

Int. Cl.^{6} H01J *1/14;1/16*

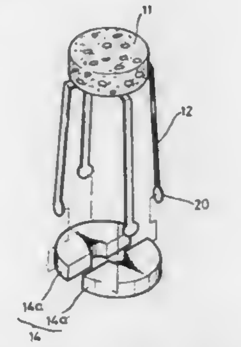
U.S. Cl. 313—336 **2 Claims**

1. A field emission cathode comprising:
- A synthetic diamond film having a sharp turn-on characteristic for field emission current, said sharp turn-on characteristic



being a 100-fold increase in field emission current density in response to an increase of less than about 3 volts/micron in an applied filed across said diamond film, said synthetic diamond film having a grain size less than about 0.5 micron and a thickness greater than about 10 microns, said diamond film being substantially free of metal inclusion.

5,852,342
DIRECTLY HEATED CATHODE STRUCTURE
Chang-seob Kim; Seok-bong Son, both of Kyungki-do; Bong-uk Jeong, and Sang-kyun Kim, both of Seoul, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea
Filed Apr. 3, 1997, Ser. No. 834,731
Claims priority, application Rep. of Korea, May 22, 1996, 96-17465
Int. Cl.^{6} H01J ***1/14***
U.S. Cl. 313—346 DC **3 Claims**



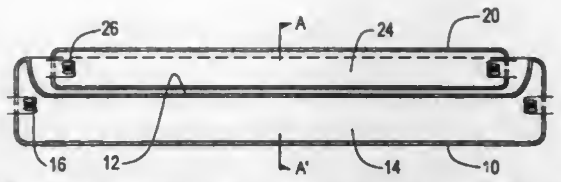
1. A directly heated cathode structure comprising a porous pellet impregnated with a thermionic emission material, a supporter for applying electrical power and a filament fixed to said porous pellet, having a width, having an end, and fixed to said supporter, wherein said filament includes a connecting portion wider than said filament and fixed to said supporter at said end of said filament.

5,852,343
FLUORESCENT LAMP WITH ADJUSTABLE COLOR TEMPERATURE
Jagannathan Ravi, Bedford; Michael J. Shea, Beverly, both of Mass.; Joseph Connolly, Manchester, N.H., and Munisamy Anandan, Fishkill, N.Y., assignors to Matsushita Electric Works Researches and Development Laboratory Inc., Woburn, Mass.
Filed Dec. 23, 1996, Ser. No. 779,982
Int. Cl.^{6} H01J ***1/62;63/04***
U.S. Cl. 313—493 **9 Claims**

1. A fluorescent lamp having an adjustable color temperature comprising:

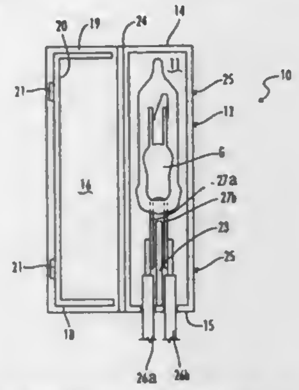
at least two elongated fluorescent discharge tubes, each tube forming a lamp, one tube having a larger diameter than the other, said tubes being assembled into a single unit;

a groove disposed within the larger tube, said groove running parallel to the longitudinal axis;



the smaller diameter tube being snugly nested within said groove and in intimate contact with said larger diameter tube; said larger diameter tube having a phosphor coating producing one color temperature and said smaller diameter tube producing a different color temperature.

5,852,344
ENCLOSURE FOR GLOW BULB STARTER USED WITH GAS DISCHARGE LAMPS
Stuart E. Sanders, Brandon, Miss.; John L. Cox, Hermitage, Tenn.; David S. Stratton, Douglas, Ariz.; Theodore Miller, Jr., Hattiesburg, and Mark R. Opperthauser, Brandon, both of Miss., assignors to MagneTek, Inc., Nashville, Tenn.
Filed Jul. 26, 1996, Ser. No. 686,661
Int. Cl.^{6} H01J ***7/44***
U.S. Cl. 315—61 **20 Claims**



1. A protective enclosure for a glow bulb used to start a gas discharge lamp, the glow bulb having a body and first and second wire leads to electrically connect the glow bulb to external power supply leads, comprising:

a. a housing having first and second side walls, first and second end walls joined to the side walls, a bottom wall joined to the side walls and to the end walls, and a top opening, to define a space inside the housing to receive the glow bulb body, where the housing generally conforms to the glow bulb body;

b. at least one wire opening in the housing, the wire opening having a size and shape to allow for mechanical connection of the glow bulb leads to the external power supply leads; and

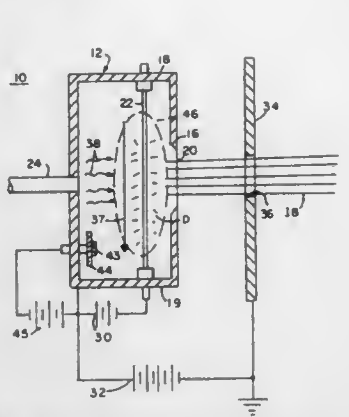
c. a lid having a size and shape which corresponds to the top opening of the housing whereby when the lid is placed on the housing, at least the body of the glow bulb is fully enclosed by the enclosure.

5,852,345
ION SOURCE GENERATOR AUXILIARY DEVICE FOR PHOSHORUS AND ARSENIC BEAMS
Anthony J. Armini, Manchester, Mass., assignor to Implant Sciences Corp., Wakefield, Mass.
Continuation-in-part of Ser. No. 742,896, Nov. 1, 1996, Pat. No. 5,808,416. This application Aug. 1, 1997, Ser. No. 904,494
Int. Cl.^{6} H01J ***7/24***
U.S. Cl. 315—111.81 **14 Claims**

1. An ion source apparatus for producing an ion beam from a solid material comprising:

a plasma chamber having an inlet orifice and an outlet orifice;

a carrier gas input into said plasma chamber through said inlet orifice;



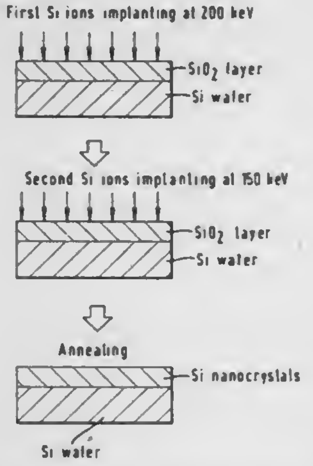
an electrically insulated platform arranged within said plasma chamber;

a wafer of solid source material attached to said platform;

a means for generating a gas plasma within said plasma chamber; and

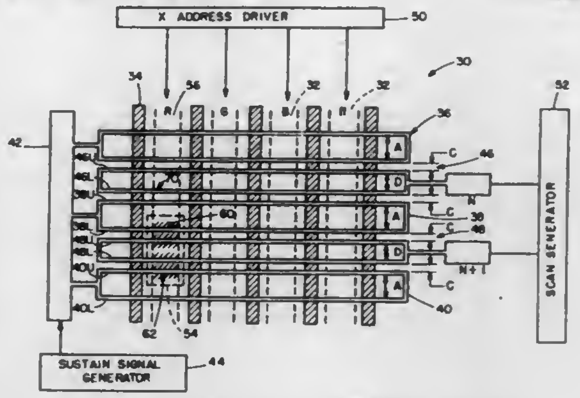
a means for heating said wafer of solid source material in said gas plasma, to permit the generation of an ion beam in said plasma, for subsequent discharge through said outlet orifice.

5,852,346
FORMING LUMINESCENT SILICON MATERIAL AND ELECTRO-LUMINESCENT DEVICE CONTAINING THAT MATERIAL
Takuya Komoda, and Peter Layton Francis Hemment, both of Surrey, England, assignors to University of Surrey, England
Continuation of Ser. No. 408,524, Mar. 22, 1995, abandoned. This application Sep. 15, 1997, Ser. No. 929,251
Claims priority, application United Kingdom, Mar. 24, 1994, 9405870; Mar. 17, 1995, 9505361
Int. Cl.^{6} H01L ***21/265***
U.S. Cl. 315—169.3 **19 Claims**


First Si ions implanting at 200 keV
SiO2 layer
Si wafer
Second Si ions implanting at 150 keV
SiO2 layer
Si wafer
Annealing
Si nanocrystals
Si wafer

1. A process for forming a luminescent silicon material which comprises the steps of implanting silicon ions into a silicon oxide (SiO_2) substrate, and annealing the substrate at an elevated temperature in an atmosphere comprising at least one of hydrogen and nitrogen for a sufficient time to bring about precipitation of silicon nanocrystals dispersed through the SiO_2 substrate, said crystals exhibiting photoluminescence and/or electroluminescence, and said process being characterized in that silicon ions are implanted at an energy of at least 100 keV and at a dose of from $1\times10^{17}/cm^2$ to less than that required to produce sputter-limited saturation, whereby there is produced a silicon material which is capable of producing photoluminescence and/or electroluminescence.

5,852,347
LARGE-AREA COLOR AC PLASMA DISPLAY EMPLOYING DUAL DISCHARGE SITES AT EACH PIXEL SITE
Robert G. Marcotte, New Paltz, N.Y., assignor to Matsushita Electric Industries, Osaka, Japan
Filed Sep. 29, 1997, Ser. No. 939,251
Int. Cl.^{6} G09F ***9/00***
U.S. Cl. 315—169.4 **9 Claims**



1. A color AC plasma display panel (PDP) comprising:

a) a first substrate having plural elongated address electrode structures including sets of color phosphors;

b) a second substrate in opposition to said first substrate and enclosing a dischargeable gas therebetween, said second substrate supporting

  i) a plurality of scan electrode structures orthogonally oriented to said address electrode structures, each scan electrode structure comprising a scan loop having a first elongated scan trace and a second elongated scan trace and

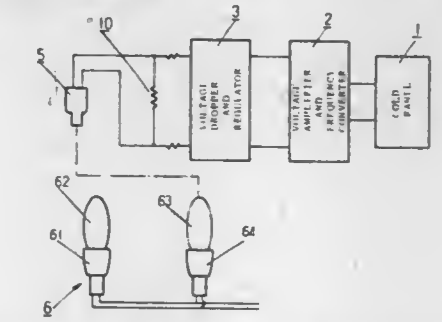
  ii) a plurality of sustain electrode structures in parallel configuration and interdigitated with said scan electrode structures, each sustain electrode structure comprising a sustain loop having a first elongated sustain trace and a second elongated sustain trace;

c) address means for selectively applying address signals to said address electrode structures;

d) scan means for applying a scan voltage to said scan electrode structures, so that gas discharges occur at intersections between addressed address electrode structures and a first elongated scan trace and a second elongated scan trace to which said scan voltage is applied, so as to create wall charges at dual discharge sites for each color subpixel;

e) sustain means for applying a sustain signal to said sustain electrode structures so as to discharge each of said dual discharge sites at which said wall charges have been created.

5,852,348
CHRISTMAS TREE ORNAMENTAL LIGHTING SYSTEM
Wen-Juei Lin, No. 347, Yuh-Her St., Shin-Diann City, Taipei, Taiwan
Filed May 8, 1997, Ser. No. 852,420
Int. Cl.^{6} H05B ***37/00***
U.S. Cl. 315—185 R **13 Claims**



1. A Christmas tree ornamental lighting system, comprising:

a light strand, including:

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at least one primary light, and at least one secondary light associated with said at least one primary light, said at least one primary light and said at least one secondary light having substantially synchronous illuminate states thereof and substantially synchronous non-illuminate states thereof,

said at least one primary light including a primary light bulb and a primary light socket on said light strand,

said at least one secondary light including a secondary light bulb and a secondary light socket on said light strand; and

at least one first illumination component unit coupled to said at least one primary light, said at least one first illumination component unit being in an illuminate state thereof substantially in synchronism with said non-illuminate state of said at least one primary light, and further being in said non-illuminate state thereof substantially in synchronism with said illuminate state of said at least one primary light;

said at least one first illumination component unit comprising:

(a) a first illumination component,

(b) said primary light socket on said at least one first illumination component unit coupled in parallel to an input of said first illumination component, said primary light bulb being coupled to said primary light socket on said at least one first illumination component unit, and

(c) a first socket coupled to said primary light socket on said light strand.

5,852,349
DRIVER CIRCUIT APPARATUS FOR DRIVING A THREE-PHASE MOTOR WITH A SINGLE MAGNETO-SENSITIVE DEVICE

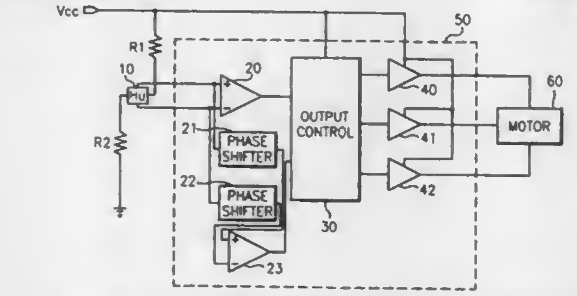
Nag-Sig Choi, Bucheon, Rep. of Korea, assignor to Samsung Electronic, Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 25, 1996, Ser. No. 738,352

Claims priority, application Rep. of Korea, Oct. 25, 1995, 1995 37147

Int. Cl.⁶ H01R *39/46*

U.S. Cl. 318—439 10 Claims



1. A driver circuit apparatus for generating a three-phase signal suitable for driving a three-phase motor, said apparatus comprising:

a single magneto-sensitive element for generating a first phase signal of the three-phase signal and a first inverse phase signal which is a 180° phase-shifted signal relative to the first phase signal in response to a detected rotor position of a three-phase motor; and

an integrated circuit for selectively applying a current signal to the three-phase motor in response to the first phase signal generated from the single magneto-sensitive element,

said integrated circuit comprising:

a first amplifier for amplifying the first phase signal and outputting a first amplified phase signal;

a first phase shifter for receiving the first phase signal and generating a second phase signal having a phase difference of 120° relative to the first phase signal; a second phase shifter for receiving the first inverse phase signal and generating a second inverse phase signal having a phase difference of 120° relative to the first inverse phase signal;

a second amplifier for amplifying the second phase signal and outputting a second amplified phase signal; and

an output control for producing a third phase signal in response to the first and the second amplified phase signals by means of a control logic thereof to produce the three-phase signal, the third phase signal having a phase difference of 120° relative to each of the first and the second phase signals.

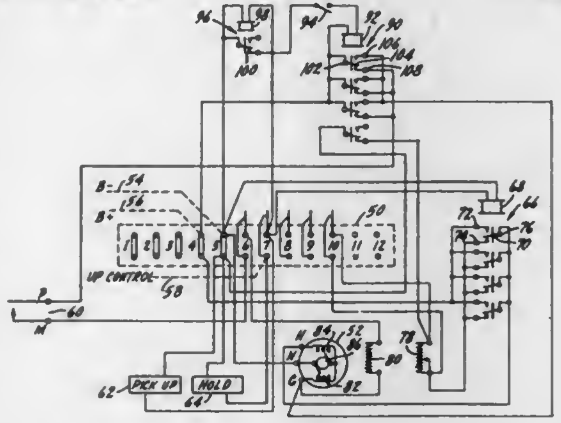
5,852,350
RAILROAD CROSSING GATE CONTROL SYSTEM INCLUDING A SEPARATE MAINTENANCE RELAY

Donald L. LeVoir, Coon Rapids, Minn., assignor to Safetran Systems Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 924,897, Sep. 8, 1997. This application Dec. 19, 1997, Ser. No. 994,386

Int. Cl.⁶ H02P *7/00*

U.S. Cl. 318—466 7 Claims



1. A railroad crossing gate control system for moving a crossing gate in up and down directions and providing means for raising gate counterweights in a failure mode, said control system including an electric motor having a plurality of electromagnet poles, an armature rotating inside of said poles, with armature movement controlling gate movement,

a motor and snub relay having contacts and a coil, the contacts thereof being connected to said armature and said electromagnet poles,

a terminal board having movable contacts thereon connected to the motor and snub relay contacts and coil for moving the contacts of said motor and snub relay, a source of power connected to said terminal board, said movable terminal board contacts controlling the application of power to said motor and snub relay coil and said motor and snub relay contacts for operating said motor to cause up and down gate movement,

and a normally open switch connected to the source of power, a maintenance relay having a coil connected on one side to said normally open switch and on the other side to said source of power said maintenance relay having contacts thereof connectable to said source of power and to said motor, closure of said normally open switch powering said maintenance relay coil to cause the contacts thereof to directly connect said source of power to said motor.

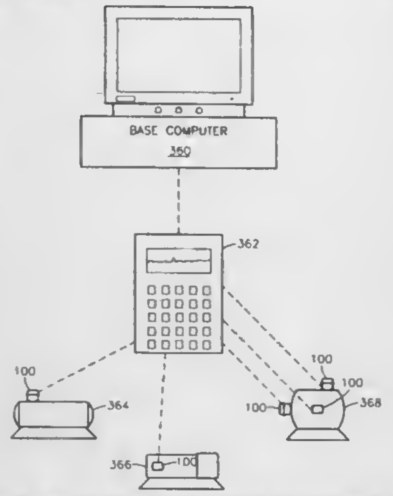
5,852,351
MACHINE MONITOR

Ronald G. Canada, Knoxville; Eugene F. Pardue, Lenoir City, and James C. Robinson, Knoxville, all of Tenn., assignors to CSI Technology, Wilmington, Del.

Continuation-in-part of Ser. No. 697,335, Aug. 22, 1996, Pat. No. 5,726,911. This application Aug. 20, 1997, Ser. No. 915,069

Int. Cl.⁶ H02K *11/00;* H02H *7/085;* G07C *3/08*

U.S. Cl. 318—490 30 Claims



1. A monitor that attaches to a mount proximate a machine for monitoring operation of the machine and producing an operation history, said monitor comprising:

a structural enclosure;

an engagement surface formed on said enclosure;

a fastener for attaching said engagement surface to the mount;

a power supply for supplying electrical power to the monitor;

at least one sensor for sensing one or more sensed parameters of the machine and producing sensor signals corresponding to the one or more sensed parameters;

a signal processor disposed in said enclosure for receiving and processing sensor signals and for performing a Fourier transform of the sensor signals to produce information corresponding to the operating parameters;

memory for storing information corresponding to the operating parameters, said stored information corresponding to the operation history of the machine; and

an output port for outputting at least the stored operation history of the machine.

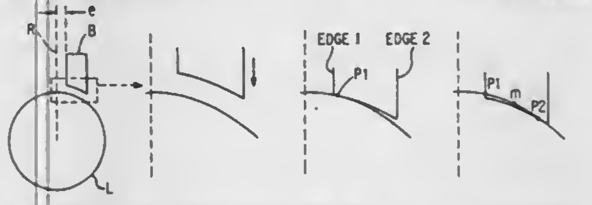
5,852,352
REDUCED SPEED GROWTH IN WINDSHIELD WIPER MOTOR

John Riden Suriano, Kettering, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Continuation of Ser. No. 475,771, Jun. 7, 1995, abandoned. This application Apr. 11, 1997, Ser. No. 833,981

Int. Cl.⁶ H01R *39/18;* H02K *13/00*

U.S. Cl. 318—541 8 Claims



1. An electric motor in which brush seating occurs, comprising:

a) brush means which

i) causes motor speed to increase during early stages of brush seating; and

ii) causes motor speed to decrease during later stages of brush seating.

5,852,353
MULTIBLOCK ROBOT SYSTEM

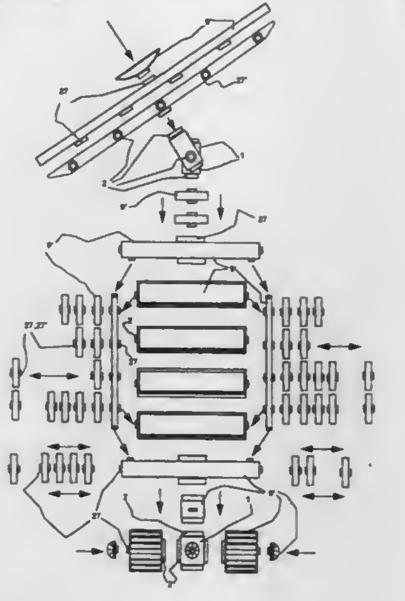
Uwe Kochanneck, Im Spähenfelde 25, D-44145 Dortmund, Germany, assignor to Uwe Kochanneck, Dortmund, Germany

Filed Apr. 18, 1997, Ser. No. 844,374

Claims priority, application Germany, Apr. 22, 1996, 196 15 943.1

Int. Cl.⁶ F03D *11/04;* H02N *6/00*

U.S. Cl. 318—558 6 Claims



1. A multiblock robot system comprising:

multiblock standard parts, combined of socket flange booster chambers with integrated solar units and socket flanges for plug connections with central chambers, having built in equipment of the solar electronic and voltage transformers and, rotation flange plug connections on the outer edges and on the back side;

said multiblock standard parts combined with solar units, articulated frames, socket flange booster chambers with central and vertical support function, horizontal junction socket flange booster chambers, multiblock-articulated frames which are horizontally and vertically plug connected and composed of said socket flange booster chambers with socket flanges;

said combinations with said socket flange booster chambers, provided with integrated battery units, plug connected one behind the other, composing battery lines with self locking solenoid switches in said rotation flange plug connections for self operating locking and unlocking of battery units during a battery exchange, said battery lines as such composing multiblock-battery dispensers and multiblock-battery changers with a multitude of said battery lines;

said combinations with said socket flange booster chambers, provided with integrated illuminator units, with integrated wind rotor units having a horizontal or vertical rotation axis, with integrated control computer units and said socket flange booster chambers with integrated sensor and control electronic units;

said combinations and said plug connections from one of said rotation flange plug connection to the other, of single or multiple of said multiblock standard parts, for the accomplishment of a variety of autonomous, self operating multiblock energy stations for solar and wind energy generation, energy storage, energy disposition and delivery, rotating the solar surfaces and the wind rotor blades always to the perpendicular position of the sun and wind directions.

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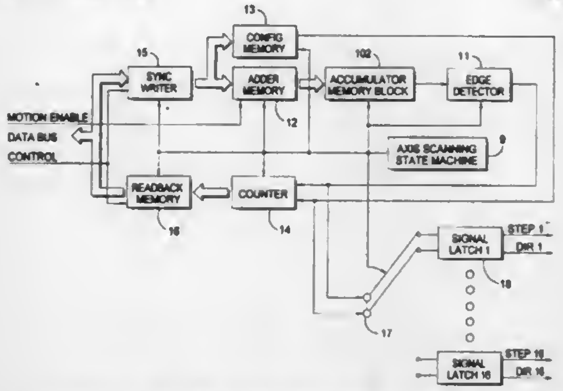
5,852,354
MULTIPLEXING RATE GENERATOR/COUNTER CIRCUIT FOR CONTROLLING STEPPER MOTORS

J. Randolph Andrews, Campbell, Calif., assignor to Douloi Automation, Inc., Campbell, Calif.

Filed Sep. 22, 1997, Ser. No. 935,324

Int. Cl.^{6} G05B *13/32*

U.S. Cl. 318—562 **3 Claims**



1. A multiplexing rate generator/counter circuit for controlling stepper motors comprising:
- an accumulator memory block,
- an edge detector,
- an axis scanning state machine,
- a position counter memory block,
- a position readback memory block,
- a configuration memory block,
- and an addend memory block; wherein
- at least one of said position counter memory block, said position readback memory block, said configuration memory block, or said addend memory block is an addressable memory block, a depth of said addressable memory block is equal to a number of motors being controlled by said circuit; and wherein
- said rate generator/counter circuit comprises a plurality of memory structures, each memory address in said memory structures represents a stepper motor in a subject system,
- said axis scanning state machine drives memory structure address lines in a circuitous manner to cycle among all stepper motors in said system such that at each memory address visit, a current state of said system is established in said rate generator/counter circuit based on information stored in each said memory address from a preceding cycle of said scanning state machine,
- an addition operation of said addend memory block and said accumulator memory block change accumulator memory block value in said accumulator memory block such that when said accumulator memory block overflows, step pulses are generated which are routed, along with axis direction signals from said configuration memory, to a subject stepper motor by means of a switch, said drive signals are then latched in non-multiplexing latches; such that
- an axis-scanning cycle frequency of N Hz supports a step rate of N Hz.

3. The multiplexing rate generator/counter circuit of claim 1 wherein:
- a shadow memory block is provided for at least one of said memory blocks, a depth of said shadow memory block is equal to a number of axes being controlled by said circuit, said shadow memory block enables said circuit to safely read information in an associated memory block,
- said shadow memory block being switched to an off line state wherein it is removed from said load-count-store-advance cycle of said circuit so that data contained in said shadow memory block can be manipulated through a microprocessor of said circuit so that position information can be read, while in said off line state, write activity to said shadow memory block is inhibited so that data in said shadow memory block is stable,
- after said data is read, said shadow memory block is switched to an on line state, during which it is written with data from said associated memory block.

5,852,355
OUTPUT SMOOTHING IN A SWITCHED RELUCTANCE MACHINE

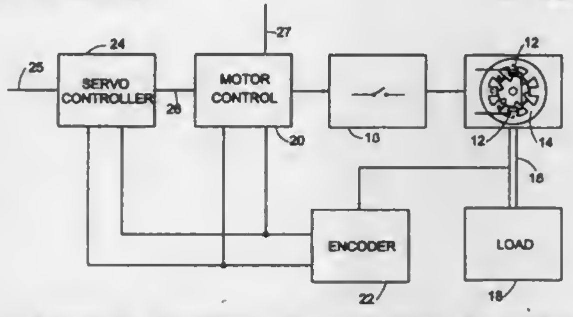
Michael James Turner, Leeds, England, assignor to Switched Reluctance Drives Limited, Harrogate, England

Filed May 23, 1997, Ser. No. 862,671

Claims priority, application United Kingdom, May 23, 1996, 9610846

Int. Cl.^{6} H02P *5/05*

U.S. Cl. 318—701 **26 Claims**



1. A method of smoothing the output ripple of a switched reluctance machine comprising a rotor, a stator, and at least one phase winding, the method comprising:
- rotating the rotor relative to the stator;
- monitoring a position parameter of the rotor relative to the stator;
- actively profiling a pulse of phase winding current as a function of rotor position by shaping the leading and trailing edges of the pulse so as to reduce the rate of change of torque with respect to time in each phase inductance cycle, the profiling altering natural current growth and decay in the pulse; and
- controlling the profiled phase current with feedback based on the monitored position parameter so as to reduce the overall magnitude of the output ripple of the machine.

16. A control system for smoothing the output ripple of a switched reluctance machine comprising a rotor, a stator and at least one phase winding, the system comprising:
- means for monitoring a position parameter of the rotor relative to the stator to produce a monitored output;
- means for actively profiling a pulse of phase winding current as a function of rotor position by shaping the leading and trailing edges of the pulse so as to reduce the rate of change of torque with respect to time in each phase inductance cycle, the profiling altering natural current growth and decay in the pulse; and
- means for controlling the profiled phase current with feedback based on the monitored output so as to reduce the overall magnitude of the output ripple of the machine.

5,852,356
DC/AC INVERTER FOR POWER SUPPLY TO AN ELECTRICAL MOTOR FOR THE TRACTION OF A VEHICLE

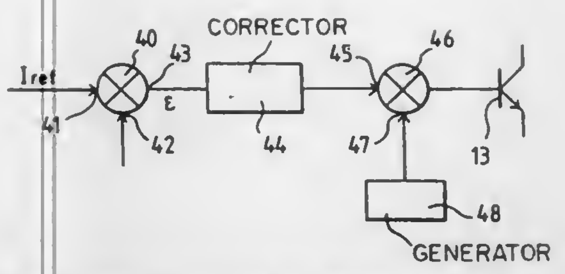
Alain Levy, Gif sur Yvette, France; Ernst Schimanek, Nuremberg, and Wolfram Dietze, Schwabach, both of Germany, assignors to Thomson-CSF, Paris, France, and Semikron International, Nuremberg, Germany

Filed Jan. 27, 1997, Ser. No. 789,538

Claims priority, application France, Jan. 30, 1996, 96 01058

Int. Cl.^{6} H02P *1/46*

U.S. Cl. 318—719 **16 Claims**



1. A dc/ac inverter for supplying alternating current to a stator of a rotating-field electrical motor, said dc/ac inverter comprising solid-state controlled switches delivering alternating currents to the stator, the intensity of each of the alternating currents, in the course of each half-wave, having successive sequences during each of which the intensity is substantially constant and determined by a cyclical ratio of a chopping signal controlling a conduction of each of the switches, wherein said inverter further comprises a means to give a frequency f of the chopping signal, a value f' at zero rotation speed of the rotor that is smaller than the chopping frequency for a rotation speed of the rotor that is different from zero.

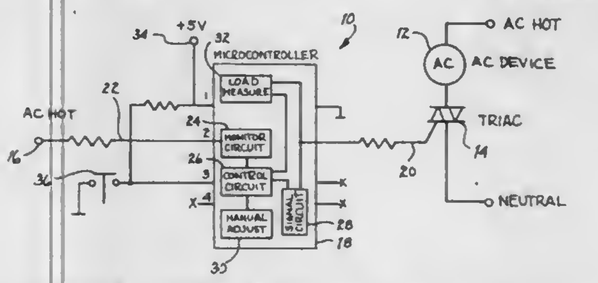
5,852,357
SYSTEM AND METHOD FOR CONTROLLING AN ALTERNATING CURRENT (AC) SIGNAL

Stanley A. D'Souza, Phoenix, Ariz., assignor to Microchip Technology Incorporated, Chandler, Ariz.

Filed Dec. 5, 1996, Ser. No. 760,262

Int. Cl.^{6} G05F *1/10;* G05B *24/02*

U.S. Cl. 323—239 **20 Claims**



1. A system for controlling an Alternating Current (AC) signal to an AC powered device comprising, in combination:
- switching means coupled to said AC powered device for controlling said AC signal supplied to said AC powered device to control at least one of speed and energy supplied to said AC powered device; and
- intelligent control means coupled to said switching means for adjusting said AC signal to said AC powered device by allowing a first predetermined number of cycles of said AC signal to be sent to said AC powered device via said switching means and for blocking a second predetermined number of cycles of said AC signal from being sent to said AC powered device to control said at least one of speed and energy supplied to said AC powered device by a proportionate amount, said intelligent control means comprising:
  - monitoring means coupled to an AC signal line for monitoring said cycles of said AC signal on said AC signal line;
  - control means coupled to said monitoring means for controlling which of said cycles of said AC signal are sent to said AC powered device to adjust said at least one of said speed and energy supplied to said AC powered device; and
  - signaling means coupled to said control means for supplying a control signal to said switching means to fire said switching means to supply said cycles of the AC signal which are required to adjust said at least one of said speed and energy supplied to said AC powered device to desired levels.

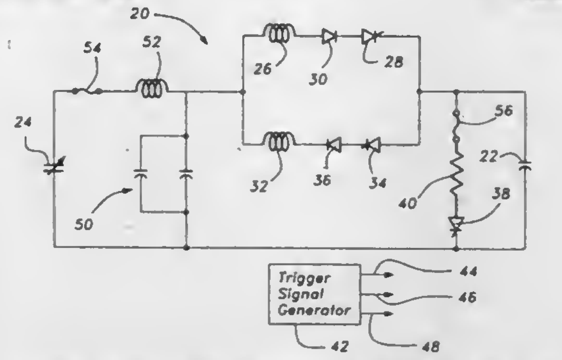
5,852,358
CAPACTIVE POWER CIRCUIT

Mehrdad Ehsani, Bryan, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Dec. 11, 1996, Ser. No. 762,011

Int. Cl.^{6} G05F *1/10*

U.S. Cl. 323—240 **15 Claims**



1. A power circuit for use in powering a capacitive load, comprising:
- a DC voltage source coupled with the capacitive load;
- a first inductor in series with the capacitive load, coupled between the capacitive load and said DC source;
- a first solid state switch in series with said first inductor coupled between the capacitive load and said DC source, said first switch permitting current flow in a first direction from said DC source toward the capacitive load;
- a second inductor in series with the capacitive load, coupled between the capacitive load and said DC source;
- a second solid state switch in series with said second inductor coupled between the capacitive load and said DC source said second switch permitting current flow in a second direction from the capacitive load toward said DC source;
- a rectifier in series with said first solid state switch coupled between said first inductor and said first switch, said rectifier being biased to permit current flow in said first direction; and
- trigger circuitry for selectively activating said solid state switches, respectively, to thereby selectively charge the capacitive load and selectively discharge the capacitive load.

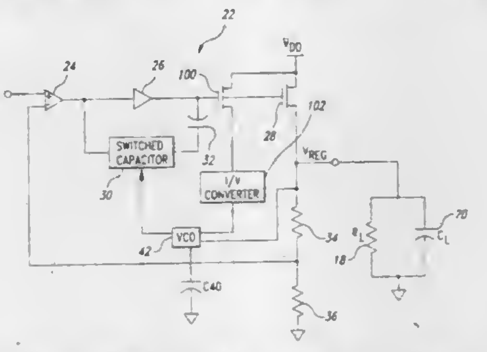
5,852,359
VOLTAGE REGULATOR WITH LOAD POLE STABILIZATION

Michael J. Callahan, Jr., Austin, Tex., and William E. Edwards, St. Paul, Minn., assignors to STMicroelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 536,436, Sep. 29, 1995, Pat. No. 5,648,718. This application Jul. 8, 1997, Ser. No. 889,816

Int. Cl.^{6} G05F *1/40;1/44;* H03F *1/36;3/52*

U.S. Cl. 323—274 **33 Claims**



1. A voltage regulator circuit to generate a regulated output voltage at a voltage regulator output using an error amp, an amplifier, a pass transistor, wherein the amplifier further comprises:
- a compensation capacitor coupled to the amplifier;

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- a variable oscillator having an input coupled to the voltage regulator output to sense changes in current draw at the voltage regulator output, said variable oscillator being controlled by the regulated output voltage to generate a clock signal whose frequency is proportional to a current demand on the voltage regulator; and
- a switched capacitor having a clock input configured to receive said clock signal and operable to vary the zero of the voltage regulator as a function of the current draw on the voltage regulator output.

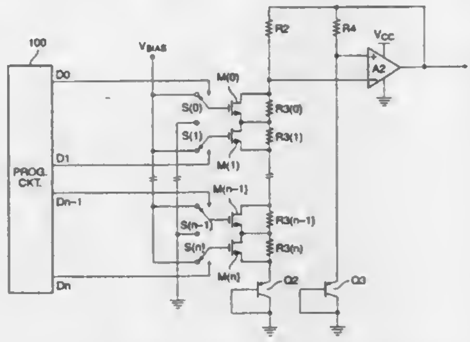
5,852,360
PROGRAMMABLE LOW DRIFT REFERENCE VOLTAGE GENERATOR

Roger Levinson, Sunnyvale, Calif., assignor to Exar Corporation, Fremont, Calif.

Filed Apr. 18, 1997, Ser. No. 844,166

Int. Cl.^{6} G05F *3/16*

U.S. Cl. 323—316 **17 Claims**



1. A reference voltage generating circuit comprising:
- a band-gap circuit having a first resistor, a second resistor and a third resistor coupled to inputs of an amplifier, said amplifier having an output generating a reference voltage, said first resistor being divided into a plurality of serially coupled resistor segments;
- a corresponding plurality of programmable switches respectively coupled in parallel to said plurality of resistor segments; and
- a control circuit coupled to said plurality of programmable switches for controlling a state of said switches,
- wherein, by turning selected ones of said plurality of switches on or off, a resistance value of said first resistor element is adjusted thereby fine tuning a value of said reference voltage.

5,852,361
ROLLING BEARING UNIT HAVING A PLURALITY OF ROLLING MEMBERS BETWEEN A STATIONARY RACEWAY AND A ROTATABLE RACEWAY AND A ROTATING SPEED SENSOR

Hideo Ouchi, Fujisawa, Japan, and Hiroya Miyazaki, Fujisawa, Japan, assignors to NSK Ltd., Tokyo, Japan

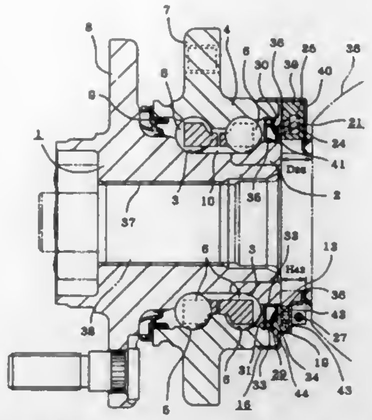
Filed Jul. 8, 1996, Ser. No. 676,959

Claims priority, application Japan, Jul. 7, 1995, 7-172180; Jul. 10, 1995, 7-173220

Int. Cl.^{6} G01P *3/46*

U.S. Cl. 324—174 **3 Claims**

1. A rolling bearing unit with a rotating speed sensor comprising:
- a stationary ring having a first peripheral surface on which a first raceway is formed,
- a rotatable ring having a second peripheral surface on which a second raceway is formed,
- a member rotating with the rotatable ring,
- a plurality of rolling members provided in a section between the first and second raceways,
- a tonewheel fixed to the rotatable ring,



- a cover fixed to the stationary ring and a peripheral portion,
- a sensor supported by the cover,
- the tonewheel having a circular ring portion, and a side face of which is faced to the sensor with an axial small gap therebetween and having magnetic characteristics alternately changed with a uniform interval in a circumferential direction,
- a first seal ring provided between the circular ring portion and the section where the rolling members are provided, to seal between the tonewheel and the section, and
- a second seal ring having a base end portion which is fixed to the peripheral portion of the cover and a tip end portion provided in a sliding contact relationship with the member rotating with the rotatable ring.

5,852,362
DEVICE FOR MAGNETIC-INDUCTIVE MEASUREMENT OF THE QUANTITY OF MIXTURE FLOWING THROUGH A PIPELINE

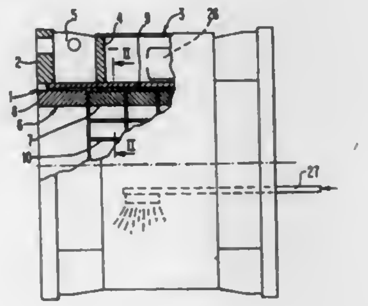
Arie Cornelis Batenburg, Papendrecht; Aart Jan Van Bekkum, Hoornaar; Cornelis Hendrik Van Den Berg, Sliedrecht; Alexander Marnix Heijnsdijk, Papendrecht; Casparus Henricus Marius Kramers, Maarssen; Teunis Visser, Sliedrecht, and Antonie Cornelis Van Zutphen, Zwijndrecht, all of Netherlands, assignors to FIIC Systems B.V. and Krohne Altometer, Sliedrecht, Netherlands

Filed Dec. 19, 1995, Ser. No. 575,210

Claims priority, application Netherlands, Jan. 5, 1995, 9500022

Int. Cl.^{6} G01N *27/74;27/87*

U.S. Cl. 324—204 **12 Claims**



1. A device for magnetic-inductive measurement of a quantity of mixture flowing through a pipeline, the device comprising:
- a measuring tube mounted in the pipeline and receiving the mixture flowing through the pipeline, the measuring tube including a metal wall with an inner side and an electrically insulative lining;
- a housing surrounding the tube;

- magnetic coils extending between the housing and the measuring tube, the magnetic coils having a magnetic field which generates a voltage difference in the mixture flowing through the measuring tube;
- at least one electrode mounted in the tube, and extending through the metal wall of the tube from an outside of the wall to the inside of the wall; and
- measuring members located outside the measuring tube, and connected to the at least one electrode, the measuring members measuring the voltage difference generated in the mixture flowing through the measuring tube;
- wherein the inner side of the metal wall of the measuring tube is coated with an insulating plastic layer having a thickness between 3 mm and 10 mm; and
- wherein a layer of ceramic tiles is adhered to the inner side of the metal wall by plastic, adjacent tiles being positioned such that joints between adjacent tiles extend in a longitudinal direction of the measuring tube, and plastic material filling the joints.

5,852,363
METHODS AND APPARATUS FOR MEASURING CHARACTERISTICS OF A FORMATION AROUND A BOREHOLE USING COMPUTED FOCUSING

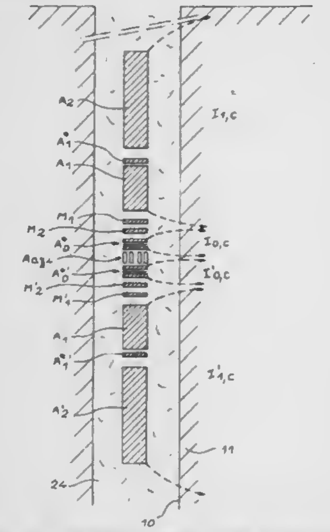
Jan W. Smits, Paris, France, assignor to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Oct. 18, 1996, Ser. No. 733,130

Claims priority, application France, Oct. 20, 1995, 95 12348

Int. Cl.^{6} G01V *3/18*

U.S. Cl. 324—373 **23 Claims**



1. A method of measuring the characteristics of formations around a borehole, the method comprising:
- inserting into the borehole a sonde (**22**) having an elongate body (**17**) provided with at least one annular current electrode (A_0, A'_0) and at least two annular guard electrodes (A, A', A_1, A'_1, A_2, A'_2), situated on either side of the annular current electrode;
- in a first effective operating mode of the sonde, emitting a current i_1 into the surrounding formation from the annular guard electrode(s) (A, A_1, A_2) situated at one end of the sonde relative to the current electrode(s) (A_0, A'_0), and a current i'_1 from the other annular guard electrode(s) (A', A'_1, A'_2) situated at the other end of the sonde relative to the current electrode(s) (A_0, A'_0), the current $I_{0.1}$ emitted by the annular current electrode(s) being equal to 0;
- in a second effective operating mode, emitting at least one current $I_{0.2}$ from the annular current electrode(s) (A_0, A'_0) towards the annular guard electrodes (A, A', A_1, A'_1, A_2, A'_2), the total current $I_{t,2}$ emitted from the sonde into the formation being equal to 0; and
- performing computed focusing on the basis of the above two effective operating modes to simulate an operating mode in which:
  - at least one current $I_{0,c}$ is emitted into the surrounding formation from the annular current electrode(s) (A_0, A'_0); and
  - the current $I_{0,c}$ is focused in the formation by emitting two currents $I_{1,c}$ and $I'_{1,c}$ from the two annular guard electrodes (A, A', A_1, A'_1, A_2, A'_2) situated on either side of the annular current electrode.

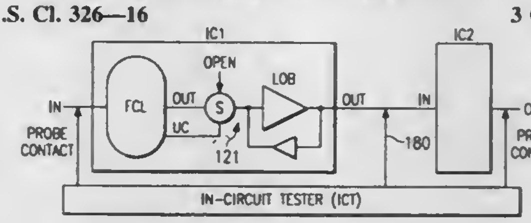
5,852,364
SYSTEM AND METHOD FOR TESTING INTEGRATED CIRCUITS CONNECTED TOGETHER

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 622,124, Mar. 26, 1996, abandoned, which is a division of Ser. No. 457,969, May 31, 1995, abandoned. This application Sep. 19, 1997, Ser. No. 933,854

Int. Cl.^{6} H03K *19/00;* G01R *31/28*

U.S. Cl. 326—16 **3 Claims**



1. An electronic system, comprising:
- A. a first integrated circuit including an external terminal;
- B. a second integrated circuit external of the first integrated circuit and including an external terminal;
- C. a wire connected between the terminals of the first and second integrated circuits;
- D. test circuitry external from the first and second integrated circuits and connected to the wire for maintaining a test signal on said wire for a first amount of time and applying said test signal to said wire only for a second amount of time which is less than said first amount of time.

5,852,365
VARIABLE LOGIC CIRCUIT AND SEMICONDUCTOR INTEGRATED CIRCUIT USING THE SAME

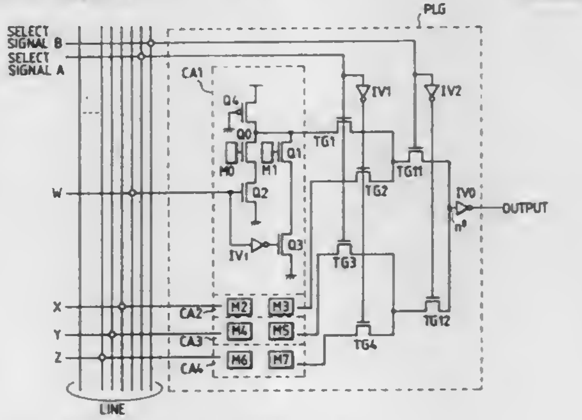
Nobuo Tamba, Ome; Mitsugu Kusunoki, Koganei, both of Japan; Takeshi Miyazaki, Meulo Park, Calif.; Akira Masaki, Musashino, and Akira Yamagiwa, Kanagawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1996, Ser. No. 712,554

Claims priority, application Japan, Sep. 14, 1995, 7-237323

Int. Cl.^{6} H03K *19/082;7/38*

U.S. Cl. 326—49 **7 Claims**



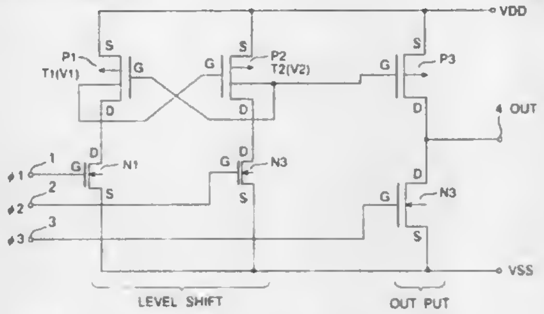
1. A variable logic circuit comprising:
- a memory cell;

at least one first transistor which turns on or off depending on data stored in said memory cell;
a second transistor which is connected in series to said first transistor and is turned on or off by an input signal;
a third transistor which produces a voltage depending on the conduction states of said first and second transistors; and
transfer means which conducts or does not conduct the voltage produced by said third transistor to the output terminal of said variable logic circuit.

5,852,366

HIGH VOLTAGE LEVEL SHIFT CIRCUIT INCLUDING CMOS TRANSISTOR HAVING THIN GATE INSULATING FILM

Mitsuasa Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 26, 1997, Ser. No. 824,434
Claims priority, application Japan, Mar. 29, 1996, 8-077227
Int. Cl.^{6} H03K *19/0185*
U.S. Cl. 326—68 **7 Claims**

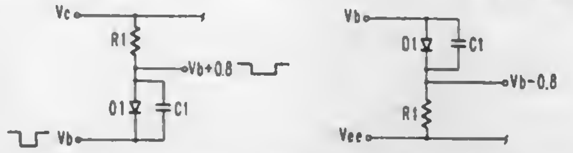


1. A level shift circuit comprising:
a first transistor of a first conductive type a gate of which is connected to a first input terminal and a source of which is connected to a power source terminal on a side of a low potential;
a second transistor of the first conductive type a gate of which is connected to a second input terminal and a source of which is connected to the power source terminal on the side of the low potential;
a third transistor of the first conductive type a gate of which is connected to a third input terminal and a source of which is connected to the power source terminal on the side of the low potential;
a fourth transistor of a second conductive type having a drain intermediate tap a drain of which is connected to a drain of the first transistor and a source of which is connected to a power source terminal on a side of a high potential;
a fifth transistor of the second conductive type a gate of which is connected to the drain intermediate tap of the fourth transistor, a drain of which is connected to a drain of the second transistor, a source of which is connected to the power source terminal on the side of the high potential and a drain intermediate tap of which is connected to a gate of the fourth transistor; and
a sixth transistor of the second conductive type a gate of which is connected to the drain intermediate tap of the fifth transistor, a drain of which is connected to a drain of the third transistor and an output terminal and a source of which is connected to the power source terminal on the side of the high potential.

5,852,367

SPEED ENHANCED LEVEL SHIFTING CIRCUIT UTILIZING DIODE CAPACITANCE

David W. Boerstler, Millbrook; Edward B. Eichelberger, Hyde Park; Gary T. Hendrickson, Kingston, and Charles B. Winn, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 1, 1992, Ser. No. 939,892
Int. Cl.^{6} H03K *19/0175*
U.S. Cl. 326—80 **26 Claims**

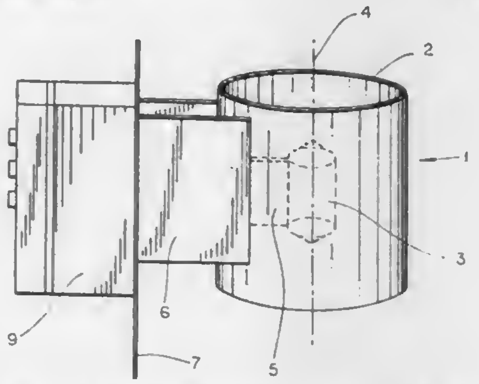


1. A level shift circuit for a logic circuit for translating a first voltage level binary pulse signal from said first voltage level at an input node to a second voltage level at an output node coupled to a capacitive load, said circuit comprising:
a resistor connected to a DC supply voltage;
diode means with a capacitance substantially higher than that of the capacitive load for creating the voltage level translation connected in series with said resistor and having a first and a second terminal, wherein said second terminal forms said output node at the point of interconnection of said resistor and said diode means;
said first voltage level binary pulse signal connected to said diode means at said first terminal which is said input node, and said second voltage level pulse signal appearing at said output node.

5,852,368

SENSOR FOR THE MEASUREMENT OF MOISTURE IN A FLOW OF MATERIAL

Ebbe Busch Larsen, DK-5230, Odense M, Denmark
Filed Dec. 27, 1996, Ser. No. 775,013
Int. Cl.^{6} G01N *27/22*
U.S. Cl. 324—689 **5 Claims**

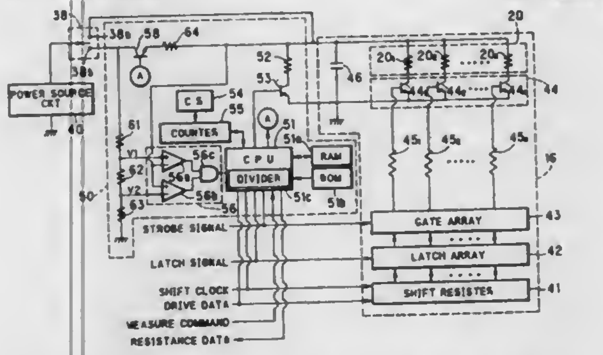


1. A sensor for the measurement of moisture in a flow of loose granular material comprising a tube piece of electrically conductive material with a circular cross-section, an elongated pole being electrically insulated and having a circular cross-section positioned with its longitudinal axis concentrically in the tube piece, the pole being made of an electrically conductive material, the tube piece connected via two support pieces to a mounting flange, a spacing element made of an electrically insulating material which is secured to the inner side of the tube piece, for mounting the pole in the tube piece, an outside surface of the spacing element having a high degree of wear resistance, a conductor extending from the pole through the spacing element and the mounting flange, being insulated thereby, the ends of the elongated pole being conical, and an outside surface of the elongated pole having a coating thereon for reducing condensation.

5,852,369

THERMAL PRINTER AND RESISTANCE DATA MEASURING DEVICE FOR THERMAL HEAD OF THE SAME

Nobuo Katsuma, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 15, 1996, Ser. No. 749,546
Claims priority, application Japan, Nov. 16, 1995, 7-298727; Nov. 16, 1995, 7-298728; Nov. 8, 1996, 8-296017
Int. Cl.^{6} G01R *27/02*
U.S. Cl. 324—678 **16 Claims**



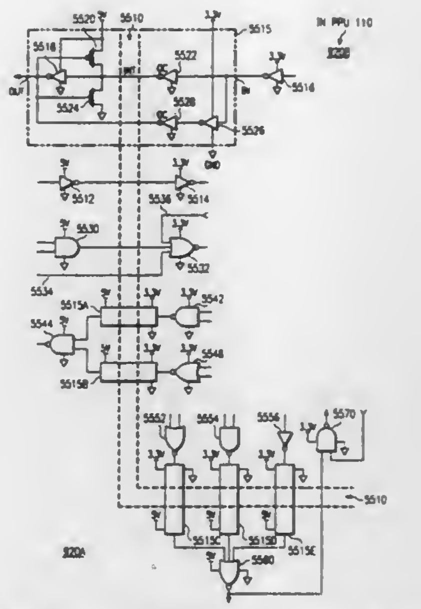
1. A resistance data measuring method for a thermal head having plural heating elements arrangod along a line and connected in parallel with one another, said heating elements each being connected to one of plural heat control switches, said heat control switches being selectively turned on/off for driving said heating elements individually by applying electrical energy to generate heat, said resistance data measuring method comprising:
charging a capacitor connected in parallel with said plural heating elements to a predetermined high voltage;
after charging said capacitor, discharging said capacitor via one of a reference resistor and one of said heating elements, said reference resistor being connected in parallel with said plural heating elements and said capacitor;
measuring an amount of time that elapses while a capacitor voltage measured across said capacitor decreases from said predetermined high voltage that is lower than a source voltage to a predetermined low voltage, said amount of time being based on a resistance of said one of said reference resistor and said one heating element; and
determining resistance data for said one heating element based on said amount of time measured.

5,852,370

INTEGRATED CIRCUITS FOR LOW POWER DISSIPATION IN SIGNALING BETWEEN DIFFERENT-VOLTAGE ON CHIP REGIONS

Uming Ko, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 547,966, Oct. 25, 1995, abandoned, which is a continuation of Ser. No. 363,450, Dec. 22, 1994, abandoned. This application Oct. 9, 1996, Ser. No. 728,404
Int. Cl.^{6} H03K *19/0175; 19/094*
U.S. Cl. 326—81 **44 Claims**

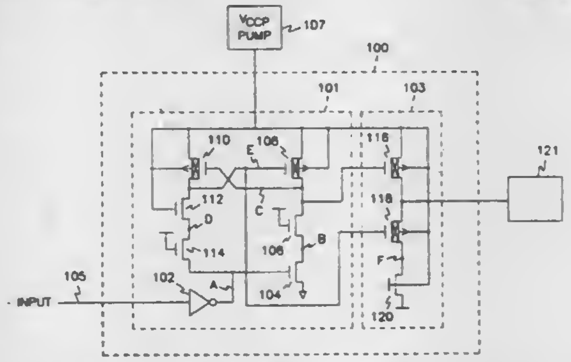
6. An electronic circuit comprising:
an input circuit connected to a first supply voltage and having an input and an output;
an output circuit connected to a second supply voltage and having an input and an output;
a first feedback circuit connected to said second supply voltage and said output circuit;
a second feedback circuit connected to ground and said output circuit; and
a first transition acceleration circuit, having an input and an output, said input of said first transition acceleration circuit connected to said input of said input circuit and said output of said first transition acceleration circuit connected to said input of said output circuit.



5,852,371

LOW POWER, HIGH SPEED LEVEL SHIFTER

Todd A. Merritt, and Troy A. Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 629,503, Apr. 9, 1996, Pat. No. 5,666,070, which is a continuation-in-part of Ser. No. 438,645, May 10, 1995, Pat. No. 5,528,173. This application Jul. 10, 1997, Ser. No. 890,921
Int. Cl.^{6} H03K *19/0185*
U.S. Cl. 326—81 **10 Claims**



1. A voltage level translator, comprising:
an input connection for receiving an input signal having a first upper voltage level and a first lower voltage level;
an input stage producing a first intermediate output and a second intermediate output; and
an output stage producing an output signal in response to the input signal, the output signal being at the first upper voltage level when the input is at the first upper voltage level, and at a second upper voltage level which is greater than the first upper voltage level when the input is at the first lower voltage level, the output stage including:
a first output transistor having its gate connected to the first intermediate output, its source electrically connected to the second upper voltage level, and its drain connected to the source of a second output transistor,
the second output transistor having its gate connected to the second intermediate output, and its drain electrically connected to the source of a third output transistor,

the third output transistor having its gate connected to the second upper voltage level and its drain electrically connected to the first upper voltage level, and

an output line connected to the drain of the first output transistor.

5,852,372

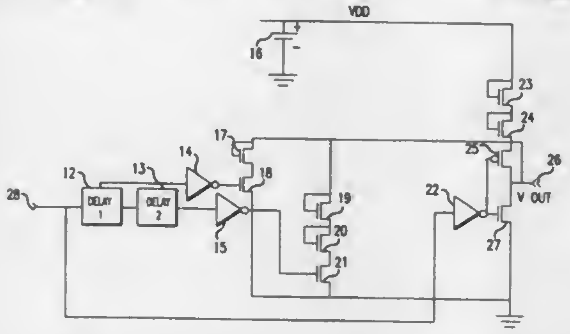
APPARATUS AND METHOD FOR SIGNAL HANDLING ON GTL-TYPE BUSES

Eduard F. Boeckmann, Huntsville; Vern Brethour, Owens Cross Road, both of Ala., and Vahid Samiee, Austin, Tex., assignors to Intergraph Corporation, Huntsville, Ala.

Filed Feb. 19, 1997, Ser. No. 803,157

Int. Cl.^{6} H03K *19/175*

U.S. Cl. 326—83 **27 Claims**



1. A driver for providing bus signals at a driver output in response to an input signal, the driver having a driver input responsive to the input signal, a supply voltage terminal, and a ground terminal, the driver comprising:

- (a) a first switching element having a switching state responsive to the input signal to provide a low impedance between the driver output and the ground terminal when the first switching element is ON and to provide a high impedance between the driver output and the ground terminal when the first switching element is OFF;
- (b) a second switching element having a switching state responsive to the input signal to provide a high impedance between the driver output and the supply voltage terminal when the second switching element is OFF,
  - wherein the first and second switching elements are switched in a complementary fashion so that when the first switching element is switched from ON to OFF the second switching element is switched from OFF to ON and when the first switching element is switched from OFF to ON the second switching element is switched from ON to OFF;
- (c) a first clamping device to provide a non-linear resistance diode-action between the driver output and the ground terminal when the second switching element is ON;
- (d) a first delay element having an input responsive to the input signal, and an output with a voltage;
- (e) a third switching element having a switching state responsive to the output voltage of the first delay element, so as to provide a high impedance between the driver output and the ground terminal when the third switching element is OFF;
- (f) a second clamping device to provide a non-linear resistance diode-action between the driver output and the ground terminal when the third switching element is ON;
- (g) a second delay element having an input responsive to the output voltage of the first delay element, and an output with a voltage;
- (h) a fourth switching element having a switching state responsive to the output voltage of the second delay element to provide a high impedance between the driver output and the ground terminal when the fourth switching element is OFF; and
- (i) a third clamping device to provide a non-linear resistance diode-action between the driver output and the ground terminal when the fourth switching element is ON.

5,852,373

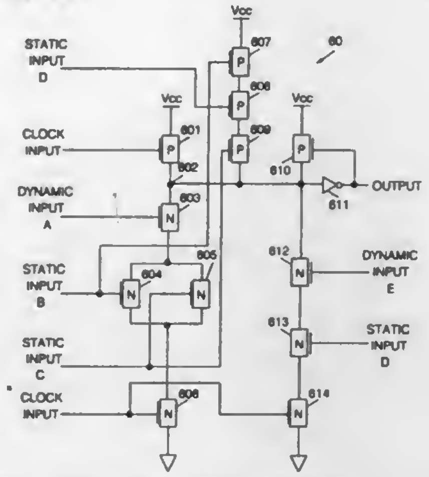
STATIC-DYNAMIC LOGIC CIRCUIT

Sam Gat-Shang Chu; Visweswara Rao Kodali, and Michael Ju Hyeok Lee, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1996, Ser. No. 723,814

Int. Cl.^{6} H03K *19/096;19/0948*

U.S. Cl. 326—98 **5 Claims**



2. A static-dynamic logic circuit comprising:

first and second NFETs having source-drain paths connected in parallel, said first NFET having a gate receiving a first static input signal, and said second NFET having a gate receiving a second static input signal;

a third NFET connected between a first end of said parallel connected source-drain paths of said first and second NFETs and an evaluation node, said third NFET having a gate receiving a first dynamic input signal;

a fourth NFET connected between a first voltage source and a second end of said parallel connected source-drain paths of said first and second NFTEs, said third NFET having a gate reciting a clock signal;

a first PFET coupled between a second voltage source and said evaluation node, wherein said first PFET has a gate receiving said clock signal;

second and third PFETs having series connected source-drain paths wherein a first end of said series connected source drain paths is coupled to said second voltage source and a second end of said series connected source-drain paths is connected to said evaluation node, said second PFET having a gate receiving said first static signal, and said third PFET having a gate receiving said second static signal;

a fifth NFET having a gate receiving a second dynamic input signal; and

a sixth NFET having a gate receiving said clock signal, wherein a first end of a source-drain path of said fifth NFET is coupled to said evaluation node, a second end of said source drain path of said fifth NFET is coupled to a first end of a source-drain path of said sixth NFET, a second end of said source-drain path of said sixth NFET being coupled to said first voltage source.

5,852,374

RESETTABLE LATCHED VOLTAGE COMPARATOR

Gary A. Frazier, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 16, 1997, Ser. No. 858,074

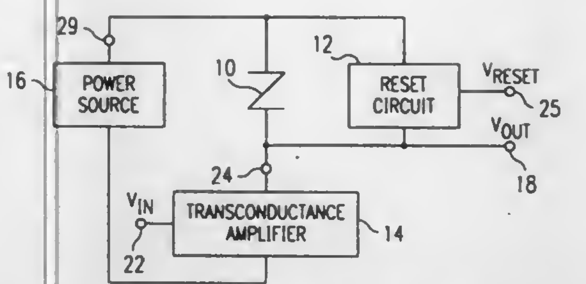
Int. Cl.^{6} H03K *5/153;3/315*

U.S. Cl. 327—77 **15 Claims**

1. A resettable latched voltage comparator for comparing an input signal to a reference potential, said comparator comprising:

a negative resistance device;

a source of said reference potential;



a voltage-controlled current sink, said current sink coupled in parallel with said source, said negative resistance device coupled in series with said current sink;

means for coupling said input signal to said current sink; and

a reset circuit coupled in parallel to said negative resistance device.

5,852,375

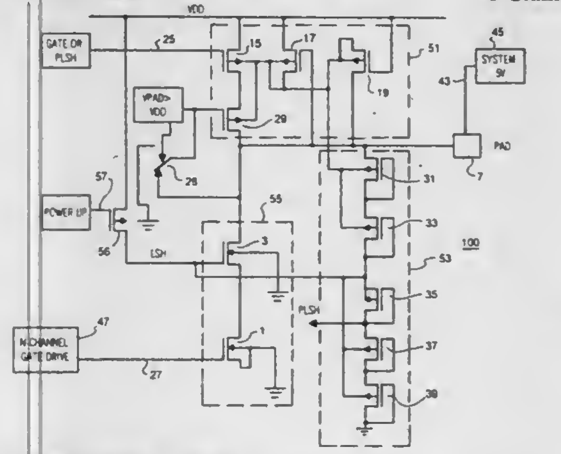
5V TOLERANT I/O CIRCUIT

Timothy Gerard Byrne, and Brian T. Morley, both of Dublin, Ireland, assignors to Silicon Systems Research Limited, Dublin, Ireland

Filed Feb. 7, 1997, Ser. No. 797,565

Int. Cl.^{6} H03K *3/00;* **H02H** *3/20*

U.S. Cl. 327—108 **6 Claims**



1. An I/O circuit comprising:

an I/O PAD connected to receive a first voltage;

a first circuit having at least one first type transistor connected between a second voltage and the I/O PAD and a second circuit having at least one second type transistor connected between the I/O PAD and a third voltage; and

a cascode arrangement of at least first and second transistors of the first type of transistors between the I/O PAD and the third voltage and a junction between a source of the first transistor and a drain of the second transistor being connected to a gate of the at least one second type of transistor.

5,852,376

BANDGAP REFERENCE BASED POWER-ON DETECT CIRCUIT INCLUDING A SUPRESSION CIRCUIT

William F. Kraus, Colorado Springs, Colo., assignor to Ramtron International Corporation, Colorado Springs, Colo.

Filed Aug. 23, 1996, Ser. No. 702,363

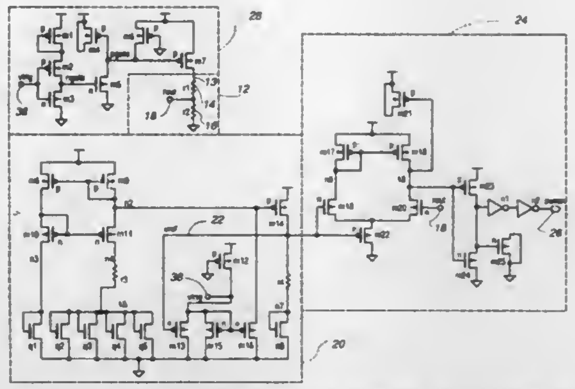
Int. Cl.^{6} H03L *7/00*

U.S. Cl. 327—143 **9 Claims**

1. A power-on detect circuit comprising:

a resistor divider having a first node, a second node coupled to ground, and a center tap;

a bandgap circuit for providing a reference voltage;



a differential amplifier having a first input for receiving the reference voltage, a second input coupled to the center tap of the resistor divider, and an output for providing a power-on detect signal;

an input section having an input for receiving a trigger voltage and an output;

a switch coupled between a source of supply voltage and the first node of the resistor divider having a control node coupled to the output of the input section; and

a capacitor-connected transistor coupled to the control node of the switch, such that the first node of the resistor divider is coupled to a source of supply voltage once the reference voltage substantially achieves a stable reference voltage level.

5,852,377

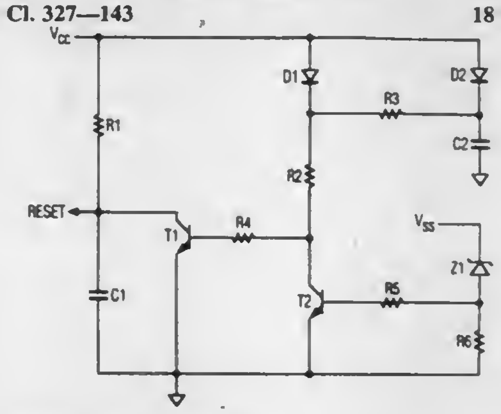
RESET CIRCUIT FOR ENSURING PROPER RESET WHEN USED WITH DECAYING POWER SUPPLIES

Robert Alan Pitsch, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 14, 1996, Ser. No. 748,888

Int. Cl.^{6} H03L *7/00*

U.S. Cl. 327—143 **18 Claims**



1. A reset circuit, comprising:

a power supply for providing a main power supply voltage and for providing an operating voltage;

voltage sensing circuitry, coupled to the power supply, for generating a control signal in response to the main power supply voltage dropping below a predetermined voltage;

a control circuit for generating a reset signal in response to the control signal; and

circuitry for providing power to the control circuit in response to the operating voltage dropping below a further predetermined voltage.

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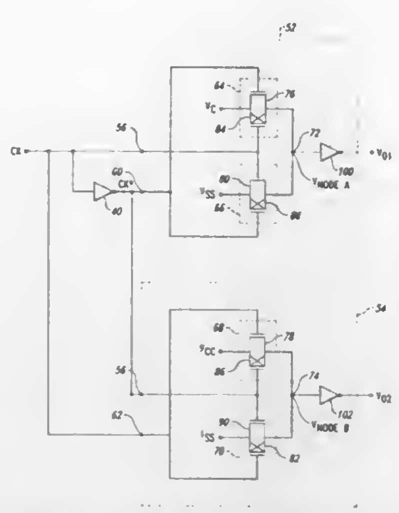
5,852,378
LOW-SKEW DIFFERENTIAL SIGNAL CONVERTER

Brent Keeth, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 11, 1997, Ser. No. 798,228

Int. Cl.⁶ H03K *3/017*

U.S. Cl. 327—171 **19 Claims**



1. A signal converter for producing low skew first and second differential output signals in response to skewed first and second differential input signals, comprising:
- a supply terminal adapted to receive a supply voltage;
- a first switching circuit coupled between the supply terminal and a first circuit node, the first switching circuit having first and second switching terminals for receiving the first and second skewed differential input signals, respectively, the first switching circuit having a first switch state in which the first switching circuit couples the supply terminal to the first circuit node and a second state in which the first switching circuit isolates the first circuit node from the supply terminal, the first switching circuit being responsive to switch between the first and second states in response to both of the first and second switching terminals changing voltages;
- a reference terminal adapted to receive a reference voltage; and
- a second switching circuit coupled between the reference terminal and the first circuit node, the second switching circuit having third and fourth switching terminals coupled to the second and first switching terminals, respectively, the second switching circuit having a first switch state in which the second switching circuit couples the reference terminal to the first circuit node and a second state in which the second switching circuit isolates the reference terminal from the first circuit node, the second switching circuit being responsive to switch from the first state to the second state in response to both of the first and second terminals changing voltages.

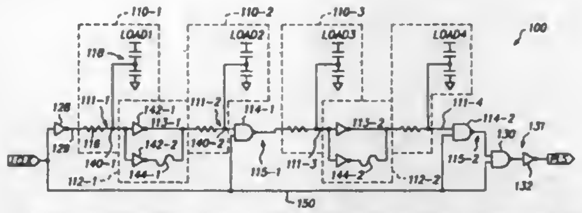
5,852,379
FUSE TUNABLE, RC-GENERATED PULSE GENERATOR

Yong H. Jiang, Milpitas, Calif., assignor to Integrated Silicon Solution Inc., Santa Clara, Calif.

Filed May 9, 1997, Ser. No. 853,406

Int. Cl.⁶ H03K *3/17;* **H01H** *85/00*

U.S. Cl. 327—176 **18 Claims**



1. A tunable pulse generator, comprising:
- an input port for receiving a stimulus signal;
- a chain of delay elements; and
- a logic circuit coupled to the input port and an output of the chain of delay elements for generating a pulse in response to a predefined logic transition in the stimulus signal, where the length of the generated pulse is governed by a delay time associated with the chain of delay eleme:.ts, and wherein the pulse automatically terminates after a tunable pulse duration;

at least one of the delay elements including;
- a tunable inverter structure including a plurality of inverters with common inputs coupled to a first signal; one subset of the plurality of inverters having an output coupled to a first output node via a respective fuse; another subset having an output coupled directly to the first output node; wherein the respective fuse has a respective open/closed circuit status and an output of the tunable inverter structure is a second signal having a current strength that is a function of the open/closed circuit status of the respective fuses; and
- a delay structure including a passive resistor with an input coupled to receive the second signal and an associated resistance that varies insignificantly as a function of operating temperature and operating voltage, and a load circuit with an input coupled to an output of the passive resistor and an associated capacitance determined by gate capacitances of transistors composing the load circuit, the transistors being connected so that the associated capacitance varies insignificantly as a function of operating temperature and operating voltage; wherein the resistance and capacitance determine in accordance with current strength of the second signal a delay associated with the delay structure that determines voltage profile characteristics of a delay output signal generated by the delay structure in response to transitions of the second signal.

5,852,380
PHASE ADJUSTING CIRCUIT, SYSTEM INCLUDING THE SAME AND PHASE ADJUSTING METHOD

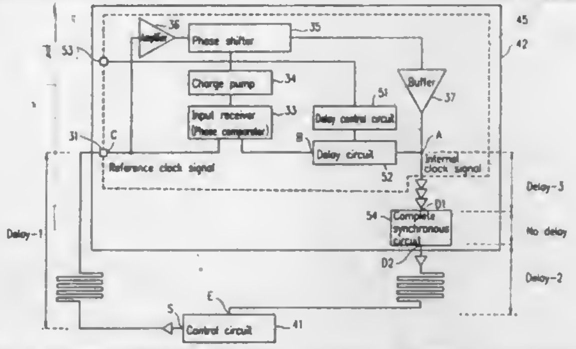
Hiroyuki Yamauchi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 15, 1996, Ser. No. 731,437

Claims priority, application Japan, Oct. 20, 1995, 7-273204

Int. Cl.⁶ H03K *5/13;5/26*

U.S. Cl. 327—243 **18 Claims**



1. A system comprising a first circuit for providing a reference clock signal and delay control information and a second circuit for operating in synchronization with the reference clock signal, the second circuit including:
- a circuit for providing an internal clock signal in a phase relationship with the reference clock signal;
- a delay circuit for delaying the internal clock signal for a predetermined delay time;
- an adjusting section for adjusting a phase difference between a phase of the reference clock signal and a phase of the internal clock signal delayed for the predetermined delay time; and

- a delay control circuit for programmably changing the predetermined delay time in accordance with the delay control information,
- wherein the predetermined delay time is determined based on at least one of a first delay time generated by a line coupling the first circuit, the first circuit providing said reference clock signal to the second circuit, a second delay time generated by a line coupling the second circuit to the first circuit and a third delay time generated by a line which transfers the internal clock signal within the second circuit.

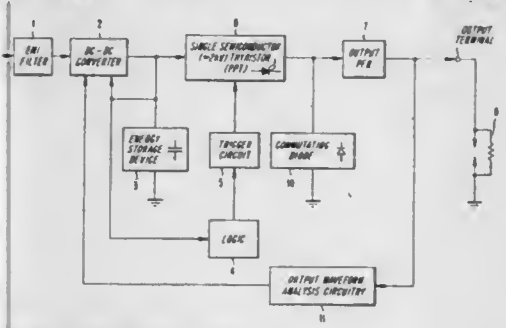
5,852,381
TURBINE ENGINE IGNITION EXCITER CIRCUIT INCLUDING LOW VOLTAGE LOCKOUT CONTROL

Theodore Steven Wilmot, Greenville, S.C.; John Cuervo Driscoll, Raleigh, N.C.; Steven John Kempinski, Seneca, and James R. Berliner, Easley, both of S.C., assignors to Cooper Industries, Inc., Houston, Tex.

Division of Ser. No. 598,904, Feb. 9, 1996, Pat. No. 5,656,966, which is a continuation-in-part of Ser. No. 207,717, Mar. 9, 1994, Pat. No. 5,592,118. This application Apr. 1, 1997, Ser. No. 831,518

Int. Cl.⁶ H03K *17/72;* **F02B** *3/08*

U.S. Cl. 327—440 **21 Claims**



1. An exciter circuit comprising:
- a node for receiving an input voltage;
- a voltage conversion device for stepping up the input voltage;
- an energy storage device for storing the stepped-up input voltage; and
- a semiconductor switching device for outputting the stored voltage to a pulse-forming network;
- wherein said pulse forming network comprises a pulse capacitor and a transformer, said pulse capacitor connected to said voltage conversion device so that said pulse capacitor is charged at substantially the same time as said energy storage device.

5,852,382
THREE-STATE CMOS OUTPUT BUFFER CIRCUIT

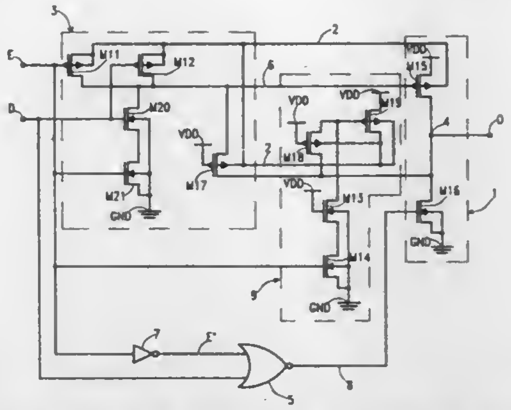
Franco Lentini, San Gregorio, and Giorgio Catanzaro, Messina, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Mar. 26, 1996, Ser. No. 623,317

Claims priority, application European Pat. Off., Mar. 31, 1995, 95830120

Int. Cl.⁶ H03K *3/01*

U.S. Cl. 327—534 **17 Claims**



1. A three-state CMOS output buffer comprising:
- a final amplifier stage comprising a pull-up transistor and a pull-down transistor connected between a voltage supply and ground and having a common output node; and
- control circuitry for driving the final amplifier stage comprising:
  - a first logic gate supplied with an input data signal and an enable/disable signal for activating a three-state mode in which the pull-up transistor and the pull-down transistor are both deactivated, the first logic gate driving the pull-up transistor; and
  - a second logic gate supplied with said input data signal and enable/disable signal, the second logic gate driving the pull-down transistor;
- wherein said pull-up transistor has a bulk electrode connected to a switchable bulk line; and
- wherein an auxiliary circuit is provided which as long as a voltage of the output node is not higher than a supply voltage of said voltage supply, keeps said switchable bulk line connected to the voltage supply;
- said first logic gate comprising means for transferring the voltage of the output node to said switchable bulk line when the voltage of the output node exceeds the supply voltage.

5,852,383
CONTROL CIRCUIT FOR BICMOS BUS DRIVERS

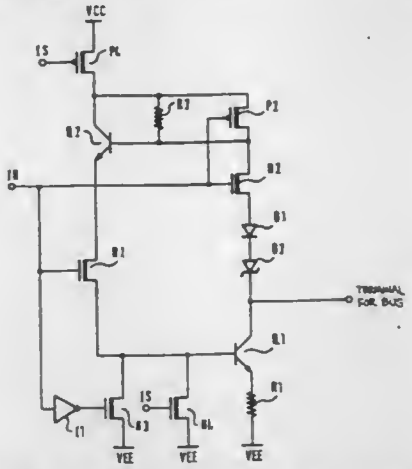
Gerd Rombach, Freising, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 11, 1996, Ser. No. 763,643

Claims priority, application Germany, Dec. 20, 1995, 195 47 754.5

Int. Cl.⁶ G05F *1/10*

U.S. Cl. 327—538 **6 Claims**



1. A control circuit for controlling the base current of a first bipolar transistor (Q1) having a base, an emitter and a collector, said circuit comprising:
- a) a second bipolar transistor (Q2) with a base, an emitter connected with the base of the first bipolar transistor (Q1), and a collector connected with a first supply potential (VCC);
- b) a first resistor (R2) which is connected between the first supply potential (VCC) and the base of the second bipolar transistor (Q2); and
- c) a diode means (D1, D2) which is connected between the base of the second bipolar transistor (Q2) and the collector of the first bipolar transistor (Q1);
- d) said diode means (D1, D2) producing a voltage drop at the base of the second bipolar transistor (Q2), which amounts to

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at least the base-emitter voltages (Vbe1, Vbe2) of the first and of the second bipolar transistor (Q1, Q2); and
e) said emitter of the first bipolar transistor (Q1) being connected with a second supply potential (VEE).

5,852,384
DUAL BAND OSCILLATOR CIRCUIT USING STRIP LINE RESONATORS

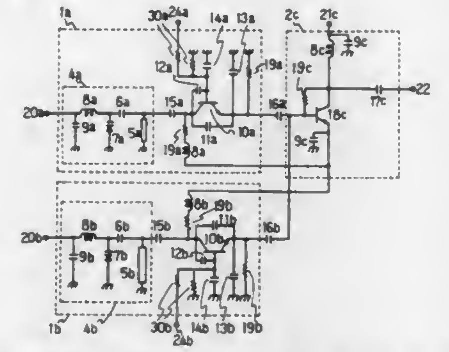
Makoto Sakakura, Kyoto; Hisanaga Miyoshi, Aichi; Kouji Hashimoto, Hyogo; Nobuo Fuse, Osaka; Hiroaki Kosugi, Osaka, and Kaoru Ishida, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 18, 1997, Ser. No. 844,039

Claims priority, application Japan, Apr. 25, 1996, 8-105798; May 14, 1996, 8-119098; Jun. 14, 1996, 8-153565

Int. Cl.^{6} H03B *5/12;5/18*

U.S. Cl. 331—48 **13 Claims**



1. A dual band oscillator circuit for producing an oscillating output at either one of first and second frequencies, comprising:
- a first oscillator circuit operable at a first frequency, including a first oscillation transistor;
- a second oscillator circuit operable at a second frequency, including a second oscillation transistor;
- a buffer amplifier circuit to which an output of the first oscillator circuit is input through a first stage-to-stage coupling element and an output of the second oscillator circuit is input through a second stage-to-stage coupling element, the buffer amplifier circuit including a buffer transistor; and
- first and second input terminals to apply a first and second control voltages for controlling operation of the first and second oscillator circuits respectively so as to alternatively operate one of the first and second oscillator circuits;
- wherein a direct current component flowing through the buffer transistor also flows through the first or second oscillation transistor that is under operation.

5,852,385
VOLTAGE CONTROLLED OSCILLATOR CIRCUIT COMPOSED OF OTA-C FILTERS

Masanori Izumikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 17, 1997, Ser. No. 931,962

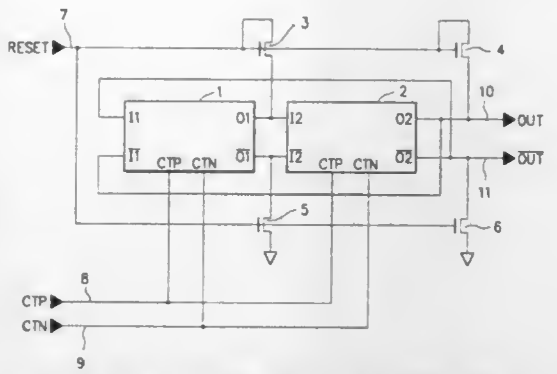
Claims priority, application Japan, Sep. 18, 1996, 8-245377

Int. Cl.^{6} H03B *5/24*

U.S. Cl. 331—57 **15 Claims**

1. A voltage controlled oscillator circuit comprising N (N: 2,3,··) sets of OTA-C filters each of which including a non-inverted input terminal, an inverted input terminal complementary to the non-inverted input terminal, a non-inverted output terminal, and an inverted output terminal complementary to the non-inverted output terminal, and in each OTA in the OTA-C filters, gate widths of 'reversed input terminals' are set narrower than gate widths of 'unreversed input terminals',

wherein, for each M (M: 1,··N−1), the non-inverted output terminal of the M-th OTA-C filter is connected with the non-inverted input terminal of the (M+1)-th OTA-C filter, the inverted output terminal of the M-th OTA-C filter is connected with the inverted input terminal of the (M+1)-th OTA-C filter, the non-inverted output terminal of the N-th OTA-C filter is connected with the inverted input terminal of the first OTA-C filter, the inverted output terminal of the N-th OTA-C filter is connected with the non-inverted input terminal of the first OTA-C filter, and oscillation output of the voltage controlled oscillator circuit is outputted from the non-inverted output terminal and the inverted output terminal of the N-th OTA-C filter.



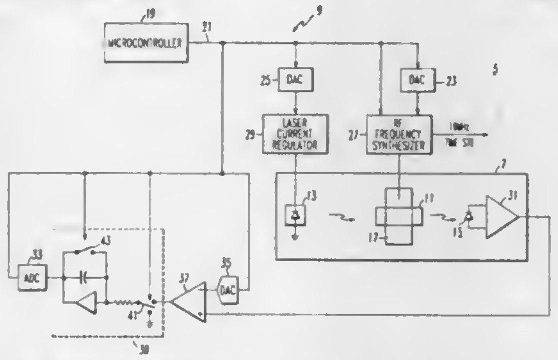
5,852,386
APPARATUS AND METHOD FOR MICROWAVE FIELD STRENGTH STABILIZATION IN CELL TYPE ATOMIC CLOCKS

Peter J. Chantry, and Carlo F. Petronio, both of Pittsburgh, Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 2, 1997, Ser. No. 867,309

Int. Cl.^{6} H03L *7/26*

U.S. Cl. 331—94.1 **24 Claims**



1. A cell type atomic clock comprising:
- a cell containing an active medium;
- optical pumping means generating an optical signal which is passed through said cell to optically pump said active medium;
- microwave means generating a microwave signal;
- means coupling said microwave signal to said active medium;
- means measuring the optical signal passed through said active medium as a measured optical signal;
- control means comprising microwave frequency control means controlling said microwave signal generating means to adjust said microwave signal to produce a microwave dip in said measured optical signal, means calculating said microwave dip from said measured optical signal and means controlling said microwave signal generating means to adjust power of said microwave signal to regulate said microwave dip;

and wherein said microwave frequency control means comprises means alternately adjusting said microwave signal to produce maximum absorption of said microwave signal by said active medium, and substantially no absorption of said microwave signal by said active medium, and wherein said means calculating said microwave dip uses measurements of said measured optical signal when said microwave signal is adjusted to produce maximum absorption and when said microwave signal is adjusted to produce substantially no absorption to calculate said microwave dip.

5,852,387
VOLTAGE-CONTROLLED OSCILLATOR THAT OPERATES OVER A WIDE FREQUENCY RANGE

Bogdan Brakus, Stockdorf, and Heinz-Jürgen Roth, München, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, and SGS-Thomson Microelectronics GmbH, Grasbrunn, both of Germany

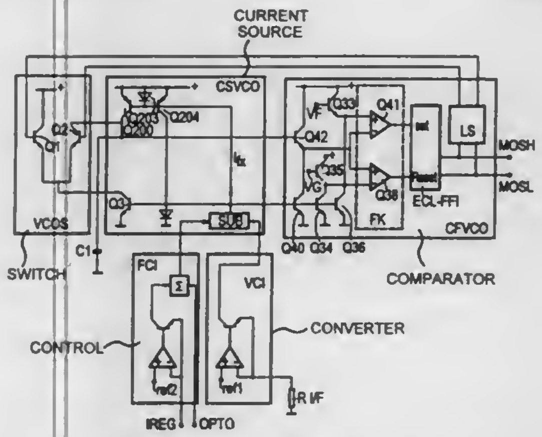
PCT No. PCT/DE95/01439, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/13899, PCT Pub. Date May 9, 1996

PCT Filed Oct. 17, 1995, Ser. No. 817,842

Claims priority, application Germany, Oct. 28, 1994, 44 38 670.2

Int. Cl.^{6} H03K *3/023;3/00*

U.S. Cl. 331—111 **7 Claims**



1. A controllable oscillator circuit arrangement, comprising:
- a comparator unit for comparing voltage potential, fed to a signal input thereof, of a storage element with a first reference voltage potential and a second reference voltage potential;
- a control stage connected to the comparator unit and which, under control of the comparator unit, defines a charging and discharge cycle via a switching unit;
- first and second current mirror units, structured as first and second controlled current sources, for charging and discharging the storage element;
- an adjusting current being fed in via an input of the first current mirror unit and a first output thereof being connected to the storage element and a second output thereof being connected to an input of the second current mirror unit;
- an oscillator frequency of the controllable oscillator being controlled by the adjusting current via the first and second current mirror units;
- an impedance converter having an input connected to the storage unit and having an output connected to the signal input of the comparator unit;
- the second output of the first current mirror unit connected directly to the input of the second current mirror unit, a first output of the second current mirror unit connected to the storage element via the switching unit and a second output of the second current mirror unit connected to the signal input of the comparator unit; and
- an emitter of the impedance converter connected to a current source whose output current is proportional to the adjusting current.

5,852,388
VOLTAGE CONTROLLED OSCILLATOR AND SENSITIVITY ADJUSTMENT

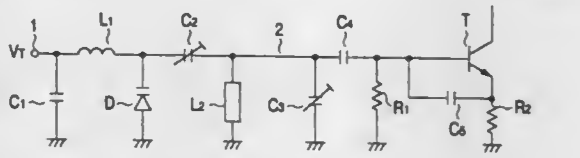
Shinya Nakai; Masashi Katsumata; Yasuyuki Hattori; Kenta Nagai; Yoshiaki Fukumitsu, and Takehiko Ishizuka, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 28, 1997, Ser. No. 901,258

Claims priority, application Japan, Aug. 5, 1996, 8-223053

Int. Cl.^{6} H03B *5/18*

U.S. Cl. 331—177 V **13 Claims**



1. A voltage controlled oscillator comprising
- a resonator for generating an oscillation signal, a frequency of which is in response to a control signal;
- amplifying means for amplifying the oscillation signal;
- oscillation frequency adjusting means for adjusting the frequency of the oscillation signal; and
- voltage control sensitivity adjusting means for adjusting a voltage control sensitivity of the oscillation signal,
- wherein said resonator comprises an input terminal to which the control signal is applied, a variable capacitance diode and a main inductor;
- said oscillation frequency adjusting means comprises a first variable capacitor arranged in parallel with the main inductor of said resonator; and
- said voltage control sensitivity adjusting means comprises a second variable capacitor arranged between the input terminal and said amplifying means, and also arranged between a hot terminal of said variable capacitance diode and a hot terminal of said main inductor of said resonator.

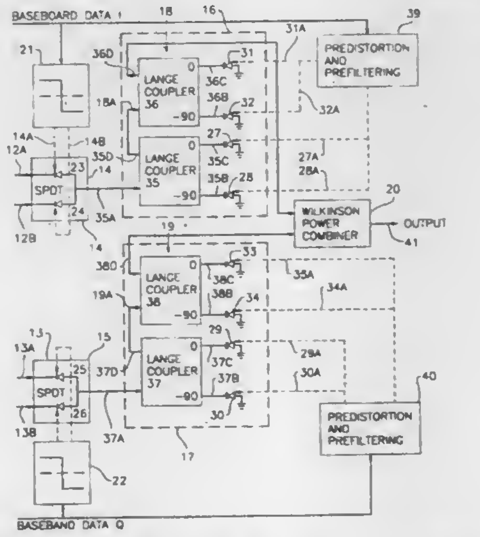
5,852,389
DIRECT QAM MODULATOR

Surinder Kumar; Abbas Mohammadi, and David M. Klymyshyn, all of Saskatchewan, Canada, assignors to Telecommunications Research Laboratories, Canada

Filed Apr. 17, 1997, Ser. No. 837,395

Int. Cl.^{6} H03C *3/00;* **H04L** *27/36*

U.S. Cl. 332—103 **18 Claims**



1. A modulator for modulating high speed QAM data onto a carrier signal, the modulator comprising:
- an oscillator having radio frequency output;

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- a coupler connected to the oscillator for dividing the output of the radio frequency oscillator into in phase and quadrature components;
- a first phase invariant voltage controlled variable attenuator connected to the coupler for receiving and attenuating the in phase component of the radio frequency output of the oscillator to produce attenuated in phase radio frequency signals;
- a second phase invariant voltage controlled variable attenuator connected to the coupler for receiving and attenuating the quadrature component of the output of the radio frequency oscillator to produce attenuated quadrature radio frequency signals;
- means for supplying control signals having plural voltage levels corresponding to baseband data signals to the first and second phase invariant voltage controlled variable attenuators to control attenuation of the in phase and quadrature components of the oscillator, in which the control signals contain less information than is contained in the baseband data signals;
- means for supplying the in phase and quadrature components with information in the baseband data signals that is not contained in the control signals; and
- a combiner for combining the attenuated in phase and quadrature radio frequency signals.

5,852,390
CIRCULARLY POLARIZED WAVE-LINEARLY POLARIZED WAVE TRANSDUCER

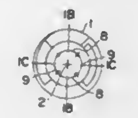
Yoshikazu Yoshimura, Takatsuri, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

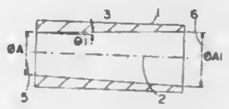
Filed Nov. 13, 1996, Ser. No. 748,370

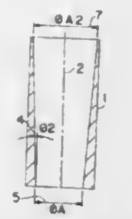
Claims priority, application Japan, Nov. 13, 1995, 7-293941

Int. Cl.^{6} H01P ***1/17***

U.S. Cl. 333—21 A **11 Claims**







1. A circularly polarized wave-linearly polarized wave transducer comprising:

- a circular waveguide having an inner wall, an axial direction and a circumferential direction perpendicular to the axial direction, said circular waveguide having a plurality of curved portions, each portion having a different position along the circumferential direction of the circular waveguide,
- the diameter of the inner wall in a first one of said plurality of curved portions being tapered with a first constant gradient in the axial direction, the diameter of the inner wall in a second one of said plurality of curved portions being tapered with a second constant gradient in the axial direction, said second constant gradient being different from said first constant gradient,
- wherein a section of the inner wall of at least one end of the waveguide has an elliptical shape.

5,852,391
MICROWAVE/MILLIMETER-WAVE FUNCTIONAL MODULE PACKAGE

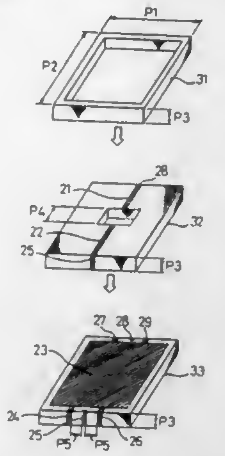
Shin Watanabe; Tominaga Watanabe, and Hideki Ikuta, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 16, 1996, Ser. No. 680,788

Claims priority, application Japan, Nov. 8, 1995, 7-290140

Int. Cl.^{6} H01P ***5/00;*** **H01L** ***29/40***

U.S. Cl. 333—246 **15 Claims**



1. A functional module package comprising:

- multilayered dielectric substrates; and
- signal through holes (**25**, **28**) connected to signal conductors that are formed on one of the dielectric substrates, and ground through holes (**24**, **26**, **27**, **29**) connected to ground conductors that are formed on another of the dielectric substrates, the through holes being formed on side faces of the dielectric substrates and serving as terminals,
- each pair of the ground through holes (**24** and **26**, or **27** and **29**) being arranged on opposite sides of a corresponding one (**25** or **28**) of the signal through holes,
- the terminals being positioned between parts of the package to be connected to an external circuit board and the signal and ground conductors.

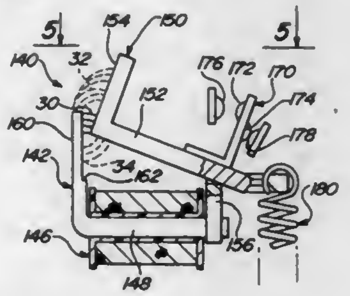
5,852,392
ELECTROMAGNETIC RELAY

Hrair N. Aharonian, Westland, Mich., assignor to Letra, Inc., Canton, Mich.

Filed Dec. 7, 1995, Ser. No. 568,695

Int. Cl.^{6} H01H ***51/22***

U.S. Cl. 335—80 **1 Claim**



1. An electromagnetic relay comprising

- a generally U-shaped magnetically permeable frame comprising first and second spaced legs connected by a bight portion;
- an electromagnetic coil disposed about said frame developing a magnetic flux therein of opposite polarity in the legs thereof, respectively,
- first and second flat pole faces of like polarity on the first leg of said frame extending at a right angle to one another; and
- an L-shaped armature comprising a leg portion having a foot portion at one end thereof extending at a right angle to the leg portion, the opposite end of the leg portion of said armature being pivoted on the second leg of said frame with the axis of rotation thereof lying in the plane of the first pole face on the first leg of said frame and extending parallel to the second pole face therein, said armature being rotatable between a first position wherein both the leg and foot portions thereof extend at acute angles to the first and second pole faces, respectively, on the first leg of said frame and a second position wherein the foot portion of said armature lies in close juxtaposed relation to the second pole face on the first leg of said frame and the leg portion of said armature is engaged with the first pole face on the first leg of said frame to maximize magnetic flux efficiency and to preclude jamming of the foot portion of said armature against the second pole face.

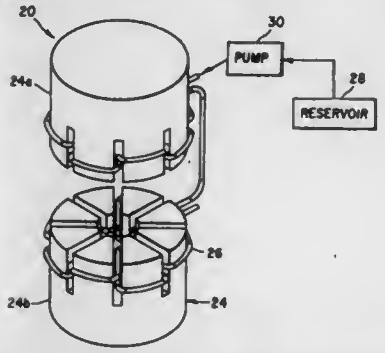
5,852,393
APPARATUS FOR POLARIZING RARE-EARTH PERMANENT MAGNETS

Svetlana Reznik, Rochester; Edward P. Furlani, Lancaster, and William E. Schmidtmann, Naples, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1997, Ser. No. 866,996

Int. Cl.^{6} H01F ***7/20***

U.S. Cl. 335—284 **17 Claims**



1. Apparatus for polarizing a multipole rare-earth permanent magnet having a main surface, comprising:

- (a) a support member for supporting the magnet;
- (b) conductive tubular elements in the form of a coil, the tubular elements being mounted on the support member in relation to the magnet so that the tubular elements produce a magnetizing field across the surface of the magnet sufficient to polarize such magnet when the tubular elements are energized;
- (c) means for energizing the tubular elements to produce the magnetizing field to polarize the magnet; and
- (d) means for circulating coolant through the tubular elements to limit the heat build-up of the tubular elements when the tubular elements are energized.

5,852,394
ELECTROMAGNETIC COUPLING DEVICE FOR CHARGING AN ELECTRIC MOTOR VEHICLE

Kunihiko Watanabe; Shuichi Kanagawa, both of Yokkaichi; Tomohiro Keishi, and Shuji Arisaka, both of Osaka, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., and Sumitomo Electric Industries, Ltd., both of Japan

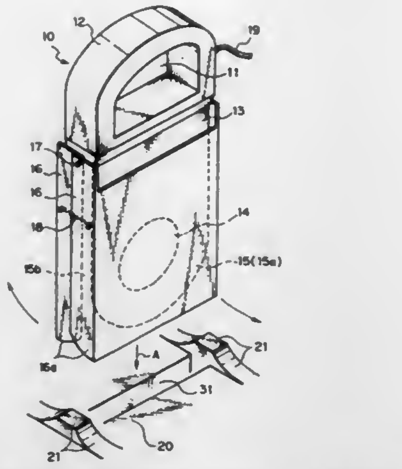
Filed Aug. 23, 1996, Ser. No. 697,363

Claims priority, application Japan, Oct. 19, 1995, 7-297866

Int. Cl.^{6} H01F ***27/06;*** **H01R** ***13/44;*** **H01M** ***10/44***

U.S. Cl. 336—66 **8 Claims**

1. An electromagnetic coupling device for connecting a source of electricity with a receiver, an incoming unit containing at least one secondary coil near a depression in said receiver,



- a supplying unit having a primary coil in a casing therefor, said primary coil adapted to be electromagnetically coupled to said secondary coil when said primary coil is introduced into said depression in an insertion direction, said supplying unit having a leading end in said insertion direction and a trailing end remote from said leading end,
- a first cover pivotally mounted on a first side of said supplying unit at a point between said leading end and said trailing end and rotatable in a plane perpendicular to said insertion direction between a protecting position, wherein said first cover overlies said first side of said primary coil, and an open position wherein said first cover is rotated about said point so that one end thereof is spaced apart from said primary coil, said first cover being urged into said open position from said protecting position by insertion of said primary coil into said depression,
- a second cover pivotally mounted on a second side, opposite said first side, of said primary coil at said point and rotatable in said plane between said protecting position and said opening position, said second cover being urged into said open position from said protecting position by insertion of said primary coil into said depression,
- at least one guide on said receiver adjacent said depression, said guide adapted to contact said first cover and said second cover, whereby said first cover and said second cover are moved from said protecting position to said open position as said supply unit enters said depression.

5,852,395
ROGOVSKI COIL

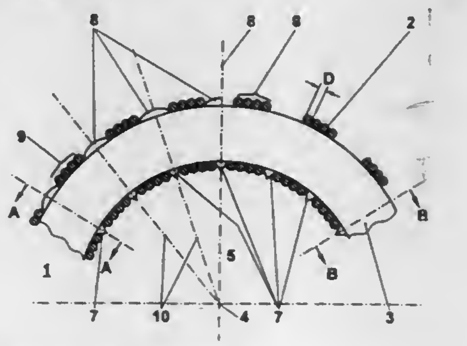
Antonio Bosco, Wikon; Andrzej kaczkowski, Würenlingen, and Manfred Seidel, Fislisbach, all of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Aug. 12, 1997, Ser. No. 909,738

Claims priority, application Germany, Oct. 4, 1996, 196 40 981.0

Int. Cl.^{6} H01F ***27/28;5/00;38/20***

U.S. Cl. 336—174 **9 Claims**



1. A Rogovski coil comprising:

- a winding applied to a winding support made from an insulating material, said winding including a central axis having an opening which is enclosed by the winding support and penetrated by the central axis,

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wherein a surface, facing the central axis, of the winding support is provided with first stops, which are distributed on a circumference, extend in a direction of the central axis, and divide the winding into winding segments, and

wherein a spacing between two of the first stops is always an integral multiple of the diameter of the wire forming the winding.

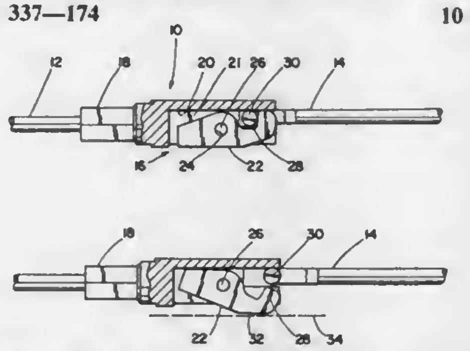
5,852,396
FUSIBLE ELEMENT WITH HIGH SURGE CAPABILITY

Glenn R. Borchardt, Round Lake Beach, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Aug. 19, 1997, Ser. No. 914,574

Int. Cl.^{6} H01H *37/76;85/04;71/10*

U.S. Cl. 337—174 **10 Claims**



1. A fusible element comprising two separable conductors and means for releasably securing said two separable conductors including interfitting parts surrounded by fusible material such that forces separating the interfitting parts result in compression forces on the fusible material, said interfitting parts comprising said two separable conductors including respective interfering portions of said separable conductors such that relative movement is required between said interfering portions before they can be separated.

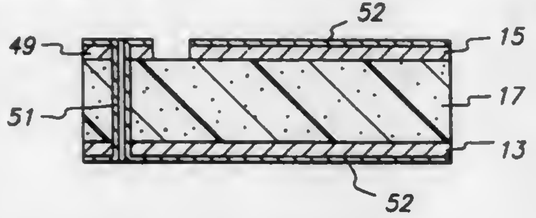
5,852,397
ELECTRICAL DEVICES

Chi-Ming Chan, Kowloon; Michael Zhang, Taikoo Shing, both of Hong Kong; Daniel Chandler, Menlo Park, Calif.; Shou-Mean Fang, Yokohama, Japan; Dennis Siden, Portola Valley, and Mark Thompson, San Carlos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 727,869, Oct. 8, 1996, abandoned, which is a continuation of Ser. No. 302,138, Sep. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 121,717, Sep. 15, 1993, abandoned, and Ser. No. 152,070, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 910,950, Jul. 9, 1992, abandoned. This application Jul. 25, 1997, Ser. No. 900,787

Int. Cl.^{6} H01C *7/10*

U.S. Cl. 338—22 R **55 Claims**



1. A circuit protection device which comprises:

(1) a la first laminar electrode;

(2) a second laminar electrode;

(3) a laminar PTC resistive element which (i) exhibits PTC behavior, (ii) comprises a laminar element composed of a PTC conductive polymer, (iii) has a first face to which the first electrode is secured and an opposite second face to which the second electrode is secured, and (iv) defines an aperture which runs between the first and second faces;

(4) a third laminar conductive member which (i) is secured to the second face of the PTC resistive element in the area of the aperture, and (ii) is spaced apart from the second electrode; and

(5) a transverse conductive member which

(a) lies within the aperture defined by the PTC resistive element,

(b) runs between the first and second faces of the PTC element,

(c) is secured to the PTC element, and

(d) is physically and electrically connected to the first laminar electrode and to the third laminar conductive member, but is not connected to the second laminar electrode.

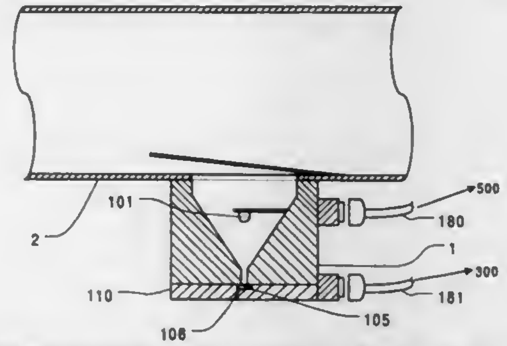
5,852,398
APPARATUS FOR INDICATING FAILURE OF AN AIR FILTRATION SYSTEM IN A DIESEL ENGINE

Norman Leon Helman, 6701 E. Presidio Rd., Scottsdale, Ariz. 85254, assignor to Norman Leon Helman, Scottsdale, Ariz.

Filed Mar. 13, 1998, Ser. No. 42,113

Int. Cl.^{6} B60Q *1/00*

U.S. Cl. 340—438 **7 Claims**



1. A dust/particulate detector monitoring the failure of the air filtration unit and air intake ducting of a diesel engine by generating a signal indicative of the concentration of dust/particulates entrained in the air flow of the diesel engine downstream of the filtration devices and intake system ducting resulting from failures of the devices comprising:

Means for providing the detector in communication with the airflow of the diesel engine;

Means for depositing said dust/particulates on an optical sensor contained within the detector;

Means for detecting changes in opacity of said dust/particulates deposited on the sensor, causing optically detectable changes in transmitted optical signals in the dust/particulate sensor;

Means for calibrating the detector to produce a number of reference levels for comparison and indication.

5,852,399
DECELERATION WARNING SYSTEM

Susan J. Pettijohn, 726 Del Mar Ave., Novato, Calif. 94947

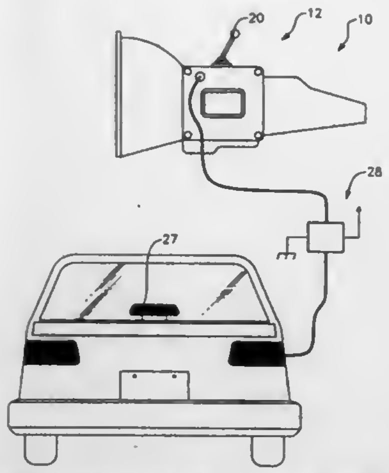
Filed Nov. 19, 1997, Ser. No. 974,059

Int. Cl.^{6} B60Q *1/50*

U.S. Cl. 340—467 **5 Claims**

1. A gear shift actuated deceleration indicator comprising, in combination:

a gear shift module including a planar plate having a plurality of parallel oval cut outs with a lateral cut out formed in the plate and communicating with a central extent of each of the parallel oval cut outs, the cut outs allowing the movement of a gear shift stick therein between front and rear ends of each oval cut out which each place the gear shift stick in a predetermined gear;



a switch mounted between a pair of oval cut outs corresponding to a first and a third gear, respectively, the switch including a first contact pivotally coupled adjacent the central lateral cut out and extending therein adjacent the oval cut out corresponding to the third gear and a second stationary contact mounted adjacent the central lateral cut out and the cut out corresponding to the first gear, whereby the contacts are closed only upon the gear shift stick being maneuvered from the oval cut out corresponding to the third gear and an oval cut out corresponding to a second gear;

a brake light mounted to a rear of the vehicle and adapted for illuminating only upon the receipt of power; and

control means connected between the switch and the brake light for transmitting power to the brake light upon the closing of the switch, wherein the power is transmitted to the brake light for a period of time that is longer than a period of time that the switch is closed when the gear shift stick is maneuvered from the oval cut out corresponding to third gear to the oval cut out corresponding to second gear in a swift continuous motion.

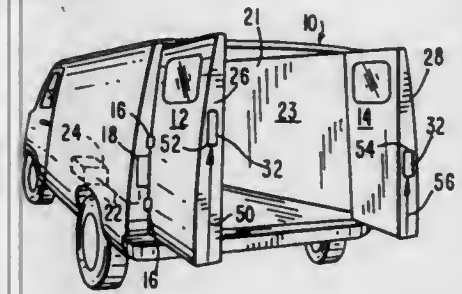
5,852,400
LIGHT-REFLECTING VAN REAR DOOR DISPLAY

Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Nov. 6, 1997, Ser. No. 965,500

Int. Cl.^{6} B60Q *1/26*

U.S. Cl. 340—463 **1 Claim**



1. A rearwardly light-reflecting van rear door display comprising identical left door and right door light reflectors each having a base, light-reflecting glass means mounted on said base, and a cover of a transparent construction material and of a selected height disposed in covering relation over said light-reflecting glass means and onto said base, hingedly mounted van left and right doors each having an end door panel remote from a hinged end thereof bounding when in facing relation with each other in a closed position of said doors a clearance of a prescribed width therebetween, said total height of said reflector covers being selected to be approximately the prescribed width of said clearance, and operative positions of said left door and right door reflectors on cooperating respective left door and right door end panels in said clearance therebetween and at different height levels so as to obviate contact of said reflectors with each other in said closed position of said van rear doors, whereby in an open condition of said van rear doors as occurs during loading and unloading said van a headlight of an approaching motorist causes an optimum extent of light to be reflected rearwardly from said reflector light-reflecting glass means to signal the presence of said van to said approaching motorist.

5,852,401
DISTRESS MESSAGE SIGNAL SENDING DEVICE

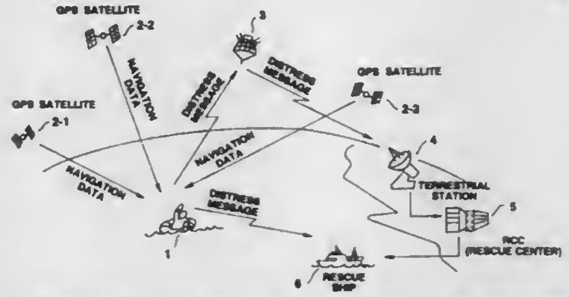
Kazunori Kita, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1997, Ser. No. 880,909

Claims priority, application Japan, Jun. 27, 1996, 8-167790

Int. Cl.^{6} G08B *1/08*

U.S. Cl. 340—539 **12 Claims**



1. A portable distress message sending device for informing a rescue side of a fact of a disaster, comprising:

positional information generating means for receiving GPS signals sent by a plurality of GPS satellites on the earth at a position of the portable distress message sending device, and generating positional information on the latitude and longitude of the position of the portable distress message sending device on the earth;

a plurality of sensors each for sensing a respective different one of aspects of a state of the portable distress message sending device;

distress message signal generating means, responsive to at least two of said plurality of sensors sensing corresponding respective different aspects of the state of the portable distress message sending device, for generating a distress message signal containing the positional information generated by said positional information generating means; and

sending means for sending the distress message signal by radio out of the portable distress sending device.

5,852,402
INTRUSION DETECTION SYSTEM

Haim Perry, Hackensack, N.J., assignor to Safeguards technology, inc., Emerson, N.J.

Filed May 5, 1998, Ser. No. 72,653

Int. Cl.^{6} G08B *13/00*

U.S. Cl. 340—541 **14 Claims**

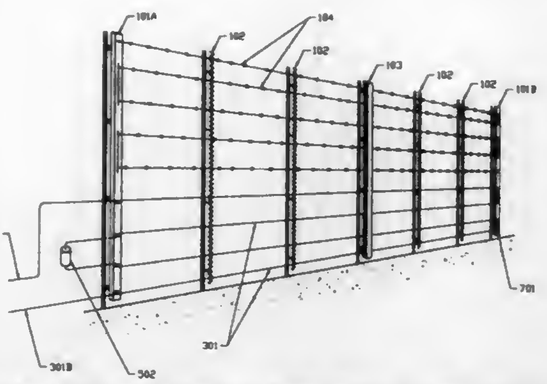
1. An intrusion barrier and detection system comprising:

first and second anchor posts spaced apart from one another to define a section of an intrusion detection fence;

at least one barbed wire extending under tension between the first and second anchor posts;

an electrically-conductive path extending between first and second ends of the path, the electrically-conductive path comprising at least one cable segment which extends under tension between the first and second anchor posts, the cable segment forming a portion of the fence, said cable segment comprises:

an inner, conductive core which forms a portion of the electrically-conductive path;



- a protective layer formed over the inner core, the protective layer providing a barrier against the cutting of the cable;
- a tension sensor coupled to the cable segment between the first and second anchor posts, the tension sensor configured to detect changes in the tension of the cable; and
- a circuit monitoring device coupled to the first and second ends of the electrically-conductive path, the circuit monitoring device configured to monitor the resistance of the electrically-conductive path to detect at least a cutting of the cable.

5,852,403

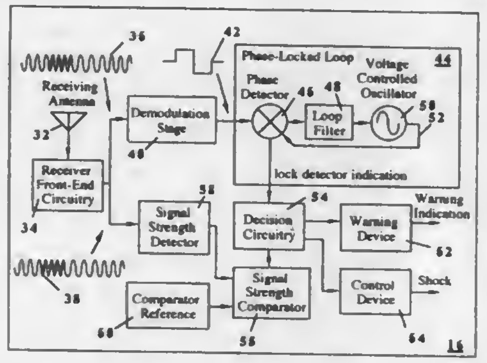
WIRELESS PET CONTAINMENT SYSTEM

Allen H. Boardman, Maryville, Tenn., assignor to Radio Systems Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 216,691, Mar. 23, 1994, Pat. No. 5,381,129. This application Jan. 4, 1995, Ser. No. 368,357

Int. Cl.^{6} G08B *21/00;* **A01K** *15/02*

U.S. Cl. 340—573 **30 Claims**



1. A pet containment system comprising:

- (a) a transmitter for transmitting a series of electromagnetic signals, wherein said transmitter further includes:
  - (1) means for generating the electromagnetic signals,
  - (2) means for transmitting the electromagnetic signals, and
  - (3) at least one transmitting antenna; and
- (b) a receiver removably attached to the pet, said receiver for receiving the series of electromagnetic signals from said transmitter, wherein said receiver further includes:
  - (1) at least one receiving antenna,
  - (2) means for comparing the phase of the received electromagnetic signals from said transmitter with a predetermined phase and for producing an electronic indication of a loss of phase, wherein if the phase of the received electromagnetic signals from said transmitter is not substantially in phase with the predetermined phase then the electronic indication of a loss of phase is produced, and
  - (3) means for producing a control stimulus to the pet,

such that when there is no electronic indication of a loss of phase, then there is no control stimulus to the pet, and when there is an electronic indication of a loss of phase, then there is a control stimulus to the pet.

5,852,404

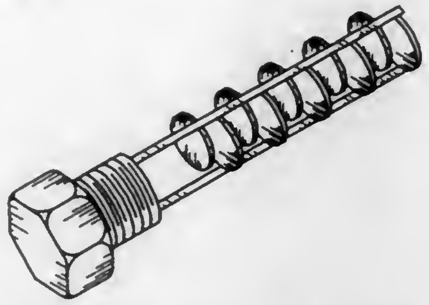
APPARATUS FOR THE DETECTION AND IDENTIFICATION OF METAL PARTICLES, COOLANT OR WATER IN ENGINE OIL OR HYDRAULIC FLUID

Bijan K. Amini, 5110 San Felipe #131, Houston, Tex. 77056

Filed Jul. 30, 1996, Ser. No. 688,395

Int. Cl.^{6} G08B *21/00*

U.S. Cl. 340—627 **3 Claims**



1. An apparatus for the detection and identification of metal particles, coolant or water in engine oil or hydraulic fluid, the apparatus comprising:

- (a) means for generating a high frequency oscillating electric field within the fluid,
- (b) means for generating an electromagnetic field within the fluid,
- (c) means for measuring a real part and an imaginary part of the complex impedance associated with the interaction of the electric field and the fluid,
- (d) means for determining at least one of the presence, the absence or the variation of metal particles, coolant or water in the fluid based upon the real part and an imaginary part of the complex impedance measured.

5,852,405

WIRELESS LAN SYSTEM

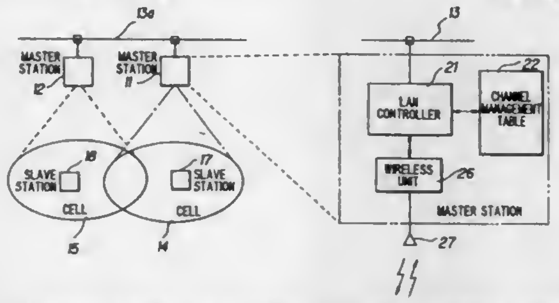
Norihiro Yoneda, and Kiyotaka Shikata, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 26, 1995, Ser. No. 548,532

Claims priority, application Japan, Mar. 17, 1995, 7-058608

Int. Cl.^{6} H04Q *7/00*

U.S. Cl. 340—825.02 **10 Claims**



1. A master station in a wireless LAN system having a plurality of master stations each connected to a wired LAN and a plurality of slave stations each connected to a terminal for wirelessly sending and receiving signals to and from one of said plurality of master stations via a prescribed channel, each master station comprising:

- a table for managing state of channel use by other master stations;
- means for transmitting state of use of its own channel to other master stations periodically in the form of a notification packet;
- means for receiving and storing state of channel use of said other master stations in said table when a notification packet has been received from each of said other master stations;
- means for selecting a channel not being used by said other master stations upon referring to said table when communication is to be performed with a slave station under supervision; and
- means for communicating with the slave station via the channel selected.

5,852,406

MULTI-PROTOCOL DATA BUS SYSTEM

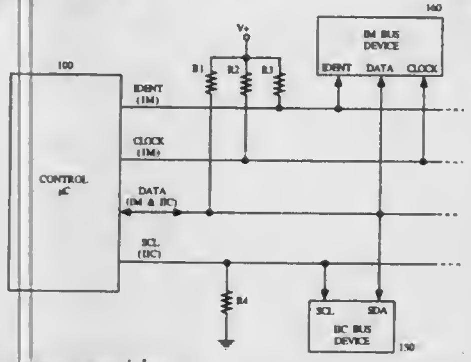
Gabriel Alfred Edde, Indianapolis, and Michael David Landis, Hamilton, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 5, 1995, Ser. No. 435,818

Claims priority, application United Kingdom, Jul. 15, 1994, 9414331

Int. Cl.^{6} A04Q *1/00*

U.S. Cl. 340—825.06 **20 Claims**



1. A system comprising:

- a data bus comprising first, second and third signal paths; and
- control means for generating a first clock signal and a first data signal according to a first data bus protocol during a first mode of operation of said system, and for generating a second clock signal and a second data signal according to a second data bus protocol during a second mode of operation;
- said control means providing said first clock signal and said first data signal on said first and third signal paths, respectively, in accordance with said first data bus protocol during said first mode of operation, and providing said second clock signal and said second data signal on said second and third signal paths, respectively, in accordance with said second data bus protocol during said second mode of operation.

5,852,407

MULTISTAGE INTERCONNECTION NETWORK AND PARALLEL COMPUTER USING THE SAME

Masato Ishii, Sagamihara, and Patrick Hamilton, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 14, 1996, Ser. No. 663,984

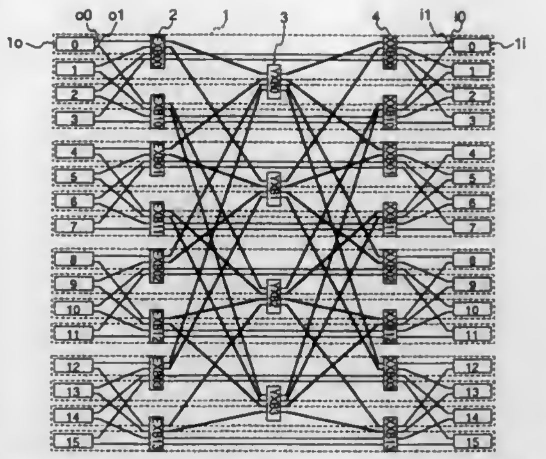
Claims priority, application Japan, Jun. 21, 1995, 7-154286

Int. Cl.^{6} H04B *3/38*

U.S. Cl. 340—825.8 **20 Claims**

1. A parallel computer comprising:

- a multistage interconnection network for interconnecting N (N: positive integer) processor nodes each having two input ports and two output ports,
- wherein said multistage interconnection network interconnects a plurality of stages each having a plurality of switches;
- each switch has M (M: positive integer) input ports and M output ports;
- said plurality of stages include a first stage each switch of which has an input port connected to the output port of each processor node and a final stage each switch of which has an output port connected to the input port of each processor node;
- said first and final stages each have 2×<N/M> switches (where <N/M> is a minimum integer equal to or larger than N/M); and



- the two output ports of each processor node are connected to the input ports of different switches at said first stage, and the two input ports of the processor node are connected to the output ports of different switches at said final stage.

5,852,408

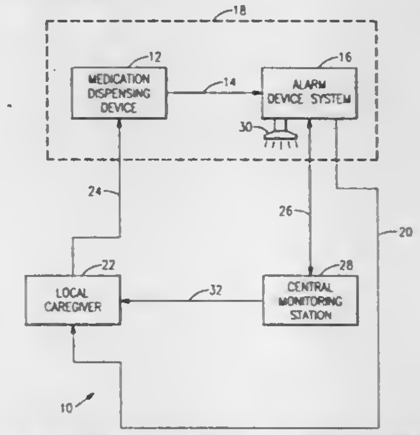
MEDICATION DISPENSING AND COMPLIANCE MONITORING SYSTEM

Steven Aagard Christiansen, Box 33; Steven John Colling, Box 161, and George Henry Weiser, Box 474, all of Meeteetse, Wyo. 82433

Filed Oct. 16, 1995, Ser. No. 543,670

Int. Cl.^{6} G08B *19/00*

U.S. Cl. 340—870.09 **17 Claims**



1. A medication dispensing and compliance monitoring system, comprising:

- (a) a medication dispensing device adapted to automatically dispense a predetermined medication at a predetermined time to a patient, said medication dispensing device including means for detecting non-compliance by said patient to remove said medication from said medication dispensing device wherein said means for detecting non-compliance includes means for determining an amount of time intermediate the dispensing of said medication by said medication dispensing device into a drawer of said medication dispensing device and the removal of said medication from said drawer of said medication dispensing device and by comparing said amount of time to a predetermined limit, and including means for generating a signal responsive to said means for detecting non-compliance whereupon a determination of said amount of time exceeding said predetermined limit results in the activation of said means for generating said signal; and
- (b) an alarm system including means for responding to said signal, said means for responding adapted for summoning help for said patient wherein said means for responding to said signal includes means for placing a telephone call to a

predetermined telephone number to summon help for said patient and including means for placing at least one additional telephone call to an alternative predetermined telephone number when said telephone call is not answered within a predetermined interval.

5,852,409
TELEMETRY

David Bell, 570 Halifax Road, Wibsey, Bradford, West Yorkshire BD6 2NA, United Kingdom

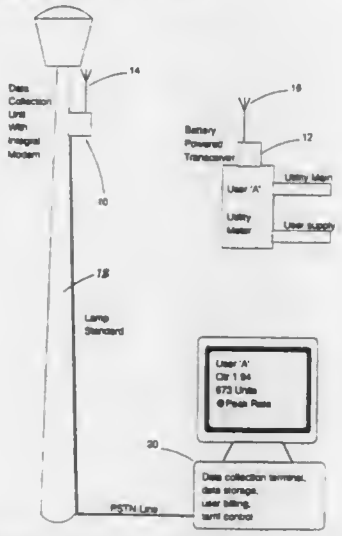
PCT No. PCT/GB95/00405, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO95/27273, PCT Pub. Date Oct. 12, 1995

PCT Filed Feb. 27, 1995, Ser. No. 702,466

Claims priority, application United Kingdom, Mar. 31, 1994, 9406500; Sep. 10, 1994, 9418266

Int. Cl.^{6} G08B *23/00*

U.S. Cl. 340—870.02 **25 Claims**


Data Collection Unit With Integral Modem
14
16
12
Battery Powered Transceiver
User 'A'
Utility Main
Utility Meter
User supply
10
18
Lamp Standard
User 'A'
20
PSTN Line
Data collection terminal, data storage, user billing, tariff control

1. A data gathering unit comprising a transceiver for the communication of information between the data gathering unit and a central data collection unit, means for transmitting data in response to a signal received via the transceiver, means for extracting power down time information from the signal received via the transceiver and means for subsequently interrupting the power supply to the transceiver for a period of time dependent upon the power down time information.

5,852,410
LASER OPTICAL PATH DEGRADATION DETECTING DEVICE

Gerald M. Berger, Northbrook, Ill., assignor to Maxtec International Corporation, Chicago, Ill.

Filed Mar. 4, 1997, Ser. No. 811,318

Int. Cl.^{6} G08G *1/16*

U.S. Cl. 340—903 **11 Claims**

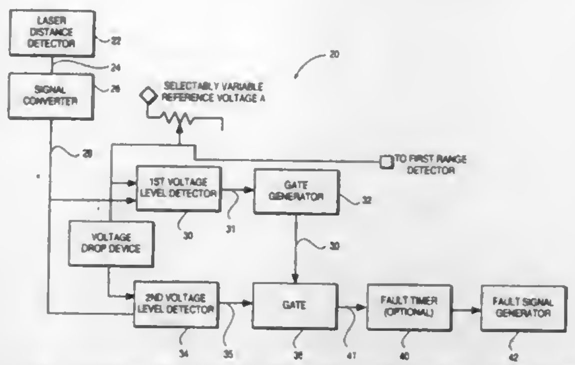
1. A laser optical path degradation detecting device for use in preventing collision of two objects, at least one of which is movable with respect to the other, the device comprising:

a laser distance detector which uses a laser beam to detect the distance between said two objects and which generates actual distance signals representative of the distance between said two objects;

voltage level detector means responsive to the distance signals for generating a first predetermined point signal upon the distance signals being in a range representative of a first predetermined distance or less, and generating a second predetermined point signal upon the distance signals being in a range representative of a second predetermined distance or less, wherein the second predetermined distance is less than the first predetermined distance;

means for determining if the second predetermined point signal is generated within a predetermined time interval relative to the generation of the first predetermined point signal; and

means for generating a fault signal upon the occurrence of said second predetermined point signal being generated within said predetermined time interval relative to the generation of said first predetermined point signal.



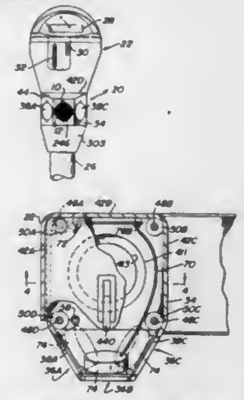
5,852,411
UNIVERSAL ADAPTOR FOR ELECTRONIC PARKING METERS

James P. Jacobs, Phoenixville, and Vincent G. Yost, Harleysville, both of Pa., assignors to Intelligent Devices, Inc., Harleysville, Pa.

Continuation-in-part of Ser. No. 684,368, Jul. 19, 1996. This application Oct. 9, 1996, Ser. No. 731,096

Int. Cl.^{6} B60Q *1/48*

U.S. Cl. 340—932.2 **100 Claims**



1. An adaptor for coupling an electronic parking meter to a vault on a stanchion at a corresponding curb side parking space, or at a parking lot space, said adaptor comprising:

(a) an enclosure disposed between the vault and the electronic parking meter, said enclosure comprising a closed wall defining an internal passageway for permitting coins to drop therethrough from the electronic parking meter to the vault;

(b) a vehicle detector, inside said enclosure, for detecting the presence of a vehicle in the corresponding curb side parking space or parking lot space, said vehicle detector being in electrical communication with the electronic parking meter; and

(c) securement means comprising a plurality of sleeves adapted to receive respective bolts for securing the electronic parking meter and said adaptor to the vault by parking authority personnel only.

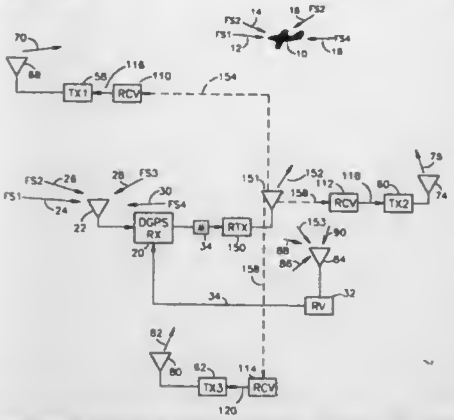
5,852,412
DIFFERENTIAL GROUND STATION REPEATER

Rodney L. Stangeland, Plymouth, Minn., assignor to Honeywell Inc.

Filed Oct. 30, 1995, Ser. No. 550,488

Int. Cl.^{6} G08B *1/123*

U.S. Cl. 340—988 **15 Claims**



1. A differential global position system for use in determining one or more parameters of an object with respect to earth by use of information transmitted to the object from a plurality of satellites which information may contain errors due to path distortions, comprising:

a ground receiving station at a first known location and including a receiver to receive the information from the satellites and to produce an output signal indicative of the errors;

means located proximate the ground receiving station for encoding the output signal in accordance with requirements for data transmission between the ground receiving station and the object;

a first transmitter located proximate the ground receiving station for broadcasting the encoded output signal to the object; and

a second transmitter located at a second position remote from the receiving station to receive the broadcast encoded output signal from the first transmitter and to retransmit it to the object.

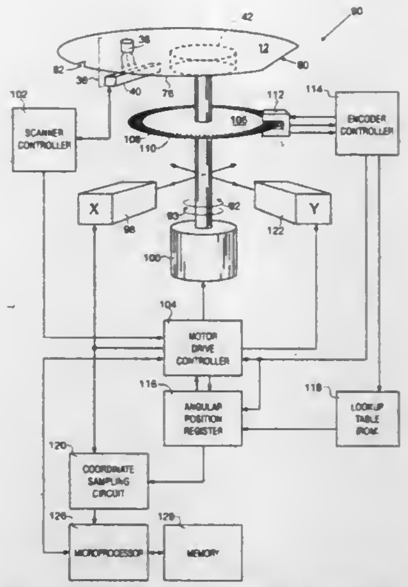
5,852,413
VIRTUAL ABSOLUTE POSITION ENCODER

Paul Bacchi, Novato, and Paul S. Filipski, Greenbrae, both of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

Continuation of Ser. No. 542,833, Oct. 13, 1995, abandoned. This application Sep. 11, 1997, Ser. No. 927,837

Int. Cl.^{6} H03M *1/30*

U.S. Cl. 341—13 **14 Claims**



1. An encoding apparatus for determining an absolute position of a movable member relative to a stationary member, comprising:

an absolute encoder scale supported by a first one of the members, the absolute encoder scale including a continuous series of abutting N-bit bar code symbols, each bar code symbol including an M-bit start code that is the same for every bar code symbol and a N-M bit sector-identifying code that does not include the start code and is unique from every other sector-identifying code, and each sector-identifying code identifying an absolute reference datum position along the absolute encoder scale;

a relative encoder scale supported by the first one of the members, the relative encoder scale including a diffraction grating illuminated by a monochromatic light source to produce an interference pattern having amplitude maxima and amplitude minima that identify relative positions along the relative encoder scale;

a detector supported by a second one of the members sensing the bar code symbols and the interference pattern and generating respective absolute and relative encoding signals;

memory storage locations that store the absolute reference data positions of the absolute encoder scale; and

a decoder operatively associated with the memory storage locations to retrieve the stored absolute reference data positions corresponding to the sector-identifying codes in response to the absolute encoding signal to determine the absolute reference data positions along the absolute encoder scales, and the decoder responsive to the relative encoding signal for interpolating the relative positions between the amplitude maxima and amplitude minima to determine the absolute position of the movable member relative to the stationary member and to periodically sense and confirm the absolute position in response to the decoded absolute reference data positions.

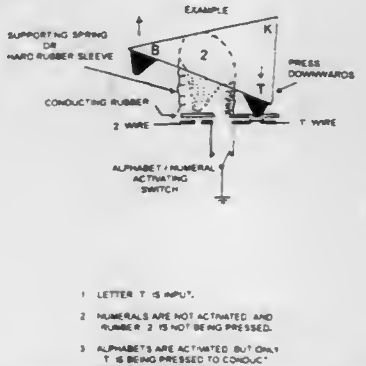
5,852,414
4-WAY TRIANGULAR-SHAPED ALPHANUMERIC KEYBOARD

Seymour H. Yu, and David H. Yu, both of 77 Oxford, Irvine, Calif. 92715

Filed Jan. 4, 1995, Ser. No. 368,348

Int. Cl.^{6} H03K *17/94*

U.S. Cl. 341—22 **2 Claims**


EXAMPLE
K
B
2
T
SUPPORTING SPRING OR HARD RUBBER SLEEVE
PRESS DOWNWARDS
CONDUCTING RUBBER
2 WIRE
T WIRE
ALPHABET / NUMERAL ACTIVATING SWITCH
1 LETTER T IS INPUT.
2 NUMERALS ARE NOT ACTIVATED AND NUMBER 2 IS NOT BEING PRESSED.
3 ALPHABETS ARE ACTIVATED BUT ONLY T IS BEING PRESSED TO CONDUCT CURRENT OTHERS ARE NOT.

1. A triangle-shaped 4-way-switching key for a keypad consisting of 10 keys alternating upwards- and downwards-pointing positioned for entering alphanumeric data into computer or communication device, while the keys are in its first state, these 10 keys are used to enter the numbers 0 to 9 respectively, while in other three states, these 10 keys are used to enter alphabets A to Z respectively wherein each of the 10 keys has four pressing areas consisting of a first are met by the center area and the other three areas met by the corner areas, and when the first area is being pressed, the key is in said first state and the whole key sinks, when the key is in one of said other three states, one of the corners is pressed and the pressed corner tilts downwards.

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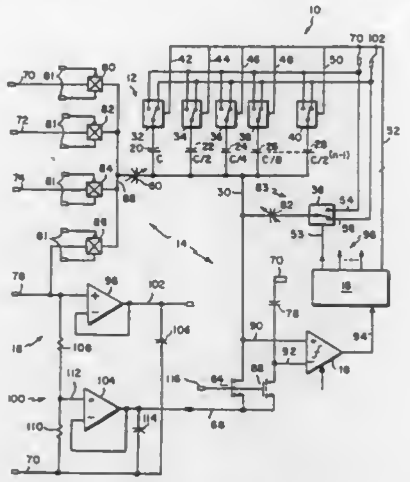
5,852,415
CHARGE REDISTRIBUTION ANALOG-TO-DIGITAL CONVERTER WITH SYSTEM CALIBRATION

Martin G. Cotter, Ennis, and Patrick J. Garavan, Limerick, both of Ireland, assignors to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 235,087, Apr. 29, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 481,058

Int. Cl.⁶ H03M *1/10*

U.S. Cl. 341—120 **41 Claims**



1. An analog-to-digital converter calibration method for a charge redistribution analog-to-digital converter, comprising:
receiving a voltage defining a user-selected voltage range,
adjusting an input offset of an input of the analog-to-digital converter based on the user-selected voltage range,
adjusting a gain of the analog-to-digital converter based on the user-selected voltage range,
repeating the steps of adjusting until a predetermined level of error is achieved for the analog-to-digital converter, and
converting an analog voltage to a digital value by successively testing a sampled charge with a capacitive network using the analog-to-digital converter after the step of repeating.

5,852,416
HIGH SPEED ARITHMETIC LOGIC CIRCUIT

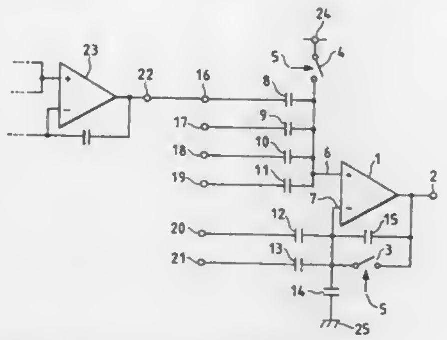
Tadahiro Ohmi, 1-17-301, Komegafukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken, and Katsuhisa Ogawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, and Tadahiro Ohmi, both of Tokyo, Japan

Filed Jan. 23, 1997, Ser. No. 786,925

Claims priority, application Japan, Jan. 30, 1996, 8-013961

Int. Cl.⁶ G06C *15/00*

U.S. Cl. 341—144 **31 Claims**



1. A semiconductor device comprising:
an operational amplifier circuit;
first capacitance means having one terminal connected to at least two input terminals and the other terminals connected to a non-inverting input terminal of said operational amplifier circuit, wherein the respective terminals of said first capacitance means are connected commonly, thereby constituting a first floating node;
second capacitance means having one terminal connected to an inverting input terminal of said operational amplifier circuit and the other terminals connected to an output of said operational amplifier circuit;
third capacitance means having one terminal connected respectively to at least two input terminals and the other terminals connected to the inverting input terminal of said operational amplifier circuit, wherein the other terminals of said third capacitance means and the one terminal of said second capacitance means are respectively connected commonly to constitute a second floating gate node; and
reset means for resetting said first and second floating nodes.

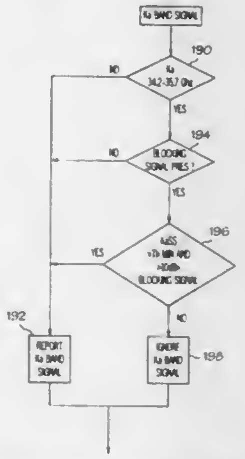
5,852,417
POLICE RADAR DETECTOR INCLUDING NUISANCE ALERT SUPPRESSION

Michael David Valentine; Clarence Richard Groth, and Stephen Ray Scholl, all of Cincinnati, Ohio, assignors to Valentine Research, Inc., Cincinnati, Ohio

Filed Sep. 12, 1997, Ser. No. 928,780

Int. Cl.⁶ G01S *7/40*

U.S. Cl. 342—20 **22 Claims**



1. A method of operating a police radar detector to suppress nuisance radar alerts due to signals received in the K_u radar band which are not police radar signals, said method comprising:
receiving electromagnetic signals;
detecting ones of said electromagnetic signals around 23.1 gigahertz;
detecting ones of said electromagnetic signals around 34.65 gigahertz; and
generating a radar alert for detected electromagnetic signals around 34.65 gigahertz unless electromagnetic signals around 23.1 gigahertz are also detected.

5,852,418
NOTCHED-SPECTRUM SWEPT-FREQUENCY GENERATOR AND METHOD THEREFOR

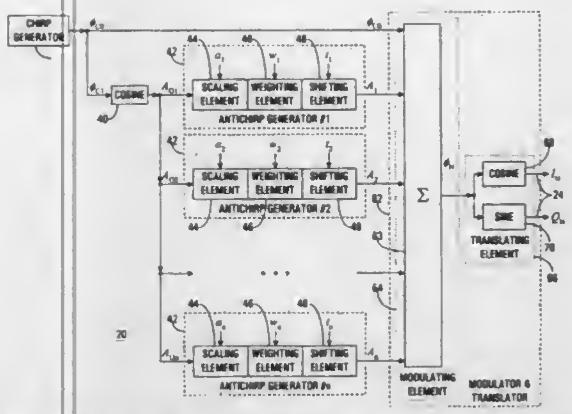
Bruce H. Ferrell, Tempe, and William C. Woody, Phoenix, both of Ariz., assignors to Lockheed Martin Corporation, Goodyear, Ariz.

Filed Nov. 12, 1997, Ser. No. 967,840

Int. Cl.⁶ G01S *7/28*

U.S. Cl. 342—202 **23 Claims**

1. A method for generating a notched-chirp signal, said method comprising the steps of:
generating a chirp phase signal which progresses quadratically over time;



generating an antichirp signal as a function of said chirp phase signal;
modulating said chirp phase signal by said antichirp signal; and
translating said chirp phase signal into said notched-chirp signal.

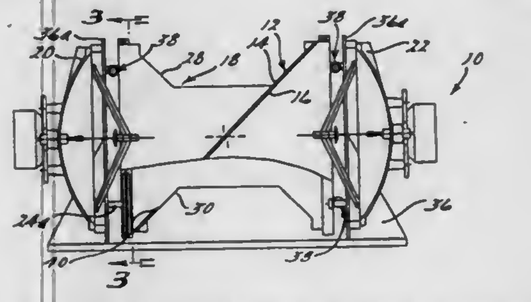
5,852,419
ROTATING MIRROR DRUM RADIOMETER IMAGING SYSTEM

Mikio L. Yujiri, Torrance; Michael S. Mussetto, Glendale, and Gerald P. Uyeno, Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 160,981, Oct. 7, 1992, Pat. No. 5,534,874. This application Feb. 22, 1996, Ser. No. 605,414

Int. Cl.⁶ G01S *3/02*

U.S. Cl. 342—351 **2 Claims**



1. A method for receiving a signal, said method comprising:
providing a two-sided mirror, mounted for rotation about a longitudinal axis of symmetry extending through said two-sided mirror at approximately a 45 degree angle relative to first and second reflective surfaces of said two-sided mirror;
positioning a pair of imaging arrays at opposite ends of said two-sided mirror such that a geometric center of each said predetermined antenna is positioned along said longitudinal axis of symmetry of said two-sided mirror;
rotating said two-sided mirror to cause said signal to be received and reflected from said first reflective surface of said two-sided mirror to a first one of said predetermined antennas;
rotating said two-sided mirror approximately 180 degrees; and
causing said signal to be reflected from said second reflective surface of said two-sided mirror to a second predetermined antenna.

5,852,420
ANTENNA DEVICE

Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

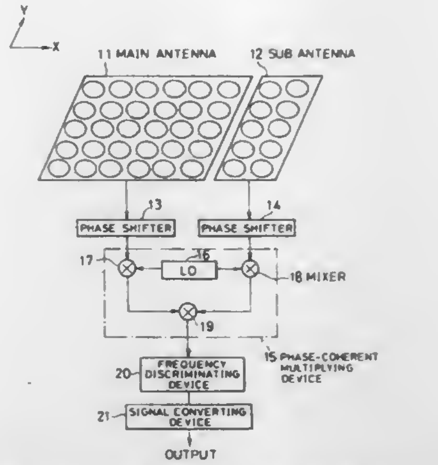
Filed Mar. 30, 1993, Ser. No. 39,819

Claims priority, application Japan, Apr. 28, 1992, 4-134448

Int. Cl.⁶ G01S *3/16;5/04*

U.S. Cl. 342—382 **6 Claims**

1. An antenna device comprising:



an antenna system made up by a main antenna for receiving a radio wave and at least one sub antenna which is adjacent said main antenna in a direction not perpendicular to a direction of beam scan of said main antenna and which has a beam axis coincident with a beam axis of said main antenna;
means for scanning antenna beams of said antenna system;
means for executing a phase-coherent multiplication process of received signals of said main antenna and said sub antenna to output a phase term produced depending on a length of a component of a center-to-center spacing between said main antenna and said sub antenna in the direction of beam scan, a wavelength of a received radio wave and an angle of a radio wave source with respect to a direction of the antenna beams; and
means for outputting a signal corresponding to a maximum frequency component corresponding to time-dependent fluctuations of said phase term output from said means for executing a phase-coherent multiplication process,
whereby amplitude and phase information about the radio wave source only in the direction of the antenna beams is obtained.

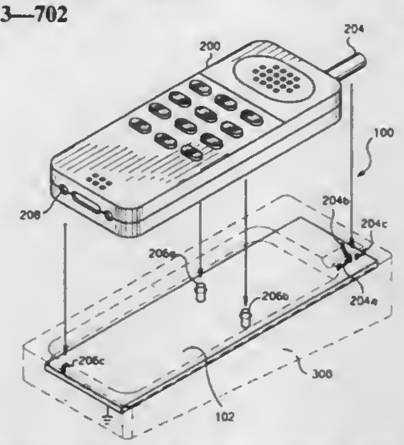
5,852,421
DUAL-BAND ANTENNA COUPLER FOR A PORTABLE RADIOTELEPHONE

David Maldonado, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 626,786, Apr. 2, 1996. This application Dec. 4, 1996, Ser. No. 760,024

Int. Cl.⁶ H01Q *1/24;1/32;1/52*

U.S. Cl. 343—702 **20 Claims**



1. An antenna coupling device for coupling radio frequency signals from a communication device having an antenna and at least one externally accessible ground point, the communication device operable in two frequency bands, the antenna coupling device comprising:
a ground plane having an upper surface;

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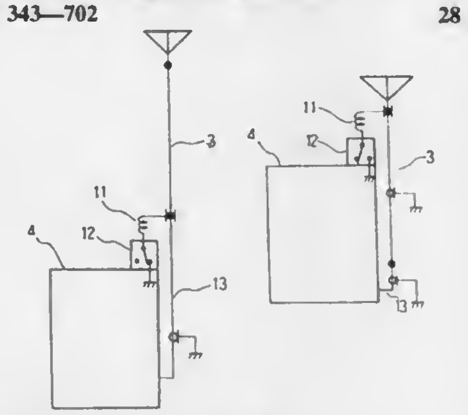
- an antenna coupler mounted on said ground plane upper surface, for coupling radio signals to and from the communication device antenna;
- at least one ground pin, coupled to said upper surface of said ground plane, for contacting the at least one externally accessible ground point; and
- a matching circuit coupled to said antenna coupler to generate a predetermined impedance to match said antenna coupler to the communication device antenna at each of the first and second frequency bands.

5,852,422
SWITCHED RETRACTABLE, EXTENDABLE, DUAL ANTENNAS FOR PORTABLE RADIO

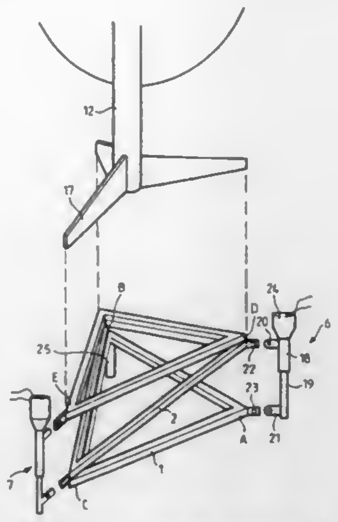
Yasuhito Imanishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 392,265, Feb. 22, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 788,347
Claims priority, application Japan, Apr. 6, 1994, 6-068627
Int. Cl.⁶ H01Q *1/24*
U.S. Cl. 343—702 **28 Claims**



1. Antenna equipment, comprising:
- a case containing a radio circuit;
- a first antenna element, connected to said radio circuit, which is movable between a stored position within said case and an extended position outside of said case; and
- means, connected to said first antenna element, for acting as a matching circuit element when said first antenna element is in said extended position and as a second antenna element when said first antenna element is in said stored position;
- said means being connected to a ground terminal when acting as said matching element, and being connected to an open terminal when acting as said second antenna element.

5,852,423
VARIABLE POINTING ANTENNA MOUNT, SUITABLE FOR SATELLITE TELECOMMUNICATION ANTENNAS

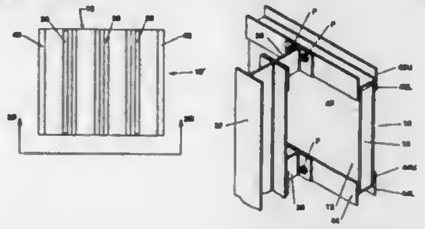
Clifford D Hughes, Noordwijkerhout, Netherlands, assignor to Agence Spatiale Europeene, Paris, France
PCT No. PCT/FR93/00937, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO94/08360, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 24, 1993, Ser. No. 406,848
Claims priority, application France, Sep. 25, 1992, 92 11 445
Int. Cl.⁶ H01Q *1/12;3/08*
U.S. Cl. 343—765 **7 Claims**



1. A variable pointing antenna mount suitable for an antenna pointing at a satellite comprising:
- a first dihedron (ABC, BCD), one plane (ABC) of which is carried out by a support base (**10**), another plane (BCD) being hinged along a first axis (BC),
- means (**6**) for varying the angle (α) of said first dihedron,
- a second dihedron (BCD, BDE), one plane (BCD) of which is common to the first dihedron and another plane (BDE) carrying means (**8**) for supporting an antenna (**9**), said first axis (BC) of the first dihedron and a second axis (BD) of the second dihedron being neither parallel nor coincident with each other,
- means (**7**) for varying the angle (β) of said second dihedron,
- a first structure defining a first triangle (ABC) fastened to said support base,
- a second structure defining a second triangle (BC), the first and second triangles having a common side (BC) having a first hinged connection (**4**) to constitute the first dihedron said means (**6**) for varying the angle of the first dihedron being disposed between a corner (A) of the first triangle opposite the hinged side and a corner (D) of the second triangle opposite said hinged side, and
- a third structure (**3**) defining a third triangle (BDE), the second and third triangles having a common side (BD) having a second hinged connection (**5**) to constitute the second dihedron, said means (**7**) for varying the angle of the second dihedron, said means (**7**) for varying the angle of the second dihedron being disposed between said corner (D) of the second triangle opposite said hinged side and a corner (E) of the third triangle opposite said hinged side.

5,852,424
BUILDING ELEMENTS AND SUPPORT STRUCTURE FOR ENCLOSING AN ANTENNA

Michael J. Reineck, and Kenneth M. Wedholm, both of Charleston, S.C., assignors to Stealth Network Technologies Inc., Charleston, S.C.
Filed May 20, 1997, Ser. No. 859,026
Int. Cl.⁶ H01Q *1/42*
U.S. Cl. 343—872 **13 Claims**

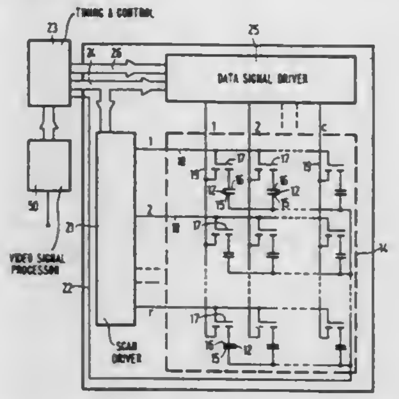


1. An antenna enclosure comprising:
- a building element having an outer skin layer, said outer skin layer being made from a material substantially transparent to electromagnetic waves that are received or discharged by an antenna to be enclosed;
- said outer skin layer having a side adapted to look like the surrounding architecture or locale;

- means for receiving said building element;
- cantilever means for supporting said receiving means; and
- means for supporting said cantilever means, said support means securing said antenna enclosure to a foundation.

5,852,425
ACTIVE MATRIX DISPLAY DEVICES FOR DIGITAL VIDEO SIGNALS AND METHOD FOR DRIVING SUCH

Neil Christopher Bird, Horley, and Alan George Knapp, Crawley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 21, 1993, Ser. No. 96,626
Claims priority, application United Kingdom, Aug. 14, 1992, 9217336
Int. Cl.⁶ G09G *3/06*
U.S. Cl. 345—92 **23 Claims**

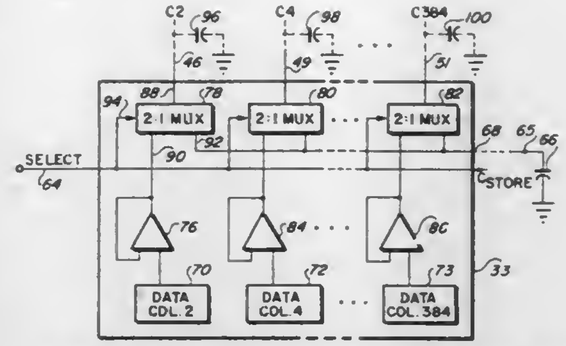


1. A method of driving an active matrix display device having sets of row and column conductors and an array of display elements each comprising first and second electrodes with electro-optical material therebetween, the first electrodes being connected to the drain of a respective TFT whose source and gate are connected respectively to a column and a row conductor, in which selection signals are applied to the row conductors and in which video information signals are converted into corresponding time dependent signals, characterised in that the time dependent signals are applied to the column conductors and in that during the application of a selection signal to a row of TFTs the TFTs are biased to act as current sources such that their associated display elements are charged to a level dependent on the duration of the applied time dependent signal.

5,852,426
POWER-SAVING CIRCUIT AND METHOD FOR DRIVING LIQUID CRYSTAL DISPLAY

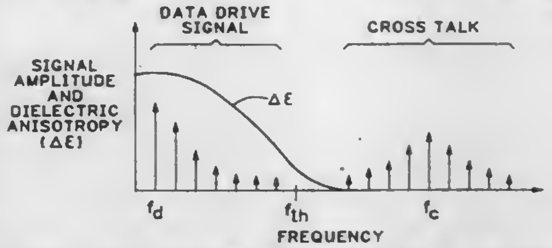
Richard Alexander Erhart, Chandler, and Gerald T. Harder, Gilbert, both of Ariz., assignors to Vivid Semiconductor, Inc., Chandler, Ariz.
Division of Ser. No. 291,134, Aug. 16, 1994, Pat. No. 5,528,256. This application Mar. 21, 1996, Ser. No. 620,132
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—96 **29 Claims**

1. A power-saving column driver circuit for applying driving voltages to a plurality of columns in a liquid crystal display, the liquid crystal display including an array of pixels arranged in rows and columns, and the liquid crystal display including row driver circuitry for selecting at least one row in the pixel array during a row drive period, the row driver circuitry selecting all rows in the pixel array at least once during a display cycle, said column driver circuit comprising in combination:
- a. a plurality of analog voltage drivers, each of said plurality of analog voltage drivers providing an analog driving voltage to be applied to a given column of the liquid crystal display during a given row drive period for controlling the pixel located at the given column within the selected row and for establishing a desired gray shade at such pixel corresponding to said analog driving voltage;
- b. clocking means for providing a control signal switching between a first state and a second state during at least one row drive period of each display cycle;
- c. a plurality of multiplexers, each of such multiplexers having a control terminal coupled to said clocking means for receiving the control signal, each of such multiplexers having a column terminal coupled to one of the columns of the liquid crystal display, each of such multiplexers having an input terminal coupled to one of said plurality of analog voltage drivers for receiving the analog voltage to be applied to a given column of the liquid crystal display during a given row drive period, and each of such multiplexers having a common terminal, each of such multiplexers electrically coupling the column terminal thereof to the common terminal thereof when the control signal is in the first state, and each of such multiplexers electrically coupling the column terminal thereof to the input terminal thereof when the control signal is in the second state;
- d. a common node coupled to the common terminal of each of said plurality of multiplexers;
- e. said plurality of multiplexers electrically coupling each of the columns of the liquid crystal display to said common node when the control signal is in its first state, and said plurality of multiplexers coupling each analog driving voltage produced by said plurality of analog voltage drivers to a respective one of the columns when the control signal is in its second state.



5,852,427
REDUCING CROSS TALK EFFECTS IN ELECTRO-OPTICAL ADDRESSING STRUCTURES

Thomas S. Buzak, Aloha, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Continuation of Ser. No. 854,145, Mar. 19, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 134,506
Int. Cl.⁶ G09G *3/36*
U.S. Cl. 345—97 **13 Claims**



1. In a liquid crystal flat panel display having an addressing structure for addressing and delivering data signals of plural magnitudes to plural display elements arranged in an array, the plural magnitudes corresponding to plural display light levels and the display elements having incidental electrical couplings that carry incidental data components among the display elements, the improvement comprising:

a frequency-sensitive liquid crystal material responsive to data signals of plural magnitudes delivered to the display elements and having a relatively small dielectric anisotropy for signal frequencies greater than a characteristic threshold frequency; and

data drive means for delivering the data signals of plural magnitudes to the display elements so as to selectively address display elements with data signals of frequencies less than the characteristic threshold frequency and to form incidental data components at frequencies greater than the characteristic threshold frequency.

5,852,428

DISPLAY DRIVING DEVICE

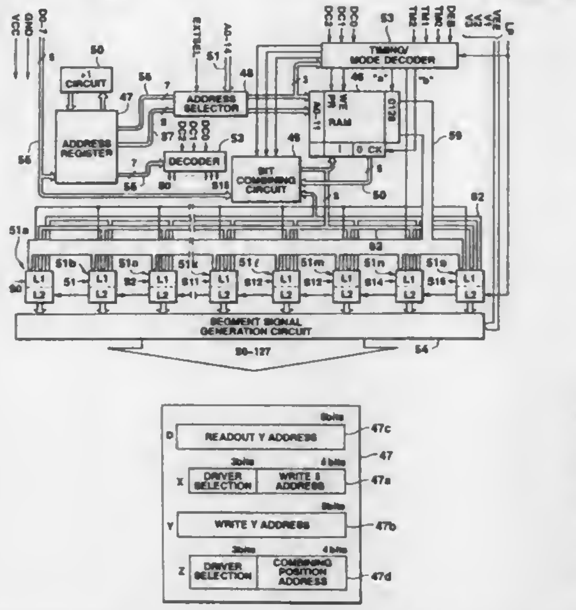
Ryo Ishikawa, Ogose-machi, and Kazuhiro Kawasugi, Oome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 238,254, May 4, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,724

Claims priority, application Japan, May 13, 1993, 5-111829; May 13, 1993, 5-111830

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—100 **8 Claims**



1. A segment driving circuit of a liquid crystal display panel, for effecting a displaying operation by selectively driving a group of common electrodes and a group of segment electrodes of the liquid crystal display panel, the segment driving circuit comprising:

a display memory for storing display data displayed on said liquid crystal display panel, locations of said display memory being specified by both an X address indicating an address in an X direction of the display panel and a Y address indicating an address in a Y direction of the display panel;

an address data memory including:

a write-in address register for storing write-in address data including an X address data and a Y address data for said display memory: and

a readout address register of smaller stgrage capacity than said write-in address register, for storing readout address data including only said Y address data;

a data write-in circuit for writing data into said display memory according to the X and Y address data stored in said write-in address register;

a data readout circuit for reading out display data of one line for one common electrode to be supplied to said segment electrode group at one time from said display memory according to the Y address data stored in said smaller storage capacity readout address register;

a bus for transferring the display data of one line read out from said display memory in a parallel form;

a segment data memory connected to said bus, for storing display data of one line read out by said data readout circuit; and

a segment signal generation circuit for driving said segment electrode group according to the display data stored in said segment data memory.

5,852,429

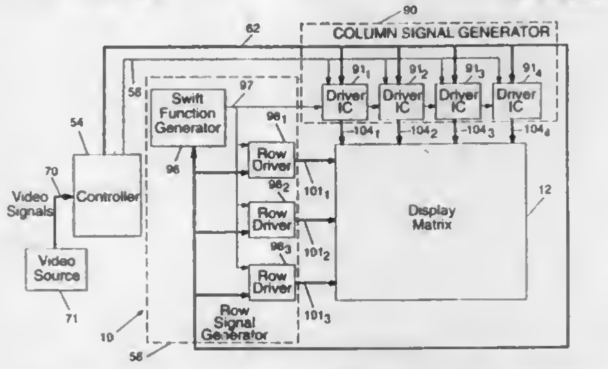
DISPLAYING GRAY SHADES ON DISPLAY PANEL IMPLEMENTED WITH PHASE-DISPLACED MULTIPLE ROW SELECTIONS

Terry J. Scheffer, Hilo, HI., and Benjamin R. Clifton, Oregon City, Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Division of Ser. No. 468,549, Jun. 6, 1995, Pat. No. 5,585,816, which is a division of Ser. No. 678,736, Apr. 1, 1991, Pat. No. 5,485,173. This application Jul. 19, 1996, Ser. No. 684,433

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—100 **16 Claims**



1. A method for addressing a display panel to display different gray shades or hues, the display panel including overlapping first and second electrodes positioned on opposite sides of an rms-responding material to define an array of pixels that display arbitrary information patterns that depend on values of rms voltages established across the pixels and correspond to pixel input data, each pixel input datum having first and second logic levels that represent corresponding first and second optical transmission states for the pixel to which the pixel input datum corresponds, the method comprising:

applying first signals to corresponding first electrodes during a frame period that is divided into time intervals, the first signals having amplitudes, and multiple ones of the first signals causing multiple selections of the corresponding first electrodes;

each of the first signals provides a number of the time intervals over the frame period that is less than an exponential function of the number of first electrodes;

controlling for each pixel a length of time the pixel input datum is in the first logic level and a length of time the pixel input datum of the pixel is in the second logic level; and

generating second signals and applying them to corresponding ones of the second electrodes, the second signals having amplitudes determined by the amplitudes of more than one of the first signals causing selections and by the logic levels of the pixel input data of pixels defined by the corresponding first electrodes, the length of time the pixel input datum associated with a pixel is in the first logic level as compared with the length of time the pixel input datum associated with the pixel is in the second logic level producing for the pixel an intermediate optical transmission state between the first and second optical transmission states and corresponding to an intermediate gray shade.

5,852,430

COLOR LIQUID CRYSTAL DISPLAY DEVICE

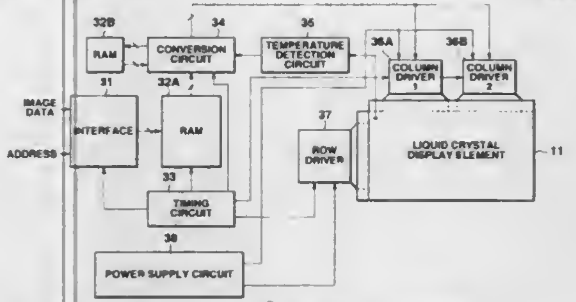
Kenzo Endo, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1996, Ser. No. 629,508

Claims priority, application Japan, Apr. 20, 1995, 7-095280; Jun. 26, 1995, 7-180579

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—101 **21 Claims**



14. A color liquid crystal display device comprising:

a liquid crystal display element for controlling a birefringence action of a liquid crystal layer by applying voltages to the liquid crystal layer sandwiched between a pair of substrates, thereby displaying a color image constituted by a plurality of display colors;

image data supply means for supplying image data for designating a color, of n colors, which is to be displayed; and

drive control means for driving said liquid crystal display element such that at least two types of images expressed by different combinations of colors, one type of image being expressed by a combination of n colors, and the other type of image being expressed by a combination of m colors smaller in number than n colors, are switched in accordance with a condition which influences a behavior of liquid crystal molecules.

5,852,431

VIDEO MONITOR ADJUSTMENT SYSTEM

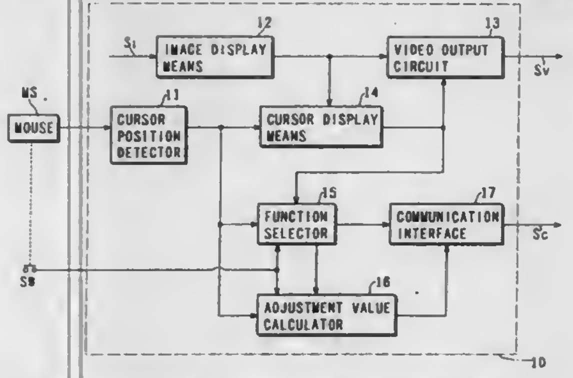
Hiroshi Ito, Matto, Japan, assignor to Nanao Corporation, Matto, Japan

Filed Apr. 29, 1997, Ser. No. 848,190

Claims priority, application Japan, Apr. 30, 1996, 8-108866

Int. Cl.^{6} G09G *5/08*

U.S. Cl. 345—145 **9 Claims**



1. A video monitor adjustment system comprising:

an image display means storing video information for displaying a crosshatch pattern on a video monitor;

a cursor display means for displaying a cursor image on the crosshatch pattern displayed on a video monitor based on the video information stored in said image display means;

a function selector for selecting one of a plurality of adjustable functions depending on a location of the cursor image in the crosshatch pattern, said plurality of adjustable functions including a combined function which is a combination of two or more other adjustable functions; and

an adjustment value calculator for calculating an adjustment value for each adjustable function selected by said function selector in accordance with the amount of movement of a pointing device and transmitting the calculated adjustment value to said video monitor.

5,852,432

FUNCTION DISPLAY CONTROLLING METHOD FOR A COMPOSITE APPARATUS OF CDG PLAYER AND VCR AND APPARATUS THEREOF

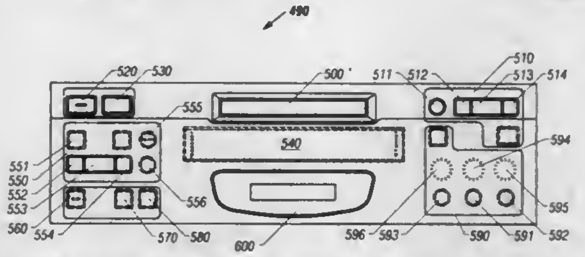
Jae-Hoon Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 26, 1995, Ser. No. 548,551

Claims priority, application Rep. of Korea, Oct. 26, 1994, 1994 27350; Oct. 26, 1994, 1994 27344

Int. Cl.^{6} G01D *15/06*

U.S. Cl. 345—156 **4 Claims**



1. An apparatus for controlling function displays in a combined device of a compact disc graphics player and a video cassette recorder, said apparatus comprising:

a function control inputting section for outputting function control input signals which are playing, and for inputting signals by operating operator's buttons through a front control panel of the function control inputting section;

a controlling section for outputting a first, a second and a third signals, and a function control signal/switching signal by judging a corresponding playing device to the function control input signals provided by said function control inputting portion;

a compact disc graphics player for outputting a composite image on a monitor and for reproducing an audio signal by reading out data recorded on a compact disc graphics through a light controlled by the control section in response to an input signal for reproducing a compact disc graphics, the input signal being provided by said function control inputting section;

a video cassette recorder either for reproducing the audio signal while outputting a composite image signal on the monitor by reading out video/audio data recorded on a video tape under the control of said controlling section in response to signals for VCR playing and recording inputting signals provided by said function control input section, or for recording either television image signals from a tuning section or composite image signals inputted from external inputting terminals on the video tape;

a control data storing section for storing a first, a second and a third function display data which are read by the first control signal provided by said control section;

a program switching section for forming output paths of first exclusive function display data exclusively used by said compact disc graphics player, second common function display data commonly used both by said compact disc graphics player and by said video cassette recorder, and third function display data exclusively used by the video cassette recorder, which are stored in said control data storing section by the third control signal from said control section, and for outputting a first, a second and a third program switching signals corresponding to each of said function display data, said program switching section including a first, a second and a third program switches;

an on screen-display data storing section for storing on-screen-display data;

an on-screen-display processing section for outputting an on-screen-display processing signal as a video outputting signal on a monitor by inputting a first signal among the first, the second and the third program switching signals from said program switching section, the second control signal from said control section and a video signal from a video switching outputting section;

a fluorescent display panel driving section for outputting a fluorescent display panel driving signal by inputting a second signal among said first, said second and said third program switching signals from said program switching section and the second control signal from said control portion; and

a fluorescent display panel section for displaying presently operating functions by inputting the fluorescent display panel driving signal from said fluorescent display panel driving section.

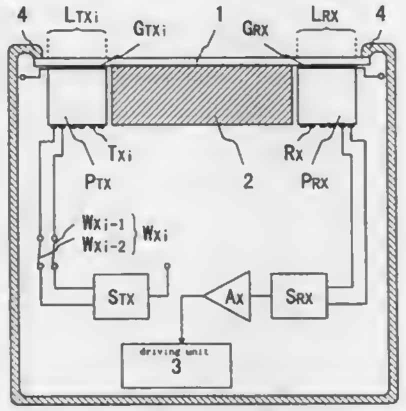
5,852,433
ELASTIC WAVE POSITION-SENSING DEVICE

Kohji Toda, 1-49-18 Futaba, Yokosuka 239, Japan

Filed Aug. 9, 1996, Ser. No. 694,987

Int. Cl.^{6} G09G *5/00*

U.S. Cl. 345—173 **13 Claims**



1. An elastic wave position-sensing device comprising:

at least two elastic wave transducing units X and Y, each thereof consisting of

a piezoelectric substrate P_T having two end surfaces running perpendicular to the direction of the thickness D thereof, and comprising N piezoelectric parts P_{Ti} (i=1, 2, . . . , N),

a piezoelectric substrate P_R having two end surfaces running perpendicular to the direction of the thickness D thereof,

N interdigital transducers I_{Ti} (i=1, 2, . . . , N), each thereof being formed on one end surface of each of said piezoelectric parts P_{Ti}, said thickness D of said piezoelectric substrate P_T being approximately equal to or smaller than an interdigital periodicity p of said interdigital transducer I_{Ti},

an interdigital transducer I_R formed on one end surface of said piezoelectric substrate P_R and having an interdigital periodicity equal to said interdigital periodicity p, said thickness D of said piezoelectric substrate P_R being approximately equal to or smaller than said interdigital periodicity p, and

N switches C_i (i=1, 2, . . . , N), an output terminal of each thereof being connected with an input terminal of each of said interdigital transducers I_{Ti};

a nonpiezoelectric plate having two end surfaces, the thickness of said nonpiezoelectric plate being equal to or smaller than said thickness D of said piezoelectric substrates P_T and P_R, said piezoelectric substrates P_T and P_R being mounted on one or the other end surface of said nonpiezoelectric plate, said nonpiezoelectric plate comprising N nonpiezoelectric parts $_{Ti}$ (i=1, 2, . . . , N) adjacent to said piezoelectric parts P_{Ti}, a nonpiezoelectric part $_R$ adjacent to said piezoelectric substrate P_R, and the remaining nonpiezoelectric part;

a display panel, mounted on said one end surface of said nonpiezoelectric plate; and

a controlling system connected with said elastic wave transducing units X and Y, and said display panel,

said piezoelectric substrates P_T and P_R, and said nonpiezoelectric plate forming

N bilayer zones L_{Ti} (i=1, 2, . . . , N) consisting of said piezoelectric parts P_{Ti} and said nonpiezoelectric parts $_{Ti}$,

a bilayer zone L_R consisting of said piezoelectric substrate P_R and said nonpiezoelectric part $_R$, and

a monolayer zone between said bilayer zones L_{Ti} and said bilayer zone L_R, and consisting of said remaining nonpiezoelectric part,

said interdigital transducer I_{Ti} receiving an electric signal E_T with a frequency approximately corresponding to said interdigital periodicity p, exciting an elastic wave of the S_o mode and the higher order modes in said bilayer zone L_{Ti}, and transmitting said elastic wave, having the wavelength approximately equal to said interdigital periodicity p, to said bilayer zone L_R through said monolayer zone, the phase velocity of said elastic wave being approximately equal to the phase velocity $V_{fd=0}$, of the S_o mode elastic wave, corresponding to a condition that the product FD of the frequency F of said elastic wave and said thickness D of said piezoelectric substrate P_T is zero,

said interdigital transducer I_R transducing said elastic wave in said bilayer zone L_R to an electric signal E_R with a frequency approximately corresponding to said interdigital periodicity p,

said nonpiezoelectric plate being made of a material such that the phase velocity of the elastic wave in said nonpiezoelectric plate alone is approximately equal to that in said piezoelectric substrates P_T and P_R alone,

said controlling system turning on and off said switches C_i with a fixed period in turn, keeping a check on a magnitude of said electric signal E_R, sensing a touch with a finger or others under a fixed or more pressure on the other end surface of said nonpiezoelectric plate by a decrease or a disappearance in magnitude of said electric signal E_R, picking out one of said switches C_i turned on when said decrease or said disappearance in magnitude of said electric signal E_R happens, specifying a touch-position corresponding with the picked out switch C_i, and producing an image corresponding to said touch-position on said display panel,

said elastic wave transducing unit X having N propagation lanes U_{Xi} (i=1, 2, . . . , N) of the elastic wave in said monolayer zone between said bilayer zones L_{Ti} and L_R, two neighbors of said propagation lanes U_{Xi} being closed or partially overlapping each other,

said elastic wave transducing unit Y having N propagation lanes U_{Yi} (i=1, 2, . . . , N) of the elastic wave in said monolayer zone between said bilayer zones L_{Ti} and L_R, two neighbors of said propagation lanes U_{Yi} being closed or partially overlapping each other, said propagation lane U_{Xi} being vertical to said propagation lane U_{Yi}.

5,852,434
ABSOLUTE OPTICAL POSITION DETERMINATION

Oral F. Sekendur, 399 W. Fullerton Pkwy., Chicago, Ill. 60614

Continuation-in-part of Ser. No. 862,977, Apr. 3, 1992, Pat. No. 5,477,012. This application Dec. 18, 1995, Ser. No. 574,117

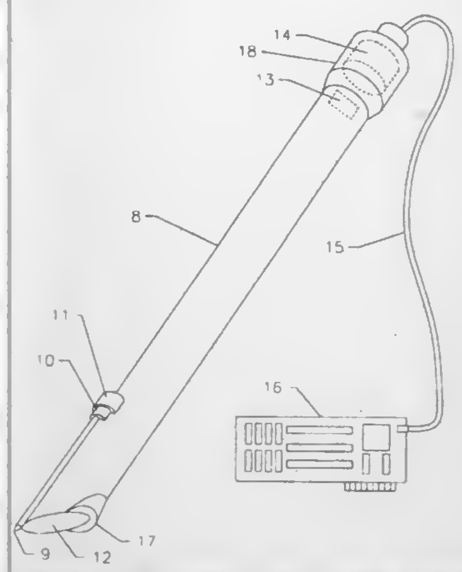
Int. Cl.^{6} G08C *21/00;* G09G *5/00*

U.S. Cl. 345—179 **20 Claims**

1. A coordinate sensor comprising:

a data surface formatted with at least one coding means for designating coordinates of at least one point on said data surface;

a detector means for detecting said at least one coding means and for generating at least one output signal thereof;



a processing means for receiving and processing said at least one output signal, thereby to determine the position of said detector means relative to said data surface;

whereby said data surface comprises a writing surface.

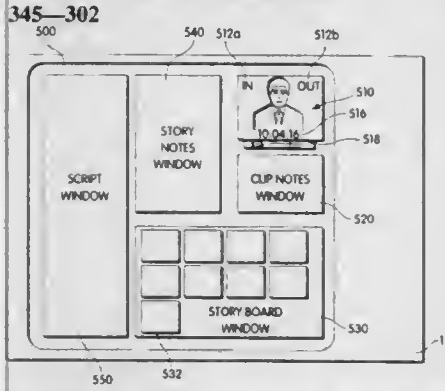
5,852,435
DIGITAL MULTIMEDIA EDITING AND DATA MANAGEMENT SYSTEM

Stevan Vigneaux, Bolton; Blair F. Wheeler, Winchester, both of Mass.; Philip Mason, Nashua, N.H.; Richard M. Pierceall, Half Moon Bay, Calif.; Adrian Scott, Coleford, England; Roland J. Boucher, Jr., Weston; William C. Morrison, Wayland, both of Mass., and Richard D. Hennessy, Nashua, N.H., assignors to Avid Technology, Inc., Tewksbury, Mass.

Filed Apr. 12, 1996, Ser. No. 631,441

Int. Cl.^{6} G06T *1/00*

U.S. Cl. 345—302 **8 Claims**



1. A multimedia production system for browsing and editing multimedia data comprising:

a media recorder that digitizes the multimedia data, the media recorder including:

means for generating a first version of the multimedia data having a first video resolution; and

means for generating a second version of the multimedia data having a second video resolution; and

wherein the first video resolution is substantially different than the second video resolution;

a multimedia storage device that stores the first version of the multimedia data and the second version of the multimedia data;

a communication network coupled to the media recorder and to the multimedia storage device to transfer the first and second versions of the media data to the multimedia storage device:

an asset manager for registering each version of the multimedia data using an identifier and for relating the identifiers of the first and second versions of the multimedia data;

a first editing system connected to the multimedia storage device for creating a multimedia program using the first version of the multimedia data, wherein the first version of the multimedia data used in the multimedia program is specified using the identifier for the first version of multimedia data; and

a second editing system connected to the multimedia storage device for creating the multimedia program using the second version of the multimedia data, including means for receiving the multimedia program created on the first editing system and for identifying, using the asset manager, the second version of multimedia data corresponding to the identifier specifying the first version of multimedia data used in the multimedia program.

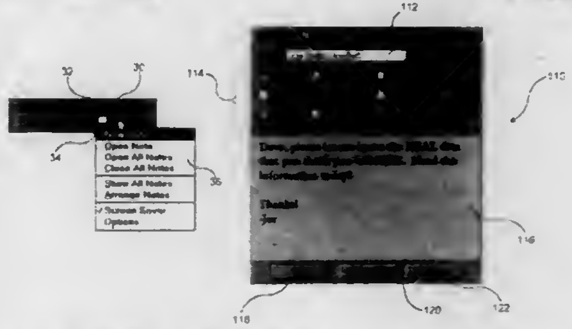
5,852,436
NOTES FACILITY FOR RECEIVING NOTES WHILE THE COMPUTER SYSTEM IS IN A SCREEN MODE

David C. Franklin; Dean J. Hachamovitch, both of Seattle; William J. Bliss, Woodinville, and David C. Tuniman, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 269,378, Jun. 30, 1994, abandoned. This application Feb. 18, 1997, Ser. No. 803,187

Int. Cl.^{6} G06F *3/14*

U.S. Cl. 345—326 **6 Claims**



1. In a computer system including a video display, a method for receiving notes while the computer system is in a screen-saver mode, comprising the steps of:

providing a screen saver program with a notes facility having a note-taker interface for generating notes;

in response to detecting an idle condition for a predetermined period of time, entering a limited-access mode limiting access within the computer system to the note-taker interface and during the limited-access mode,

running the screen saver program,

in response to receiving a first command for activating the note-taker interface, displaying the note taker interface on the video display, and

in response to input by the user via the note taker interface, creating a note; and

in response to receiving a second command for ending the limited-access mode,

ending the limited-access mode,

dismissing the screen saver program, and

displaying the note on the video display.

5,852,437
WIRELESS DEVICE FOR DISPLAYING INTEGRATED COMPUTER AND TELEVISION USER INTERFACES

Theodore David Wugofski, Fort Worth, and John Martin Baker, Keller, both of Tex., assignors to AST Research, Inc., Irvine, Calif.

Filed Sep. 24, 1996, Ser. No. 719,260

Int. Cl.^{6} H04N *7/00*

U.S. Cl. 345—327 **4 Claims**

1. A method of establishing a wireless connection between a video device and a computer, the method comprising the steps of:

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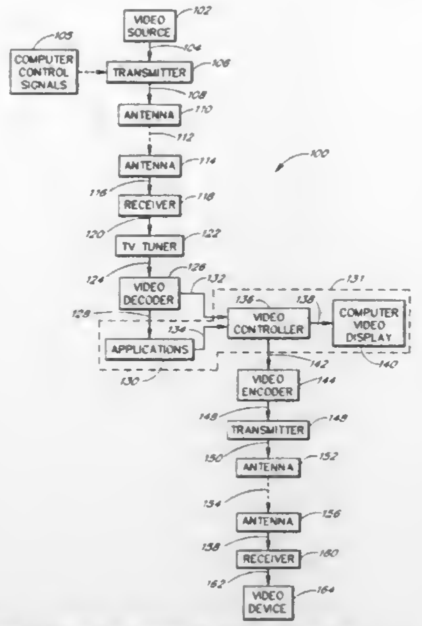
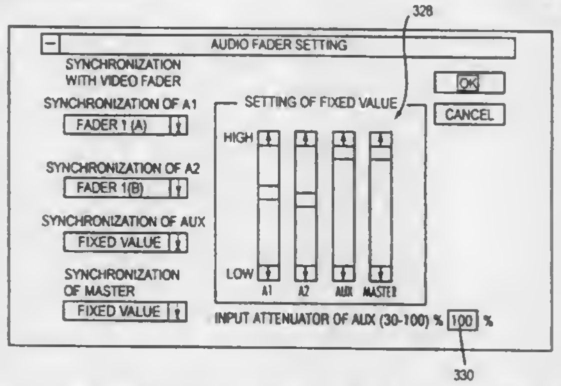


- receiving a television signal at a first location;
- upconverting the television signal and transmitting the upconverted signal from the first location;
- receiving the upconverted signal at a second location, wherein the upconverted signal is downconverted;
- processing the downconverted signal with the computer to produce digital video data;
- converting the digital video data into analog composite video, wherein the analog composite video is upconverted and transmitted from the second location; and
- receiving the upconverted analog composite video at the first location, wherein the upconverted analog composite video is downconverted and input into a video device.

5,852,438
VIDEO EDITOR

Mizuo Tomizawa; Atsushi Tomita; Hironori Mikami, and Satoshi Seto, all of Osaka, Japan, assignors to Roland Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1995, Ser. No. 563,925
Claims priority, application Japan, Sep. 21, 1995, 7-267703
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 345—328 **5 Claims**



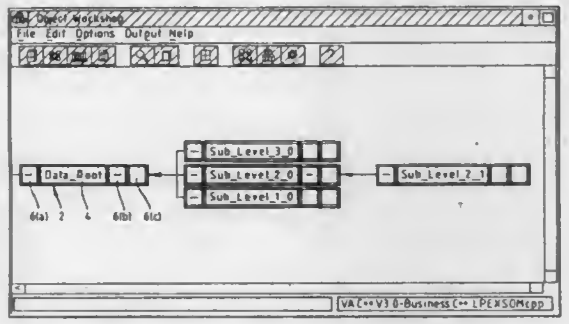
1. A video editor wherein at least two each of audio and video signals are inputted, and levels of the audio and the video signals inputted are controlled in response to the operations of faders, comprising:

- a first fader which a user can operate for indicating a ratio of composition in said at least two video signals inputted,
- a second fader which a user can operate for indicating the levels of said at least two audio signals inputted,
- a synchronous/asynchronous mechanism for establishing whether the levels of said at least two audio signals inputted are synchronous or asynchronous with operations of said first fader,
- a first level controller for controlling a ratio of composition in said at least two video signals inputted in response to the operations of said first fader, and
- a second level controller for controlling the levels of said at least two audio signals inputted in response to operations of said first fader when said mechanism is establishing levels synchronous with the operations of said first fader, said second level controller controlling the levels of said at least two audio signals inputted in response to said second fader when said mechanism is establishing levels asynchronous with the operations of said first fader.

5,852,439
OBJECT BROWSER AND MANIPULATION SYSTEM

Rupert Jeremy Musgrove, Alcester, United Kingdom, and David Kay, Melbourne, Australia, assignors to JBA Holdings PLC, Birmingham, United Kingdom

Filed Mar. 1, 1996, Ser. No. 608,626
Int. Cl.^{6} G06F *17/00*
U.S. Cl. 345—339 **16 Claims**



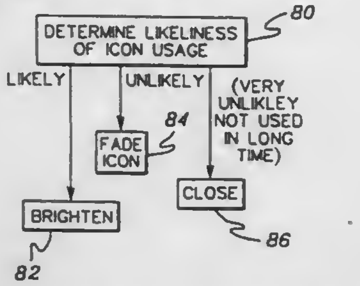
1. A method of manipulating objects using an object browser and manipulation system comprising components for representing on a display unit respective objects, the components each comprising an object identifier and at least one active sub-region, the at least one active sub-region having the capability to display information relating to a state of the component and its respective object and having a functionality activatable by an input device to effect an operation in relation to the component, the method comprising the step of:

- (a) providing images of a parent component and a child component representing respectively a parent object and an associated child object on the display of the display unit, each component respectively having at least one active sub-region;
- (b) receiving an input via the input device to activate the functionality of the at least one active sub-region of the child component; wherein the functionality of the at least one active sub-region of the child component performs an operation in relation to the child component without influencing either the parent component or any other child component of the parent component; and
- (c) providing on the screen of the display unit an image corresponding with the outcome of the operation of the functionality of the at least one active sub-region of the child component.

5,852,440
METHOD AND SYSTEM FOR FACILITATING THE SELECTION OF ICONS

Bertrand M. Grossman, New York, N.Y.; James Gordon McLean, Boynton Beach, Fla.; Clifford A. Pickover, Yorktown Heights; Michael Stephen Schwartz, Bronx, both of N.Y., and Daniel James Winarski, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 227,149, Apr. 13, 1994, Pat. No. 5,564,004. This application Sep. 18, 1996, Ser. No. 718,155
Int. Cl.^{6} G06F *15/00*
U.S. Cl. 345—348 **16 Claims**


DETERMINE LIKELINESS OF ICON USAGE
80
LIKELY
UNLIKELY
(VERY UNLIKLEY NOT USED IN LONG TIME)
84
FADE ICON
CLOSE
86
BRIGHTEN
82

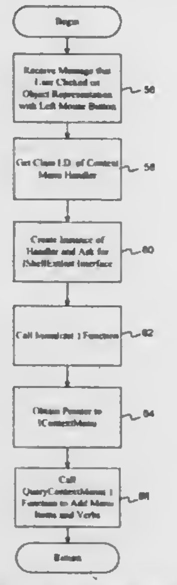
9. A system for cleaning up a computer display having a plurality of icons, said system comprising:

- means for associating a predefined amount of time to one or more of said plurality of icons;
- means for automatically determining for one or more of said plurality of icons the likeliness that said one or more icons will be used within said predefined amount of time; and
- means for gradually changing the appearance of said one or more icons determined not likely to be used, said gradually changing commencing within said predefined amount of time.

5,852,441
SHELL EXTENSIONS FOR AN OPERATING SYSTEM

Satoshi Nakajima, Bellevue; George H. Pitt, III; Joseph D. Belfiore, both of Redmond, and Christopher J. Guzak, Kirkland, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 335,410, Dec. 13, 1994. This application Aug. 20, 1997, Ser. No. 915,475
Int. Cl.^{6} G06F *15/00*
U.S. Cl. 345—352 **11 Claims**


Begin
Receive Message that User Clicked on Object Representation with Left Mouse Button
Get Class I.D. of Context Menu Handler
58
Create Instance of Handler and Ask for IShellExtInit Interface
60
62
Obtain Pointer to IContextMenu
64
Return

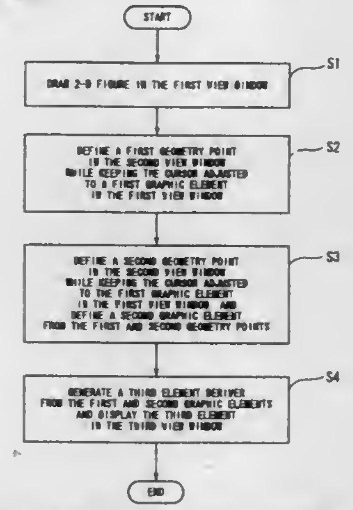
1. In a data processing system having a video display, an object having an associated object identifier, the object belonging to an associated object class, the object class having an associated object class identifier which is different than the object identifier, the object class having an associated context menu that specifies operations that may be performed relative to objects of the object class, an operating system that includes a shell which specifies a predefined first set of menu items for the context menu associated with the object class, and an application program installed under the operating system, wherein the object and object class are associated with the application, a method comprising the steps of:

- providing a database of entries holding configuration information associated with the context menu;
- providing a context menu handler for adding to the context menu a second set of menu items not provided by the shell, said context menu handler and said second set of menu items provided by the application program and being independent of the operating system;
- registering the second set of menu items in the database of configuration information in association with the object class identifier; and
- when the object is accessed, running the context menu handler to display the second set of menu items.

5,852,442
METHOD OF DRAWING A THREE-DIMENSIONAL OBJECT

Masao Morito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 2, 1996, Ser. No. 674,513
Claims priority, application Japan, Jan. 12, 1996, 8-003496
Int. Cl.^{6} G06K *17/40*
U.S. Cl. 345—419 **14 Claims**


START
DRAW 2-D FIGURE IN THE FIRST VIEW WINDOW
S1
DEFINE A FIRST GEOMETRY POINT IN THE SECOND VIEW WINDOW WHILE KEEPING THE CURSOR ADJUSTED TO A FIRST GRAPHIC ELEMENT IN THE FIRST VIEW WINDOW
S2
DEFINE A SECOND GEOMETRY POINT IN THE SECOND VIEW WINDOW WHILE KEEPING THE CURSOR ADJUSTED TO THE FIRST GRAPHIC ELEMENT IN THE FIRST VIEW WINDOW AND DEFINE A SECOND GRAPHIC ELEMENT FROM THE FIRST AND SECOND GEOMETRY POINTS
S3
GENERATE A THIRD ELEMENT DERIVED FROM THE FIRST AND SECOND GRAPHIC ELEMENTS AND DISPLAY THE THIRD ELEMENT IN THE THIRD VIEW WINDOW
S4
END

1. A method of drawing a three-dimensional object in a drawing system that shows a top view, a front view, and a side view using first, second, and third view windows, the method comprising the steps of:

- drawing a figure containing a first graphic element on the first view window;
- defining a first geometry point in the second view window adjacent to the first view window by using a cross-hair cursor extending across the first and second view windows so that the first geometry point will have a geometrical relationship with the first graphic element drawn in the first view window;
- defining a second geometry point in the second view window by using the cross-hair cursor so that the second geometry point will have a geometrical relationship with the first graphic element, and further defining a second graphic element with the first and second geometry points so as to give a depth to the figure drawn in the first view window; and
- generating a third graphic element having a shape based on shapes of the first and second graphic elements and displaying the third graphic element in the third view window.

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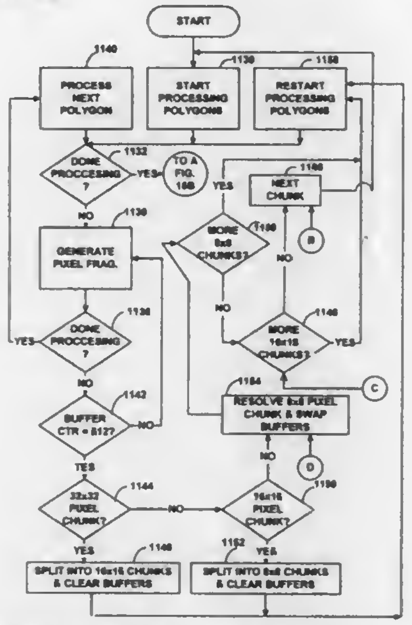
5,852,443
METHOD AND SYSTEM FOR MEMORY DECOMPOSITION IN A GRAPHICS RENDERING SYSTEM

Mark L. Kenworthy, Duvall, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 560,114, Nov. 17, 1995, abandoned, which is a continuation of Ser. No. 511,553, Aug. 4, 1995, abandoned. This application Jun. 27, 1996, Ser. No. 671,506

Int. Cl.^{6} G06T *15/00*

U.S. Cl. 345—431 **18 Claims**



1. In a graphics rendering system, a method of rendering geometric primitives, the method comprising:

rasterizing a first set of the geometric primitives for a first image region of size S_1 to generate pixel fragments;

storing the pixel fragments as fragment entries in a fragment buffer,

determining whether a number of fragment entries in the fragment buffer exceed a predetermined value;

in response to determining that the number of fragment entries exceed the predetermined value, dividing the first image region into two or more image regions of a size S_2;

rendering serially the two or more image regions of size S_2 including rasterizing a first sub-set of the first set of geometric primitives for a first image region of size S_2 to generate first corresponding pixel fragments, resolving the first corresponding pixel fragments, and repeating the rasterizing and resolving steps for subsequent image regions of size S_2.

5,852,444
APPLICATION OF VIDEO TO GRAPHICS WEIGHTING FACTOR TO VIDEO IMAGE YUV TO RGB COLOR CODE CONVERSION

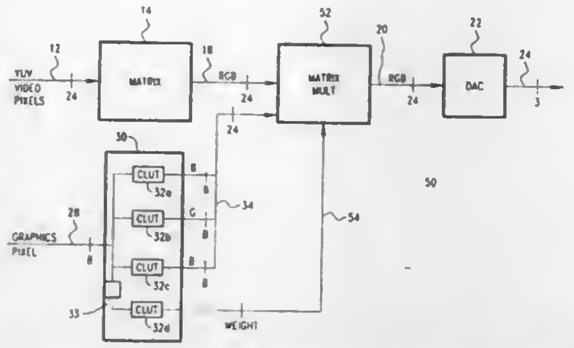
Louis A. Lippincott, Roebling, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 425,709, Apr. 19, 1995, abandoned, which is a continuation of Ser. No. 986,220, Dec. 7, 1992, abandoned. This application Nov. 25, 1996, Ser. No. 755,714

Int. Cl.^{6} G09G *5/06*

U.S. Cl. 345—431 **22 Claims**

1. A video processing system for combining first and second input signals to provide a combined output signal, wherein the first input signal is representative of a first pixel and the second input signal is representative of a second pixel and a combining factor index, the system comprising:



(a) lookup table means for determining a combining factor in accordance with a table location accessed by the combining factor index of the second input signal;

(b) means for applying the first and second pixels and the combining factor to a blending circuit;

(c) the blending circuit, wherein the blending circuit is for combining the first and second pixels in accordance with the combining factor to provide the combined output signal; and

(d) means for converting the first pixel from a YUV type pixel to an RGB type pixel before the first pixel is applied to the blending circuit, wherein the lookup table means (a) comprises:

(a)(1) a plurality of lookup tables for converting the second pixel from a YUV type pixel to an RGB type pixel before the second pixel is applied to the blending circuit; and

(a)(2) a lookup table for determining the combining factor in accordance with the table location accessed by the combining factor index of the second input signal.

5,852,445
METHOD OF VERIFYING INTEGRATED CIRCUIT OPERATION BY COMPARING STORED DATA STRUCTURES CORRESPONDING TO INTEGRATED CIRCUIT LOGIC CELLS

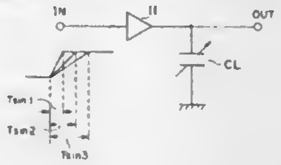
Satoru Yoshikawa, and Tetsu Tanizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

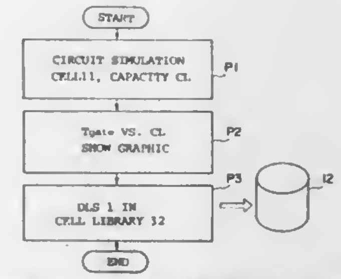
Continuation of Ser. No. 204,503, Mar. 2, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 552,150

Claims priority, application Japan, Mar. 18, 1993, 5-59069

Int. Cl.^{6} G06T *11/00*

U.S. Cl. 345—440 **13 Claims**




START
CIRCUIT SIMULATION CELL11, CAPACITY CL
P1
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P2
P3
DLS 1 IN CELL LIBRARY 32
12
END

1. A method of generating general-use graph data for a plurality of different types of logic cells, comprising the steps of:

executing circuit simulations for plural types of logic cells, each of the plural types corresponding to a plurality of inner circuits having corresponding different structures, by changing a delay time after a signal is inputted into a respective logic cell until the signal is outputted from the logic cell and changing a load capacity and/or transient time of the inputted signal for the logic cell, to acquire graph data in the form of a plurality of relational graphs each corresponding to a respective slew rate for the logic cell;

processing said plurality of relational graphs into characteristic data having an origin at a common value; and

comparing the characteristic data each logic cell with one another to find characteristic data having a similar characteristic, wherein the found characteristic data is used as general-use graph data.

5,852,446
RENDERING APPARATUS AND RENDERING METHOD, AND MAPPING APPARATUS AND MAPPING METHOD

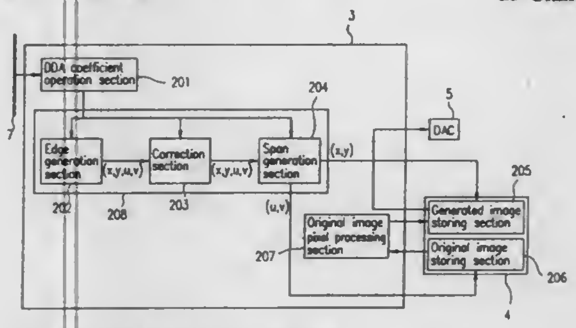
Tsutomu Hashimoto, Moriguchi, and Makoto Hirai, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 28, 1996, Ser. No. 673,311

Claims priority, application Japan, Jun. 30, 1995, 7-166662

Int. Cl.^{6} G06T *11/20*

U.S. Cl. 345—441 **25 Claims**


3
DDA coefficient operation section
201
204
5
1
DAC
Edge generation section
(x,y,u,v)
Correction section
(x,y,u,v)
Span generation section
(x,y)
205
202
208
203
(u,v)
Generated image storing section
Original image pixel processing section
Original image storing section
207
206
4

1. A rendering apparatus comprising:

means for performing a rendering calculation based on a depicting point on a polygon, and for outputting a calculating result, the polygon being projected to a plane having a plurality of pixels;

means for determining a plurality of pixels corresponding to the depicting point;

means for determining a weight coefficient for each of the plurality of pixels, based on a position of the depicting point; and

means for distributing the calculating result to each of the plurality of pixels, based on respective weight coefficients for the plurality of pixels.

5,852,447
CHARACTER AND FIGURE TRANSFORMING SYSTEM

Rituko Hosoya, Kamakura; Tsukasa Yamauchi, Yokohama, and Yasumasa Matsuda, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 539,725, Oct. 5, 1995, Pat. No. 5,539,868, which is a continuation of Ser. No. 931,199, Aug. 17, 1992, abandoned. This application May 17, 1996, Ser. No. 649,805

Claims priority, application Japan, Nov. 7, 1991, 3-291734

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 345—468 **20 Claims**

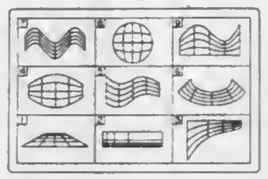
19. A method for displaying transformed characters on a display, comprising the steps of:

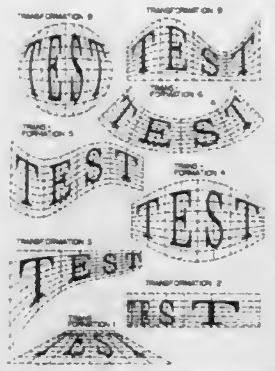
a step of inputting characters;

displaying a selection menu showing transformed shapes which are schematized surface areas surrounded by lines and/or curves;

selecting a desired shape from said menu;

performing a transformation operation on data of said characters to change outline forms of the characters to correspond to the lines and/or curves surrounding the area of said transformed shape selected; and





displaying said characters transformed on said display, wherein in a case where a part of a transformed shape is curved, a part of a straight line segment of said characters and/or figures which is an object of transformation is displayed as a curved segment.

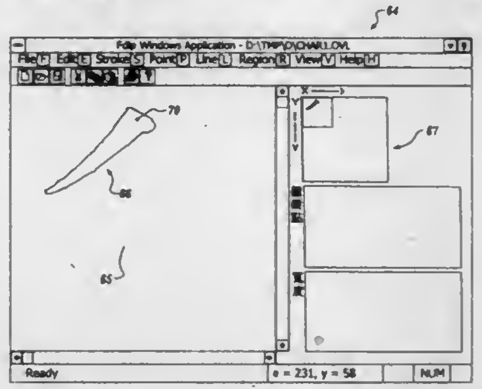
5,852,448
STROKE-BASED FONT GENERATION INDEPENDENT OF RESOLUTION

Kuo-Young Cheng, Taichung Hsien, Taiwan, assignor to DynaLab Inc., Taipei, Taiwan

Continuation-in-part of Ser. No. 717,172, Sep. 20, 1996. This application Jan. 22, 1997, Ser. No. 787,083

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 345—469 **20 Claims**



1. A character generating method for generating character bitmap images in a character bitmap space for display on an output device, wherein each generated character comprises a plurality of strokes, said method comprising the steps of:

a. selecting a character for display on the output device, wherein each stroke comprises predefined, prestored key points, width values, curve ratios stored in a curve ratio table, and feature points that have a predefined spatial relationship to the key points and wherein a key point is labeled with hint information if the key point requires a predefined specific display location;

b. determining the resolution of the output device;

c. retrieving curve ratios from the prestored curve level table according to the determined resolution of the output device;

d. calculating non-labeled key point positions that are associated with the strokes of said selected character in the characters display space at the key points' prestored position;

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e. calculating labeled key point positions that are associated with the strokes of said selected character in the characters display space at predetermined positions relative to the bitmap cell that contains the labeled key points' prestored position; and

f. rendering the strokes of the selected character in the character bitmap space on the output device according to the width values, the retrieved curve ratios, and feature points of the strokes and calculated, labeled and non-labeled key points.

5,852,449

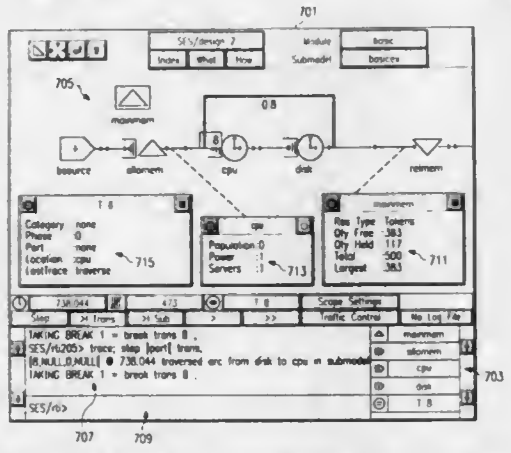
APPARATUS FOR AND METHOD OF DISPLAYING RUNNING OF MODELED SYSTEM DESIGNS

Mark A. Esslinger, Cedar Park; Allan D. Clarke, Austin; Robert M. Howard, Austin; Douglas K. Matchett, Austin; Douglas M. Neuse, Austin; James R. Palmer, Austin, and Carolyn W. West, Austin, all of Tex., assignors to Scientific and Engineering Software, Austin, Tex.

Filed Jan. 27, 1992, Ser. No. 825,979

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 345—473 7 Claims



1. A method of animating a system having parallel processes for the purpose of debugging the system, the system being modeled as a hierarchical collection of directed process execution graphs, said graphs representing sub-models of the system and having collections of nodes and arcs, and the parallel processes as transactions, the nodes indicating manipulation of physical or logic resources or other process steps in a transaction's life, and the arcs indicating paths along which transactions may flow from one node to another; the method comprising the steps of:

(a) executing a computer process having parallel execution threads representing parallel processes in a system;

(b) selecting one of the execution threads for animation of preselected events during the execution thread, the execution thread being represented by a transaction in a model of the system, the model including one or more hierarchial directed process execution graphs representing one or more submodels of the system;

(c) animating the selected execution thread on a user's display screen by displaying a graph in which the transaction is located, moving a symbol on the displayed graph representing the single transaction along arcs connecting nodes to which the transaction flows, and terminating animation of the selected execution thread when the transaction is blocked by the occurrence of a predefined event;

(d) displaying user-defined inspection data on said user's display screen, wherein said inspection data comprises user-selected program operating parameters from user-selected nodes; and

(e) selecting a next transaction representing another of the parallel execution threads for animation and animating the next transaction until it blocks.

5,852,450

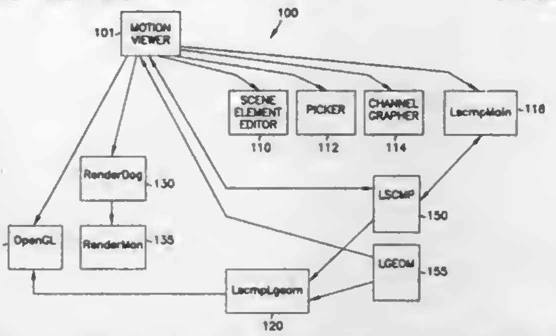
METHOD AND APPARATUS FOR PROCESSING CAPTURED MOTION DATA

Jeffrey Allyn Thingvold, Shoreview, Minn., assignor to Lamb & Company, Inc., Minneapolis, Minn.

Filed Jul. 11, 1996, Ser. No. 678,670

Int. Cl.^{6} G06T *17/70*

U.S. Cl. 345—473 1 Claim



1. A method of managing animation data on a computer, the computer comprising a memory and a display the method comprising the steps of:

storing motion data in a database in the computer's memory, the motion data comprising a hierarchy of segments and nodes;

storing geometry data in a computer-readable file, the geometry data comprising a hierarchy of segments and nodes:

graphically editing the motion data:

combining the motion data and the geometry data to create a computer-readable file of three-dimensional animation data

transforming the motion data hierarchy to align with the geometry data hierarchy, further comprising creating a transformation for each node in the geometry data hierarchy;

storing the transformation for each node in the database; and

applying the motion data to the geometry data by transforming each node of the motion data hierarchy according to the respective transformation stored in the database.

5,852,451

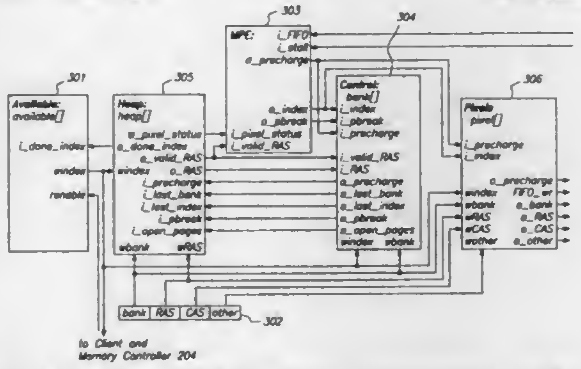
PIXEL REORDERING FOR IMPROVED TEXTURE MAPPING

Michael B. Cox, Menlo Park; Dinyar B. Lahewala, Newark, and Dong-Ying Kuo, Pleasanton, all of Calif., assignors to S3 Incorporation, Santa Clara, Calif.

Filed Jan. 9, 1997, Ser. No. 780,787

Int. Cl.^{6} G09G *5/36*

U.S. Cl. 345—509 14 Claims



1. A system for reordering memory references for pixels to improve memory locality in a page-mode memory architecture, comprising:

an available module for receiving pixel memory references from a client graphics engine; and

a pixel priority heap coupled to the available module for receiving pixel memory references from the available module, for reordering pixel memory references to improve memory locality, and for transmitting reordered pixel memory references to a memory controller;

wherein:

the pixel priority heap comprises a plurality of slots for storage of pixel memory references, each slot having a status selectable from an available status indicating that no reference is stored in the slot and an unavailable status indicating that a reference is stored in the slot; and

the available module further stores indices representing available slots in the pixel priority heap.

5,852,452

INK JET PRINTER WITH ADJUSTABLE CAPPING MECHANISM AND PRINTING CAP

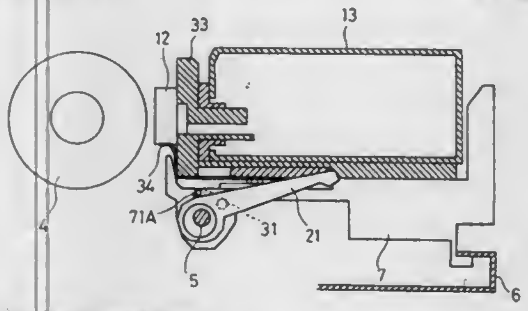
Koji Imai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 12, 1997, Ser. No. 872,960

Claims priority, application Japan, Jul. 25, 1996, 8-195799

Int. Cl.^{6} B41J *25/308;2/165*

U.S. Cl. 347—8 24 Claims



1. A printer, comprising:

a print head which ejects ink to a recording medium;

a capping mechanism which has a cap hermetically covering a nozzle surface of said print head and being capable of moving the cap into contact with the nozzle surface of said print head in such a manner that the cap can advance/retract to/from said print head;

gap indicating means for indicating a head gap which is an interval between said print head and the recording medium;

a gap adjusting mechanism adjusting the head gap to the indicated head gap indicated by said gap indicating means;

head gap detecting means for detecting the head gap indicated by said gap indicating means;

cap position adjusting means for receiving signals of the head gap from said head gap detecting means, said cap position adjusting means for adjusting the cap advancing/retracting distance based on the received signals of the head gap.

5,852,453

INK-JET PRINTER

Shuzo Hirahara, Yokohama; Hitoshi Nagato, Tokyo; Yuko Nomura; Koichi Ishii, both of Kawasaki; Yasuo Hosaka, Tokyo; Hideyuki Nakao, Kawasaki, and Teruo Murakami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1996, Ser. No. 610,398

Claims priority, application Japan, Mar. 15, 1995, 7-056219

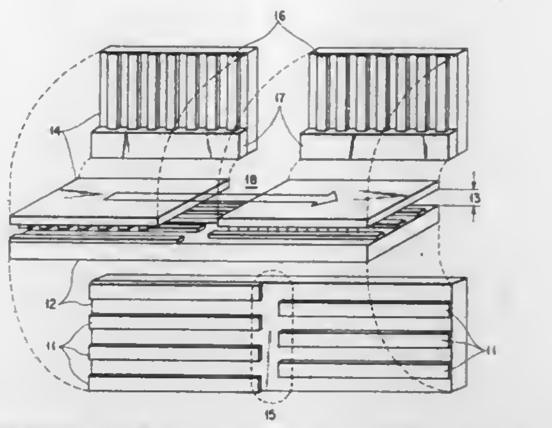
Int. Cl.^{6} B41J *2/065*

U.S. Cl. 347—55 13 Claims

1. An ink-jet printer comprising:

holding means having an emitting outlet, for holding ink in which charged coloring material components are floating in solvent;

control means for controlling a concentration of the coloring material components in the ink in the vicinity of the emitting outlet; and



printing means for forcing the coloring material components to fly in the form of ink droplets from the emitting outlet as a printing medium when the concentration of the coloring material components is increased in the vicinity of the emitting outlet by said control means and thereby printing a desired image on the printing medium.

5,852,454

COLOR RECORDING DEVICE AND METHOD FOR RECEIVING BINARY IMAGE DATA AND RECORDING A CORRESPONDING COLOR IMAGE

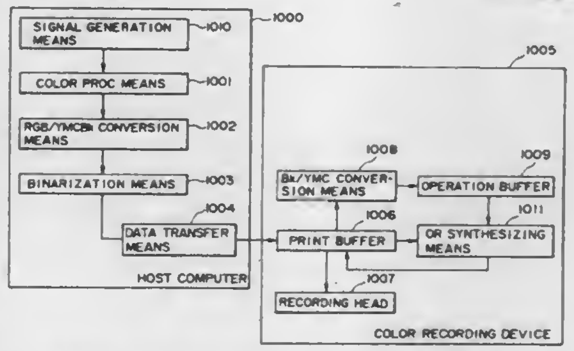
Daigoro Kanematsu; Naoji Otsuka; Kentaro Yano, all of Yokohama; Kiichiro Takahashi, Kawasaki; Hitoshi Nishikori, Kawasaki, and Osamu Iwasaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1996, Ser. No. 634,989

Claims priority, application Japan, Apr. 21, 1995, 7-096965; Aug. 31, 1995, 7-223594; Oct. 27, 1995, 7-280424

Int. Cl.^{6} B41J *2/21*

U.S. Cl. 347—43 29 Claims



1. An apparatus for processing images, comprising:

a means for receiving Y (yellow), M (magenta), C (cyan), and Bk (black) binary image data;

a means for recording color images by using Y, M, and C recording members;

a conversion means for converting the received Bk binary image data to Y, M, and C binary image data at a given ratio; and

a synthesizing means for synthesizing the converted Y, M, and C binary image data with the received Y, M, and C binary image data.

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5,852,455
IMAGE FORMING DEVICE, HAVING SEPARATELY ENERGIZABLE, INTER-CONNECTED ELECTRODES AND IMAGE RECORDING ELEMENT FOR USE, THEREIN

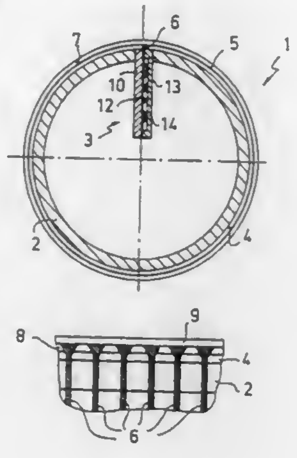
Rob Adrianus Maria Van Ham; Paulus Henricus Eijmberts, both of Eindhoven, and Augustinus Mathlas Wilhelmus Cox, Roermond, all of Netherlands, assignors to OCE-Nederland, B.V., Ma Venlo, Netherlands

Continuation of Ser. No. 279,023, Jul. 22, 1994. This application Oct. 7, 1997, Ser. No. 946,064

Claims priority, application Netheriands, Jul. 23, 1993, 9301300

Int. Cl.^{6} B41J *2/06;2/39;2/395;2/40*

U.S. Cl. 347—55 **6 Claims**



1. An image-forming device comprising:

a movable image-recording element includes a support with a dielectric surface layer thereon, a system of separately energizable image-forming electrodes said system of separately energizable electrodes having a surface and is disposed beneath said dielectric surface layer and on a surface of said movable image recording element,

an image-forming zone situated along a path of movement of said movable image-recording element, a counter electrode being disposed juxtapositioned above said dielectric surface of said movable image-recording element in said image-forming zone, and

energization means for applying a voltage between said image-forming electrodes and said counter electrode in accordance with an image pattern to be recorded, in order that toner powder supplied to said image-forming zone may be deposited on the dielectric surface of said movable image-recording element in accordance with said image pattern,

wherein said separately energizable image-forming electrodes disposed beneath said dielectric surface layer are interconnected in the movable image-recording element by a material having an electrical resistance between that of the dielectric surface layer and that of the image-forming electrodes and the electric resistance is so selected wherein an image-forming electrode that cannot be directly energized by said energization means is energized at a predetermined level, on energization of one of said separately energizable image-forming electrode nearest to said image forming zone, such that toner powder is deposited on the dielectric surface situated thereabove.

5,852,456
PLATE ASSEMBLY SUITABLE FOR INK-JET-TYPE PRINTING HEAD

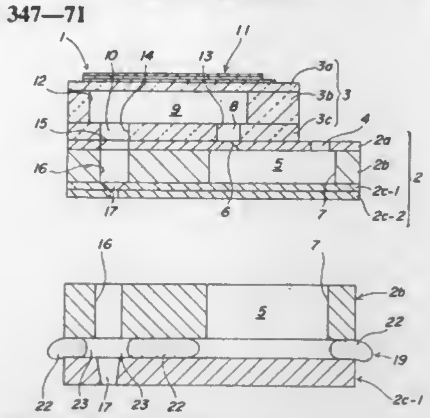
Shigeki Okada; Natsumi Shlmogawa, both of Nagoya, and Nobou Takahashi, Owariasahi, all of Japan, assignors to NGK Insulators, Ltd., and Selko Epson Corp., both of Japan

Filed Jul. 25, 1994, Ser. No. 280,648

Claims priority, appllcation Japan, Jul. 26, 1993, 5-183625

Int. Cl.^{6} B41J *2/045*

U.S. Cl. 347—71 **15 Clalms**



1. A plate assembly comprising:

first and second plates having opposite surfaces of a predetermined shape, said first and second plates each having a plurality of openings for passing a fluid therethrough, including at least one opening in one plate which is aligned with at least one corresponding opening in the other plate; and

an intermediate sheet having a shape which substantially corresponds to the shape of said surfaces of the first and second plates, said intermediate sheet being interposed between the first and second plates and bonding the first and second plates with each other, and having at least one opening which is aligned with at least one opening in each of said first and second plates, said opening in said intermediate sheet being defined by a periphery which is substantially flush with a periphery of the corresponding opening in at least one of said first and second plates;

said intermediate sheet comprising a thermoplastic resin which has been heated under pressure, the periphery of said at least one opening in said intermediate sheet, before the intermediate sheet is heated, being set-back from the periphery of the corresponding opening in said at least one of the first and second plates, by a first set-back amount in a first direction connecting said openings in each of said first and second plates, and by a second set-back amount in a second direction which is different from said first direction, said second set-back amount being greater than said first set-back amount.

5,852,457
INK CONTAINER CARTRIDGE

Yasuo Kotaki, Machida; Masanori Takenouchl, Yokohama; Hideo Salkawa, Machida; Hisashi Yamamoto, Hiratsuka, and Yuji Hamasaki, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,729

Claims priority, application Japan, Aug. 24, 1994, 6-199811; Aug. 22, 1995, 7-213290

Int. Cl.^{6} B46J *2/175*

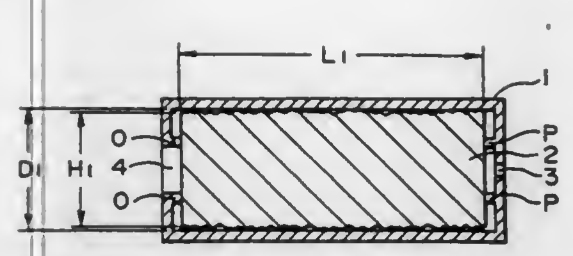
U.S. Cl. 347—86 **8 Claims**

1. An ink container detachably mountable to an ink jet recording head, comprising:

a substantially hexahedron casing having a first pair of opposed sides and a second pair of opposed sides, one side of said first pair of opposed sides having an ink supply opening for supplying ink to said ink jet recording head; and

an ink retaining member, in said casing, for retaining ink;

wherein said ink retaining member is compressed in said casing so that a compression ratio A of said ink retaining member between said first pair of opposed sides is greater than a compression ratio B between said second pair of opposed sides and so that 1.1≦A≦1.6.



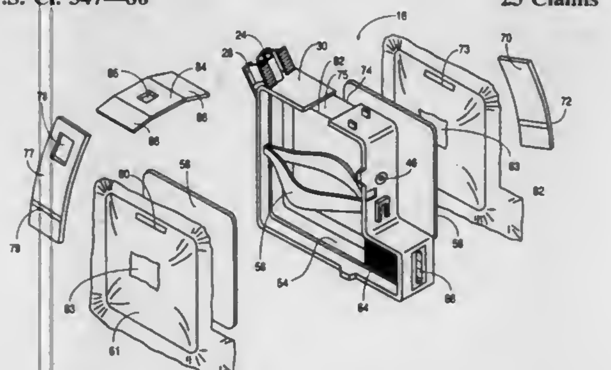
5,852,458
INKJET PRINT CARTRIDGE HAVING A FIRST INLET PORT FOR INITIAL FILLING AND A SECOND INLET PORT FOR INK REPLENISHMENT WITHOUT REMOVING THE PRINT CARTRIDGE FROM THE PRINTER

Joseph E. Scheffelin; David S. Hunt, both of San Diego; Mark E. Young, Escondido; Elizabeth Zapata, San Diego; Alfred Zepeda, San Marcos; Christopher J. Schultz, San Diego, and Jon Fong, Manhattan Beach, all of Calif., assignors to Hewlett-Packard Company, PaloAlto, Calif.

Continuation-in-part of Ser. No. 322,848, Oct. 13, 1994, Pat. No. 5,621,445, and Ser. No. 454,975, May 19, 1995, Pat. No. 5,745,137, which is a continuation-in-part of Ser. No. 995,851, Dec. 23, 1992, Pat. No. 5,757,406, said Ser. No. 322,848 is a continuation-in-part of Ser. No. 171,321, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 750,360, Aug. 27, 1991, Pat. No. 5,280,300. This application Mar. 14, 1996, Ser. No. 618,237

Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—86 **23 Claims**



1. An inkjet printing system comprising:

a print cartridge support structure within an inkjet printer;

a print cartridge having a print cartridge body, said print cartridge being installed in said support structure;

a first reservoir for ink within said body;

a printhead supported on said body in fluid communication with said first reservoir;

an ink recharge port on said body for recharging said first reservoir with ink after a supply of ink in said first reservoir has been at least partially depleted, said recharge port having a seal which is selectively actuated to be in an opened state or a closed state, said closed state providing a fluid seal of said first reservoir, said opened state providing fluid communication between an external ink reservoir and said first reservoir when said external ink reservoir is connected to said recharge port;

an ink conduit having a first end connected to said recharge port and in fluid communication with said first reservoir due to said seal being in said opened state; and

said external ink reservoir connected to a second end of said ink conduit for supplying ink to said first reservoir, said ink flowing from said external ink reservoir to said first reservoir due to a negative pressure in said first reservoir relative to a pressure within said external ink reservoir.

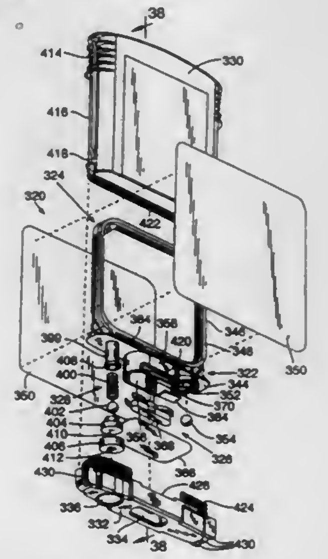
5,852,459
PRINTER USING PRINT CARTRIDGE WITH INTERNAL PRESSURE REGULATOR

Norman E. Pawlowski, Jr.; Mark Hauck, and John A. Barinaga, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 550,902, Oct. 31, 1995, Ser. No. 429,915, Apr. 27, 1995, and Ser. No. 566,821, Dec. 4, 1995, said Ser. No. 550,902 is a continuation-in-part of Ser. No. 518,847, Aug. 24, 1995, Pat. No. 5,736,992, which is a continuation-in-part of Ser. No. 331,453, Oct. 31, 1994, Pat. No. 5,583,545. This application Aug. 30, 1996, Ser. No. 706,051

Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—86 **19 Claims**



1. A printing system comprising:

a first ink reservoir;

a scanning carriage;

a print cartridge for installation in said carriage, said print cartridge having a second ink reservoir internal to said print cartridge, said print cartridge containing a pressure regulator comprising:

a valve for controlling an opening in an ink path between said first ink reservoir and said second ink reservoir;

a flexible member within said print cartridge maintained at an internal reference pressure, said flexible member expanding or contracting dependent upon the relative pressures internal and external to said flexible member; and

an actuator in contact with said flexible member for actuating said valve based on the expansion and contraction of said flexible member, said valve controlling a flow of ink into said second ink reservoir such that ink is supplied to a printhead within said print cartridge at a substantially constant pressure.

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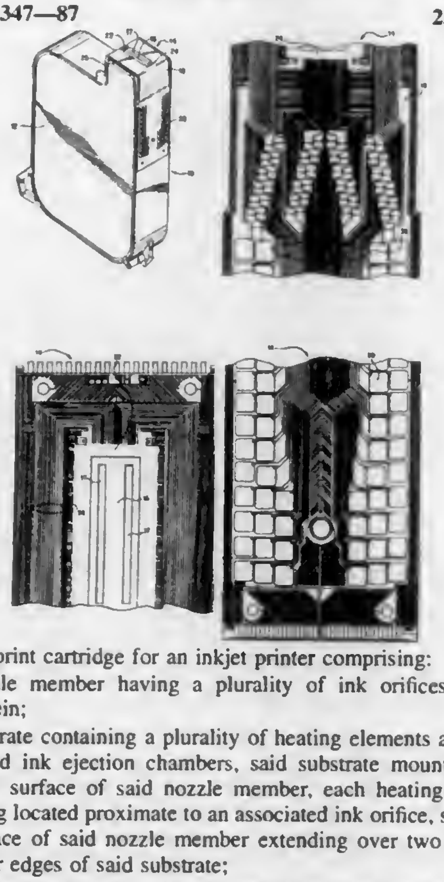
5,852,460
INKJET PRINT CARTRIDGE DESIGN TO DECREASE DEFORMATION OF THE PRINTHEAD WHEN ADHESIVELY SEALING THE PRINTHEAD TO THE PRINT CARTRIDGE

Sara E. Schaeffer, Escondido, and Max S. Gunther, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 398,849, Mar. 6, 1995, Pat. No. 5,736,998. This application May 31, 1996, Ser. No. 655,796

Int. Cl.⁶ B41J *2/175*

U.S. Cl. 347—87 **25 Claims**



1. An print cartridge for an inkjet printer comprising:

a nozzle member having a plurality of ink orifices formed therein;

a substrate containing a plurality of heating elements and associated ink ejection chambers, said substrate mounted on a back surface of said nozzle member, each heating element being located proximate to an associated ink orifice, said back surface of said nozzle member extending over two or more outer edges of said substrate;

a headland portion located proximate to the back surface of said nozzle member and including an inner raised wall circumscribing an inlet slot, the inner raised wall having an adhesive support surface and an adhesive dam formed thereon and having wall openings therein, said wall openings having a support surface; and

an adhesive layer located between the back surface of said nozzle member and the inner raised wall to affix said nozzle member to said headland, said adhesive layer is located on the adhesive support surface and the adhesive dam and along the support surface within the wall openings therein.

5,852,461
IMAGE FORMATION SYSTEM AND COLOR MISREGISTRATION CORRECTION SYSTEM

Junichi Noguchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1997, Ser. No. 832,860

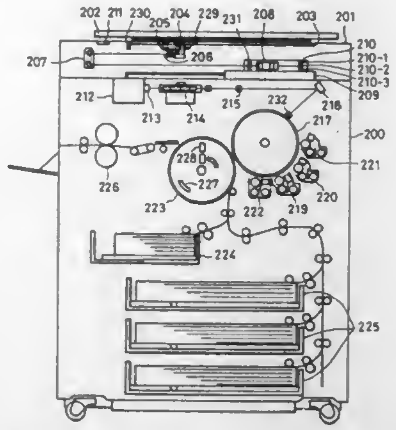
Claims priority, application Japan, Apr. 25, 1996, 8-105388

Int. Cl.⁶ G01D *15/14*

U.S. Cl. 347—116 **22 Claims**

1. An image formation system, comprising:

a generating means for generating a first line image composed of a plurality of lines which are to be formed on a given medium;



a detecting means for detecting a magnitude of a deviation of a scan position at which the first line image will be formed on the given medium from a given scan position at which the first line image is supposed to be formed on the given medium;

a producing means for producing a second line image composed of a plurality of lines, as a substitute for the first line image, according to the magnitude of a deviation, wherein at least one of the lines constituting the second line image is produced by said producing means on the basis of a plurality of the lines constituting the first line image: and

an image forming means for forming the second line image produced by said producing means on the given medium instead of the first line image.

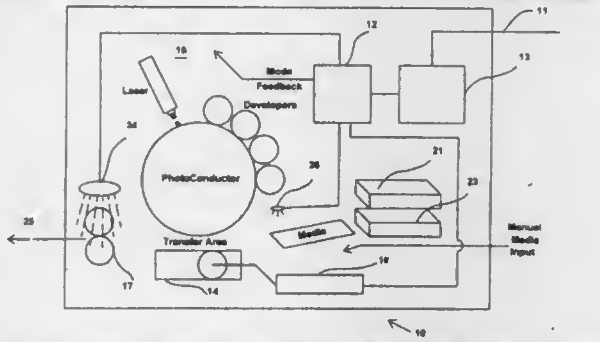
5,852,462
METHOD AND APPARATUS FOR FORMING HIGH GLOSS IMAGES USING LOW GLOSS TONER FORMULATION

Michael B. Lloyd, Boise, Id., and Wallace K. Johnson, Albany, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 7, 1996, Ser. No. 611,593

Int. Cl.⁶ B41J *2/385;2/435;* **G03G** *9/08;13/04*

U.S. Cl. 347—156 **20 Claims**



15. A system for selectively rendering an image in either a low gloss mode or a high gloss or range in-between mode comprising:

a document generating device being configured to generate and transmit electronic data representing a document to be printed and prefacing the electronic data with an electronic data command representing a desired mode selected as either a low gloss document mode wherein the document is printed on a low gloss media using a dry low gloss toner formulation or a high gloss document mode wherein the document is printed on a high gloss media, if available, using the dry low gloss toner;

an image forming device capable of being communicatively coupled with the document generating device for receiving transmissions therefrom, the image forming device including,

an input for receiving a transmission of electronic data representing a document to be printed and an electronic transmission of data representing

a desired mode selected as either a low gloss document on a low gloss media using a dry low gloss toner formulation or a high gloss document on a high gloss media using the dry low gloss toner formulation;

print control means being connected to the input means and the input, and configured to determine a gloss level for the image to be printed;

a print engine being connected to print control means for printing an image at the determined gloss level;

means for controlling a feed speed of media through the image forming device being connected to and controlled by the print control means and configured to feed media for a higher gloss finish at a reduced rate through the print engine as compared to a lower gloss finished image;

fusion means for fusing an image to a print media, the fusion means including a means for controlling a temperature for fusion to media and being connected to and controlled by the print control means.

5,852,463
THERMAL RECORDING APPARATUS AND ERASING METHOD OF A RECORD THEREFOR

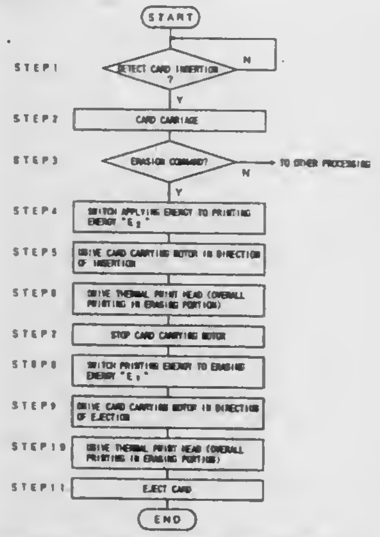
Yoshinori Koshida; Shusaku Tanabe, and Satoshi Murakami, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 278,068

Claims priority, application Japan, Mar. 2, 1994, 6-032263; Aug. 9, 1996, 5-197366

Int. Cl.⁶ B41J *2/32*

U.S. Cl. 347—171 **6 Claims**


START
STEP1
DETECT CARD INSERTION ?
N
Y
STEP2
CARD CARRIAGE
STEP3
ERASION COMMAND?
N
TO OTHER PROCESSING
Y
STEP4
SWITCH APPLYING ENERGY TO PRINTING ENERGY "E₂"
STEP5
DRIVE CARD CARRYING MOTOR IN DIRECTION OF INSERTION
STEP6
DRIVE THERMAL PRINT HEAD (OVERALL PRINTING IN ERASING PORTION)
STEP7
STOP CARD CARRYING MOTOR
STEP8
SWITCH PRINTING ENERGY TO ERASING ENERGY "E₁"
STEP9
DRIVE CARD CARRYING MOTOR IN DIRECTION OF EJECTION
STEP10
DRIVE THERMAL PRINT HEAD (OVERALL PRINTING IN ERASING PORTION)
STEP11
EJECT CARD
END

1. A thermal recording apparatus, comprising:

a print/erasion unit having a carrier path along which a thermal recording media is carried, and having heating means located on the carrier path for applying heat energy to the thermal recording media for selectively recording and erasing data on the recording media; and

control means operatively connected to said heating means for selectively applying a high level driving energy to said heating means to generate a high level of heat energy, and a low level driving energy to said heating means to generate a low level of heat energy, said control means applying the high level driving energy to said heating means for effecting the recording of the data onto the thermal recording media, and applying the high level driving energy to said heating means to return the thermal recording media to a characteristic condition representative of a condition of the thermal recording media immediately after the recording of the data is effected, followed by the low level driving energy to said heating means for effecting the erasion of the data recorded on the thermal recording media; and wherein

said print/erasion unit further comprises means for reciprocating the thermal recording media on the carrier path in a forward and returning direction, whereby, for the erasion of the data recorded on the thermal recording media, said control means applies the high level driving energy while the thermal recording media is moved in the forward direction, and applies the low level driving energy while the thermal recording media is moved in the returning direction.

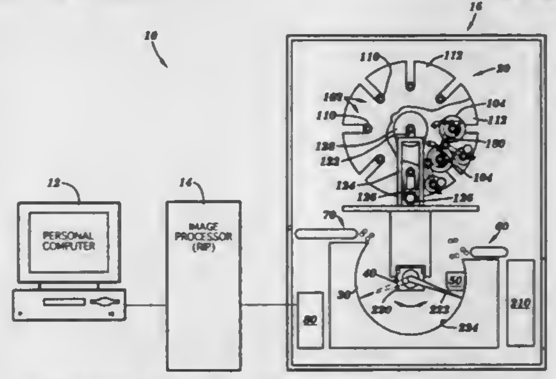
5,852,464
OUTPUT CONVEYOR FOR THERMAL IMAGING APPARATUS

James J. Hebert, Manchester, N.H.; Ronald W. Krohn, Marlboro, and James M. Renaud, Dracut, both of Mass., assignors to Agfa Division - Bayer Corporation, Wilmington, Mass.

Filed Jun. 29, 1995, Ser. No. 496,708

Int. Cl.⁶ B41J *2/44*

U.S. Cl. 347—215 **20 Claims**



1. An imaging apparatus, comprising:

stationary support means for supporting an imaging material;

imaging means for exposing an image onto the imaging material; and

loading means for automatically loading and unloading the imaging material onto said stationary support means including output conveyor means for removing the imaging material from said stationary support means without contact between the image on the imaging material and an adjacent platen, wherein the imaging material has a curl and said output conveyor means comprises redirecting means for redirecting the imaging material in a direction against the curl.

5,852,465

Patent Not Issued For This Number

5,852,466
TELECONFERENCE SYSTEM

Takayuki Komine, Kawasaki, and Hisashi Kawai, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 174,434, Dec. 28, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 599,666

Claims priority, application Japan, Dec. 28, 1992, 4-361627; Jan. 29, 1993, 5-034926

Int. Cl.⁶ H04N *7/15*

U.S. Cl. 348—15 **19 Claims**

17. A method of operating a teleconference system comprising the steps of:

inputting image data and audio data;

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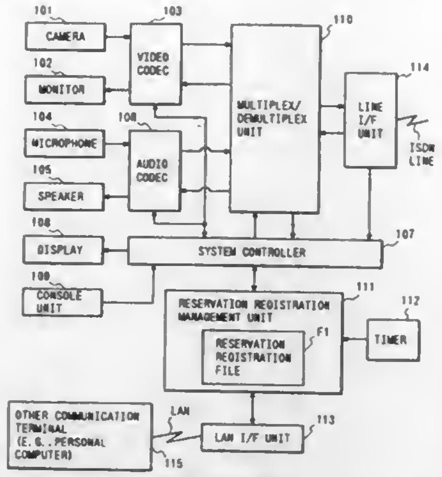


outputting image data and audio data;
communicating the input image data and audio data and the output image data and audio data;
controlling a reservation time to use said teleconference system and allowing a reservation partner at which said teleconference system is used to use, inhibiting partners other than said reservation partner from using, said teleconference system when the reservation time has arrived by a reservation management means; and
releasing said reservation management means from inhibiting the use of said teleconference system when the reservation partner does not use said teleconference system during a predetermined period of time after the reservation time has arrived.

5,852,467
IMAGE SIGNAL RECORDING APPARATUS CONTROLLING THE TRANSFER OF IMAGE DATA FROM TEMPORARY MEMORY TO NON-VOLATILE MEMORY

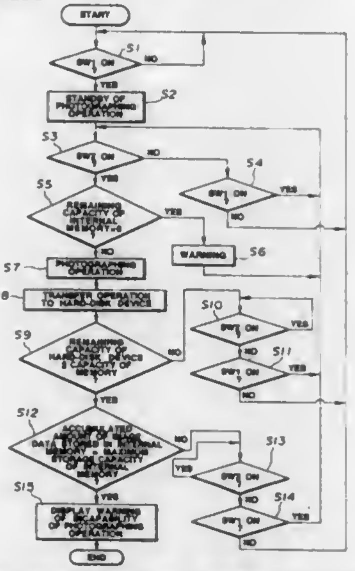
Hiroyuki Ogino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 465,570, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 114,964, Sep. 2, 1993, abandoned. This application Mar. 10, 1997, Ser. No. 815,992

Claims priority, application Japan, Sep. 9, 1992, 4-266593

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 348—231 **58 Claims**


START
S1
SW1 ON
NO
YES
S2
STANDBY OF PHOTOGRAPHING OPERATION
S3
SW1 ON
S4
SW1 ON
S5
REMAINING CAPACITY OF INTERNAL MEMORY=0
WARNING
S6
S7
PHOTOGRAPHING OPERATION
S8
TRANSFER OPERATION TO HARD-DISK DEVICE
S9
REMAINING CAPACITY OF HARD-DISK DEVICE ≧ CAPACITY OF MEMORY
S10
SW1 ON
S11
SW1 ON
S12
S13
SW1 ON
S14
SW1 ON
S15
DISPLAY WARNING OF INCAPABILITY OF PHOTOGRAPHING OPERATION
END

1. An image signal recording apparatus for recording image signals, said image signal recording apparatus comprising:
image pickup means for obtaining an image of an object, and for outputting an image signal corresponding to the obtained image;
first memory means having a predetermined storage capacity for temporarily storing the image signal output from said image pickup means, and for outputting the temporarily stored image signal;
second memory means for storing the image signal output from said first memory means;
first detection means for detecting the amount of image signals stored in said first memory means;
second detection means for detecting the storage capacity of image signals in said second memory means; and
image-pickup-operation prohibition means for directly comparing the amount of image signals stored in said first memory means with the storage capacity of said second memory means, and for prohibiting the image-pickup operation of said image pickup means when the amount of image signals stored in said first memory means equals the storable capacity remaining in said second memory means as the result of a comparison between the detection results of said first and second detection means.

5,852,468
1-CHIP COLOR VIDEO CAMERA FOR GENERATING INTER-PIXEL COLOR SIGNAL COMPONENT BY INTERPOLATING PRIMARY COLOR SIGNALS FROM NEIGHBORING PIXELS

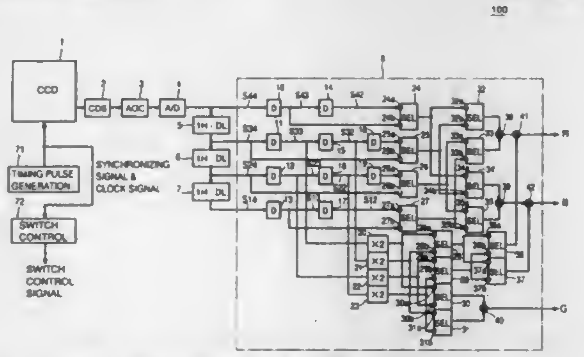
Hidefumi Okada, Daito, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Feb. 21, 1996, Ser. No. 604,482

Claims priority, application Japan, Feb. 27, 1995, 7-038632

Int. Cl.^{6} H04N *3/14;5/335;9/04;9/083*

U.S. Cl. 348—272 **14 Claims**



1. A 1-chip color video camera, comprising:
solid-state image sensing means provided with photoelectric converting elements corresponding to respective pixels arranged in an array;
said solid-state image sensing means including on its light receiving surface a color filter array in which primary color filters are placed in a prescribed arrangement corresponding to said photoelectric converting elements; and
interpolating means, receiving an output from said solid-state image sensing means, for outputting color signals;
said interpolating means including:
- parallel color signal output means, receiving said output from said solid-state image sensing means, for outputting, as said color signals, color signals corresponding to a prescribed even number of rows of said pixels in synchronization with and parallel to each other successively, column by column;
- control means for outputting a synchronized interpolation designating signal in accordance with correspondence between said color signals, output column by column from said parallel color signal output means, and an arrangement of predetermined weight coefficients for the prescribed arrangement of said color filter array; and
- color separation means, receiving said outputs from said parallel color signal output means, for interpolating color signals from a pixel block including pixels of said prescribed even number of rows and a prescribed even number of columns in accordance with said interpolation designating signal, and for successively outputting color signals in synchronization with and corresponding to a central position of said pixel block.

5,852,469
MOVING PICTURE CODING AND/OR DECODING SYSTEMS, AND VARIABLE-LENGTH CODING AND/OR DECODING SYSTEM

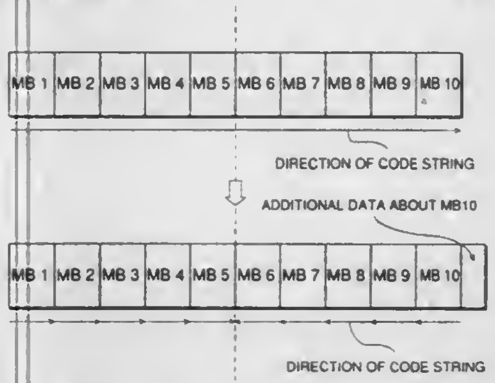
Takeshi Nagai, Higashi-Murayama; Yoshihiro Kikuchi; Toshiaki Watanabe, both of Yokohama, and Takeshi Chujoh, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1996, Ser. No. 616,809

Claims priority, application Japan, Mar. 15, 1995, 7-056285; Apr. 14, 1995, 7-089772; Oct. 6, 1995, 7-260383; Oct. 25, 1995, 7-277982; Mar. 8, 1996, 8-080550

Int. Cl.^{6} H04N *7/18;* **H03M** *13/00*

U.S. Cl. 348—384 **8 Claims**



1. A variable-length coding system for assigning, to a plurality of source symbols, a code word of a code length corresponding to an occurrence probability of each of the source symbols, and for outputting coded data corresponding to an inputted source symbol, said variable-length coding system comprising:
- a code word table for storing a plurality of code words corresponding to respective source symbols, the code words being able to be decoded in either of a forward direction and a backward direction; and
- coding means for selecting a code word corresponding to the inputted source symbol from said code word table if a code word corresponding to the inputted source symbol is stored in said code word table, and for generating a code word comprising an escape code including a prefix and a suffix added to a predetermined code representing the inputted source symbol when no code word corresponding to the inputted source symbol is stored in the code word table, the escape code being decodable in either of a forward and a backward direction, and for outputting coded data corresponding to the inputted source symbol and comprising one of a selected code word and a generated code word.

5,852,470
SIGNAL CONVERTING APPARATUS AND SIGNAL CONVERTING METHOD

Tetsujiro Kondo; Yasuhiro Fujimori; Hideo Nakaya, and Kenji Takahashi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

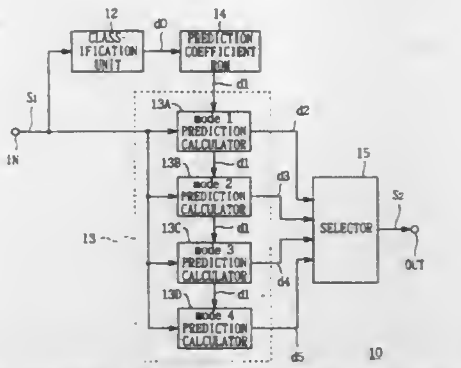
Filed May 28, 1996, Ser. No. 654,205

Claims priority, application Japan, May 31, 1995, 7-158616

Int. Cl.^{6} H04N *7/01*

U.S. Cl. 348—448 **55 Claims**

1. A signal converting apparatus for converting an input first video signal into a second video signal, comprising:


12
CLASSIFICATION UNIT
d0
14
PREDICTION COEFFICIENT ROM
d1
S1
IN
13A
mode 1 PREDICTION CALCULATOR
13B
mode 2 PREDICTION CALCULATOR
13C
mode 3 PREDICTION CALCULATOR
13D
mode 4 PREDICTION CALCULATOR
13
d2
d3
d4
d5
15
SELECTOR
S2
OUT
10

- a unit for evaluating a spatial activity for said first video signal to generate an activity code;
- a unit for setting a plurality of different patterns for said first video signal to select a pixel pattern from a set of pixel patterns determined by said spatial activity, and classifying said first video signal using the selected pixel pattern in order to generate a class code;
- a memory stored with prediction coefficients for each class for predictively producing said second video signal; and
- a unit for producing said second video signal by predictively calculating said first inputted video signal using the prediction coefficient read out from said memory corresponding to at least the class code.

5,852,471
TELEVISION MULTIPLEX DATA EXTRACTING APPARATUS

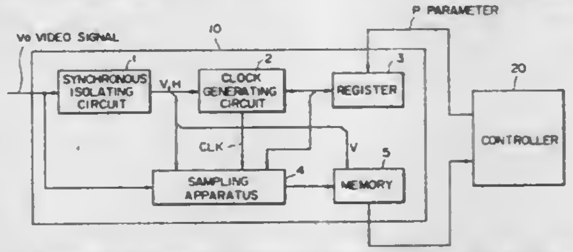
Miki Furuya, Saitama; Tadashi Ezaki, Tokyo; Teruhiko Kori, and Satoshi Tsuchiya, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 19, 1996, Ser. No. 665,882

Claims priority, application Japan, Jun. 20, 1995, 7-176684

Int. Cl.^{6} H04N *7/00;11/00*

U.S. Cl. 348—465 **11 Claims**



1. A television multiplex data extracting apparatus for extracting multiplex data in the designated horizontal section among those in the vertical blanking period of the television signal, said extracting apparatus comprising:
- mode designating means for designating a data fetch mode;
- data extracting means for providing first and second modes as said data fetch mode to isolate and for extracting the multiplex data of said designated horizontal section from said television signal, said data extracting means having means for discriminating the existence or non-existence of the multiplex data; and
- memory means for storing output data from said data extracting means;
- wherein when said first mode is designated by said mode designating means, said data extracting means extracts the multiplex data of said designated horizontal section and transfers said multiplex data to said memory means; and
- wherein when said second mode is designated by said mode designating means, said discriminating means of said data extracting means discriminates existence or non-existence of the multiplex data in said designated horizontal section and when existence of said multiplex data is discriminated, said data extracting means extracts said multiplex data and transfers said multiplex data to said memory means.

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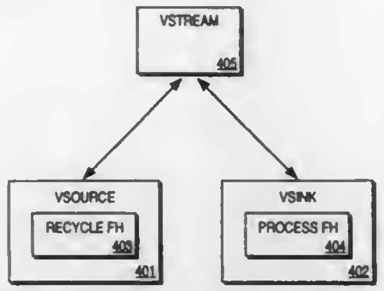
5,852,472
METHOD AND APPARATUS FOR CONNECTING VIDEO SOURCES AND VIDEO SINKS

Rama R. Prasad; Michael J. Gutmann, both of Hillsboro, and Stephen S. Ing, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 28, 1995, Ser. No. 535,541

Int. Cl.^{6} H04N *5/30*

U.S. Cl. 348—552 **36 Claims**



1. A method of creating a connection between a video source and a video sink, the video source for providing a plurality of video frames to the video sink, the video source having a recycle framehandler for recycling a plurality of buffers, the video sink having a process framehandler for processing the frames, the method comprising:

providing the video source with a reference to the process framehandler of the video sink; and

providing the video sink with a reference to the recycle framehandler of the video source.

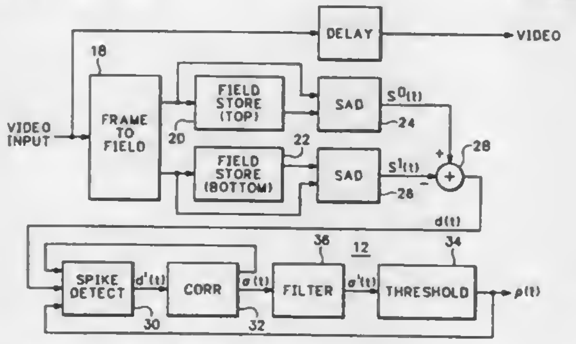
5,852,473
3-2 PULLDOWN DETECTOR

Caspar Horne, Santa Clara, Calif., and Ali Tabataba, Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Feb. 20, 1996, Ser. No. 603,302

Int. Cl.^{6} H04N *5/46;7/01*

U.S. Cl. 348—558 **8 Claims**



1. A 3-2 pulldown detector comprising:

means for converting each frame of an input video signal which includes converted film material into respective top and bottom fields;

means for obtaining a sum of absolute differences between consecutive fields for each of the top and bottom fields respectively;

means for subtracting the sums of the absolute differences to produce a difference signal; and

means for processing the difference signal to produce a flag signal during a period when converted film material is included in the input video signal.

5,852,474
TELEVISION RECEIVER INCLUDING PLAYBACK MODE FOR STORING SCREEN IMAGE INFORMATION FOR PREDETERMINED TIME TO REPRODUCE AND ITS METHOD

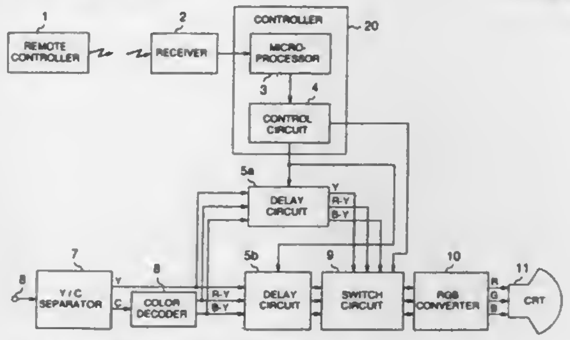
Nobufumi Nakagaki, Tokyo; Takeshi Minemoto, Sagamihara; Takeshi Hoshino, Kodaira; Masahide Aoki, Iruma, and Atsushi Ishibashi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1996, Ser. No. 698,560

Claims priority, application Japan, Aug. 24, 1995, 7-216321

Int. Cl.^{6} H04N *5/445;5/45*

U.S. Cl. 348—564 **15 Claims**



1. A television receiver, comprising:

a video signal processing section for receiving as an input thereto a video signal and converting the signal into a video display signal;

video signal storage means for receiving the video display signal from the video signal processing section, recording the video display signal for a predetermined period of time, and writing the video display signal in an overwriting fashion after lapse of the predetermined period of time, thereby repeatedly recording the video display signal at an interval of the predetermined period of time;

composition switch means for receiving as inputs thereto the video display signals respectively outputted from the video signal processing section and the video signal storage means and combining the received signals with each other in a selective manner, and outputting a combined signal therefrom;

control means for controlling the video signal storage means and the composition switch means in response to an indication signal supplied from an external device and combining the video display signal from either one or both of the video signal storage means and the video signal processing section, thereby outputting the combined signal from the composition switch means; and

display means for displaying thereon the video display signal outputted from the composition switch means.

5,852,475
TRANSFORM ARTIFACT REDUCTION PROCESS

Smita Gupta, Sunnyvale, and Yi Tong Tse, San Jose, both of Calif., assignors to Compression Labs, Inc., San Jose, Calif.

Filed Jun. 6, 1995, Ser. No. 486,279

Int. Cl.^{6} H04N *5/21*

U.S. Cl. 348—606 **111 Claims**

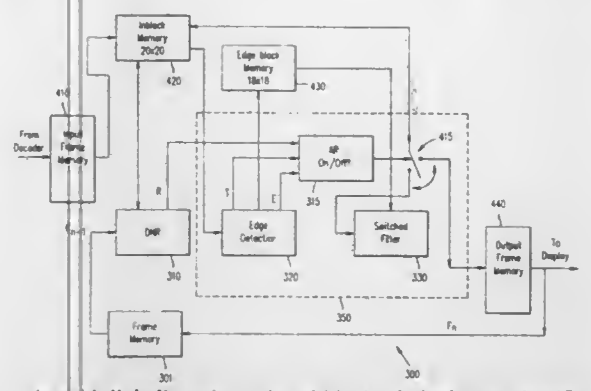
1. A transform artifact reduction method for decoded video pixel data, said method comprising:

digitally noise reducing a block of pixels to obtain a digitally noise reduced block of pixels; and

filtering said digitally noise reduced block of pixels using a spatially-variant filter wherein said filtering further comprises

adaptively identifying each pixel in said digitally noise reduced block of pixels as one of an edge pixel and a non-edge pixel;

assigning a pixel in said digitally noise reduced block of pixels one classification in a plurality of edge classifications using said edge pixel and said non-edge pixel identifications for pixels in a window about said pixel, said assigning said pixel



in said digitally noise reduced block of pixels one classification in said plurality of edge classifications using said edge pixel and said non-edge pixel classifications for pixels in a window about said pixel further comprising

generating an edge map for said digitally noise reduced block of pixels wherein in said edge map, an edge flag for each pixel in said digitally noise reduced block of pixels is configured to identify each pixel as one of said edge pixel and said non-edge pixel; and

adaptively filtering each pixel in said digitally noise reduced block of pixels based upon said assigned classification to reduce transform artifacts in a video image.

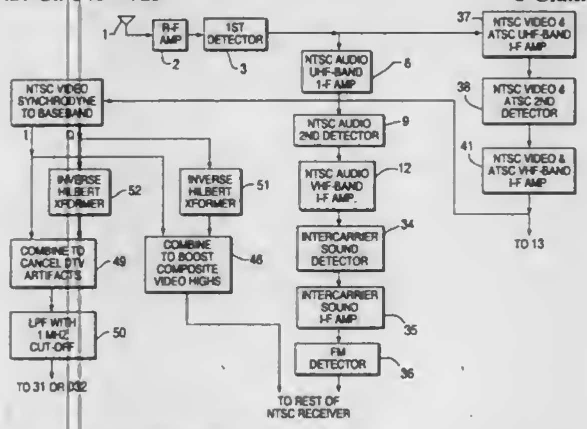
5,852,476
USING SPECIAL NTSC RECEIVER TO DETECT WHEN CO-CHANNEL INTERFERING NTSC SIGNAL ACCOMPANIES A DIGITAL TV SIGNAL

Allen LeRoy Limberg, Vienna, Va., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 821,944, Mar. 21, 1997. This application Jun. 25, 1997, Ser. No. 882,540

Int. Cl.^{6} H04N *5/44*

U.S. Cl. 348—725 **8 Claims**


1
R-F AMP
2
1ST DETECTOR
3
37
NTSC VIDEO & ATSC UHF-BAND I-F AMP
NTSC AUDIO UHF-BAND I-F AMP
6
38
NTSC VIDEO & ATSC 2ND DETECTOR
NTSC VIDEO SYNCHRODYNE TO BASEBAND
I
Q
NTSC AUDIO 2ND DETECTOR
9
41
NTSC VIDEO & ATSC VHF-BAND I-F AMP
INVERSE HILBERT XFORMER
52
INVERSE HILBERT XFORMER
51
NTSC AUDIO VHF-BAND I-F AMP.
12
TO 13
INTERCARRIER SOUND DETECTOR
34
COMBINE TO CANCEL DTV ARTIFACTS
49
COMBINE TO BOOST COMPOSITE VIDEO HIGHS
48
INTERCARRIER SOUND I-F AMP
35
LPF WITH 1 MHZ CUT-OFF
50
FM DETECTOR
36
TO 31 OR 32
TO REST OF NTSC RECEIVER

1. A method comprising the steps of:

receiving a digital television signal apt at times to be accompanied by a co-channel interfering analog television signal having a video portion;

synchrodyning the video portion of any said co-channel interfering analog television signal to baseband, for generating an in-phase demodulation result including first artifacts of said digital television signal, and for generating a quadrature-phase demodulation result including second artifacts of said digital television signal;

differentially shifting said in-phase and quadrature-phase demodulation results in respective phase by 90° at frequencies in a prescribed frequency range extending below 750 kilohertz;

linearly combining said in-phase and quadrature-phase demodulation results following said differential shifting in respective phase by 90° at frequencies in said prescribed frequency range, to generate a linear combining result substantially free of the first and second artifacts of the digital television signal in said prescribed frequency range; and

detecting whether or not the amplitude of said linear combining result in said prescribed frequency range exceeds a prescribed value, for generating an indication of when said digital television signal is accompanied by co-channel interfering analog television signal of substantial amplitude.

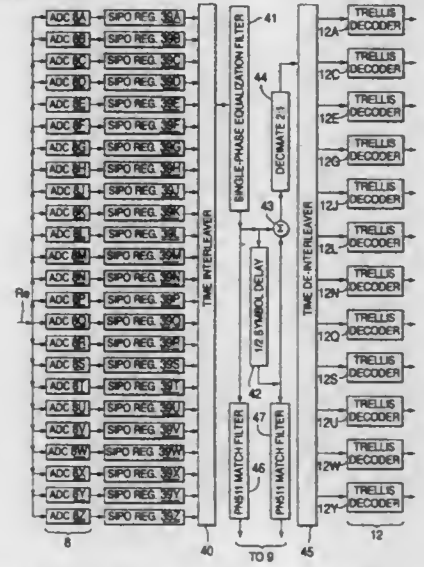
5,852,477
DIGITAL TV RECEIVERS WITH POLY-PHASE ANALOG-TO-DIGITAL CONVERSION OF BASEBAND SYMBOL CODING

Allen L.R. Limberg, Vienna, Va., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 25, 1997, Ser. No. 882,542

Int. Cl.^{6} H04N *5/455;9/08*

U.S. Cl. 348—725 **24 Claims**



1. A digital television signal receiver comprising:

circuitry for converting a received digital television signal to baseband symbol coded signal;

a plurality N in number of trellis decoders supplying respective trellis decoding results;

circuitry for assembling said respective trellis decoding results into a forward error-correction code;

a forward error-correction decoder responsive to said forward error-correction code for supplying a data stream portions of which are descriptive of television images;

a plurality MN in number of analog-to-digital converters of successive binary approximation type sampling baseband symbol coded signal on an MN-phase basis to provide a respective digital output signal, each of which sampling phases is one-Mth symbol time duration, M being a positive integer at least one and MN being the product of M times N, said MN analog-to-digital converters identifiable by consecutive ordinal numbers first through MNth assigned in order of their successive input sampling; and

an equalization filter responsive to the digital output signals of said first through MNth analog-to-digital converters received as respective input signals thereto, for supplying N output signals to said N trellis decoders as their respective input signals, said equalization filter being an adaptive filter for equalizing said digital output signals of said MN analog-to-digital converters to condition said N trellis decoders for generating de-interleaved symbol decoding results.

5,852,478

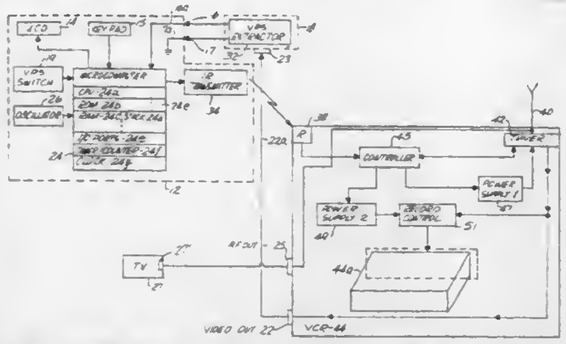
VPS COMPATIBLE APPARATUS AND METHOD FOR SELECTION OF CORRECT IR CODE SETS

Daniel S. Kwoh, Flintridge, Calif., assignor to Gemstar Development Corporation, Pasadena, Calif.

Continuation of Ser. No. 440,191, May 12, 1995, abandoned. This application May 23, 1997, Ser. No. 862,592

Int. Cl.^{6} H04N *5/44;5/91;* **H04B** *1/18*

U.S. Cl. 348—734 **8 Claims**



1. In a multi-channel television environment in which program information labels are included in at least some of the television channels, a method for programming a controller for selecting, from a plurality of sets of infra red (IR) codes where each set is for communicating with a different television channel selector, of one of such sets of IR codes for subsequent control of IR signal communication with the corresponding television channel selector, and

wherein each such television channel selector includes a tuner, which when tuned to an actual channel of broadcast video signals, provides video signals derived from such actual channel to a video output thereof, the method comprising the steps of:

providing to the television channel selector a selected IR code which is selected from one of the sets of IR codes and causes the television channel selector to tune to a predetermined actual channel,

electrically monitoring the video output of the television channel selector for a program information label;

comparing at least a portion of the program information label which was provided the video output of the television channel selector for a predetermined relation; and

selecting the correct set of IR codes, from which the selected IR code was selected and resulted in the predetermined relation, and then using said correct set of IR codes for subsequent signal communication with the television channel selector.

5,852,479

COLOR LIQUID CRYSTAL PROJECTOR DEVICE

Kazuhiko Ueda, Nara-ken, and Takahiro Miyake, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 23, 1996, Ser. No. 702,343

Claims priority, application Japan, Sep. 7, 1994, 7-230417; Aug. 25, 1995, 7-217984; Sep. 25, 1995, 7-246471

Int. Cl.^{6} G02F *1/1335*

U.S. Cl. 349—9 **21 Claims**

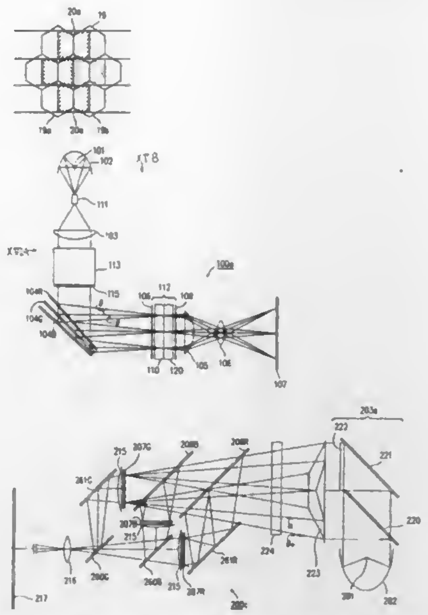
9. A liquid crystal projector comprising:

a light source for generating light;

a liquid crystal display device for modulating the light, the liquid crystal display device including a liquid crystal panel having a plurality of pixel apertures and a microlens array which is provided in a path of light to be incident on the liquid crystal panel and which has a plurality of microlenses, the plurality of microlenses causing two light components to enter the plurality of pixel apertures, wherein the microlens array is located so that the pixel apertures each correspond to a respective pair of microlenses adjacent to each other, and the two light components incident on the pair of microlenses both enter the corresponding one pixel aperture;

a projection optical system for projecting light modulated by the liquid crystal display device onto a screen; and

an incidence optical system for dividing the light into at least the two light components in an equal wavelength range and causing the two light components to be incident on the liquid crystal display device from different directions.



5,852,480

LCD PANEL HAVING A PLURALITY OF SHUNT BUSES

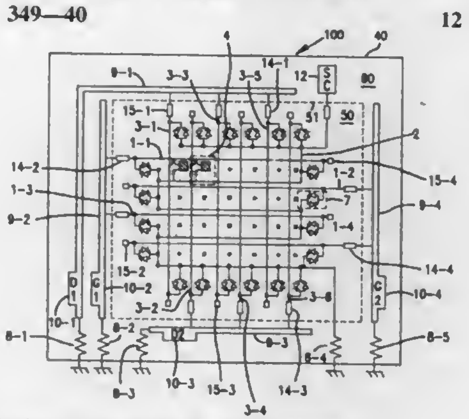
Akihiro Yajima, and Kohji Nakashima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 411,273

Claims priority, application Japan, Mar. 30, 1994, 6-061736

Int. Cl.^{6} G02F *1/136;1/1343*

U.S. Cl. 349—40 **12 Claims**



1. A liquid crystal display panel comprising:

a plurality of scan signal lines;

a plurality of data lines;

a plurality of pixel electrodes arranged in a matrix;

a plurality of transistors each connected to one of said scan signal lines and a respective one of said data lines;

a plurality of storage capacitors each having a first node connected to a corresponding one of said pixel electrodes;

a storage line connected to all second nodes of said storage capacitors;

a plurality of discharge elements each connected between said storage line and a respective one of said scan or data lines;

a first shunt bus line connected to a first group of said scan signal lines; and

a second shunt bus line connected to a second group of said scan signal lines, and electrically separated from said first shunt bus line.

5,852,481

LIQUID CRYSTAL DISPLAY WITH TWO GATE ELECTRODES EACH HAVING A NON-ANODIZING AND ONE ANODIZING METALLIC LAYER AND METHOD OF FABRICATING

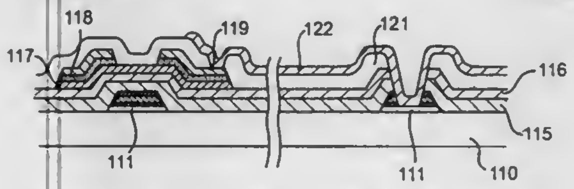
Kwang Jo Hwang, Anyang, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

Filed Sep. 10, 1997, Ser. No. 927,088

Claims priority, application Rep. of Korea, Sep. 10, 1996, 96-39167

Int. Cl.^{6} G02F *1/136;* **H01L** *29/93;23/48*

U.S. Cl. 349—43 **32 Claims**



1. A method of fabricating a liquid crystal display device, comprising:

forming a first and second gate electrode on a first and second region, respectively, of a substrate, the first and second gate electrodes each including a non-anodizing metallic layer and at least one anodizing metallic layer;

forming a first insulating layer on the anodizing metallic layer of the first and second gate electrodes;

forming at least a second insulating layer over the substrate;

forming a thin film transistor structure which utilizes the first gate electrode as a gate, the thin film transistor structure including a semiconductor layer on the second insulating layer over the first gate electrode, an impurity semiconductor layer on first and second portions of the semiconductor layer, and first and second source/drain electrodes on the impurity semiconductor layer covering the first and second portions of the semiconductor layer, respectively;

depositing a passivation layer over the substrate;

forming first and second contacts holes, the first contact hole exposing the first source/drain electrode, and the second contact hole exposing the second gate electrode; and

forming a pixel electrode on the passivation layer and in contact with the first source/drain electrode and the second gate electrode.

5,852,482

TFT ARRAY OF LIQUID CRYSTAL DISPLAY WHERE DATALINE AND SOURCE ELECTRODE PROJECTING THEREFROM CROSS GATE LINES AT ONLY TWO POINTS AND REPAIR METHOD THEREOF

Dong-Gyu Kim, Suwon-si, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 23, 1996, Ser. No. 702,013

Claims priority, application Rep. of Korea, Aug. 23, 1995, 1995-26167

Int. Cl.^{6} G02F *1/136;1/1343;1/13;* **H01L** *29/04*

U.S. Cl. 349—46 **19 Claims**

1. A thin film transistor array panel of a liquid crystal display, comprising:

a pair of gate lines formed on a substrate;

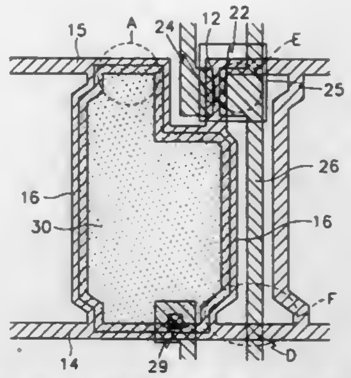
a storage electrode connected to both the gate lines;

a data line crossing the gate lines via insulator;

a pixel electrode; and

a thin film transistor including a source electrode formed at a crossing portion of the gate lines and the data line and projected from the data line, a gate electrode in which a part of the gate lines is formed in parallel with the data line near the crossing portion, and a drain electrode connected to a pixel electrode;

wherein the storage electrode has a neighboring storage electrode as a connecting portion crossing the data line.



5,852,483

BACK ILLUMINATED LCD APPARATUS WITH LIGHT ATTENUATING MEANS FOR EVEN LIGHT DISTRIBUTION AND METHOD OF MANUFACTURE

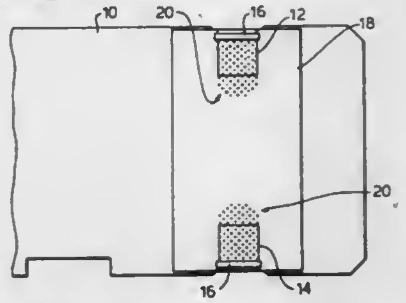
Robert Clifford Newstead, and Peter Michael Peregrine, both of Surrey, England, assignors to Nokia Mobile Phones, Ltd., Camberley, United Kingdom

Filed Dec. 18, 1995, Ser. No. 574,603

Claims priority, application United Kingdom, Dec. 23, 1994, 9426468

Int. Cl.^{6} G02F *1/1335*

U.S. Cl. 349—62 **14 Claims**



1. An illuminated liquid crystal display apparatus comprising a substrate having mounted thereon:

a liquid crystal display;

at least one light source;

a light guide comprising a transparent plate-like member having front, back and side faces and being disposed between the liquid crystal display and said substrate for distributing light from said at least one light source over an area of the liquid crystal display; and

light attenuating means disposed between said light guide and said substrate and comprising a pattern of areas of differing optical reflectance for reducing the intensity of the light reaching portions of the liquid crystal display nearest to the light source;

wherein said light attenuating means includes in part a light attenuating material printed upon said substrate.

5,852,484
LIQUID CRYSTAL DISPLAY PANEL AND METHOD AND DEVICE FOR MANUFACTURING THE SAME

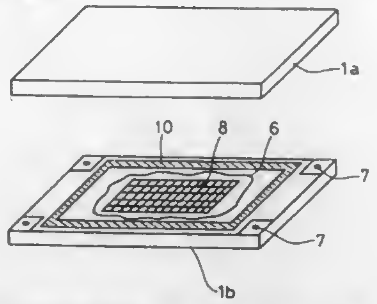
Kazuo Inoue; Tsuyoshi Uemura, and Junji Nakajima, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 533,149, Sep. 25, 1995. This application May 27, 1997, Ser. No. 863,218

Claims priority, application Japan, Sep. 26, 1994, 6-229316

Int. Cl.^{6} G02F *1/1333;1/137*

U.S. Cl. 349—86 **6 Claims**



1. A liquid crystal display panel comprising a pair of substrates, resin, liquid crystals and a film, wherein said resin and said liquid crystals are sandwiched between said substrates, wherein said film is formed on one section of one of said substrates, wherein said film does not seal the pair of substrates, wherein a material comprising said resin and said liquid crystals has a contact angle on said film larger than a contact angle on a section where said film is not formed, and wherein said resin and said liquid crystals are in a phase-separation state.

5,852,485
LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME

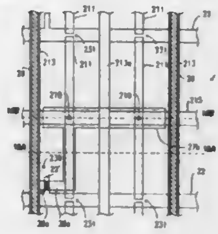
Yoshinori Shimada, Yamatokoriyama; Tetsuro Koyama; Hirohiko Nishiki, both of Tenri, and Yoshiharu Kataoka, Suita, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

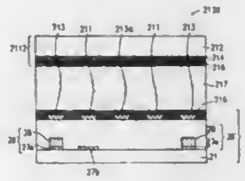
Filed Feb. 26, 1997, Ser. No. 806,928

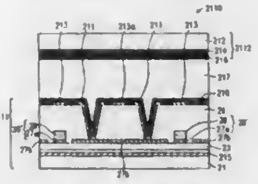
Claims priority, application Japan, Feb. 27, 1996, 8-040125; Feb. 27, 1996, 8-040127; Mar. 19, 1996, 8-063543

Int. Cl.^{6} G02F *1/1343*

U.S. Cl. 349—141 **15 Claims**







1. An active-matrix substrate comprising:
an insulation substrate;

a plurality of switching elements arranged in a matrix on the insulation substrate;

a plurality of first signal lines for supplying a signal for controlling the switching elements to the switching elements;

a plurality of second signal lines for supplying a date signal to the switching elements, arranged so as to cross the first signal lines;

an interlayer insulation film having first contact holes formed therethrough, formed so as to cover the switching elements, the first signal lines, and the second signal lines;

a plurality of picture element electrodes formed on the interlayer insulation film, electrically connected to the switching elements through the contact holes; and

a plurality of counter electrodes formed on the interlayer insulation film,

wherein the counter electrodes are formed along the second signal lines so as to face the second signal lines through the interlayer insulation film,

the plurality of picture element electrodes are arranged in a same direction in which the counter electrodes are formed, and

the plurality of picture element electrodes and the counter electrodes are alternately arranged so that the picture element electrodes and the counter electrodes are disposed at substantially equal intervals.

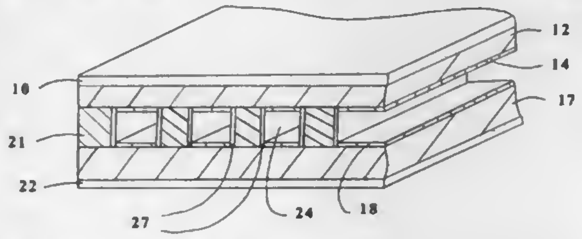
5,852,486
LIQUID CRYSTAL DISPLAY WITH ALTERNATIVE ELECTRODE STRUCTURE

Clare L. Hoke, Jr., 1318 N. Monte Vista Ave., Suite 11, Upland, Calif. 91786

Filed Dec. 30, 1996, Ser. No. 774,462

Int. Cl.^{6} G02F *1/1339*

U.S. Cl. 349—156 **17 Claims**



1. A liquid crystal display comprised of:

a pair of substrates, at least one of which is transparent, a plurality of vertical barrier members positioned between and at substantial angles to said substrates upon which data source lines, gate lines, drain means, appropriate insulating layers, contacts, and opposing electrodes are formed, an alignment layer attached to at least one of said substrates, and liquid crystal material encapsulated between said substrates, and said vertical barrier members.

5,852,487
LCD DEVICE HAVING AN INPUT FUNCTION AND POLYMER SUBSTRATES HAVING DUAL FUNCTION

Kohichi Fujimori, Nabari; Tokihiko Shinomiya; Ippei Inou, both of Nara, and Shuichi Kozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 23, 1997, Ser. No. 787,904

Claims priority, application Japan, Jan. 25, 1996, 8-011275

Int. Cl.^{6} G02F *1/1335;1/1333;* **G09G** *3/36;5/00*

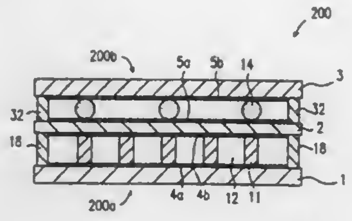
U.S. Cl. 349—162 **15 Claims**

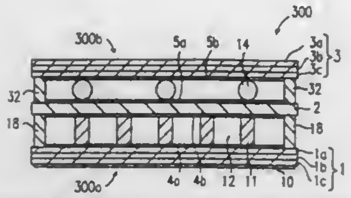
1. A liquid crystal display apparatus having an input function, comprising:

a first substrate, a second substrate, and a third substrate;

a display medium provided between the first substrate and the second substrate;

a first electrode provided between the first substrate and the display medium;





a second electrode provided between the second substrate and the display medium;

spacers for supporting the second substrate and the third substrate with respect to each other; and

at least two electrodes provided between the second substrate and the third substrate,

wherein the display medium includes a polymer projection and a liquid crystal region at least partially surrounded by the polymer projection, and

wherein the first, second and third substrates are each formed of a polymer material, at least one of the first, second and third substrates has a polarizing function, and at least one of the first, second and third substrates has a phase contrasting function.

5,852,488
ELECTRO-OPTICAL DEVICE AND METHOD OF DRIVING THE SAME

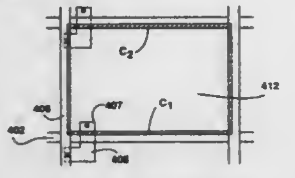
Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

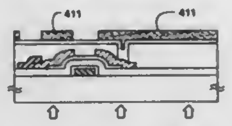
Division of Ser. No. 460,687, Jun. 2, 1995, abandoned, which is a division of Ser. No. 051,313, Apr. 23, 1993. This application Dec. 22, 1995, Ser. No. 577,014

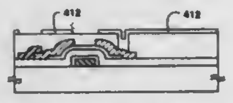
Claims priority, application Japan, Apr. 28, 1992, 4-135865

Int. Cl.^{6} G02F *1/136*

U.S. Cl. 349—187 **21 Claims**







1. A method of manufacturing an active-matrix device comprising the steps of:

preparing a transparent substrate;

forming a plurality of gate lines over said substrate;

forming a plurality of thin film transistors over said transparent substrate;

forming a plurality of data lines over said plurality of gate lines in an intersecting relation via an insulating layer, each of said thin film transistors being located at each intersection of said gate lines and said data lines;

forming a light transparent insulating film over said gate and data lines and said thin film transistors, said light transparent insulating film providing a leveled upper surface thereon;

forming a light transparent conductive film on said light transparent insulating film; and

patterning said light transparent conductive film to form a plurality of pixel electrodes arranged in a plurality of regions surrounded by said gate and data lines respectively, where said pixel electrodes are electrically connected to said thin film transistors, respectively,

wherein said light transparent conductive film is patterned by photolithography using said gate and data lines as a photo mask.

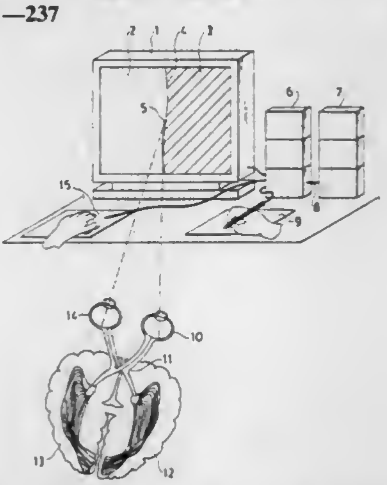
5,852,489
DIGITAL VIRTUAL CHIASM FOR CONTROLLED STIMULATION OF VISUAL CORTICES

Chi Chen, 16 Brittany Cir., Rochester, N.Y. 14618

Filed Dec. 23, 1997, Ser. No. 997,133

Int. Cl.^{6} A61B *3/00*

U.S. Cl. 351—237 **18 Claims**



1. A digital virtual chiasm apparatus for controlled stimulation of visual cortices, wherein said apparatus comprises a means for tracking the eye movement of a subject, a digital computer operatively connected to said means for tracking the eye movement of a subject, a display operatively connected to said digital computer, means for generating a first set of stimuli in a first half visual field while simultaneously generating a second set of stimuli in second, contralateral half visual field and a boundary between said first half visual field and said second half visual field, and means for moving said boundary between said first half visual field and said second half visual field in response to the eye movement of said subject.

5,852,490
PROJECTION EXPOSURE METHOD AND APPARATUS

Tomoyuki Matsuyama, Foster City, Calif., assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 30, 1996, Ser. No. 724,167

Int. Cl.^{6} G03B *27/54;27/42*

U.S. Cl. 355—67 **12 Claims**

1. A projection exposure apparatus for transferring a pattern formed on a reticle onto substrate, comprising:

an illumination optical system to uniformly illuminate said reticle with a wavelength λ;

a first supporting member to support said reticle;

a second supporting member to support said substrate and;

a projection optical system disposed between said reticle and said substrate, said projection optical system projecting a ray bundle having a numerical aperture of at least 0.55, wherein said projection optical system projects said pattern on said reticle illuminated by said illumination optical system onto said substrate with said ray bundle while satisfying the following conditions:

$|dSAp|<0.3\times\lambda/(NA)^2$

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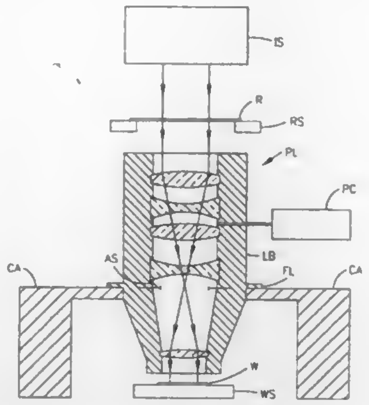


$|dCOMAp|<0.3\times\lambda/(NA)$,

where, dSAp is an amount of change in spherical aberration of a maximum numerical aperture of said projection optical system when atmospheric pressure surrounding said projection optical system changes by 30 mmHg, dCOMAp is an amount of change in coma aberration of the maximum numerical aperture at a maximum image height of said projection optical system when atmospheric pressure surrounding said projection optical system changes by 30 mmHg, and NA is a maximum numerical aperture of said projection optical system.

5,852,491
DISTANCE MEASURING APPARATUS

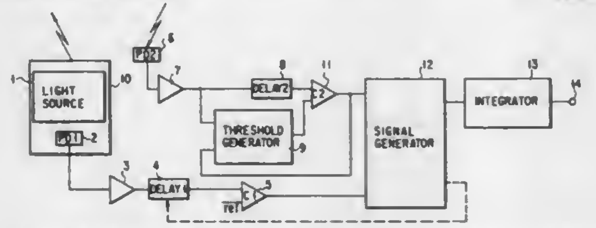
Masahiko Kato, Akiruno, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 15, 1997, Ser. No. 857,063

Claims priority, application Japan, May 20, 1996, 8-124654; May 8, 1997, 9-118225

Int. Cl.^{6} G01C *3/08;* G01S *13/08*

U.S. Cl. 356—5.01 **17 Claims**



1. An apparatus for measuring a distance to a target by measuring a time that an emitted light pulse takes to travel to the target and back, comprising:
   - converting means for receiving a light pulse reflected by the target, and for converting the light pulse into an electrical signal;
   - a delay element for delaying a pulse of the electrical signal so as to generate a delayed electrical signal;
   - a threshold generator for receiving the electrical signal from the converting means and the delayed electrical signal from the delay element, and for holding, as a threshold, a signal level at which the electrical signal from the converting means and the delayed electrical signal from the delay element are coincident; and
   - a comparator for comparing the delayed electrical signal from the delay element and the threshold held by the threshold generator, and for generating a signal whose width corresponds to a length of time during which the delayed electrical signal from the delay element exceeds the threshold held by the threshold generator.

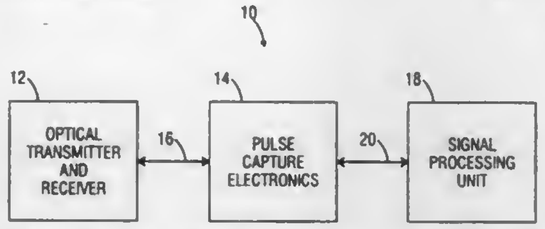
5,852,492
FUSED LASAR RANGE/INTENSITY IMAGE DISPLAY FOR A HUMAN INTERPRETATION OF LASAR DATA

Donald W. Nimblett, Cedar Hill; Bruno J. Evans, and Gary K. Jenkins, both of Arlington, all of Tex., assignors to Lockheed Martin Vought Systems Corp., Houston, Tex.

Filed Jun. 7, 1996, Ser. No. 660,443

Int. Cl.^{6} G01C *3/08;* G01S *13/00*

U.S. Cl. 356—5.04 **11 Claims**



1. A method of generating target information, the method comprising the steps of:
   - (a) generating a three-dimensional image;
   - (b) generating a two-dimensional image;
   - (c) combining the three-dimensional image and the two-dimensional image to generate a fused image; and
   - (d) scrolling the three-dimensional image through the two-dimensional image.

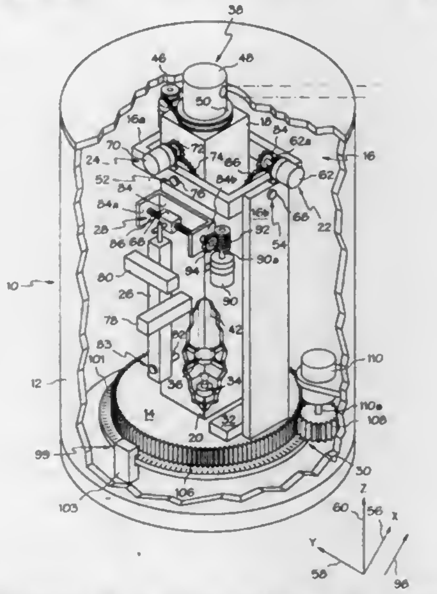
5,852,493
SELF-ALIGNING LASER TRANSMITTER HAVING A DUAL SLOPE GRADE MECHANISM

Douglas Bernard Monnin, Dayton, Ohio, assignor to Spectra Precision, Inc., Dayton, Ohio

Filed Mar. 13, 1997, Ser. No. 815,623

Int. Cl.^{6} G01B *11/26;* G01C *05/00*

U.S. Cl. 356—141.1 **39 Claims**



1. An apparatus for projecting laser light in a plane having predetermined slopes with respect to an X-axis and with respect to a Y-axis, said Y-axis being orthogonal to said X-axis, said apparatus comprising:
   - a housing;
   - a base rotatably coupled to said housing;
   - a gimbal mechanism coupled to said base and adapted for pivotal movement about said X-axis;
   - a frame coupled to said gimbal mechanism and adapted for pivotal movement along said Y-axis;
   - an optical device coupled to said frame and including a light source to generate said laser light which rotates about a first axis and an optical projecting device to project said laser light in said plane which is orthogonal to said first axis;

   - an X-axis leveling device coupled to said gimbal mechanism to control an angular orientation of said gimbal mechanism about said X-axis with respect to a Z-axis, said Z-axis being substantially orthogonal to said X and Y axes;
   - a Y-axis leveling device coupled to said gimbal mechanism and said frame to control an angular orientation of said frame about said Y-axis with respect to said Z-axis;
   - a grade arm rotatably coupled to said frame and including a first level sensor adapted to sense said angular orientation of said gimbal mechanism and a second level sensor adapted to sense said angular orientation of said frame;
   - a grade arm pivoting device coupled to said grade arm to control a predetermined angular orientation of said grade arm with respect to one of said X or Y axes;
   - a rotating device coupled to said base to adjust an angular orientation of said base with respect to a reference axis, said base being rotated about said Z-axis; and
   - a processor programmed to set said predetermined angular orientation of said grade arm and said angular orientation of said base based on said predetermined slopes, said processor adapted to control said X-axis leveling device and said Y-axis leveling device so that said first and second level sensors are substantially level and said plane of light has said predetermined slopes.

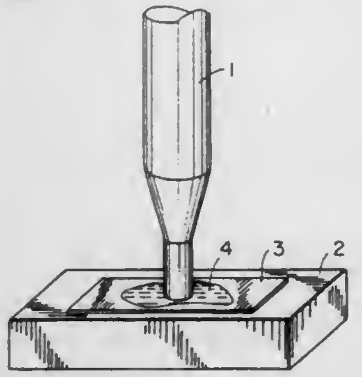
5,852,494
APPARATUS FOR CHECKING THE CALIBRATION OF OPTICAL PROBES

Victor N. Skladnev, Vaucluse; Richard L. Thompson, Killarney Heights, both of Australia, and Irwin Wunderman, Mtn. View, Calif., assignors to Polartechnics Limited, Sydney, Australia

Filed Mar. 17, 1997, Ser. No. 819,107

Int. Cl.^{6} A61B *5/00;* G01J *1/02*

U.S. Cl. 356—243 **11 Claims**



1. An apparatus for identifying whether tissue under examination has been physiologically changed comprising
   - a probe that emits radiation to the tissue under examination and receives radiation backscattered from said tissue, said probe having
     - an active tip intended for the measurement of optical properties of materials by the measurement of the proportion of backscattered radiation from the material, said active tip comprising
       - a light emitter configured to irradiate said tissue;
       - a detector configured to receive radiation backscattered by said tissue;
   - a calibrating apparatus for the calibration of said probe, comprising
     - a turbid elastomer blocks
     - a polymer film interposed between the probe tip and the block of turbid elastomer, wherein said polymer film conforms to the tip of the probe when said probe is compressed between said polymer film and said block,

   wherein said calibrating apparatus causes a portion of the radiation to be back scattered.

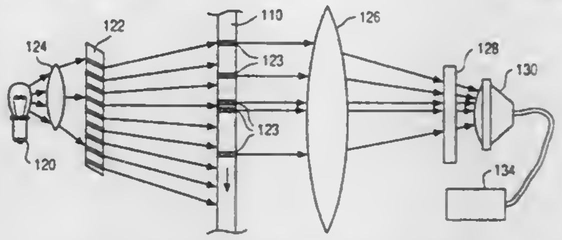
5,852,495
FOURIER DETECTION OF SPECIES MIGRATING IN A MICROCHANNEL

J. Wallace Parce, Palo Alto, Calif., assignor to Caliper Technologies Corporation, Palo Alto, Calif.

Continuation of Ser. No. 683,080, Jul. 16, 1996, Pat. No. 5,699,157. This application Sep. 30, 1997, Ser. No. 941,679

Int. Cl.^{6} G01N *21/00*

U.S. Cl. 356—344 **26 Claims**



1. A method of performing high-speed electrophoretic analysis of subject materials, said method comprising:
   - holding said subject materials in solution in a channel of a microfluidic system;
   - subjecting said materials to an electric field so that said subject materials move through said channel and separate into species bands;
   - directing light toward said channel at periodically spaced regions along said channel simultaneously;
   - receiving light from said channel; and
   - analyzing frequencies of light intensity of said received light so that velocities of said bands along said channel can be determined for analysis of said materials.

5,852,496
METHOD AND DEVICE FOR MEASURING POLARIZATION DISPERSION OF AN OPTICAL FIBER

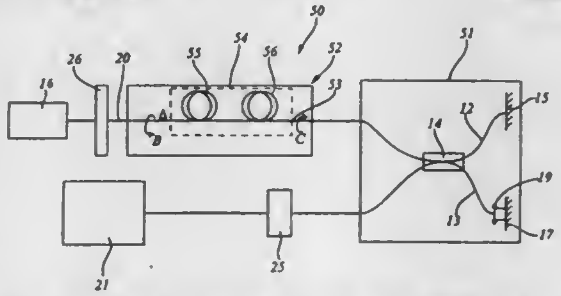
Nicolas Gisin, Geneva, and Karin Julliard, Lausanne, both of Switzerland, assignors to Universite de Geneve, Geneva, Switzerland

Filed Feb. 14, 1997, Ser. No. 812,061

Claims priority, application France, Feb. 16, 1996, 96 02419

Int. Cl.^{6} G01B *9/02*

U.S. Cl. 356—345 **9 Claims**



1. A method for measuring a polarization dispersion of an optical fiber to be measured by coupling the optical fiber to be measured to an interferometer and injecting, via a light source, a low coherent light into said optical fiber to be measured, said method comprising the steps of:
   - connecting a module in series with said optical fiber to be measured, at a location between said optical fiber to be measured and the interferometer, said module having a birefringent fiber, with a stable and known high polarization dispersion, and a polarization controller;
   - performing various predetermined adjustments, via said polarization controller, corresponding to different predetermined alignments of principal polarization modes of the optical fiber to be measured and the birefringent fiber;
   - obtaining an interferogram for each polarization controller adjustment by measuring a separation between lateral peaks of each interferogram; and

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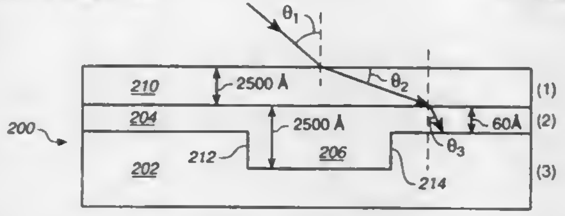
deducing a polarization dispersion of the fiber to be measured from the measured separation between lateral peaks of each interferogram.

5,852,497

METHOD AND APPARATUS FOR DETECTING EDGES UNDER AN OPAQUE LAYER

Dipankar Pramanik, Saratoga; Kouros Ghandehari, Fremont; Satyendra S. Sethi, Pleasanton, and Daniel C. Baker, Milpitas, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 28, 1997, Ser. No. 919,200
Int. Cl.⁶ G01B *11/27*
U.S. Cl. 356—401 **11 Claims**



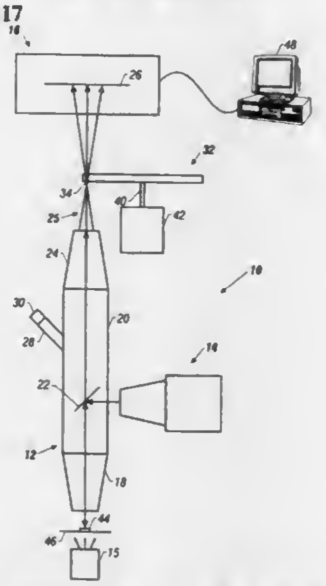
1. A method for detecting edges through a planarized layer which is opaque to visible light, comprising the steps of:
selecting a thickness of the opaque layer;
determining a wavelength of an energy source to be used for edge detection, said wavelength being selected on the basis of an absorption coefficient of the opaque layer;
determining an angle of incidence with which the energy source enters the opaque layer; and
detecting an intensity of the energy source which is reflected by material which has been obscured from view of-visible light by the opaque layer.

5,852,498

OPTICAL INSTRUMENT HAVING A VARIABLE OPTICAL FILTER

Douglas C. Youvan, and Mary M. Yang, both of San Jose, Calif., assignors to KAIROS Scientific Inc., Santa Clara, Calif.

Filed Apr. 4, 1997, Ser. No. 833,351
Int. Cl.⁶ G01N *21/64*
U.S. Cl. 356—417 **20 Claims**



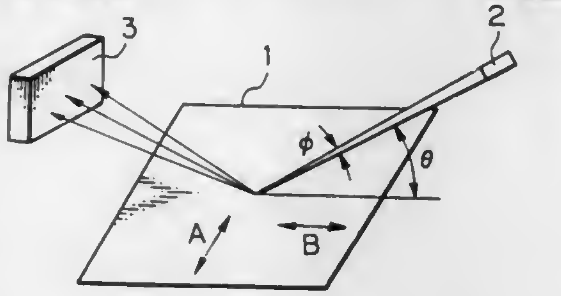
2. An optical instrument for collecting light from an object, comprising:
(a) an objective lens positioned to collect light from the object;
(b) an exit lens positioned to focus the collected light at a focal position; and
(c) a variable optical filter positioned between the objective lens and the focal position approximately at a waist in the collected light.

5,852,499

METHOD AND DEVICE FOR DETERMINING FIBER ORIENTATION OF PAPER, AND APPARATUS FOR REMOVING IMAGE FORMING SUBSTANCE FROM PAPER

Kan Tomita; Nobuo Sakuma, both of Tokyo, and Takashi Mama, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 596,860, Feb. 9, 1996, Pat. No. 5,729,349. This application Sep. 18, 1997, Ser. No. 933,277
Claims priority, application Japan, Feb. 10, 1995, 7-022705
Int. Cl.⁶ G01N *21/86;* G03G *21/00*
U.S. Cl. 356—429 **34 Claims**



1. An apparatus for removing an image forming substance from an image holding medium having at least a surface thereof on which the image forming substance is deposited, comprising:
an image removing unit for removing the image forming substance from the image holding medium;
a fiber orientation sensing member located upstream of said image removing unit in a direction in which the image holding medium is transported, for sensing an orientation of fibers of the image holding medium; and
a control member for controlling said image removing unit based on the orientation of fibers sensed by said fiber orientation sensing member.

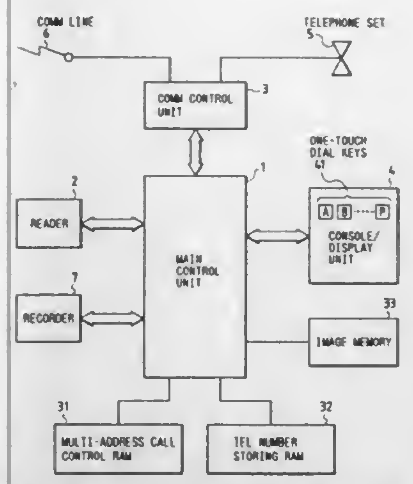
5,852,500

IMAGE COMMUNICATION APPARATUS

Motoaki Yoshino, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha

Continuation of Ser. No. 115,127, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 387,981, Aug. 1, 1989, abandoned. This application Dec. 20, 1994, Ser. No. 360,120
Claims priority, application Japan, Aug. 12, 1988, 63-201209
Int. Cl.⁶ H04N *1/00*
U.S. Cl. 358—440 **14 Claims**

1. An image communication apparatus comprising:
manual designating means for designating a plurality of destinations to which image data is to be transmitted;
multi-address call means, having a plurality of multi-address call modes including at least a first multi-address call mode and a second multi-address call mode, for transmitting image data to the plurality of destinations designated by said manual designating means, wherein said first multi-address call mode and said second multi-address call mode are different from each other in a process for re-dialing a destination which is busy, wherein said first multi-address call mode is a mode for sequentially transmitting the image data to all the destinations, and said second multi-address call mode is a mode in which all the destinations are divided into at least two groups, each group having a plurality of destinations, and in which an operator uses said manual designating means to input information to define which of the destinations are in which group and the image data is then sequentially transmitted to the destinations in one group and thereafter the image data is sequentially transmitted to the destinations in the other group;
means for setting a proper multi-address call mode of said multi-address call means; and
control means for controlling multi-address transmission in accordance with the proper multi-address call mode set by said setting means and in accordance with the respective, different processes for re-dialing corresponding to the set mode.

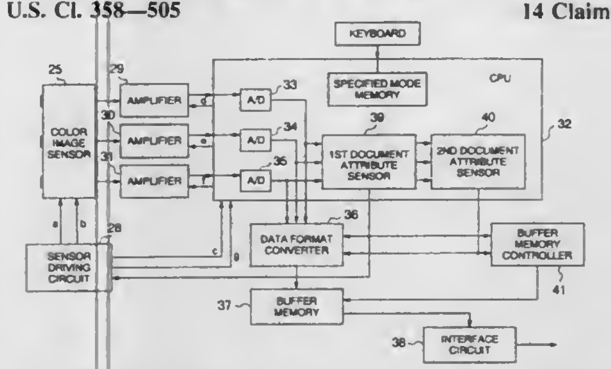


5,852,501

IMAGE READING APPARATUS WHICH DETECTS DOCUMENT ATTRIBUTES

Yoshiaki Maehara, Fukuoka, and Toshihumi Abe, Kitakyushu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 5, 1996, Ser. No. 610,855
Claims priority, application Japan, Mar. 6, 1995, 7-045624
Int. Cl.⁶ H04N *1/46;1/04;* G03G *21/00*
U.S. Cl. 358—505 **14 Claims**



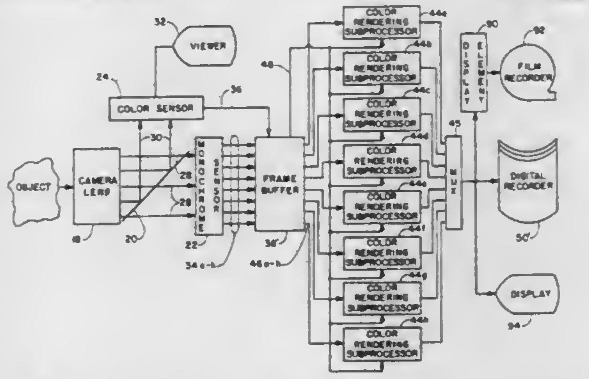
1. An image reading apparatus for conducting a document read operation by moving a two-dimensional document sheet having a main-scan direction and a sub-scan direction in the sub-scan direction while sequentially reading lines of the document sheet in the main-scan direction, comprising:
a document feeding unit for conveying the document sheet onto a document glass plate;
a light source for emitting a light beam onto the document sheet;
an optical system for receiving light reflected by the document sheet and producing a focused document image;
a color image sensor for separating the focused document image into images respectively of a plurality of colors and producing data of the respective color images;
an image read control section having a plurality of read modes; and
a carriage for setting an image read position,
wherein the image read control section includes document attribute sense means for detecting a first attribute indicating whether the document image is monochrome or colored and for additionally detecting a second attribute indicating whether the document image is binary or multi-value, and
wherein the document attribute sense means conducts a changeover operation between the plural read modes according to the first and second attributes detected by the document attribute sense means.

5,852,502

APPARATUS AND METHOD FOR DIGITAL CAMERA AND RECORDER HAVING A HIGH RESOLUTION COLOR COMPOSITE IMAGE OUTPUT

John Patrick Beckett, Beverly Hills, Calif., assignor to American Digital Imaging, Inc., Santa Monica, Calif.

Filed May 31, 1996, Ser. No. 657,607
Int. Cl.⁶ H04N *1/56*
U.S. Cl. 358—512 **25 Claims**



1. An apparatus for producing a color image from a visual input comprising:
an optical assembly for receiving said visual input;
a first sensor operably connected to said optical assembly, said first sensor producing a monochromatic image from said visual input;
a second sensor operably connected to said optical assembly, said second sensor producing a color image from said visual input;
a processor for producing a composite image from said monochromatic image and said color image;
wherein said first sensor is high resolution respective to said second sensor;
wherein said first sensor produces a first plurality of pixels representative of said visual image;
wherein said second sensor produces a second plurality of pixels representative of said visual image;
wherein each of said second plurality of pixels corresponds to at least one of said first plurality of pixels;
wherein each of said first plurality of pixels has a grayscale value;
wherein each of said second plurality of pixels has a hue value and a saturation value;
wherein said composite image comprises a third plurality of pixels, said third plurality of pixels respectively corresponding to said first plurality of pixels;
wherein each of said third plurality of pixels has a respective composite grayscale value, said respective composite grayscale value being equal to said respective grayscale value of said first plurality of pixels;
wherein each of said third plurality of pixels has a respective composite hue value, said respective composite hue value being said hue value of said second plurality of pixels; and
wherein each of said third plurality of pixels has a respective composite saturation value, said respective composite saturation hue value being said saturation value of said second plurality of pixels.

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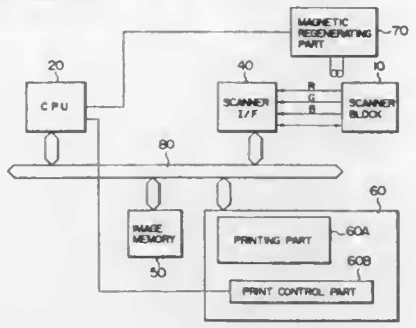
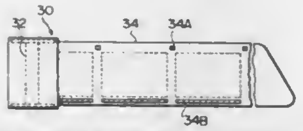
5,852,503

SYSTEM FOR PRINTING FILM IMAGES FROM A ROLL OF FILM HAVING MIXED PRINT FORMATS

Yoshiki Kawaoka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 12, 1996, Ser. No. 599,927
Claims priority, application Japan, Feb. 15, 1995, 7-026721
Int. Cl.^{6} G03B *27/52*
U.S. Cl. 358—527 **14 Claims**





1. A film image printing apparatus comprising:

a printer:

film image reading means for reading a frame image from a roll of photographic film and outputting image data corresponding to the read frame image, the photographic film being coated with a magnetic recording layer and having preset photograph areas, the film storing a plurality of frame images which are respectively recorded on the whole area of each preset photograph area, each of the plurality of frame images having corresponding print format information indicating an aspect ratio of the corresponding frame image, said print information being recorded on said magnetic layer as rewritable magnetic information;

image memory for storing the image data corresponding to the read frame image output by said film image reading means;

print format information reading means for reading the print format information from the magnetic recording layer on the photographic film corresponding to the read frame image;

print paper selecting means for selecting a print paper type having an aspect ratio corresponding to the read print format information from among a plurality of print paper types having different aspect ratios;

print paper supply means for supplying the selected print paper type to said printer; and

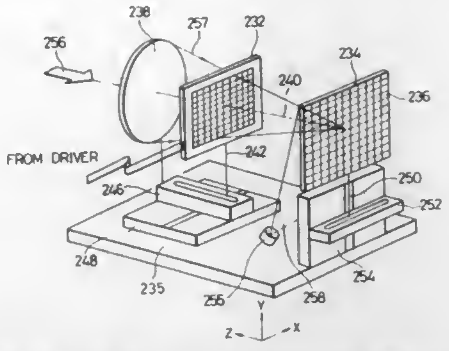
image processing means for reading out the image data from said image memory and processing the read out image data in accordance with the rad print format information so that the resulting image data is consistent with the print paper supplied to said printer, said printer printing the processed image data onto the supplied print paper.

5,852,504

STEREOSCOPIC DISPLAY METHOD OF HOLOGRAM AND ITS FORMING METHOD AND ITS STEREOSCOPIC DISPLAY APPARATUS

Masayuki Kato; Hirokazu Aritake; Manabu Ishimoto; Noriko Sato, and Masato Nakashima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 411,216, Mar. 27, 1995, abandoned, which is a division of Ser. No. 104,622, Aug. 11, 1993, abandoned. This application Jun. 21, 1996, Ser. No. 667,366
Claims priority, application Japan, Aug. 21, 1992, 4-222588
Int. Cl.^{6} G03H *1/08;1/26;1/28;1/30*
U.S. Cl. 359—9 **9 Claims**

1. A method of forming a hologram on a two-dimensional hologram forming surface divided into a plurality of minimum units, comprising:



a) selecting a plurality of two-dimensional planes bisecting a three-dimensional object such that each two-dimensional plane is parallel to the hologram forming surface;

b) determining the distance of each two-dimensional plane from the hologram forming surface;

c) formulating projection images by imaging a corresponding bisecting portion of the three-dimensional object each of the two-dimensional planes as would be seen from the minimum units forming the hologram forming surface such that each minimum unit has corresponding projection images for each of the two-dimensional planes; and

d) holographically recording the projection images onto the hologram forming surface, comprising the substeps of:

  i) arranging the hologram forming surface and a display means for displaying the projection images in parallel so that a distance between the hologram forming surface and the display means can be freely adjusted;

  ii) for each of the two-dimensional planes, setting the distance between the hologram forming surface and the display means to the distance from the two-dimensional plane to the hologram forming surface determined in step b);

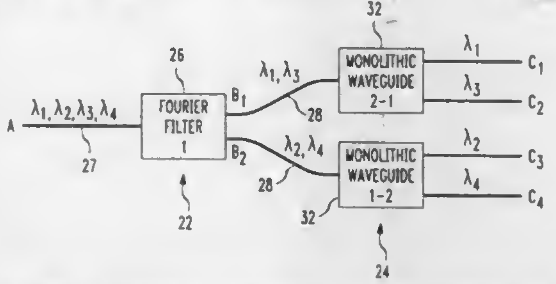
  iii) for each minimum unit, displaying on the display means the projection images corresponding to the minimum unit such that each projection image is displayed while maintaining the distance at the distance set in step d)ii); and

  iv) projecting each projecting image onto the corresponding minimum unit to thereby expose the hologram forming surface.

5,852,505

DENSE WAVEGUIDE DIVISION MULTIPLEXERS IMPLEMENTED USING A FIRST STAGE FOURIER FILTER

Yuan P. Li, Duluth, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Continuation-in-part of Ser. No. 365,618, Dec. 28, 1994, Pat. No. 5,596,661, and a continuation-in-part of Ser. No. 554,332, Nov. 6, 1995, Pat. No. 5,699,176. This application Dec. 2, 1996, Ser. No. 759,325
Int. Cl.^{6} H04B *10/20*
U.S. Cl. 359—118 **19 Claims**



1. A dense waveguide division multiplexer for demultiplexing an optical signal into a plurality of individual channels at various wavelengths, comprising:

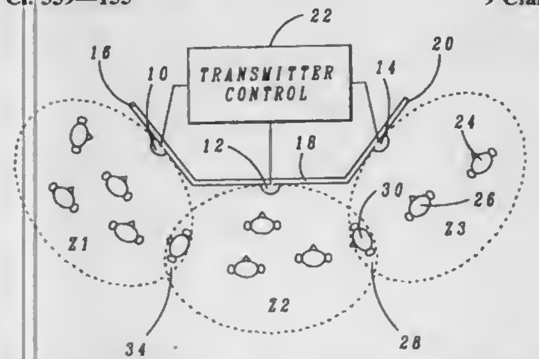
a first stage comprising a Fourier filter for receiving said optical signal having said plurality of individual channels at various wavelengths and for demultiplexing said plurality of individual channels onto a plurality of first stage output paths with first passbands, wherein the said Fourier filter is a multipath interference device with a transfer function that is a truncated Fourier series where each harmonic term corresponds to an interference path; and

a second stage comprising a plurality of Mach-Zehnder filters, wherein each said Mach-Zehnder filter is connected to a respective said first stage output path of said first stage Fourier filter for demultiplexing said channels received from said first stage onto a plurality of second stage output paths with second passbands that are wider than said first passbands.

5,852,506

METHOD AND APPARATUS FOR CONTROLLING PROGRAM START/STOP OPERATIONS

Alan John Testani, Boca Raton, Fla.; Eugene Arnold Eighmy, Hoover, and William Thomas Edwards, Helena, both of Ala., assignors to Sonics Associates, Inc., Birmingham, Ala.
Filed Oct. 25, 1996, Ser. No. 738,220
Int. Cl.^{6} H04B *10/00*
U.S. Cl. 359—155 **9 Claims**



1. A system for communicating with multiple users in a defined zone, comprising:

a transmitter disposed in the defined zone and having a defined range, said transmitter having multiple program channels, each for transmitting programs comprised of programmed information, and a command channel for transmitting command information;

a mobile receiver associated with each of the mobile users and disposed proximate to the associated mobile user, and having:

  a program receiver having a plurality of selectable receive channels, each of said receive channels for receiving programs from one of said program channels associated with said transmitter,

  a command receiver for receiving from said command channel said command information from said transmitter when said mobile receiver is in said defined range, said command information including at least a channel-select command.

  a selection device for selecting one of said receive channels, and

  a receive controller for controlling said selection device to select the one of said receive channels associated with said received channel select command after the mobile user enters the defined zone, and then inhibiting further selection while in the defined zone;

a sensor for sensing the presence of a mobile user in the defined zone;

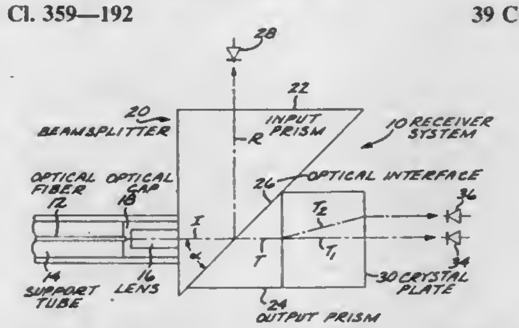
a program generator for generating programs for each of said program channels, each of said programs for each of said program channels having a beginning and an end; and

a transmit controller for generating a channel-select command to define a given one of said program channels when a mobile user is determined to be within the defined zone by said sensor and then controlling said program generator to initiate the program associated with said given one of said program channels and then defining another one of said program channels as the given one of the program channels, such that a subsequent user that enters the defined zone will be commanded to receive information on another one of said program channels, such that programs associated with another one of the program channels can be initiated independent of the program information for the given one of said program channels.

5,852,507

HIGH EFFICIENCY POLARIZATION DIVERSITY RECEIVER SYSTEM

David B. Hall, Litton Systems Inc., Guidance & Control Syst. Division, 5500 Canoga Ave., Woodland Hills, Calif. 91367
Filed May 10, 1996, Ser. No. 644,881
Int. Cl.^{6} H04B *10/06*
U.S. Cl. 359—192 **39 Claims**



1. A polarization diversity receiver system for yielding multiple heterodyne optical output signals from an incident optical beam having a p-polarized component and an s-polarized component, the system comprising:

a first optical element, disposed so as to receive the incident beam, that splits the incident beam into a transmitted beam portion including approximately 100% of the p-polarized component and approximately 33% of the s-polarized component, and a reflected beam portion that exits the first optical element as a first heterodyne optical output signal including approximately 0% of the p-polarized component and approximately 67% of the s-polarized component;

a first photodetector disposed so as to receive the first heterodyne optical output signal;

a second optical element, disposed so as to receive the transmitted beam portion from the first optical element, that provides an effective 45° rotation of the polarization eigenstates of the transmitted beam portion, and that splits the transmitted beam portion into second and third heterodyne optical output signals;

a second photodetector disposed to receive the second heterodyne optical output signal; and

a third photodetector disposed to receive the third heterodyne optical output signal.

5,852,508

LENS DEVICE, ULTRAVIOLET-RAY EMITTING DEVICE, AND OPTICAL DISC RECORDING DEVICE

Shigeo Kubota, Kanagawa, and Naoya Eguchi, Tokyo, both of Japan, assignors to Sony Corporation, Japan
Filed May 15, 1996, Ser. No. 649,759
Claims priority, application Japan, May 18, 1995, 7-119946
Int. Cl.^{6} G02B *13/14;3/02;13/18;9/04*
U.S. Cl. 359—355 **8 Claims**

1. A lens device for focusing a beam of an ultraviolet-ray region, provided with at least one aspherical lens made of synthetic quartz in which an aspherical portion is formed by coating a fluororesin on a spherical portion of a side polished to a spherical surface, wherein provision is further made of a spherical lens made of

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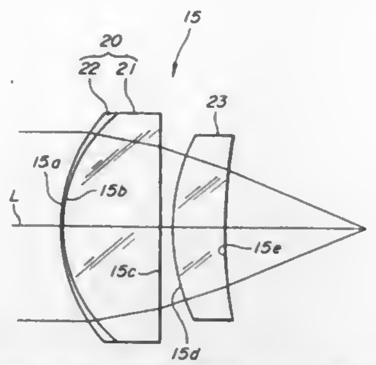


synthetic quartz with one side polished to a spherical surface, located at an image side of said aspherical lens.

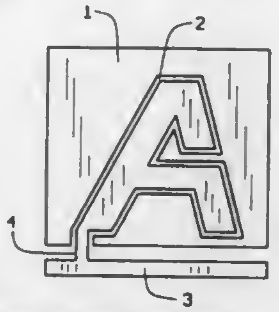
5,852,509
CONDUCTIVE FONT

James P. Coleman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 437,757, May 9, 1995, abandoned. This application Mar. 28, 1997, Ser. No. 827,519

Int. Cl.^{6} G02F *1/153*

U.S. Cl. 359—271 **43 Claims**



1. A electrochromic display comprising:

two electrically continuous electrodes printed on a single side of an insulating film, the electrochromic display having alphanumeric characters corresponding to apertures in a first one of the two electrically continuous electrodes; and

means for applying a voltage across the two electrically continuous electrodes to activate the alphanumeric characters comprising an electrochromic image.

5,852,510
AMPLIFIED TELECOMMUNICATION SYSTEM FOR WAVELENGTH-DIVISION MULTIPLEXING TRANSMISSION HAVING AN EQUALIZED RECEPTION POWER

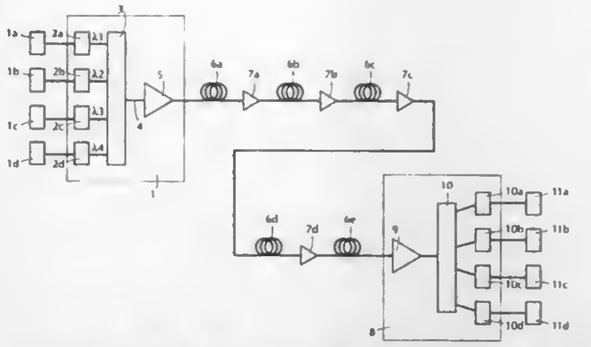
Fausto Meli, Piacenza, and Stefano Piciaccia, Milan, both of Italy, assignors to Pirelli Cavi S.p.A., Italy

Filed Jul. 24, 1995, Ser. No. 506,086

Claims priority, application Italy, Jul. 25, 1994, MI94 A 001573

Int. Cl.^{6} H01S *3/00;* **H04J** *14/02*

U.S. Cl. 359—341 **25 Claims**



1. A multi-wavelength optical telecommunication system comprising:

an optical signal transmitting station comprising optical signal generating means for simultaneously generating at least two optical transmission signals at two different wavelengths in a band of predetermined width;

a receiving station for receiving said optical transmission signals;

an optical fiber line connecting said transmitting and receiving stations for simultaneously transmitting both of said optical transmission signals from said transmitting station to said receiving station, said optical fiber line comprising at least two optical line amplifiers connected in series and to said transmitting station and said receiving station by optical fibers, each of said line amplifiers comprising a length of active fiber doped with dopants including a rare earth material and a pumping means coupled to the active fiber for amplifying both said optical transmission signals;

said receiving station further comprising separation means for separating said optical transmission signals received from said optical fiber line; and

wherein the length of the active fiber of at least one of said line amplifiers, the power of the pumping means of said at least one of said line amplifiers and said dopants are selected so that the difference in optical signal/noise ratio between said optical transmission signals having different wavelengths received at said receiving station is less than 2 dB and the optical signal/noise ratio for each of said optical transmission signals received at said receiving station is greater than 15 dB over a 0.5 nm bandwidth when said optical transmission signals are simultaneously transmitted from said transmitting station to said receiving station and have an optical power of at least 16 dBm at the input of the optical line amplifiers.

5,852,511
OPTICAL SYSTEM FOR NON-FLEXIBLE ENDOSCOPES

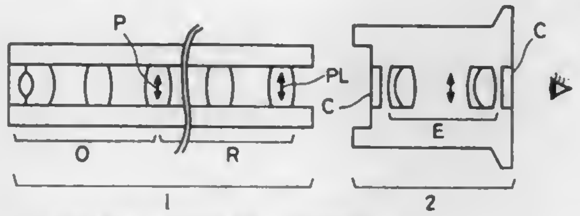
Noriyuki Tateyama, and Tsutomu Igarashi, both of Hachioji, Japan, assignors to Olympus Optical Co. Ltd, Tokyo, Japan

Division of Ser. No. 282,453, Jul. 29, 1994, abandoned. This application Sep. 19, 1996, Ser. No. 718,163

Claims priority, application Japan, Oct. 20, 1993, 5-284146; Nov. 8, 1993, 5-300803

Int. Cl.^{6} G02B *21/36;27/02;3/02;9/12*

U.S. Cl. 359—362 **12 Claims**



1. A non-flexible endoscope comprising:

an insertion section which comprises an observation optical system for forming an image of an object to be observed and is to be inserted into a cavity to be observed; and

an eyepiece section which comprises an eyepiece optical system configured so as to be attachable and detachable to and from said insertion section,

wherein said observation optical system produces longitudinal chromatic aberration and said eyepiece optical system corrects said chromatic aberration,

said observation optical system comprises an objective optical system and a relay optical system, and

said eyepiece optical system comprises at least one cemented lens component and satisfies the condition defined below:

$$N_{oc} \geqq N_R + 1$$

wherein the reference symbol N_{oc} represents a number of cemented lens components comprised in said eyepiece optical system and the reference symbol N_R designates a number of relay cycle, to be performed by said relay optical system.

5,852,512
PRIVATE STEREOSCOPIC DISPLAY USING LENTICULAR LENS SHEET

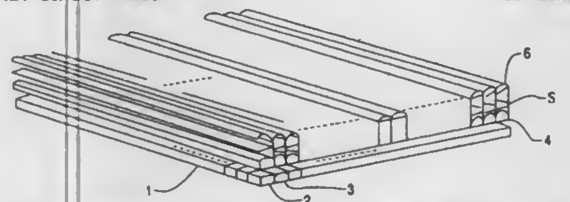
Yoshiharu Chikazawa, Kanagawa-ku, Japan, assignor to Thomson multimedia S.A., Boulogne-Billancourt, France

Filed Oct. 18, 1996, Ser. No. 733,422

Claims priority, application United Kingdom, Nov. 13, 1995, 9523189

Int. Cl.^{6} G02B *27/22*

U.S. Cl. 359—463 **13 Claims**



1. Stereoscopic display using a lenticular lens sheet comprising:

a display wherein pixels for left and right images alternate to form a mixed stripe image,

a lenticular lens sheet disposed in front of the display,

refraction means for directing left image main lobes to a left image viewing point and right image main lobes to a right image viewing point, and

barrier means disposed adjacent the refraction means for limiting emanating rays of respective sets of pixels to main lobes.

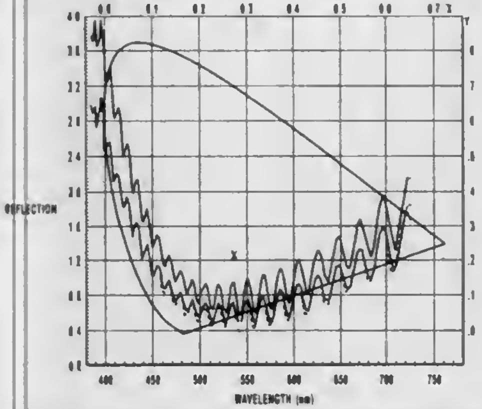
5,852,513
TELEVISION FILTER

James D. McDole, Rohnert Park; Donald L. Keehn, Healdsburg; John Morse Huish, Sebastapol, and Orville Larry Creech, Jr., Santa Rosa, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed May 14, 1997, Ser. No. 856,132

Int. Cl.^{6} H04N *5/72;* **G02B** *1/11;5/28;7/00*

U.S. Cl. 359—580 **42 Claims**



1. An optical filter assembly for use with televisions, said assembly comprising:

a. an optical filter having optical properties suitable for mounting in front of a television screen, said optical properties including neutral density contrast enhancement,

said optical filter comprising a substrate having a front viewing surface and a rear surface,

said front and rear surfaces comprising an anti-glare coating, and

said front viewing surface having an anti-reflection coating providing a photopic brightness measurement of no greater than 1.3%,

the anti-reflection coating providing white or close to white reflected color and white or close to white transmitted color; and

b. a frame system for mounting said optical filter in front of a television screen while minimizing interference with the available viewing area of said screen,

said frame system comprising two frame members, and

said frame system comprising means for securing frame members to the television screen.

5,852,514
LIGHT DIFFUSION COMPOSITE

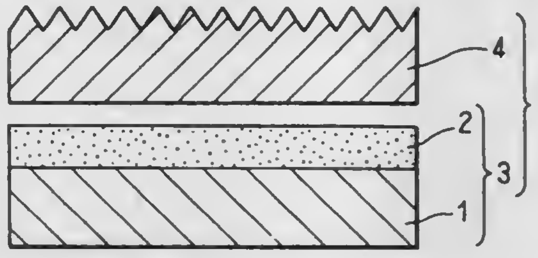
Yasumaro Toshima, Yono, and Takaaki Kato, Ina-machi, both of Japan, assignors to Kimoto Co., Ltd., Japan

Filed Nov. 4, 1996, Ser. No. 743,364

Claims priority, application Japan, Nov. 6, 1995, 7-313506

Int. Cl.^{6} G02B *5/02;* **F21V** *7/00;* **F21S** *3/00*

U.S. Cl. 359—599 **8 Claims**



1. A light diffusion composite comprising a light diffusion material and a prism sheet, wherein the light diffusion material comprises a transparent support and a light diffusion layer formed on the transparent support, and wherein the light diffusion layer comprises transparent resin and spherical particles of polymethyl methacrylate.

5,852,515
MICROSCOPE OBJECTIVE AND SINGLE OBJECTIVE TYPE BINOCULAR STEREOMICROSCOPE SYSTEM

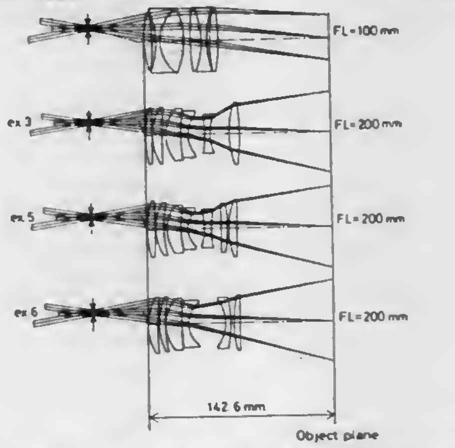
Kiyonobu Kurata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 7, 1997, Ser. No. 852,513

Claims priority, application Japan, May 8, 1996, 8-113613; Apr. 1, 1997, 9-082757

Int. Cl.^{6} G02B *21/02*

U.S. Cl. 359—660 **13 Claims**



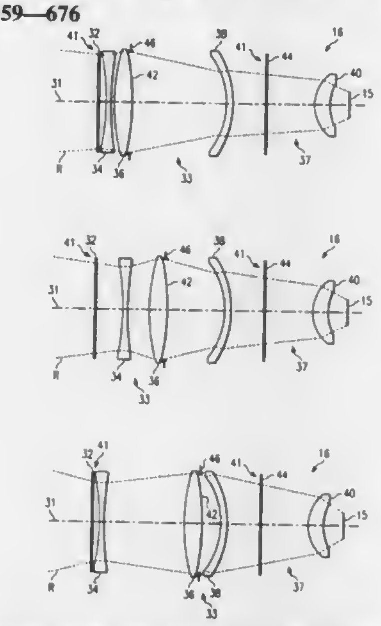
1. An objective system for use on a single objective type binocular stereomicroscope comprising an objective lens for converting light from an object into an afocal light flux satisfying the condition (1):

$$1.0<FL/L<1.6 \qquad (1)$$

where FL is a focal length of said objective system, and L is a distance from a first lens surface of said objective system on an image point side to a sample surface.

5,852,516
DUAL PURPOSE INFRARED LENS ASSEMBLY USING DIFFRACTIVE OPTICS
Robert B. Chipper, Allen, Tex., assignor to Raytheon TI Systems, Inc., Lewisville, Tex.

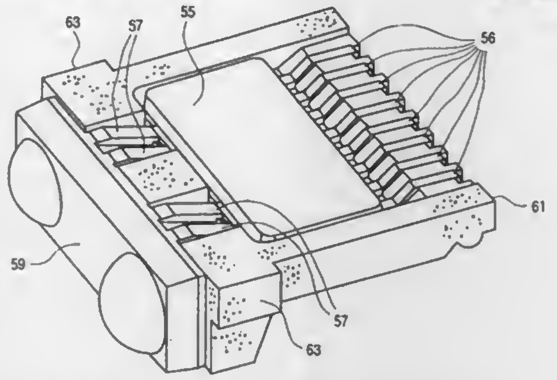
Filed Jan. 23, 1997, Ser. No. 786,945
Int. Cl.^{6} G02B *15/14;13/14;5/18*
U.S. Cl. 359—676 **20 Claims**



1. An infrared zoom lens assembly, comprising:
a focusing zoom component located along an optical axis to receive infrared radiation, the focusing zoom component including:
  a first focusing zoom lens which provides both a focusing function and a zoom function, the first focusing zoom lens being located along the optical axis at a first location when said zoom lens assembly is at a first zoom position and when said zoom lens assembly is at a second zoom position different from the first zoom position; and
  a second focusing zoom lens which provides both a focusing function and a zoom function, the second focusing zoom lens being movably supported in said infrared zoom lens assembly;
a collecting component located along the optical axis and in optical communication with the focusing zoom component, the collecting component including at least one collecting lens; and
a diffracting component located along the optical axis and in optical communication with the focusing zoom component and the collecting component, the diffracting component including at least one diffractive surface to correct color aberrations associated with an infrared waveband;
the focusing zoom component and the collecting component cooperating with the diffracting component to focus infrared radiation at an image plane of an infrared detector;
the first focusing zoom lens being movably supported in said infrared zoom lens assembly; and
the first focusing zoom lens being located along the optical axis at a second location different from the first location when said zoom lens assembly is between the first and second zoom positions.

5,852,517
LOW PROFILE OPTICAL DEVICE WITH MULTIPLE MOUNTING CONFIGURATIONS
Paul-Martin Gerber, Munich, Germany, and Marvin Lumbard, Los Gatos, Calif., assignors to Siemens Microelectronics, Inc., Cupertino, Calif.

Continuation of Ser. No. 555,557, Nov. 8, 1995, abandoned. This application Oct. 8, 1997, Ser. No. 946,688
Int. Cl.^{6} G02B *7/02*
U.S. Cl. 359—811 **16 Claims**

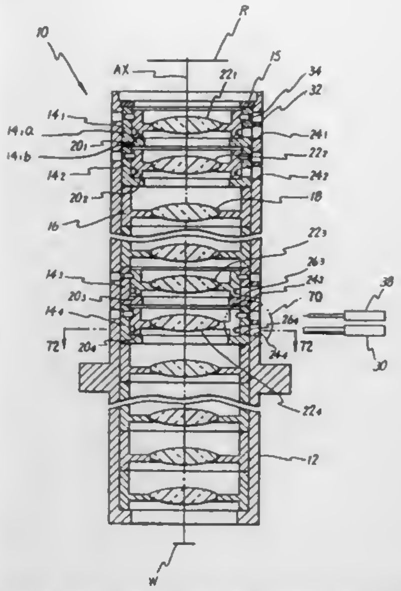


1. An optical send-receive module comprising:
a frame having a front, a back side, and a top section;
a lens carrier attached to the front of the frame, the lens carrier including a lens which faces forward;
an integrated circuit carrier placed within the top section of the frame;
first metal leads which electrically connect components within the lens carrier to an integrated circuit within the integrated circuit carrier; and,
second metal leads which extend from the integrated circuit carrier, along the top section of the frame, down the back side of the frame and extend under the frame.

5,852,518
PROJECTION OPTICAL UNIT AND PROJECTION EXPOSURE APPARATUS COMPRISING THE SAME
Masato Hatasawa, Yokohama, and Masatoshi Ikeda, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

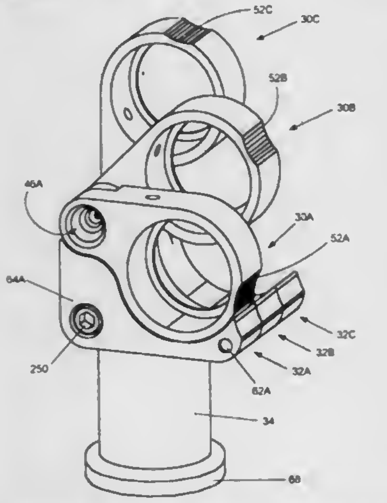
Continuation of Ser. No. 652,761, May 23, 1996, abandoned. This application May 30, 1997, Ser. No. 865,933
Claims priority, application Japan, May 26, 1995, 7-152220
Int. Cl.^{6} G02B *7/02*
U.S. Cl. 359—822 **38 Claims**

1. A projection optical unit for projecting a pattern on a mask onto a substrate, comprising:
a barrel;
a plurality of optical elements held coaxially in the barrel;
at least two optical elements of the plurality of optical elements being optical elements which produce asymmetric component aberration relative to an optical axis of the optical elements; and
a rotating mechanism that relatively rotates the at least two optical elements about the optical axis respectively;
said rotating mechanism comprising inner optical element frames, which are rotatable in the barrel about the optical axis as a center, that hold the at least two optical elements respectively, and outer optical element frames, which are arranged between the inner optical element frames and the barrel, that rotatably support the inner optical element frames.



5,852,519
POSITIONABLE MULTI-OPTIC HOLDER
Khiem Ba Do, Sunnyvale, and David F. Arnone, Mountain View, both of Calif., assignors to New Focus, Inc., Santa Clara, Calif.

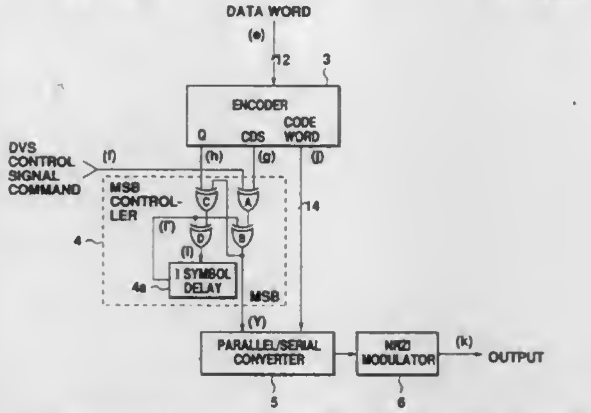
Filed Sep. 5, 1997, Ser. No. 924,587
Int. Cl.^{6} G02B *7/02*
U.S. Cl. 359—822 **24 Claims**



1. An optic mount for holding an optic element in a light path, said optic mount comprising:
a base including opposing first and second base faces, and said base defining a first pivot member;
a holder including an opposing first and second holder faces and said opposing first and second holder faces defining an optic bore extending from said first to said second holder face, and said optic bore dimensioned to contain an optical element, and said holder further defining a second pivot member, said second pivot member suitable for pivotally connecting to said first pivot member to provide for an arcuate movement of said holder with respect to said base from a first position in which the light path passes through the optic bore to a second position in which the optic bore avoids the light path.

5,852,520
DATA CONVERSION METHOD, PILOT SIGNAL FORMATION METHOD USING THE SAME ROTARY MAGNETIC HEAD DEVICE FOR USE THEREIN
Kihei Ido, and Masayuki Ohta, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 287,918, Aug. 9, 1994, Pat. No. 5,570,248, which is a division of Ser. No. 120,857, Aug. 31, 1993, Pat. No. 5,365,232, which is a continuation of Ser. No. 743,888, Aug. 12, 1991, abandoned. This application Jul. 31, 1996, Ser. No. 690,564
Claims priority, application Japan, Aug. 18, 1990, 2-217624; Feb. 26, 1991, 3-30839; Jun. 14, 1991, 3-143457
Int. Cl.^{6} G11B *15/14*
U.S. Cl. 360—40 **28 Claims**

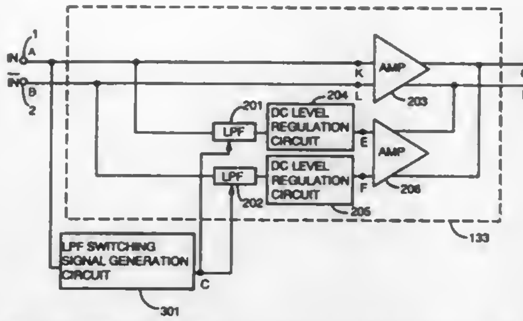


1. A pilot signal formation method for obtaining a tracking error signal in a magnetic recording and reproducing apparatus in which digital signals are recorded or reproduced onto or from a magnetic medium by using a rotary magnetic head device mounted on a rotary drum, comprising:
allowing a pair of groups of n bits of code words corresponding to CDSs (code word digital sum) of two codes +1 and −1 to correspond to m bits of digital in a data conversion from the m bits of two-value digital signals into the n bits of code words, n being larger than m, in a recording; and
controlling a DSV (digital sum variation) of a string of digital data by using selected one of the two codes +1 and −1 according to a DSV control signal, an initial phase of the DSV control signal being preset by a signal synchronized with a drum.PG signal for controlling the phase of the drum to form a pilot signal synchronized with the digital data.

5,852,521
AMPLIFIER CIRCUIT SUPPRESSING DISTURBANCE SIGNAL PRODUCED BY MAGNETORESISTIVE HEAD
Takehiko Umeyama, and Tsutomu Kamifuji, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1996, Ser. No. 674,011
Claims priority, application Japan, Nov. 28, 1995, 7-309259
Int. Cl.^{6} G11B *5/09*
U.S. Cl. 360—46 **12 Claims**

1. An amplifier for a magnetoresistive (MR) head comprising:
a non-inverting input terminal for receiving from an MR head a composite signal including a data signal on which a disturbance signal is superposed;
an inverting input terminal for receiving an inverted signal, an inversion of the composite signal input to the non-inverting input terminal;
a first differential amplifier for receiving the signal input to the non-inverting input terminal at a first, non-inverting input terminal, for receiving the signal input to the inverting input terminal at a second, inverting input terminal, and outputting the two signals differentially amplified;


IN
A
B
1
2
201
202
204
LPF
LPF
DC LEVEL REGULATION CIRCUIT
DC LEVEL REGULATION CIRCUIT
AMP
AMP
203
206
205
5
OUT
OUT
6
133
LPF SWITCHING SIGNAL GENERATION CIRCUIT
C
301

an LPF switching signal generation circuit receiving the signal input to the non-inverting input terminal for generating a control signal having a fixed period when a disturbance signal is superposed on a data signal;

a first low pass filter receiving the composite signal from the non-inverting input terminal and the control signal, switching cut-off frequencies according to the control signal, and outputting a filtered signal to an inverting output terminal of the amplifier for an MR head; and

a second low pass filter receiving the composite signal from the inverting input terminal and the control signal and switching cut-off frequencies according to the control signal and outputting a filtered signal to a non-inverting output terminal of the amplifier for an MR head.

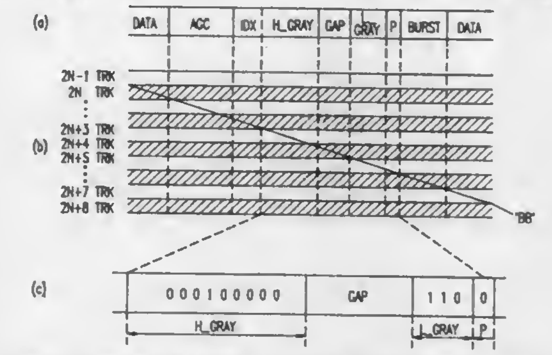
5,852,522
DATA RECORDING APPARATUS FOR FAST DETECTION OF SERVO SECTORS AND CORRECTION OF TRACK ADDRESS USING A DIVIDED GRAY CODE AND A PARITY BIT

Kwang-Heui Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 11, 1996, Ser. No. 661,492

Int. Cl.^{6} G11B *5/09*

U.S. Cl. 360—48 **18 Claims**



1. A servo sector on a data-recording medium, comprising:

a first gray code field containing first address information;

a second gray code field containing second address information;

a gap field positioned between the first and second gray code fields; and

a parity bit field containing a parity bit.

5,852,523
DATA SECTOR PULSE GENERATING METHOD

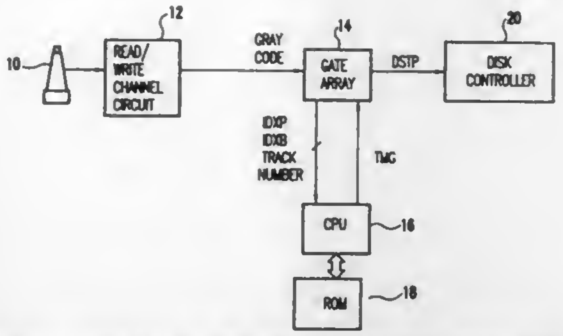
Kwang-Jo Jung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 6, 1996, Ser. No. 659,737

Int. Cl.^{6} G11B *5/09;5/596*

U.S. Cl. 360—49 **8 Claims**

1. A method of generating a data sector pulse in a magnetic disk drive comprising the steps of:



servo-writing a bit of index pattern information corresponding to each servo sector in an index area of a servo area on said magnetic disk by a predetermined rule;

mapping a data sector pulse timing value with respect to a representative frame of each zone in an inside storage by changing the frame number of a relevant zone according to the characteristic of each zone; and

reading as sector pulse timing value with respect to a predetermined sector of a predetermined track from said inside storage by deciphering said index pattern information read from said track according to said rule and loading the read result in a gate array for generating said data sector pulse;

wherein said index bit information is structured such that plural pieces of index bit information make one group and a plurality of said groups are present on one track, and

wherein each said group comprises a key pattern which identifies the plural pieces of index information as a group and a group value which designates a group number of a corresponding group.

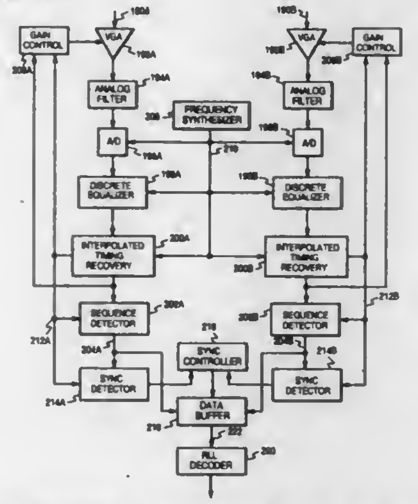
5,852,524
SAMPLED AMPLITUDE READ CHANNEL FOR PROCESSING MULTIPLE DATA STREAMS IN A DISC STORAGE SYSTEM

Neal Glover, Broomfield, and Howard H. Sheerin, Denver, both of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 796,310, Feb. 7, 1997. This application May 27, 1997, Ser. No. 797,525

Int. Cl.^{6} G11B *5/04*

U.S. Cl. 360—51 **16 Claims**



1. A sampled amplitude read channel for detecting data recorded on a disc storage medium from a sequence of discrete time sample values generated by simultaneously sampling a plurality of analog read signals emanating from a plurality of read heads positioned over the disc storage medium, comprising:

(a) a frequency synthesizer for generating a sampling clock at a predetermined frequency;

(b) a first sampling device, responsive to the sampling clock, for asynchronously sampling a first analog read signal emanating from a first read head to generate a first sequence of asynchronous sample values;

(c) a first interpolated timing recovery circuit, responsive to the sampling clock and the first sequence of asynchronous sample values, for generating first interpolated sample values substantially synchronized to a baud rate of the recorded data;

(d) a second sampling device, responsive to the sampling clock, for asynchronously sampling a second analog read signal emanating from a second read head to generate a second sequence of asynchronous sample values;

(e) a second interpolated timing recovery circuit, responsive to the sampling clock and the second sequence of asynchronous sample values, for generating second interpolated sample values substantially synchronized to a baud rate of the recorded data; and

(f) a sequence detector for detecting an estimated data sequence from at least the first interpolated sample values.

5,852,525
AUTOMATIC CLOCK SIGNAL PHASE ADJUSTMENT IN WHICH A PATTERN INCLUDING 0'S IS DETECTED AND INTEGRATED TO EFFECT THE PHASE ADJUSTMENT

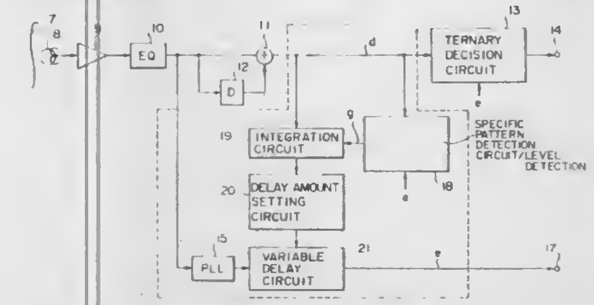
Takahito Seki, Kanagawa, and Haruyuki Yoshioka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 107,074, Aug. 17, 1993, abandoned. This application Feb. 14, 1997, Ser. No. 800,617

Claims priority, application Japan, Aug. 25, 1992, 04-247120; Jan. 26, 1993, 05-029760

Int. Cl.^{6} G11B *5/09*

U.S. Cl. 360—51 **1 Claim**



1. An automatic clock signal phase adjusting circuit for use with a digital magnetic recording and reproducing apparatus adopting a partial response class IV coding method, said automatic clock signal phase adjusting circuit comprising:

pattern detecting means for simultaneously detecting patterns "1, 0, −1" and "−1, 0, 1" from a reproduced signal;

level detecting means for detecting respective levels of said reproduced signal corresponding to the patterns "1, 0, 1" and "−1, 0, 1" in effect when said pattern detecting means detects 0's from the two patterns to produce respective first and second level signals;

integrating means for integrating said respective first and second level signals;

clock reproducing means for reproducing a clock signal from said reproduced signal; and

phase adjusting means for adjusting the phase of said clock signal reproduced by said clock reproducing means by detecting equality of said respective integrated first and second level signals and adjusting the phase of said clock signal based on the detected equality of said respective integrated first and second level signals.

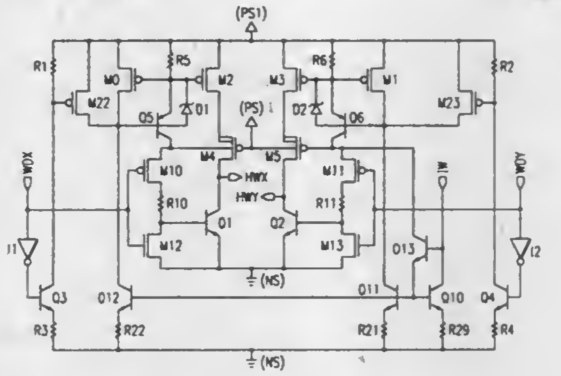
5,852,526
LOW BIAS VOLTAGE WRITE DRIVER USING A LOW BIAS VOLTAGE TO REDUCE THE RISK OF HEAD ARCING

Albert M. Huntington, San Jose, Calif., assignor to Silicon Systems, Inc., San Jose, Calif.

Filed Sep. 25, 1996, Ser. No. 725,581

Int. Cl.^{6} G11B *5/03*

U.S. Cl. 360—66 **11 Claims**



1. A write driver circuit comprising:

a negative supply terminal, a positive supply terminal;

a first current source, said first current source being coupled to said positive supply terminal;

a first write driver head terminal to connect a first write driver, said first write driver head terminal being directly coupled to said first current source while said first write driver head is active;

a second current source, said second current source coupled to said positive supply terminal;

a second write driver head terminal to connect a second write driver, said second write driver head terminal being directly coupled to said second current source while said second write driver head is active;

a first switch, a first terminal of said first switch being coupled to first write driver head terminal;

a second switch, a first terminal of said second switch being coupled to said second write driver head terminal;

second terminals of said first and second switches being coupled to said negative supply terminal so that the bias voltage of said first and second write head terminals is closer to said negative supply terminal voltage than said positive supply terminal voltage.

5,852,527
AMPLIFYING CIRCUIT FOR MAGNETIC RECORD AND PLAYBACK APPARATUS HAVING MAGNETIC HEADS WITH FIRST AND SECOND WINDINGS CONNECTED AT A COMMON POINT

Toshikazu Fujii, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 472,176, Jun. 7, 1995, abandoned, which is a division of Ser. No. 267,407, Jun. 29, 1994, abandoned. This application Jan. 24, 1997, Ser. No. 788,257

Claims priority, application Japan, Jun. 30, 1993, 5-162394

Int. Cl.^{6} G11B *5/02*

U.S. Cl. 360—68 **4 Claims**

1. An amplifying circuit for a magnetic record and playback apparatus, comprising:

a set of magnetic heads including, first and second magnetic heads having first and second windings, respectively, first ends of said first and second windings being connected to a common point;

a first playback amplifying circuit having first and second input terminals, the first input terminal being connected to the common point;

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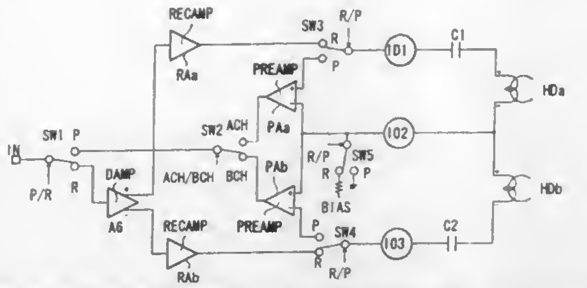


a second playback amplifying circuit having first and second input terminals, the first input terminal being connected to the common point;

selecting means for selecting an output of one of the first playback amplifying circuit and the second playback amplifying circuit;

an output terminal connected to the selecting means;

inputting means for inputting a first recording signal and a second recording signal, a polarity of the first recording signal being different from a polarity of the second recording signal;

a first record amplifying circuit having an input terminal and an output terminal, the input terminal receiving the first recording signal, and the output terminal and the second input terminal of said first playback amplifying circuit being alternatively connected to a second end of said first winding through first switching means; and

a second record amplifying circuit having an input terminal and an output terminal, the input terminal receiving the second recording signal, and the output terminal and the second input terminal of said second playback amplifying circuit being alternatively connected to a second end of said second winding through second switching means.

5,852,528

VIDEO INFORMATION RECORDING METHOD WHICH USES A COMPARISON OF EVENT INFORMATION IN TWO RECORDED INFORMATION PACKETS

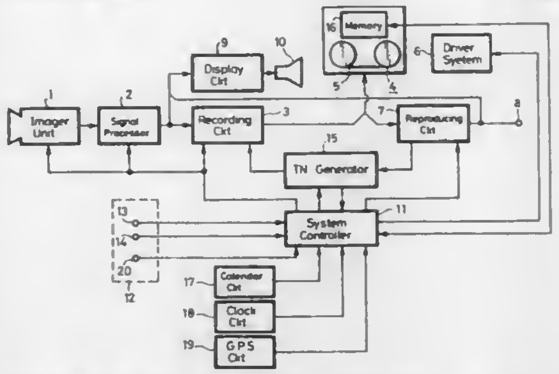
Teruhiko Kori, Kanagawa; Masaki Oguro, Tokyo, and Ken Iizuka, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 284,106, Aug. 2, 1994, abandoned. This application Dec. 27, 1996, Ser. No. 774,898

Claims priority, application Japan, Aug. 24, 1993, 5-209622

Int. Cl.⁶ G11B *15/18*

U.S. Cl. 360—69 **16 Claims**



1. A video information recording method for recording video information packets each having its contents composed of at least a recording starting track number, a recording ending track number and event information, comprising the steps of:

comparing said event information contained in two previously recorded video information packets prior to recording a newly supplied video information packet;

combining said two previously recorded video information packets into a common packet if the compared event information differs by less than a predetermined amount;

replacing the contents of a first of said two previously recorded video information packets with the contents of said common packet; and

recording the contents of said newly supplied video information packet in place of the contents of a second of said two previously recorded video information packets if it is determined that the compared event information differs by less than the predetermined amount.

5,852,529

DIGITAL SIGNAL RECORDER

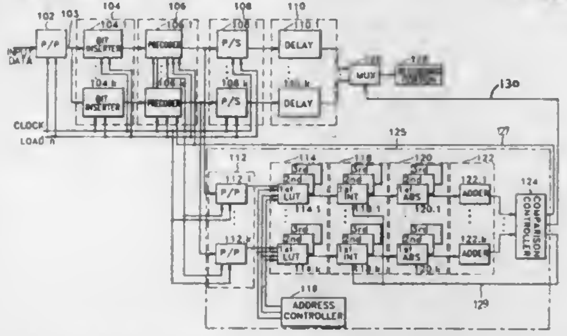
Jung-wan Ko, Suwon, and Soon-tae Kim, Kumi, both of Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed May 28, 1996, Ser. No. 654,960

Claims priority, application Rep. of Korea, May 29, 1995, 95-13687

Int. Cl.⁶ G11B *5/584*

U.S. Cl. 360—77.14 **19 Claims**



1. A digital signal recorder for recording digital information on an information track of a magnetic recording medium, said digital signal recorder comprising:

an input port (**102**) for receiving an information word of n bits in parallel;

means for inserting m additional bits (**104**) into the n-bit information word so as to form a plurality of n+m bit channel words, the m additional bits in each channel word being set to a unique one of the 2**m possible values of m bits;

control signal generating means (**125**) for receiving and analyzing the plurality of channel words in parallel, the control signal generating means including a number of channels at least equal to the number of channel words, each channel arranged for processing a respective one of the channel words and each channel including:

time division multiplexing means (**112**) for dividing the corresponding channel word by a predetermined number of bit units so as to form a plurality of channel word segments;

memory means (**114**) for storing predetermined spectrum data according to a predetermined track pattern; and

means for analyzing frequency characteristics (**118**,**120**,**122**) of the corresponding channel word by using the stored spectrum data to form an error signal;

a comparison controller (**124**) for generating a selection control signal corresponding to the channel word having a smallest error signal frequency characteristic on the basis of the analyzed spectrum;

means for selecting one of the channel words of n+m bits supplied from said encoding means in response to the selection control signal; and

recording means for recording the selected channel word on the information track of the magnetic recording medium.

5,852,530

MAGNETIC TAPE DRIVE FOR SINGLE-REEL TYPE MAGNETIC TAPE CARTRIDGE

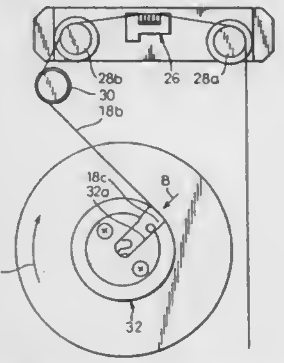
Akira Takano, Yokohama; Masayoshi Kobayashi, Kawasaki; Yoshio Kotaki, Kawasaki; Makoto Sasaki, Kawasaki, and Kazunori Ishiyama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 608,113, Feb. 28, 1996, abandoned, which is a division of Ser. No. 303,029, Sep. 8, 1994, abandoned. This application Nov. 20, 1997, Ser. No. 974,808

Claims priority, application Japan, Sep. 9, 1993, 5-224350

Int. Cl.⁶ G11B *15/00*

U.S. Cl. 360—95 **4 Claims**



1. A magnetic tape drive for a single-reel type magnetic tape cartridge having a leader block coupled to a leading end of a magnetic tape wound therein, said drive comprising:

a magnetic head unit for writing data on and reading data from the magnetic tape;

a hub member disposed in spaced relationship with said magnetic head unit, said hub member having a radial slot formed therein for receiving the leader block of the magnetic tape threaded through said magnetic head unit;

a first guide member arranged downstream of the magnetic head relative to the path of the tape from the tape cartridge to said hub member; and

a second guide member arranged between said first guide member and said hub member to bend the course of the tape along a bending direction;

said hub member being rotated in a direction in which said radial slot substantially faces said second guide member and then moves toward a side of said second guide member opposite to the side of said second guide member in which the course of the tape is bent,

wherein said hub member has a predetermined rotational movement along a first direction, said predetermined rotational movement ensuring that the leader block is covered by the tape and preventing slippage of said leader block from said radial slot by a pressing force exerted by the magnetic tape as said hub member is rotated.

5,852,531

SPINVALVE MAGNETORESISTIVE HEAD AND METHOD OF MANUFACTURING THE SAME AND MAGNETIC RECORDING/REPRODUCING APPARATUS

Ken'ichiro Yamada, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 12, 1997, Ser. No. 855,851

Claims priority, application Japan, Sep. 20, 1996, 8-250709

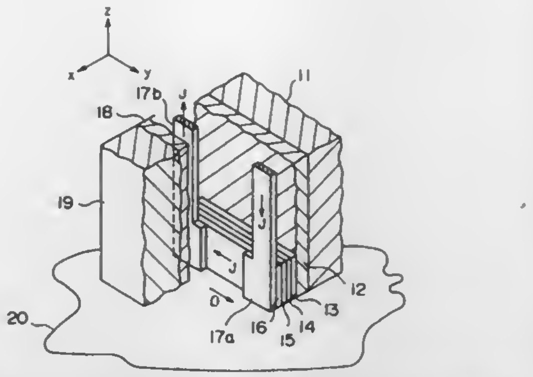
Int. Cl.⁶ G11B *5/39*

U.S. Cl. 360—113 **26 Claims**

1. A spinvalve magnetoresistive head comprising:

a free magnetic layer made of soft magnetic material;

a nonmagnetic intermediate layer overlapped with said free magnetic layer; and



a pinning magnetic layer overlapped with said nonmagnetic intermediate layer and made of soft magnetic material;

wherein a magnetization angle (θf) of said free magnetic layer and a magnetization angle (θp) of said pinning magnetic layer relative to a track core width direction are set such that an electric resistance-magnetic field curve is in a range of −10—+10% in an asymmetry (Asym) defined by the formula;

$$Asym(\%)=((\cos\theta p/\cos^3\theta f-4\cdot amr)/(\cos\theta p\cdot\tan\theta f-\sin\theta p-4\cdot amr\cdot\sin\theta f)\cdot(\partial\sin\theta f/\partial H)+(\partial^2\sin\theta f/\partial H^2)/(\partial\sin\theta f/\partial H))\cdot\Delta H/2$$

where amr is a ratio of resistance change due to spinvalve magnetoresistance effect and resistance change due to an anisotropic magnetoresistance effect.

5,852,532

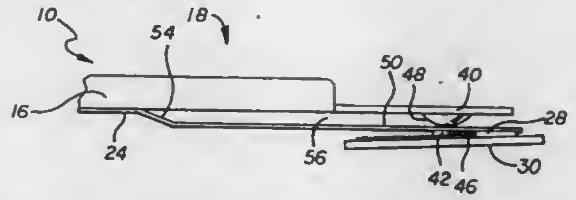
DOUBLE DIMPLE DISK DRIVE SUSPENSION

Robert N. Summers, La Habra, Calif., assignor to Magnecomp Corp., Temecula, Calif.

Continuation of Ser. No. 500,284, Jul. 10, 1995, Pat. No. 5,666,241. This application May 14, 1997, Ser. No. 856,452

Int. Cl.⁶ G11B *5/48;21/16*

U.S. Cl. 360—104 **11 Claims**



1. A disk drive suspension for positioning a slider at a disk, said suspension comprising an assembly of a load beam having inward and outward portions and a flexure having a longitudinal axis and inward portion and an outward portion and a longitudinal offset therebetween, said load beam and flexure being attached to each other at their respective inward portions, said load beam having a protuberant dimple tapering inwardly away from said load beam in a first direction and with a circular cross-section, said flexure having a protuberant dimple tapering inwardly away from said flexure in a second direction opposite to said first direction, said flexure dimple being opposed to said load beam dimple and having a circular cross-section, said flexure outward portion carrying said slider to position said slider in operating proximity to said disk while said flexure dimple is engaged with said load beam dimple at a locus of engagement.

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5,852,533
MAGNETORESISTANCE EFFECT TRANSDUCER ELEMENT WITH CONTINUOUS CENTRAL ACTIVE AREA

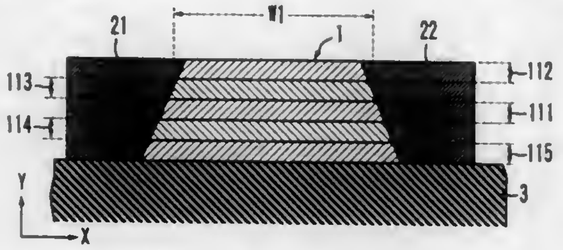
Daisuke Miyauchi, Tokyo; Eiichi Omata, Saku; Hajime Amano, Saku; Tetsuro Sasaki, Saku, and Yasufumi Uno, Nagano, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,717

Claims priority, application Japan, Jul. 28, 1995, 7-193619

Int. Cl.^{6} G11B *5/39*

U.S. Cl. 360—113 **18 Claims**



1. A magnetoresistance effect transducer element comprising:

a laminated film structure that generates a magnetoresistance effect;

a magnetic domain control film that applies a bias magnetic field to said laminated film structure;

a pair of lead conductor films;

said laminated film structure and said magnetic domain control film are laminated to one another to form a continuous central active area;

said laminated film structure layer and said magnetic domain control film extend fully from one lateral side of the central active area to an opposite lateral side of the central active area;

said pair of lead conductor films are respectively formed on each said lateral side along a lateral side end surface in a direction at a right angle to a direction of lamination of said central active area;

and at least one of said lateral side end surfaces extends obliquely in said direction of lamination of said central active area.

5,852,534
TAPE CASSETTE, TAPE RECORDING APPARATUS AND TAPE REPRODUCING APPARATUS

Tadashi Ozue, and Yoshihisa Takayama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

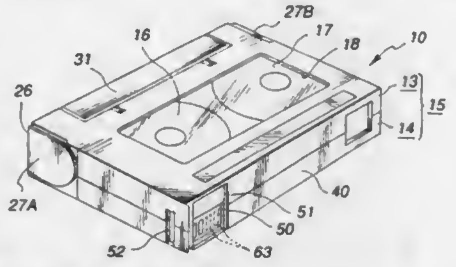
PCT No. PCT/JP96/01804, § 371 Date Feb. 7, 1997, § 102(e) Date Feb. 7, 1997, PCT Pub. No. WO97/02566, PCT Pub. Date Jan. 23, 1997

PCT Filed Jun. 28, 1996, Ser. No. 776,646

Claims priority, application Japan, Jun. 30, 1995, 7-166636; Feb. 29, 1996, 8-067520

Int. Cl.^{6} G11B *15/18*

U.S. Cl. 360—69 **12 Claims**



1. A tape cassette comprising:

a tape-shaped recording medium including a plurality of partitions, wherein recording data is recorded into each one of said plurality of partitions; and

memory means for storing attached or subsidiary information relating to each one of said plurality of partitions, said memory means being separate from said tape-shaped recording medium.

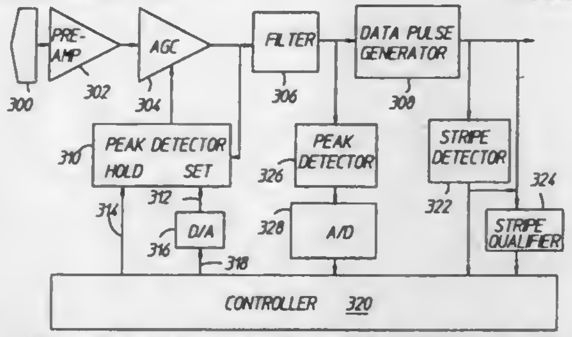
5,852,535
ACCURATE MEASUREMENT OF PREFORMATTED TRACK SERVO PATTERNS BY A MAGNETIC DATA TAPE DRIVE

Kenneth G. Richardson, Fort Collins; Mark Millican, Boulder; Erik Habbinga, Longmont; Mark E. Mills; Stephen G. Uhlmann, both of Loveland, and Mark E. Nash, Lyons, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 29, 1996, Ser. No. 609,254

Int. Cl.^{6} G11B *5/584;5/02*

U.S. Cl. 360—77.12 **2 Claims**



1. A method of reading a servo pattern on a magnetic tape drive, the method comprising the following steps:

(a) detecting, by a controller, a stripe pattern on the magnetic tape, the stripe pattern used to mark a location of the servo pattern;

(b) enabling, by the controller, automatic gain control on an amplifier receiving a signal read from the stripe pattern;

(c) waiting for a time period sufficient for the amplifier gain to adjust to the signal read from the stripe pattern;

(d) counting pulses resulting from the signal read from the stripe pattern, during the period of waiting in step (c); and

(e) using a subsequent positioning servo pattern for positioning only if a predetermined number of pulses are counted in step (d).

5,852,536
MAGNETIC HEAD

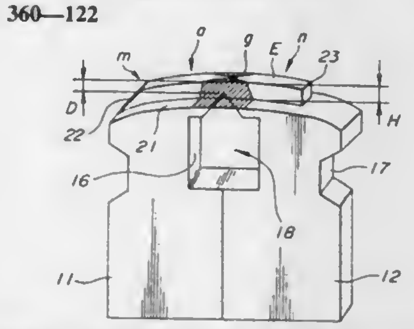
Tohru Matsunaga; Naoyuki Kaneyama; Takehiko Saito, all of Miyagi, and Masatoshi Hayakawa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1997, Ser. No. 818,121

Claims priority, application Japan, Mar. 14, 1996, 8-057994; Dec. 13, 1996, 8-333932

Int. Cl.^{6} G11B *5/193*

U.S. Cl. 360—122 **11 Claims**



1. A magnetic head formed by the joinder of two magnetic core half members with a gap forming film between the two magnetic core half members, said head having a recording sliding surface and a pair of contact width defining rabbets formed on opposite sides of said head in said recording medium sliding surface, said rabbets having widths delimiting the width of contact between recording medium and said recording medium sliding surface of said head, said rabbets having depths as measured from said recording medium sliding surface which are less than the width of contact between the recording medium and said recording medium sliding surface of said head.

5,852,537
MAGNETIC RECORDING AND REPRODUCTION APPARATUS

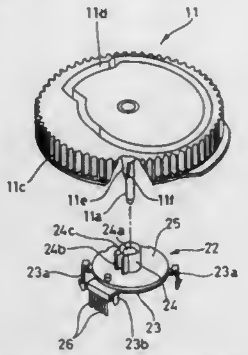
Hiroyuki Suzuki, Kitakatsuragi-gun, and Ichiro Senda, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 18, 1997, Ser. No. 933,515

Claims priority, application Japan, Sep. 30, 1996, 8-257921

Int. Cl.^{6} G11B *15/46;15/18*

U.S. Cl. 360—137 **4 Claims**



1. A magnetic recording and reproduction apparatus comprising:

a rotating shaft section of a rotating cam gear supported on a side of a chassis and transmitting the driving force of a driving motor and a rotating shaft section of a mode detection switch for detecting a mode from a rotating position of the rotating cam gear, which rotating shaft sections can be inserted into and removed from each other;

a recessed portion and a protruding portion formed in the rotating shaft sections to be engaged with each other to transmit the rotational force of the rotating cam gear; and

output terminals of the mode detection switch coupled and attached to a circuit section of a circuit substrate;

whereby, the rotating shaft section of the mode detection switch is inserted into the rotating shaft section of the rotating cam gear supported on the chassis side to engage the recessed portion with the protruding portion.

5,852,538
POWER ELEMENT DRIVING CIRCUIT

Yoshitugu Masui, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 428,382, Apr. 25, 1995, abandoned. This application Jul. 14, 1997, Ser. No. 892,343

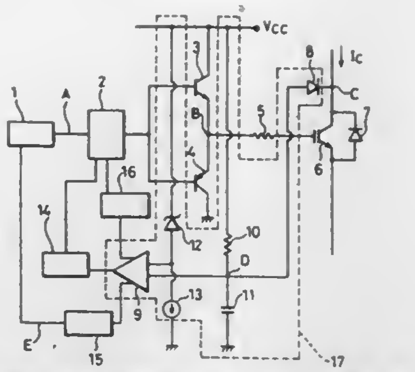
Claims priority, application Japan, Apr. 27, 1994, 6-089310

Int. Cl.^{6} H02H *7/00*

U.S. Cl. 361—18 **22 Claims**

1. A power element driving circuit comprising:

driving means for driving a power element, said driving means includes a circuit having an n-p-n transistor and a p-n-p transistor which are complementary connected in series, and a control electrode of said power element connected to an emitter of said n-p-n transistor and to an emitter of said p-n-p transistor, the emitter of said n-p-n transistor and the emitter of said p-n-p transistor being connected, said driving means providing a driving voltage to said power element, said driving voltage being the only signal provided to said control electrode of said power element;



control means for controlling said driving means, said control means being configured to send a control signal to a base of said n-p-n transistor and to a base of said p-n-p transistor, the base of said n-p-n transistor and the base of said p-n-p transistor being connected, said control signal controlling delivery of said driving voltage to said control electrode of said power element;

abnormality detection means for detecting an occurrence of abnormality in said power element or a load connected to said power element; and

voltage drop control means for controlling said control means so as to gradually lower said driving voltage of said power element when the occurrence of abnormality in said power element or the load connected to said power element is detected by said abnormality detection means.

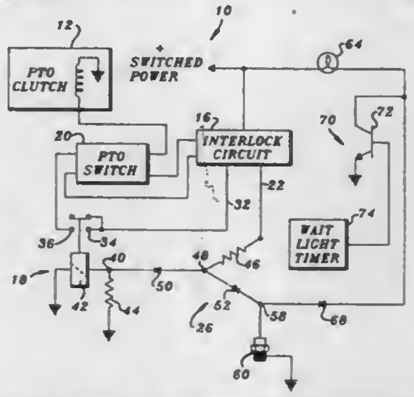
5,852,539
OVERHEAT CIRCUIT FOR A UTILITY VEHICLE

Rudolph Andrew Peterson, Jr., Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jun. 26, 1996, Ser. No. 670,867

Int. Cl.^{6} H02H *5/04*

U.S. Cl. 361—25 **10 Claims**



1. In a vehicle having an engine and a drive operably connected to a vehicle attachment for powering the attachment from the engine, and an electrically activated drive engagement device for selectively connecting and removing drive from the attachment, an engine overheat protection circuit comprising:

an interlock circuit responsive to one or more vehicle conditions and providing an enabling output signal when preselected vehicle conditions are present;

a temperature switch connected to the engine and having a first state when the engine is below a preselected operating temperature and a second state when the engine is above a maximum operating temperature;

a resistor having a first lead connected to the interlock circuit and a second lead connected to the temperature switch;

a drive relay connected to the drive engagement device and having a minimum activation voltage, the drive relay connected to the second lead; and

wherein the enabling output signal provides a voltage to the drive relay above the minimum activation voltage when the temperature switch is in the first state and a voltage below the minimum activation voltage when the temperature switch is in the second state.

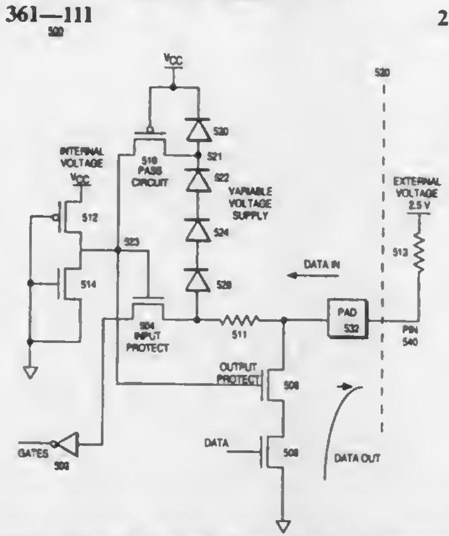
5,852,540
CIRCUIT FOR PROTECTING THE INPUT/OUTPUT STAGE OF A LOW VOLTAGE INTEGRATED CIRCUIT DEVICE FROM A FAILURE OF THE INTERNAL VOLTAGE SUPPLY OR A DIFFERENCE IN THE POWER-UP SEQUENCING OF SUPPLY VOLTAGE LEVELS

Nazar S. Haider, Fremont, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 24, 1997, Ser. No. 936,846

Int. Cl.^{6} H02H *3/22*

U.S. Cl. 361—111 **22 Claims**



1. A circuit within an integrated circuit device comprising:

a protection circuit coupled to an internal power supply and an external power supply, said internal power supply providing an internal voltage, said external power supply providing an external voltage, wherein said protection circuit is operable to reduce said external voltage for internal circuits within said integrated circuit device, and has associated therewith a maximum terminal voltage difference, which, if exceeded, causes failure of said protection circuit; and

a pass circuit coupled between said protection circuit and said internal power supply, said internal voltage being lower than said external voltage, and wherein said pass circuit is operable to reduce a terminal voltage difference across said protection circuit in the event of a failure of said internal power supply.

5,852,541
EARLY TRIGGER OF ESD PROTECTION DEVICE BY AN OSCILLATION CIRCUIT

Shi-Tron Lin, Hsinchu; Hao-Luen Tien, Taipei, and Shyh-Chyi Wong, Taichung, all of Taiwan, assignors to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Oct. 22, 1997, Ser. No. 955,505

Int. Cl.^{6} H02H *3/22*

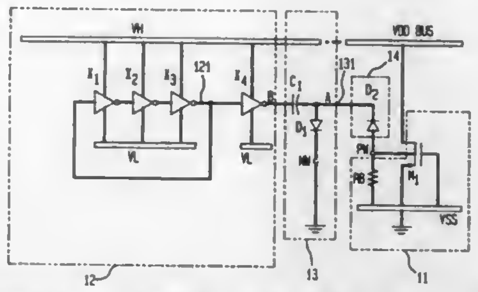
U.S. Cl. 361—111 **36 Claims**

1. An electrostatic discharge (ESD) protection structure for an integrated circuit constructed on a substrate of a first type, comprising:

an ESD protection means constructed on the substrate;

an oscillation means having an output terminal for generating an oscillation signal of a first voltage polarity during an ESD event;

a pulse-generator means, responsive to the oscillation signal, for generating electric pulses including at least pulses of a second voltage polarity opposite to said first voltage polarity during the ESD event;



a minority-carrier injection means, having an input terminal adapted to receive said electric pulses, for injecting minority carriers into the substrate which triggers turn-on of the ESD protection means to conduct a large current due to the ESD event.

5,852,542
MONOLITHIC CERAMIC CAPACITOR

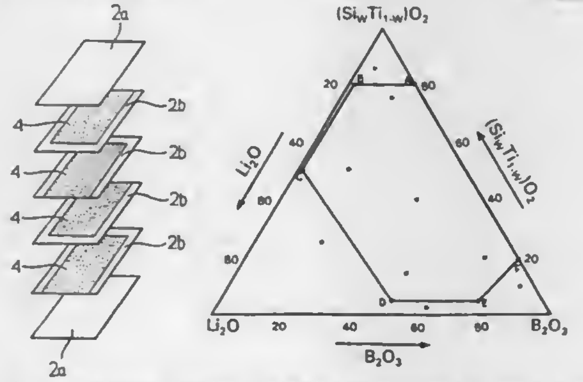
Hiroyuki Wada; Harunobu Sano, and Norihiko Sakamoto, all of Kyoto-fu, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 18, 1997, Ser. No. 897,249

Claims priority, application Japan, Jul. 19, 1996, 8-190629; Oct. 31, 1996, 8-289887

Int. Cl.^{6} H01G *4/06;4/005;4/228;2/20*

U.S. Cl. 361—321.5 **15 Claims**



1. A monolithic ceramic capacitor comprising at least three dielectric ceramic layers, at least two internal electrodes between adjacent dielectric ceramic layers such that an end of each of the internal electrodes is exposed at a different side surface of said capacitor, and external electrodes electrically connected to the exposed internal electrodes, wherein the dielectric ceramic layers comprise a main component comprising (a) barium titanate having a content of alkali metal oxides impurities in an amount of not more than about 0.02% by weight, (b) at least one member selected from the group consisting of scandium oxide and yttrium oxide, (c) at least one member selected from the group consisting of samarium oxide and europium oxide, and (d manganese oxide, cobalt oxide and nickel oxide, said main component having the following composition formula

$$(1-\alpha-\beta-\gamma)\{BaO\}_m.TiO_2+\alpha M_2O_3+\beta Re_2O_3+\gamma(Mn_{1-x-y}Ni_xCo_y)O$$

wherein M_2O_3 is at least one member selected from the group consisting of Sc_2O_3 and Y_2O_3; Re_2O_3 is at least one member selected from the group consisting of Sm_2O_3 and Eu_2O_3 and α, β, γ, m, x, and y are

$0.0025 \leqq \alpha+\beta \leqq 0.025$

$0 < \beta \leqq 0.0075$

$0.0015 \leqq \gamma \leqq 0.05$

$\gamma/(\alpha+\beta) \leqq 4$

$0 \leqq x < 1.0$

$0 \leqq y < 1.0$

$0 \leqq x+y < 1.0$

$1.000 < m \leqq 1.035$;

magnesium oxide in an amount of from about 0.5 to 5.0 mols as MgO to 100 mols of said main constituent; and

an $Li_2O—B_2O_3—(Si, Ti)O_2$ oxide glass in an amount of from about 0.2 to 3.0 parts by weight to 100 parts by weight of the sum total of said main constituent and said magnesium oxide.

5,852,543
GUIDE RAIL SET FOR ELECTRICAL COMPONENTS OF ELECTRICAL DEVICES GUIDED IN GUIDE RAILS

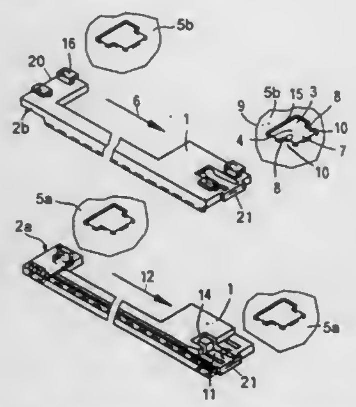
Bernhard Kannler, Augsburg, Germany, assignor to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

Filed Feb. 26, 1997, Ser. No. 806,443

Claims priority, application Germany, Feb. 26, 1996, 196 07 142.9

Int. Cl.^{6} H02B *11/12*

U.S. Cl. 361—608 **5 Claims**



1. In a guide rail set for receiving an electrical component of an electrical device, each set being composed of two individual guide rails, each guide rail, at the respective ends of the rails, having means for fastening the rail to a frame part of an electrical device so that when the rails are mounted in the device, a back surface of each of the rails is against a seating surface of the frame part and a front surface of each rail has allocated guide channels which lie opposite one another for receiving the component part, the improvements comprising the seating surface of the frame part having a T-shaped aperture for each fastening means, each T-shaped aperture having a transverse portion and a longitudinal portion, each fastening means including a sub-group being provided on a back surface of each of the guide rails for introduction into the transverse portion of the T-shaped aperture in the frame part of the electrical device and with axial longitudinal displacement of the guide rail, the sub-group is shifted into the longitudinal portion of the aperture for embracing longitudinal edges of the longitudinal portion of the T-shaped aperture of the frame part, said sub-group of each of the fastening means of one guide rail of the set being arranged offset to the sub-group of the fastening means of the other guide rail of said set so that when the guide rails of the set are placed with the back surfaces against one another, the fastening means are positioned offset next to one another, and at least one sub-group of each guide rail including a spring tongue that projects from a position adjacent a front edge of each rail toward a back end of the rail in a direction opposite to the axial displacement of the guide rail during mounting and having a free end that projects beyond a back surface of the respective guide rail for engaging an edge of one of the T-shaped apertures.

5,852,544
POWER CONNECTION BRACKET FOR COMPUTER SYSTEM AND COMPUTER SYSTEM HAVING THE SAME

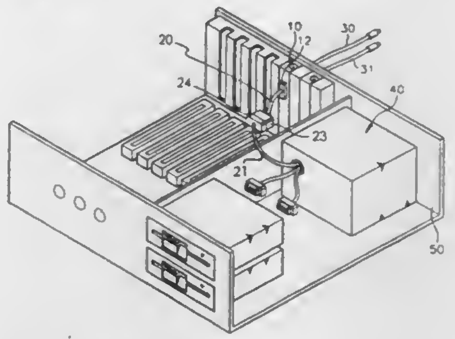
Ju-Hun Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 22, 1997, Ser. No. 840,588

Claims priority, application Rep. of Korea, Apr. 22, 1996, 1996-12200

Int. Cl.^{6} G06F *1/16*; H05K *7/10*

U.S. Cl. 361—683 **7 Claims**



1. A computer system, comprising:

a computer chassis;

a power supply located within said computer chassis and having a plurality of connectors for access to said power supply;

a plurality of electronic components located within said computer chassis, said plurality of electronic components for connection to corresponding said plurality of connectors of said power supply for operation;

a bracket mounted on one side of said computer chassis for supplying power from said power supply to at least one external peripheral device;

first connector mounted on said bracket for receiving at least one output power connector for supplying power to said at least one external peripheral device;

a second connector electrically coupled to said first connector, for electrically mating with one of said plurality of connectors from said power supply to supply power from said power supply to said at least one external peripheral device.

5,852,545
DETACHABLE ELECTRICAL AND MECHANICAL MOUNTING MECHANISM FOR SNAP MOUNTING COMPUTER SPEAKERS

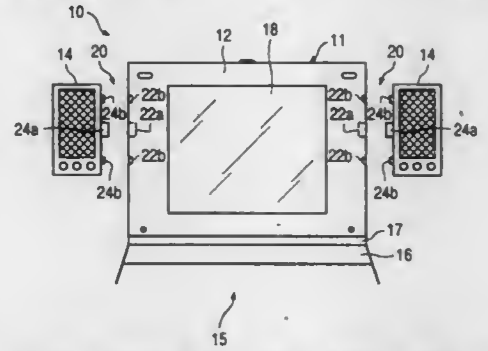
Ruby Pan-Ratzlaff, Cedar Park, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Continuation of Ser. No. 449,180, May 24, 1995, abandoned.

This application Jul. 10, 1997, Ser. No. 891,059

Int. Cl.^{6} G06F *1/16*

U.S. Cl. 361—683 **42 Claims**



1. A computer system having a data processing unit, an audio speaker assembly apparatus, and at least one computer component mounting structure, said audio speaker assembly apparatus comprising:

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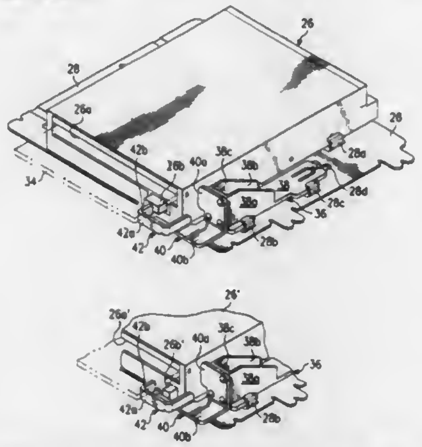
at least one speaker; and

mounting means for electrically connecting said at least one speaker to said at least one computer component mounting structure and for concurrently physically supporting said at least one speaker on said at least one computer component mounting structure, said mounting means comprising means for snap mounting said at least one speaker to said at least one computer component mounting structure for selectively and readily establishing both an electrical connection of said at least one speaker to said at least one computer component mounting structure and a physical support of said at least one speaker on said at least one computer component mounting structure.

5,852,546
COMPUTER WITH AN IMPROVED DISK DRIVE EJECT BUTTON ACTUATION ASSEMBLY

Timothy Radloff, Austin, Tex., and Ken Haven, Fremont, Calif., assignors to Dell U.S.A., L.P., Round Rock, Tex.
Filed Jan. 23, 1997, Ser. No. 789,313
Int. Cl.^{6} G06F *1/16;* H05K *7/14*
U.S. Cl. 361—685 **20 Claims**



1. A computer comprising a chassis, a processor disposed in the chassis, a memory device disposed in the chassis, a disk drive unit disposed in the chassis and having an eject button, a first actuation member disposed in the chassis, moveable relative to the disk drive, and having an arm extending therefrom and moveable therewith, the arm adapted to engage and actuate the eject button upon movement of the first actuation member in a first direction, a cover extending over the chassis, and a second actuation member supported by the cover and engaging the first actuation member so that manual movement of the second actuation member in the first direction causes corresponding movement of the first actuation member and the arm in the first direction and actuation of the eject button.

5,852,547
MODULE SHROUD ATTACHMENT TO MOTHERBOARD

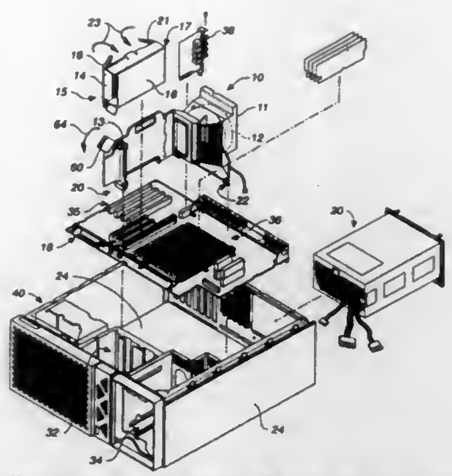
Ken Kitlas, San Jose, and Khim Foo, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Jul. 14, 1997, Ser. No. 892,504
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—695 **17 Claims**

1. A shroud assembly for positioning a CPU relative to a cooling fan within a computer chassis, comprising

a vented cooling fan enclosure for securing the cooling fan in position on a motherboard, the cooling fan enclosure including at least one vent for drawing air past the CPU to the exterior of the computer chassis,

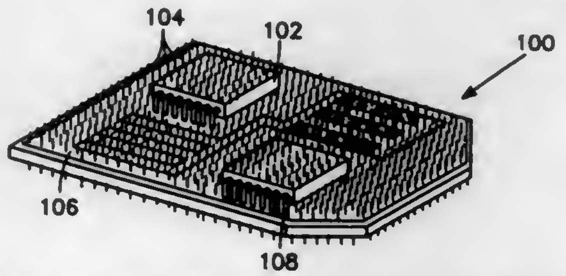
a CPU mount for positioning the CPU relative to the cooling fan, and

a CPU housing for enclosing the CPU, the housing forming an air inlet opening and an air outlet opening, the CPU mount including means for detachably aligning the CPU housing in a manner wherein its air outlet opening aligns with the vent of the cooling fan enclosure, so that air drawn by the cooling fan flows into the air inlet of the CPU module housing, across the CPU, out the air outlet opening and into the cooling fan enclosure, to be forced out of the computer chassis.



5,852,548
ENHANCED HEAT TRANSFER IN PRINTED CIRCUIT BOARDS AND ELECTRONIC COMPONENTS THEREOF

Robert W. Koon, Palos Verdes, and Thomas E. Steelman, Torrance, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Sep. 9, 1994, Ser. No. 304,018
Int. Cl.^{6} H05K *7/20*
U.S. Cl. 361—704 **8 Claims**



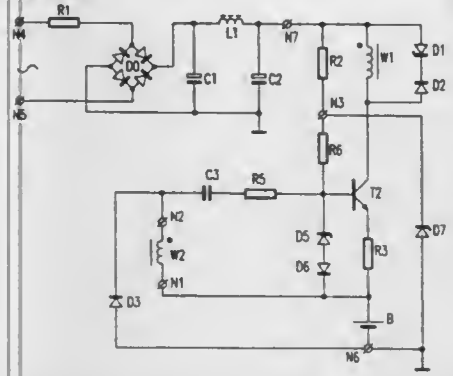
8. A circuit board having an enhanced heat transfer capability, comprising:

(a) a circuit board with electronic components which is at least in part cooled by a gas flowing around the board, and wherein at least one of the electronic components of the circuit board is a temperature sensitive electronic component such that power input to said temperature sensitive electronic component can be increased in proportion to an increase in a rate of heat transfer from the temperature sensitive electronic component to the gas; and,

(b) a structure for providing an enhanced heat transfer capability, the structure comprising thermally conductive carbon fibers permanently attached at a first end to at least a portion of some of the exterior surfaces of the at least one temperature sensitive electronic component, each of said fibers extending out from the at least a portion of some of the exterior surfaces in a generally perpendicular direction so as to transfer heat to the gas.

5,852,549
POWER-SUPPLY CIRCUIT

Schelte Heeringa, Drachten, Netherlands, assignor to U.S. Philips Corporation, NY, N.Y.
Filed Nov. 27, 1996, Ser. No. 757,527
Claims priority, application European Pat. Off., Nov. 27, 1995, 95203249
Int. Cl.^{6} H02M *3/335;* H02J *7/04*
U.S. Cl. 363—18 **33 Claims**



1. A power-supply circuit for powering a load from an input voltage, comprising: a transformer having a primary winding and a secondary winding, a switching transistor having a control electrode and having a first main electrode and a second main electrode which define a main current path of the switching transistor, which main current path is connected in series with the primary winding; a first resistor connected between the first main electrode and a first terminal of the secondary winding; a first diode connected in series with the load, between a second terminal of the secondary winding and the first terminal of the secondary winding; a series arrangement of a first capacitor and a second resistor connected between the second terminal and the control electrode; a third resistor connected between the control electrode and a supply terminal; a threshold element for limiting the voltage on the control electrode and connected between the control electrode and the first terminal, and a second diode connected a in series with the threshold element, which second diode conducts during limitation of the voltage on the control electrode of the switching transistor.

5,852,550
SWITCHED-MODE POWER SUPPLY CIRCUIT HAVING A VERY LOW POWER STAND-BY MODE

Naveed Majid, Moheoan Lake, N.Y.; Tom Mobers, Gravee, and Erwin G. R. Seinen, Malden, both of Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed Aug. 4, 1997, Ser. No. 905,660
Int. Cl.^{6} H02M *3/335*
U.S. Cl. 363—21 **8 Claims**

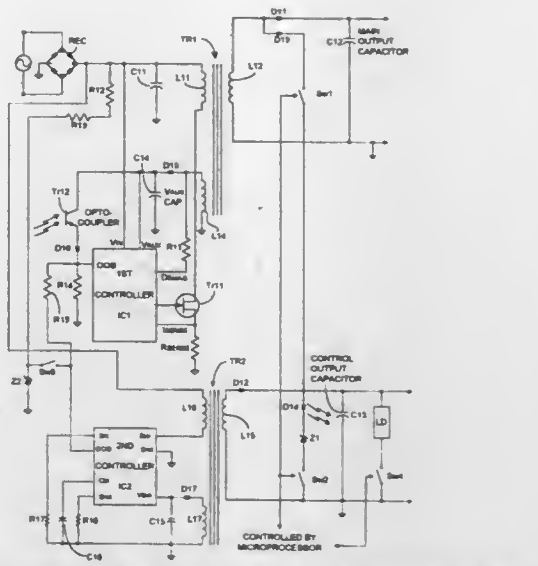
1. A switched-mode power supply circuit having an operating mode and a low power stand-by mode, said switched-mode power supply circuit comprising:

means for generating a d.c. supply voltage having a first output terminal and a second output terminal;

a first transformer having a primary winding, an auxiliary primary winding and a secondary winding, said primary winding having a first terminal coupled to the first output terminal of said generating means, and a second terminal;

a second transformer having a primary winding, an auxiliary primary winding and a secondary winding, a voltage across said auxiliary primary winding tracking a voltage across said secondary winding, said primary winding having a first terminal coupled to the first output terminal of said generating means, and a second terminal;

a controllable switch connected in series with the second terminal of said primary winding and the second output terminal of said generating means;



a main output capacitor coupled across output terminals of said secondary winding of said first transformer for providing a first main output voltage in the operating state and a second main output voltage in the stand-by mode, said second main output voltage being lower than said first main output voltage;

a control output capacitor coupled across output terminals of said secondary winding of said second transformer for providing a control output voltage;

means for selectively coupling an additional load across said control output capacitor;

a first controller having an output for supplying switching signals to said controllable switch, an auxiliary voltage sensing input coupled, via a shunting auxiliary capacitor, to said auxiliary primary winding of said first transformer, and a control input, said first controller comprising means for turning off said start-up current source and for stopping said switching signals when a voltage on said control input drops below a predetermined level, and means for coupling said control input to the first output terminal of said generating means to receive a voltage greater than said predetermined level; and

a second controller having a first terminal coupled to the second terminal of the primary winding of the second transformer, a second terminal coupled to the second output terminal of said generating means, a third terminal coupled to said auxiliary primary winding of said second transformer for detecting a voltage thereon, and a fourth terminal coupled to the control input of said first controller, wherein to effect said low power stand-by mode, said selective coupling means uncouples said additional load from across said control output capacitor, and said second controller, through said fourth terminal prevents a voltage on said control input of said first controller from exceeding said predetermined level, and said operating mode is effected by said selective coupling means coupling said additional load across said control output capacitor, and said second controller allowing a voltage on said control input of said first controller to exceed said predetermined level.

5,852,551
PULSED WIDTH MODULATION METHOD FOR POWER TRANSFORMING APPARATUS

Geun-Ho Lee, Kyungsangnam-Do, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Oct. 1, 1997, Ser. No. 942,287
Claims priority, application Rep. of Korea, Oct. 2, 1996, 1996 43662
Int. Cl.^{6} H02J *1/02;3/00;* H02M *5/45;* H02P *1/46*
U.S. Cl. 363—39 **8 Claims**

1. In a power transforming apparatus which is capable of applying a voltage, current and frequency of an alternating current to a

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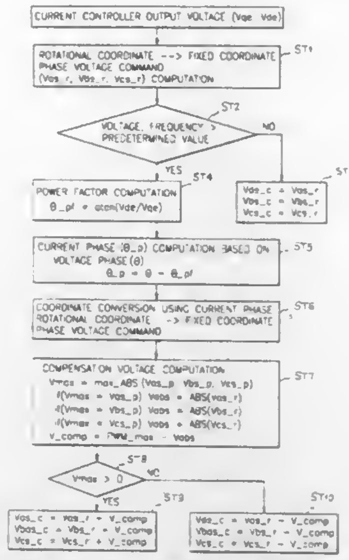

CURRENT CONTROLLER OUTPUT VOLTAGE
ST1
ST2
VOLTAGE FREQUENCY > PREDETERMINED VALUE
NO
YES
ST3
ST4
POWER FACTOR COMPUTATION
ST5
CURRENT PHASE COMPUTATION BASED ON VOLTAGE PHASE
ST6
COORDINATE CONVERSION USING CURRENT PHASE
ST7
COMPENSATION VOLTAGE COMPUTATION
ST8
Vmax > 0
YES
NO
ST9
ST10

load circuit, detecting a voltage and frequency supplied to the load circuit, and performing a pulse width modulation with respect thereto, a pulse width modulation method using the power transforming apparatus, comprising the steps of:

a first step for computing a phase voltage command in accordance with a phase of a voltage applied to the load circuit;

a second step for performing a three-phase pulse width modulation with respect to the phase voltage command when the voltage and frequency applied to the load circuit are below a predetermined value;

a third step for computing new phase voltage commands which have the same phase as the phase of a current when the voltage and frequency applied to the load circuit are the predetermined value; and

a fourth step for performing a pulse width modulation so that a switching operation having the maximum absolute value of the current among the new phase voltage commands obtained in the third step becomes idle.

5,852,552
HIGH VOLTAGE GENERATOR WITH A LATCH-UP PREVENTION FUNCTION

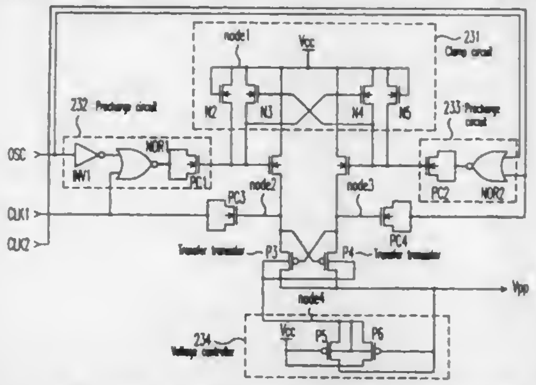
Jung Tae Kwon, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd, Kyoungki-do, Rep. of Korea

Filed May 30, 1997, Ser. No. 866,236

Claims priority, application Rep. of Korea, Jun. 27, 1996, 1996-24280

Int. Cl.^{6} H02M ***3/18***

U.S. Cl. 363—60 **5 Claims**



1. A high voltage generator comprising charge pumping means including precharge means for generating a high voltage, a plurality of transfer transistors connected to said precharge means for transferring said high voltage to an output node, and clamp means for supplying another voltage lower than the high voltage to the transistors to precharge the transistors;

wherein said charge pumping means further includes voltage control means for varying a voltage in a well including said transfer transistors according to a relative voltage variation between an external supply voltage and said high voltage to prevent a latch-up phenomenon between the output node and a bulk region of the transistors.

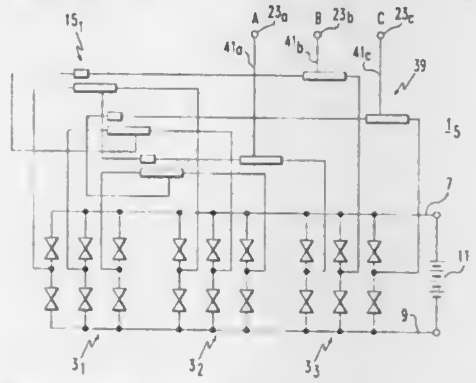
5,852,553
HARMONIC NEUTRALIZED VOLTAGE SOURCED INVERTER EMPLOYING PHASE SHIFTING INTERPHASE TRANSFORMERS

Eric John Stacey, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1997, Ser. No. 911,156

Int. Cl.^{6} H02M ***7/00***

U.S. Cl. 363—64 **8 Claims**



1. A static inverter comprising:

a plurality of multipulse three-phase static inverter stages;

control means operating switches in said multipulse three-phase static inverter stages at discretely spaced electrical angles; and

combining means comprising at least one set of phase shifting interphase transformers connected between adjacent pairs of multipulse three-phase static inverter stages, phase shifting currents and voltages across said phase shifting interphase transformers by amounts which maintain displacement factors between said currents and voltages across said phase shifting interphase transformer.

5,852,554
POWER INVERTER HAVING THREE OR MORE PARALLEL DRIVEN PWM-TYPE POWER INVERTING UNITS

Yasuhiro Yamamoto, Aichi, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jun. 12, 1997, Ser. No. 873,923

Claims priority, application Japan, Jun. 12, 1996, 8-150529

Int. Cl.^{6} H02M ***7/519***

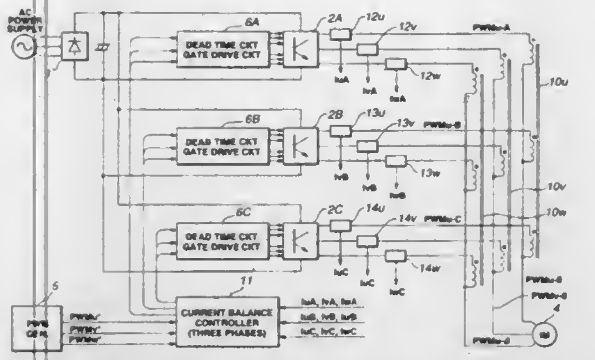
U.S. Cl. 363—71 **11 Claims**

1. A power inverter comprising:

three or more PWM-type power inverting units which are so arranged and constructed as to be enabled to be driven in parallel;

a plurality of integrated interphase reactors , each of which is so arranged and constructed as to synthesize each of the same phase output currents of the respective PWM-type inverting units and supply the synthesized phase output current to a load; and

a plurality of current balance controllers, each of which is so arranged and constructed as to carry out a retardation correction for a PMW waveform outputted from the respective PWM-type power inverting units in the corresponding phase so that each phase current between the respective PWM-type inverting units is balanced, and wherein each of the integrated interphase reactors includes: a magnetic core member having a plurality of juxtaposed leg portions and a plurality of coils, each coil being wound so as to interlink to a corresponding one of the leg portions of the core member, each of same instantaneous polarity indicating terminals of the coils being connected to a corresponding phase output end of each PWM-type inverting unit so that the respective coils operatively generate magnetic fluxes on the juxtaposed leg portions in mutually the same directions in response to output phase currents of the respective PWM-type power inverting units and each of the other terminals thereof being connected together to the load.


AC POWER SUPPLY
6A
DEAD TIME CKT GATE DRIVE CKT
2A
12u
12v
12w
6B
DEAD TIME CKT GATE DRIVE CKT
2B
13u
13v
13w
6C
DEAD TIME CKT GATE DRIVE CKT
2C
14u
14v
14w
10u
10v
10w
5
PWM GEN.
11
CURRENT BALANCE CONTROLLER (THREE PHASES)
4

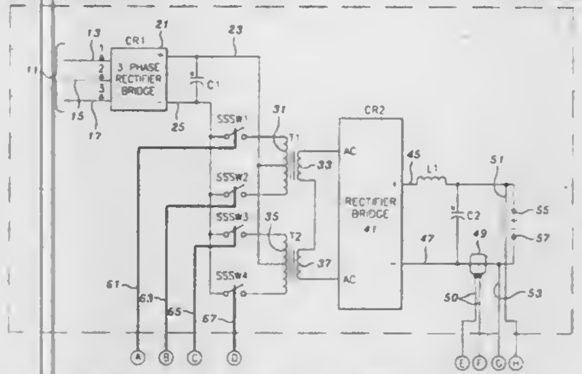
5,852,555
DUAL INVERTER POWER SUPPLY

Ricky Martin, 1851 Pitcairn Dr., Costa Mesa, Calif. 92626

Filed Dec. 17, 1997, Ser. No. 991,981

Int. Cl.^{6} H02M ***7/00;3/335***

U.S. Cl. 363—71 **14 Claims**



1. A dual inverter power supply comprising:

a first and a second switch, connected such that when said first switch is on, said second switch is off and when said first switch is off said second switch is on, each having a first end connected to one of a first and a second high voltage direct current source and each having a second end;

a first primary coil having a first end connected to said second end of said first switch and having a second end connected to said second end of said second switch, and having a center tapped connection with the other of said first and said second high voltage direct current source;

a third and a fourth switch, connected such that when said third switch is on, said fourth switch is off and when said third switch is off said fourth switch is on, each having a second end connected to one of said first and said second high voltage direct current source, and each having a second end;

a second primary coil having a first end connected to said second end of said third switch and having a second end connected to said second end of said fourth switch, and having a center tapped connection with the other of said first and said second high voltage direct current source;

a first secondary coil having a first end and a second end, magnetically linked with said first primary coil;

a second secondary coil having a first end connected to said second end of said first secondary coil, and a second end, and magnetically linked with said second primary coil;

a rectifier bridge having a first input connected to said first end of said first secondary coil and a second input connected to said second end of said second secondary coil, said rectifier bridge having a pair of electrical power outputs for at least one of welding and fusing, and;

a phase controller to control the relative timing of operation of said first and second switches with respect to said third and fourth switches to control a magnitude of current and voltage of said electrical power outputs of said rectifier bridge.

5,852,556
POWER CONVERTER

Sumio Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

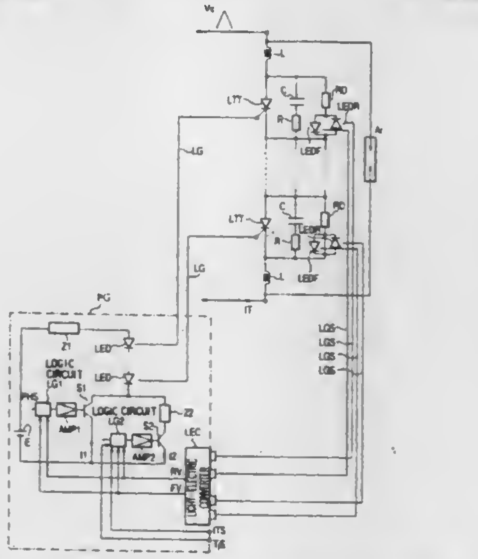
PCT No. PCT/JP96/02315, § 371 Date Apr. 17, 1997, § 102(e) Date Apr. 17, 1997, PCT Pub. No. WO97/07588, PCT Pub. Date Feb. 27, 1997

PCT Filed Aug. 19, 1996, Ser. No. 817,163

Claims priority, application Japan, Aug. 18, 1995, 7-210315

Int. Cl.^{6} H02M ***7/04***

U.S. Cl. 363—85 **15 Claims**



1. A power converter having a thyristor valve which is turned on by being supplied with a gate power to flow a current in one direction, comprising:

trigger pulse generating means for generating a trigger pulse signal to supply to the thyristor valve a first gate power to turn on the thyristor valve;

detecting means for detecting, during a turn a transient period from a time at which the thyristor valve current is cut off to a time at which a withstand voltage of the thyristor valve recovers to a rated value; and

supplemental pulse generating means for continuously generating a supplemental pulse signal to supply a second gate power to the thyristor valve during the transient period detected by said detecting means, the second gate power being set at a level lower than that of the first gate power so that the thyristor valve is not turned on.

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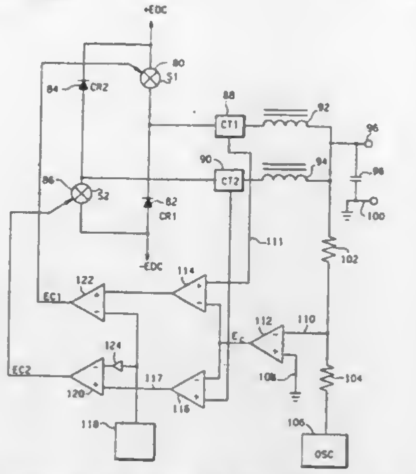
5,852,557
SWITCHING CONVERTER UTILIZING DUAL SWITCH OUTPUTS

Mark Woodward, Huntington Beach, Calif., assignor to Pacific Power Source a Division of Thermo-Voltek, Huntington Beach, Calif.

Filed Dec. 22, 1995, Ser. No. 577,613
Int. Cl.^{6} H02M *7/00;3/335;1/12;* **G05F** *3/16*
U.S. Cl. 363—124 **4 Claims**



1. A switching power supply circuit connected in a manner eliminating the requirement for a dead zone comprising:

switching means having first and second switching devices connected between +EDC and −EDC wherein said first switching device is connected to +EDC and is connected to −EDC through a diode and wherein said second switching device is connected to −EDC and is connected to +EDC through a diode, the output nodes of said first and second switching devices each being connected to a filter which is connected to the supply output, drive means having first and second outputs connected respectively to said first and second switching devices for controlling said switching devices, and

first current feedback means connected on the output side of one of said first or second switching devices and to said drive means, said first current feedback means providing current feedback for biasing at least one of said first or second switching devices in the conduction mode during zero current crossover.

5,852,558
METHOD AND APPARATUS FOR REDUCING COMMON MODE VOLTAGE IN MULTI-PHASE POWER CONVERTERS

Alexander L. Julian, Madison; Thomas A. Lipo, Middleton, and Deepakraj M. Divan, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

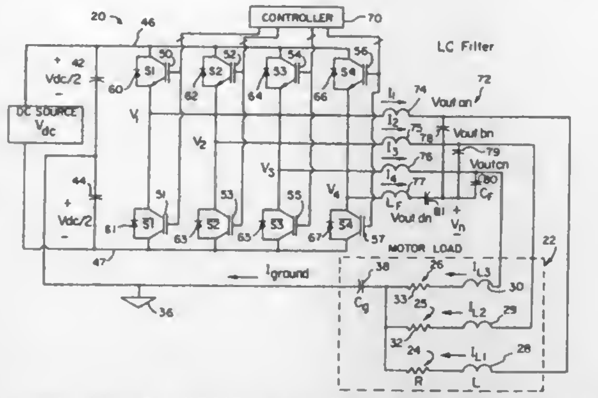
Filed Jun. 20, 1997, Ser. No. 880,096
Int. Cl.^{6} H02M *1/12*
U.S. Cl. 363—132 **30 Claims**

1. A multi-phase power conversion system for reducing common mode voltage, comprising:

(a) a DC-to-AC power inverter having an even number of at least four inverter legs connected between positive and negative DC bus lines, wherein each inverter leg includes inverter switching devices responsive to switching device control signals to connect the positive or negative DC bus lines to an inverter leg output;

(b) means for symmetrizing a DC source voltage provided to the positive and negative DC bus lines such that the DC source voltages applied to the positive and negative DC bus lines are symmetric about ground; and

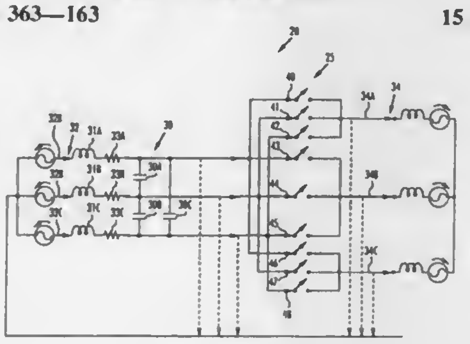
(c) switching device controller means for providing the switching device control signals to the inverter switching devices in the inverter legs to switch the inverter switching devices in a pattern which implements a modulation strategy such that a multi-phase AC voltage waveform is synthesized on at least three of the inverter leg outputs, and wherein the modulation strategy is subject to a modulation constraint such that at all times an equal number of the inverter leg outputs are connected to the positive DC bus line by the inverter switching devices as are connected to the negative DC bus line by the inverter switching devices.

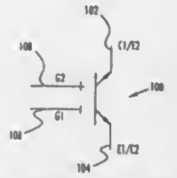


5,852,559
POWER APPLICATION CIRCUITS UTILIZING BIDIRECTIONAL INSULATED GATE BIPOLAR TRANSISTOR

Hsin-hua Li, Brookfield, Wis., assignor to Allen Bradley Company, LLC, Milwaukee, Wis.

Filed Sep. 24, 1996, Ser. No. 719,194
Int. Cl.^{6} H02M *5/293*
U.S. Cl. 363—163 **15 Claims**





1. A power conversion circuit, comprising:

a plurality of input conductors, the input conductors being configured to receive a plurality of phases of input power;

an array of bidirectional insulated gate bipolar transistors, the array being coupled to the input conductors, the bidirectional insulated gate bipolar transistors including a double RESURF structure wherein the double RESURF structure allows the bidirectional insulated gate transistors to block over 300 volts in both directions, wherein a first gate contact and a second gate contact are disposed above a gate oxide, the gate oxide having a thick portion disposed between a first thin portion and a second thin portion;

a control circuit coupled to the array, the control circuit controlling the operation of the array; and

a plurality of output conductors coupled to the array, wherein each insulated gate transistor includes;

a semiconductor substrate;

a drift region disposed above the substrate, the drift region having a first end, a second end, and a middle section;

a doped region disposed above the drift region:

an emitter/collector region disposed above the first end of the drift region, the emitter/collector region having a first portion and a second portion, the first portion being more heavily doped with a first type dopant than the second portion:

a collector/emitter region disposed above the second end of the drift region, the collector/emitter region having a first portion and a second portion, the first portion being more heavily doped with the fist type dopant than the second portion;

a first region disposed above the emitter/collector region, the first region being doped with a second type dopant, the second type dopant having an appositive conductivity type to the first dopant;

a second region disposed above the collector/emitter region, the second region being doped with the second type dopant;

an emitter/collector contact coupled to the first region and the emitter/collector region; and

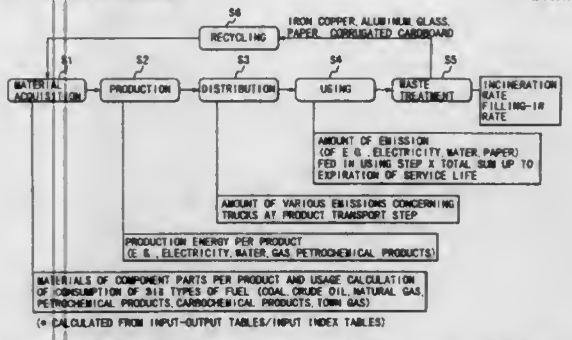
a collector/emitter contact coupled to the second region and the collector/emitter region;

wherein the first gate contact is coupled to the oxide gate and disposed above the first region and the second gate contact is coupled to the oxide gate and disposed above the second region and wherein the double RESURF structure includes a first RESURF structure associated with said drift region and said substrate and a second RESURF structure associated with said doped region and said drift region.

5,852,560
APPARATUS FOR ASSESSING A LOAD THAT INDUSTRIAL PRODUCTS APPLY TO THE ENVIRONMENT

Norio Takeyama, Yokohama, and Hideyo Kagami, Kamakura, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1997, Ser. No. 866,060
Claims priority, application Japan, May 31, 1996, 8-139269
Int. Cl.^{6} G06F *19/00*
U.S. Cl. 364—468.03 **21 Claims**


S6
RECYCLING
IRON COPPER, ALUMINUM GLASS, PAPER, CORRUGATED CARDBOARD
S1
S2
S3
S4
S5
MATERIAL ACQUISITION
PRODUCTION
DISTRIBUTION
USING
WASTE TREATMENT
INCINERATION RATE FILLING-IN RATE
AMOUNT OF EMISSION (OF E.G., ELECTRICITY, WATER, PAPER) FED IN USING STEP X TOTAL SUM UP TO EXPIRATION OF SERVICE LIFE
AMOUNT OF VARIOUS EMISSIONS CONCERNING TRUCKS AT PRODUCT TRANSPORT STEP
PRODUCTION ENERGY PER PRODUCT (E.G., ELECTRICITY, WATER, GAS PETROCHEMICAL PRODUCTS)
MATERIALS OF COMPONENT PARTS PER PRODUCT AND USAGE CALCULATION OF CONSUMPTION OF 318 TYPES OF FUEL (COAL, CRUDE OIL, NATURAL GAS, PETROCHEMICAL PRODUCTS, CARBOCHEMICAL PRODUCTS, TOWN GAS)
(* CALCULATED FROM INPUT-OUTPUT TABLES/INPUT INDEX TABLES)

1. An apparatus for assessing a load that industrial products apply to the environment on the basis of the amount of emission of factors that apply a load to the environment, comprising:

an environmental load equation storage section that stores the environmental load equations modeled on a stage at which a product is produced and used and a stage of waste treatment and recycling, with the life cycle of the product being divided into at least the two stages;

a conversion coefficient storage section that stores conversion coefficients used to convert the amounts of materials and energy consumed in producing, using, waste-treating, and recycling the product into the amount of environmental load factors emitted as a result of those operations;

an input section for entering the amounts of materials and energy consumed in producing, using, waste-treating, and recycling the product, for each of the modeled stages;

a computing section that calculates the amount of emission of environmental load factors by applying the amounts of materials and energy fed and the conversion coefficients corresponding to the amounts to said environmental load equations;

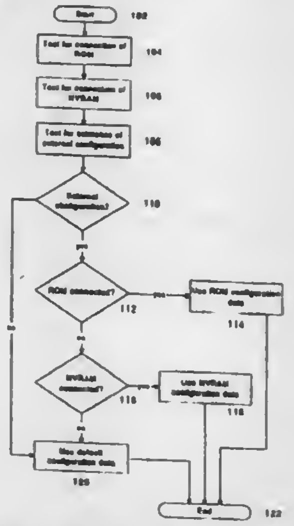
an assessment section for assessing a load that the product applies to the environment on the basis of the calculation result; and

an output section that outputs the assessment result.

5,852,561
SELECTIVE CONFIGURATION OF OPERATING PROGRAMS STORED IN AN APPLICATION SPECIFIC INTEGRATED CIRCUIT

Virginia M. Chan, Fountain Valley; Stephen C. Muller, San Diego; Douglas M. Berger, Mission Viejo, and Chuong D. Nguyen, San Jose, all of Calif., assignors to Rockwell Int'l. Corp., Newport Beach, Calif.

Filed Dec. 7, 1995, Ser. No. 568,840
Int. Cl.^{6} G06F *9/445;9/46;15/177;13/14*
U.S. Cl. 364—488 **14 Claims**



1. A method for configuring an application specific program-controlled integrated circuit which contains default configuration data and includes input/output means connectable to a plurality of external sources of configuration data, said method comprising:

a) testing for connection of a first external memory to said application specific integrated circuit;

b) testing for connection of a second external memory to said application specific integrated circuit;

c) determining whether an external source of configuration data is connected to said input/output means;

d) in response to a determination that an external source of configuration data is connected to the input/output means, locating the externally stored configuration data;

e) configuring the application specific integrated circuit in accordance with the externally located configuration data;

f) in response to a determination that an external source of configuration data is not connected to the input/output means, configuring the integrated circuit in accordance with the default configuration data stored in said application specific integrated circuit.

5,852,562

METHOD AND APPARATUS FOR DESIGNING AN LSI LAYOUT UTILIZING CELLS HAVING A PREDETERMINED WIRING HEIGHT IN ORDER TO REDUCE WIRING ZONES

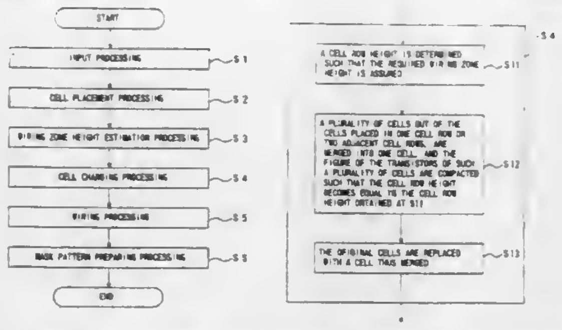
Noriko Shinomiya, Osaka; Masahiko Toyonaga, Hyogo; Masahiro Fukui, and Toshiro Akino, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 12, 1995, Ser. No. 571,130

Claims priority, application Japan, Dec. 13, 1994, 6-308508; Feb. 9, 1995, 7-021869

Int. Cl.^{6} G06F *17/00;17/50*

U.S. Cl. 364—491 **6 Claims**


START
INPUT PROCESSING
S1
CELL PLACEMENT PROCESSING
S2
WIRING ZONE HEIGHT ESTIMATION PROCESSING
S3
CELL CHANGING PROCESSING
S4
WIRING PROCESSING
S5
MASK PATTERN PREPARING PROCESSING
S5
END
S4
A CELL ROW HEIGHT IS DETERMINED SUCH THAT THE REQUIRED WIRING ZONE HEIGHT IS ASSURED
S11
A PLURALITY OF CELLS OUT OF THE CELLS PLACED IN ONE CELL ROW OR TWO ADJACENT CELL ROWS, ARE MERGED INTO ONE CELL, AND THE FIGURE OF THE TRANSISTORS OF SUCH A PLURALITY OF CELLS ARE COMPACTED SUCH THAT THE CELL ROW HEIGHT BECOMES EQUAL TO THE CELL ROW HEIGHT OBTAINED AT S11
S12
THE ORIGINAL CELLS ARE REPLACED WITH A CELL THUS MERGED
S13

1. An LSI layout design method of designing, according to circuit design information, a layout of cells and cell interconnection on a semiconductor substrate and preparing a mask pattern based on the layout thus designed, comprising:

an input processing for entering circuit design information and the information of a cell group which can be placed;

a cell placing processing for selecting cells from said cell group which can be placed, and for two-dimensionally placing said cells thus selected on a plane according to said circuit design information, thereby to design a layout of said selected cells arranged in a plurality of parallel cell rows;

a wiring zone height estimating processing for estimating, in said cell layout designed by said cell placing processing, the wiring zone height or length in a direction at a right angle to said cell rows, of a necessary wiring zone required between two adjacent cell rows for the purpose of wiring;

a cell changing processing for amending said cell layout by changing a cell placed on said cell layout designed by said cell placing processing, to a cell which has the same specifications and a different shape or a different cell terminal position and which is contained in said cell group which can be placed, thereby to reduce the area of a pure wiring zone disposed solely for the purpose of wiring, said pure wiring zone being required for assuring said wiring zone height of said necessary wiring zone, in addition to the over-the-cell wiring zones where wiring can be made on cells;

a wiring processing for designing a layout of cell interconnection according to said cell layout amended by said cell changing processing and according to said circuit design information; and

a mask pattern preparing processing for preparing a mask pattern based on said layout of cell and cell interconnection designed by said processings above-mentioned,

wherein said cell changing processing comprises:

a cell row height determining processing for obtaining a cell row height such that said wiring zone height of said necessary wiring zone is assured in said over-the-cell wiring zone;

a cell merge processing for (i) acquiring, from said information entered by said input processing relating to said cell group which can be placed, the figure information of placement and wiring of transistors of cells forming each cell row, (ii) merging a plurality of cells of one cell row or two adjacent cell rows, into one cell, and (iii) vertically or horizontally compacting the figure of placement and wiring of the transistors of said plurality of cells such that the height of each of said cell rows is equal to said cell row height obtained by said cell row height determining processing; and

a processing for changing a plurality of cells out of said cells placed by said cell placing processing, to a cell obtained by said cell merge processing.

5,852,563

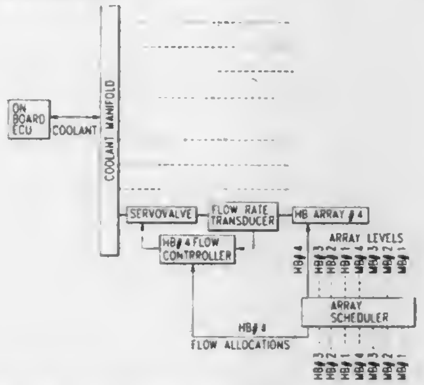
INTELLIGENT COOLANT FLOW CONTROL SYSTEM

Richard M. Weber, Prosper, and James F. Kviatkofsky, Allen, both of Tex., assignors to Raytheon TI Systems, Inc., Lewisville, Tex.

Filed Mar. 14, 1997, Ser. No. 815,028

Int. Cl.^{6} G01F *1/00*

U.S. Cl. 364—528.17 **14 Claims**



1. A coolant distribution system for a plurality of devices requiring cooling which comprises:

(a) a coolant source of limited capacity; and

(b) a system for apportioning coolant to each of said devices requiring cooling based upon instantaneous knowledge of the waste heat load of each of said devices, said system comprising:

(i) scheduler means to concurrently determine the instantaneous amount of coolant required at each of said devices; and

(ii) means responsive to said scheduler means to control the flow of coolant from said coolant source to said devices in accordance with the coolant apportioned for each of said devices.

5,852,564

METHOD AND APPARATUS FOR INTERACTIVELY DISPLAYING SIGNAL INFORMATION DURING COMPUTER SIMULATION OF AN ELECTRICAL CIRCUIT

Edward C. King, Fremont, and Alan G. Smith, Pleasanton, both of Calif., assignors to CPU Technology, Inc., Pleasanton, Calif.

Continuation of Ser. No. 334,769, Nov. 4, 1994, Pat. No. 5,615,356, which is a continuation of Ser. No. 883,584, May 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 871,435, Apr. 21, 1992, abandoned. This application Nov. 20, 1996, Ser. No. 752,498

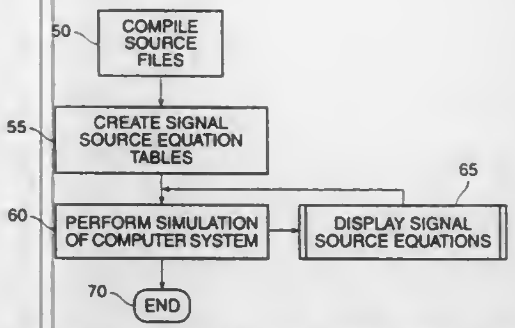
Int. Cl.^{6} G06F *9/455*

U.S. Cl. 364—578 **15 Claims**

1. A method of simulating an electronic system with interactive control of a simulation display, said electronic system including an electrical conductor and a first signal applied to the conductor, said method comprising the steps of:

a) providing at least one design language source file describing said electronic system, said at least one design language source file comprising a definition equation of the first signal;

b) compiling said at least one design language source file to form a design language object file;


50
COMPILE SOURCE FILES
55
CREATE SIGNAL SOURCE EQUATION TABLES
65
60
PERFORM SIMULATION OF COMPUTER SYSTEM
DISPLAY SIGNAL SOURCE EQUATIONS
70
END

c) invoking a simulator with said design language object file, whereby said electronic system is simulated and simulation information is displayed upon a simulation screen;

d) concurrently with said simulating of said electronic system, selecting by user inputs said first signal for definition display; and

e) displaying said definition equation of said first signal on said simulation screen concurrently with said simulating of said electronic system.

5,852,565

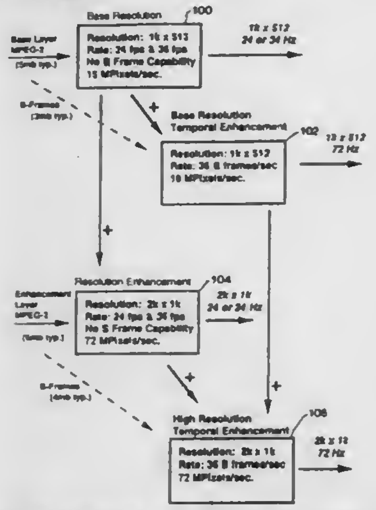
TEMPORAL AND RESOLUTION LAYERING IN ADVANCED TELEVISION

Gary E. Demos, Culver City, Calif., assignor to DemoGraFX, Culver City, Calif.

Filed Jan. 30, 1996, Ser. No. 594,815

Int. Cl.^{6} G06F *17/00*

U.S. Cl. 364—715.02 **71 Claims**



1. A method for capturing and compressing video information, comprising the steps of:

(a) capturing video images in a plurality of frames at an initial framing rate selected from one of approximately 36 fps, 72 fps, and 75 fps;

(b) encoding the captured video images in a compressed data stream comprising:

(1) a base layer comprising an encoded bitstream having relatively low resolution and a frame rate selected from one of approximately 24 Hz, 36 Hz, and 37.5 Hz;

(2) at least one of the following types of layers:

(A) optionally, at least one temporal enhancement layer comprising an encoded bitstream having relatively low resolution and a frame rate selected to achieve a final frame rate of approximately 60 Hz, 72 Hz, or 75 Hz when combined with the base layer;

(B) optionally, at least one high resolution enhancement layer comprising an encoded bitstream having relatively high resolution and a frame rate selected from one of approximately 24 Hz, 36 Hz, and 37.5 Hz;

(C) optionally, at least one high resolution temporal enhancement layer comprising an encoded bitstream having relatively high resolution and a frame rate selected to achieve a final frame rate of approximately 60 Hz, 72 Hz, or 75 Hz when combined with the high resolution enhancement layers.

5,852,566

APPARATUS FOR REDUCING QUANTIZATION DISTORTION

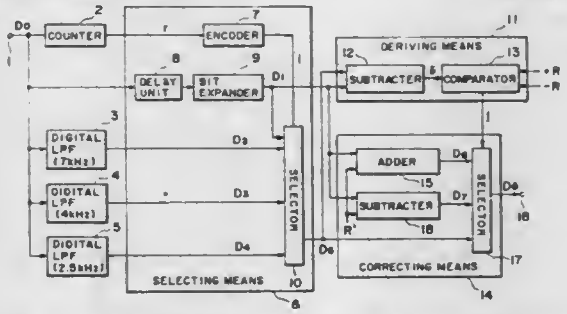
Toshio Iwata, Sagamihara, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Sep. 13, 1996, Ser. No. 712,557

Claims priority, application Japan, Sep. 29, 1995, 7-276698

Int. Cl.^{6} G06F *17/10;7/38;17/15*

U.S. Cl. 364—724.1 **18 Claims**



12. An apparatus for reducing quantization distortion, comprising:

a digital filter for picking up the low frequency components of an input digital signal having a frequency of a predetermined cut-off frequency or lower while expanding downward the bit length of the input digital signal so as to obtain an output digital signal having the expanded bit length;

counter means for counting the number of consecutive samples having a same quantized level before and after each sample point of the input digital signal;

selecting means for selecting and outputting, in accordance with the count value of said counting means, the input digital signal whose bit length was expanded downward, for the sections having the count value of a predetermined value or smaller, or a signal passed through said digital filter, for the sections having the count value of a predetermined value or larger; and

correcting means for detecting a discontinuous point contained in the output of said selecting means and making the detected discontinuous point continuous.

5,852,567

ITERATIVE TIME-FREQUENCY DOMAIN TRANSFORM METHOD FOR FILTERING TIME-VARYING, NONSTATIONARY WIDE BAND SIGNALS IN NOISE

Xiang-Gen Xia, Westlake Village, Calif., and Shie Qian, Austin, Tex., assignors to Hughes Electronics Corporation, El Segundo, Calif., and National Instruments Corporation, Austin, Tex.

Filed Jul. 31, 1996, Ser. No. 695,321

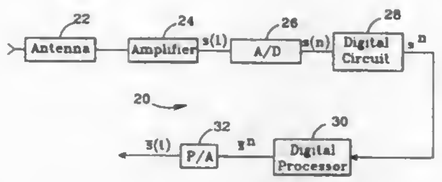
Int. Cl.^{6} G06F *15/31;* **G01R** *23/16*

U.S. Cl. 364—725.01 **17 Claims**

1. A method for filtering time-varying nonstationary wideband signals, comprising:

a) protecting a noisy time-varying nonstationary wideband signal s onto a time-frequency (TF) plane so that the noise is spread over the TF plane and the signal information is concentrated in a local area of the TF plane;

b) masking the TF plane to reject the noise that lies outside the local area;



c) generating an estimated signal s_{k+1} from the signal information and the noise in the local area;

d) repeating steps a, b, and c until the estimated signal S_{k+1} converges to a limit signal $\bar{s}$; and

e) extracting the limit signal $\bar{s}$ as an estimate of the signal information in the noisy signal s,

said method further comprising:

f) selecting a class of TF domain transforms for filtering the signals; and

g) selecting a pair of transform and inverse transform matrices from the selected class, said signal s being multiplied by the transform matrix to project the signal onto the TF plane, and the masked signal information and noise in the local area being multiplied by the inverse transform matrix to generate the estimated signal s_{k+1},

wherein the pair of transform and inverse transform matrices are selected by:

h) selecting a candidate pair of transform and inverse transform matrices;

i) iterating steps a,b and c on a test signal t having a known information content and noise until an estimated test signal t_{k+1} converges to a test limit signal $\bar{t}$;

j) when the signal $\bar{t}$ approximates the known information content, selecting the candidate pair of transform and inverse transform matrices for application to the noisy time-varying nonstationary wideband signals s, and otherwise repeating steps h and i.

5,852,568
SYSTEM AND METHOD FOR A FAST CARRY/SUM SELECT ADDER

Nalini Ranjan, Sunnyvale, Calif., assignor to S3 Incorporated, Santa Clara, Calif.

Filed Jan. 27, 1997, Ser. No. 788,391

Int. Cl.^{6} G06F *7/50*

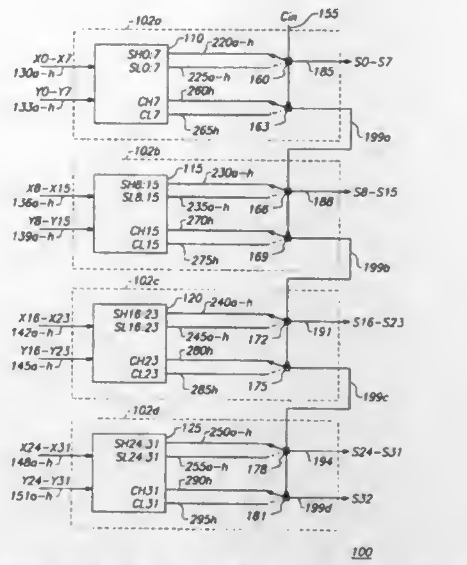
U.S. Cl. 364—788 **9 Claims**

1. An adder having at least one adder circuit block, each adder circuit block comprising:

a first n-bit input line for inputting first n-bit input signal and a second n-bit input line for inputting a second n-bit input signal;

a conditional carry-select circuit, having a first (n−1-bit carry-high signal line and a second (n−1)-bit carry-low signal line and having a 1-bit carry-high signal line and a 1-bit carry-low signal line, the conditional carry-select circuit disposed to receive the first n-bit input signal line and the second n-bit input signal line, the conditional carry-select circuit for producing a carry-out signal from an adder circuit block; and

a conditional sum-select circuit, having an n-bit high-sum line and an n-bit low-sum line, and disposed to receive the first n-bit input line, the second n-bit input line, the (n−1)-bit carry-high line, and the (n−1)-bit carry-low line, the conditional sum-select circuit for adding the first n-bit input signal and the second n-bit input signal and producing an n-bit output signal representing a least significant digit of the added n-bit input signals and one of the (n−1)-bit carry-high line or the (n−1)-bit carry-low line.



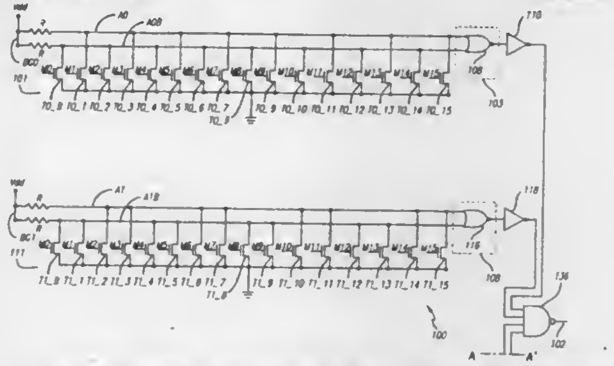
5,852,569
CONTENT ADDRESSABLE MEMORY MULTIPLE MATCH DETECTION CIRCUIT

Varadarajan Srinivasan, Los Altos Hills; Sandeep Khanna, Santa Clara; Sanjay V. Gala, and Ketan K. Mehta, both of Sunnyvale, all of Calif., assignors to Quality Semiconductor, Inc., Santa Clara, Calif.

Filed May 20, 1997, Ser. No. 858,997

Int. Cl.^{6} G11C *15/00*

U.S. Cl. 365—49 **17 Claims**


10
108
110
101
103
108
ML0 ML1 ML2 ML3 ML4 ML5 ML6 ML7 ML8 ML9 ML10 ML11 ML12 ML13 ML14 ML15
T0_0 T0_1 T0_2 T0_3 T0_4 T0_5 T0_6 T0_7 T0_8 T0_9 T0_10 T0_11 T0_12 T0_13 T0_14 T0_15
11
118
111
116
108
T1_0 T1_1 T1_2 T1_3 T1_4 T1_5 T1_6 T1_7 T1_8 T1_9 T1_10 T1_11 T1_12 T1_13 T1_14 T1_15
136
100
102
A
A'

1. A multiple match detection circuit for use with a content addressable memory having a plurality of match lines, said multiple match detection circuit for detecting whether two or more match lines are simultaneously active, comprising:

at least one bus group having a plurality of members;

a plurality of encoding circuits, each encoding circuit for coupling to a one of the match lines, each encoding circuit being coupled to each of said bus groups for activating a single member of said bus group responsive to the activation of its associated match line;

at least one bus group detection circuit, each bus group detection circuit corresponding to a one of said bus groups and coupled thereto, said bus group detection circuit having an output which is active when more than one of said members of said one bus group is active;

a logical OR circuit coupled to said bus group detection circuits, said logical OR circuit having an output which is active when at least one of said outputs of said bus group detection circuits is active;

wherein each of said encoding circuits activates a unique set of members responsive to the activation of its associated match line;

whereby the output of said logical OR circuit is active when more than one match line is active.

5,852,570
SEMICONDUCTOR MEMORY USING SELECT TRANSISTORS COUPLED TO SUB-BITLINES FROM DIFFERENT BLOCKS

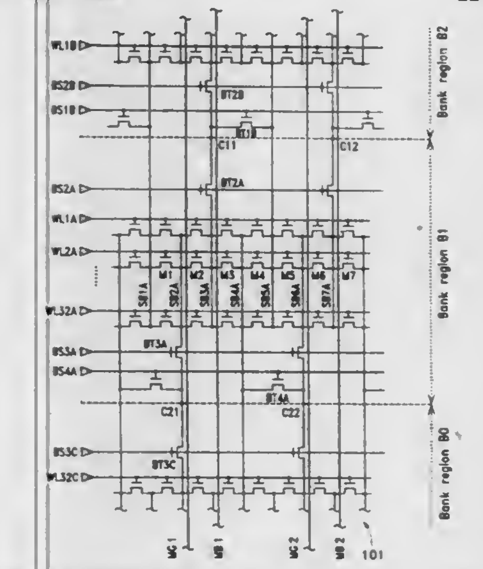
Yasuhiro Hotta, Nara; Takeshi Nojima, Tenri, and Koji Komatsu, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 30, 1997, Ser. No. 866,498

Claims priority, application Japan, Jun. 11, 1996, 8-149615

Int. Cl.^{6} G11C *17/00*

U.S. Cl. 365—104 **22 Claims**



1. A semiconductor memory device comprising: a semiconductor substrate; a first block; a second block adjacent to the first block; a main bitline; a first auxiliary conductive region; a first select transistor; and a first select line,

wherein the first block comprises:

a first memory transistor having a first electrode, a second electrode and a gate electrode;

a first sub-bitline including a part functioning as the first electrode of the first memory transistor;

a second sub-bitline including a part functioning as the second electrode of the first memory transistor; and

a first word line including a part functioning as the gate electrode of the first memory transistor,

while the second block comprises:

a second memory transistor having a third electrode, a fourth electrode and a gate electrode;

a third sub-bitline including a part functioning as the third electrode of the second memory transistor;

a fourth sub-bitline including a part functioning as the fourth electrode of the second memory transistor; and

a second word line including a part functioning as the gate electrode of the second memory transistor,

and wherein the main bitline is electrically connected to the first auxiliary conductive region,

the second sub-bitline and the fourth sub-bitline are electrically connected to each other, thereby forming a common bitline, and

the first select transistor electrically connects selectively the electrically connected second and fourth sub-bitlines to the first auxiliary conductive region depending upon a potential on the first select line.

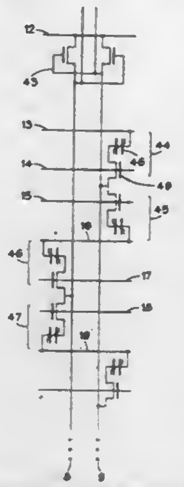
5,852,571
NONVOLATILE FERROELECTRIC MEMORY WITH FOLDED BIT LINE ARCHITECTURE

Wayne I. Kinney, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 14, 1997, Ser. No. 818,042

Int. Cl.^{6} G11C *11/22*

U.S. Cl. 365—145 **21 Claims**



1. A ferroelectric memory device having a folded bit line architecture, comprising:

a selectable upper even memory cell, coupled to an upper even bit line;

a first sense amplifier having a first input and a second input;

control circuitry operable to couple an upper odd bit line to a lower odd bit line at the first input of the first sense amplifier, to couple the upper even bit line to the second input of the first sense amplifier, and to isolate a lower even bit line form the second input of the first sense amplifier, wherein the sum of the length of the upper odd bit line and the length of the lower odd bit line equals substantially twice the length of the upper even bit line; and

a selectable lower odd reference cell coupled to the lower odd bit line.

5,852,572
SMALL-SIZED STATIC RANDOM ACCESS MEMORY CELL

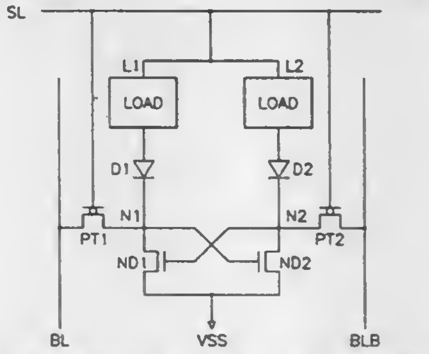
Soon-moon Jung, Seongnam, and Yun-seung Shin, Seoul, both of Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 5, 1997, Ser. No. 906,270

Claims priority, application Rep. of Korea, Dec. 4, 1996, 96/61659

Int. Cl.^{6} G11C *11/34*

U.S. Cl. 365—154 **21 Claims**



1. A static random access memory (SRAM) cell, comprising:

a single line for receiving both a word and a power supply voltage;

a first load element connected between the single line and a first storage node;

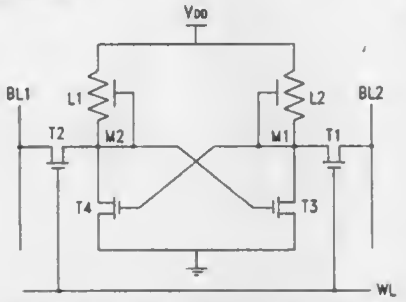
a second load element connected between the single line and a second storage node;
a first NMOS driver transistor connected between the first storage node and ground;
a second NMOS driver transistor connected between the second storage node and ground;
a first PMOS access transistor connected between the first storage node and a bit line, the first PMOS transistor having a gate connected to the single line; and
a second PMOS access transistor connected between the second storage node and a complementary bit line, the second PMOS transistor having a gate connected to the single line.

5,852,573
POLYLOAD SRAM MEMORY CELL WITH LOW STANBY CURRENT

Ching-Nan Yang, Chutung Chen, and Li-Chun Peng, Chung Ho, both of Taiwan, assignors to Mosel Vitelic Inc., Hsinchu, Taiwan

Filed Oct. 8, 1997, Ser. No. 946,827
Int. Cl.⁶ G11C *11/00*

U.S. Cl. 365—154 **19 Claims**



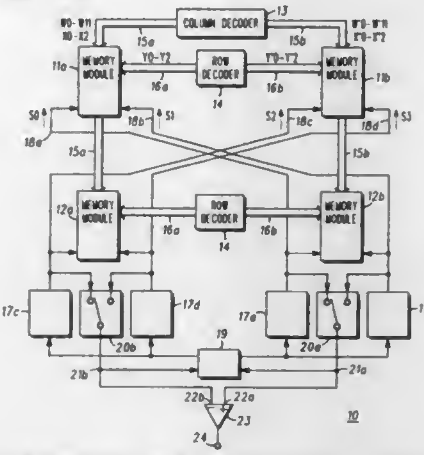
1. A static random access memory cell formed on a semiconductor substrate, said memory cell comprising:
a first inverter;
a second inverter cross-coupled to said first inverter to form a storage element;
a first load device, coupled to said first inverter, for pulling-up said first inverter to a power source;
a second load device, coupled to said second inverter, for pulling-up said second inverter to the power source;
a first access transistor coupled to an output port of said first inverter, so that stored data in the storage element is selectively communicated to a first bitline via said first access transistor, said selective communication through said first access transistor being controlled by a wordline; and
a second access transistor coupled to an output port of said second inverter, so that stored data in the storage element is selectively communicated to a second bitline via said second access transistor, said selective communication through said second access transistor being controlled by the wordline,
wherein said first load device is placed over said second inverter with substantial overlapping therebetween, when an input of said second inverter is at a low potential, a depletion region is generated between overlapped said first load device and said second inverter, obstructing movement of electrons in said first load device, thereby increasing resistance of said first load device and decreasing a standby current of said first load device, and
said second load device is placed over said first inverter with substantial overlapping therebetween, when an input of said first inverter is at a low potential, a depletion region is generated between overlapped said second load device and said first inverter, obstructing movement of electrons in said second load device, thereby increasing resistance of said second load device and decreasing a standby current of said second load device.

5,852,574
HIGH DENSITY MAGNETORESISTIVE RANDOM ACCESS MEMORY DEVICE AND OPERATING METHOD THEREOF

Peter K. Naji, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1997, Ser. No. 998,366
Int. Cl.⁶ G11C *11/00*

U.S. Cl. 365—158 **23 Claims**



1. A magnetoresistive random access memory module comprising:
memory units being arranged in rows and columns, each of the memory units having a plurality of magnetic memory cells;
a plurality of row lines, each row line being coupled to memory units lined in the row;
a plurality of column lines, each column line being coupled to memory units lined in the column; and
a plurality of second switches, each second switch being coupled to the row line to activate the memory units lined in the row.

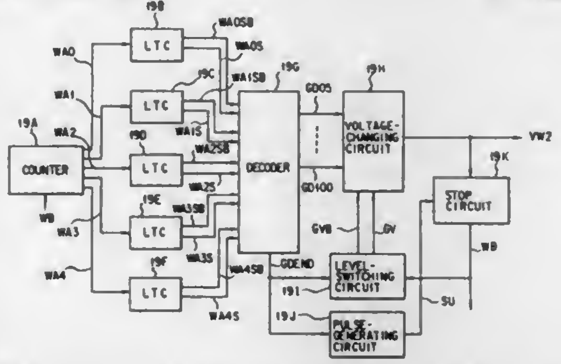
5,852,575
APPARATUS AND METHOD FOR READING MULTI-LEVEL DATA STORED IN A SEMICONDUCTOR MEMORY

Nobutake Sugiura, Yokohama; Hideo Kato, and Yoshio Mochizuki, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 572,830, Dec. 4, 1995, abandoned, which is a continuation of Ser. No. 272,682, Jul. 8, 1994, Pat. No. 5,457,650. This application Mar. 18, 1997, Ser. No. 819,052

Claims priority, application Japan, Jul. 12, 1993, 5-193876
Int. Cl.⁶ G11C *11/34*

U.S. Cl. 365—184 **27 Claims**



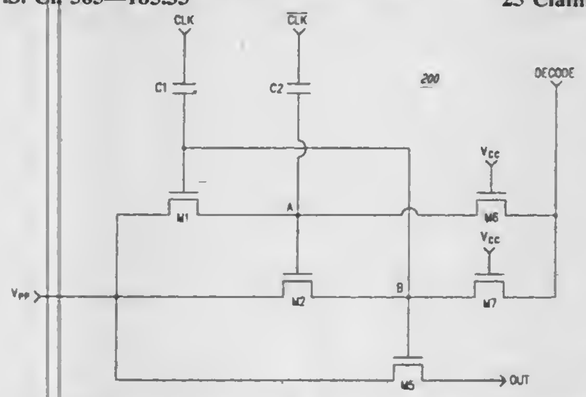
17. A method of reading multi-level data stored in at least two of a plurality of memory cells by selecting a word line and at least two bit lines, said method comprising the steps of:
applying a first potential to the selected word line to sequentially detect current flowing through at least two memory cells, which are connected to the word line, with a sense amplifier, and latching a first signal output from the sense amplifier in a first latch circuit;
applying a second potential higher than the first potential to the selected word line to sequentially detect current flowing through said at least two memory cells, and latching a second signal output from the sense amplifier in a second latch circuit;
applying a third potential higher than the second potential to the selected word line to sequentially detect current flowing through said at least two memory cells, and latching a third signal output from the sense amplifier in a third latch circuit; and
generating digital data from the first, second, and third signals latched in said first, second, and third latch circuits,
wherein the sense amplifier detects the current flowing through said at least one memory cell using one sense level, and outputs the first, second, and third signals.

5,852,576
HIGH VOLTAGE NMOS PASS GATE FOR INTEGRATED CIRCUIT WITH HIGH VOLTAGE GENERATOR AND FLASH NON-VOLATILE MEMORY DEVICE HAVING THE PASS GATE

Binh Quang Le, Mountain View; Pau-Ling Chen, Saratoga; Shane Charles Hollmer, San Jose; Shoichi Kawamura, Sunnyvale; Michael Shingche Chung, San Jose; Vincent C. Leung, Mountain View, and Masaru Yano, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif., and Fujitsu Limited, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 808,237, Feb. 28, 1997. This application Oct. 6, 1997, Ser. No. 944,904
Int. Cl.⁶ G11C *13/00*

U.S. Cl. 365—185.33 **25 Claims**



17. A flash erasable non-volatile memory having a high voltage switch, comprising:
a plurality of floating gate memory cells each having a control gate;
a word line coupled to the control gates of the plurality of floating gate memory cells;
a first NMOS boost transistor having a source, a drain, and a gate;
a second NMOS boost transistor having a source, a drain, and a gate;
a first NMOS coupling capacitor having first and second terminals;
a second NMOS coupling capacitor having first and second terminals;
an NMOS pass transistor having a source, a drain, and a gate;
a first NMOS regulation transistor having a source, a drain, and a gate;
a second NMOS regulation transistor having a source, a drain, and a gate;
a first NMOS discharge transistor having a source, a drain, and a gate; and
a second NMOS discharge transistor having a source, a drain, and a gate;
wherein the first NMOS boost transistor drain is connected to the second NMOS boost transistor gate and the second coupling capacitor second terminal;
wherein the second NMOS boost transistor drain is connected to the first NMOS boost transistor gate, the first coupling capacitor second terminal, and the pass transistor gate;
wherein the high voltage switch input is coupled to the NMOS pass transistor source, the first NMOS boost transistor source, and the second NMOS boost transistor source;
wherein the first NMOS coupling capacitor first terminal is connected to a first clock input, and the second NMOS coupling capacitor first terminal is connected to a second clock input;
wherein the NMOS pass transistor drain is connected to the word line;
wherein the first NMOS regulation transistor source and gate are connected to the first NMOS boost transistor drain;
wherein the second NMOS regulation transistor source and gate are connected to the second NMOS boost transistor drain;
wherein the high voltage switch input is connected to the first NMOS regulation transistor drain and the second NMOS regulation transistor drain;
wherein the first NMOS discharge transistor source is connected to the first NMOS boost transistor drain; and
wherein the second NMOS discharge transistor source is connected to the second NMOS boost transistor drain.

5,852,577
ELECTRICALLY ERASABLE AND PROGRAMMABLE READ-ONLY MEMORY HAVING A SMALL UNIT FOR PROGRAM AND ERASE

Sohrab Kianian, Los Altos, and Dana Lee, Santa Clara, both of Calif., assignors to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Filed May 5, 1998, Ser. No. 73,104
Int. Cl.⁶ Q11C *13/00*

U.S. Cl. 365—185.23 **14 Claims**

1. In an array of non-volatile floating gate memory cells arranged in a plurality of rows and columns with each cell of the type having a first region, a spaced apart second region, with a channel region therebetween, a floating gate disposed over and insulated from a portion of said channel region and from a portion of said second region, an electrically conductive control gate having a first section disposed over and insulated from said first region and disposed adjacent to said floating gate and insulated therefrom and a second section disposed over said floating gate and insulated therefrom, said array comprising:
a plurality of column lines, each column line connect to the first region of memory cells arranged in a column;
a plurality of word lines, each word line for connecting to the control gate of memory cells in a row;
a common line for connecting to the second region of the memory cells in said array;
a plurality of first transistor means interposed in each row for connecting the second regions of the memory cells arranged in each row to the common line, each of said plurality of first transistor means having an associated first portion of memory cells in each row;
means for activating one of said plurality of first transistor means to program the memory cells of the associated first portion.

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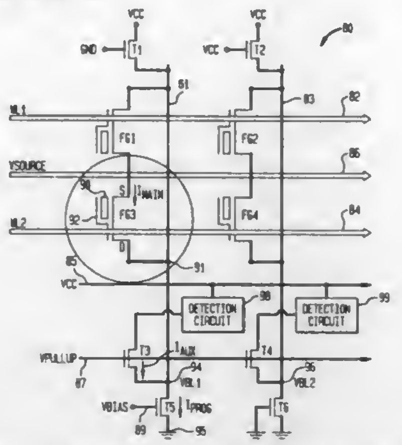
5,852,578
FLASH CELL HAVING SELF-TIMED PROGRAMMING

Loc B. Hoang, 5253 Rooster Dr., San Jose, Calif. 95136

Filed Jun. 17, 1997, Ser. No. 877,038

Int. Cl.^{6} G11C *16/00*

U.S. Cl. 365—185.28 11 Claims



1. A cell grid having a plurality of cells, at least one of which being selected for programming, each of said cells having a source, a drain, a floating gate and a control gate, comprising:

at least one bit line connected to the drain of corresponding said cells, wherein one of said at least one bit line is selected and connected to said drain of said selected cell·

at least one write line connected to the control gate of corresponding said cells, wherein one of said at least one write line is selected and supplies a main voltage source for maintaining said selected cell in an on-state during programming of said selected cell;

at least one source line connected to the source of corresponding said cells wherein one of said at least one source line is selected and supplies a voltage required for programming of said selected cell and being a main current source to the selected bit line during programming of said selected cell;

at least one auxiliary transistor, each coupled to a corresponding said at least one bit line, wherein one of said at least one auxiliary transistor being an auxiliary current source to the selected bit line and maintaining the remaining non-selected cells on the selected bit line in said off-state during programming of said selected cell;

at least one biasing transistor, each coupled to a corresponding said at least one bit line, wherein one of said at least one biasing transistor is selected for providing a constant current sink, coupled to the selected bit line, during programming of said selected cell; and

at least one detection circuit, each coupled to a corresponding said at least one auxiliary transistor, for detecting when said programming is complete by detecting a current source change between said main current source and said auxiliary current source over time to the selected constant current sink, coupled to the selected bit line, during programming of said selected cell.

5,852,579
METHOD AND CIRCUIT FOR PREVENTING AND/OR INHIBITING CONTENTION IN A SYSTEM EMPLOYING A RANDOM ACCESS MEMORY

Mathew R. Arcoleo, San Jose; Raymond M. Leong, Los Altos; Derek Johnson, San Gatos, all of Calif., and Jonathan F. Churchill, Berkshire, United Kingdom, assignors to Cypress Semiconductor Corporation, San Jose, Calif.

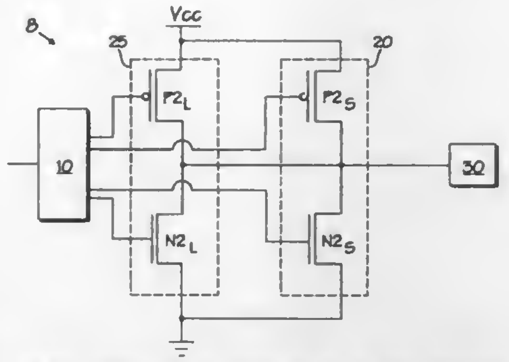
Filed Jun. 19, 1997, Ser. No. 878,904

Int. Cl.^{6} G11C *7/00;* H03K *19/003*

U.S. Cl. 365—189.05 19 Claims

1. A Static Random Access Memory (SRAM) comprising:

an input/output pin; and



driver means coupled to the input/output pin and configured to drive the input/output pin to a voltage potential using a first current, and further configured to (a) hold the input/output pin at approximately the voltage potential using a second current and (b) deactivate the first current after the input/output pin is at approximately the voltage potential.

5,852,580
REPAIR FUSE CIRCUIT IN A FLASH MEMORY DEVICE

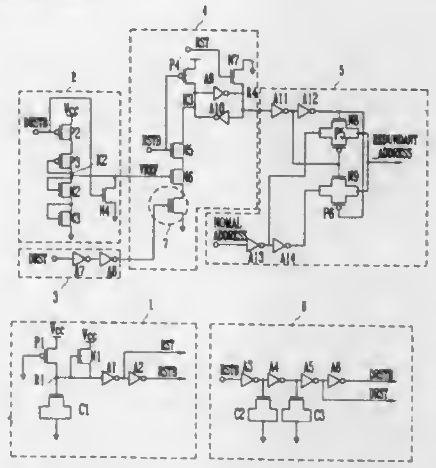
Chang Wan Ha, Kyungki-Do, Rep. of Korea, assignor to Hyundal Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 29, 1997, Ser. No. 999,350

Claims priority, application Rep. of Korea, Dec. 28, 1996, 1996 74984

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—200 2 Claims



1. A repair fuse circuit in a flash memory device, comprising;

a power-on reset circuit to generate first and second control signals in response to a reset pulse which is generated upon power-on;

a delay circuit to generate third and fourth control signals which are delayed according to said first control signal;

a gate voltage control circuit to generate a fifth control signal which is delayed according to said third control signal;

a reference voltage generating circuit to generate a reference voltage in response to said fourth control signal;

a fuse cell sensing and latching circuit to latch a data stored on a fuse cell in response to said fifth control signal, wherein said fuse cell sensing and latching circuit is initialized by said first and second control signals before the data is latched; and

an address compare circuit to generate a redundant address by comparing an output of said fuse cell sensing and latching circuit with a normal address.

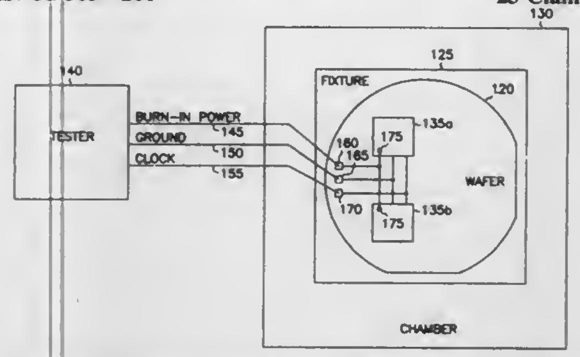
5,852,581
METHOD OF STRESS TESTING MEMORY INTEGRATED CIRCUITS

Ray Beffa; Leland R. Nevill, both of Boise; Warren M. Farnworth, Nampa; Eugene H. Cloud, and William K. Wailer, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 13, 1996, Ser. No. 663,515

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—201 23 Claims



1. A method of stress testing a memory integrated circuit die, the method comprising:

supplying a burn-in power supply voltage and a ground voltage to each memory die of a plurality of memory die on a semiconductor wafer;

providing the burn-in power supply voltage to a cell plate common node of a memory cell storage capacitor;

providing the ground voltage to at least one bit line of a plurality of bit lines; and

turning on a cell access transistor between the bit line and a storage node of the memory cell storage capacitor, thereby allowing conduction between the bit line and the storage node of the memory cell storage capacitor, wherein turning on the cell access transistor comprises turning on alternating word lines of a word line sequence, wherein a particular word line controls a plurality of cell access transistors and turns on each cell access transistor of the plurality of cell access transistors in response to a voltage applied to the particular word line;

providing the ground voltage to the common cell plate of the memory cell storage capacitor; and

providing the burn-in power supply voltage to at least one bit line of the plurality of bit lines.

5,852,582
NON-VOLATILE STORAGE DEVICE REFRESH TIME DETECTOR

Lee E. Cleveland, Santa Clara; Yuan Tang, San Jose; Jonathan Su, Sunnyvale; Chi Chang, Redwood City, and Chung K. Chang, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 18, 1997, Ser. No. 801,305

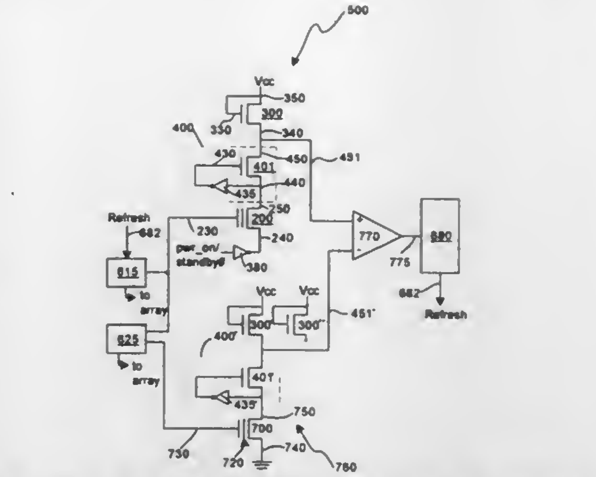
Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—222 27 Claims

1. A timing apparatus, comprising:

a programmable semiconductor device, wherein said device is programmed by the addition of charge;

a discharge detector, in electrical communication with said programmable semiconductor device, to detect when the amount of charge on said programmable semiconductor device has diminished to at most a threshold amount; and



an output, in electrical communication with said discharge detector, for carrying a signal indicative of whether a second programmable semiconductor device needs to be refreshed.

5,852,583
SEMICONDUCTOR MEMORY DEVICE THAT CAN REALIZE HIGH SPEED DATA READ OUT

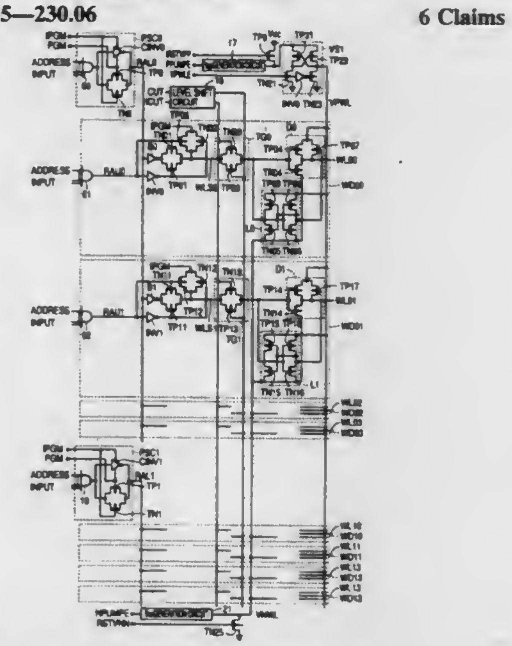
Yasuhiko Taito; Shinji Kawai; Shinichi Kobayashi, all of Hyogo; Akinori Matsuo, and Masashi Wada, both of Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1997, Ser. No. 848,391

Claims priority, application Japan, May 10, 1996, 8-116427

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—230.06 6 Claims



1. A semiconductor memory device comprising:

a plurality of word lines,

a plurality of word line drive means for selectively driving said word lines, each provided corresponding to each of said word lines, and

predecode signal generation means responsive to a first address for generating a predecode signal and supplying said predecode signal to said word line drive means,

wherein each of said word line drive means comprises

buffer means for receiving and buffering said predecode signal,

select signal output means responsive to a second address for providing said predecode signal from said buffer means as a select signal,

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latch means connected to said select signal output means for latching said select signal,

a word line driver connected to said select signal output means, and responsive to said select signal for selectively activating said word lines,

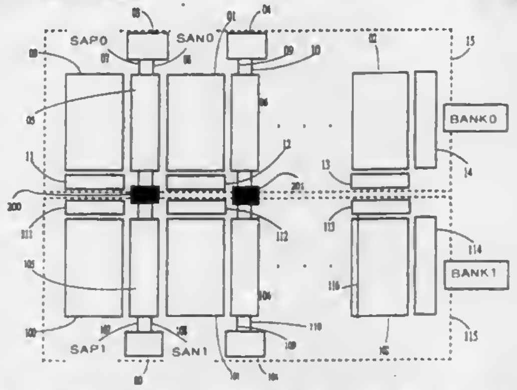
first voltage supply means for supplying a first voltage to said word line driver, and

disconnection means for disconnecting said latch means and said word line driver from said select signal output means.

5,852,584
DYNAMIC RANDOM ACCESS MEMORY OF A PLURALITY OF BANKS EXHIBITING HIGH SPEED ACTIVATION OPERATION OF SENSE AMPLIFIER

Minari Arai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 11, 1997, Ser. No. 907,948
Claims priority, application Japan, Aug. 9, 1996, 8-211018
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—230.03 12 Claims



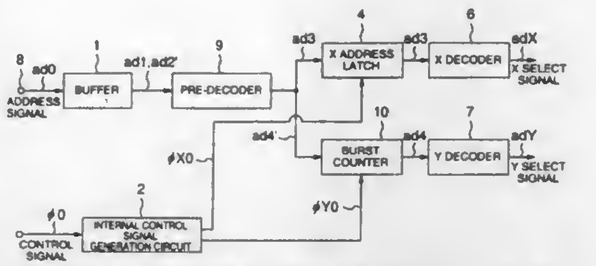
1. A connection control circuit for providing an electrical connection between a pair of sense amplifiers respectively provided in adjacent two banks in a dynamic random access memory device having a plurality of said banks, each of said sense amplifiers being connected to a sense amplifier driver circuit for supplying a sense amplifier activation signal to said sense amplifier so as to activate said sense amplifier,

wherein said connection control circuit operates to make said paired sense amplifiers electrically conductive to each other so that charges are supplied from first one of said paired sense amplifiers through said connection control circuit to second one of said paired sense amplifiers whereby said second one of said paired sense amplifiers is activated not only by said sense amplifier driver circuit but also with said charges supplied through said connection control circuit from said first one of said paired sense amplifiers, provided that said connection control circuit connects said pair of said sense amplifiers when said bank having said first one of said paired sense amplifiers has been previously selected and said bank having said second one of said paired sense amplifiers is currently selected.

5,852,585
ADDRESSING UNIT

Atsuo Koshizuka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed May 29, 1997, Ser. No. 864,924
Claims priority, application Japan, May 31, 1996, 8-161064
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—230.08 4 Claims



1. An addressing unit comprising:

a pre-decoder for sequentially receiving a first address signal and a second address signal, and for sequentially pre-decoding a plurality of address data included in the first address signal and pre-decoding a first one of a plurality of address data included in the second address signal;

an address latch circuit for latching said plurality of address data included in the pre-decoded first address signal;

a burst counter for latching the first one of said plurality of address data included in the pre-decoded second address signal and sequentially shifting the latched address data to generate a plurality of address data;

a control signal generating circuit for generating a first control signal for controlling timing to latch the pre-decoded first address signal and a second control signal for controlling timing to latch the pre-decoded second address signal, and for supplying the first and second control signals to said address latch circuit and said burst counter respectively;

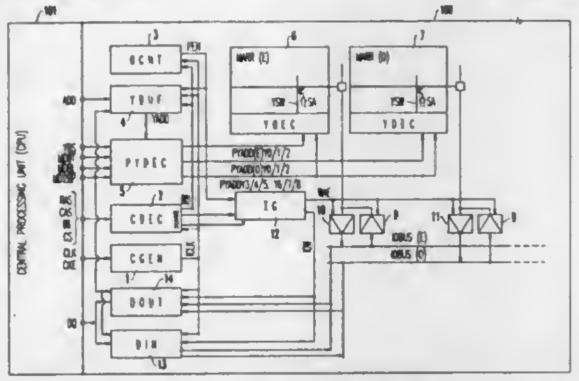
a first address decoder for decoding said plurality of address data output from said address latch circuit; and

a second address decoder for decoding said plurality of address data generated by said burst counter.

5,852,586
SINGLE-CHIP SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY (DRAM) SYSTEM INCLUDING FIRST ADDRESS GENERATOR OPERABLE IN FIRST AND SECOND MODES

Mamoru Fujita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 10, 1997, Ser. No. 891,193
Claims priority, application Japan, Jul. 22, 1996, 8-192245
Int. Cl.^{6} G11C *8/00*
U.S. Cl. 365—233 20 Claims



1. A synchronous dynamic random access memory (DRAM) system, comprising:

first and second DRAM cell arrays; and

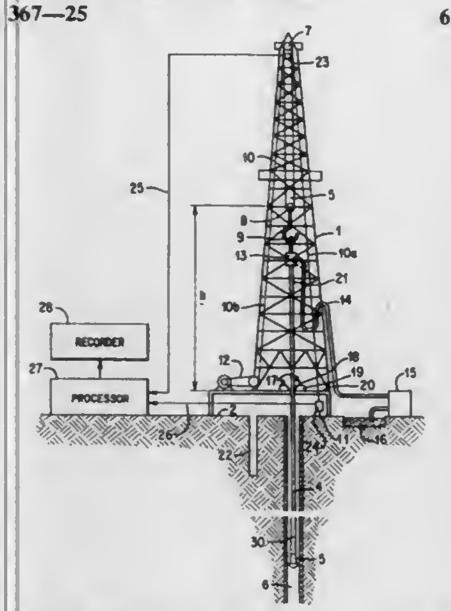
a first address generator for outputting a first address and a second address respectively to said first and second DRAM cell arrays simultaneously in a first mode, and for outputting said first address and said second address respectively to said first and second DRAM cell arrays sequentially in a second mode,

said first mode and said second mode depending upon a type of central processing unit (CPU) being provided externally to said DRAM system for operating said DRAM system.

5,852,587
METHOD OF AND APPARATUS FOR SONIC LOGGING WHILE DRILLING A BOREHOLE TRAVERSING AN EARTH FORMATION

Sergio Kostek; Shu-Kong Chang, both of Redding, Conn.; Gordon McDaniel, Houston, Tex.; Thomas Plona, New Milford, Conn., and Curtis Randall, Missouri City, Tex., assignors to Schlumberger Technology Corporation, Sugar Land, Tex.

Continuation-in-part of Ser. No. 548,169, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 288,742, Dec. 22, 1988, abandoned. This application Feb. 20, 1992, Ser. No. 839,969
Int. Cl.^{6} G01V *1/40*
U.S. Cl. 367—25 67 Claims



1. Method for determining characteristics of formations traversed by a borehole in which borehole a hollow cylindrical drill string is positioned comprising the steps of:

connecting to one segment of said drill string an elongated hollow drill collar so as to position said drill collar in said borehole; said drill collar being made of a material having a given acoustic transmission characteristic;

emitting at a first location on said drill collar an acoustic signal;

receiving, at a given frequency, at a second location on said drill collar a first direct arrival acoustic signal transmitted through said drill collar in response to the emission of said acoustic signal;

receiving, at said given frequency, at said second location on said drill collar a second direct arrival acoustic signal transmitted through a portion of said formations surrounding said drill collar in response to the emission of said acoustic signal; the arrival time at said second location of said first direct arrival acoustic signal being substantially the same as the arrival time at said second location of said second direct arrival acoustic signal;

wherein said frequency is selected by determining a natural stop band for said drill collar so that by positioning said emission of said acoustic signal on said drill collar the energy of said first direct arrival acoustic signal is reduced;

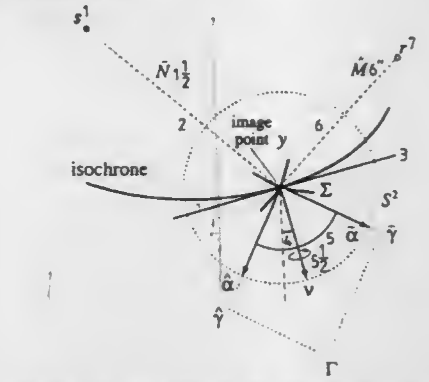
effecting at a third location on said drill collar intermediate said first and second locations, a change in the acoustic transmission characteristic of said drill collar material so that by effecting said change and the emission of said acoustic signal the energy of said first direct arrival acoustic signal is additionally reduced; and

effecting the emission of said acoustic signal in a manner that enhances the coupling of the emitted acoustic energy to the formations relative to the coupling of the emitted acoustic energy to the drill collar.

5,852,588
METHOD OF PROCESSING SEISMIC DATA

Maarten de Hoop, Golden, Colo.; Robert Burridge, Ridgefield, Conn., and Carl Peter Spencer, Great Abington, United Kingdom, assignors to Schlumberger Technology Corporation, Sugar Land, Tex.

Division of Ser. No. 499,584, Jul. 7, 1995, Pat. No. 5,677,893.
This application May 12, 1997, Ser. No. 854,425
Claims priority, application United Kingdom, Jul. 7, 1994, 9413659; Sep. 6, 1995, 9511786
Int. Cl.^{6} G01L *1/28*
U.S. Cl. 367—38 15 Claims



1. A method for determining the anisotropic properties of an unknown earth formation by means of seismic exploration, comprising the steps of:

generating seismic signals for propagation through said unknown formation,

detecting a range of seismic data samples generated by the propagation of said signals through said unknown formation, said detected samples being affected by the anisotropic properties of the unknown formation,

selecting, for said unknown formation, a group of postulated anisotropic properties which would cause known perturbations in seismic signals,

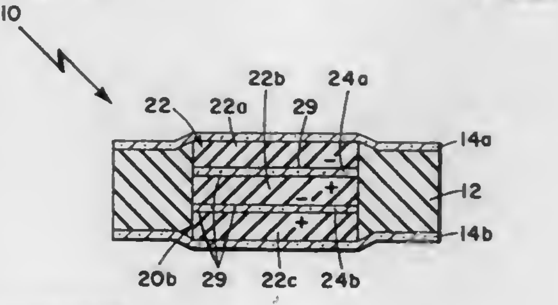
comparing the detected range of seismic data samples from the unknown earth formation with estimated ranges that could have been produced by seismic signals propagating through earth formations made up with differing weighting of components of the postulated anisotropic properties, and

identifying the estimated range that best matches the detected range, and attributing the related weighted components of the postulated anisotropic properties to said unknown earth formation.

5,852,589
LOW COST COMPOSITE TRANSDUCER

David T. Wilson, Billerica, and Roger H. Tancrell, Cambridge, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 19, 1990, Ser. No. 570,832
Int. Cl.^{6} H04R *17/00*
U.S. Cl. 367—157 30 Claims



1. In combination:

a layer comprising a piezoelectric material having a first predetermined Young's Modulus and a pair of in-plane, mutually

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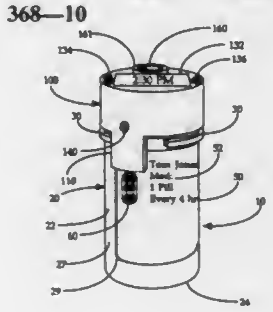
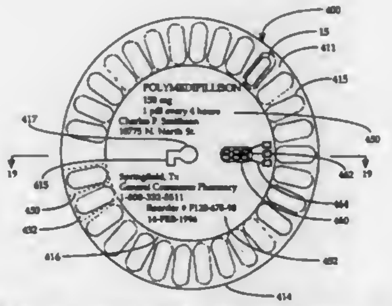
orthogonal directions in a plane parallel to major opposing surfaces of said layer with said material having a first resistance characteristic to tensional forces applied along a first direction, and a second, lower resistance characteristic to tensional forces applied along a second, orthogonal direction;
means for concentrating onto the piezoelectric material strains derived from forces applied to the concentrating means, said means including a pair of layers of an elastomer material having a second, relatively small Young's Modulus with respect to the Young's Modulus of the piezoelectric material with said layers of small Young's Modulus material with said layers of small Young's Modulus material being disposed over the opposing major surfaces of said layer of piezoelectric material, and means for preventing expansion of said piezoelectric layer along said second, orthogonal direction while permitting expansion of said layer along said first direction.

5,852,590
INTERACTIVE LABEL FOR MEDICATION CONTAINERS AND DISPENSERS

Carlos de la Huerga, 9190 N. Upper River Rd., River Hills, Wis. 53217

Filed Mar. 28, 1997, Ser. No. 832,613
Int. Cl.⁶ G04B *37/00*
U.S. Cl. 368—10 **60 Claims**



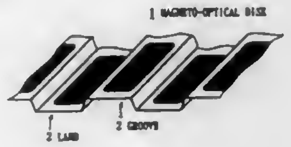


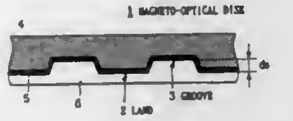
1. A medication container for containing doses of medication, said medication container comprising:
a first piece having inside and outside surfaces, said inside surface defining a compartment, and said compartment containing the medication;
a machine readable and writable, memory strip containing prescribed dosing regimen information for the medication, said memory strip being secured to said first piece in a predetermined location;
a second piece adapted for removable securement to said first piece, said second piece having a sensor positioned to communicate with said memory strip when said second piece is secured to said first piece, said second piece having a computer processor, a timing device and a communication device, said timing device, communication device and sensor being in electrical communication with said computer processor, said prescribed dosing regimen information in said memory strip being transmitted to said computer processor when said first piece is secured to said second piece, said computer processor using said prescribed dosing regimen information and said timing device to develop a predetermined time to take the medication, and said computer processor communicating said predetermined time to said communication device; and
wherein movement of said second piece causes a disruption in said communication to said computer processor, said timing device obtaining disruption time information corresponding to said movement of said second piece, and said disruption time information being recorded in said memory strip.

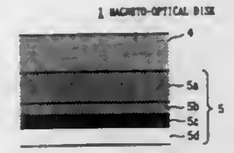
5,852,591
MAGNETO-OPTICAL RECORDING MEDIUM AND HEAD UNIT FOR A MAGNETO-OPTICAL RECORDING MEDIUM

Atsushi Fukumoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
PCT No. PCT/JP95/00743, § 371 Date Dec. 2, 1996, § 102(e) Date Dec. 2, 1996, PCT Pub. No. WO95/29483, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 17, 1995, Ser. No. 564,371
Claims priority, application Japan, Apr. 23, 1994, 6-107651
Int. Cl.⁶ G11B *11/00*
U.S. Cl. 369—13 **3 Claims**







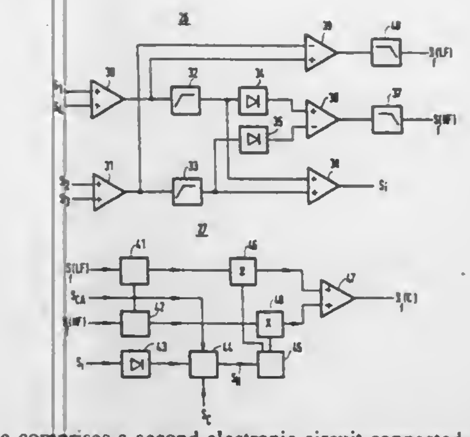
1. A magneto-optical recording medium comprising:
a substrate formed from material having light transmittivity; and
a magneto-optical recording film provided on one surface of said substrate;
wherein in said one surface of said substrate where said magneto-optical recording film is provided, when a wavelength of a light beam, irradiated on said magneto-optical recording medium, is λ, there are formed grooves having an optical depth where its lower limit is λ/8 and its upper limit is λ/4, and said magneto-optical recording film is formed so that the Kerr ellipticity thereof becomes 0°.

5,852,592
DEVICE FOR SCANNING AN OPTICALLY READABLE RECORD CARRIER

Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1996, Ser. No. 764,192
Claims priority, application European Pat. Off., Dec. 27, 1995, 95203643
Int. Cl.⁶ G11B *7/09*
U.S. Cl. 369—44.35 **21 Claims**

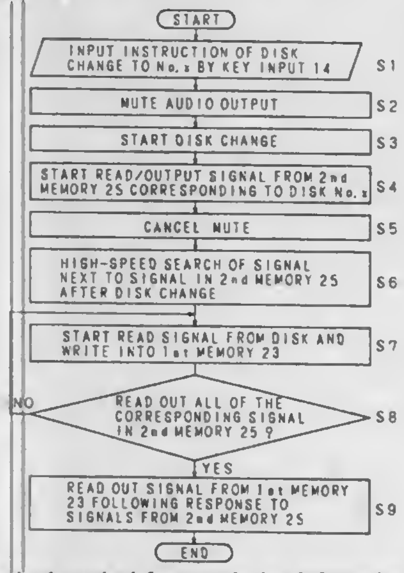
1. A device for optically scanning an information layer on which information is stored, which device comprises: a radiation source, an objective system for converging radiation emitted by the radiation source onto the information layer, a radiation-sensitive detection system arranged in the path of a radiation beam from the information layer and providing detector signals, a first electronic circuit for forming a first focus error signal and a second focus error signal from the detector signals, characterized in that the



device comprises a second electronic circuit connected to the first electronic circuit for receiving the first focus error signal and the second focus error signal, which second electronic circuit forms a combined focus error signal from a combination of the first focus error signal and the second focus error signal, such that the weights of the first and second focus error signals in the combined focus error signal gradually change as the longitudinal position of the objective lens changes with respect to the information layer.

5,852,593
REPRODUCTION APPARATUS AND METHOD FOR SUCCESSIVELY PLAYING BACK INFORMATION FROM A PLURALITY OF RECORDING MEDIA

Masayuki Ishida; Kazuhito Endo; Manabu Tsukamoto; Nobuaki Hirai, and Yoshinobu Ishida, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan
Division of Ser. No. 47,272, Apr. 19, 1993, Pat. No. 5,680,379.
This application Jul. 11, 1997, Ser. No. 890,799
Claims priority, application Japan, Apr. 20, 1992, 4-99648; May 6, 1992, 4-113474; Jul. 3, 1992, 4-176901
Int. Cl.⁶ G11B *7/00*
U.S. Cl. 369—54 **16 Claims**

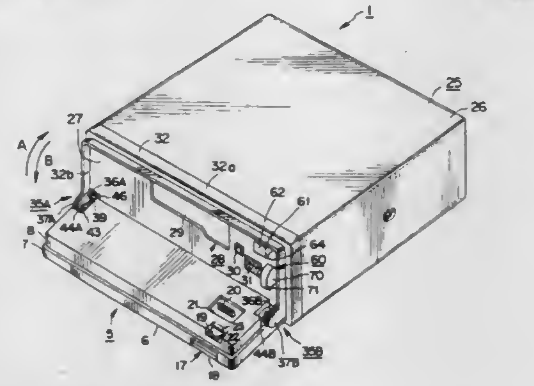

START
INPUT INSTRUCTION OF DISK CHANGE TO No. x BY KEY INPUT 14
S1
MUTE AUDIO OUTPUT
S2
START DISK CHANGE
S3
START READ/OUTPUT SIGNAL FROM 2nd MEMORY 25 CORRESPONDING TO DISK No. x
S4
CANCEL MUTE
S5
HIGH-SPEED SEARCH OF SIGNAL NEXT TO SIGNAL IN 2nd MEMORY 25 AFTER DISK CHANGE
S6
START READ SIGNAL FROM DISK AND WRITE INTO 1st MEMORY 23
S7
NO
READ OUT ALL OF THE CORRESPONDING SIGNAL IN 2nd MEMORY 25 ?
S8
YES
READ OUT SIGNAL FROM 1st MEMORY 23 FOLLOWING RESPONSE TO SIGNALS FROM 2nd MEMORY 25
S9
END

1. A playback method for reproducing information from a plurality of recording media comprising the steps of:
pre-reproducing information from a limited portion of each of the plurality of recording media;
pre-storing the pre-reproduced information from the limited portion of each of the plurality of recording media in auxiliary memory;
determining which of the plurality of recording media has been selected for playback;
reading the pre-stored information from the auxiliary memory corresponding to the selected recording medium;
reproducing information from the selected recording medium which immediately follows the pre-stored information for that recording medium while pre-stored information from auxiliary memory is being read;
storing information resulting from said reproducing step in primary memory; and
reading out reproduced information from primary memory after the pre-stored information for the selected medium has been read from auxiliary memory.

5,852,594
ELECTRONIC EQUIPMENT AND RECORDING AND/OR REPRODUCING APPARATUS FOR RECORDING MEDIUM

Kazuhito Kaise; Masahiro Higuchi; Kenji Sasaki, and Tsunenori Sato, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 769,539
Claims priority, application Japan, Dec. 29, 1995, 7-352639
Int. Cl.⁶ G11B *33/02;5/016*
U.S. Cl. 369—75.1 **8 Claims**



1. An electronic apparatus comprising:
a main apparatus portion;
a front panel having an operating unit including at least an operating switch, said front panel being arranged on the front side of said main apparatus portion; and
a supporting mechanism for rotatably supporting said front panel relative to said main apparatus portion, wherein said front panel is rotable about an axis of rotation, said supporting mechanism supporting said front panel for rotation between a position parallel to the front surface of the main apparatus portion and a position rotated from the front surface of the main apparatus portion, said supporting mechanism including:
a shaft provided in one of the front panel and the main apparatus portion and a bearing mounted in the other of the front panel and the main apparatus portion, one of the shaft and the bearing being slidably mounted to move parallel to the axis of rotation, wherein the front panel is removed from the main apparatus portion when the slidably mounted shaft or bearing is moved away from the other of the shaft or bearing so that the shaft and bearing are disengaged from one another;
a gear provided on one of the main apparatus portion and the front panel and a buffer mechanism provided on the other of the main apparatus portion and the front panel, the buffer mechanism being engaged with said gear for slowing a rotational speed of the gear; and
biasing means for biasing said bearing in the direction of the rotational axis toward the shaft, whereby the bearing and shaft are normally engaged with one another, said biasing means having the gear formed thereon.

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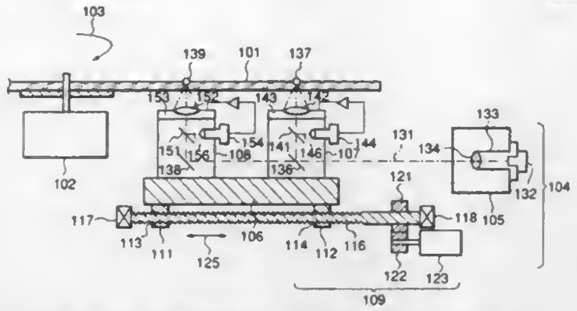
5,852,595
DEVICE FOR INITIALIZING AN OPTICAL DISC

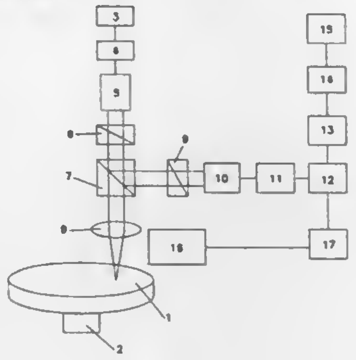
Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 25, 1997, Ser. No. 845,788
Claims priority, application Japan, Apr. 26, 1996, 8-107610
Int. Cl.^{6} G11B *7/00*
U.S. Cl. 369—116 **7 Claims**

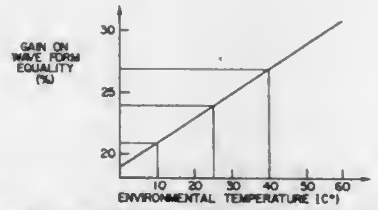


1. A device for initializing an optical disc, comprising:
- a plurality of erasing beam irradiating means for irradiating an erasing beam onto a plurality of tracks at different positions on the optical disc simultaneously to erase information written in said plurality of tracks at once;
- moving means for moving said plurality of erasing beam irradiating means in a radius direction of the optical disc under a condition where erasing beams irradiated from said plurality of erasing beam irradiating means are irradiated onto the optical disc at given intervals; and
- control means for controlling said moving means to move said plurality of erasing beam irradiating means by a plurality of tracks.

5,852,596
ADJUSTING A DETECTED SIGNAL WITH A WAVE FORM EQUALIZER BASED UPON ENVIRONMENTAL TEMPERATURE OR HEAT CHARACTERISTIC OF AN OPTICAL DISK

Shinichi Kurita, Yokohama; Hiroyuki Matsumoto; Masashi Horikawa, both of Tokyo, and Koichiro Ishii, Zushi, all of Japan, assignors to Nikon Corporation, Japan
Filed Jun. 14, 1996, Ser. No. 662,668
Claims priority, application Japan, Jun. 15, 1995, 7-149175
Int. Cl.^{6} G11B *11/10*
U.S. Cl. 369—120 **22 Claims**

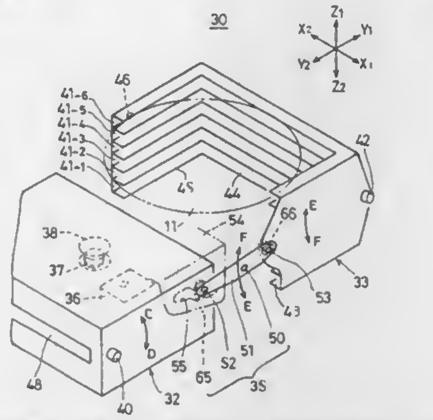




13. A method of adjusting an electrical signal converted from an optical signal for representing user data stored on an optical disk, comprising the steps of:
- a) reading the data from the disk, a portion of the data including a temperature dependent value selected for the disk; and
- b) selectively increasing an amplitude of a high-frequency portion of the electrical signal based upon the temperature dependent value.

5,852,597
RECORDING MEDIUM REPRODUCING APPARATUS ACCOMMODATING A PLURALITY OF RECORDING MEDIA AND HAVING A REDUCED HEIGHT

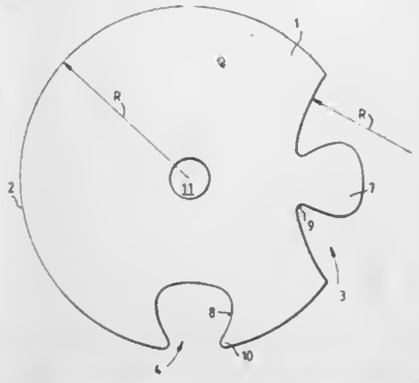
Shinichi Fujisawa, Akiruno, and Takashi Takemoto, Sagamihara, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Feb. 19, 1997, Ser. No. 802,235
Claims priority, application Japan, Feb. 20, 1996, 8-032328; Jun. 3, 1996, 8-140401
Int. Cl.^{6} G11B *17/04;17/22*
U.S. Cl. 369—192 **6 Claims**



1. A recording medium reproducing apparatus for reproducing a selected one of a plurality of recording media accommodated therein, said recording medium reproducing apparatus comprising:
- a recording medium reproducing unit reproducing one of said recording media;
- a recording medium accommodating unit having a plurality of recording medium accommodating sections each accommodating one of said recording media;
- a recording medium conveying mechanism conveying said recording media between said recording medium reproducing unit and said recording medium accommodation unit;
- a recording medium reproducing unit supporting mechanism rotatably supporting said recording medium reproducing unit;
- a recording medium accommodating unit supporting mechanism rotatably supporting said recording medium accommodating unit; and
- a rotating mechanism rotating both said recording medium reproducing unit and said recording medium accommodating unit when said one of said recording medium is conveyed between said recording medium reproducing unit and said recording medium accommodating unit so that said recording medium reproducing unit is substantially aligned with one of said recording medium accommodating sections, said rotating mechanism including a driving unit rotating one of said recording medium reproducing unit and said recording medium accommodating unit, said rotating mechanism further including a link arm having a first end and a second end opposite said first end, said first end engaging said recording medium reproducing unit, said second end engaging said recording medium accommodating unit, said link arm being rotatably supported at a position between said first end and said second end thereof so that one of said recording medium reproducing unit and said recording medium accommodating unit is rotated when the other one of said recording medium reproducing unit and said recording medium accommodating unit is rotated.

5,852,598
DISK-SHAPED SOUND RECORDING MEDIUM, ESPECIALLY CD

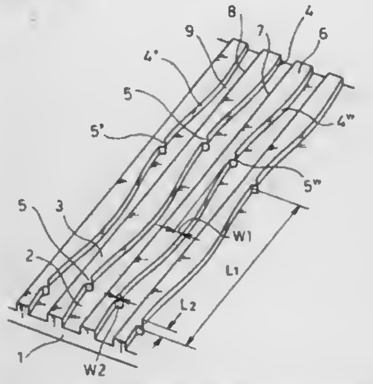
Peter P. Wiest, Hessenallee 8, 14052, Berlin, Germany
Filed Dec. 19, 1996, Ser. No. 770,182
Claims priority, application Germany, Dec. 19, 1995, 295 20 805.8
Int. Cl.^{6} G11B *3/70*
U.S. Cl. 369—272 **19 Claims**



1. A disk-shaped sound recording medium, comprising:
- a disk element with a center and a circular core data storage area, said disk element being provided with a shaped outer contour with a first contour area and a second contour area, said first contour area and said second contour area being shaped mutually complementarily to one another whereby at least two sound recording media are placed together in the plane of the disk in the manner of a jigsaw puzzle.

5,852,599
OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING/REPRODUCING DEVICE, AND MANUFACTURING METHOD OF OPTICAL RECORDING MEDIUM

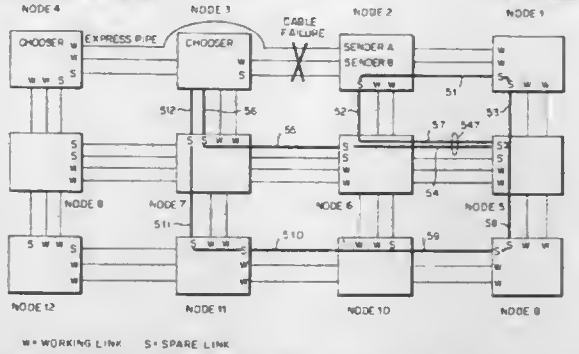
Hiroshi Fuji, Soraku-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 22, 1997, Ser. No. 787,601
Claims priority, application Japan, Jan. 26, 1996, 8-011688
Int. Cl.^{6} G11B *7/24*
U.S. Cl. 369—275.4 **10 Claims**



1. An optical recording medium for recording information into a track, one of the sidewalls of the track wobbling at a predetermined frequency in accordance with either rotation synchronization information or address information, or both,
- the optical recording medium comprising a notch bit of a reference signal generating a recording/reproducing clock, the notch bit being carved and stored on the one of the sidewalls of the track at a different frequency from the wobbling frequency.

5,852,600
SYSTEM AND METHOD FOR RESOLVING SUBSTANTIALLY SIMULTANEOUS BI-DIRECTIONAL REQUESTS OF SPARE CAPACITY

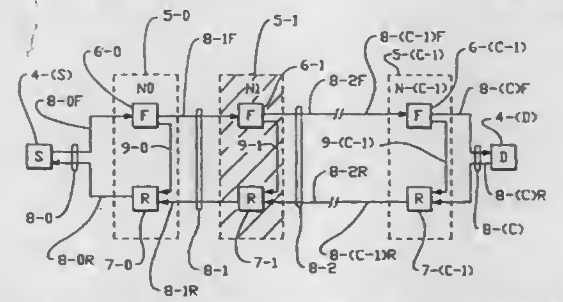
Will Russ, Dallas, Tex., assignor to MCI Communications Corporation, Washington, D.C.
Filed Jun. 7, 1995, Ser. No. 483,578
Int. Cl.^{6} H04B *10/08*
U.S. Cl. 370—228 **26 Claims**



1. A method of arbitrating which of two adjacent nodes of a telecommunications network is entitled to use a spare link for restoring traffic disrupted by a failure of said network if both of said adjacent nodes are contending for said spare link, comprising the steps of:
- a) determining the total time it takes for a signal to traverse along said spare link from one node of said adjacent nodes to an other node of said adjacent nodes;
- b) determining the total time it takes for a signal to traverse along said spare link from said other node to said one node;
- c) deciding said spare link is to be dedicated for the use of said one node if the signal sent out by said one node is determined to have reached said other node before the signal sent out by said other node is received by said one node; and
- d) deciding said spare link is to be dedicated for the use of said other node if the signal sent out by said other node is determined to have reached said one node before the signal sent out by said one node is received by said other node.

5,852,601
METHOD AND APPARATUS FOR REACTIVE CONGESTION CONTROL IN AN ASYNCHRONOUS TRANSFER MODE (ATM) NETWORK

Peter Newman, Mountain View; Willie T. Glover; Gururaj Singh, both of San Jose; Amar Gupta, Cupertino, and Clifford James Buckley, San Jose, all of Calif., assignors to Network Equipment Technologies, Inc., Fremont, Calif.
Continuation of Ser. No. 456,386, Jun. 1, 1995, abandoned, which is a continuation of Ser. No. 116,500, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 756,463, Sep. 9, 1991, abandoned. This application Jun. 9, 1997, Ser. No. 870,755
Int. Cl.^{6} H04J *3/14;3/26*
U.S. Cl. 370—230 **49 Claims**



47. A multiple issue rate source for use in a communication system where the communication system has one or more multiple issue rate sources connected through one or more channels to a plurality of destinations and has control signal generating means

for generating control signals for the channels for reactively controlling the transmission rates over the channels, said multiple issue rate source comprising,

a modifiable issue rate unit having means to transmit information signals at different transmission rates in response to control signals, said issue rate unit having an output for transmitting, for each of one or more channels, at a maximum-channel-peak-cell-rate or at a rate below the maximum-channel-peak-cell-rate as a function of the control signals for each channel and wherein said issue rate unit has means for decreasing said transmission rate exponentially as a function of the control signals.

5,852,602

CREDIT CONTROL METHOD AND SYSTEM FOR ATM COMMUNICATION APPARATUS

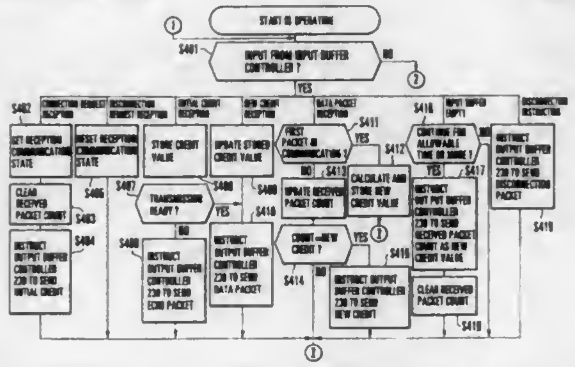
Tsugio Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1997, Ser. No. 787,772

Claims priority, application Japan, Jan. 29, 1996, 8-013184

Int. Cl.^{6} H04J *3/14*

U.S. Cl. 370—231 **11 Claims**



1. A credit control method for an ATM communication apparatus for performing data transfer of a fixed-length packet from a packet sending-side to a packet receiving side by flow control using credit information, comprising:

sending an initial credit value from said packet receiving-side to said packet sending-side prior to transferring a packet;

starting transfer of a packet on said packet sending-side when the initial credit value is received;

calculating a new credit value on said packet receiving-side when the packet is received from said packet sending-side;

receiving and processing the same number of packets as the number indicated by the calculated new credit value on said packet receiving-side;

sending a new credit value from said packet-receiving side to said packet sending side whenever a number of receiving buffers, equal to a number indicated by the preceding new credit values, are emptied;

storing, on said packet-sending side, a value obtained by adding the new credit value to the initial credit value from said packet receiving side, whenever the new credit value is received, as a credit value indicating the number of successively transmittable packets; and

decrementing the stored credit value by one on said packet sending-side whenever a packet is sent and continuously transferring packets until the credit value becomes "0" or there are no more packets to be sent,

wherein the step of calculating the new credit value calculates an integer new credit value Cn on the basis of a condition

$$Ta+Tp\times(Cn-1)<Tp\times Ci$$

where Ta is a time from transmission of the initial credit value from said packet receiving-side to reception of a first packet on said packet-receiving side, Tp is a time required to send one fixed-length packet, and Ci is the initial credit value.

5,852,603

TRANSCEIVER WITH SWITCHABLE FREQUENCY BAND AND BANDWIDTH

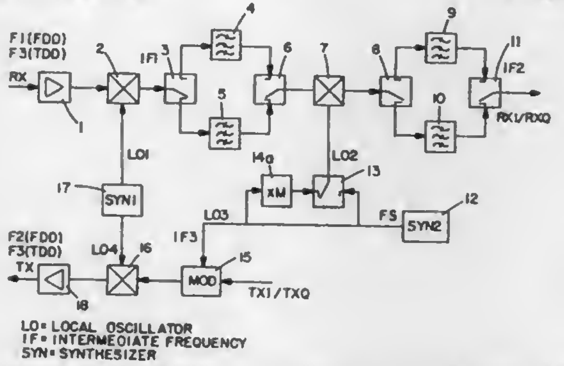
Kari Lehtinen, Salo, and Mikko Pesola, Marynummi, both of Finland, assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Feb. 26, 1997, Ser. No. 806,439

Claims priority, application Finland, Feb. 29, 1996, 960947

Int. Cl.^{6} H04J *3/00*

U.S. Cl. 370—280 **5 Claims**



1. A transceiver, which in a Frequency Division Duplex (FDD) mode of operation receives at a first, reception frequency (F1) in a first frequency band and transmits at a second, transmission frequency (F2) in a second frequency band, and in a Time Division Duplex (TDD) mode of operation receives and transmits at a third frequency (F3) in a third frequency band, said transceiver comprising a receiving branch and a transmitting branch, and further comprising:

in the receiving branch, a first mixer (**2**) for forming a first intermediate frequency (IF1) from a received frequency (F1, f3) and from a first local oscillator frequency (LO1), and a second mixer (**7**) for forming a second intermediate frequency (IF2) from the first intermediate frequency (IF1) and from a second local oscillator frequency (LO2); and

in the transmitting branch, a modulator (**15**) for modulating signals to be transmitted (TXI, TXQ) to a third intermediate frequency (IF3), a third mixer (**16**) for forming a transmission frequency (F2, F3) from the third intermediate frequency (IF3) and from a fourth local oscillator frequency (LO4),

said transceiver further comprising first synthesizer means (**17**) for forming equally high first and fourth local oscillator frequencies (LO1, LO4), second synthesizer means (**12**), and one of a frequency multiplier or divider (**14***a*, **14***b*, **14***c*, **14***d*, **14***e*) and switching means (**13**, **13***e*) for forming and switching a fourth frequency (FS/M, FS) and an M times multiple of the fourth frequency (FS, M*FS),

characterized in that the fourth frequency (FS/M, FS) has a magnitude that is an absolute value of a difference between the reception frequency (F1) and the transmission frequency (F2) of the FDD mode of operation divided by (M−1),

wherein in the FDD mode of operation the fourth frequency (FS/M, FS) is switched to be the third local oscillator frequency (LO3), and said multiple (FS, M*FS) of the fourth frequency is switched to be the second local oscillator frequency (LO2), if the reception frequency (F1) of the FDD mode of operation is higher than the transmission frequency (F2),

wherein the fourth frequency (FS/M, FS) is switched to be the second local oscillator frequency (LO2), and said multiple (FS, M*FS) of the fourth frequency is switched to be the third local oscillator frequency (LO3), if the reception frequency (F1) of the FDD mode of operation is lower than the transmission frequency (F2),

and wherein in the TDD mode of operation either the fourth frequency (FS/M, FS) or said multiple (FS, M*FS) of the fourth frequency is switched to be both the second local oscillator frequency (LO2) and the third local oscillator frequency (LO3).

5,852,604

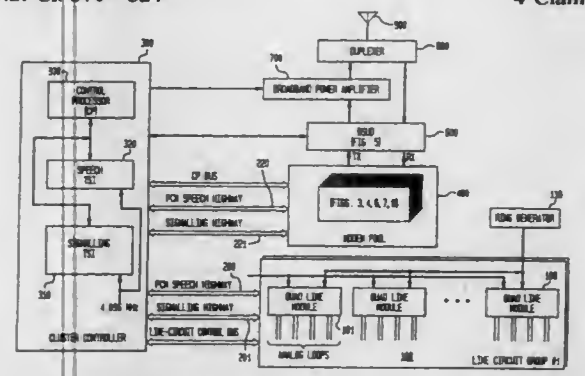
MODULARLY CLUSTERED RADIOTELEPHONE SYSTEM

David M. Cooley, Upper Darby; Joseph J. DiGiovanni, Malvern; John D. Kaewell, Bensalem, all of Pa.; Scott D. Kurtz, Mt. Laurel, N.J.; Mark A. Lemmo, Huntington Valley, Pa.; Michael W. Regensburg, Marlton, N.J.; David Vessal, Narberth, and Eric Johns, Phoenixville, both of Pa., assignors to InterDigital Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 129,444, Sep. 30, 1993, Pat. No. 5,546,383. This application May 20, 1996, Ser. No. 650,491

Int. Cl.^{6} H04J *3/06*

U.S. Cl. 370—324 **4 Claims**



1. A method of minimizing synchronization delay in a radiotelephone system between a modular subscriber cluster communicating with a common base station, the modular subscriber cluster receiving repetitive time slots from the base station and having a plurality of frequency-agile modems, the method comprising the steps of:

synchronizing a selected one of the modems to a selected time slot of the received time slots;

generating a frame sync signal from said selected modem; and

distributing said frame sync signal to remaining ones of the plurality of modems.

5,852,605

MATRIX TIME SWITCH APPARATUS CAPABLE OF PROVIDING CONTROL DATA FROM INLET TIME SWITCHES TO A MATRIX

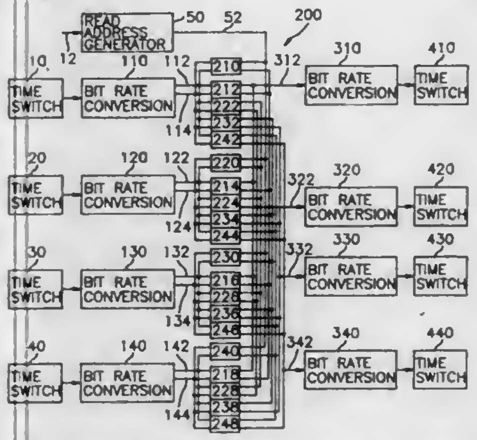
Jae-Peoung Kim, Incheon, Rep. of Korea, assignor to Daewoo Telecom Ltd., Incheon, Rep. of Korea

Filed May 31, 1996, Ser. No. 657,847

Claims priority, application Rep. of Korea, May 31, 1995, 1995-14429

Int. Cl.^{6} H04L *12/02*

U.S. Cl. 370—371 **5 Claims**



1. A matrix time switching apparatus for use in a small capacity switching system, comprising:

a first group of N time switch means, each time switch means producing subscriber data and control data, N being a positive integer greater than 1;

a second group of N time switch means, each time switch means receiving the subscriber data;

a matrix having N memory groups, each memory group having N voice memories, wherein all N voice memories of the ith memory group are coupled to an ith time switch means of the first group to store the subscriber data from the ith time switch means of the first group, i ranging from 1 to N, and the jth voice memory of all N memory groups is coupled to a jth time switch means of the second group to transmit the subscriber data retrieved therefrom, j ranging from 1 to N; and

a set of N control memories, wherein a kth control memory of the N control memories is coupled with a kth time switch means of the first group to store the control data produced from the kth time switch means of the first group and is coupled with the kth voice memory in each of the N memory groups to control the transmission of the subscriber data retrieved therefrom to a kth time switch means of the second group through the use of the control data.

5,852,606

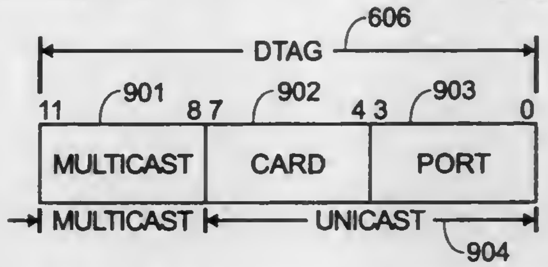
METHOD AND APPARATUS FOR TRANSMITTING CELLS ACROSS AN ATM SWITCH BUS

Jeff Prince, Sunnyvale; Mike Noll, San Jose; Earl Ferguson, Sunnyvale; Bobby Johnson, Menlo Park, and Randy Ryals, San Jose, all of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Continuation of Ser. No. 501,454, Jul. 12, 1995, abandoned. This application Sep. 29, 1995, Ser. No. 536,137

Int. Cl.^{6} H04L *12/56*

U.S. Cl. 370—393 **8 Claims**



1. An apparatus having stored therein a tag coupled to a data cell for specifying a destination of said data cell transmitted on a data bus, said tag comprising:

a module number field to indicate a module coupled to said data bus for receiving said data cell from said data bus;

a port number field to indicate a port coupled to said module for receiving said data cell from said module; and

a multicast group number field to indicate said module and said port for receiving said data cell.

5,852,607

ADDRESSING MECHANISM FOR MULTIPLE LOOK-UP TABLES

Hon Wah Chin, Palo Alto, Calif., assignor to Cisco Technology, Inc., San Jose, Calif.

Filed Feb. 26, 1997, Ser. No. 806,636

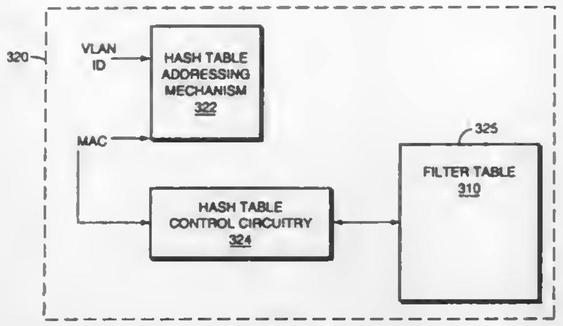
Int. Cl.^{6} H04L *12/56*

U.S. Cl. 370—401 **25 Claims**

1. In a system that includes multiple overlaid look-up tables, a table addressing system including:

A. a processor for producing a first X-bit index based on Y bits of a Y+V–bit identifier, the X-bit index being associated with the selection of a table entry;

B. means for producing a second X-bit index by combining the first X-bit index with V bits that are associated with the remaining V-bits of the Y+V–bit identifier, said means adding


320
VLAN ID
HASH TABLE ADDRESSING MECHANISM 322
MAC
325
FILTER TABLE 310
HASH TABLE CONTROL CIRCUITRY 324

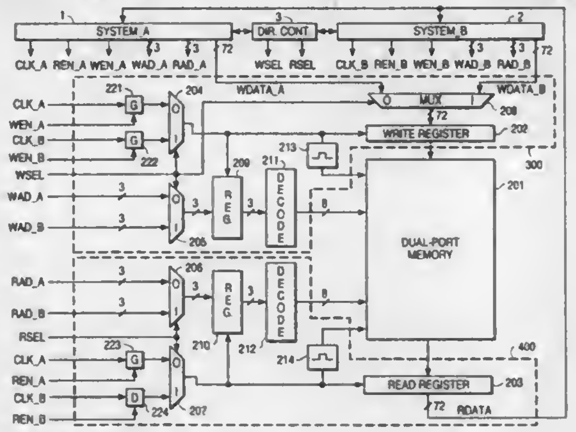
the V bits using modulo 2^Q addition, the second X-bit index being associated with a particular one of the multiple overlaid look-up tables.

5,852,608
STRUCTURE AND METHOD FOR BI-DIRECTIONAL DATA TRANSFER BETWEEN ASYNCHRONOUS CLOCK DOMAINS

Michael A. Csoppenszky, Los Gatos, and Kevin B. Normoyle, Santa Clara, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 6, 1996, Ser. No. 659,729
Int. Cl.^{6} G06F *12/00*

U.S. Cl. 370—465 **12 Claims**



1. An electronic system comprising:

a first system which operates in response to a first clock signal;

a second system which operates in response to a second clock signal, the first clock signal being asynchronous with respect to the second clock signal;

a direction control circuit connected between the first and second systems, the direction control circuit determining whether data transfer between the first and second systems is to occur in a first direction from the first system to the second system or in a second direction from the second system to the first system, the direction control circuit providing one or more direction control signals representative of the direction of data transfer;

a dual-port memory having a write port and a read port;

a write control circuit coupled to the first system, the second system and the direction control circuit, wherein the write control circuit couples the first system to the write port of the dual-port memory when the direction control signals are representative of the first direction of data transfer, and wherein the write control circuit couples the second system to the write port of the dual-port memory when the direction control signals are representative of the second direction of data transfer; and

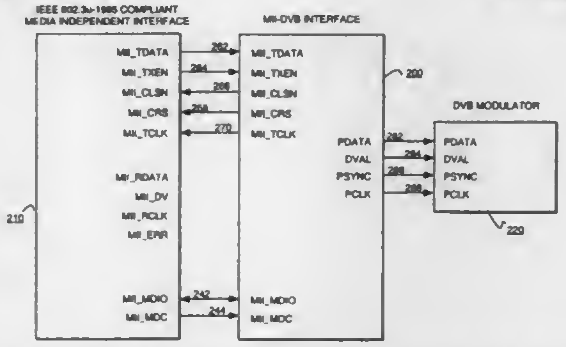
a read control circuit coupled to the first system, the second system and the direction control circuit, wherein the read control circuit couples the second system to the read port of the dual-port memory when the direction control signals are representative of the first direction of data transfer, and wherein the read control circuit couples the first system to the read port of the dual-port memory when the direction control signals are representative of the second direction of data transfer.

5,852,609
METHOD AND APPARATUS FOR INTERFACING A MEDIA INDEPENDENT INTERFACE WITH DVB-COMPLIANT MODULATORS

Lewis E. Adams, III, Phoenix, and Christopher L. Spearman, Tempe, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 11, 1996, Ser. No. 763,414
Int. Cl.^{6} H04J *3/16*

U.S. Cl. 370—465 **9 Claims**



1. A method for interfacing a media independent interface with a Digital Video Broadcast (DVB) compliant modulator, comprising the steps of:

a) receiving nibbles of data from the media independent interface in accordance with a transmit clock signal and a holdoff signal during assertion of a transmit enable signal, wherein the nibbles of data are a portion of a variable sized packet;

b) storing the nibbles of data into a first buffer;

c) disabling the transmit clock signal;

d) shifting the nibbles of data out of the first buffer in accordance with a serial clock signal to provide a first bitstream;

e) framing the first bitstream into a predetermined packet size;

f) asserting the holdoff signal to halt the first bitstream;

g) serially inserting a synchronization indicator into the first bitstream in accordance with the serial clock signal to form a second bitstream;

h) parallelizing the second bitstream to provide parallelized data;

i) synchronously providing the parallelized data and a synchronization signal corresponding to the synchronization indicator in accordance with a parallel clock signal.

5,852,610
REMOTE BROADCAST LISTENING SYSTEM WHICH RECEIVES RADIO/BROADCAST SIGNALS USING RECEIVERS WHICH INCLUDES ANTENNAS AND INTERCONNECTS RECEIVERS TO CUSTOMER TELEPHONES/INTERFACE MEANS

Olajide O. Olaniyan, 7811 Lockney Ave. #201, Takoma Park, Md. 20912

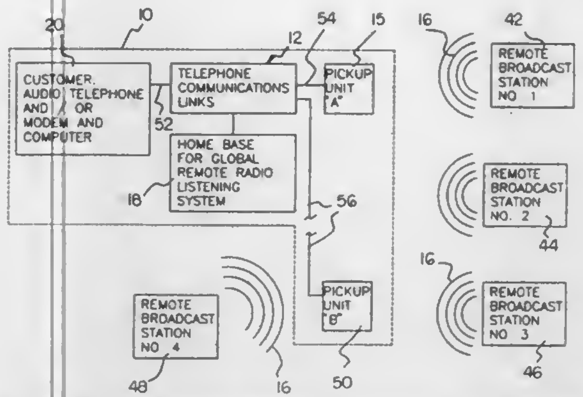
Filed May 15, 1996, Ser. No. 647,829
Int. Cl.^{6} H04H *1/04;* **H04J** *1/00;* **H04N** *1/00*

U.S. Cl. 370—486 **10 Claims**

1. A remote broadcast listening apparatus, comprising:

a telephone communication system,

a plurality of receiver means including antenna means for receiving broadcasts of electromagnetic waves and for converting the received broadcasts into signals transmissible over said telephone communication system, wherein said receiver means are connected to said telephone communication system,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12
CUSTOMER. AUDIO TELEPHONE AND / OR MODEM AND COMPUTER
TELEPHONE COMMUNICATIONS LINKS
PICKUP UNIT "A"
REMOTE BROADCAST STATION NO 1
52
HOME BASE FOR GLOBAL REMOTE RADIO LISTENING SYSTEM
18
56
REMOTE BROADCAST STATION NO. 2
44
16
REMOTE BROADCAST STATION NO 4
PICKUP UNIT "B"
REMOTE BROADCAST STATION NO 3
48
16
50
46

a central station assembly means, connected to said telephone communication system, for receiving telephone-communication-system transmitted signals from said receiver means and for sending control signals to said receiver means by way of said telephone communication system, and

customer interface unit means, connected to said telephone communication system, for accessing said central station assembly means and for receiving signals from said receiver means through said central station assembly means;

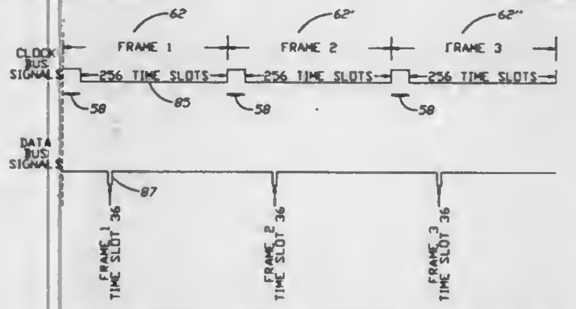
said customer interface unit means including input means for transmitting an input signal designating a specific geographic region to said central station assembly means, said central station assembly means including means responsive to said input signal for interconnecting a selected one of said plurality of receiver means to said customer interface unit means corresponding to said designated specific geographic region, said central station assembly means further including means for presenting a menu of program selectable choices corresponding to different broadcast signals present in said designated specific geographic region to said customer interface unit following receipt of said signal designating a specific geographic region.

5,852,611
MODULE FOR A SERIAL MULTIPLEX DATA INPUT PROTECTION CIRCUIT

Robert E. Riley, Jackson, Miss., assignor to Square D Company, Palatine, Ill.

Division of Ser. No. 305,253, Sep. 13, 1994, Pat. No. 5,553,070. This application Nov. 30, 1995, Ser. No. 565,367
Int. Cl.^{6} H04J *3/00*

U.S. Cl. 370—498 **10 Claims**



1. In a data ink module having an integrated circuit with an data bus terminal for receipt of digital data signals from a data bus, a local input terminal for receipt of input signals from a local input device, and a time division multiplexing address defining one of a plurality of time slots between synchronization pulses, a high voltage protection circuit, comprising:

a switchable breakdown device with an input junction and a pair of transconductive outputs and having a breakdown voltage at which a short is created between the transconductive outputs;

means for connecting one of the transconductive outputs to a data bus susceptible to voltage spikes in excess of the breakdown voltage and detrimental to the integrated circuit if applied to the input;

means for connecting the other transconductive output to a reference potential; and

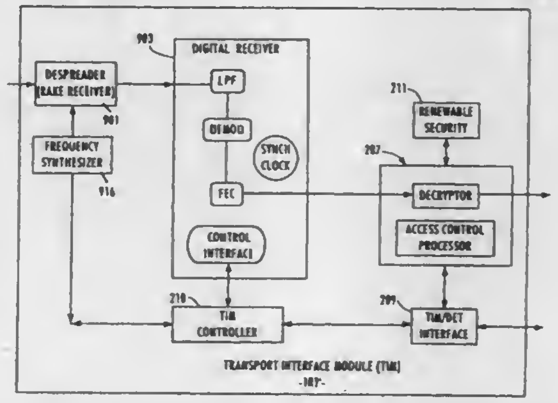
means responsive to the address and to the signals at at least one of the local input terminal and the data bus terminal to provide a drive signal to the input junction of the switchable breakdown device to provide an appropriate data signal on the data bus during the time slot of the address of the data link module, said switchable breakdown device breaking down to protect the integrated circuit from said voltage spikes when not being driven to provide data signals to the data bus.

5,852,612
TERMINAL FOR RECEIVING SIMULCAST DIGITAL VIDEO PROGRAMS

Bruce Kostreski, Wheaton, Md.; Allan Schneider, Falls Church, Va.; Kamran Sistanizadeh, Arlington, Va., and W. Tim Campbell, Alexandria, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 441,976, May 16, 1995, Pat. No. 5,559,808, which is a continuation-in-part of Ser. No. 405,558, Mar. 16, 1995, Pat. No. 5,651,010. This application Nov. 9, 1995, Ser. No. 555,373
Int. Cl.^{6} H04N *5/21*

U.S. Cl. 370—537 **19 Claims**



1. In a reception area having overlapping radio frequency propagation areas generated by corresponding transmitting sites each simulcast transmitting a signal including multiplexed channels of compressed digital broadband data, a method comprising the steps of:

(a) receiving a signal containing a plurality of time offset counterparts of said transmitted simulcast signal at a receiving site within said reception area;

(b) processing said time offset counterparts of the received signal to acquire a single copy of a signal corresponding to a selected one of the multiplexed channels; and

(c) presenting a selected portion of the compressed digital broadband data contained in the acquired single copy;

wherein the transmitted signal is a spread spectrum signal, the processing step comprising the step of spread spectrum processing the received signal in accordance with a selected spread spectrum code to develop a composite signal as said single copy.

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5,852,613

AUTOMOBILE MULTIPLEX COMMUNICATION SYSTEM

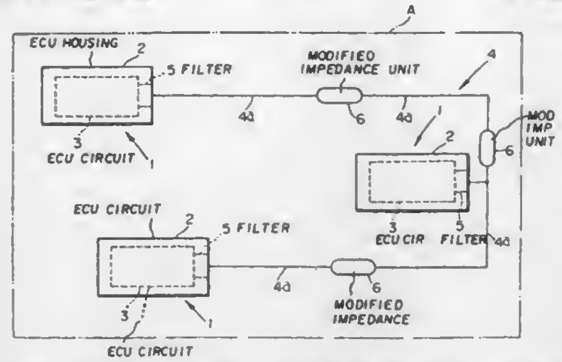
Yuji Nagatani, and Hiroshi Hashimoto, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 633,037

Claims priority, application Japan, Apr. 27, 1995, 7-103876

Int. Cl.^{6} H03H ***7/01***

U.S. Cl. 370—546 **9 Claims**



1. An automobile multiplex communication system, comprising:
a plurality of control units mounted on an automobile;
a communication cable interconnecting said control units for multiplex communications therethrough between said control units, said communication cable having a uniform characteristic impedance and comprising a plurality of communication cable segments; and
a plurality of modified-impedance units each having an impedance different from said uniform characteristic impedance, each of said modified-impedance units being connected between adjacent two of said communication cable segments, said modified-impedance units being positioned in such locations on said communication cable that frequency bands of external noises tuned to said communication cable segments depending on their lengths are higher than a frequency band of a signal transmitted between said control units.

5,852,614

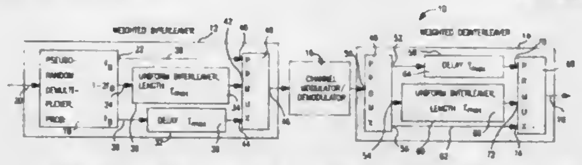
WEIGHTED INTERLEAVING FOR CORRELATED CHANNEL CODING

Scott A. Stephens; Terrence R. Smigla, both of Manhattan Beach, and Donald R. Martin, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 29, 1997, Ser. No. 864,755

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—2.1 **6 Claims**


WEIGHTED INTERLEAVER
WEIGHTED DEINTERLEAVER
PSEUDO-RANDOM DEMULTI-PLEXER
UNIFORM INTERLEAVER LENGTH
DELAY
CHANNEL MODULATOR/DEMODULATOR
DELAY
UNIFORM INTERLEAVER LENGTH
10

1. A method for interleaving a plurality of input data bits with a weighted interleaver matched to correlation statistics of a channel, said method comprising the steps of:
determining an average channel correlation function in time for a channel having an impairment;
determining an interleaver delay distribution function to minimize expected correlation between two consecutive bits based upon knowing the average channel correlation function;
constructing a weighted interleaver modeled from said interleaver delay distribution function;
applying input data bits to said weighted interleaver; and
interleaving said input data bits in said weighted interleaver based upon said interleaver delay distribution function.

5,852,615

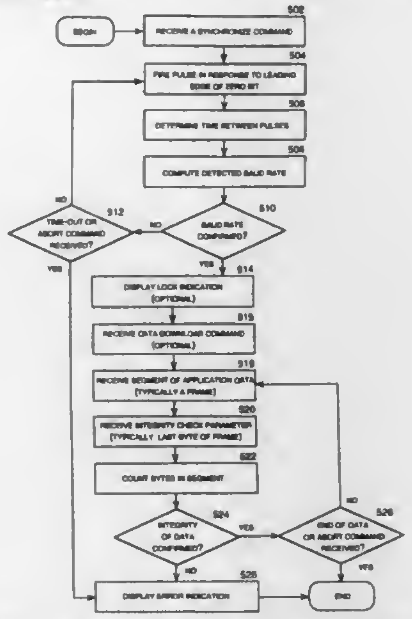
METHOD AND SYSTEM FOR TRANSMITTING DATA FROM A UNIDIRECTIONAL TRANSMITTER TO A RECEIVER

David L. Holo, Kent; Alfred L. Schumer, Redmond, both of Wash., and John Morrow, Fremont, Nebr., assignors to Microsoft Corp., Redmond, Wash.

Filed Dec. 14, 1996, Ser. No. 764,237

Int. Cl.^{6} G01R ***31/28;*** **G06F** ***15/16***

U.S. Cl. 371—20.1 **25 Claims**


BEGIN
RECEIVE A SYNCHRONIZE COMMAND
502
FIRE PULSE IN RESPONSE TO LEADING EDGE OF ZERO BIT
504
DETERMINE TIME BETWEEN PULSES
506
COMPUTE DETECTED BAUD RATE
508
BAUD RATE CONFIRMED?
510
NO
TIME-OUT OR ABORT COMMAND RECEIVED?
512
NO
YES
YES
DISPLAY LOCK INDICATION (OPTIONAL)
514
RECEIVE DATA DOWNLOAD COMMAND (OPTIONAL)
516
RECEIVE SEGMENT OF APPLICATION DATA (TYPICALLY A FRAME)
518
RECEIVE INTEGRITY CHECK PARAMETER (TYPICALLY LAST BYTE OF FRAME)
520
COUNT BYTES IN SEGMENT
522
INTEGRITY OF DATA CONFIRMED?
524
YES
NO
END OF DATA OR ABORT COMMAND RECEIVED?
526
NO
YES
DISPLAY ERROR INDICATION
528
END

1. A method for communicating data between a display device operating as a unidirectional transmitter and a receiver, comprising the steps of:
at the display device,
displaying a plurality of scanline at a selected baud rate for the transmitter, the scan lines defining a synchronization signal for receipt by the receiver; and
at the receiver,
receiving the synchronization signal,
measuring a synchronization parameter from the synchronization signal by determining a time differential between a first scan line and a second scan line of the synchronization signal, and
selecting a baud rate for the receiver based on the synchronization parameter.

5,852,616

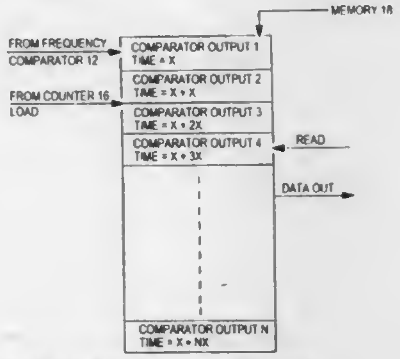
ON-CHIP OPERATING CONDITION RECORDER

James Kubinec, Reno, Nev., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 17, 1997, Ser. No. 971,357

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—21.1 **16 Claims**


MEMORY 18
FROM FREQUENCY COMPARATOR 12
FROM COUNTER 16 LOAD
COMPARATOR OUTPUT 1 TIME = X
COMPARATOR OUTPUT 2 TIME = X + X
COMPARATOR OUTPUT 3 TIME = X + 2X
COMPARATOR OUTPUT 4 TIME = X + 3X
READ
DATA OUT
COMPARATOR OUTPUT N TIME = X + NX

1. A condition recorder system, comprising:

an oscillator located on a chip for generating a signal having a nominal frequency;
a reference clock located off the chip for generating a signal having said nominal frequency;
a comparator having a first input coupled to the oscillator and a second input coupled to the reference clock, for comparing the frequency of the oscillator to the frequency of the reference clock and for generating a value indicating the difference between the oscillator signal and the reference clock; and
a memory coupled to the comparator and having an input for receiving the value from the comparator.

5,852,617

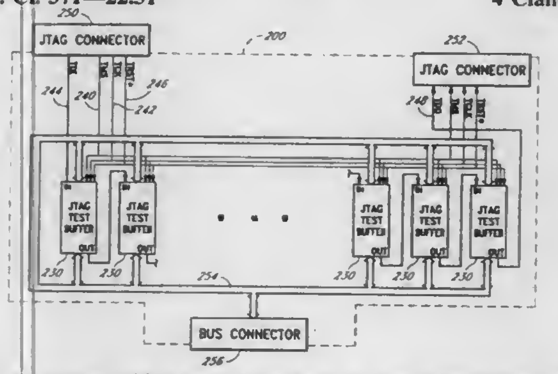
JTAG TESTING OF BUSES USING PLUG-IN CARDS WITH JTAG LOGIC MOUNTED THEREON

L. Randall Mote, Jr., Laguna Hills, Calif., assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 8, 1995, Ser. No. 569,751

Int. Cl.^{6} G01R ***31/28***

U.S. Cl. 371—22.31 **4 Claims**



1. A system which tests a plurality of bus connections that interface with plug-in slots on a motherboard, said system comprising:
said motherboard;
a bus having said plurality of bus connections which interface with said plug-in slots on said motherboard; and
a plug-in test card further comprising:
a boundary scan register;
a first connector portion in communication with said boundary scan register, said first connector portion configured to engage with said plug-in slot to establish communication between said plurality of bus connections and said boundary scan register;
a second connector portion for receiving at least one scan control signal;
a third connector portion coupled to said at least one scan control signal, wherein said third connector portion provides said at least one scan control signal for output; and
boundary scan control circuitry comprising:
a TAP controller coupled to said at least one scan control signal; and
an instruction register.

5,852,618

MULTIPLE BIT TEST PATTERN GENERATOR

Kenichi Fujisaki, Gyoda, Japan, assignor to Advantest Corp., Tokyo, Japan

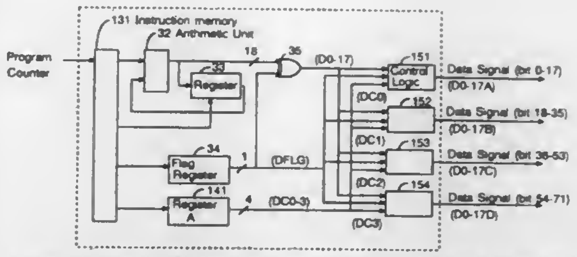
PCT No. PCT/JP96/00036, § 371 Date Sep. 8, 1997, § 102(e) Date Sep. 8, 1997, PCT Pub. No. WO97/25718, PCT Pub. Date Jul. 17, 1997

PCT Filed Dec. 1, 1996, Ser. No. 849,663

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—27.1 **3 Claims**

1. A multiple bit test pattern generator for evaluating a semiconductor device (5) under test having a multiple data bit width, characterized in having:



a data operator (30) having a 1/n width of said data bit width of said device (5) to be tested;
a register A(141) having n bits whose data is established by a control signal from an instruction memory (131); and
n control logic circuits (151, 152, 153, 154) for controlling the passage of the output data of the data operator (30) based on an output signal of said register A(141).

5,852,619

PATTERN GENERATOR CIRCUIT FOR SEMICONDUCTOR TEST SYSTEM

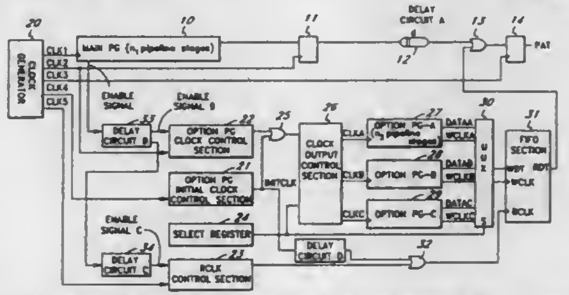
Michio Shimura, Hanyu, Japan, assignor to Advantest Corp., Tokyo, Japan

Continuation of Ser. No. 677,016, Jul. 8, 1996, Pat. No. 5,751,738. This application Dec. 8, 1997, Ser. No. 986,469

Claims priority, application Japan, Jul. 11, 1995, 7-198135

Int. Cl.^{6} G06F ***11/00***

U.S. Cl. 371—27.7 **11 Claims**



1. A pattern generator circuit for a semiconductor test system, comprising:
a clock generator (20) for generating a plurality of clock signals;
a main pattern generator (10) having a predetermined number of pipeline stages for generating a main pattern signal for testing semiconductor devices;
an OR circuit (13) which transmits either said main pattern signal or an optional pattern signal generated by an optional pattern generator (27) for testing said semiconductor devices;
a register (14) which receives an output of said OR circuit (13) in synchronism with a first clock signal (CLK3) from said clock signal generator and generates either said main pattern signal or said optional pattern signal;
an optional PG initial clock controller (21) that generates an initial clock signal (INITCLK) which is synchronous with a second clock signal (CLK4) from said clock generator (20) for initializing said optional pattern generator (27) and a FIFO (First-In First-Out) section (31) by said initial clock signal (INITCLK);
an optional PG clock controller (22) which provides a third clock signal (CLK2) to said optional pattern generator (27) a predetermined time after the start of pattern generation by said main pattern generator (10);
a read clock (RCLK) control section (23) which provides a read clock signal that is synchronous with said first clock (CLK3) from said clock generator (20) a predetermined delay time after said third clock (CLK2) is output by said optional PG clock controller (22);
wherein said optional pattern generator (27) first receives said initial clock signal (INITCLK) from said option PG initial clock controller (21) for initializing an internal state thereof and then receives said third clock signal (CLK2) for generating said optional pattern signal; and

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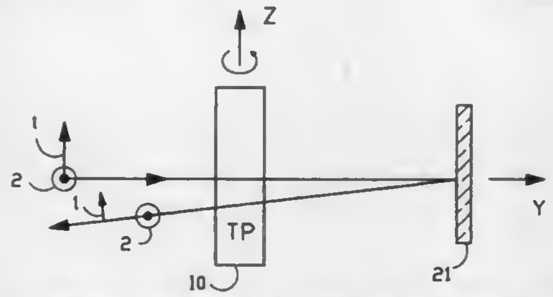
wherein said FIFO section (**31**) receives said optional pattern signal from said optional pattern generator (**27**) and provides said optional pattern signal to said OR circuit in synchronism with said read clock (RCLK).

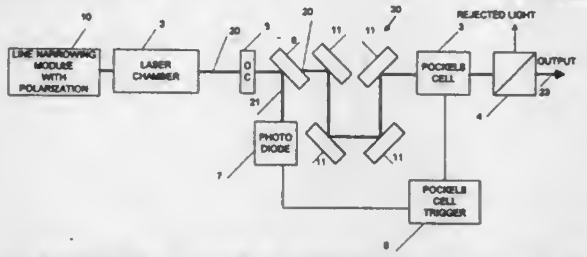
5,852,620
TUNABLE TIME PLATE
Chaozhi Wan, Arcadia, Calif., assignor to Uniwave Technology, Inc., Chatsworth, Calif.
Filed Jan. 16, 1997, Ser. No. 784,767
Int. Cl.^{6} H01G *3/10*
U.S. Cl. 372—22 **20 Claims**



1. An apparatus for providing a continually adjustable time delay between two laser pulses ω_1 and ω_2 which are linearly polarized respectively along the Z-axis and the X-axis, and propagate in a direction along the Y-axis, of a Cartesian coordinate system, the apparatus comprising:

- a. a time plate made of a parallel flat birefringence crystal having a principal axis of refractive index n_z parallel to its surface, a principal axis of refractive index n_y, and a principal axis of refractive index n_x having an angle θ to its surface normal, where n_x is different from n_y and n_z;
- b. said time plate rotatably mounted such that its n_z principal axis coincides with said Z-axis, and it is rotatable about its n_z principal axis for adjusting a time delay between said two laser pulses ω_1 and ω_2 as they travel through said time plate, which time delay is a function of an incident angle θ between said surface normal of said crystal and said propagation direction of said two laser pulses ω_1 and ω_2;
- c. whereby said time delay can be continually adjusted by rotating said time plate to change said incident angle θ.

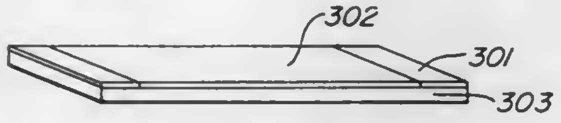
5,852,621
PULSE LASER WITH PULSE ENERGY TRIMMER
Richard L. Sandstrom, Encinitas, Calif., assignor to Cymer, Inc., San Diego, Calif.
Filed Jul. 21, 1997, Ser. No. 897,665
Int. Cl.^{6} H01S *3/10*
U.S. Cl. 372—25 **6 Claims**



1. A pulse laser system for providing precise control of energy output of each individual pulse in a series of pulses in a pulse laser beam, said system comprising:

- A. a pulse laser for producing a pulse laser beam;
- B. a fast pulse detector having response times in the nanosecond or sub-nanosecond range and configured to detect a pre-output pulse energy of each individual pulse in a series of pulses and produce for each said individual pulse in said series of pulses, a signal corresponding to the pre-output pulse energy of said individual pulse, said signal defining a pre-output pulse energy measurement for said individual pulse;
- C. an electro optic switch having response times in the nanosecond or sub-nanosecond range for blocking portions of each pulse in said series of pulses; and
- D. an electro optic switch trigger configured to control said electro optic switch based on said signals from said fast pulse detector, so as to limit the energy output of each individual pulse to approximately a desired energy output based on the pre-output pulse energy measurement of said individual pulse.

5,852,622
SOLID STATE LASERS WITH COMPOSITE CRYSTAL OR GLASS COMPONENTS
Helmuth E. Meissner, and Oliver R. Meissner, both of Pleasanton, Calif., assignors to Onyx Optics, Inc., Dublin, Calif.
Continuation-in-part of Ser. No. 339,147, Nov. 14, 1994, Pat. No. 5,563,899, which is a continuation-in-part of Ser. No. 330,174, Oct. 27, 1994, abandoned, which is a division of Ser. No. 919,374, Jul. 29, 1992, Pat. No. 5,441,803, which is a continuation of Ser. No. 672,251, Mar. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 597,987, Oct. 15, 1990, abandoned, which is a continuation of Ser. No. 446,214, Dec. 5, 1989, abandoned, which is a division of Ser. No. 238,563, Aug. 30, 1988, abandoned. This application Sep. 11, 1996, Ser. No. 713,436
Int. Cl.^{6} H01S *3/14*
U.S. Cl. 372—39 **11 Claims**



1. A solid state laser device, comprising:

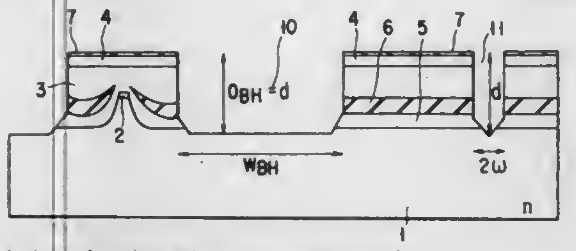
an ionic lasing medium with a surface substantially parallel to an intended direction of propagation of generated laser radiation; and

a non-lasing ionic medium optically contacted to said surface to form an essentially defect free interface, wherein said interface is permanently bonded using an adhesive-free diffusion bonding technique, wherein said non-lasing ionic medium is sapphire with a (0001) crystallographic plane aligned parallel to said surface.

5,852,623
CERIUM ACTIVATED COLQUIRITE LASER CRYSTAL
Vida K. Castillo; Gregory J. Quarles, both of Tarpon Springs; Arlete Cassanho, Palm Harbor, and Wayne R. Ignatuk, Crystal Beach, all of Fla., assignors to VLOC, Incorporated, New Port Richey, Fla.
Filed Oct. 25, 1996, Ser. No. 736,158
Int. Cl.^{6} H01S *3/16*
U.S. Cl. 372—41 **17 Claims**

1. A laser crystal of the composition $M'M''M'''F_6$, wherein each of said M' sites contains a monovalent cation selected from the group consisting of: Li^{1+}, Na^{1+}, K^{1+}, Rb^{1+}, and $C_S{}^{1+}$, C^{1+}, at least one of said M'' sites contains a divalent cation selected from the group consistent of: Be^{2+}, Mg^{2+}, Ca^{2+}, Sr^{2+}, Cd^{2+}, and Ba^{2+}, at least one said M''' sites containing a trivalent cation selected from the group consisting of: B^{3+}, Al^{3+}, Ga^{3+}, Sc^{3+}, and In^{3+}, and wherein said laser crystal is doped with trivalent cerium cations and charge compensating ions selected from the group consisting of: Na^{1+}, K^{1+}, Mg^{2+}, Ba^{2+}, Be^{2+}, Cd^{2+}, and Zn^{2+} so that at least one of said M'' sites contains Ce^{3+}, and one of said M'' and M''' sites adjacent to each M'' site which contains a Ce^{3+} cation contains one of said charge compensating ions.

5,852,624
SEMICONDUCTOR LASER ELEMENT, METHOD OF MANUFACTURING SEMICONDUCTOR LASER ELEMENT, AND LASER DIODE MODULE
Takayuki Matsuyama, Hiratsuka, and Chisato Furukawa, Atsugi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 15, 1996, Ser. No. 632,116
Claims priority, application Japan, May 15, 1995, 7-140022
Int. Cl.^{6} H01S *3/19;* **H01L** *21/20*
U.S. Cl. 372—44 **13 Claims**



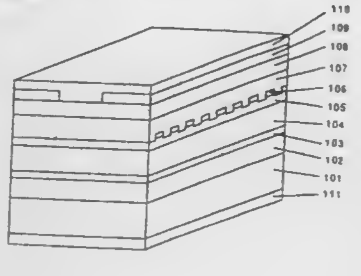
1. A semiconductor laser element comprising:

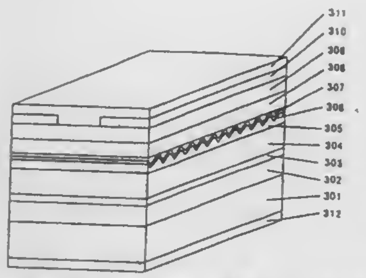
a semiconductor substrate;

a striped active layer on a surface region of a main surface of the semiconductor substrate; and

a plurality of element separation grooves in the striped active layer on the surface region of the main surface of the semiconductor substrate so as to be adjacent to each other at an interval, for separating the semiconductor substrate into individual elements, the element separation grooves having a ratio of (d/2w) of a depth d from the main surface of the semiconductor substrate with respect to twice width w of higher than 1.0, each element separation groove forming a pair of notches when divided.

5,852,625
DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER
Koji Takahashi, Raport Tenri 850, 2613-1, Ichinomoto-cho, Tenri-shi, Nara-ken, Japan
Filed Mar. 22, 1996, Ser. No. 621,748
Claims priority, application Japan, Mar. 22, 1995, 7-062560
Int. Cl.^{6} H01S *3/08;3/19*
U.S. Cl. 372—96 **8 Claims**





1. A gain coupled distributed feedback semiconductor laser, comprising:

an active layer; and

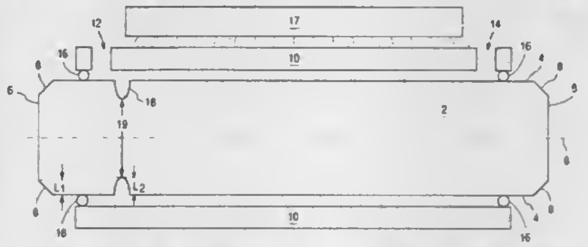
a diffraction grating provided in the vicinity of said active layer, and having a periodic light absorption layer which includes a plurality of light absorption sections periodically arranged along a resonator length direction, wherein:

said periodic light absorption layer is formed of n type $Al_xGa_{1-x}As$ $(0 \leqq x \leqq 1)$;

a thickness of said periodic light absorption layer is larger than a de Broglie wavelength of an electron; and

a difference between an energy hν of an induced emission light and a forbidden band width E_g of said periodic light absorption layer is about 0.13 eV or greater where h is Planck's constant and ν is a frequency of said induced emission light.

5,852,626
GEOMETRY FOR CYLINDRICAL SHAPED LASER SYSTEM GAIN MEDIUM
Edward D. Reed, Sunnyvale, Calif., assignor to Coherent, Inc., Santa Clara, Calif.
Filed Jul. 31, 1997, Ser. No. 903,669
Int. Cl.^{6} G01S *3/08*
U.S. Cl. 372—103 **11 Claims**



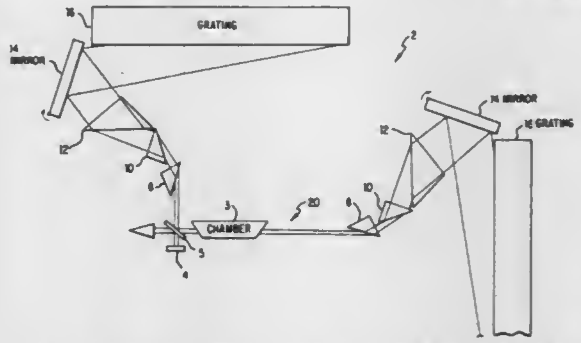
1. An improved gain medium for a laser cavity, comprising:

an elongated gain medium having an outer side surface and two opposing end faces;

an annular groove formed in the side surface, wherein the annular groove defines an annular aperture inside the gain medium, and wherein the end faces and the aperture each have a diameter, and the aperture diameter is smaller than at least one of the end face diameters; and

a chamfer portion formed between the side surface and one of the end faces, the chamfer portion is an annular angled surface between the one face and the side surface so that the diameter of the one face is less than a diameter of the side surface, wherein the aperture diameter is less than the diameter of the one face.

5,852,627
LASER WITH LINE NARROWING OUTPUT COUPLER
Alexander I. Ershov, San Diego, Calif., assignor to Cymer, Inc., San Diego, Calif.
Filed Sep. 10, 1997, Ser. No. 926,721
Int. Cl.^{6} H01S *3/08*
U.S. Cl. 372—108 **10 Claims**



1. A line narrowing output coupler for line narrowing a light beam, defining an output beam direction, from a gain medium of a laser system, said line narrowing output coupler comprising:

- A. a partially reflecting mirror oriented in a plane at an angle of 10 to 80 degrees with a plane perpendicular to said output beam direction, so as to permit a portion of light from said

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gain medium to pass as a component of an output beam and to reflect a portion of the light from said gain medium,

B. highly reflecting optic, and

C. a line narrowing means configured to narrow the spectrum of the light reflected from said partially reflecting mirror and to at least once reflect back to said partially reflecting mirror line narrowed light in a direction such that portions of said line narrowed light is reflected from said partially reflecting mirror back into said gain medium for further amplification and portions of said line narrowed light is transmitted through said partially reflecting mirror, reflected from said totally reflecting optic and then reflected out of said laser system by said partially reflecting mirror as additional components of said output beam.

5,852,628

Patent Not Issued For This Number

5,852,629
REPEATER

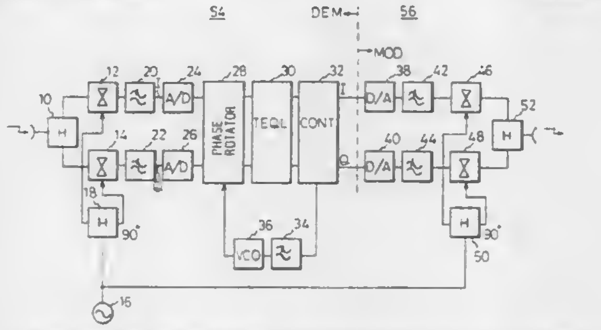
Takanori Iwamatsu, Kanagawa, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 22, 1994, Ser. No. 263,686

Claims priority, application Japan, Dec. 10, 1993, 5-310243

Int. Cl.^{6} H04B *3/36*

U.S. Cl. 375—211 **2 Claims**



1. A repeater in which a quadrature-modulated received signal is demodulated for the reproduction of a baseband signal, and the reproduced baseband signal is then quadrature-modulated for retransmission, comprising:

a local oscillator for outputting a local oscillation signal of a fixed frequency roughly equal to a carrier frequency of a received signal that is modulated with a baseband signal;

a quadrature detector for performing quadrature detection by applying the local oscillation signal to the received signal to reproduce said baseband signal;

an error-component eliminator for eliminating error components which are related to the difference between the carrier frequency and the local oscillation signal frequency and which are contained in an output of the quadrature detector, prior to the reproduction of the baseband signal; and

a quadrature modulator for quadrature-modulating the reproduced baseband signal for retransmission by applying the local oscillation signal to the reproduced baseband signal, wherein

the received signal includes a primary-polarization received signal carried on a primary polarized wave and a cross-polarization received signal carried on a cross-polarized wave normal to the primary polarized wave,

the quadrature detector includes a first quadrature detection circuit for performing quadrature detection by applying the local oscillation signal to the primary-polarization received signal, and a second quadrature detection circuit for performing quadrature detection by applying the local oscillation signal to the cross-polarization received signal;

the error-component eliminator includes a first error-component elimination circuit for reproducing the primary-polarization baseband signal by eliminating the error components contained in the output of the first quadrature detection circuit, and a second error-component elimination circuit for reproducing the cross-polarization baseband signal by eliminating the error components contained in the output of the second quadrature detection circuit, and

the quadrature modulator includes a first quadrature modulation circuit for quadrature-modulating the reproduced primary-polarization baseband signal by applying the local oscillation signal to the reproduced primary-polarization baseband signal, and a second quadrature modulation circuit for quadrature-modulating the reproduced cross-polarization baseband signal by applying the local oscillation signal to the reproduced cross-polarization baseband signal.

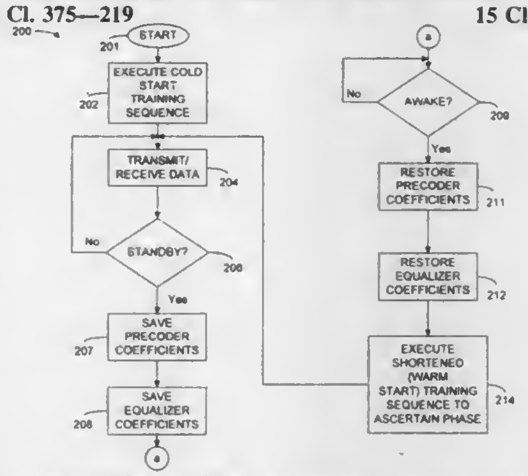
5,852,630
METHOD AND APPARATUS FOR A RADSL TRANSCEIVER WARM START ACTIVATION PROCEDURE WITH PRECODING

Ehud Langberg, Ocean Township; William Scholtz, Middletown, and Farooq Jabbar, Parlin, all of N.J., assignors to Globespan Semiconductor, Inc., Red Bank, N.J.

Filed Mar. 30, 1998, Ser. No. 50,474

Int. Cl.^{6} H04B *1/38;* **H04L** *5/16;* **H03H** *7/30;7/40*

U.S. Cl. 375—219 **15 Claims**


200
201
START
EXECUTE COLD START TRAINING SEQUENCE
202
TRANSMIT/ RECEIVE DATA
204
No
STANDBY?
206
Yes
SAVE PRECODER COEFFICIENTS
207
SAVE EQUALIZER COEFFICIENTS
208
a
No
AWAKE?
209
Yes
RESTORE PRECODER COEFFICIENTS
211
RESTORE EQUALIZER COEFFICIENTS
212
EXECUTE SHORTENED (WARM START) TRAINING SEQUENCE TO ASCERTAIN PHASE
214

1. A method for providing a shortened warm-start training sequence for a transceiver that is communicating data with another transceiver, comprising the steps of:

processing a request to enter a standby mode,

saving the state of a precoder at a transmitter;

saving the state of an equalizer at a receiver;

receiving a request to exit the standby mode and resume data transmission;

restoring the saved precoder state to the precoder;

restoring the saved equalizer state to the equalizer;

performing a shortened training sequence to ascertain the correct phase of a communication channel; and

adjusting the equalizer accordingly.

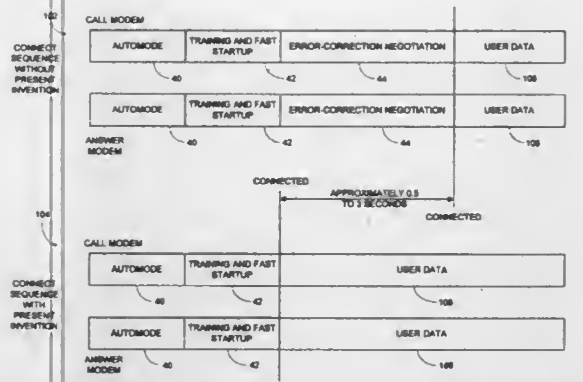
5,852,631
SYSTEM AND METHOD FOR ESTABLISHING LINK LAYER PARAMETERS BASED ON PHYSICAL LAYER MODULATION

Robert Earl Scott, Indian Rocks Beach, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Jan. 8, 1997, Ser. No. 780,762

Int. Cl.^{6} H04L *29/10*

U.S. Cl. 375—222 **10 Claims**


102
CALL MODEM
CONNECT SEQUENCE WITHOUT PRESENT INVENTION
AUTOMODE
TRAINING AND FAST STARTUP
ERROR-CORRECTION NEGOTIATION
USER DATA
40
42
44
108
ANSWER MODEM
CONNECTED
APPROXIMATELY 0.5 TO 3 SECONDS
CONNECTED
104
CONNECT SEQUENCE WITH PRESENT INVENTION

1. A method for establishing a link layer connection between a calling modem having a plurality of possible first physical layer modulations and a plurality of possible link layer connections and an answering modem having a plurality of possible second physical layer modulations and a plurality of possible second link layer connections, comprising the steps of:

establishing a physical layer connection between said calling and said answering modems, wherein said physical layer connection is based on a negotiated physical layer modulation chosen from said first and second physical layer modulations; and

establishing said link layer connection based upon said negotiated physical layer modulation.

5,852,632
RECOVERY OF THE PROPAGATION DELAY IN A PWM CIRCUIT

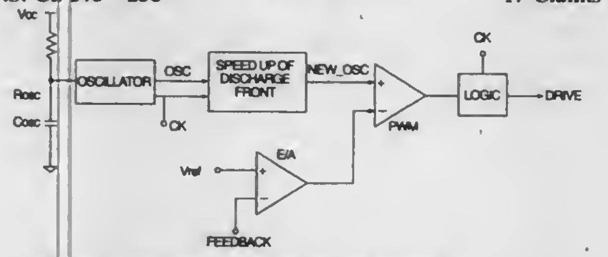
Salvatore V. Capici, Barrafranca, and Antonio Magazzu', Messina, both of Italy, assignors to Consorzio Per La Ricerca Sulla Microelectronica Nel Mezzorgiorno, Catania, Italy

Filed Oct. 29, 1996, Ser. No. 744,714

Claims priority, application European Pat. Off., Oct. 31, 1995, 95830463

Int. Cl.^{6} H03K *7/08;9/08*

U.S. Cl. 375—238 **17 Claims**



1. A pulse width modulator circuit, comprising:

a sawtooth oscillator for generating a first sawtooth signal having a charge ramp and a discharge ramp;

a circuit connected to reduce the duration of said discharge ramp of said first sawtooth signal, said circuit having an input for receiving said first sawtooth signal and an output for generating a second sawtooth signal substantially synchronous with said first sawtooth signal, said second sawtooth signal having a steeper discharge ramp than said first sawtooth signal, said circuit further comprising a clamp circuit that fixes the amplitude of the second sawtooth signal, and a circuit for increasing the current through the clamp circuit during the discharge ramp to prevent the amplitude of the second sawtooth signal from decreasing excessively; and

a comparator capable of comparing an error output signal amplified by an error amplifier with said second sawtooth signal, wherein said comparator has an output for generating a pulse width modulated signal, and wherein said circuit reduces the duration of said discharge ramp of said first sawtooth signal by an amount substantially greater than the propagation delay of said pulse width modulated signal.

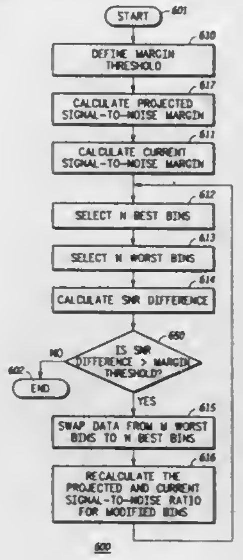
5,852,633
METHOD FOR ALLOCATING DATA IN A DATA COMMUNICATION SYSTEM

Howard E. Levin, and Jeffrey P. Gleason, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1996, Ser. No. 660,380

Int. Cl.^{6} H04K *1/10;* **H04L** *27/28*

U.S. Cl. 375—260 **39 Claims**


START
601
DEFINE MARGIN THRESHOLD
610
CALCULATE PROJECTED SIGNAL-TO-NOISE MARGIN
617
CALCULATE CURRENT SIGNAL-TO-NOISE MARGIN
611
SELECT N BEST BINS
612
SELECT M WORST BINS
613
CALCULATE SNR DIFFERENCE
614
IS SNR DIFFERENCE > MARGIN THRESHOLD?
650
NO
607
END
YES
SWAP DATA FROM M WORST BINS TO N BEST BINS
615
RECALCULATE THE PROJECTED AND CURRENT SIGNAL-TO-NOISE RATIO FOR MODIFIED BINS
616
600

22. A method of re-allocating data in a communication system having a plurality of bins for sending data, the method comprising the steps of:

defining a margin threshold;

defining an initial signal-to-noise value for each of the plurality of bins;

defining a reference signal-to-noise value for each possible amount of data;

calculating a current signal-to-noise margin for an each of the plurality of bins based on the initial signal-to-noise value and the reference signal-to-noise value for each of the plurality of bins;

calculating a projected signal-to-noise margin for each of the plurality of bins based on the initial signal-to-noise value and the reference signal-to-noise value;

selecting N best bins from the plurality of bins based on the projected signal-to-noise margin, wherein the N best bins have a best bin having a best projected signal-to-noise margin;

selecting M worst bins from the plurality of bins based on the current signal-to-noise margin, wherein the M worst bins have a worst bin having a worst current signal-to-noise margin;

calculating a signal-to-noise difference based on the best bin and the worst bin;

swapping a portion of data from the M worst bins to the N best bins if a threshold value is greater than the margin threshold, wherein the step of swapping creates modified bins;

recalculating the projected signal-to-noise margin and the current signal-to-noise margin for the modified bins; and

repeating the steps of selecting N, selecting M, calculating, swapping, and recalculating while the threshold value is greater than the margin threshold.

5,852,634
DATA CODING SYSTEM

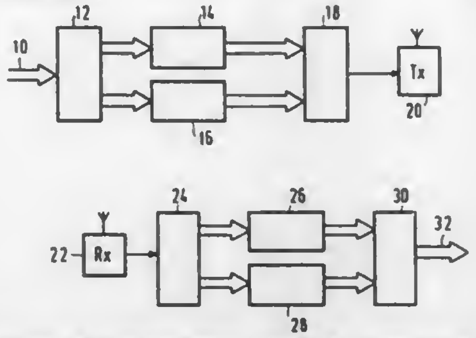
Christopher B. Marshall, Stein, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 102,012, Aug. 4, 1993, Pat. No. 5,502,744. This application Jan. 5, 1996, Ser. No. 583,686

Claims priority, application United Kingdom, Aug. 21, 1992, 9217819

Int. Cl.⁶ H04L *27/00*

U.S. Cl. 375—259 **2 Claims**



1. A system for communicating digital data words, comprising

means for generating a first symbol, having a duration equal to a bit length in the digital data words, in response to a more significant section of each digital data word,

means for generating a second symbol, having a duration equal to a bit length in the digital data words, in response to a less significant section of each digital data word,

means for combining the first and second symbols to provide an encoded symbol,

means for transmitting the encoded symbol,

means for receiving the transmitted encoded signal,

means for separating a received signal into first and second symbols,

means for deriving a more significant section of received data from the first symbol,

means for deriving a less significant section of received data from the second symbol, and

means for combining the more significant section and the less significant section of the received data to provide an output digital data word.

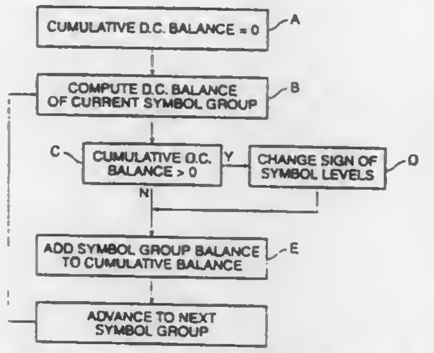
5,852,635
NETWORK SYSTEM FOR LINKING USER NODES USING HIGH SPEED CSMA/CD COMMUNICATION

Ronald C. Crane, 2101 California St., Apt. 329, Mountain View, Calif. 94040

Division of Ser. No. 602,479, Feb. 20, 1996, Pat. No. 5,677,651, which is a division of Ser. No. 187,267, Jan. 25, 1994, Pat. No. 5,614,905. This application Mar. 31, 1997, Ser. No. 831,280

Int. Cl.⁶ H04L *5/12;25/02*

U.S. Cl. 375—264 **3 Claims**


CUMULATIVE D.C. BALANCE = 0
A
COMPUTE D.C. BALANCE OF CURRENT SYMBOL GROUP
B
C
CUMULATIVE D.C. BALANCE > 0
Y
N
CHANGE SIGN OF SYMBOL LEVELS
D
ADD SYMBOL GROUP BALANCE TO CUMULATIVE BALANCE
E
ADVANCE TO NEXT SYMBOL GROUP

1. A local area network communicating CSMA/CD data over a medium comprising:

a plurality of nodes interconnected via a communication medium;

an 8B6T encoding means at each node for applying a long-term d.c.-balanced three-level communication signal containing information to the communication medium, said signal applying means receiving group codes in binary form of eight units length and converting each eight-bit group to a three-level ternary code of groups of six units length, said ternary code consisting of selected d.c.-balanced six-unit symbol groups, selected plus-one-biased d.c.-unbalanced six-unit symbol groups and selected minus-one-biased d.c.-unbalanced six-unit symbol groups, and said signal applying means being operative to constrain signals to enforce a d.c. polarity reversal after transmission of each d.c.-unbalanced group; and

an 8B6T decoding means at each node for receiving the long-term d.c.-balanced three-level communication signal from the communication medium and converting three-level information of said long-term d.c.-balanced three-level communication signal to corresponding eight-bit group binary level code by assuming a long-term d.c. balance.

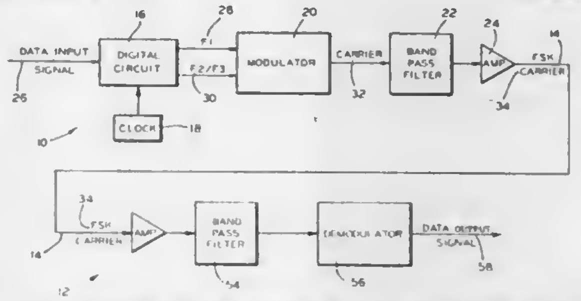
5,852,636
METHOD OF AND APPARATUS FOR MODULATION OF FSK CARRIER IN A VERY NARROW BAND

Serge Mathieu, Beauport, and Dominic Tremblay, Québec, both of Canada, assignors to Serge Mathieu, Beauport, Canada

Filed Aug. 8, 1997, Ser. No. 908,936

Int. Cl.⁶ H04B *1/44*

U.S. Cl. 375—272 **17 Claims**



1. A transmitter for transmitting an FSK output signal, said transmitter comprising:

a circuit for receiving a binary data signal, for generating a reference signal, and for generating a control signal having a first frequency and a second frequency in response to the binary data signal;

a modulator coupled to said circuit for phase reversal keying modulation of the reference signal with the control signal to create a carrier signal having a first carrier frequency component and a second carrier frequency component; and

a high order filter with a narrow bandwidth to filter the carrier signal, whereby an FSK carrier signal with a narrow bandwidth is created.

5,852,637
SERIAL MULTI-GB/S DATA RECEIVER

Anthony Kevin Dale Brown, Kanata; Richard Ralph Goulette, Arnprior; Roderick Edgar Wallace, Perth, and Rodney David Pike, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

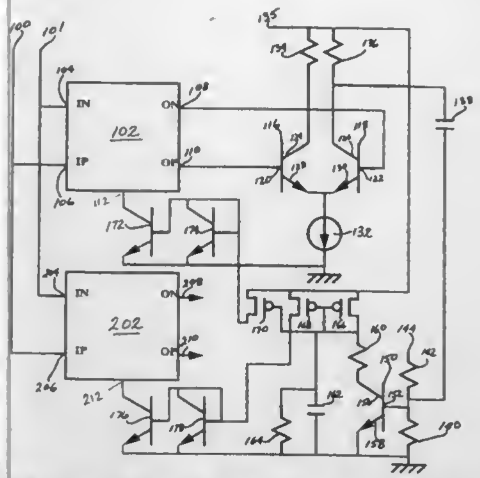
Filed Dec. 7, 1995, Ser. No. 568,911

Int. Cl.⁶ H04L *27/06*

U.S. Cl. 375—316 **16 Claims**

1. A data pulse receiver comprising:

a differential grounded base amplifier having a pair of bipolar transistors each of the said transistors having a base, a collector and an emitter, said bases being connected to a.c. ground;



two inputs, the first input connected to said emitter of the first transistor of said pair of bipolar transistors, said first input having impedance matching means, and the second input connected to said emitter of the second transistor of said pair of bipolar transistors, said second input having impedance matching means;

two constant current sources the first constant current source connected between said emitter of the first transistor of said pair of bipolar transistors and ground, and the second constant current source connected between said emitter of the second transistor of said pair of bipolar transistors and ground;

two load resistors, the first load resistor connected between said collector of the first transistor of said pair of bipolar transistors and a positive supply, and the second load resistor connected between said collector of the second transistor of said pair of bipolar transistors and a positive supply;

hysteresis generating means having a current supply and a set-reset flip-flop, said hysteresis generating means connected to said collector of first transistor and said collector of second transistor; and

two output terminals, the first output terminal connected to the said collector of the first transistor of said pair of bipolar transistors, and the second output terminal connected to the collector of the second transistor of said pair of bipolar transistors.

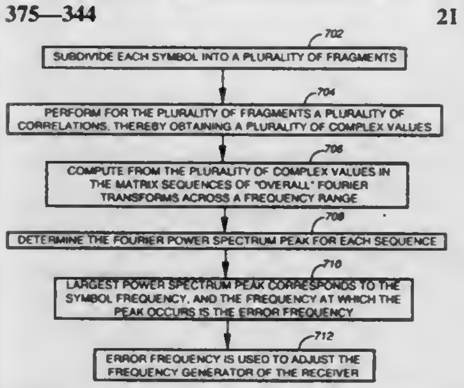
5,852,638
METHOD AND APPARATUS FOR DEMODULATING A SYMBOL USING SYMBOL FRAGMENTATION, CORRELATION AND FOURIER ANALYSIS

Weizhong Chen, Keller, and Slim Souissi, Fort Worth, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 19, 1997, Ser. No. 858,337

Int. Cl.⁶ H04L *27/38;27/22;27/144*

U.S. Cl. 375—344 **21 Claims**


702
SUBDIVIDE EACH SYMBOL INTO A PLURALITY OF FRAGMENTS
704
PERFORM FOR THE PLURALITY OF FRAGMENTS A PLURALITY OF CORRELATIONS, THEREBY OBTAINING A PLURALITY OF COMPLEX VALUES
706
COMPUTE FROM THE PLURALITY OF COMPLEX VALUES IN THE MATRIX SEQUENCES OF "OVERALL" FOURIER TRANSFORMS ACROSS A FREQUENCY RANGE
708
DETERMINE THE FOURIER POWER SPECTRUM PEAK FOR EACH SEQUENCE
710
LARGEST POWER SPECTRUM PEAK CORRESPONDS TO THE SYMBOL FREQUENCY, AND THE FREQUENCY AT WHICH THE PEAK OCCURS IS THE ERROR FREQUENCY
712
ERROR FREQUENCY IS USED TO ADJUST THE FREQUENCY GENERATOR OF THE RECEIVER

1. A method in a receiver for demodulating a symbol, comprising the steps of:

receiving the symbol;

subdividing the symbol into a plurality of fragments;

performing for the plurality of fragments a plurality of correlations with at least one possible symbol value, thereby producing a plurality of complex values corresponding to each fragment and further corresponding to the at least one possible symbol value;

computing from the plurality of complex values a plurality of overall Fourier transforms across a frequency range;

locating a peak value in the plurality of overall Fourier transforms; and

determining the symbol from the peak value.

5,852,639
RESYNCHRONIZATION APPARATUS FOR ERROR CORRECTION CODE DECODER

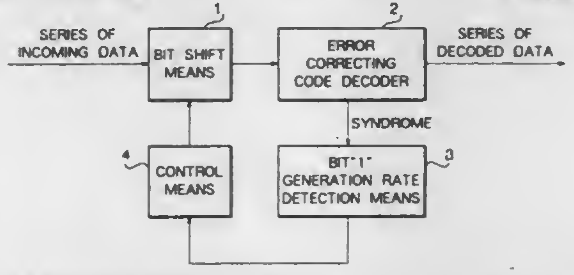
Yasuyuki Murakami, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 18, 1995, Ser. No. 544,772

Claims priority, application Japan, Oct. 28, 1994, 6-264323

Int. Cl.⁶ H04L *7/00*

U.S. Cl. 375—354 **5 Claims**



1. A resynchronization apparatus for an error correction code decoder comprising:

bit shift means for bit shifting a series of incoming data;

decoding means for receiving an output of the bit shift means, decoding an error correction code and outputting a syndrome;

detection means for detecting a bit generation rate of the syndrome; and

control means for making the bit shift means bit shift based on the output of the detection means, wherein the detection means includes a shift register that enters the syndrome and weight count means for counting "1" bit in each stage of the shift register, and the control means causes the bit shifting by the bit shift means when an output of the weight count means reaches above a predetermined value.

5,852,640
CLOCK DISTRIBUTION APPARATUS WITH CURRENT SENSED SKEW CANCELLING

Phillip S. Kliza, 124 Amaya Dr., Folsom, Calif. 95630, and William P. Cornelius, 114 Escobar Ct., Los Gatos, Calif. 95032

Filed Jun. 26, 1995, Ser. No. 494,367

Int. Cl.⁶ H04L *7/02;* H03D *3/24*

U.S. Cl. 375—356 **23 Claims**

1. A clock distribution circuit for achieving substantially simultaneous arrival of timing events at a plurality of digital subsystems comprising:

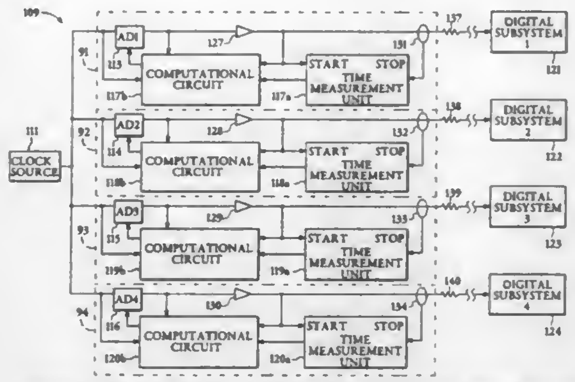
a clocking means for generating said timing events, said clocking means baving a plurality of outputs, each of said outputs being effective for supplying a copy of said timing events;

a plurality of transmission lines;

a plurality of current sensing means;

a plurality of delay means;

each of said plurality of digital subsystems being coupled to said clock distribution circuit at only a corresponding one of said plurality of outputs, each of said plurality of digital subsystems being coupled to said corresponding one of said



outputs via a single one of said transmission lines whereby each of said digital subsystems receives one of said conies of said timing events;

each of said plurality of current sensing means being coupled to a corresponding one of said plurality of transmission lines, each of said current sensing means being effective for determining a current flow time during which current flows in said corresponding one of said transmission lines;

each of said plurality of transmission lines being coupled to a corresponding one of said plurality of delay means, each of said plurality of delay means being effective for delaying said timing events by an amount dependent on a predetermined maximum delay reduced by one-half said current flow time whereby the propagation delay of said timing events from each of said outputs to its corresponding one of said digital subsystems is equalized to said predetermined maximum delay.

5,852,641
METHOD FOR CARRIER-FREQUENCY SYNCHRONIZATION

Franz-Josef Hagmanns, Backnang, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

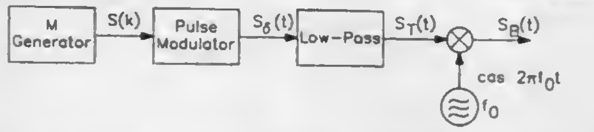
PCT No. PCT/DE95/00729, § 371 Date Dec. 9, 1996, § 102(e) Date Dec. 9, 1996, PCT Pub. No. WO95/34961, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 3, 1995, Ser. No. 750,351

Claims priority, application Germany, Jun. 10, 1994, 44 20 283.0

Int. Cl.^{6} H04L *7/00*

U.S. Cl. 375—356 **13 Claims**



1. A method for carrier frequency synchronization combining the step of transmitting a synchronization signal from base stations of a mobile radio network, said signal being used by mobile stations at the mobile radio network to synchronize the carrier frequency of their receivers, wherein the synchronization signal is a combination of a group of 2^m-1 sinusoidal oscillations of different frequencies, where m=2, 3, 4, . . . , and the group encompasses a number 2L+1 of sinusoidal oscillations, where L=1, 2, 3, . . . , and these sinusoidal oscillations have virtually the same power, and the synchronization signal has a virtually constant amplitude.

5,852,642
METHOD AND APPARATUS FOR INSPECTING THE GEOMETRY OF A GUIDE TUBE

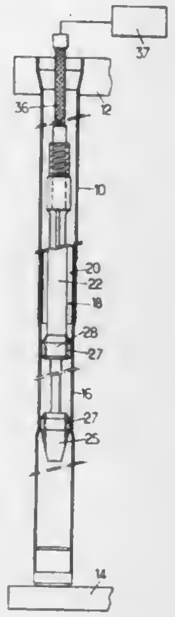
Pascal Descot, Saint-Chamond, and Bruno Fichet, Saint-Loup-de-Varennes, both of France, assignors to Framatome, Courbevole, and Compagnie Generale Des Matières Nucleaires, Vellzy-Villacoublay, both of France

Filed Jun. 26, 1997, Ser. No. 882,729

Claims priority, application France, Jun. 26, 1996, 96 07927

Int. Cl.^{6} G21C *17/00*

U.S. Cl. 376—245 **9 Claims**



9. A method for monitoring a degree of straightness of a guide tube of a nuclear fuel assembly having a zone of smaller diameter in a terminal portion thereof, comprising the steps of:

- inserting, into said guide tube, from an end opposite to said terminal portion, an apparatus comprising:
  - stick-shaped means having a distal portion which presents in succession, starting from a distal end of the stick-shaped means,
  - a guiding swelling having a predetermined diameter selected to enable said swelling to pass through the zone of smaller diameter with an easy fit, and
  - a first projection and a second projection at different distances from said swelling, with at least the first projection carrying at least two sets of diametrically opposite strain sensors provided with conductors linking them to a proximal end of the stick-shaped means; and
  - a sleeve having an outer diameter selected for a sliding fit in a running portion of the guide tube above said zone of smaller diameter and an inner diameter selected for sliding fit over the stick-shaped means;

said sleeve and said stick-shaped means having mutually cooperating abutment means for limiting displacement of the sleeve towards said distal portion to a position where the sleeve surrounds the stick-shaped means, until said sleeve comes into abutment against an end of said zone of smaller diameter,

- further moving the guide tube relative to the stick-shaped means to make the projections scan said zone of smaller diameter,
- and deriving an amount of deformation and an orientation of deformation at each axial level of said narrower zone from signals delivered by the sensors and from measurement of displacement of the stick-shaped means along the guide tube.

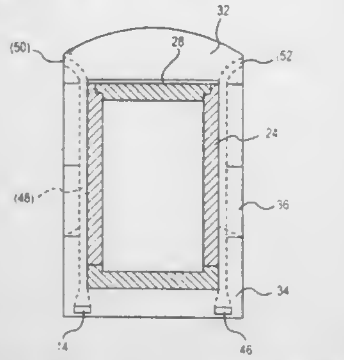
5,852,643
FLAK JACKET PROTECTIVE COVER FOR SPENT NUCLEAR FUEL STORAGE CASKS

Alex G. Copson, 3419 Dent Pl., NW., Washington, D.C. 20007

Filed Jun. 9, 1997, Ser. No. 871,622

Int. Cl.^{6} G21F *5/00*

U.S. Cl. 376—287 **13 Claims**



1. A flak jacket protective cover for a spent nuclear fuel storage cask of the type having a cylindrical shape, defining a lower portion, a mid-portion and a top portion, with top and bottom closures, said flak jacket protective cover comprising:

- an annular base configured to support the cask bottom closure and encircling the lower portion of the cask;
- a plurality of complemental annular mid-pieces stacked one upon the other on top of said annular base and encircling the cask mid-portion;
- a complemental annular cap supported upon a mid-piece; and
- an indexing cylinder fitted over the nuclear fuel storage cask, so as to axially index placement of said annular base, annular mid-pieces and annular top,
- wherein said annular base, annular mid-pieces and said annular cap define an inner venting annulus and a protective and venting cover over the spent nuclear fuel storage cask.

5,852,644
GUIDE TUBE FOR A NUCLEAR FUEL ASSEMBLY

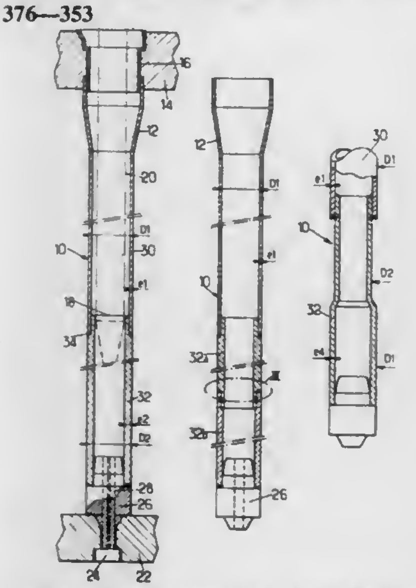
Alain Brosset, Fontaines Saint Martin, and Michel Verdier, Lyons, both of France, assignors to Framatome, Courbevoie, and Compagnie Generale des Matières Nucléaires, Velizy-Villacoublay, both of France

Filed Jun. 27, 1997, Ser. No. 884,323

Claims priority, application France, Jun. 28, 1996, 96 08092

Int. Cl.^{6} G21C *3/32*

U.S. Cl. 376—353 **11 Claims**



11. A control rod guide tube for a nuclear reactor fuel assembly, said guide tube comprising:

- a top length extending over at least 70% of a total length of said guide tube and having a predetermined thickness; and
- a bottom length having a thickness greater than the thickness of the top length;
- said bottom length having an upper part engaged in a terminal lower fraction of said top length and being welded to said top length along a terminal edge of said top length;
- said bottom length defining an inner flow passage having a smaller diameter than an inner flow passage in said top length, having a constant outside diameter equal to an outside diameter of the top length except in an uppermost portion thereof which presents a smaller outside diameter, equal to the diameter of the inner flow passage in the top length, and consisting of an upper section and a lower section, said upper section projecting into said top length and into the lower section, and said upper section being welded to the lower section along a shoulder of said upper section.

5,852,645
FUEL ASSEMBLY WITH CONSUMABLE POISON, AND A METHOD OF OPERATING A REACTOR

Jean-Michel Romary, Lyons, and Michel Bonniaud, Decines-Charpieu, both of France, assignors to Framatome, Courbevoie, and Compagnie General des Matieres Nucleaires, Velizy-Villacoublay, both of France

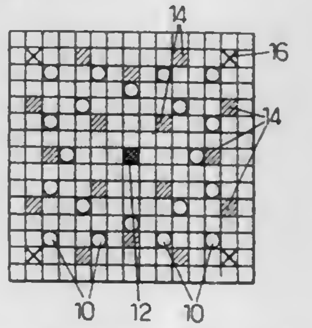
PCT No. PCT/FR95/0170C, § 371 Date Jun. 23, 1997, § 102(e) Date Jun. 23, 1997, PCT Pub. No. WO96/20484, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 20, 1995, Ser. No. 860,227

Claims priority, application France, Dec. 23, 1994, 94 15593

Int. Cl.^{6} G21C *3/326*

U.S. Cl. 376—419 **10 Claims**



9. A fuel assembly for a pressurized water reactor, comprising a plurality of fuel rods distributed at the nodes of a 15×15 square array, each of said rods having a sheath and containing fuel material,

- wherein four to twenty of said fuel rods have a first concentration of gadolinium lying in the range 5% to 12% by weight, and
- wherein four to twelve other ones of said fuel rods have a second concentration of gadolinium lying in the range 0.5% to 2% by weight and are regularly distributed in a peripheral row of said array.

5,852,646
X-RAY IMAGING METHOD

Erhard P. A. Klotz, Neumünster; Reiner H. Koppe, Hamburg, both of Germany; John Op De Beek, Son, and Hans Aerts, Berkel Enschot, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1997, Ser. No. 852,301

Claims priority, application Germany, May 21, 1996, 196 20 371.6

Int. Cl.^{6} A61B *6/03*

U.S. Cl. 378—8 **9 Claims**

1. An X-ray imaging method

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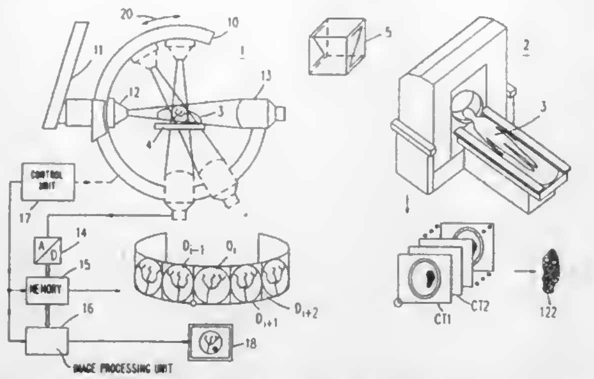


comprising forming and digitally storing a series of processed two-dimensional X-ray images of an object to be examined by use of a first imaging device, which projects radiation from an X-ray image through the object to be examined and onto an X-ray image pick-up device from different perspectives,

forming a three-dimensional image of the same object to be examined by means of a second imaging device (**2**),

extracting a relevant structure of the object to be examined from the three-dimensional image,

calculating a series of synthetic, two-dimensional projection images of the extracted structure, the structure being projected with the same geometrical parameters as used for the same relevant structure during the formation of the individual X-ray images,

forming a series of superposition images by superposing the synthetic projection images and the processed X-ray images formed from the same perspectives, and

displaying the series of superposition images.

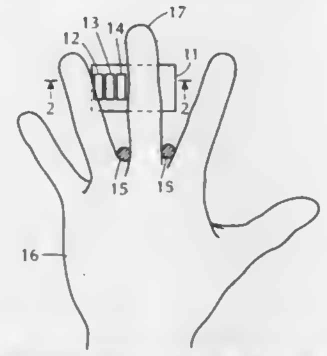
5,852,647
METHOD AND APPARATUS FOR MEASURING BONE DENSITY

David B. Schick, Flushing; David B. Plass, Merrick, and Jonathan Singer, Dobbs Ferry, all of N.Y., assignors to Schick Technologies, Long Island City, N.Y.

Filed Sep. 24, 1997, Ser. No. 936,571

Int. Cl.⁶ G01N *23/06*

U.S. Cl. 378—53 **55 Claims**



1. A method of determining the density of a bone in a body part from a high-energy image and a low-energy image, the images including the body part, a hard tissue reference, and a soft tissue reference, the body part comprising bone and soft tissue, the method comprising the steps of:

determining high-energy and low-energy radiation transmissivity characteristics of varying thicknesses of the hard tissue reference and the soft tissue reference from the high-energy and low-energy images; and

determining a density of the bone based on at least one pixel that corresponds to bone in the high-energy image, a corresponding at least one pixel in the low-energy image, and the determined transmissivity characteristics.

5,852,648
IMAGE SIGNAL PROCESSING METHOD AND IMAGE SIGNAL PROCESSING DEVICE

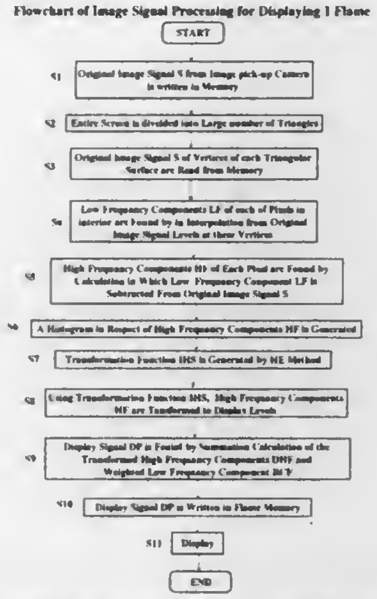
Yoshihiro Miyamoto, and Masaji Dohi, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed May 22, 1997, Ser. No. 848,727

Claims priority, application Japan, Dec. 26, 1996, 8-357012

Int. Cl.⁶ G01N *23/04*

U.S. Cl. 378—62 **11 Claims**


Flowchart of Image Signal Processing for Displaying 1 Flame
START
S1
Original Image Signal S from Image pick-up Camera is written in Memory
S2
Entire Screen is divided into Large number of Triangles
S3
Original Image Signal S of Vertices of each Triangular Surface are Read from Memory
S4
Low Frequency Components LF of each of Pixels in interior are Found by in Interpolation from Original Image Signal Levels at three Vertices
S5
High Frequency Components HF of Each Pixel are Found by Calculation in Which Low Frequency Component LF is Subtracted From Original Image Signal S
S6
A Histogram in Respect of High Frequency Components HF is Generated
S7
Transformation Function IHS is Generated by HE Method
S8
Using Transformation Function IHS, High Frequency Components HF are Tansformed to Display Levels
S9
Display Signal DP is Found by Summation Calculation of the Transformed High Frequency Components DHF and Weighted Low Frequency Component BLF
S10
Display Signal DP is Written in Flame Memory
S11
Display
END

1. An image signal processing method wherein a display signal is generated from an original image signal acquired from means for image pickup, comprising:

a step of dividing a screen into a plurality of polygons, finding signal intensities of pixels in the polygons by interpolation from the original image signal intensities of pixels corresponding to the vertices of these polygons, as a signal intensity of a low frequency component;

a step of finding the signal intensities of high frequency components of the pixels by performing calculation to subtract the signal of the low frequency component from the original image signal at each pixel;

a step of finding the display signal of the pixels by adding to the signal of the high frequency components a signal obtained by multiplying the signal of the low frequency component by a weighting coefficient of less than 1; and

a step of displaying image on a display device in accordance with the display signal.

5,852,649
ALARM NOTIFICATION SYSTEM AND METHOD FOR A TELEPHONE SWITCH

Jeffrey D. Hodson, Wheaton, Ill., assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Feb. 23, 1996, Ser. No. 606,357

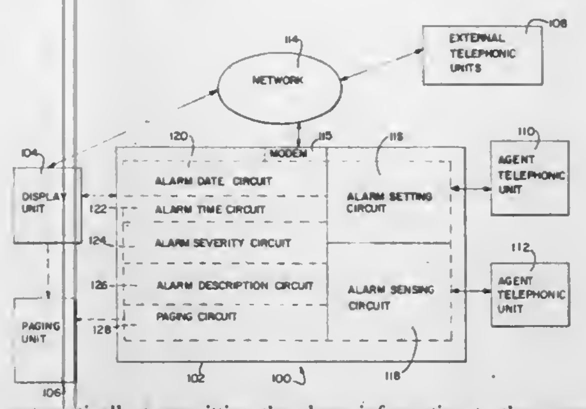
Int. Cl.⁶ H04M *1/24*

U.S. Cl. 379—9 **20 Claims**

1. A method for automatically reporting an alarm condition related to a telephonic switch for routing telephone calls from external telephone units to agent telephone units to a remote communications device, the method comprising the steps of:

detecting the alarm condition;

detecting alarm information relating to the alarm condition, including detecting switch information relating to the telephonic switch, including a size of the telephonic switch; and



automatically transmitting the alarm information to the remote communications device.

5,852,650
METHOD FOR RECOVERING A FAULTY UNIT AND A RECOVERY SYSTEM

Altti Hyyrynen, Vantaa; Jussi Sarpola, Oulu, and Pekka Hirvonen, Vantaa, all of Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

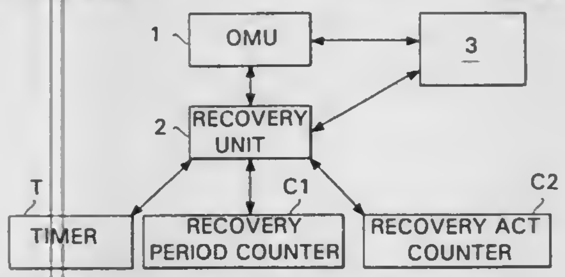
PCT No. PCT/FI95/00444, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/06474, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 22, 1995, Ser. No. 793,401

Claims priority, application Finland, Aug. 23, 1994, 943874

Int. Cl.⁶ H04M *1/24;* G06F *11/00*

U.S. Cl. 379—29 **6 Claims**



1. A method for recovering a faulty unit, comprising:

(a) defining a predetermined number of recovery periods;

(b) defining for each of said recovery periods a respective maximum number of times for conducting a recovery act during the respective recovery period, and a duration period for the respective recovery period;

(c) upon detecting that a unit appears to be faulty, removing the unit from service;

(d) subjecting the unit removed from service to a recovery act;

(e) testing the unit which has been subjected to a recovery act, and, only if as a result of such testing the unit is found to be apparently in condition for being placed in service, provisionally placing the unit in service, for enabling monitoring of the unit;

(f) monitoring the unit which has been provisionally placed in service, by initiating a first or whichever next one of said recovery periods as has not so far in this conducting of step (f) been initiated in regard to the unit, and, in that recovery period awaiting a detection that the unit appears to be faulty;

(g) upon detecting that the unit being monitored appears to be faulty,

(i) removing the unit from service,

(ii) determining whether any said recovery act remains available to be done in the respective said recovery period which is now underway, and, only if so, performing a respective next remaining available said recovery act in relation to said unit,

(iii) testing the unit which has subjected to said recovery act of step (g)(ii), and only if as a result of such testing the unit is found to be apparently in condition for being placed in service, again provisionally placing the unit in service, for enabling continuation of monitoring of said unit; and

(h) repeating conducting of steps (f) and (g) in relation to said unit, provided that during the respective immediately previous conducting of steps (f) and (g), at least one said act of recovery has been conducted in relation to said unit, until said unit has been monitored for said predetermined number of recovery periods; and then

(i) conducting step (g)(i), but terminating further conducting of steps (g)(ii) and (g)(iii) in relation to said unit.

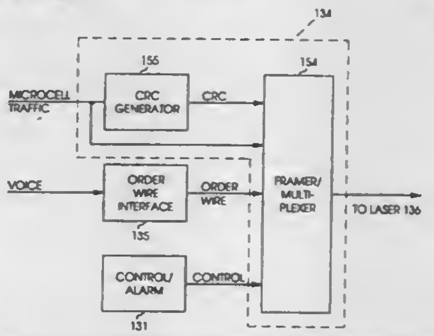
5,852,651
CELLULAR COMMUNICATIONS SYSTEM WITH SECTORIZATION

David S. Russell, Minneapols; Larry G. Fischer; Philip M. Wala, both of Waseca, all of Minn.; Charles R. Ratliff, Crystal Lake, Ill., and Jeffrey Brennan, Waseca, Minn., assignors to ADC Telecommunications, Inc., Minnetonka, Minn.

Division of Ser. No. 204,660, Mar. 2, 1994, Pat. No. 5,627,879, which is a continuation-in-part of Ser. No. 183,221, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,389, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,402, Sep. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 946,964, Sep. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 946,931, Sep. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 946,548, Sep. 17, 1992, abandoned. This application Aug. 31, 1994, Ser. No. 299,159

Int. Cl.⁶ H04Q *7/30*

U.S. Cl. 379—56.2 **9 Claims**



1. A method of sectorizing coverage over a cellular communications area divided into a plurality of microcells each covering a subarea of the communications area and being divided into a plurality of angular sectors having separate transmitters and receivers, the method comprising performing the following steps:

receiving a number of information-bearing telephone signals from a mobile telecommunications switching office at a common base station serving the microcells within the cellular communications area;

modulating the information-bearing telephone signals onto a plurality of different analog radio-frequency carriers representing a plurality of different channel sets for respective sectors of the microcells at the base station;

combining the analog radio-frequency signals for all of the sectors into a single outbound analog signal within a predetermined radio-frequency band, representing all of the channel sets for all of the sectors;

converting the single outbound analog signal directly to a single outbound digital representation at the base station;

sending the outbound digital representation of the radio-frequency signal via a transmission means to a remote unit located in or near the subarea of at least one microcell;

at the remote unit, converting the outbound digital representation directly to a single analog representation of the entire outbound single radio-frequency signal within the same radio-frequency band and containing each of the plurality of channel sets;

- sending each of the plurality of channel sets to a different one of a plurality of antenna units for the microcell], each of the antenna units being positioned so as to cover a different angular sector of the microcell];
- at the antenna unit covering each sector of the microcell, receiving telephone signals within the radio-frequency band for the channel set of that sector;
- sending the received telephone signals to the remote unit;
- at the remote unit, combining all the received telephone signals from all the sectors to a single combined analog radio-frequency received signal containing all the channel sets for the microcell;
- converting the single combined radio-frequency received[signal directly to a received digital representation of the radio-frequency band of the channel sets for the sectors;
- sending the received digital representation via the transmission means to the base station; and
- at the centrally located base station, converting the received digital representation directly to a received analog representation;
- demodulating the received analog representation to recover the individual inbound telephone signals.

5,852,652

VOICE MAIL EXCHANGE WITH A MESSAGE RECORDER DIVIDED INTO SECTORS FOR GROUPS OF VOICE MAIL TELEPHONE SETS

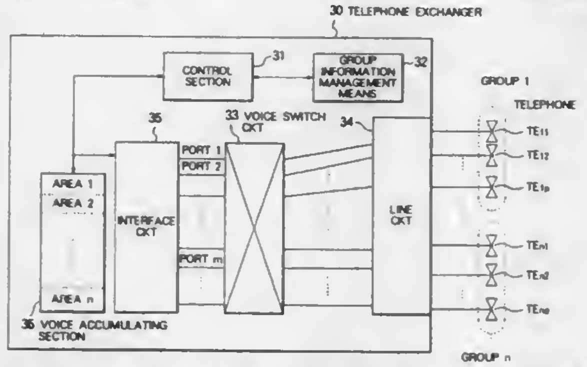
Shin-Ichi Matsuoka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 27, 1996, Ser. No. 607,460

Claims priority, application Japan, Feb. 28, 1995, 7-040036

Int. Cl.^{6} H04M *1/64*

U.S. Cl. 379—88 11 Claims



1. A voice mail exchange for a plurality of voice mail telephone sets grouped into first through N-th groups, in which N represents a predetermined number, an n-th group of said first through said N-th groups comprising an n-th group of telephone sets from among said voice mail telephone sets, where n represents one of 1 to N, both inclusive, said voice mail exchange comprising a message recorder for recording messages and switching means for switching transmission of said messages between said message recorder and the telephone sets of said first through said N-th groups, wherein:

- said message recorder comprises first through N-th memory sectors in one-to-one correspondence to said first through said N-th groups so that only an n-th memory sector of said first through said N-th memory sectors is used for the messages originating at and destined for said n-th group of telephone sets:
- said switching means judging, when said n-th memory sector should be used for storage of one of said messages that is for said n-th group of telephone sets of said n-th group, whether or not said n-th memory sector includes an idle portion for storage of said one of said messages, said predetermined number being a first predetermined number, wherein said switching means comprises:
  - first through M-th transmission ports put in a port busy state of transmitting said messages to and from said first through said N-th memory sectors, where M represents a second predetermined number related to said first predetermined number in accordance with predetermined office data;
- control means for producing a switching signal in accordance with said office data and for producing control signals in accordance with said office data and in compliance with port state information and recorder state information indicative of whether or not said first through said M-th transmission ports are in said port busy state and whether or not said first through said N-th memory sectors individually include said idle portion, said control signal selectively putting said first through said M-th transmission ports in said port busy state; and
- switchboard means responsive to said switching signal and said control signals for switching between said first through said N-th memory sectors and the telephone sets of said first through said N-th groups through said first through said M-th transmission ports.

5,852,653

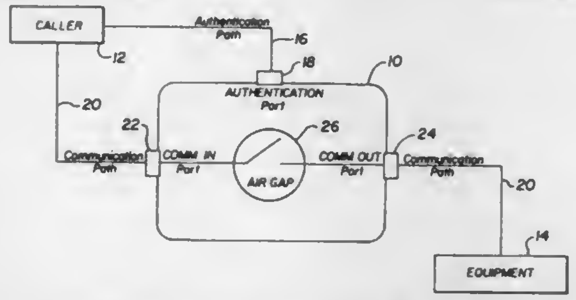
COMMUNICATIONS LINE SECURITY DEVICE

John Steven Reel, Rt. 2 Box 53M, Marion, Tex. 78124; William Lawrence Clayton, 2710 Pebble Breeze, San Antonio, Tex. 78232; Larry Earl Horton, 25103 Arrow Ridge, San Antonio, Tex. 78258; Louis Bernard Knecht, 1330 Adobe Run, San Antonio, Tex. 78232; Thomas John Pavlik, 32040 Rock Forest, Fair Oaks Ranch, Tex. 78015, and Steven Kent Wooster, 1955 Creek Hollow, San Antonio, Tex. 78259

Filed Aug. 23, 1996, Ser. No. 701,248

Int. Cl.^{6} H04M *1/66;1/57*

U.S. Cl. 379—88 25 Claims



1. A communications line security device for connecting a caller to a piece of terminal equipment, the communications line security device comprising:

- a) a communications path including a COMM IN port and a COMM OUT port, the communications path used to connect the caller to the piece of terminal equipment;
- b) a switch electrically connected between the COMM IN port and the COMM OUT port providing a physical disconnection between the caller and the piece of terminal equipment when open;
- c) an authentication port separate from the communications path; and
- d) a controller electrically connected to the authentication port and the switch which acts to verify information provided on the authentication port matches information on the communications path to the information on the authentication path, and closes the switch when the caller is verified resulting in the caller being physically connected to the piece of terminal equipment.

5,852,654

COUPLING DEVICE FOR USE WITH A COMPUTER SYSTEM

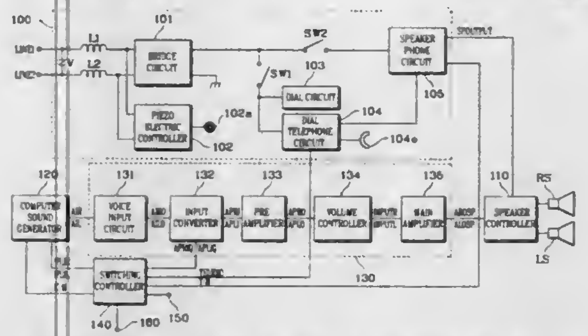
Moon-Jong Song, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 22, 1996, Ser. No. 603,854

Claims priority, application Rep. of Korea, Feb. 22, 1995, 1995 3439; Feb. 22, 1995, 1995 2892

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—93.05 22 Claims



1. A coupling device, for providing a telephone function for a computer system, said coupling device comprising:

- mounting means integrally formed on a top surface of said coupling device for attaching to and detaching from a lower portion of a video display monitor;
- a loudspeaker internally incorporated in said coupling device for generating audible sounds;
- a control console panel for selectively switching between said telephone function and an audio function;
- a plurality of input-output terminals provided for signal input to and signal output from a computer sound generator and a telephone speech network; and
- a sound control circuit for coupling signals output from said computer sound generator and said telephone speech network to said loudspeaker;
- said sound control circuit comprising:
  - a telephone control circuit for controlling input signals applied to and output signals received from a telephone cord;
  - an amplifier circuit for amplifying a signal from one of said telephone control circuit and said computer sound generator, and for controlling a volume of an amplified signal generated at an output terminal of said amplifier circuit;
  - a speaker controller for selectively generating one of a signal output from said amplifier circuit and a signal output from said telephone control circuit for transmission to said loudspeaker;
  - a switching controller coupled to said telephone control circuit, said computer sound generator and said amplifier circuit for selectively switching said signal output from said telephone control circuit and said signal output from said computer sound generator for transmission to said amplifier circuit; and
  - a signal input terminal for applying a signal input from said telephone control circuit said computer sound generator and an external microphone to said switching controller;
- said telephone control circuit comprising:
  - a bridge circuit coupled to said telephone cord across a network comprising a varistor and a pair of induction coils;
  - a piezoelectric controller coupled to said pair of induction coils for driving and controlling a piezoelectric speaker;
  - a dial circuit coupled to an output terminal of said bridge circuit via a first switch;
  - a dial telephone circuit connected to said first switch for controlling a telephone set; and
- a speaker phone circuit coupled to said output terminal of said bridge circuit via a second switch.

5,852,655

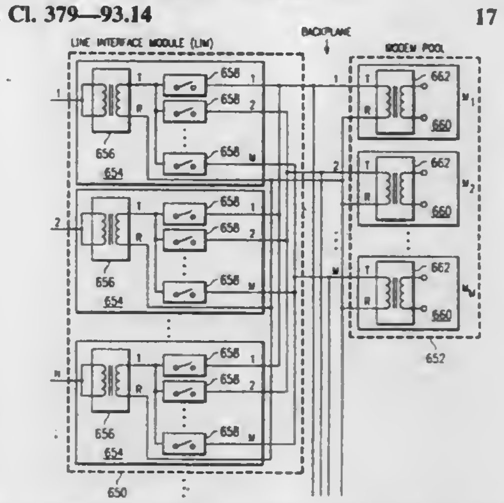
COMMUNICATION SERVER APPARATUS HAVING DISTRIBUTED SWITCHING AND METHOD

John F. McHale, Austin; James R. Sisk, Cedar Park; Robert H. Locklear, Jr., Austin; Jason McCullough, Austin; Clifford L. Hall, Austin, and Ronald E. Ham, Austin, all of Tex., assignors to Cisco Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 625,769, Mar. 29, 1996, Pat. No. 5,668,857. This application Jan. 10, 1997, Ser. No. 781,441

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—93.14 17 Claims



14. A method for coupling a plurality of twisted pair data lines to XDSL modems in a modem pool, comprising:

- coupling each of the twisted pair data lines to separate inputs of a plurality of line interface modules such that a subset of the plurality of twisted pair data lines are coupled to each line interface module;
- detecting a need for data service on a requesting twisted pair data line;
- selecting one of the XDSL modems in response to the detected need for data service on the requesting twisted pair data line, where the selected XDSL modem can be any one of the XDSL modems in the modem pool; and
- directing the line interface module to which the requesting twisted pair data line is coupled to couple the requesting twisted pair data line to the selected XDSL modem.

5,852,656

ELECTRONIC CONFERENCE SYSTEM AND CONFERENCE SERVER APPARATUS

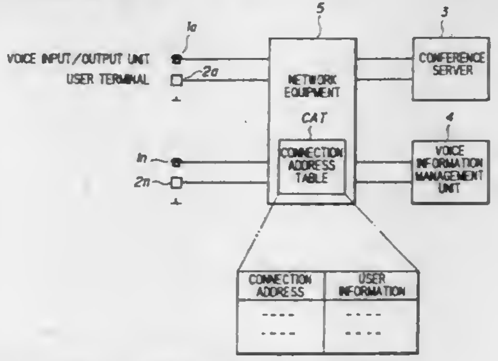
Kazuaki Sato, and Koji Yamato, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 29, 1995, Ser. No. 496,527

Claims priority, application Japan, Sep. 2, 1994, 6-209858

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—93.21 11 Claims



1. An electronic conference system comprising:
a plurality of voice input/output units;

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a plurality of user terminals for entering/displaying electronic document information and transmitting/receiving electronic documents:

a conference server for accumulating electronic documents received from said plurality of user terminals, selecting an electronic document, which has been designated by a user terminal, from among the electronic documents accumulated, and transmitting the electronic document selected to the user terminal;

a voice information management unit for accumulating voice information received from said plurality of voice input/output units, selecting prescribed voice information, which is designated by a user terminal, from among the voice information accumulated, and transmitting the voice information selected to said voice input/output units;

network equipment for interconnecting said plurality of voice input/output units, said plurality of user terminals, said conference server and said voice information management unit having a table which indicates user identification information in correspondence with connection addresses of said voice input/output units and user terminals;

wherein when conference participation requests are issued from said user terminals or said input/output units, said network equipment obtains user identification information corresponding to these user terminals or voice input/output units from said table and communicates this information to said conference server;

said conference server collects conference attendee information on the basis of the user identification information communicated and creates an attendee list;

wherein when conference withdrawal requests are issued from said user terminals or said input/output units during the conference, said network equipment obtains user identification information corresponding to these user terminals or voice input/output units from said table and communicates this information to said conference server; and

said conference server collects conference withdrawal information on the basis of the user identification information communicated.

5,852,657

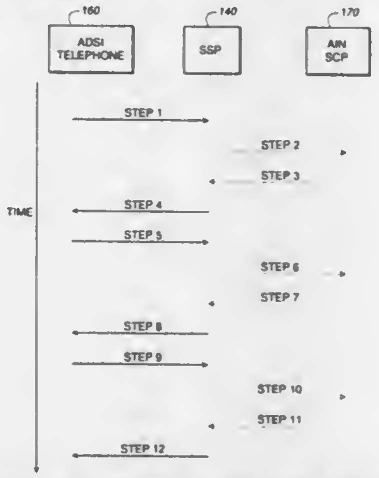
METHOD FOR VISUAL DELIVERY TO A CALLER OF SELECTED INFORMATION ASSOCIATED WITH A TELEPHONE NUMBER IN AN ADVANCED INTELLIGENT NETWORK VIA PUBLIC SWITCH TELEPHONE NETWORK

Dale W. Malik, Atlanta; Stephen Randolph La Pierre, Union City; Robert A. Koch, Norcross, and Alexander David Raji, Atlanta, all of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

Filed Jun. 18, 1997, Ser. No. 877,863

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—93.25 **27 Claims**



1. A method for delivering selected data associated with a telephone number in an advanced intelligent network via a public switch telephone network to telecommunications terminating equipment with data receipt and visual display capability, comprising the steps of:

receiving from a caller a first communication including an information retrieval service number;

in response to said first communication, sending a first announcement to the caller prompting the caller to communicate a subject telephone number;

receiving a second communication from the caller including the subject telephone number;

in response to receiving the second communication, retrieving the selected data associated with the subject telephone number from a database;

sending said data in a response message via the public switch telephone network to telecommunications terminating equipment associated with said caller and having data receipt and visual display capability for visual display of said data on said telecommunications terminating equipment.

5,852,658

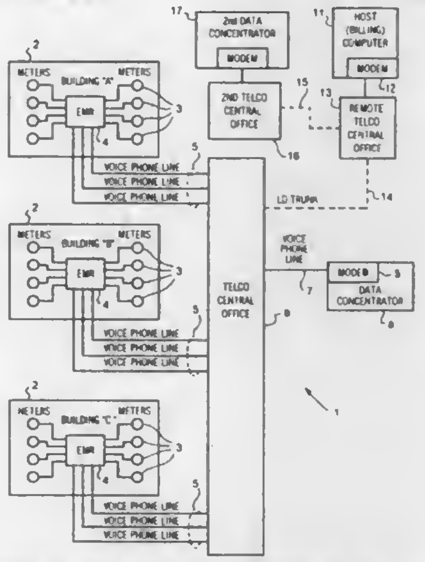
REMOTE METER READING SYSTEM

Nelson E. Knight, 16620 CR 247, Terrell, Tex. 75160, and David M. Banks, 11220 Cotillion, Dallas, Tex. 75228

Filed Jun. 12, 1997, Ser. No. 874,029

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—106.03 **23 Claims**



1. A system for remote automatic monitoring and recording of utility meter readings comprising:

an electronic meter reader (EMR) for accumulating meter counts from a plurality of utility meters, said EMR including:

a telephone interface which connects said EMR to a plurality of standard landline telephone lines;

means for determining whether each of said plurality of standard landline telephone lines is available for placing a data call; and

means for selecting an available telephone line from said plurality of standard landline telephone lines;

a data concentrator which collects accumulated meter counts from said EMR;

means for automatically placing a first data call from said EMR to said data concentrator over said selected available telephone line, said first data call including said accumulated meter counts;

a billing computer connected to said data concentrator; and

means for placing a second data call from said billing computer to said data concentrator, said second data call collecting said accumulated meter counts.

5,852,659

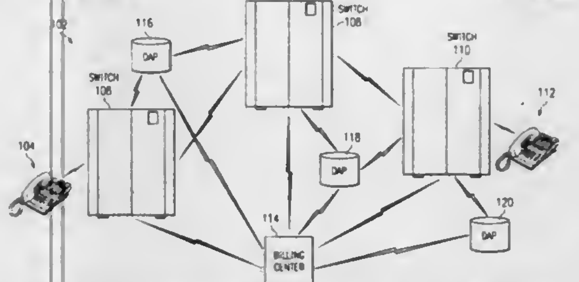
SYSTEM AND METHOD FOR IMPROVED BILLING RECORDS

William G. Welter, Jr., Colorado Springs, Colo., assignor to MCI Communications Corporations, Washington, D.C.

Filed Dec. 29, 1995, Ser. No. 581,736

Int. Cl.^{6} H04M *15/00*

U.S. Cl. 379—116 **14 Claims**



1. A method of generating a default call record or an expanded call record to store information about a telephone call from a calling location to a destination address, said method comprising the steps of:

(1) analyzing the telephone call to determine whether the default call record is sufficiently large to store call information pertaining to the telephone call, or whether the expanded call record must be used to store said call information pertaining to the telephone call;

(2) generating the default call record or the expanded call record for the telephone call as determined by step (1);

(3) recording timepoints in epoch time format in the default call record or the expanded call record as determined by step (1); and

(4) sending the default call record or the expanded call record, as determined by step (1), to a billing center upon termination of the telephone call.

5,852,660

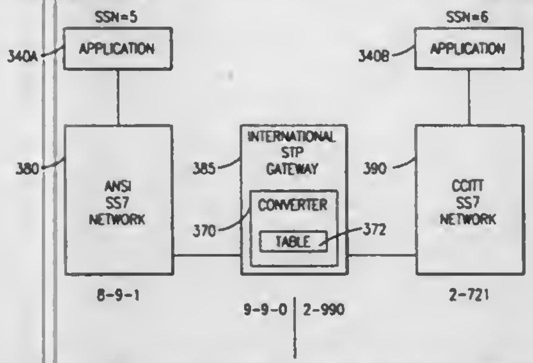
NETWORK PROTOCOL CONVERSION MODULE WITHIN A TELECOMMUNICATIONS SYSTEM

Jan Lindquist, Aachen, Germany, and Charles M. Feltner, Plano, Tex., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Apr. 10, 1996, Ser. No. 630,355

Int. Cl.^{6} H04M *7/00;3/42;* H04J *3/02;3/12*

U.S. Cl. 379—230 **24 Claims**



1. A system for communicating a signal containing application layer data between a first American National Standards Institute (ANSI) based Signaling System No. 7 (SS7) network and a second Consultative Committee on International Telegraph and Telephone (CCITT) based SS7 network, said system comprising:

a gateway Signal Transfer Point (STP) connecting said first SS7 network with said second SS7 network, said gateway STP comprising:

a Signaling Connection Control Part (SCCP) layer module; and

a conversion module interfaced with said SCCP layer module, said conversion module:

receiving said signal from one of said SS7 networks; and

converting SCCP parameter addressing data within said signal received from said one of said SS7 network between ANSI protocol and CCITT protocol in order to be recognizable by the other SS7 network.

5,852,661

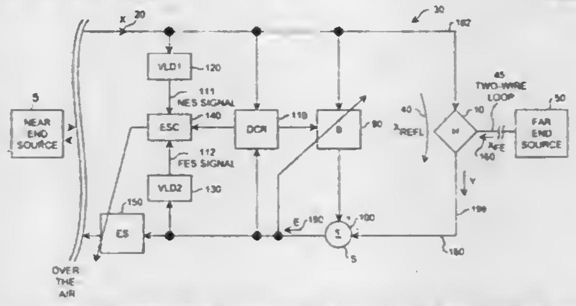
ADAPTIVE ECHO CANCELLATION USED WITH ECHO SUPPRESSION TO REDUCE SHORT AND LONG DURATION ECHOES

Herbert M.K. Chen, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 17, 1995, Ser. No. 390,320

Int. Cl.^{6} H04M *1/00*

U.S. Cl. 379—406 **21 Claims**



1. An echo suppressor controller device in a base station unit, comprising:

a hybrid connecting a two-wire loop to a four-wire loop, said hybrid having a first port for receiving a first transmit signal from a near-end source, a second port for outputting said first transmit signal to said two-wire loop and for receiving a second transmit signal from a far-end source, and a third port for outputting said second transmit signal to said two-wire loop, wherein an impedance mismatch between said two-wire loop and said four-wire loop results in reflection of said first transmit signal to said near-end source through said third port;

an adder/subtracter having an addition input, a subtraction input connected to receive said output from said third port of said hybrid, and an output port for outputting a residual error signal;

an adaptive balance filter having a first input port connected to receive said first transmit signal, a second input port connected to receive said residual error signal, an enable port, and an output port for outputting a balance signal based on a correlation determined therein between said first transmit signal and said residual error signal;

a decorrelation controller having a first input port connected to receive said first transmit signal, a second input port connected to receive said residual error signal, and outputting a first control signal to said enable port of said adaptive balance filter to control adaptation by said adaptive balance filter based on a level of correlation of said first transmit signal and said residual error signal as determined by said decorrelation controller, and outputting a second control signal in reverse polarity to said first control signal;

a first and second voice level detector respectively connected to receive said first transmit signal and said residual error signal, said first and second voice level detectors respectively outputting a first and second voice detection level;

an echo suppressor controller having a first and second input respectively connected to said first and second voice level detectors, said echo suppressor controller having an enable input for receiving said second control signal, and outputting an echo suppression control signal according to said first and second voice detection levels respectively received from said first and second voice level detectors; and

an echo suppressor having a first input port for receiving said echo suppression control signal, a second input port for receiving said residual error signal, and an output port for outputting an attenuated residual error signal according to an

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attenuation level as determined from said echo suppression control signal received from said echo suppression controller.

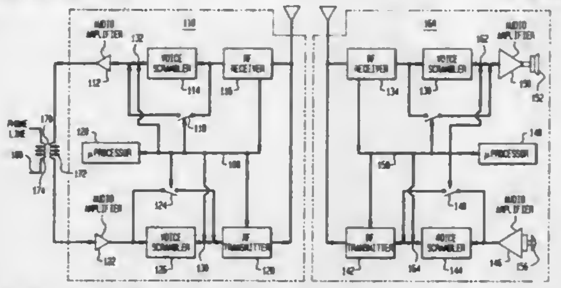
5,852,662
SCRAMBLER BYPASS SYSTEM

Scott L. Forgues, Tucson, Ariz., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 11, 1996, Ser. No. 678,731

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—9 **15 Claims**



1. A cordless phone comprising:
- a base station configured to receive audio signals from a phone line and to transmit audio signals to said phone line said base station further including:
  - a transmitter section comprising a first voice scrambler circuit coupled to said phone line so as to scramble audio signals received from said phone line;
  - a receiver section comprising a second voice scrambler circuit coupled to said phone line so as to descramble audio signals intended to be transmitted to said phone line;
- a handset terminal configured to receive audio signals from said base station and to transmit audio signals to said base station further including;
  - a transmitter section comprising a third voice scrambler circuit coupled to an audio microphone so as to scramble audio signals intended to be transmitted to said base station;
  - a receiver section comprising a fourth voice scrambler circuit coupled to an audio speaker so as to descramble audio signals received from said base station; and
- wherein said voice scrambler circuits of said base station are activated upon receiving a scrambler mode indication signal from said handset terminal and said voice scrambler circuits of said handset terminal are activated upon receiving a predetermined scrambling mode indication signal from said base station, said voice scrambler circuits include a bypass switch that when activated is adapted to couple said audio signals from the input terminal of each scrambler circuit to the output terminal of each scrambler circuit.

5,852,663
INFORMATION SIGNAL TRANSMISSION SYSTEM

Masahiko Enari, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

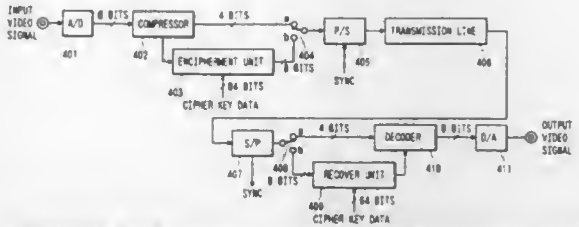
Continuation of Ser. No. 398,815, Mar. 6, 1995, Pat. No. 5,682,425, which is a continuation of Ser. No. 152,083, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 685,849, Apr. 16, 1991, abandoned. This application Jun. 6, 1997, Ser. No. 870,461

Claims priority, application Japan, Apr. 23, 1990, 2-105258; Apr. 26, 1990, 2-108903

Int. Cl.^{6} H04N *7/167;1/44;* **H04L** *9/00*

U.S. Cl. 380—10 **12 Claims**

1. An image processing method, comprising steps of:



a) inputting predictive encoded image data and reference image data which has been used for predictive encoding the predictive encoded data;

b) encrypting the reference image data; and

c) outputting the predictive encoded image data without encrypting and the encrypted reference image data, wherein an amount of data of the reference image data per a unit of image is larger than that of the predictive encoded image data.

5,852,664
DECODE ACCESS CONTROL FOR ENCODED MULTIMEDIA SIGNALS

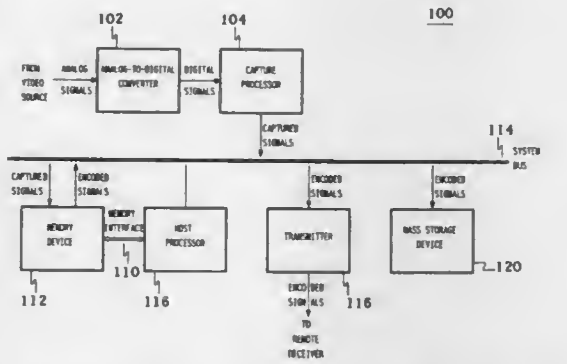
Vaughn Iverson, and Doug Brucks, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 10, 1995, Ser. No. 500,463

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—25 **72 Claims**

ENCODING SYSTEM



37. An apparatus for encoding multimedia signals to control access to decoding of encoded multimedia signals, comprising:

(1) means for receiving the multimedia signals; and

(2) means for encoding the multimedia signals to generate the encoded multimedia signals, wherein the decoding of the encoded multimedia signals is to be accomplished by:

(a) processing the encoded multimedia signals is to be accomplished by:

(b) comparing a first result to a second result, wherein:

the first result is generated by applying a first function to the first value; and

the second result is generated by applying a second function to a second value, the second value received from an application program; and

(c) decoding the encoded multimedia signals for playback only if the first result is equal to the second result.

5,852,665
INTERNATIONALLY REGULATED SYSTEM FOR ONE TO ONE CRYPTOGRAPHIC COMMUNICATIONS WITH NATIONAL SOVEREIGNTY WITHOUT KEY ESCROW

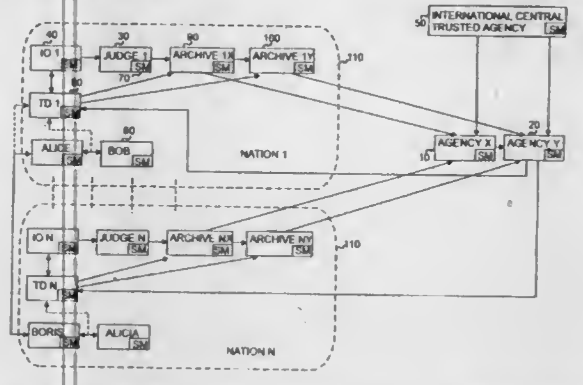
Carmi David Gressel, Kvutzat Urim, and Itai Dror, Beersheva, both of Israel, assignors to Fortress U & T Ltd., Beersheva, Israel

Continuation-in-part of Ser. No. 437,223, May 8, 1995, Pat. No. 5,664,017. This application Jul. 18, 1996, Ser. No. 683,476

Claims priority, application Israel, Apr. 13, 1995, 113375

Int. Cl.^{6} H04L *9/30;9/00*

U.S. Cl. 380—30 **30 Claims**



27. A system for controlling tapping of a suspect encrypted communication, the system comprising:
- a multiplicity of security modules each encrypting information using a different session key and each transmitting, in addition to said information, his own secret key, encrypted using at least one agency key wherein information transmitted in the course of a session between a security module A from among said multiplicity of security modules, and another security module B, can only be decrypted by a tapping security module if the at least one agency key retrieves A's secret key for the tapping security module;
- an agency security module which does not store the secret keys and which stores the agency key so as to prevent access thereto by any of the multiplicity of security modules; and
- an agency access monitoring module monitoring use of the agency key so as to prevent use of the agency key to facilitate unlawful tapping.

5,852,666
CAPABILITY SECURITY FOR DISTRIBUTED OBJECT SYSTEMS

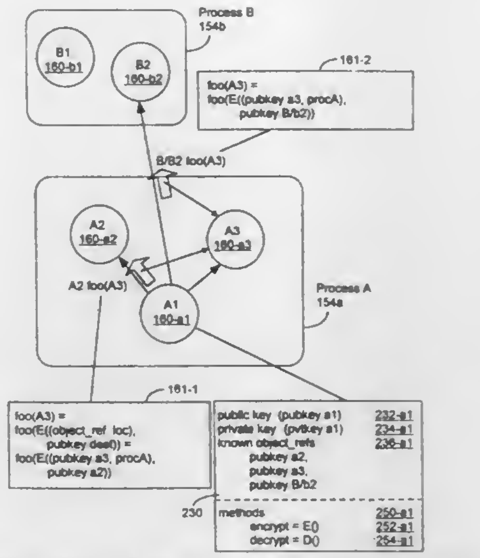
Mark S. Miller, Los Altos; E. Dean Tribble, Los Altos Hills; Norman Hardy, Portola Valley; Eric C. Hill, Palo Alto, and Christopher T. Hibbert, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 674,128

Int. Cl.^{6} G06F *15/163*

U.S. Cl. 380—4 **28 Claims**

18. A capability security system for distributed systems, comprising:
- a plurality of objects, each having a respective location;
- a cryptographic key that, along with said location, represents a capability to access one of said objects; and
- a secure message transmitting facility;
- messages referring to said one object via said cryptographic key and location being transmitted via said secure message transmitting facility so that said capability is distributed according to rules of capability security.



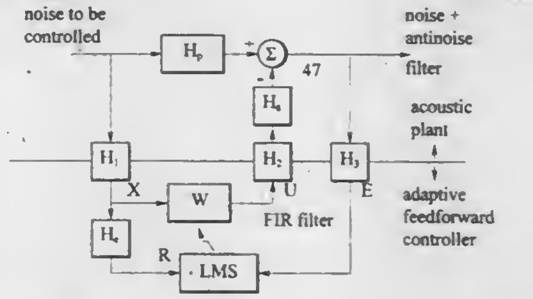
5,852,667
DIGITAL FEED-FORWARD ACTIVE NOISE CONTROL SYSTEM

Jianhua Pan, 401-1396 Ogilvie Road, Gloucester, Ontario, Canada, K1J 8V8, and Anthony J. Brammer, 4792, Massey Lane, Gloucester, Ontario, Canada, K1J 8W9

Filed Jul. 1, 1996, Ser. No. 673,459

Int. Cl.^{6} A61F *11/06*

U.S. Cl. 381—71.1 **32 Claims**



22. A method of noise control of an acoustic signal comprising:

(a) obtaining a reference signal of the acoustic signal to be controlled,

(b) applying an antinoise signal to the acoustic signal so as to control the acoustic signal,

(c) obtaining an error signal resulting from the application of the antinoise signal to the acoustic signal,

(d) generating said antinoise signal from said reference signal by passing the reference signal through a first filter having controllable filter coefficients,

(e) controlling the filter coefficients by processing the error signal and a modified representation of the reference signal and generating a coefficient control signal such as to generate the antinoise signal,

(f) applying the coefficient control signal to the first filter, and

(g) varying the gains of the paths of the reference signal (X), the antinoise signal (U), and the error signal (E) such that the error path impulse response remains unchanged.

5,852,668

HEARING AID FOR CONTROLLING HEARING SENSE COMPENSATION WITH SUITABLE PARAMETERS INTERNALLY TAILORED

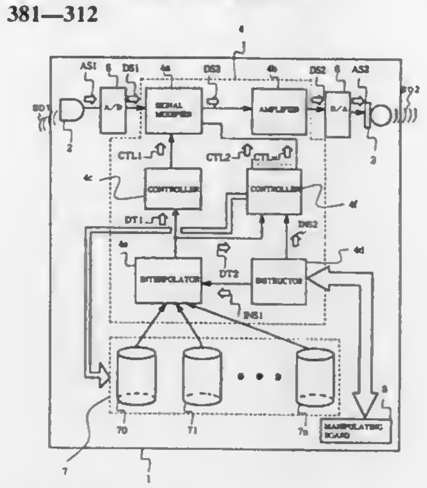
Ryuuichi Ishige, and Reishi Kondo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 26, 1996, Ser. No. 773,952

Claims priority, application Japan, Dec. 27, 1995, 7-340826

Int. Cl.⁶ H04R *25/00*

U.S. Cl. 381—312 **12 Claims**



1. A hearing aid comprising:

an acoustic signal-to-electric signal converting means for converting a first sound to a first electric signal;

an electric signal-to-acoustic signal converting means for converting a second electric signal to a second sound;

a signal modifying means connected between said acoustic signal-to-electric signal converting means and said electric signal-to-acoustic signal converting means, and responsive to a third electric signal representative of hearing aid parameters so as to modify said first electric signal to said second electric signal;

a memory means including a plurality of memory sub-means for respectively storing a plurality of pieces of hearing aid data information in a readable manner;

a working condition modifying means responsive to an instruction for working conditions for producing a fourth electric signal representative of a ratio of interpolation; and

a parameter generating means responsive to said fourth electric signal so as to produce said third electric signal from said plurality of pieces of hearing aid data information through an interpolation at said ratio represented by said fourth electric signal,

wherein said working condition modifying means includes a switching means for generating a fifth electric signal representative of said working conditions, an instructor connected to said switching means for producing said fourth electric signal and a sixth electric signal representative of a user's request for modification, and a first controller connected to said instructor for receiving said sixth electric signal,

wherein said memory means and said parameter generating means are configured to cause said parameter generating means to produce said third electric signal,

wherein said parameter generating means includes an interpolator, supplied with said pieces of hearing aid information and responsive to said fourth electric signal for carrying out said interpolation, and a second controller connected to said interpolator for producing said third electric signal from the result of said interpolation, and

wherein said ratio of interpolation is computed by said instructor based on receipt of said sixth electric signal which corresponds to the user's request for modification of said working conditions, the user's request for modification being inputted through said switching means.

5,852,669

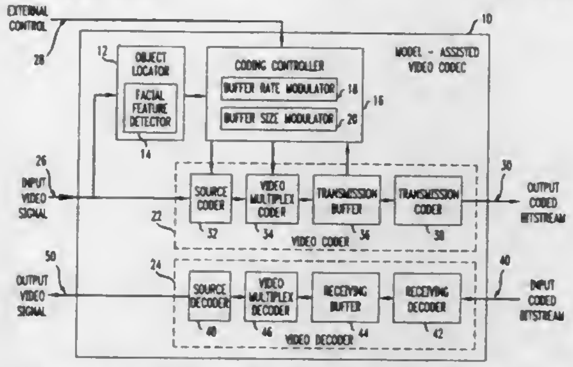
AUTOMATIC FACE AND FACIAL FEATURE LOCATION DETECTION FOR LOW BIT RATE MODEL-ASSISTED H.261 COMPATIBLE CODING OF VIDEO

Alexandros Eleftheriadis, and Arnaud Eric Jacquin, both of New York, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 455,472, May 31, 1995, Pat. No. 5,500,673, which is a division of Ser. No. 223,903, Apr. 6, 1994, Pat. No. 5,512,939. This application Jul. 10, 1995, Ser. No. 500,672

Int. Cl.⁶ H04N *7/15;* **H04B** *1/66*

U.S. Cl. 382—118 **21 Claims**



1. An apparatus for coding a video signal representing a succession of frames, at least one of the frames including an image of a human subject, the apparatus comprising:

a processor for processing the video signal to detect at least a region of a head outline of the human subject characterized by at least a portion of an ellipse, and to generate a plurality of parameters associated with the ellipse for use in coding the video signal;

wherein said processor is adapted to define a rectangular window encompassing an eyes-nose-mouth region of the subject as a function of the ellipse, and to determine an amount of slant of a symmetrical axis of the window with respect to a vertical axis of the image to enhance detection and image quality of the eyes-nose-mouth region of the subject.

5,852,670

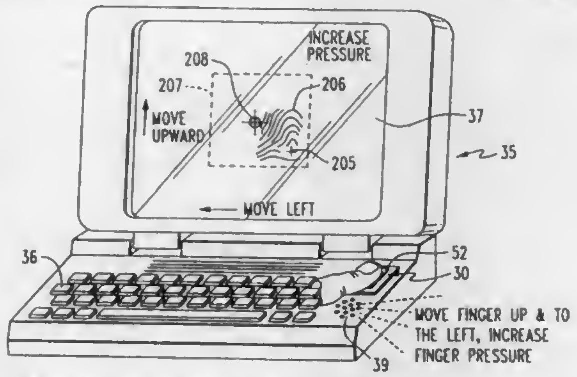
FINGERPRINT SENSING APPARATUS WITH FINGER POSITION INDICATION

Dale R. Setlak, Melbourne; John C. Schmitt, Indialantic, both of Fla.; Steven D. Wilson, Chicago, Ill., and Ellery Y. Chan, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 590,564, Jan. 26, 1996. This application Dec. 30, 1997, Ser. No. 771

Int. Cl.⁶ G06K *9/28;9/32*

U.S. Cl. 382—126 **35 Claims**



1. A fingerprint sensing apparatus comprising:

a fingerprint sensor including a plurality of sensing elements for sensing identifying features of a fingerprint from a finger of a user;

a processor operatively connected to said plurality of sensing elements of said fingerprint sensor for determining an actual fingerprint position on said fingerprint sensor relative to a desired fingerprint position based on the sensed identifying features; and

finger position indicator means operatively connected to said processor for generating a finger position indication to assist the user in positioning the finger to the desired fingerprint position based upon the actual fingerprint position on said fingerprint sensor.

5,852,671

METHOD FOR RECONSTRUCTING A CURVED SURFACE OF A SUBJECT AND AN APPARATUS FOR RECONSTRUCTING A CURVED SURFACE OF A SUBJECT

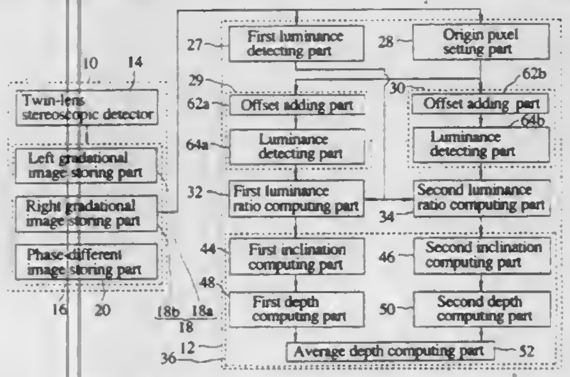
Mitsuo Oshima, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 829,818

Claims priority, application Japan, Aug. 29, 1996, 8-228196

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—154 **11 Claims**


27
First luminance detecting part
28
Origin pixel setting part
10
14
29
30
62b
Twin-lens stereoscopic detector
62a
Offset adding part
Offset adding part
64a
Luminance detecting part
64b
Luminance detecting part
Left gradational image storing part
32
First luminance ratio computing part
Second luminance ratio computing part
34
Right gradational image storing part
44
First inclination computing part
46
Second inclination computing part
Phase-different image storing part
48
16
20
18b
18a
18
First depth computing part
50
Second depth computing part
12
36
Average depth computing part
52

1. A method for reconstructing a curved surface of a subject, comprising the steps of:

photographing a subject from at least two different positions,

detecting each gradational image seen from each of the respective positions,

computing a luminance ratio of pixels corresponding to each other in the different gradational images, and

computing an inclination of the curved surface of said subject on the basis of the luminance ratio and including the steps of:

(1) obtaining inclinations of the surfaces of a second and a third observed part which are adjacent to the first observed part and are different from each other, respectively, as a first and a second inclination,

(2) taking an average of the first and the second inclination, and

(3) obtaining an inclination of the surface of a first observed part of said subject on the basis of the average inclination.

5,852,672

IMAGE SYSTEM FOR THREE DIMENSIONAL, 360°, TIME SEQUENCE SURFACE MAPPING OF MOVING OBJECTS

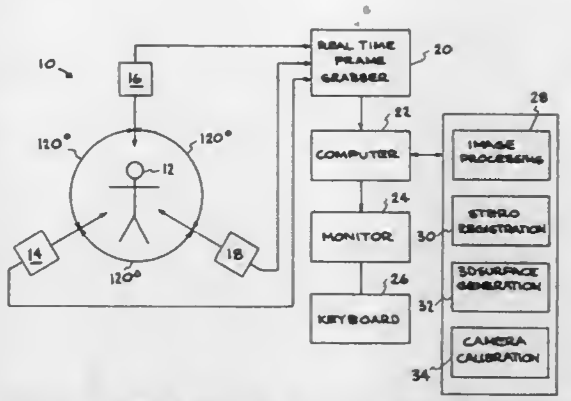
Shin-Yee Lu, Pleasanton, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 500,380, Jul. 10, 1995. This application Jun. 9, 1997, Ser. No. 871,557

Int. Cl.⁶ G01B *11/24;* **G06T** *17/00*

U.S. Cl. 382—154 **3 Claims**

1. A system for detecting and measuring the three-dimensional positions occupied by the surfaces of an object-of-interest, comprising:



a first video camera and a second video camera separated from one another along a baseline and aimed in tandem at a target area and providing for respective first and second video images;

a light projector disposed between the first and second video cameras for projecting a first set of parallel light line segments at said target area; and

three-dimensional surface generation means connected to receive said first and second video images and a camera pair calibration matrix and for translating the respective observations of said light lines distorted by their falling on an object-of-interest into a plurality of three-dimensional coordinates that estimate a surface of said object-of-interest and that conform to a plurality of measurements taken for said camera pair calibration matrix;

wherein, the three-dimensional surface generation means include frame grabbing means for synchronizing respective first and second video image outputs of the first and second video cameras and for storing a sequence of video frames in memory that represent image columns parallel to said first set of parallel line segments of light and image rows orthogonal to said first set of parallel line segments of light;

wherein; the three-dimensional surface generation means includes image warping means connected to the first and second video cameras for electronically warping the images from each camera to have a common plane of observation, wherein the horizontal and vertical linear scales of each image coincide with the other, and providing for an aligned image output for each of said first and second video images;

wherein, the three-dimensional surface generation means includes stereo image registration means for inputting said first and second video images line-by-line and taking separate second order derivatives of each to find a first and a second plurality of zero-crossings $(i_1, i_2, \ldots, i_n)^{left}$ and $(a_1, a_2, \ldots, a_n)^{right}$, wherein connections are plotted between corresponding zero-crossings of adjacent first video image lines, and connections are also plotted between corresponding zero-crossings of adjacent second video image lines, and wherein said first image zero-crossings are matched with said second image zero-crossings, line-by-line;

wherein, said plotting of corresponding zero-crossings of adjacent first image lines, said plotting of said corresponding zero-crossings of adjacent second image lines, and said matching of first and second images are all consistent with one another, and said matched pixel pairs are adjusted for consistency between epipolar lines, as indicated by said light lines, in both said first and second video images, and wherein said matched pixel pairs are also adjusted for consistency between successive image frames (t-3), (t-2), (t-1), (t), with said matches that are between zero-crossings being interpolated, and matched pairs being output at sub-pixel resolution.

5,852,673

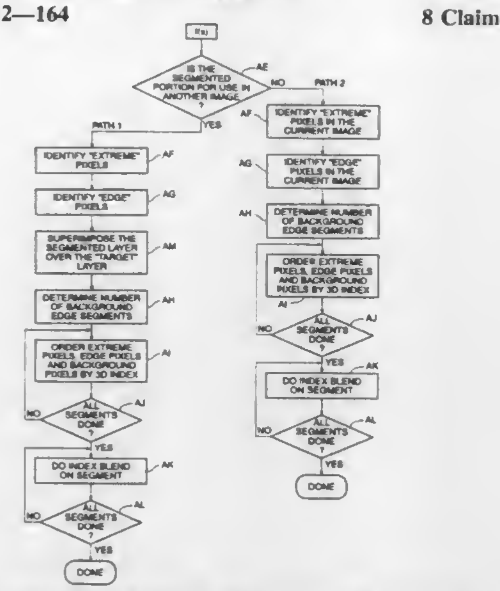
METHOD FOR GENERAL IMAGE MANIPULATION AND COMPOSITION

Fredric S. Young, Los Altos, Calif., assignor to Chroma Graphics, Inc., Burlingame, Calif.

Continuation-in-part of Ser. No. 624,035, Mar. 27, 1996, abandoned. This application Nov. 21, 1996, Ser. No. 754,731

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—164 **8 Claims**


IS THE SEGMENTED PORTION FOR USE IN ANOTHER IMAGE ?
AE
NO
PATH 2
YES
PATH 1
IDENTIFY "EXTREME" PIXELS
AF
IDENTIFY "EDGE" PIXELS
AG
SUPERIMPOSE THE SEGMENTED LAYER OVER THE "TARGET" LAYER
AM
DETERMINE NUMBER OF BACKGROUND EDGE SEGMENTS
AH
ORDER EXTREME PIXELS, EDGE PIXELS AND BACKGROUND PIXELS BY 3D INDEX
AI
ALL SEGMENTS DONE ?
AJ
DO INDEX BLEND ON SEGMENT
AK
AL
DONE
IDENTIFY "EXTREME" PIXELS IN THE CURRENT IMAGE
IDENTIFY "EDGE" PIXELS IN THE CURRENT IMAGE

1. In a process of photorealistically processing a portion of a source image, to form a target image using a palette of colors, said process having at least a color selection step and a blending step, the improvement comprising:

in the color selection step, classifying each part of an image segment of the source image in a color space of at least three dimensions as a foreground region, a background region or a transition region; and

in the blending step,

formulating a color gradient between a new foreground color which has been selected by said color selection step and an original background color across said transition region, said gradient defining a seamless color transition between said foreground region and said background region without artificial discontinuities;

employing difference vectors to define an endpoint of a transition vector between said background color and said new foreground color; and

mapping said transition vector from said background color to said new foreground color.

5,852,674

APPARATUS AND METHOD FOR PROCESSING IMAGES USING POSITION-DEPENDENT WEIGHING FACTOR

Hiroyuki Takahashi, Kawasaki, and Mitsuru Kurita, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 250,345, May 27, 1994, which is a continuation of Ser. No. 864,009, Apr. 7, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,463

Claims priority, application Japan, Apr. 8, 1991, 3-103167

Int. Cl.⁶ G06K *9/00*

U.S. Cl. 382—167 **5 Claims**

1. A color image processing apparatus, comprising:

compression means for compressing color image data by a lossy compression;

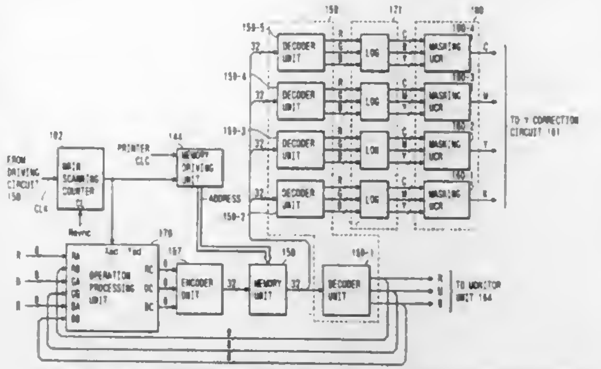
a memory for storing the compressed color image data;

decompressing means for decompressing the compressed color image data;

a plurality of image forming means, each of which forms a different color, with each color being consecutively provided to the plurality of image forming means at a predetermined time interval with respect to each other;

display means for displaying a color image on the basis of the decompressed color image data; and

read-out means for consecutively reading out at the predetermined time interval each of a plurality of different compressed color image data from said memory when an image is to be formed by said plurality of image forming means, and for directly reading out the compressed color image data from said memory when the color image is to be displayed by said display means.



5,852,675

COLOR CHART FOR IMAGE CORRECTION AND METHOD OF COLOR CORRECTION

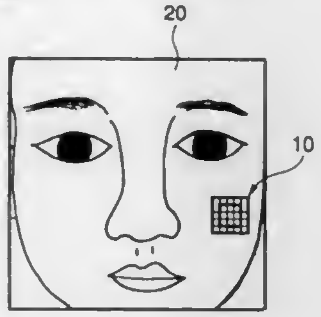
Kiyoshi Matsuo, 14-29, Sawamura 1-chome, Matsumoto, Nagano 390; Masaho Hayashi, Koganei, and Atsushi Uchida, Tokyo, all of Japan, assignors to Kiyoshi Matsuo, Matsumoto, and Dai Nippon Printing Co., Ltd., Tokyo, both of Japan

Filed Apr. 15, 1996, Ser. No. 632,065

Claims priority, application Japan, May 14, 1995, 7-089098

Int. Cl.⁶ G03F *3/08*

U.S. Cl. 382—167 **15 Claims**



1. A color chart for image correction comprised of a sheet base substrate such as paper and plastic film, in which an adhesive layer is provided in the posterior side for adhering onto an object the surface of the sheet base substrate is matted, and at least three mat color materials are applied each in a different partition on the surface of the sheet base substrate, wherein the partitions to which said color materials are applied is divided into square grids of the same number as the number of the color materials a scale is provided located around the square grid partitions on the surface of said base substrate in a form of a series of squares of a standard size.

5,852,676

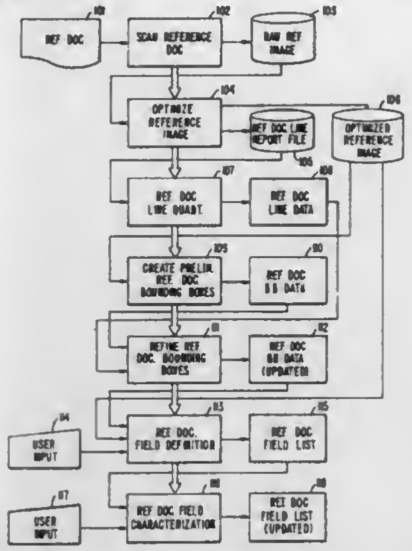
METHOD AND APPARATUS FOR LOCATING AND IDENTIFYING FIELDS WITHIN A DOCUMENT

Theodore G. Lazar, San Carlos, Calif., assignor to Teraform Inc., San Jose, Calif.

Filed Apr. 11, 1995, Ser. No. 419,663

Int. Cl.⁶ G06K *9/00;9/34*

U.S. Cl. 382—173 **13 Claims**


101
REF DOC
102
SCAN REFERENCE DOC
103
RAW REF IMAGE
104
OPTIMIZE REFERENCE IMAGE
REF DOC LINE REPORT FILE
106
OPTIMIZED REFERENCE IMAGE
107
REF DOC LINE QUANT.
REF DOC LINE DATA
CREATE PRELIM. REF. DOC BOUNDING BOXES
REF DOC BB DATA
REFINE REF DOC. BOUNDING BOXES
REF DOC BB DATA (UPDATED)
USER INPUT
REF DOC. FIELD DEFINITION
REF DOC FIELD LIST
REF DOC FIELD CHARACTERIZATION
REF DOC FIELD LIST (UPDATED)

1. A method of locating a specific subject image field in a subject image partitioned into a plurality of subject image fields, the method comprising the computer implemented steps of:

a) determining at least one characteristic value for each of the subject image fields, wherein the characteristic value is determined by one or more characteristics selected from the group consisting of the X-coordinate of the leftmost point of the subject image field, the Y-coordinate of the uppermost pixel of the subject image field, the width of the field, the height of the subject image field, the number of pixels in the subject image field, the number of characters in the subject image field, the number of horizontal lines above the subject image field, the number of horizontal lines below the subject image field, the number of vertical lines to the left of the subject image field, the number of vertical lines to the right of the subject image field, the distance from another field having a particular string of characters, the height, width and number of pixels for each character in the subject image field, and the ASCII value of each character in the subject image field;

b) determining a correlation value for each of the characteristic values by comparing each characteristic value to at least one predetermined criterion;

c) combining the correlation values to yield a composite correlation value for each of the subject image fields; and

d) locating the specific subject image field by determining the subject image field with the highest composite correlation value.

5,852,677

IMAGE DATA PROCESSING APPARATUS

Koji Nakamura, and Masayuki Mizuno, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd, Osaka, Japan

Filed Feb. 18, 1997, Ser. No. 802,778

Claims priority, application Japan, Feb. 19, 1996, 8-031032

Int. Cl.⁶ G06K *9/34;* **G06T** *5/00;* **H04N** *1/403*

U.S. Cl. 382—173 **11 Claims**

1. An image data processing apparatus adapted to produce image data to be applied to image outputting means which is capable of producing pixels of a plurality of density gradation levels on the basis of inputted image data having values within a range between a lower limit value and an upper limit value, the image data processing apparatus comprising:

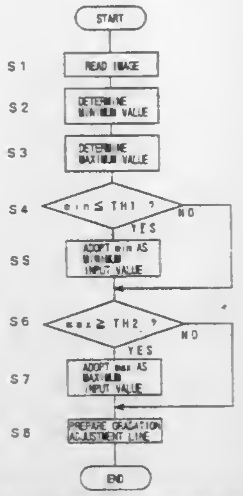
first comparison means for comparing a minimum value of the inputted image data with a first threshold which is higher than a lower limit input value and lower than an upper limit input image data value;

second comparison means for comparing a maximum value of the inputted image data with a second threshold which is higher than the first threshold and lower than the upper limit input image data value;

minimum input value determining means for adopting the minimum value of the inputted image data as a minimum input value if the minimum value of the inputted image data is not higher than the first threshold, and adopting the lower limit input image data value as the minimum input value if the minimum value of the inputted image data is higher than the first threshold, on the basis of the comparison by the first comparison means;

maximum input value determining means for adopting the maximum value of the inputted image data as a maximum input value if the maximum value of the inputted image data is not lower than the second threshold, and adopting the upper limit input image data value as the maximum input value if the maximum value of the inputted image data is lower than the second threshold, on the basis of the comparison by the second comparison means; and

data correction means for correcting the inputted image data so that inputted image data within a range between the minimum input value and the maximum input value thus determined correspond to data within a range between the lower limit value and the upper limit value for input to the image outputting means, to prepare image data to be applied to the image outputting means.



5,852,678

DETECTION AND RENDERING OF TEXT IN TINTED AREAS

Jeng-nan Shiau; Zhigang Fan, and Raymond J. Clark, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1996, Ser. No. 655,523

Int. Cl.⁶ G06K *9/34*

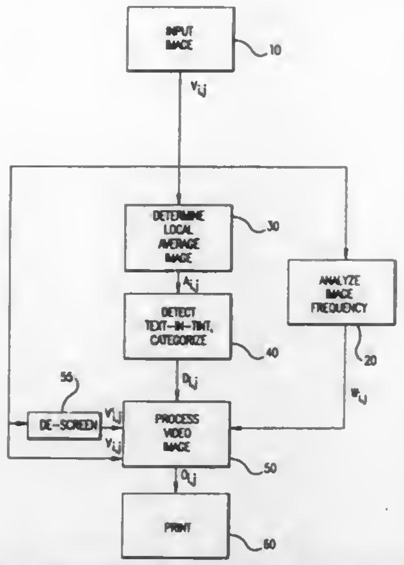
U.S. Cl. 382—176 **19 Claims**

1. A method for reproducing a compound document image comprising:

distinguishing half-tone tint regions having embedded text and/or line graphics from half-tone tint regions not having embedded text and/or line graphics;

providing a digital image of said document, said digital image comprising a multiplicity of pixels, each of which has a value to represent the tonal state of said pixel;

determining an average image of said document by calculating, for each said pixel, an average of the values of the pixels within an averaging window encompassing said pixel;



determining a discrimination value for each said pixel indicating whether said pixel is a half-tone tint pixel or a text/graphics pixel; and

controlling a print device in accordance with said discrimination values to output a reproduction of at least a portion of said document image.

5,852,679

IMAGE PROCESSING APPARATUS AND METHOD

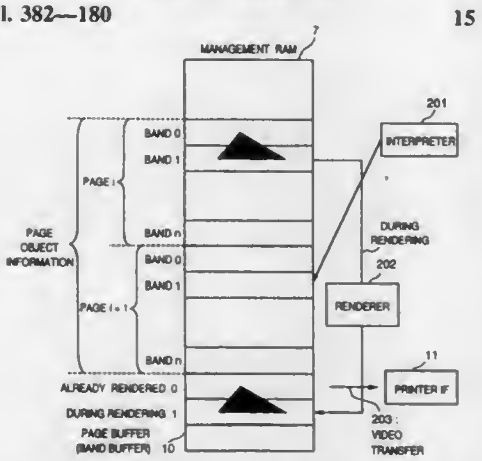
Haruo Shimizu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,916

Claims priority, application Japan, Sep. 2, 1994, 6-210254

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—180 15 Claims



1. An image processing apparatus for an image forming apparatus which forms an image on the basis of color page-description information input from an external apparatus, comprising:

input means for inputting the color page-description information from the external apparatus, the information representing the image and including gradation information which instructs generation of a gradation image;

intermediate information generation means for generating predetermined intermediate information on the basis of the color page-description information;

interpretation means for interpreting the gradation information and performing calculating processing based on the interpretation result so as to generate gradation image data; and

rendering means for rendering the image data which includes the generated gradation image data, on the basis of the intermediate information and the interpretation result.

5,852,680

CHARACTER PROCESSING APPARATUS AND A CHARACTER PROCESSING METHOD

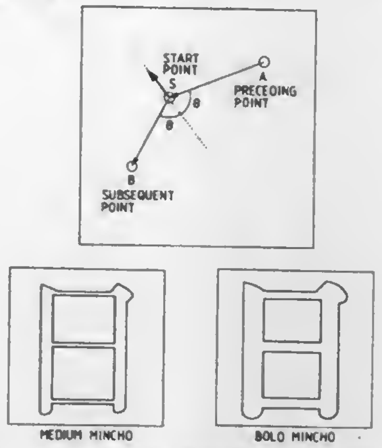
Masayuki Yoshida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 566,169

Claims priority, application Japan, Dec. 5, 1994, 6-300879

Int. Cl.^{6} G06K *9/44*

U.S. Cl. 382—258 30 Claims



1. An information processing apparatus comprising:

thickening means for thickening an outline of a pattern comprising a plurality of strokes, the outline comprising a plurality of outline points;

discrimination means for discriminating, for each adjacent two of the plurality of strokes of the outline thickened by said thickening means crossing over each other at a crossing angle, whether or not the angle is equal to or less than a predetermined value; and

correction means for correcting outline points on adjacent two strokes crossing over each other at a crossing angle if said discrimination means discriminates that the crossing angle is equal to or less than the predetermined value.

5,852,681

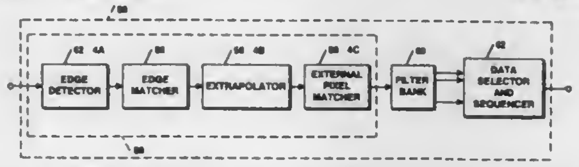
METHOD AND APPARATUS FOR ELIMINATING ARTIFACTS IN DATA PROCESSING AND COMPRESSION SYSTEMS

Kevin Amaratunga, Cambridge, and John R. Williams, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 20, 1995, Ser. No. 425,759

Int. Cl.^{6} G06K *9/40*

U.S. Cl. 382—268 8 Claims



1. A method of eliminating edge effects from a transformed image, the method comprising the steps of:

(a) selecting a wavelet basis function which approximates a sequence of data values wherein the sequence of data values define an image region and wherein a first data value in the sequence of data values corresponds to a first boundary of the image and a second data value in the sequence of data values corresponds to a second boundary of the image;

(b) selecting a first predetermined number of data values inside the predetermined boundary region of the image region;

(c) generating a polynomial having a predetermined order and having a predetermined characteristic inside a predetermined boundary region of the image region wherein the polynomial is representative of selected data values inside the boundary region, wherein the first predetermined number of data values correspond to at least twice the predetermined order of the polynomial;

(d) extrapolating the polynomial a predetermined length outside the boundary region;

(e) generating a second predetermined number of exterior data values from the portion of the polynomial extrapolated outside the boundary region of the image region; and

(f) expressing the plurality of exterior data values in terms of data values inside the boundary region of the image region.

5,852,682

POST-PROCESSING METHOD AND APPARATUS FOR USE IN A VIDEO SIGNAL DECODING APPARATUS

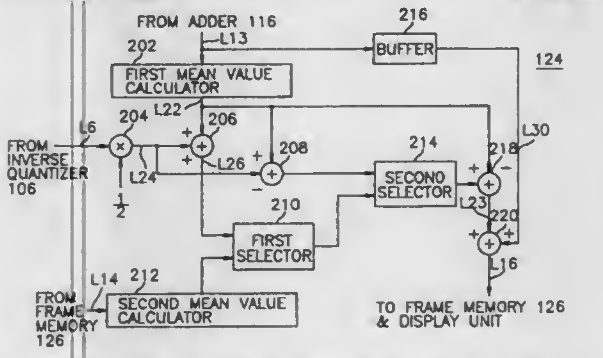
Sang-Ho Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics, Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 1, 1996, Ser. No. 595,142

Claims priority, application Rep. of Korea, Feb. 28, 1995, 95-3963

Int. Cl.^{6} G06K *9/36;9/40;* H04N *7/12*

U.S. Cl. 382—268 9 Claims



1. A method for post-processing a current block for use in a decoding system for decoding an encoded digital image signal, wherein the encoded digital image signal includes a plurality of encoded blocks of quantized transform coefficients, and the current block corresponds to one of the encoded blocks having a quantized DC coefficient and a predetermined number of quantized AC coefficients, the quantized DC coefficient having been quantized based on a DC quantization step size(OS), comprising the steps of:

(a) calculating an average neighboring pixel value(ANV) of neighboring block pixels located along a borderline between the current block and its neighboring blocks;

(b) obtaining an average current pixel value(ACV) of current block pixels located along the borderline between the current block and the neighboring blocks; and

(c) adjusting pixel values of the current block pixels based on the average neighboring pixel value, the average current pixel value, and the DC quantization step size;

wherein said adjusting step (c) includes the steps of:

(c1) subtracting the ANV from the ACV; and

(c2) if $(ACV-ANV)\geqq QS/2$, decreasing all the pixel values of the current block by QS/2; if $(ACV-ANV)\leqq -QS/2$, increasing all the pixel values of the current block by QS/2; and, if $-QS/2<(ACV-ANV)<QS/2$, increasing all the pixel values of the current block by ACV−ANV.

5,852,683

METHOD FOR AUTOMATIC IMAGE MERGE

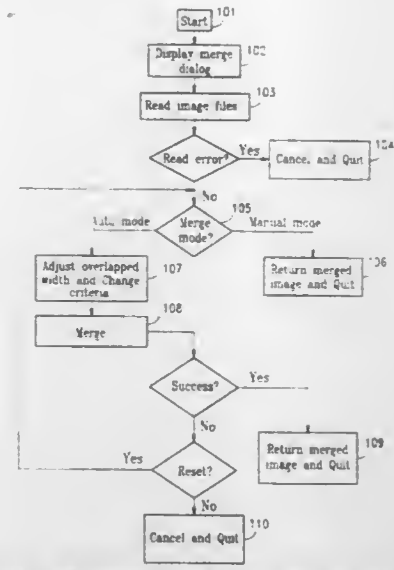
Tsai Jewel, Hsinchu, Taiwan, assignor to Mustek Systems, Inc., Taiwan

Filed Sep. 13, 1996, Ser. No. 713,824

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 382—284 18 Claims

1. A method for automatically merging a first image and a second image, wherein said first image and said second image are overlapped, comprising the steps of:



a. selecting a meaningful sample from said second image;

b. selecting an array of pixels as a parent region from said first image, said parent region having a plurality of child regions;

c. storing said parent region and said child regions in a region queue;

d. comparing each region in said region queue with said meaningful sample according to a first estimate function;

c. returning a region with an estimate close to that of said meaningful sample;

f. creating a node queue based on said region queue;

g. comparing the pixels in each node of said node queue with said meaningful sample;

h. defining and returning a node as a match point if said node is within a minimum error tolerance; and

i. merging said first image with said second image based on said match point.

5,852,684

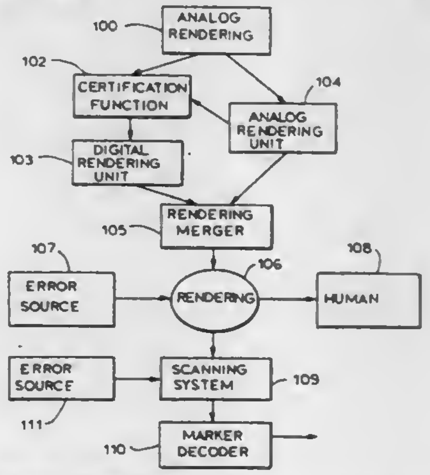
MULTIMEDIA RENDERING MARKER AND METHOD

Daniel P. Lopresti, Hopewell, N.J., and Jonathan S. Sandberg, New York, N.Y., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Division of Ser. No. 434,560, May 3, 1995, Pat. No. 5,793,903, which is a continuation of Ser. No. 137,617, Oct. 15, 1993, abandoned. This application Nov. 5, 1997, Ser. No. 964,560

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—309 8 Claims



1. A composite signal comprising:

at least one first component comprising an analog representation of image content data generated by a processor from a digital representation of said image content data; and

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at least one second component comprising a marker derived by said processor from said digital representation, said marker encoding spatial decomposition scan order information for use by a computer receiving said composite signal in processing said analog representation along spatial coordinates to recover objects in said image.

5,852,685

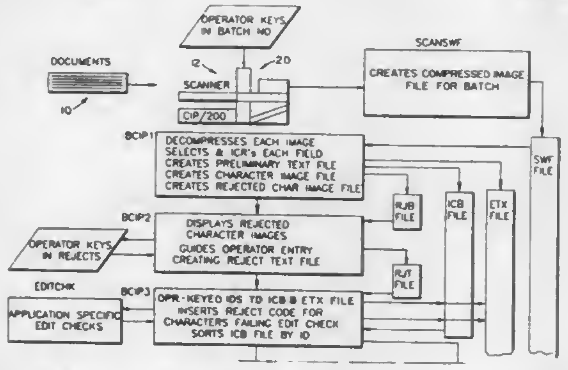
ENHANCED BATCHED CHARACTER IMAGE PROCESSING

David H. Shepard, Coronado, Calif., assignor to Cognitronics Imaging Systems, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 097,131, Jul. 26, 1993, Pat. No. 5,526,447. This application Nov. 15, 1995, Ser. No. 558,830

Int. Cl.^{6} G06K *9/03;9/62*

U.S. Cl. 382—311 **8 Claims**


OPERATOR KEYS IN BATCH NO
DOCUMENTS
10
12
20
SCANNER
CIP/200
SCANSWF
CREATES COMPRESSED IMAGE FILE FOR BATCH
BCIP1
DECOMPRESSES EACH IMAGE
SELECTS & ICR's EACH FIELD
CREATES PRELIMINARY TEXT FILE
CREATES CHARACTER IMAGE FILE
CREATES REJECTED CHAR IMAGE FILE
SWF FILE
RJB FILE
ICB FILE
ETX FILE
BCIP2
DISPLAYS REJECTED CHARACTER IMAGES
GUIDES OPERATOR ENTRY
CREATING REJECT TEXT FILE
OPERATOR KEYS IN REJECTS
RJT FILE
EDITCHK
APPLICATION SPECIFIC EDIT CHECKS
BCIP3
OPR-KEYED IDS TO ICB & ETX FILE
INSERTS REJECT CODE FOR
CHARACTERS FAILING EDIT CHECK
SORTS ICB FILE BY ID

1. In a process for verifying the tentatively determined identity of recognition-processed characters, the steps of:

storing data representing the images of a number of characters which have been tentatively identified in a predetermined computer-controlled algorithm providing a recognition-processing segment;

storing data representing the images of a number of characters which are purposely-incorrectly-identified (PII);

sorting said stored tentatively-identified and PII image data into groups of characters of the same identification;

merging by combining the tentatively-identified characters of one group with a number of said PII characters from a corresponding group having the same (but incorrect) identification as said one group;

simultaneously displaying in a single uniform composite array a number of stored character images from each of said groups of the same identification;

determining by inspection the presence of characters in the displayed groups failing to have the characterization common to those groups of the same identification;

determining those characters failing to have said common characterization which were purposely-incorrectly-identified (PII);

developing statistics reflecting the number of PII characters found in said inspection;

determining from said PII statistics whether a desired sufficient number of incorrectly-tentatively-identified characters has been found; and

when an insufficient number of such characters has been found, inspecting said displayed groups again in an effort to find additional characters failing to have the characterization common to those groups.

5,852,686

MANUALLY OPERABLE DOCUMENT READING DEVICE FOR AN IMAGE FORMING APPARATUS

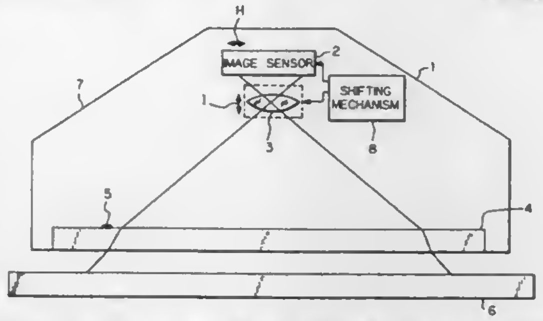
Shinya Kubo; Tetsuichiro Yamamoto, both of Tokyo, and Yasushi Matsumoto, Shizuoka, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 10, 1996, Ser. No. 731,129

Claims priority, application Japan, Oct. 11, 1995, 7-263004

Int. Cl.^{6} G06K *9/18*

U.S. Cl. 382—313 **18 Claims**



1. A hand held device for reading image data out of a document, comprising:

a casing;

an image sensor attached to said casing;

a lens for focusing an image adjacent a reading surface to said image sensor;

a transparent member affixed to said casing to extend in a main scanning direction, and having a fixed mark positioned outside of a valid reading range of said image sensor, wherein said fixed mark is located at a fixed distance from said image sensor along a direction perpendicular to the main scanning direction; and

adjusting means for automatically adjusting said valid reading range of said image sensor on the basis of a position of said fixed mark.

5,852,687

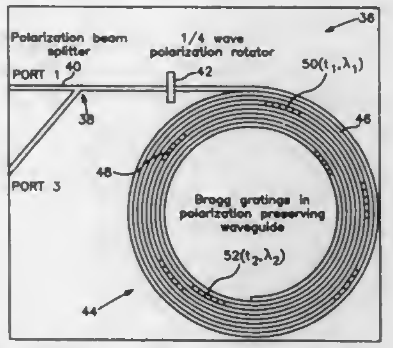
INTEGRATED OPTICAL TIME DELAY UNIT

Michael G. Wickham, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 9, 1997, Ser. No. 890,164

Int. Cl.^{6} G02B *6/12*

U.S. Cl. 385—14 **13 Claims**


36
Polarization beam splitter
1/4 wave polarization rotator
PORT 1
40
42
50(t1, λ1)
38
46
48
PORT 3
Bragg gratings in polarization preserving waveguide
52(t2, λ2)
44

1. A system for providing time delays for an optical signal comprising:

an input port for receiving an input optical signal having a predetermined polarization;

an output port;

an optical splitting device coupled to said input port and said output port for splitting optical signals relative to the polarization of the input optical signal;

a polarization rotating device for rotating the polarization of said input optical signal and reflected optical signals, said polarization rotating device coupled to said optical splitting device and a waveguide device; and

a waveguide device coupled to said polarization rotating device, said waveguide device including one or more reflective devices for reflecting optical signals having predetermined wavelengths to said polarization rotating device, said reflective devices spaced along said waveguide for reflecting optical to said output port to provide predetermined time delays of said input optical signal.

5,852,688

METHOD FOR MANIPULATING OPTICAL ENERGY USING POLED STRUCTURE

Michael J. Brinkman, Redwood City; David A. G. Deacon, Los Altos; William K. Bischel, and Simon J. Field, both of Menlo Park, all of Calif., assignors to Gemfire Corporation, Palo Alto, Calif.

Division of Ser. No. 304,042, Sep. 9, 1994, Pat. No. 5,703,710. This application Jul. 31, 1997, Ser. No. 904,198

Int. Cl.^{6} G02B *6/42;6/26*

U.S. Cl. 385—16 **5 Claims**

1. A method for operating a laser comprising a solid material for passing optical energy, an input waveguide in said solid material, a base reflector disposed along an optical axis, a plurality of output waveguides encountering said input waveguide at intersection regions along said input waveguide, a plurality of electrically-switchable beam redirectors disposed along said input waveguide at said intersection regions, each one of said electrically-switchable beam redirectors comprising a first electrically-conductive material forming a first electrode, said first electrode confronting said solid material and bridging at least one electrically-controllable element in said solid material, a plurality of gratings disposed along said output waveguides defining electrically-selectable retroreflectors further defining cavities between said base reflectors and said gratings, an optical amplifier disposed along an optical axis, said optical axis traversing said solid material, and an optical coupling means disposed between said solid material and said optical amplifier along said optical axis, said method comprising:

selectively activating said redirectors simultaneously in order to support multiple simultaneous operation at different frequencies.

5,852,689

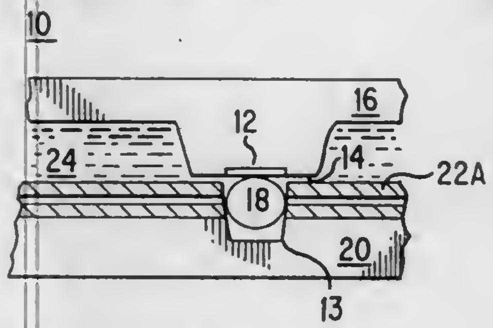
METHOD FOR MAKING FLUID OPTICAL SWITCHES

David K. Donald, Monte Sereno, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 9, 1997, Ser. No. 842,927

Int. Cl.^{6} G02B *6/35*

U.S. Cl. 385—21 **12 Claims**



12. A vented fluid optical switch comprising:

a waveguide plate, that includes a lattice of optical fiber, wherein each intersection is cut such that one face is highly reflective, having a vent;

a heater plate positioned below the waveguide plate, having a heater on a mesa and a trench, the heater proximate to one of the intersections and near to the vent;

fluid within a trench, wherein the trench is a reservoir for the fluid; and

a fluid injector, positioned within the reservoir, operative to create an injection of fluid;

wherein the switch is OFF when the injection of fluid covers the mesa and ON when the injection of fluid escapes from the intersection.

5,852,690

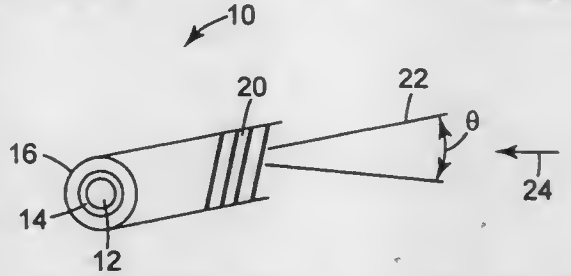
DEPRESSED CLADDING FIBER DESIGN FOR REDUCING COUPLING TO CLADDING MODES IN FIBER GRATINGS

Charles W. Haggans, and Wayne F. Varner, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 30, 1997, Ser. No. 884,889

Int. Cl.^{6} G02B *6/34*

U.S. Cl. 385—37 **22 Claims**



1. An waveguide for guiding electromagnetic waves, the waveguide comprising:

a) a core having a refractive index n_{co}, and a first transverse dimension 2A;

b) an inner cladding laterally surrounding the core, the inner cladding having a width W and a refractive index n_{ic};

c) an outer cladding laterally surrounding the inner cladding, the outer cladding having a refractive index n_{oc};

d) a grating pattern; and

e) a narrow depressed well, wherein $n_{co}>n_{oc}>n_{ic}$ and $0.5<A/(A+W)<1$.

5,852,691

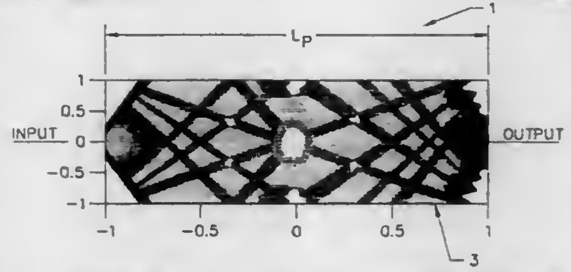
SELF-IMAGING WAVEGUIDE OPTICAL POLARIZATION OR WAVELENGTH SPLITTERS

David M. Mackie, College Park, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1998, Ser. No. 113,796

Int. Cl.^{6} G02B *6/26;6/42*

U.S. Cl. 385—39 **4 Claims**



1. A simultaneous 1-by-1 and 1-by-2 self-imaging waveguide integrated optical wavelength splitter comprising:

an input waveguide containing light of two different wavelengths;

a multimode interference region, with the length of said multimode interference region set such that one light wavelength in said region is singly self-imaged while the light having the other wavelength is doubly self-imaged;

a first output waveguide containing only one of the light wavelengths; and

second and third output waveguides each containing half the power of the other light wavelength.

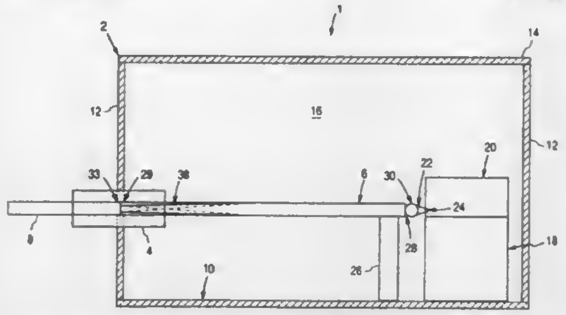
5,852,692
TAPERED OPTICAL FIBER DELIVERY SYSTEM FOR LASER DIODE

John Lawrence Nightingale, Portola Valley; Michael Jansen, Palo Alto; Ronil Chris Mehl, Mountain View, and Michael Hmelar, Palo Alto, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Filed May 16, 1997, Ser. No. 857,940

Int. Cl.^{6} G02B *6/26*

U.S. Cl. 385—43 20 Claims



1. An optical fiber delivery system, comprising:
- a semiconductor light source that produces an optical output;
- a first optical fiber having an input end and an output end, said input end positioned to receive the optical output;
- a second optical fiber having an input end and an output end;
- a quick disconnect optical connector that removably butt couples said second fiber input end to said first fiber output end to receive the optical output from said first fiber; and
- one of said first and second fibers having a tapered segment with a core and a cladding tapered down smoothly in diameter, wherein diameters of said core and cladding at said input end of the one of said first and second fibers are larger than core and cladding diameters respectively at said output end of the one of said first and second fibers.

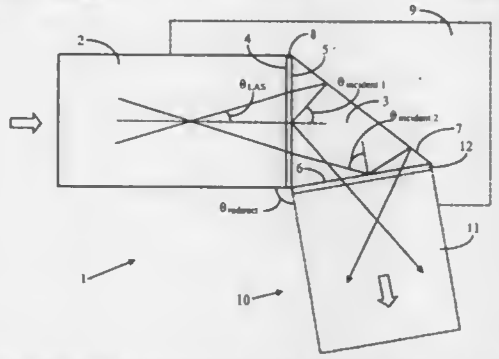
5,852,693
LOW-LOSS LIGHT REDIRECTION APPARATUS

Hwan J. Jeong, Los Altos, Calif., assignor to Ultratech Stepper, Inc., San Jose, Calif.

Filed Nov. 26, 1996, Ser. No. 756,723

Int. Cl.^{6} G02B *6/26*

U.S. Cl. 385—47 55 Claims



1. An apparatus for receiving and redirecting light, the apparatus comprising:
- a first light guide having an input surface and an output surface and a first selected refractive index, said first light guide input surface disposed to receive at least a portion of the light;
- a first redirection member having an input surface, an output surface and a reflective surface and a second selected refractive index, with said first redirection member input surface disposed to receive light traveling along a first general direction from the first light guide output surface with the reflective surface redirecting light traveling in the first general direction to a second general direction to the first redirection member output surface;
- a first interface, having a third selected refractive index, situated between the first light guide output surface and the first redirection member input surface; and
- a medium, having a fourth selected refractive index, situated adjacent to the first redirection member output surface to receive the light traveling generally along the second direction from the first redirection member;
- wherein the first, second, third and fourth refractive indices are each selected to spatially confine the light in the first redirection member until the light is redirected in the first redirection member to travel along the second general direction to the medium.

5,852,694
HIGH POWER FIBER OPTIC CONNECTOR

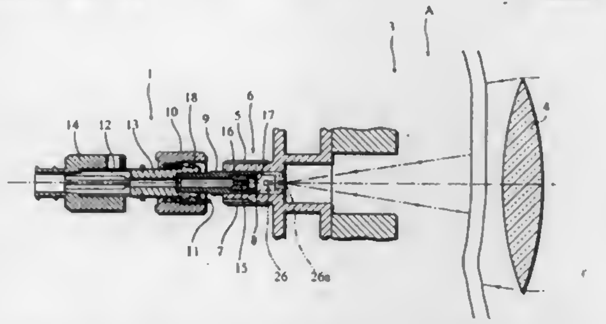
Koji Kimura, Nishinomiya; Tokuji Hayashi, Takarazuka; Masayoshi Hachiwaka, Tokyo, and Takeshi Satake, Yokohama, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki, Japan

Filed Jul. 8, 1997, Ser. No. 889,371

Claims priority, application Japan, Jul. 10, 1996, 8-201251

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—78 2 Claims



2. An optic connector for high-energy to be detachably attached to a connected cylindrical portion of a counterpart member which connected cylindrical portion possesses an axial hole portion, a male screw portion, and a key way, wherein the improvement comprises:
- a ferrule portion to be inserted into said axial hole portion;
- a cap nut to be engaged with said male screw portion;
- a key ring possessing a positioning key portion to be inserted into said key way;
- said key ring comprising a fitting annular portion having a slit, said key portion protruding from said annular portion, and a positioning leg protruding from said annular portion; and
- the key portion fixed to be freely changed in a circumferential direction of the ferrule portion at circumferential regular intervals in which a circumferential groove and positioning grooves at said circumferential regular intervals are formed on a portion, which corresponds to an inner portion of the cap nut, of said ferrule portion or a connector main body connected to said ferrule portion, the annular portion of said key ring fits on said circumferential groove, and said positioning leg of the key ring is inserted into said positioning grooves selectively.

5,852,695
CONNECTORS FOR USE WITH OPTICAL FIBER APPARATUS

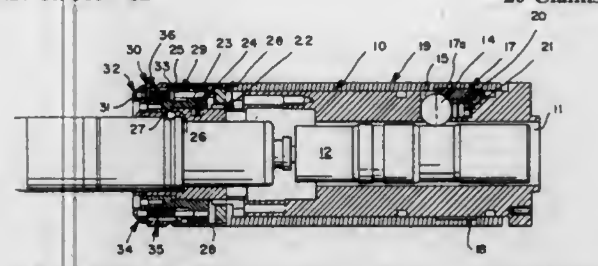
Anthony D. Elliman, Grandborough, Nr Rugby, and Martin P. McNulty, Long Buckby, both of United Kingdom, assignors to Lumonics Ltd., United Kingdom

Filed Mar. 25, 1997, Ser. No. 823,551

Claims priority, application United Kingdom, Mar. 27, 1996, 9606430

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—82 20 Claims



1. A connector comprising a body providing a socket for receiving an inserted body; a sleeve rotatable relative to the body, and a plurality of floating transfer elements retained within the body, the floating transfer elements being caused to move towards the inserted body by rotation of the sleeve so as to clamp the inserted body at two separate longitudinally-spaced positions, wherein rotation of the sleeve causes at least one of the floating transfer elements to exert an axial clamping force against one part of the inserted body, and simultaneously also causes at least one of the floating transfer elements to exert a radial clamping force against a second part of the inserted body, longitudinally spaced from the first part.

5,852,696
PACKAGED OPTICAL DEVICE

John Vincent Collins, Woodbridge; Roger Alyn Payne, Felixstowe; Adrian Richard Thurlow; Ian Francis Lealman, both of Ipswich, all of United Kingdom, and Philip John Fiddyment, Zaragoza, Spain, assignors to British Telecommunications public limited company, London, England

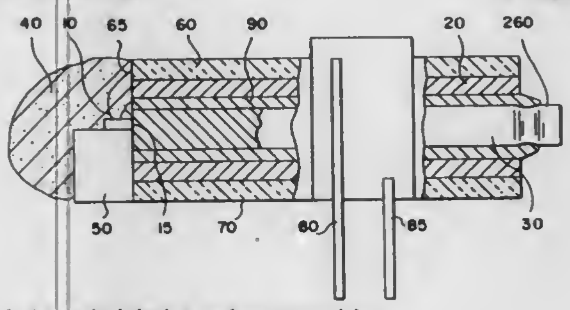
PCT No. PCT/GB95/01542, § 371 Date Jan. 14, 1997, § 102(e) Date Jan. 14, 1997, PCT Pub. No. WO96/00918, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 29, 1995, Ser. No. 765,644

Claims priority, application European Pat. Off., Jun. 29, 1994, 94304755; United Kingdom, Mar. 1, 1995, 9504056

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—88 23 Claims



1. An optical device package comprising:
- an optical device,
- a first support member supporting the optical device,
- a second support member having a bore and an optical fibre received in said bore,
- the second support member carrying the first support member such that the optical device and the optical fibre are in optically coupled relationship, and
- an encapsulant applied to the optical device to seal the optical device from the surrounding environment.

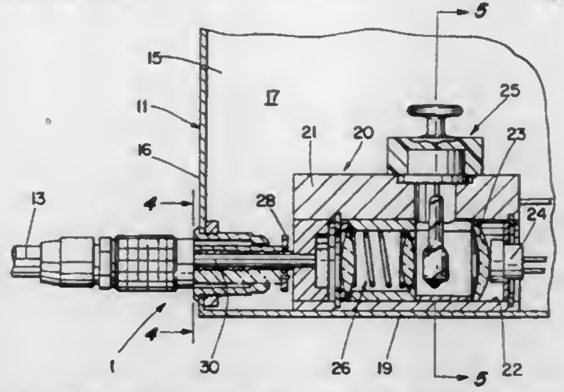
5,852,697
COMBINATION LIGHT SOURCE AND CONNECTOR

Ronald R. Williams, 24872 Sea Aire, Dana Point, Calif. 92629, and Leonard Scrivo, 12 Crawford Dr., Tuckahoe, N.Y. 10707

Filed Jan. 3, 1997, Ser. No. 778,828

Int. Cl.^{6} G02B *6/36*

U.S. Cl. 385—93 1 Claim



1. A combination light source and optical connector comprising:
- a. a housing having a front wall;
- b. a light-tube module including:
  - i. a body with a cavity;
  - ii. a reflector disposed within said cavity;
  - iii. a lamp disposed within said cavity; and
  - iv. a focusing lens disposed within said cavity, said focusing lens optically coupled to said lamp and said reflector; and
- c. a connector including:
  - i. a socket coupled to said front of said housing, said socket having a threaded bore;
  - ii. a plug adapted to be coupled to said socket, said plug having a bore for receiving an optical fiber; and
  - iii. a heat sink having a disc-shaped portion having a bore for receiving said optical fiber and a threaded stem portion having a bore for receiving said optical fiber, said disc-shaped portion of said heat sink being slidably coupled within said cavity of said body of said light-tube module and disposed adjacent to said socket and said threaded stem portion of said heat-sink being threadedly coupled in said threaded bore of said socket whereby said optical fiber is optically coupled to and axially aligned with said focusing lens of said light-tube module.

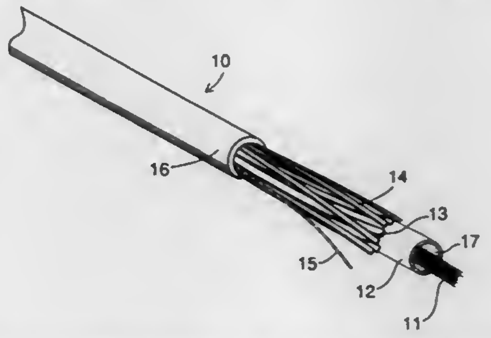
5,852,698
RISER-RATED OPTICAL CABLE

Anne G. Bringuier, Taylorsville, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Mar. 24, 1997, Ser. No. 823,260

Int. Cl.^{6} G02B *6/44*

U.S. Cl. 385—113 13 Claims



1. A fiber optic cable suitable for indoor applications, comprising:
- a core tube surrounding a plurality of coated optical fibers;
- a jacket formed of flame-retardant polymer material surrounding said core tube;

- at least one layer of strength members disposed between said core tube and said jacket, said strength members perform an anti-buckling function in said fiber optic cable;
- said jacket has an outer diameter of not greater than about seven millimeters; and said strength members preventing buckling of said fiber optic cable whereby said coated optical fibers experience a short term increase in attenuation of no more than about 0.01 dB when the cable is looped in a radius of five centimeters.

5,852,699
FIBER OPTICAL LIGHT TRANSMISSION DEVICE FOR TRANSMITTING ENERGY

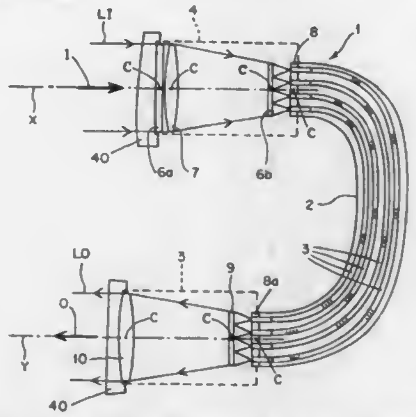
Vitaly Lissotschenko, Solbergweg 54, 44225 Dortmund, and Joachim Hentze, Im Welandsborn 15, 33189 Schlangen, both of Germany

Filed May 23, 1997, Ser. No. 862,186

Claims priority, application Germany, Sep. 3, 1996, 196 35 499.4

Int. Cl.^{6} G02B *6/04*

U.S. Cl. 385—115 **18 Claims**



1. A fiber optical light transmission device for transmitting energy, comprising

- a bundle of light conducting fibers formed by a plurality of light conducting fibers, each fiber having a light conducting cross section area;
- a coupling element positioned adjacent to said bundle of fibers for transmitting an incoming incident bundle of light rays;
- said coupling element having two coupler arrays, and each coupler array having a plurality of light focusing cells, and each coupler array focusing said incoming incident bundle of light rays multiple times using said plurality of light focusing cells;
- each coupler array comprising a cylindrical lens array such that said two coupler arrays form two crossed cylindrical lens arrays; and
- each light focusing cell of said plurality of light focusing cells focusing said light rays on said light conducting cross section area within each corresponding light conducting fiber for a light conducting fiber bundle.

5,852,700
METHOD AND DEVICE FOR THE GENERATION OF ULTRASHORT OPTICAL PULSES

Renato Caponi, Turin, and Riccardo Calvani, Pino Torinese, both of Italy, assignors to CSELT - Centro Studi e Laboratori Telecommunicazioni S.p.A., Turin, Italy

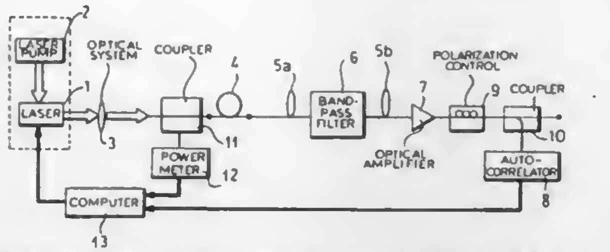
Filed Jun. 5, 1997, Ser. No. 869,935

Claims priority, application Italy, Jul. 2, 1996, TO96A0562

Int. Cl.^{6} G02B *6/02*

U.S. Cl. 385—123 **7 Claims**

1. A method of generating ultrashort optical pulses, comprising the steps of:



- launching optical pulses, subject to chirp and having a wavelength lying within a first band, into a compensating optical fiber whose minimum dispersion lies in a second band other than the first band and whose length and dispersion characteristics are such as to compensate for a phase distortion induced by the chirp;
- propagating said pulses also in a dispersion-shifted optical fiber having a dispersion minimum in said first band and arranged in series with compensating fiber; and
- sending said pulses into the series of the compensating and dispersion-shifted optical fibers with such a peak power as to give rise to self-phase modulation in the dispersion-shifted fiber so that the compensating fiber compensates chirp due to self-phase modulation, and such as to coincide with a vertex of a parabola representing a square of a full width at half maximum of the pulses expressed as a function of peak power.

5,852,701
DISPERSION-SHIFTED FIBER

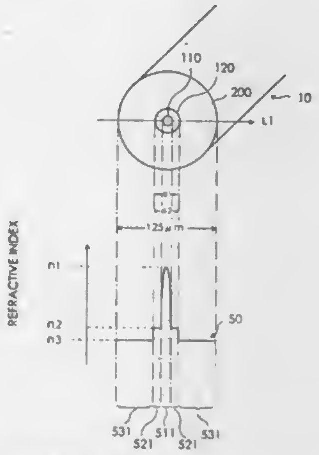
Takatoshi Kato; Yoshiyuki Suetsugu, and Masayuki Nishimura, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 7, 1997, Ser. No. 796,187

Claims priority, application Japan, Feb. 8, 1996, 8-022742

Int. Cl.^{6} G02B *6/22*

U.S. Cl. 385—127 **25 Claims**



1. A dispersion-shifted fiber having:

- a zero-dispersion wavelength within the range within the range of 1.4 μm to 1.7 μm; and
- a cutoff wavelength of 1.6 μm or more at a 2 m length of said dispersion-shifted fiber,
- wherein said dispersion-shifted fiber comprises a core region and a cladding region disposed around an outer periphery of said core region, said core region including:
- a first core having a predetermined refractive index; and
- a second core disposed around an outer periphery of said first core, said second core having a lower refractive index than said first core, and
- wherein, when said core region has an outer diameter of 2a, said dispersion-shifted fiber satisfies the following requirement:

$$\int_0^a \Delta n(r) \cdot r dr \geqq 8.4(\% \cdot \mu m^2)$$

$$0.6(\%) \leqq \Delta n_{max} \leqq 1.4(\%)$$

wherein

- r is a distance from a center of said dispersion-shifted fiber in a radial direction thereof;
- Δn(r) is a relative refractive index difference with respect to said cladding region at the position apart from the center to said dispersion-shifted fiber at the distance r; and
- Δn_{max} is a maximum relative refractive index difference in said core region with respect to said cladding region.

5,852,702
THIN FILM OPTICAL WAVEGUIDE AND OPTICAL DEFLECTING DEVICE

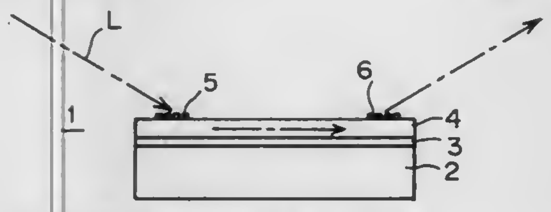
Naoki Nishida, Osaka; Tsuyoshi Iwamoto, Kyoto, and Shunichi Hayamizu, Amagasaki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Feb. 25, 1997, Ser. No. 804,689

Claims priority, application Japan, Feb. 28, 1996, 8-040962; May 13, 1996, 8-117710

Int. Cl.^{6} G02B *6/10*

U.S. Cl. 385—130 **20 Claims**



1. A thin film optical waveguide comprising:

- a substrate;
- a waveguide layer which guides a light beam; and
- an optical buffer layer which is provided between the substrate and the waveguide layer, the optical buffer layer having a refractive index smaller than a refractive index of the waveguide layer and having a thickness such that the waveguide layer has a propagation loss of not more than 2 dB/cm for a zero mode guided light beam guided by the waveguide layer, and a propagation loss of not less than 4 dB/cm for a first mode guided light beam guided by the waveguide layer.

5,852,703
FERROELECTRIC THIN FILM ELEMENT AND PRODUCTION METHOD THEREOF

Keiichi Nashimoto, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

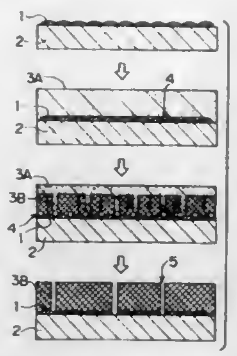
Filed Jun. 3, 1997, Ser. No. 867,842

Claims priority, application Japan, Jun. 7, 1996, 8-168339

Int. Cl.^{6} G02B *6/10*

U.S. Cl. 385—130 **14 Claims**

1. A production method of a ferroelectric thin film element, comprising a step of performing a first solid phase epitaxial growth process where a first organometallic compound is applied on the single-crystalline substrate and heated to produce a ferroelectric buffer layer having a composition different from a single-crystalline substrate on the single-crystalline substrate with a film thickness of 1 nm to 40 nm, and a step of forming a ferroelectric thin film layer on the ferroelectric buffer layer by at least once performing a second solid phase epitaxial growth process where a second organometallic compound is applied on the layer of the former process and heated to form a ferroelectric single layer thin film with a film thickness of 10 nm or more and being thicker than the ferroelectric buffer layer.



5,852,704
TWO-PICTURE VIDEO RECORDING/REPRODUCING APPARATUS AND A METHOD THEREFOR

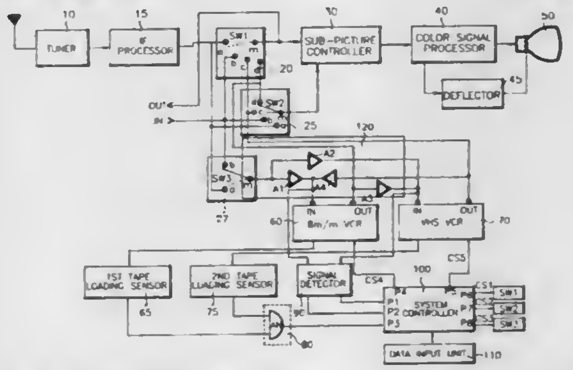
Eui Duck Kim, Seo-Ku, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,296

Claims priority, application Rep. of Korea, Dec. 31, 1993, 1993 32129

Int. Cl.^{6} H04N *5/76*

U.S. Cl. 386—46 **13 Claims**



1. A two-picture video recording/reproducing apparatus comprising:

- a tuner for receiving a television broadcast signal via an antenna to supply a video signal;
- intermediate frequency (IF) processing means for processing the video signal from said tuner into an IF signal;
- data input means for receiving a signal by a user's key manipulation and supplying predetermined data corresponding to the key manipulation;
- a first video recorder/reproducer having a deck capable of loading a tape for recording the input video signal on said tape loaded to said deck in a first system or reproducing to output the video signal recorded on said tape loaded to said deck in said first system in accordance with an operational mode control signal;
- a second video recorder/reproducer having a deck capable of loading a tape for recording the input video signal on said tape loaded to said deck in a second system or reproducing to output the video signal recorded on said tape loaded to said deck in said second system in accordance with an operational mode control signal;
- main picture selecting means for selecting any one among a signal from said IF processing means, an externally input signal via an input terminal, and video signals from said first and second video recorders/reproducers in accordance with a first control signal, and supplying a selected signal as a video signal of the main picture;
- sub-picture selecting means for selecting any one among said signal from said IF processing means, said externally input signal via said input terminal, and said video signals from said

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first and second video recorders/reproducers in accordance with a second control signal, and supplying a selected signal as a video signal of the sub picture;

external input selecting means for selecting either said signal from said IF processing means or said externally input signal via said input terminal in accordance with a third control signal, and supplying a selected video signal as a record video signal to be recorded to said first and second video recorders/reproducers;

signal detecting means for receiving the output signals from said first and second video recorders/reproducers, automatically detecting a no-signal portion in the input signals, and supplying the detected signal to a system controller;

a still mode conversion means for automatically changing the mode of said second video recorder/reproducer to a still mode when said video signal is not supplied from said first video recorder/reproducer;

a recording mode conversion means for automatically changing the mode of said second video recorder/reproducer to a recording mode when said video signal is supplied from said first video recorder/reproducer within a predetermined time after being converted to said still mode to perform the recording operation;

a system controller for receiving data from said data input means to respectively supply said first to third control signals corresponding to the input data to said main picture selecting means, sub-picture selecting means and external input selecting means, and supplying fourth and fifth control signals to control the operational modes of said first and second video recorders/reproducers;

sub-picture controlling means for receiving to mix the video signals of said main picture and sub-picture selected by said main picture selecting means and sub-picture selecting means; and

a receiver for processing the mixed video signal from said sub-picture controlling means as of said main picture and sub-picture to display the processed signal.

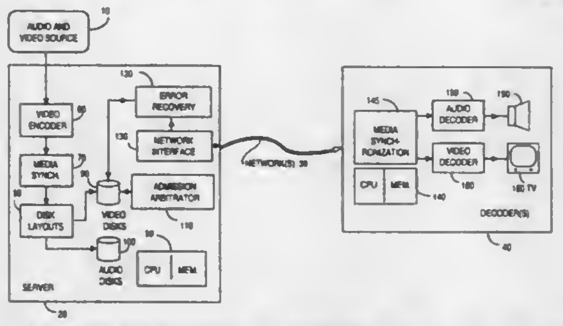
5,852,705

METHOD AND APPARATUS FOR GUARANTEEING AVERAGE CASE DISK TRANSFER BANDWIDTH AND SEEK TIME FOR A VIDEO SERVER

James G. Hanko, Redwood City, and Steve Kleiman, Los Altos, both of Calif., assignors to Sun Microsytems, Inc., Mountain View, Calif.

Filed May 22, 1995, Ser. No. 446,144
Int. Cl.⁶ H04N *5/91;7/08*

U.S. Cl. 386—92 27 Claims



1. A method for achieving substantially average case hard disk drive transfer bandwidth in a video server system having a plurality of D hard disk drives whereon blocks of video movies are stored before transfer to a buffer unit, the method comprising the following steps:

(a) dividing each of said hard disk drives into Z substantially equal storage zones;

(b) recording a portion of each of said video movies across all of said storage zones such that each of said storage zones contains a substantially equal number of blocks of a video movie; and

(c) for said video server system, defining a substantially equal number of user streams per a slot using each of said zones, wherein a sum S of said user streams represents a maximum number of users that can access said video server system at one time;

wherein worst case bandwidth for each slot is determinable given worst case bandwidth information for transfers from each said zone.

5,852,706

APPARATUS FOR RECORDING AND REPRODUCING INTRA-FRAME AND INTER-FRAME ENCODED VIDEO DATA ARRANGED INTO RECORDING FRAMES

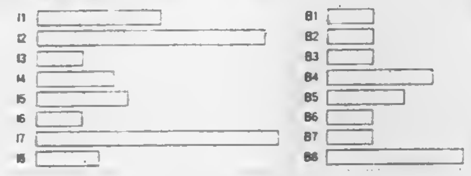
Junichi Ogikubo, Tokyo, and Tadashi Katagiri, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

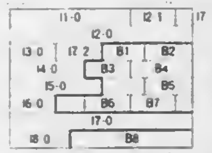
Filed Jun. 6, 1996, Ser. No. 660,610

Claims priority, application Japan, Jun. 8, 1995, 7-142237; Jun. 8, 1995, 7-142238

Int. Cl.⁶ H04N *5/917*

U.S. Cl. 386—111 11 Claims





1. Apparatus for recording video data on a recording medium in which frames of said video data are subjected to either intra-frame compression and encoding or inter-frame compression and encoding and arranged into recording frames each having a plurality of recording units of a predetermined capacity, comprising:

means for dividing each frame of said video data into a plurality of blocks each containing a predetermined number of pixel data;

means for intra-frame compressing and encoding at least one frame of said video data on a block basis such that said at least one frame is encoded independent of adjoining frames of said video data so as to generate intra-frame encoded data for each of the plurality of blocks of said at least one frame;

means for inter-frame compressing and encoding other frames of said video data on a block basis such that said other frames are encoded in correlation with adjoining frames of said video data so as to generate inter-frame encoded data for each of the plurality of blocks of each of said other frames;

means for generating recording frames by arranging each of said intra-frame encoded data in a respective recording unit of said recording frames without exceeding said predetermined capacity of said recording unit for each of said intra-frame encoded data and arranging overflow data portions of each of said intra-frame encoded data exceeding said predetermined capacity of said recording unit together with each of said inter-frame encoded data in empty regions of said recording units of said recording frames, wherein each of said intra-frame encoded data and said overflow portions of each of said intra-frame encoded data are positioned within said recording frame at a position so as to be read prior to each of said inter-frame encoded data when said video data is reproduced from said recording medium; and

means for recording intra-frame encoded data and said inter-frame encoded data arranged in said recording frames on said recording medium.

5,852,707

PHOTOGRAPHED IMAGE REPRODUCING APPARATUS

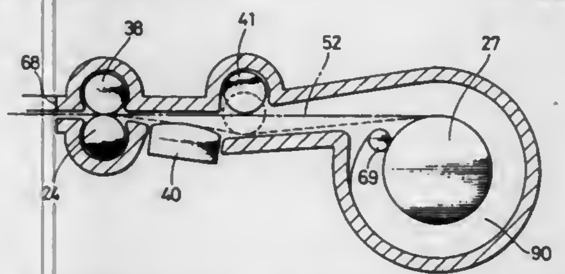
Manabu Inoue, Kobe; Hirokazu Yagura, Sakai; Kouji Hamaguchi, Osaka; Shigeru Wada, Kishiwada; Hiroyuki Matsumoto, Wakayama, and Katsuyuki Nanba, Osakasayama, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 95,679, Jul. 26, 1993, Pat. No. 5,633,977. This application Feb. 3, 1997, Ser. No. 794,654

Claims priority, application Japan, Jul. 27, 1992, 4-200028; Jul. 27, 1992, 4-200029; Jul. 27, 1992, 4-200030; Jul. 27, 1992, 4-200031; Dec. 14, 1992, 4-333331; Dec. 14, 1992, 4-333332

Int. Cl.⁶ H04N *5/91;7/00*

U.S. Cl. 386—128 22 Claims



1. An apparatus which is to be used for reproducing an image, comprising:

an image reader which picks up an image recorded on a recording medium to produce an image signal;

an information reader which is fixedly provided on the apparatus to read information concerning the image recorded on the recording medium;

a controller which makes a space between the recording medium and the information reader at least during the time when the image is being picked up by the image reader; and

an output device which outputs the image signal for reproduction of the image.

5,852,708

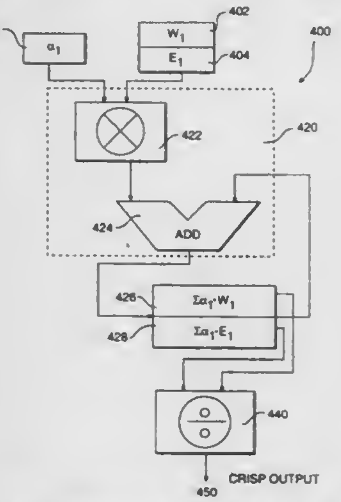
SIMPLIFIED ARCHITECTURE FOR DEFUZZIFICATION INTEGRATED CIRCUIT (IC) PROCESSOR INCLUDING CIRCUITS FOR ESTIMATING EFFECTIVE AREAS WITHOUT OVERLAPPING ERRORS

Jyuo-Min Shyu; Yao-Chou Lu, both of Hsinchu; Hsi-Chou Deng, Chupei, and Hsu-Huang Cheng, Tainan, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 152,712, Apr. 26, 1993, abandoned. This application Jul. 8, 1996, Ser. No. 676,909

Int. Cl.⁶ G06G *7/00*

U.S. Cl. 395—3 12 Claims



1. A fuzzy logic control system, including a defuzzification section, for generating a crisp output from a plurality of fuzzy logic signals defining membership functions generated by the fuzzy logic control system, the defuzzification section comprising:

an input port, coupled to the fuzzy logic control system, for receiving an input value α, a specific weight, and an effective area for each of said membership functions;

multiplication-and-adding means for computing a first sum of the products of said input values and said specific weights and a second sum of the products of said input values and said effective area; and

dividing means for dividing the first sum by the second sum to obtain a crisp output of said membership functions of the fuzzy logic control system; and

means for providing the crisp output to external logic.

5,852,709

OUTPUT METHOD AND APPARATUS

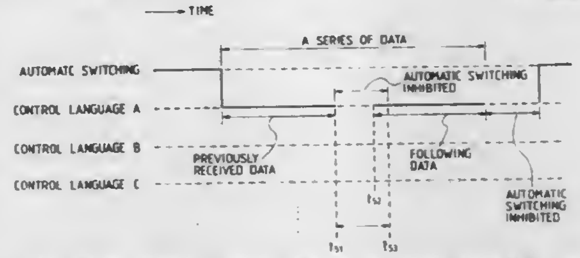
Yoko Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 483,849, Jun. 7, 1995, abandoned, which is a division of Ser. No. 096,925, Jul. 23, 1993, abandoned. This application Jul. 16, 1997, Ser. No. 895,551

Claims priority, application Japan, Jul. 23, 1992, 4-196760

Int. Cl.⁶ G06F *15/00*

U.S. Cl. 395—112 6 Claims



1. An output method carried out in an output apparatus, said method comprising the steps of:

discriminating a control language describing received data;

judging whether the received data to be output to a predetermined region comprises one of (a) image data, (b) a mixture of image data and text data, and (c) text data, in response to the discriminated control language; and

controlling the output apparatus to output data in a resolution of the image data if said judging step judges that the received data comprises the image data or the mixture of image data and text data;

wherein in the event that next data is received within a predetermined time after reception of the received data, said discriminating means does not discriminate a control language describing the next data and said judging step performs the judgment in response to the control language previously discriminated for the received data.

5,852,710

APPARATUS AND METHOD FOR STORING IMAGE DATA INTO MEMORY

Susumu Shiohara, and Michio Maruyama, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,527

Claims priority, application Japan, Oct. 28, 1994, 6-265069; Dec. 27, 1994, 6-325637; Feb. 15, 1995, 7-027175; Sep. 4, 1995, 7-226893

Int. Cl.⁶ G06K *15/00*

U.S. Cl. 395—115 18 Claims

1. An apparatus for storing image data, comprising:

means for storing said image data, which is in a first data format, into a memory;

means for making a first judgment, for each element of said image data, as to whether a respective data size of said each element in said first data format exceeds a respective data size of said each element in a second data format;

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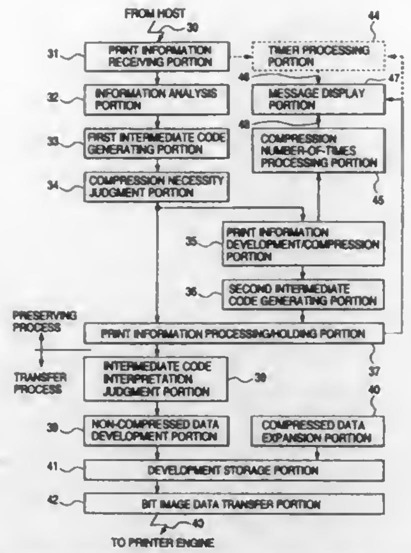

FROM HOST
30
31
PRINT INFORMATION RECEIVING PORTION
44
TIMER PROCESSING PORTION
46
47
32
INFORMATION ANALYSIS PORTION
MESSAGE DISPLAY PORTION
48
33
FIRST INTERMEDIATE CODE GENERATING PORTION
COMPRESSION NUMBER-OF-TIMES PROCESSING PORTION
45
34
COMPRESSION NECESSITY JUDGMENT PORTION
35
PRINT INFORMATION DEVELOPMENT/COMPRESSION PORTION
36
SECOND INTERMEDIATE CODE GENERATING PORTION
PRESERVING PROCESS
PRINT INFORMATION PROCESSING/HOLDING PORTION
37
TRANSFER PROCESS
INTERMEDIATE CODE INTERPRETATION JUDGMENT PORTION
38
40
39
NON-COMPRESSED DATA DEVELOPMENT PORTION
COMPRESSED DATA EXPANSION PORTION
41
DEVELOPMENT STORAGE PORTION
42
BIT IMAGE DATA TRANSFER PORTION
43
TO PRINTER ENGINE

means for making a second judgment, for each element of said image data, as to whether a total transformation time required to transform said each element in said first data format to said second data format exceeds a predetermined time limit, said predetermined time limit relating to a memory overrun time; and

means for storing into said memory said each element using said second data format instead of said first data format when a result of at least one of said first judgment and said second judgment is affirmative;

wherein said second data format comprises bit map data.

5,852,711

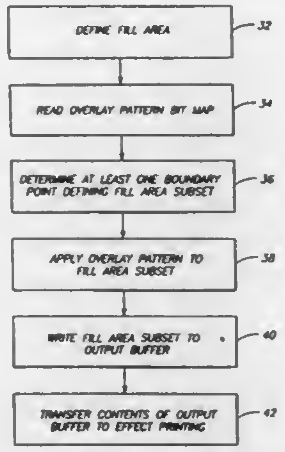
EFFICIENT PATTERN USE IN PRINTERS

Russell Campbell, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 24, 1996, Ser. No. 637,060

Int. Cl.^{6} G06A *15/00*

U.S. Cl. 395—117 **17 Claims**


DEFINE FILL AREA
32
READ OVERLAY PATTERN BIT MAP
34
DETERMINE AT LEAST ONE BOUNDARY POINT DEFINING FILL AREA SUBSET
36
APPLY OVERLAY PATTERN TO FILL AREA SUBSET
38
WRITE FILL AREA SUBSET TO OUTPUT BUFFER
40
TRANSFER CONTENTS OF OUTPUT BUFFER TO EFFECT PRINTING
42

1. A method of operating a digital printer for producing a printed image on a print medium; said printer including at least one memory for holding an overlay pattern bit map which defines an overlay pattern at least portions of which are utilized in printing the printed image onto the print medium, and an image processor for processing image data used to produce the printed image, the method comprising:

a. defining at least one fill area to be printed with at least a portion of the overlay pattern;

b. reading at least a portion of the overlay pattern bit map from said memory, said portion comprising a plurality of bits;

c. providing at least one boundary point which in part defines a fill area subset; said fill area subset serving to fill at least a portion of the fill area and define a printed image appearing therewithin said reading of said overlay pattern bit map comprising using said at least one fill-area-subset-defining boundary point to determine whether a starting bit to be read from the overlay pattern bit map matches a first writing bit in said fill area subset, and if not, adjusting at least one of the starting bits and the writing bits so each matches the other;

d. applying said at least a portion of the overlay pattern bit map read from memory to said fill area subset; and

e. writing said fill area subset to an output buffer which stores data defining at least a portion of the printed image.

5,852,712

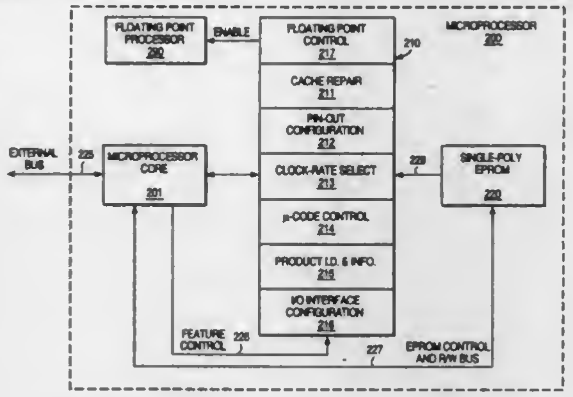
MICROPROCESSOR HAVING SINGLE POLY-SILICON EPROM MEMORY FOR PROGRAMMABLY CONTROLLING OPTIONAL FEATURES

Michael J. Allen, Rescue; Gregory K. Crain, Folsom; Stephen A. Fischer, Rancho Cordova, all of Calif.; Patrick P. Gelsinger, Aloha, Oreg.; David R. Gray, Hillsboro, Oreg.; Stuart T. Hopkins, Portland, Oreg.; Gustay Laub, III, Gold River, Calif.; Charles H. Lucas, Fair Oaks, Calif.; Richard D. Pashley, Roseville, Calif.; Babak Sabi, Portland, Oreg.; Joseph D. Schutz, Portland, Oreg.; David J. Shield, El Dorado Hills, Calif., and Stephen F. Sullivan, Rescue, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 396,117, Feb. 28, 1995, Pat. No. 5,732,207. This application Sep. 8, 1997, Ser. No. 925,527

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—182.03 **11 Claims**



1. A microprocessor comprising:

a microprocessor core;

an electrically programmable non-volatile memory coupled for write access by said microprocessor core and having an address interface and a data interface, the address interface being coupled to receive an address from said microprocessor core;

a circuit coupled to receive one or more control signals from the data interface of said memory, the state of the one or more control signals being determined by a control value stored in said memory at the address received from said microprocessor core; and

wherein said circuit is a bus interface circuit configured to interface said microprocessor with one of a plurality of differently configured buses based on the state of the one or more control signals.

5,852,713

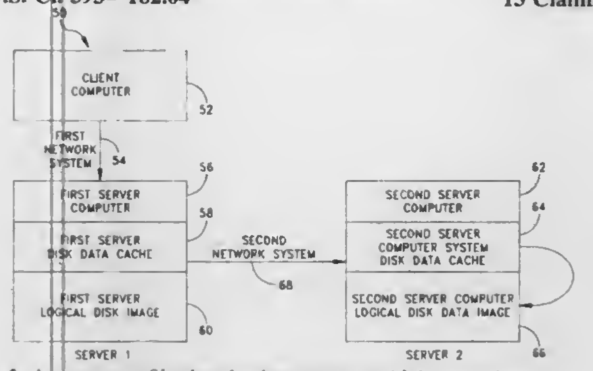
COMPUTER DATA FILE BACKUP SYSTEM

John P. Shannon, 46 Summer St., Yarmouth Port, Mass. 02675

Continuation of Ser. No. 670,873, Jun. 28, 1996, Pat. No. 5,799,147, which is a continuation of Ser. No. 325,485, Oct. 19, 1994, abandoned. This application Sep. 30, 1997, Ser. No. 940,450

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—182.04 **13 Claims**


50
CLIENT COMPUTER
52
FIRST NETWORK SYSTEM
54
56
FIRST SERVER COMPUTER
58
FIRST SERVER DISK DATA CACHE
SECOND NETWORK SYSTEM
68
FIRST SERVER LOGICAL DISK IMAGE
60
SERVER 1
62
SECOND SERVER COMPUTER
64
SECOND SERVER COMPUTER SYSTEM DISK DATA CACHE
SECOND SERVER COMPUTER LOGICAL DISK DATA IMAGE
66
SERVER 2

1. A computer file data backup system which comprises:

a) a client computer having a client disk image, composed of a plurality of client data files, having a set of selected attributes on a client computer storage means, for storing said client data files;

b) means for providing a client disk map composed of attributes of the client data files from the client computer;

c) a separate server computer, having a server computer storage means solely for receiving and storing said client disk image as a client logical disk image;

d) means to transmit, by a client from the client computer, said client disk image in logical form into said server computer storage means to create a stored client logical disk image;

e) means to update, periodically by the client in said client computer, said client disk map, with a previous client disk map, to identify any client data files with additions, modifications or deletions occurring since the last update of the previous client disk map to provide a revised client disk map;

f) means to transmit from the client computer, and to receive and store only in said storage means of said server computer, the added or modified client data files, and to remove said deleted client data files to provide a stored, revised, updated, client logical disk image in said server computer storage means; and

g) means to acknowledge the completion of the transmission between said server computer and said client computer.

5,852,714

REAL TIME BROADCASTING SYSTEM ON AN INTERNET

Wei-Jerng Tseng, Taipei; Jun-Yih Lee, Kaohsiung, and Ching-Feng Wang, Tainan, all of Taiwan, assignors to Eten Information System Co., Ltd., Taipei, Taiwan

Filed May 21, 1997, Ser. No. 861,325

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—187.01 **21 Claims**

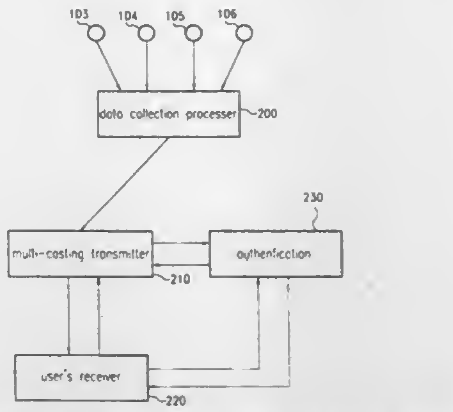
1. Apparatus for real time broadcasting system on an internet, comprising:

data collecting means for collecting and processing a plurality of data sent by all data-sources connected to said data-collection processor means;

receiving means for receiving a portion of said plurality of data and sending out an authentication information of a user, said received data being examined for data loss;

authentication means for checking the authentication of the user and transmitting the type of said portion of said plurality of data to said receiving means; and

multi-transmitting means for receiving the output of said data collecting means, then sending lost data of the select types of data sources to said receiving means, the loading and address of said multi-transmitting means being sent to said authentication means is used to assign the multi-transmitting means as the source of the receiving means, wherein the output of said multi-transmitting means contains a plurality of serial number representing the order that the data arrived at said data collecting means, wherein the data are sent by the data-sources.



5,852,715

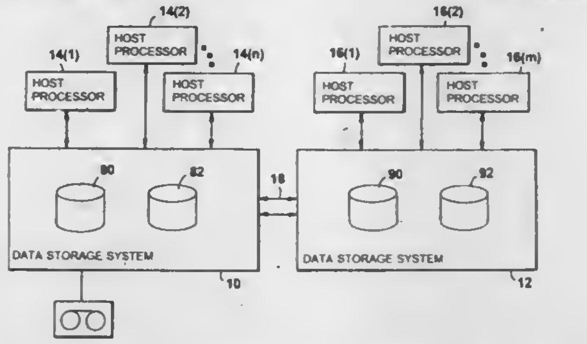
SYSTEM FOR CURRENTLY UPDATING DATABASE BY ONE HOST AND READING THE DATABASE BY DIFFERENT HOST FOR THE PURPOSE OF IMPLEMENTING DECISION SUPPORT FUNCTIONS

Yoav Raz, Newton, and Philip Tamer, Lowell, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Mar. 19, 1996, Ser. No. 617,689

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.31 **15 Claims**



1. A method of implementing decision support in an environment including a data storage system to which a plurality of host processors is connected, wherein said data storage system stores a database, said method comprising:

through a selected one of said plurality of host processors, updating said database on an ongoing basis; and

through a different one of said plurality of host processors, reading said database for the purpose of implementing decision support functions, wherein the updating and the reading of said database are allowed to take place concurrently without imposing any interhost locks on said database.

5,852,716

SPLIT-SMP COMPUTER SYSTEM WITH LOCAL DOMAINS AND A TOP REPEATER THAT DISTINGUISHES LOCAL AND GLOBAL TRANSACTIONS

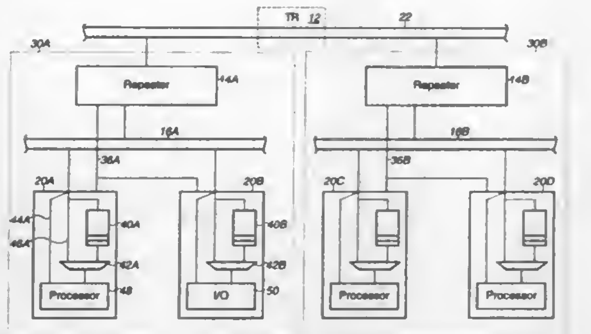
Erik E. Hagersten, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 2, 1996, Ser. No. 674,690

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.31 **20 Claims**

1. A multiprocessing computer system comprising:



a first local domain including a first processor, a second processor, and a first memory;
a second local domain including a third processor and a second memory; and
a first repeater coupled between said first local domain and said second local domain, said first repeater configured to receive a first transaction from said first processor, wherein said first repeater is configured to transmit said first transaction to said third processor if said first transaction is a global transaction, and wherein said first repeater is configured to inhibit transmission of said first transaction to said third processor if said first transaction is a local transaction.

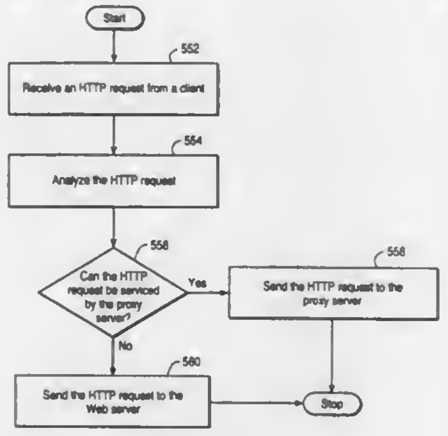
5,852,717
PERFORMANCE OPTIMIZATIONS FOR COMPUTER NETWORKS UTILIZING HTTP

Chandrashekhar W. Bhide, Sunnyvale; Jagdeep Singh, and Don Oestreicher, both of Cupertino, all of Calif., assignors to Shiva Corporation, Bedford, Mass.

Filed Nov. 20, 1996, Ser. No. 752,500

Int. Cl.⁶ G06F ***17/00***

U.S. Cl. 395—200.33 **48 Claims**


Start
552
Receive an HTTP request from a client
554
Analyze the HTTP request
556
Can the HTTP request be serviced by the proxy server?
Yes
558
Send the HTTP request to the proxy server
No
560
Send the HTTP request to the Web server
Stop

18. A computer network, comprising:
a client computer running a Web browser;
a Web server networked to the client computer;
a proxy server computer networked to the client computer for storing information available on the Web server; and
network access equipment, networked between the client computer and the Web and proxy servers, including an agent that stores identifiers and timestamps for objects so that when the agent receives a request from the Web browser to get an object from the server if the object has been modified after a specific timestamp, the agent responds to the request without sending a request to the Web server.

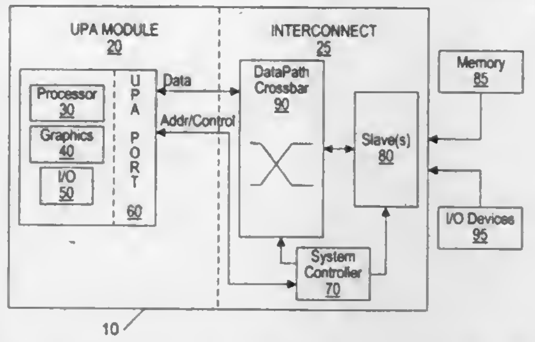
5,852,718
METHOD AND APPARATUS FOR HYBRID PACKET-SWITCHED AND CIRCUIT-SWITCHED FLOW CONTROL IN A COMPUTER SYSTEM

William C. Van Loo, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 6, 1995, Ser. No. 498,950

Int. Cl.⁶ G06F ***12/00***

U.S. Cl. 395—200.38 **23 Claims**



1. A control system for providing circuit-switched and packet-switched transaction flow in a computer system having at least one microprocessor with at least one master device, a main memory and at least one slave device, the control system comprising:
a system component coupled to said master device and configured to determine whether a transaction request issued by said master device is of a first predetermined type of transaction request or a second predetermined type of transaction request;
a first logic module cooperating with said system component to initiate execution of said transaction request as a packet-switched transaction if the request is of said first predetermined type and executes said transaction request as a circuit-switched transaction if the request is of said second predetermined type.

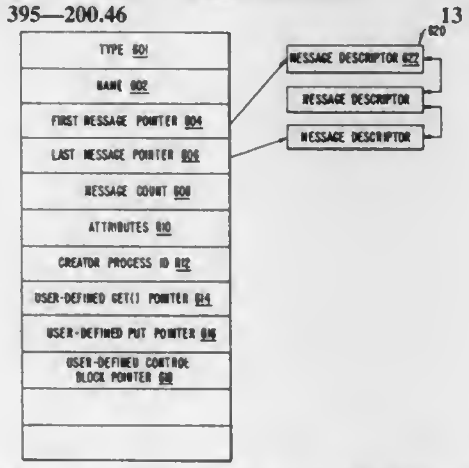
5,852,719
SYSTEM FOR TRANSFERRING DATA OVER A NETWORK IN WHICH A DATA SOURCE SENDS ONLY A DESCRIPTOR WHICH A DATA SINK USES TO RETRIEVE DATA

Leonard R. Fishler, Cupertino, and Bahman Zargham, Sunnyvale, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Dec. 20, 1995, Ser. No. 578,410

Int. Cl.⁶ G06F ***13/00;13/38***

U.S. Cl. 395—200.46 **13 Claims**



13. In a data processing system having a distributed memory architecture that includes a plurality of data source/sinks in the form of CPUs having associated memories, memory units having associated controllers, and global memories available to all resources on the network, with the data source/sinks coupled as nodes to a network and with data locations accessible by global

memory addresses over the network, a method for transferring a large video data stream, stored in a memory unit, including data segments scattered among multiple data source/sinks without copying the scattered data segments to each of the multiple data source/sinks during scattered data stream building processing, said method comprising the steps of:
providing a application server process, on a first data source/sink in the form of a CPU having an associated memory, said application server process for receiving requests for video files from requestors and directing transfer of a requested video file to a requestor;
allocating of a pool of global memories for use as a cache, with said pool of global memories referenced by a first message;
transferring the video file, stored in said memory unit, to said allocated pool of global memories;
making a copy of said first message as said first data source/sink;
transferring only said copy of said first message and not said video file data segment from said first data source/sink to a second data source/sink in the form of a CPU with an associated memory;
generating, at said second data source/sink, a second message including a second global network address specifying a second storage location where a second data segment is stored;
processing, at said second data source/sink, said first and second messages to form a first chained message including said first and second global addresses specifying said first and second storage locations;
transferring only said first chained message and not said second data segment to a third data source/sink, with said third data source/sink for generating protocol headers for transmitting said first and second data segments to a destination;
determining, at said third data source/sink, the size of said video file, and based on said size, determining a fragment number of data fragments into which said first data segment is to be divided prior to transmission;
generating, at said third data source/sink, said fragment number of protocol headers for concatenation with each of said data fragments prior to transmission;
generating, at said third data source/sink, said fragment number of protocol header messages including global addresses of said fragment number of storage areas in said pool of global memories storing said fragment number of protocol headers;
generating, as said third data source/sink, said fragment number of data fragment messages including global addresses specifying where each of said data fragments is stored within said pool of global memories;
processing, at said third data source/sink, said first chained message, said fragment number of protocol header messages, and said fragment number of data fragment messages, to form linked packet messages, with a first packet message including said first and second messages, a first protocol header message, and first data fragment message and with subsequent packet messages including associated protocol header and data fragment messages.

5,852,720
SYSTEM FOR STORING DISPLAY DATA DURING FIRST TIME PERIOD PRIOR TO FAILURE OF COMPUTER AND DURING SECOND TIME PERIOD AFTER RESET OF THE COMPUTER

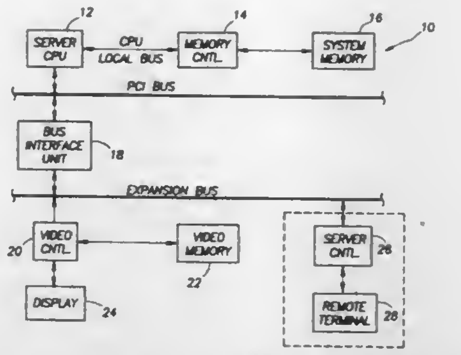
R. Scott Gready, Spring; Wesley M. Ellinger, Houston, and Gordon R. Clark, The Woodlands, all of Tex., assignors to Compaq Computer Corp.

Filed Aug. 16, 1996, Ser. No. 695,828

Int. Cl.⁶ G06F ***13/00***

U.S. Cl. 395—200.47 **26 Claims**

1. A computer, comprising:
a host central processing unit (CPU);
an expansion bus operably coupled between said host CPU and a video controller; and



a server controller connected to said expansion bus, wherein said server controller comprises a controller memory for storing display data forwarded from said host CPU to said video controller during a first time period prior to failure of said computer and during a second time period after reset of said computer.

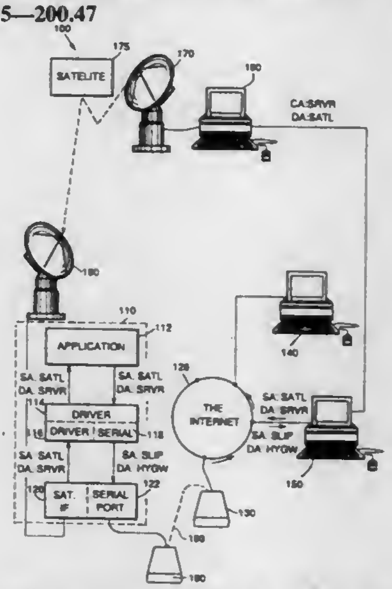
5,852,721
METHOD AND APPARATUS FOR SELECTIVELY RETRIEVING INFORMATION FROM A SOURCE COMPUTER USING A TERRESTRIAL OR SATELLITE INTERFACE

Douglas M. Dillon, and Vivek Gupta, both of Gaithersburg, Md., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 257,670, Jun. 8, 1994, abandoned. This application Feb. 7, 1997, Ser. No. 797,505

Int. Cl.⁶ G06F ***13/14;9/44;*** **H04Q** ***7/22***

U.S. Cl. 395—200.47 **10 Claims**



1. A system for retrieving data from a source computer coupled to a network, comprising:
a requesting terminal;
a low-speed path linking the requesting terminal with the network;
a high-speed path linking the requesting terminal with the network; and
selection means for selecting one of the low-speed path and the high speed path for transmission of data from the source computer to the requesting terminal,
wherein the requesting terminal includes application software for generating a data request packet for transmission from the requesting terminal to the source computer,
wherein the selection means comprises a driver for receiving the data request packet from the application software and modi-

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fying the request packet to specify one of the low-speed path and the high-speed path for transmission of data from the source computer, and

wherein the request packet is an IP packet including a destination address and a source address and the driver specifies the low-speed path by changing the source address to correspond to the low-speed path.

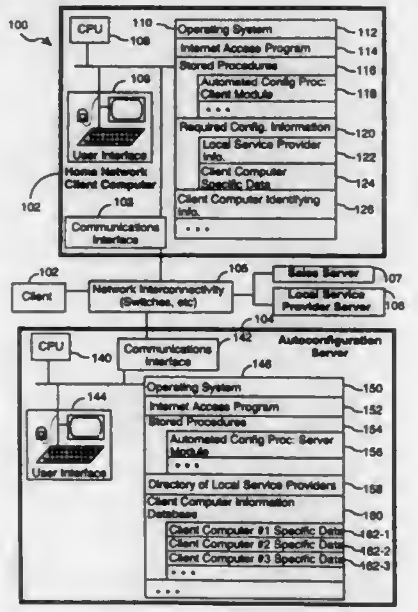
5,852,722
SYSTEM AND METHOD FOR AUTOMATIC CONFIGURATION OF HOME NETWORK COMPUTERS

Graham Hamilton, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation of Ser. No. 613,432, Feb. 29, 1996. This application Dec. 8, 1997, Ser. No. 986,298

Int. Cl.^{6} H04L *12/46;* **G06F** *13/14*

U.S. Cl. 395—200.51 **12 Claims**


100
CPU
110
108
Operating System
112
Internet Access Program
114
Stored Procedures
116
Automated Config Proc: Client Module
118
Required Config. Information
120
Local Service Provider Info.
122
Client Computer Specific Data
124
Client Computer Identifying Info.
126
User Interface
Home Network Client Computer
Communications Interface
102
Client
Network Interconnectivity (Switches, etc)
Sales Server
107
Local Service Provider Server
106
104
CPU
140
Communications Interface
142
Autoconfiguration Server
146
144
Operating System
150
Internet Access Program
152
Stored Procedures
154
Automated Config Proc: Server Module
156
User Interface
Directory of Local Service Providers
158
Client Computer Information Database
160
Client Computer #1 Specific Data
162-1
Client Computer #2 Specific Data
162-2
Client Computer #3 Specific Data
162-3

1. A method for automatic configuration of network client computers comprising the steps of:

- a) receiving requests from the network client computers for autoconfiguration;
- b) receiving caller identification information with each of the requests, wherein the caller identification information includes a telephone number associated with a telephone connection being used to send the request;
- c) using the received caller identification information to determine
  - i) local service provider information, selected from information in a predefined directory of local service providers; and
  - ii) client computer specific data corresponding to the caller identification information, selected from a database of client computer information; wherein at least a portion of the client computer specific data for each one of the network client computers includes data selected from the group consisting of computer model information for the one computer, data identifying an internal hardware or software configuration of the one computer, and data identifying a designated end user or recipient of the one computer; and
- d) providing instructions for downloading the local service provider information, and the client computer specific data to a respective network client computer.

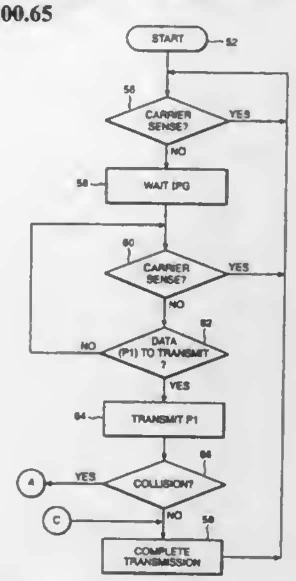
5,852,723
METHOD AND APPARATUS FOR PRIORITIZING TRAFFIC IN HALF-DUPLEX NETWORKS

Mohan Kalkunte, Sunnyvale; Jayant Kadambi, Milpitas; Jim Mangin, San Ramon, and Shashank Merchant, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 6, 1996, Ser. No. 692,689

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.65 **24 Claims**



1. A method in a network station of mediating collisions on network media, comprising:

sensing a collision on the media;

determining a priority of data to be transmitted by the network station;

determining a slot time interval by multiplying a predetermined slot time interval with (1) an integer randomly selected from a range of integers calculated from an exponential number of access attempts by the network station, and (2) a selected coefficient having a value corresponding to the determined priority; and

attempting access of the media in response to the detected collision and after the slot time interval.

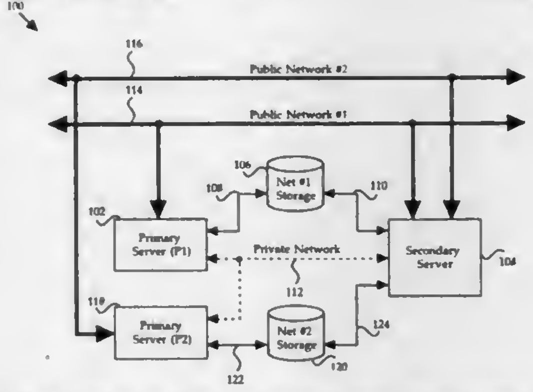
5,852,724
SYSTEM AND METHOD FOR "N" PRIMARY SERVERS TO FAIL OVER TO "1" SECONDARY SERVER

Fletcher M. Glenn, II, Danville, and Bruce D. Parker, Pleasanton, both of Calif., assignors to Veritas Software Corp., Mountain View, Calif.

Filed Jun. 18, 1996, Ser. No. 664,437

Int. Cl.^{6} G06F *13/38;15/17*

U.S. Cl. 395—200.69 **23 Claims**



1. In a client-server data processing system having client applications for generating requests, a system for server back-up, the system comprising:

a network;

a primary server coupled to the network, the primary server including:

a primary host file module for assigning a common node name to the primary server;

a primary high availability module for transmitting a primary server status over the network; and

a primary set of services responsive to the common node name, coupled to the primary host file module, for responding to requests from the client applications; and

a secondary server coupled to the network, the secondary server including:

a secondary host file module for assigning the common node name to the secondary server;

a duplicate set of the primary set of services responsive to the common node name, coupled to the secondary host file module, for responding to requests from the client applications; and

a secondary high availability module, coupled to the secondary host file module, for starting the duplicate set of the primary set of services in response to the primary server status indicating that the primary server is inoperative;

wherein said common node name is used by said primary set of services and by said duplicate set of the primary set of services to reference said primary server and said secondary server;

whereby the primary set of services continue to be provided over the network even though the primary server has failed.

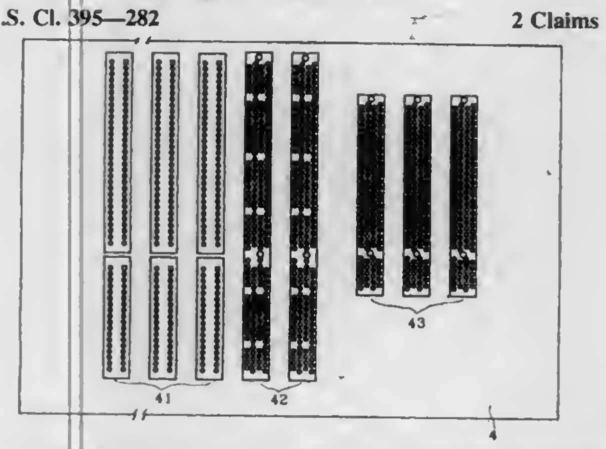
5,852,725
PCI/ISA BUS SINGLE BOARD COMPUTER CARD/CPU CARD AND BACKPLANE USING EISA BUS CONNECTORS AND EISA BUS SLOTS

Juei-Hsiang Yen, 4F-1, No. 5, Lane 33, Sec. 6, Hsin-Yi Road, Taipei, Taiwan

Filed May 10, 1996, Ser. No. 644,235

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—282 **2 Claims**



1. A backplane for a single board computer system having both PCI bus and ISA bus comprising:

a plurality of PCI bus slots, each of said PCI bus slots having a plurality of clamping connectors for PCI bus data paths and each corresponding data path being connected together;

a plurality of ISA bus slots, each of said ISA bus slots having a plurality of clamping connectors for ISA bus data paths and each corresponding data path being connected together; and

at least one EISA bus slot having a plurality of clamping connectors including an upper part and a lower part, said EISA bus slot having a first row, a second row, a third row and a fourth row of connection points on said backplane, each connection point of said first and third rows being connected to the lower part of one of said clamping connectors and each connection point of said second and fourth rows being connected to the upper part of one of said clamping connectors;

wherein each connection point of said first and third rows is connected to one of said PCI bus clamping connectors and each connection point of said second and fourth rows is connected to one of said ISA bus clamping connectors.

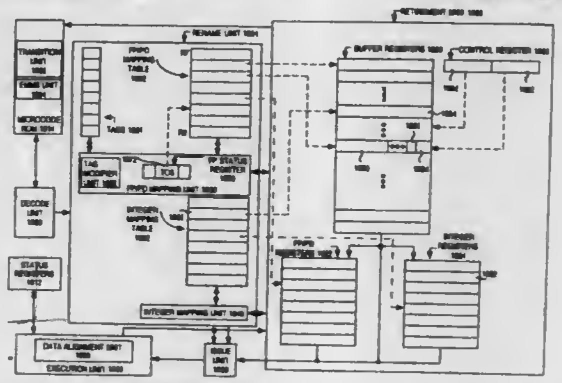
5,852,726
METHOD AND APPARATUS FOR EXECUTING TWO TYPES OF INSTRUCTIONS THAT SPECIFY REGISTERS OF A SHARED LOGICAL REGISTER FILE IN A STACK AND A NON-STACK REFERENCED MANNER

Derrick Lin, Foster City; Romamohan R. Vakkalagadda, Fremont, both of Calif.; Andrew F. Glew, Hillsboro, Oreg.; Larry M. Mennemeier, Boulder Creek, Calif.; Alexander D. Peleg, Haifa, Israel; David Bistry, Cupertino, Calif.; Millind Mittal, South San Francisco, Calif.; Carole Dulong, Saratoga, Calif.; Eiichi Kowashi, Ibaraki, Japan, and Benny Eitan, Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1995, Ser. No. 574,719

Int. Cl.^{6} G06F *9/00;9/30*

U.S. Cl. 395—376 **107 Claims**



1. A processor comprising:

a decode unit configured to decode instructions from at least one instruction set;

a plurality of physical registers; and

a mapping unit, coupled to said decode unit and said plurality of physical registers, to map logical registers specified by a first set of instructions to registers in said plurality of physical registers in a stack referenced manner, and to also map the same logical registers specified by a second set of instructions to registers in said plurality of physical registers in a non-stack referenced manner, wherein the first set of instructions specify operations on a different operand data type than said second set of instructions.

5,852,727
INSTRUCTION SCANNING UNIT FOR LOCATING INSTRUCTIONS VIA PARALLEL SCANNING OF START AND END BYTE INFORMATION

Rammohan Narayan, and Thang M. Tran, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

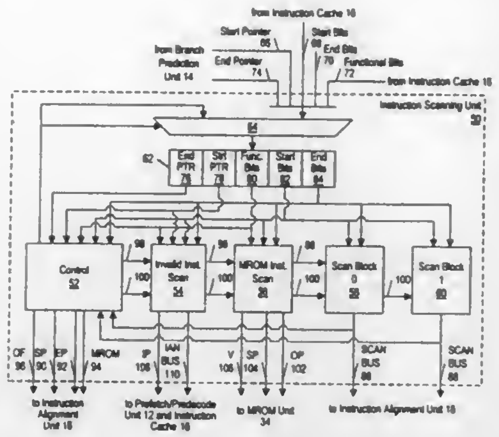
Filed Mar. 10, 1997, Ser. No. 813,568

Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—391 **20 Claims**

1. An instruction scanning unit for scanning a block of predecode information associated with a plurality of contiguous instruction bytes wherein said block of predecode information includes start byte information indicative of bytes which start instructions and wherein said block of predecode information further includes end byte information indicative of bytes which end instructions, said instruction scanning unit comprising:

a first subunit coupled to receive said start byte information, and wherein said first subunit is configured to generate a plurality of instruction valid values, and wherein each of said plurality of instruction valid values is indicative of a potential valid instruction starting at a first byte within said plurality of contiguous instruction bytes and ending at a second byte



within said plurality of contiguous instruction bytes, and wherein said first byte is indicated to be a start byte by said start byte information, and wherein said second byte is different for each one of said plurality of instruction valid values; and

a second subunit coupled to receive said end byte information, and wherein said second subunit is configured to generate a plurality of instruction end counts, and wherein each of said instruction end counts is indicative of a number of instructions which end between a first one of said plurality of contiguous instruction bytes and a particular one of said plurality of contiguous instruction bytes, and wherein said first subunit and said second subunit operate in parallel.

5,852,728

UNINTERRUPTIBLE CLOCK SUPPLY APPARATUS FOR FAULT TOLERANT COMPUTER SYSTEM

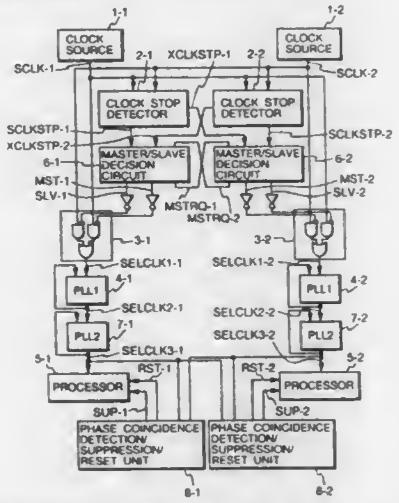
Koji Matsuda, Hitachinaka; Soichi Takaya, Hitachi; Yoshihiro Miyazaki, Hitachi; Kenichi Kurosawa, Hitachi; Shinichiro Yamaguchi, Mito; Sako Ishikawa, Hadano; Akira Yamagiwa, Ooiso; Masao Inoue, Sagamihara, and Kenji Kashiwagi, Minamiashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 585,344

Claims priority, application Japan, Jan. 19, 1905, 7-003067; Jun. 9, 1995, 7-142891

Int. Cl.^{6} G06F *1/06*

U.S. Cl. 395—556 4 Claims



1. A clock circuit comprising a first clock source and a second clock source;

a stop detector detecting a failure in one of said first and second clock sources, wherein said clock source not experiencing a failure is used a reference clock source;

a selector switching from said clock source experiencing said failure to said reference clock source in response to an output from said stop detector;

a PLL circuit provided in a subsequent stage of said selector,

wherein said PLL circuit comprises an overdamping response characteristic such that during a period of time when switching from said failed clock source to the other clock source, a glitch does not occur, and continuity of an output clock supply from said PLL circuit is assured.

5,852,729

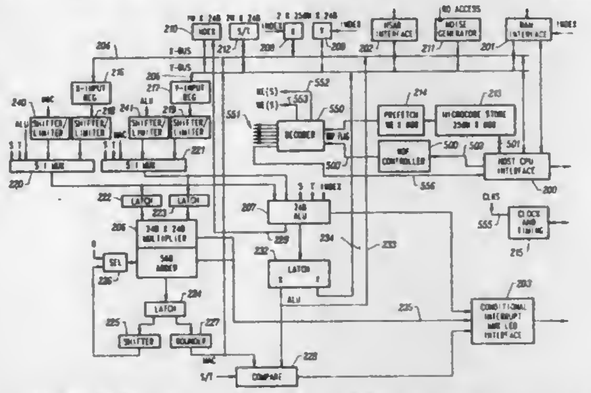
CODE SEGMENT REPLACEMENT APPARATUS AND REAL TIME SIGNAL PROCESSOR USING SAME

Alexander John Limberis, San Jose; Joanne F. Ottney, Los Altos, and Joseph Watson Bryan, Sunnyvale, all of Calif., assignors to Korg, Inc., Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 84,801

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—566 39 Claims



1. An apparatus for replacing a segment of instructions for a processor, the processor responsive to instructions to change data, comprising:

a memory system coupled to the processor having a set of memory locations to supply a sequence of instructions stored in the set of memory locations to the processor;

a controller, coupled to the memory system and the processor, and having an input, that is responsive to a command on the input to disable the processor from changing data in response to instructions in the sequence of instructions from a particular subset of the set of memory locations which stores the segment of instructions, the particular subset including more than one memory location; and

a memory interface, coupled to the memory system and to the controller, to receive and write new instructions to the particular subset to replace the segment of instructions.

5,852,730

HYBRID INSTRUCTION SET FOR VERSATILE DIGITAL SIGNAL PROCESSING SYSTEM

John Michael Buss, 1066 W. Vera La., Tempe, Ariz. 85284; James Douglas Dworkin, 6802 W. Shannon St., and Stephen Lee Smith, 3088 W. Ironwood Cir., both of Chandler, Ariz. 85226

Filed Dec. 12, 1996, Ser. No. 764,429

Int. Cl.^{6} G06F *9/40*

U.S. Cl. 395—588 20 Claims

1. A hybrid instruction set for programming a versatile digital signal processing system, comprising:

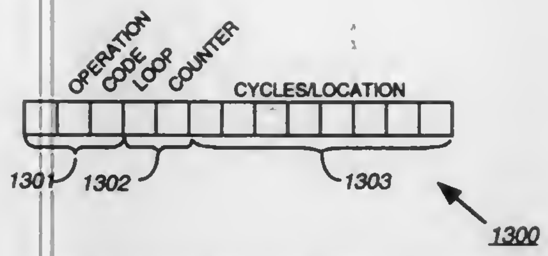
a program instruction word, comprising:

an operation code field;

a loop counter field responsive to the operation code field; and

a cycles/location field responsive to the operation code field and the loop counter field;

wherein the program instruction word operates to establish one of a plurality of unique program instruction words, each of the



plurality of program instruction words representing a distinct instruction that selectively configures programmable hardware for executing digital signal processing functions.

5,852,731

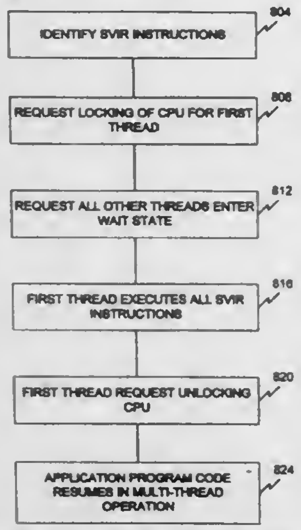
COMPUTER PROGRAM PRODUCT FOR SYNCHRONIZING STATIC VARIABLE INITIALIZATION AND REFERENCE UNDER A MULTI-THREADED COMPUTER ENVIRONMENT

I-Shin Andy Wang, San Jose, and Roni Korenshtein, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 465,240, Jun. 5, 1995, abandoned. This application Sep. 29, 1997, Ser. No. 940,205

Int. Cl.^{6} G06F *9/40*

U.S. Cl. 395—670 6 Claims


IDENTIFY SVIR INSTRUCTIONS
804
REQUEST LOCKING OF CPU FOR FIRST THREAD
808
REQUEST ALL OTHER THREADS ENTER WAIT STATE
812
FIRST THREAD EXECUTES ALL SVIR INSTRUCTIONS
816
FIRST THREAD REQUEST UNLOCKING CPU
820
APPLICATION PROGRAM CODE RESUMES IN MULTI-THREAD OPERATION
824

1. A computer program product for enabling a processor in a computer system to control static variable operations including initialization and reference in a multi-threaded computer system having a central processing unit (CPU) and an operating system, said computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium for causing an application program to execute on the computer system, said computer readable program code means comprising

a computer readable first program code means for causing the computer system to receive a lock request from a first thread, wherein said first thread is the first thread to request CPU processing of at least one static variable operation;

a computer readable second program code means for causing the computer system to switch said CPU to a single thread mode, wherein only said first thread is processed by said CPU during the single thread mode;

a computer readable third program code means for causing the computer system to label said first thread after said step of switching said CPU to a single thread mode; and

a computer readable fourth program code means for causing the computer system to switch said CPU to multiple thread mode, wherein multiple threads are processed by said CPU during the multiple thread mode.

5,852,732

HETEROGENEOUS OPERATIONS WITH DIFFERING TRANSACTION PROTOCOLS

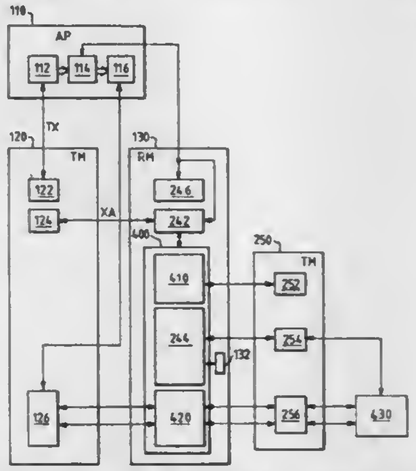
Thomas Freund, Winchester, and Robert Anthony Storey, Southhampton, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1996, Ser. No. 735,626

Claims priority, application United Kingdom, May 24, 1996, 9610993

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—671 18 Claims



1. A resource manager for a distributed transaction processing system, the transaction processing system also comprising a first transaction manager using a first transaction processing protocol to process transactions initiated by one or more application programs, the resource manager being compliant with said first transaction processing protocol, and comprising:

means for registering the resource manager with said first transaction manager;

characterised in that the resource manager further comprises:

means for initiating a transaction in a second transaction manager in order to access a further resource manager;

means, responsive to a first two phase commit protocol from said first transaction manager, for initiating a second two phase commit protocol with said second transaction manager; and

means, responsive to said second two phase commit protocol initiated with said second transaction manager, for responding to said first two phase commit protocol with said first transaction manager.

5,852,733

MICROCONTROLLER DEVELOPMENT TOOL USING SOFTWARE PROGRAMS

Yung-Ping S. Chien, 723 W. Michigan St., Indianapolis, Ind. 46202; William D. S. Connor, 8969 S. McGray Dr., Pendleton, Ind. 46064-9541, and Christopher D. Jeffares, P.O. Box 1007, Noblesville, Ind. 46061

Filed Dec. 16, 1996, Ser. No. 767,002

Int. Cl.^{6} G06F *9/445;13/10*

U.S. Cl. 395—701 20 Claims

5. A software development tool, operable to run on a computer, for microcontrollers comprising: a plurality of Windows®-based computer forms generated by programs which are commercially-available and non-proprietary to the microcontroller manufacturer, operable to generate code, of a language selected from the languages consisting of assembly, C, or a variation thereof, capable of programming information into selected registers of a microcontroller in connection with information entered into said forms from a computer, said development tool being operable to insert said code

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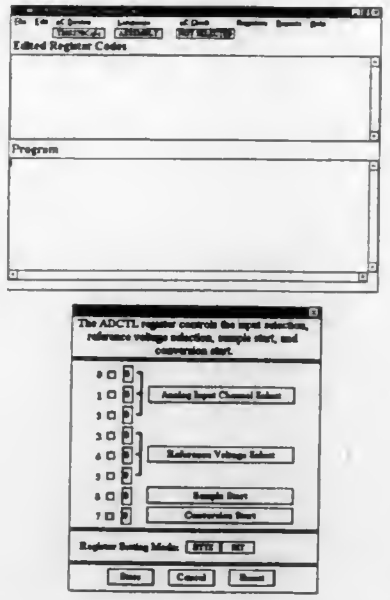


The ADCTL register controls the input selection, reference voltage selection, sample start, and conversion start.

into a selected location of a main program of said microcontroller without the use of an emulator.

5,852,734
METHOD AND COMPILER FOR PARALLEL EXECUTION OF A PROGRAM

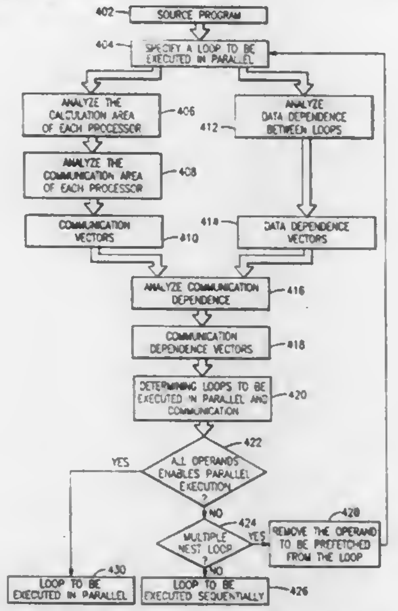
Hideaki Komatsu, Yokohama; Kazuaki Ishizaki, Tokyo-to, and Osamu Gohda, Yokohama, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1995, Ser. No. 489,196

Claims priority, application Japan, Jul. 6, 1994, 6-154942

Int. Cl.^{6} G06F *9/45*

U.S. Cl. 395—707 **16 Claims**


402
SOURCE PROGRAM
404
SPECIFY A LOOP TO BE EXECUTED IN PARALLEL
ANALYZE THE CALCULATION AREA OF EACH PROCESSOR
406
ANALYZE DATA DEPENDENCE BETWEEN LOOPS
412
ANALYZE THE COMMUNICATION AREA OF EACH PROCESSOR
408
COMMUNICATION VECTORS
410
414
DATA DEPENDENCE VECTORS
ANALYZE COMMUNICATION DEPENDENCE
416
COMMUNICATION DEPENDENCE VECTORS
418
DETERMINING LOOPS TO BE EXECUTED IN PARALLEL AND COMMUNICATION
420
422
YES
ALL OPERANDS ENABLES PARALLEL EXECUTION ?
NO
424
MULTIPLE NEST LOOP ?
YES
428
REMOVE THE OPERAND TO BE PREFETCHED FROM THE LOOP
NO
430
LOOP TO BE EXECUTED IN PARALLEL
LOOP TO BE EXECUTED SEQUENTIALLY
426

1. In a computer having a plurality of processors, a method for increasing the speed of program execution by decomposing loops in a source program onto the processors and having said processors execute them in parallel, said method comprising the steps of:

(a) reading the source program;
(b) specifying a loop to be executed in parallel in said source program;
(c) determining data dependence vectors indicating true and anti dependences relatives to said loop being specified;
(d) decomposing the iteration spaces of said loop and assigning the spaces to said plurality of processors;
(e) determining the area of each iteration space assigned to said plurality of processors where data is required to be read from any other processor for parallel processing;
(f) calculating communication vectors based on information on the area of said iteration space which has been determined that data is required to be read from any other processor, said vectors are the ones which indicate whether interprocessor communication exists or not for each loop;
(g) calculating communication dependence vectors based on said data dependence vectors and said communication vectors, said dependence vectors are calculated by ANDing said communication vectors with said dependence vectors;
(h) determining the manner of communication based on the values of said communication dependence vectors; and
(i) generating codes for specifying communication and loop execution methods by detecting the method of communication between respective operands, based on said manner of communication being determined.

5,852,735
METHOD AND APPARATUS FOR EXCHANGING A PROGRAM OVER A NETWORK COMPUTER SYSTEM THAT PERMITS REACTIVATION OF THE ORIGINAL PROGRAM IF AN ERROR OCCURS

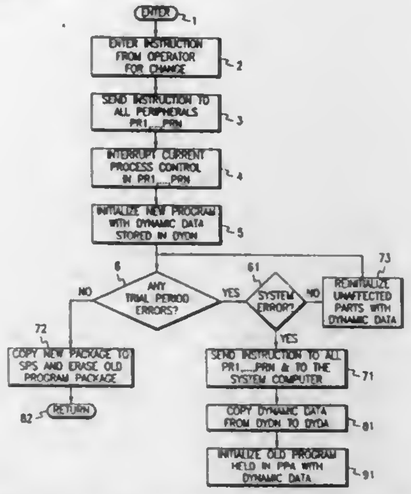
Hans-Jürgen Urban, Weissach, Germany, assignor to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 23, 1995, Ser. No. 518,621

Claims priority, application Germany, Aug. 24, 1994, 44 29 969.9

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—712 **15 Claims**


ENTER
1
ENTER INSTRUCTION FROM OPERATOR FOR CHANGE
2
SEND INSTRUCTION TO ALL PERIPHERALS PR1....PRN
3
INTERRUPT CURRENT PROCESS CONTROL IN PR1....PRN
4
INITIALIZE NEW PROGRAM WITH DYNAMIC DATA STORED IN DYDN
5
6
NO
ANY TRIAL PERIOD ERRORS?
YES
61
SYSTEM ERROR?
NO
73
REINITIALIZE UNAFFECTED PARTS WITH DYNAMIC DATA
YES
72
COPY NEW PACKAGE TO SPS AND ERASE OLD PROGRAM PACKAGE
SEND INSTRUCTION TO ALL PR1....PRN & TO THE SYSTEM COMPUTER
71
82
RETURN
COPY DYNAMIC DATA FROM DYDN TO DYDA
81
INITIALIZE OLD PROGRAM HELD IN PPA WITH DYNAMIC DATA
91

1. A method of exchanging an old program package for a new program package in a multicomputer system (MRS) comprising a plurality of peripheral computers (PR1, . . . , PRN) and at least one system computer (SR), with the peripheral computers (PR1, . . . , PRN) and the at least one system computer (SR) connected to a computer communication network (RKN) and each peripheral computer having a main memory (RAM1), characterized by the following steps for execution in each of the peripheral computers (PR1, . . . , PRN) and in the at least one system computer (SR):

copying the new program package to respective first areas (PPN) of the main memories (RAM1) of the peripheral computers (PR1, . . . , PRN) and the at least one system computer (SR);

saving dynamic data of processes under control of the multicomputer system (MRS) in respective second areas (DYD) of the main memories (RAM1) upon reaching a selected point in the execution of the old program package; and

initializing the new program package in the respective peripheral computers (PR1, . . . , PRN) and the at least one system computer (SR) with the saved dynamic data.

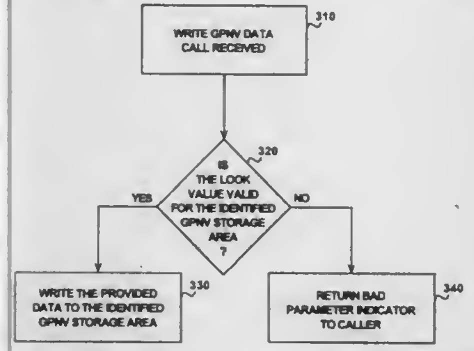
5,852,736
METHOD AND APPARATUS FOR PROTECTING DATA USING LOCK VALUES IN A COMPUTER SYSTEM

Mark S. Shipman, Hillsboro; Orville H. Christeson, and Timothy E. W. Labatte, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 28, 1996, Ser. No. 623,930

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—726 **23 Claims**


WRITE GPNV DATA CALL RECEIVED
310
320
IS THE LOCK VALUE VALID FOR THE IDENTIFIED GPNV STORAGE AREA ?
YES
NO
WRITE THE PROVIDED DATA TO THE IDENTIFIED GPNV STORAGE AREA
330
RETURN BAD PARAMETER INDICATOR TO CALLER
340

5. A method for protecting a nonvolatile storage area in a computer system, wherein the computer system is compatible with a desktop management interface BIOS specification, wherein the method comprises the computer-implemented steps of:

(a) indicating that the computer system does not support locked writes to the nonvolatile storage area;
(b) receiving a request to perform a locked write to the nonvolatile storage area;
(c) checking whether a first lock value corresponding to the request is valid based on a predetermined lock value, notwithstanding having indicated that the computer system does not support locked writes to the nonvolatile storage area; and
(d) writing data corresponding to the request to the nonvolatile storage area provided the first lock value is valid, otherwise leaving the nonvolatile storage area unmodified.

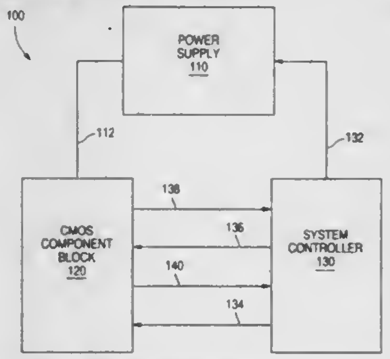
5,852,737
METHOD AND APPARATUS FOR OPERATING DIGITAL STATIC CMOS COMPONENTS IN A VERY LOW VOLTAGE MODE DURING POWER-DOWN

Zeev Bikowsky, Natanla, Israel, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 427,027, Apr. 24, 1995, abandoned. This application Dec. 31, 1996, Ser. No. 777,857

Int. Cl.^{6} G06F *1/32*

U.S. Cl. 395—750.05 **26 Claims**



24. An electronic system comprising:

a static CMOS component;

a programmable power supply source coupled to the static CMOS component by a power line, the programmable power source supplying to the static CMOS component a voltage selected from a plurality of voltages including an operating voltage and a low voltage substantially lower than the operating voltage but sufficient to maintain register and internal state levels of a static CMOS component; and

a system controller coupled to the programmable power supply by a power control line for selecting the supplied voltage and coupled to the static CMOS component by a status line indicative of component status including an active status and an idle status, the system controller including:

a control logic responsive to the idle status signal on the status line by selecting the low voltage substantially lower than the operating voltage but sufficient to maintain register and internal state levels of the static CMOS component, the control logic calibrating the low reference voltage pertaining to the static CMOS component in a suboperation included in a system bootstrap operation.

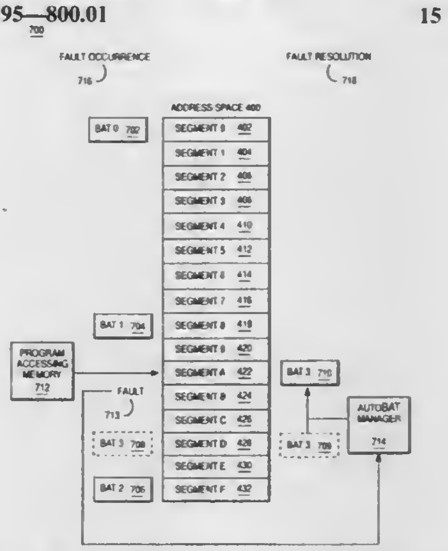
5,852,738
METHOD AND APPARATUS FOR DYNAMICALLY CONTROLLING ADDRESS SPACE ALLOCATION

Richard Bealkowski; Doyle Stanfill Cronk; Benjamin Russell Grimes, and Michael Robert Turner, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 266,914, Jun. 27, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 752,410

Int. Cl.^{6} G06F *12/10*

U.S. Cl. 395—800.01 **15 Claims**



1. A method for managing a memory address space in a memory system, said memory system having a plurality of block address translation entries. each entry defining a portion of the memory address space, comprising the steps of:

a) determining that a received virtual address references a portion of the memory address space not defined by any of the block address translation entries;
b) reallocating at least one of said block address translation entries to define a part of the memory address space that includes the portion of the memory space referenced by said received virtual address; and
c) providing a physical address matching the virtual address by using the reallocated block address translation entries.

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5,852,739

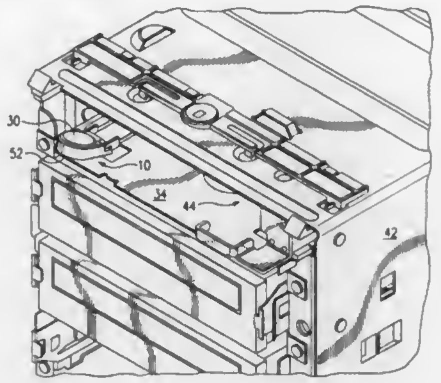
LOW PROFILE PLATE INTERLOCK MECHANISM FOR A COMPUTER CHASSIS

Timothy Radloff, Austin, and Stephen Cook, Georgetown, both of Tex., assignors to Dell Computer Corporation, Round Rock, Tex.

Filed Oct. 8, 1997, Ser. No. 947,139

Int. Cl.^{6} G06F *15/76*

U.S. Cl. 395—800.01 **23 Claims**



1. A computer system comprising:
a microprocessor;
an input device coupled to provide input to the microprocessor;
a mass storage device coupled to the microprocessor;
a display coupled to the microprocessor by a video controller;
a memory coupled to provide storage to facilitate execution of computer programs by the microprocessor;
a chassis;
a drive bay in the chassis, the drive bay including a support plate mounted therein;
a drive plate mounted on the support plate; and
an interlock member releasably engaging the drive plate and the support plate, including a first portion having a first end engaged with a first retainer on the drive plate and a second portion connected to a second end, the second portion extending angularly relative to the first portion and being engaged with a second retainer on the drive plate, and an interlock member extending from the first portion and through aligned openings formed in the drive plate and the support plate.

5,852,740

POLYMORPHIC NETWORK METHODS AND APPARATUS

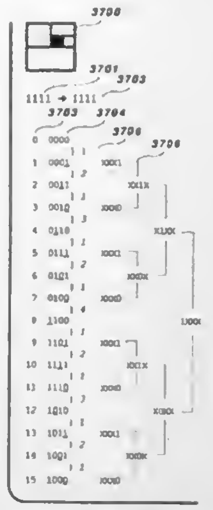
Mark D. Estes, 4509 Bunny Run VI, Austin, Tex. 78746

Continuation of Ser. No. 218,333, Mar. 28, 1994, Pat. No. 5,680,634, which is a continuation-in-part of Ser. No. 642,508, Jan. 16, 1991, Pat. No. 5,301,284. This application Oct. 15, 1997, Ser. No. 951,057

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—800.15 **2 Claims**

1. A method of controlling a Gray code transition sequence using a plurality of dimensions corresponding to attributes which name a plurality of groups of related object space configurations, and a first dimension corresponding to an attribute of the Gray code transition sequence described by grouping named transitions in which the same bit position of codewords changes, comprising the steps of:
allocating a context configuration control network;
inputting, using the plurality of dimensions, data representing a particular object space configuration;
inputting the first dimension, corresponding to a particular step in the Gray code transition sequence; and
determining a bit position which changes to produce a next codeword in the Gray code transition sequence.



5,852,741

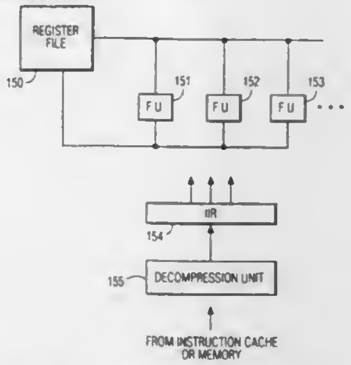
VLIW PROCESSOR WHICH PROCESSES COMPRESSED INSTRUCTION FORMAT

Elno Jacobs, Palo Alto, and Michael Ang, Santa Clara, both of Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed May 15, 1996, Ser. No. 648,359

Int. Cl.^{6} G06F *9/38*

U.S. Cl. 395—800.24 **27 Claims**



1. A VLIW processor for using compressed instructions, the processor comprising
an instruction issue register comprising a plurality of issue slots, each issue slot being for storing a respective operation, all of the operations starting execution in a same clock cycle;
a plurality of functional units for executing the operations stored in the instruction register;
a decompression unit for providing decompressed instructions to the instruction issue register, the decompression unit taking compressed instructions from a compressed instruction storage medium and decompressing the compressed instructions, at least one of the compressed instructions including at least one operation, each operation being compressed according to a compression scheme which assigns a compressed operation length to that operation, the compressed operation length being chosen from a plurality of finite lengths, which finite lengths include at least two non-zero lengths, which of the finite lengths is chosen being dependent upon at least one feature of the operation.

5,852,742

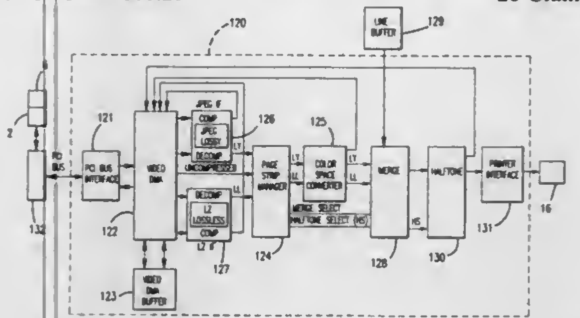
CONFIGURABLE DATA PROCESSING PIPELINE

Gary L. Vondran, Jr., Winchester, Mass.; James R. Nottingham; Scott C. Clouthier, both of Boise, Id.; Douglas Heins, Burley, Id., and Brian E. Hoffmann, Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 17, 1997, Ser. No. 878,883

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—800.28 **20 Claims**



1. A configurable data processing pipeline for processing data, comprising:
a direct memory access controller having a first input for receiving said data and a first output for sending said data and for sending a result of performing at least one of a plurality of transforms on said data;
a first pipeline processing unit having a second input coupled to said first output, said first pipeline processing unit having the capability to perform a first one of said plurality of transforms on said data and on said result of performing at least one of said plurality of transforms on said data, said first pipeline processing unit having a second output coupled to said direct memory access controller for sending said result of performing at least one of said plurality of transforms on said data and a third output for sending said data and said result of performing at least one of said plurality of transforms on said data; and
a second pipeline processing unit having a third input coupled to said third output, said second pipeline processing unit having the capability to perform a second one of said plurality of transforms on said data and on said result of performing at least one of said plurality of transforms on said data, said second pipeline processing unit having a fourth output coupled to said direct memory access controller for sending said result of performing at least one of said plurality of transforms on said data and a fifth output for sending said data and said result of performing at least one of said plurality of transforms on said data.

5,852,743

METHOD AND APPARATUS FOR CONNECTING A PLUG-AND-PLAY PERIPHERAL DEVICE TO A COMPUTER

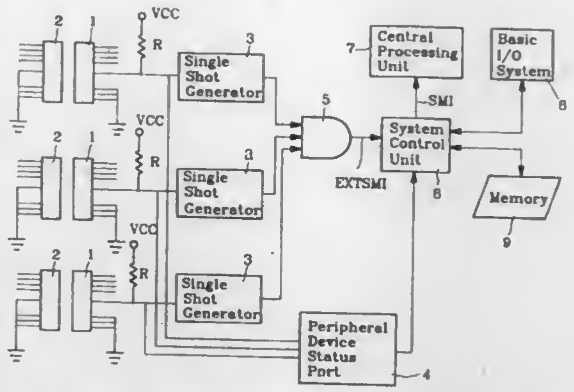
Shih-Ping Yeh, Chung-Li, Taiwan, assignor to Twinhead International Corp., Kaohsiung, Taiwan

Filed Jul. 12, 1996, Ser. No. 682,834

Int. Cl.^{6} G06F *9/00*

U.S. Cl. 395—838 **1 Claim**

1. An apparatus for connecting a peripheral device to a peripheral I/O port of a computer, comprising:
a plurality of I/O ports for connecting a plurality of peripheral devices;
a plurality of single shot generators, each of said single shot generators having an input and an output;
a peripheral device status register having a plurality of inputs and an output;
an interface connector for each of said I/O ports, said interface connector having a detection pin connected to the input of one of said single shot generators and to one of said plurality of inputs of said peripheral device status register, said detection pin being connected through a resistor to a system power supply of said computer;
an external device connector for each of said peripheral devices, said external device connector matching one of said interface connectors and having a connection pin corresponding to the detection pin of the matched interface connector, and said connection pin being connected to ground;
an AND gate receiving and anding all the outputs of said single shot generators for generating an external system management interrupt;
and a system control unit receiving said external system management interrupt and the output of said peripheral device status register and generating a system management interrupt to a central processing unit, said system control unit having access to a dynamic random access memory as well as a basic input/output system;
wherein when a peripheral device is connected to its matched interface connector, the detection pin of the matched interface connector triggers the single shot generator connected to the detection pin and generates a trigger signal, the AND gate generates said external system management interrupt to the system control unit, the system control unit interrupts the central processing unit, the central processing unit executes an interrupt service routine that scans said peripheral device status register to determine which peripheral device is newly connected and executes a service procedure for modifying appropriate parameters and settings of said basic input/output system as well as appropriate flags of the operating system of said computer for the peripheral device newly connected, said interrupt service routine ends after setting appropriate parameters and flags, the central processing unit resumes its normal operation, and the peripheral device becomes available to a user of the computer.



5,852,744

METHOD FOR DISCOVERING A NETWORK PRINTER BY ASSIGNING DEDICATED SOCKETS TO DIFFERENT PRINTER TYPES AND POLLING THE DEDICATED SOCKETS TO LEARN THE CORRESPONDING STATE

Kevin Agatone, Broomall, Pa.; Roman Orzol, Marlton; Tim Deppa, Cherry Hill, both of N.J.; Jon Hopkins, Brookfield, Wis., and Ponna Arumgam, Medford, N.J., assignors to Oki America, Inc., Hackensack, N.J.

Filed Jun. 18, 1996, Ser. No. 665,627

Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—837 **6 Claims**

1. A method for discovering a printer of a printer type in a network, the method comprising the steps of:
establishing a socket having a socket identifier (ID) associated with the printer type, the network communicating with the printer through the socket, the socket having a poll mode and a listen mode, the socket when in the poll mode awaiting and obtaining outgoing data from the network tagged with the socket ID and sending the obtained outgoing data to the printer, the socket when in the listen mode awaiting and obtaining incoming data from the printer and sending the obtained incoming data to the network;

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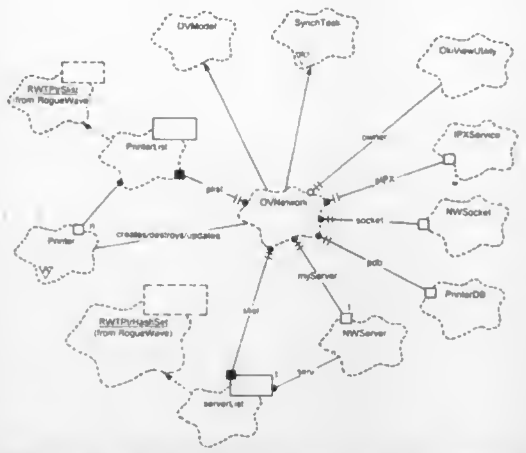


establishing a printer information object for storing printer information associated with the printer once the printer is discovered, the network maintaining and updating the printer information therewith;

establishing a timer providing a periodic timing signal TICK;

periodically polling for the printer once every N TICKs, each polling step comprising the steps of:
  placing the socket in the poll mode;
  sending polling data tagged with the socket ID to the socket for receipt by the printer;
  placing the socket in the listen mode; and
  waiting to determine whether the socket has obtained printer data from the printer;

if the socket has obtained printer data from the printer, determining from the printer information object whether the printer has been previously discovered based on whether the printer information object has stored printer information for the printer; and

if the printer has not been previously discovered, creating printer information for the printer and storing the created printer information in the printer information object.

5,852,745

GRAPHICAL SHEET TECHNIQUE FOR AUTOMATICALLY CHANGING THE CONDITIONS OF A PRINTER/PLOTTER

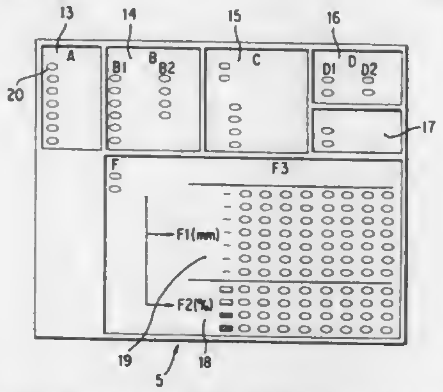
Juan Belon Fontal, San Diego, Calif.; Joseph Giralt Adroher, Esplungues de Llobregat, and Andrew D. Mackenzie, La Floresta, both of Spain, assignors to Hewlett-Packard Company, Pala Alto, Calif.

Continuation of Ser. No. 234,160, Apr. 28, 1994, abandoned.
This application Oct. 1, 1996, Ser. No. 743,338

Claims priority, application European Pat. Off., Jun. 21, 1993, 93500089

Int. Cl.^{6} G06F *15/46;* **G09F** *19/00*

U.S. Cl. 395—835 **16 Claims**



1. Method of altering the values of the setting parameters which determine the operating conditions of a printer/plotter machine or apparatus, characterised by:

a) the production on laminar medium of optically readable different marks which are respectively coded in accordance with different values of the setting or configuration parameters of the printer/plotter machine or apparatus;

b) supplying the laminar medium with the optically readable marks to an automatic optical reader head of the printer/plotter machine or apparatus;

c) automatic reading of graph signals produced on the laminar medium, by means of the optical reader head incorporated in the machine or apparatus control components;

d) transmitting the result of said automatic reading to a system microprocessor;

e) comparing the values read with fixed tables stored in a computer memory, containing the equivalents of the different parameter values;

f) emission of instructions by the microprocessor to the components of the machine or apparatus having operating conditions which depend on the precise values of the different parameters, and

g) wherein the aforesaid production step includes allowing a printer/plotter user to apply optically readable graphic marks to the laminar medium prior to said supplying step.

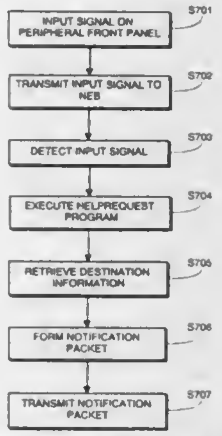
5,852,746

SYSTEM FOR TRANSMITTING A MESSAGE USING STATUS BUTTON TO SYSTEM ADMINISTRATOR BY USING A SIGNAL COMPRISING PREDETERMINED NUMBER OF CHANGES EFFECTED OVER A PERIOD

Lorraine F. Barrett, Yorba Linda, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,787
Int. Cl.^{6} G06F *13/00*

U.S. Cl. 595—837 **39 Claims**


INPUT SIGNAL ON PERIPHERAL FRONT PANEL
S701
TRANSMIT INPUT SIGNAL TO NEB
S702
DETECT INPUT SIGNAL
S703
EXECUTE HELPREQUEST PROGRAM
S704
RETRIEVE DESTINATION INFORMATION
S705
FORM NOTIFICATION PACKET
S706
TRANSMIT NOTIFICATION PACKET
S707

1. A method of transmitting a message to a system administrator of a local area network (LAN) using a status button on a front panel of a peripheral device which is interfaced to the LAN via a network interface device having a storage device, said method comprising the steps of:
  storing a message to the system administrator in the storage device;
  inputting a signal corresponding to the message stored in the storage device on the front panel of the peripheral device, the signal comprising a predetermined number of status changes effected over a predetermined period of time using the status button;
  transmitting the input signal to the network interface device;
  detecting the input signal at the network interface device;
  retrieving destination information for the message to the system administrator in response to detection of the input signal;
  retrieving the message from the storage device in response to detection of the input signal;
  forming a notification packet including retrieved destination information, identification information regarding the peripheral device, and the message retrieved from the storage device; and

  transmitting the notification packet to the system administrator using the retrieved destination information.

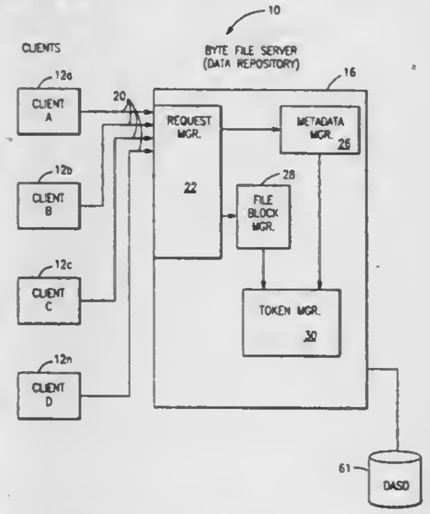
5,852,747

SYSTEM FOR AWARDING TOKEN TO CLIENT FOR ACCESSING FIRST DATA BLOCK SPECIFIED IN CLIENT REQUEST WITHOUT INTERFERENCE DUE TO CONTENTION FROM OTHER CLIENT

Robert Bradley Bennett, Endwell; Eugene Johnson, Vestal, and Terrence L. Woodnorth, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,991
Int. Cl.^{6} G06F *13/14*

U.S. Cl. 395—860 **19 Claims**



1. A token manager for a computer system wherein data blocks are represented by respective tokens, and an award of a token to a client represents access by the client to the respective block, said manager comprising:
  means for receiving a request for at least one of multiple consecutive data blocks; and
  means, responsive to the request, for (a) awarding the token for a first data block specified in the request without interference due to contention for said first data block by a current owner of the token for said first data block; and (b) awarding tokens for all other consecutive blocks following said first block of said multiple blocks held by a client who also holds the token for said first block, except if another client currently holds a contending token for one of said consecutive blocks other than said first block but does not also hold the token for said first block, then awarding only the tokens for said first block and all blocks between said first block and said one block.

5,852,748

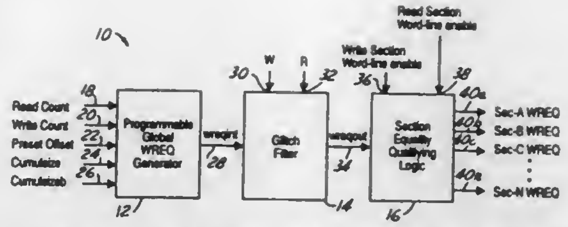
PROGRAMMABLE READ-WRITE WORD LINE EQUALITY SIGNAL GENERATION FOR FIFOS

Andrew L. Hawkins; Pidugu L. Narayana, and Roland T. Knaack, all of Starkville, Miss., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 29, 1995, Ser. No. 578,209
Int. Cl.^{6} G11C *7/00;15/00*

U.S. Cl. 395—874 **13 Claims**

1. A circuit comprising:
  a FIFO buffer having a plurality of write enable signals, a plurality of read enable signals, a read pointer and a write pointer;
  a first circuit configured to generate an internal signal indicating when said read pointer is within a specified offset of said write pointer in response to (i) a first input coupled to said



  write pointer, (ii) a second input coupled to said read pointer and (iii) an offset input for receiving said specified offset;
  a logic circuit configured to generate a read write equality signal in response to (i) said internal signal, (ii) said plurality of write enable signals and (iii) said plurality of read enable signals.

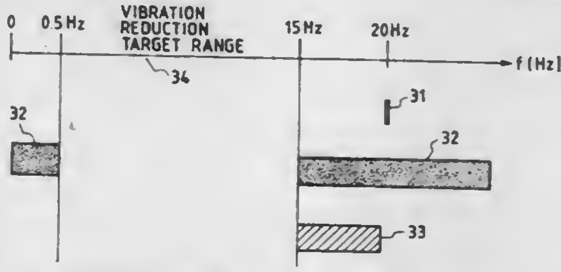
5,852,749

VIBRATION REDUCTION DEVICE

Norikatsu Konno, Tokyo, and Shoei Nakamura, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 715,380, Sep. 12, 1996, abandoned.
This application May 7, 1997, Ser. No. 852,573
Claims priority, application Japan, Sep. 13, 1995, 7-235019
Int. Cl.^{6} G03B *17/00*

U.S. Cl. 396—55 **28 Claims**



1. A vibration reduction device comprising:
  a vibration detection device which detects a vibration;
  a vibration reduction optical system which reduces the vibration by its movement;
  a vibration reduction optical system drive device which drives said vibration reduction optical system on the basis of a detection result of said vibration detection device;
  a memory device which stores a predetermined frequency region;
  a comparison device which compares the stored frequency region with a frequency of the vibration detected by said vibration detection device;
  a lock device which locks an operation of said vibration reduction optical system; and
  a control device which controls said lock device on the basis of a comparison result of said comparison device.

5,852,750

ATTITUDE ADJUSTMENT DEVICE AND METHOD

Tadao Kai, Kawasaki, and Hidenori Miyamoto, Urayasu, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 735,436, Jan. 2, 1997, abandoned, which is a continuation of Ser. No. 238,838, May 4, 1994, abandoned. This application Jul. 25, 1997, Ser. No. 900,872
Claims priority, application Japan, May 6, 1993, 5-105735
Int. Cl.^{6} G03B *17/00*

U.S. Cl. 396—55 **16 Claims**

1. An attitude adjustment device for use with a detector device, wherein said detector device detects motion about an optical axis of an optical instrument, said attitude adjustment device comprising:

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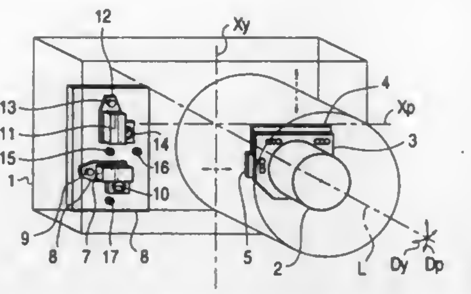


- a first adjustment mechanism which adjusts said detector device about a first angle;
- a second adjustment mechanism which adjusts said detector device about a second angle; and
- a baseplate on which said first and second adjustment mechanisms are mounted, wherein said baseplate is mounted in said optical instrument substantially perpendicular to said optical axis.

5,852,751

STROBE LIGHT AND IMAGE RECORDER CONTAINING THAT STROBE LIGHT

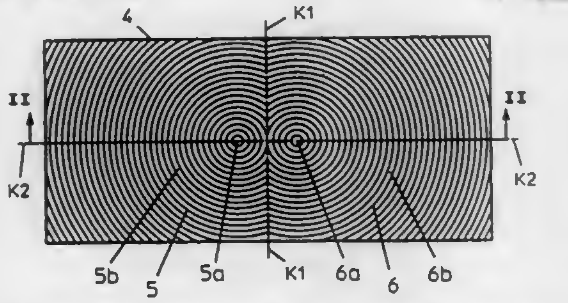
Katsunori Kawabata, Osaka, and Katsumi Horinishi, Hashimoto, both of Japan, assignors to West Electric Co., Ltd., Japan

Filed Jun. 20, 1997, Ser. No. 879,514

Claims priority, application Japan, Jun. 21, 1996, 8-161379; Jan. 23, 1997, 9-009905

Int. Cl.^{6} G03B *15/06*

U.S. Cl. 316—175 **20 Claims**



1. A strobe light, which changes the angle at which light from a light source illuminates an object, comprising at least a light emitter consisting of a reflector provided with a reflecting surface which is not of a truly parabolic form but of a quasi-parabolic form and planar side reflecting surfaces, all of which surfaces are next to a rectangular opening, and of a rod light source positioned in space formed by the reflecting surface which is not of a truly parabolic form but of a quasi-parabolic form and the planar side reflecting surfaces; an optical member positioned in front of the reflector, first and second condenser lenses said optical member are formed on both sides of a first reference line crossing the rod light source at right angles substantially at its center in its Longitudinal direction; and light emitting angle varying means for varying the angle of light emitted through the optical member from the light emitter, characterized in that:

the optical member is arranged to hardly diffuse light from the rod light source in the direction at right angles to the direction of the length of the rod light source and widely diffuses the light in the direction of the length of the rod light source, compared with the case where the optical member has either the first condenser lens or the second condenser lens.

5,852,752

CAMERA WITH POP-UP STROBE UNIT

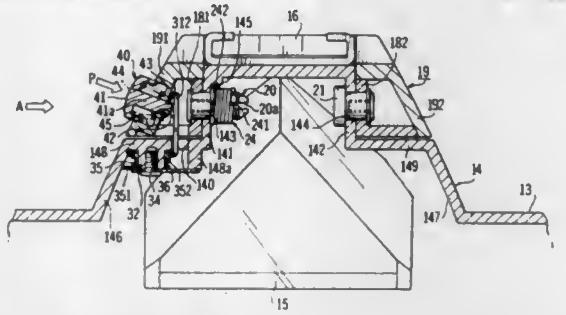
Takao Nakanishi, and Tetsuo Hosokawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1997, Ser. No. 826,822

Claims priority, application Japan, Apr. 9, 1996, 8-086611

Int. Cl.^{6} G03B *15/03*

U.S. Cl. 396—176 **20 Claims**



1. A camera, comprising:
- a strobe head pivotable about a pivoting axis, said strobe head being pivotable between an operating position and a retracted position about the pivoting axis;
- a locking arrangement that locks said strobe head at said retracted position;
- a trapezoid-shaped strobe head cover provided to said strobe head, said trapezoid-shaped strobe head cover including a wall which is inclined with respect to a plane which is perpendicular to the pivoting axis of said strobe head; and
- an operation button that is provided in said wall, said operation button being pressed in a direction perpendicular to said wall to actuate said locking arrangement to release said strobe head.

5,852,753

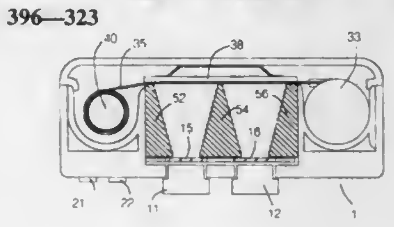
DUAL-LENS CAMERA WITH SHUTTERS FOR TAKING DUAL OR SINGLE IMAGES

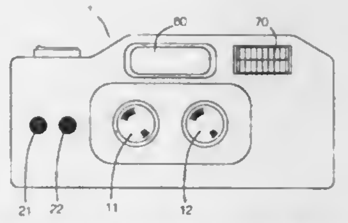
Allen Kwok Wah Lo, 5022 Hidden Branches Dr., Dunwoody, Ga. 30338, and Kenneth Quochuy Lao, 650 Glen Ave., Westfield, N.J. 07090

Filed Nov. 10, 1997, Ser. No. 964,196

Int. Cl.^{6} G03B *41/00*

U.S. Cl. 396—323 **6 Claims**





1. A dual-lens camera for taking pictures and recording images on a roll of photographic film, said camera comprising:
- a first taking lens having therebehind a first image frame to define an exposing area on said film; said first image frame having a width;
- a first shutter associated with said first taking lens;
- a first shutter release button for activating said first shutter to effect the exposure of an image formed by said first taking lens on said first image frame;
- a second taking lens having therebehind a second image frame to define an exposing area on said film; said second image frame having a width;
- a second shutter associated with said second taking lens;
- a second shutter release button for simultaneously activating said first and second shutters to effect the exposure of two images formed by said first and second taking lenses on the respective image frames;
- a film advance mechanism; said mechanism being caused by the action of the first shutter release button to advance said film by a length slightly greater than the width of said first image frame; said mechanism being caused by the action of the second shutter release button to advance said film by a length slightly greater than the total width of said first and second image frames; and
- a viewfinder.

5,852,754

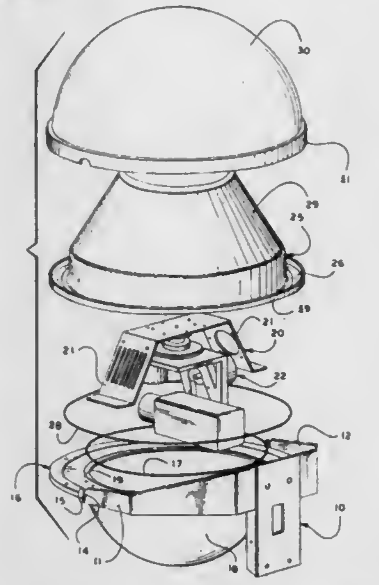
PRESSURIZED HOUSING FOR SURVEILLANCE CAMERA

Peter G. Schneider, Decatur, Ga., assignor to Videolarm, Inc., Decatur, Ga.

Filed Aug. 27, 1997, Ser. No. 919,021

Int. Cl.^{6} G03B *29/00*

U.S. Cl. 396—427 **8 Claims**



1. A housing for a surveillance camera, said housing comprising an assembly plate defining a central opening therein, a hemispherical lower dome having an outwardly turned flange, said lower dome being received within said central opening of said assembly plate with said outwardly turned flange received by said assembly plate, an upper enclosure received on said assembly plate, said upper enclosure including flanges fixed to said assembly plate radially outwardly of said lower dome, first sealing means for sealing said flange of said lower dome with respect to said assembly plate, second sealing means for sealing said flange of said upper enclosure with respect to said assembly plate, and valve means for introducing gas under pressure into an interior defined by said lower dome and said upper enclosure.

5,852,755

SYSTEM FOR CONTROLLING CIRCULATION OF DEVELOPING LIQUID

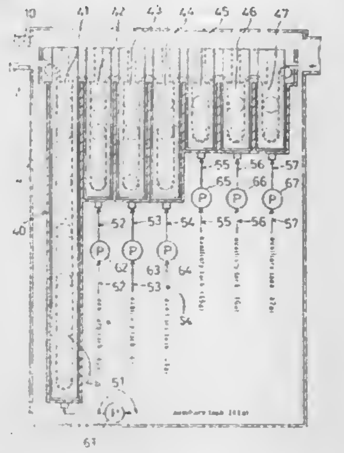
Yoshihiko Nakashima, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wajatana-ken, Japan

Filed Oct. 24, 1996, Ser. No. 736,571

Claims priority, application Japan, Oct. 25, 1995, 7-277799

Int. Cl.^{6} G03D *3/02*

U.S. Cl. 396—626 **5 Claims**



1. A system for controlling circulation of developing liquid comprising:
- a plurality of processing tanks in series for storing a developing liquid for developing photosensitive material;
- a plurality of auxiliary tanks, each of said auxiliary tanks communicating with an upper region of each processing tank;
- a circulating passage communicating between each auxiliary tank and a lower region of each processing tank;
- a plurality of circulating pumps for generating circulation of the developing liquid from the upper region of the processing tank through the auxiliary tank, the circulating passage, the lower region of the processing tank than back to the upper region of the processing tank, said circulating pump being provided in correspondence with each said circulating passage;
- use condition detecting means for detecting at least two use differing conditions of the processing tank including first and second use conditions; and
- controlling means operatively connected with each of said circulating pumps and the use condition detecting means for setting each circulating pump to a high circulation amount mode when the use condition detecting means detects the first use condition and alternatively setting each circulating pump to a low circulation amount mode when the use condition detecting means detects the second use condition wherein said high circulation amount is substantially twice greater than said low circulation amount.

5,852,756

METHOD OF ADJUSTING IMAGE FORMING CONDITIONS AND IMAGE FORMING APPARATUS TO WHICH THE METHOD IS APPLIED

Katsuyuki Teranishi, and Takeshi Arakawa, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 21, 1997, Ser. No. 955,295

Claims priority, application Japan, Oct. 25, 1996, 8-284310

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—44 **10 Claims**

1. A method of adjusting, in an image forming apparatus for forming an image having a desired density by a plurality of image forming conditions set, at least one of the image forming conditions, the method comprising the steps of:

detecting a humidity; and

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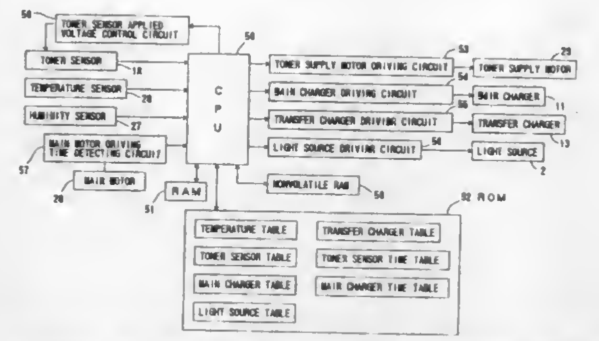


adjusting only the first image forming condition out of the plurality of image forming conditions set if the detected humidity is less than a first predetermined value, wherein

the step of detecting the humidity includes detecting an absolute humidity, and wherein

the adjusting step adjusts only the first image forming condition and the second image forming condition out of the plurality of image forming conditions set if the detected humidity is not less than the first predetermined value and is less than a second predetermined value.

5,852,757

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS HAVING A DEVICE FOR RECOVERING RESIDUAL TONER

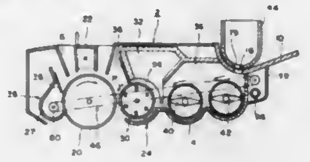
Toshio Tooda; Yoshio Yamaguchi; Nobuo Kuwabara; Mituru Sato; Haruyasu Watanabe; Akira Nagahara; Sachio Sasaki; Yoshiya Ishiyama, all of Kawasaki; Hiroshi Kera, Inagi; Masanori Nishido, Inagi, and Hisashi Hanzawa, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

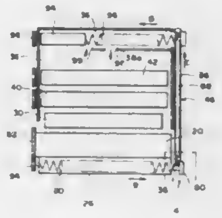
Filed Jul. 16, 1996, Ser. No. 680,959

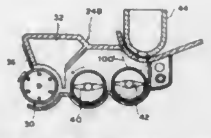
Claims priority, application Japan, Aug. 23, 1995, 7-215066

Int. Cl.^{6} G03G *21/00*

U.S. Cl. 399—119 **18 Claims**







1. An electrophotographic image forming apparatus comprising:

an electrostatic latent image carrying member;

charging means for uniformly charging said carrying member;

means for exposing said carrying member to light according to image information to form an electrostatic latent image on said carrying member;

developing means for developing said electrostatic latent image to form a toner image on said carrying member, said developing means including a housing for defining a toner chamber, a developing roller rotatably mounted to said housing, an agitator rotatably mounted to said housing and provided in said toner chamber, and a partition member mounted to said housing to define a carrier chamber between said partition member and said developing roller, wherein said housing has a toner supply opening adapted to supply toner from outside said housing and communicating with said toner chamber, and said developing means further comprises a foreign matter removing means provided so as to cover said toner supply opening, wherein said developing means further comprises a vibrating means for vibrating said foreign matter removing means;

transferring means for transferring said toner image from said carrying member to a sheet of paper;

means for fixing said toner image transferred to said paper;

cleaning means for cleaning a residual toner from said carrying member; and

circulating means for recovering said residual toner cleaned from said carrying member by said cleaning means to said toner chamber in said developing means.

5,852,758

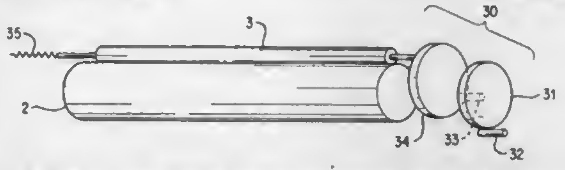
CHARGE ROLLER DISPLACEMENT MECHANISM

Mark Wibbels, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 19, 1998, Ser. No. 25,993

Int. Cl.^{6} G03G *15/02;21/00*

U.S. Cl. 399—176 **20 Claims**



1. A charge roller displacement mechanism for laterally displacing a charge roller relative to a photoconductor in an electrophotographic printing system, the charge roller displacement mechanism comprising:

a first gear having a first plurality of teeth and having a first face with at least one lobe for contacting the charge roller, where rotation of the first gear laterally displaces the charge roller relative to the photoconductor, the charge roller includes a longitudinal axis and the photoconductor includes a longitudinal axis with the charge roller positioned to angle the longitudinal axis of the charge roller with respect to the longitudinal axis of the photoconductor for loading the charge roller against the first face of the first gear during rotation of the photoconductor and the charge roller.

5,852,759

ELECTROSTATOGRAPHIC DEVELOPING DEVICE WITH TONER DOSAGE RESERVOIR

Leo Vackier, 's Gravenwezel; Paul Konings, Westerlo, and Luc Van Goethem, Sint-Gillis-Waas, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Filed May 19, 1997, Ser. No. 858,908

Claims priority, application European Pat. Off., May 17, 1996, 96201387

Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—260 **16 Claims**

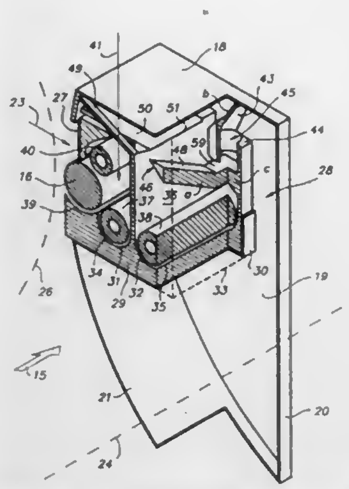
1. An electrostatic developing device comprising:

a housing having an elongated peripheral opening;

a magnetic roller rotatably mounted in said elongated peripheral opening, said magnetic roller having a surface for holding magnetically attractable developer for use in developing an electrostatic image formed on an electrostatic support passed in close proximity to said magnetic roller;

a toner chamber in said housing for holding toner;

a developer chamber in said housing for holding said developer;



means for adding said toner stored in said toner chamber to said developer stored in said developer chamber to form fresh developer, said means comprising

a dosage reservoir having an open upper end defined by an upper rim, and a lower end;

means for filling said dosage reservoir with said toner so that when said dosage reservoir is in an upright position, said toner forms a pile having an upper level located above said upper rim; and

means for emptying at one time the entire toner contents of said dosage reservoir into said developer chamber to form said fresh developer.

5,852,760

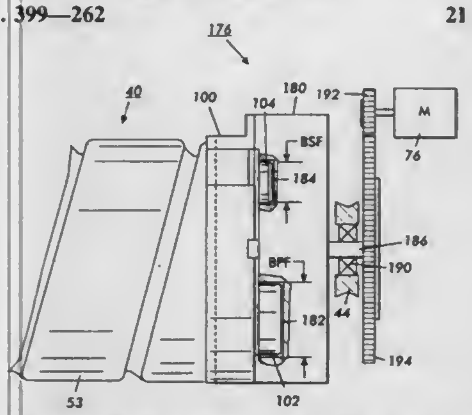
TONER CONTAINER WITH SNAP-ON TORQUE BEARING ADAPTOR

Michael Harris, Rochester, N.Y., and John D. Sundquist, Clarksville, Va., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 10, 1997, Ser. No. 967,769

Int. Cl.^{6} G03G *15/08*

U.S. Cl. 399—262 **21 Claims**



1. A device for storing a supply of particles for use a developer unit of an electrophotographic printing machine, the device cooperable with a mechanism to feed the particles from the device into the developer unit, the device comprising:

a container defining a chamber for storing particles therein, said container defining an aperture therein; and

a member removably connectable to said container, said container and said member being insertable into and removable from the mechanism with said container and said member connected to each other, said member including a member feature, said member feature being engagable with said mechanism for feeding the particles from the device into the developer unit.

5,852,761

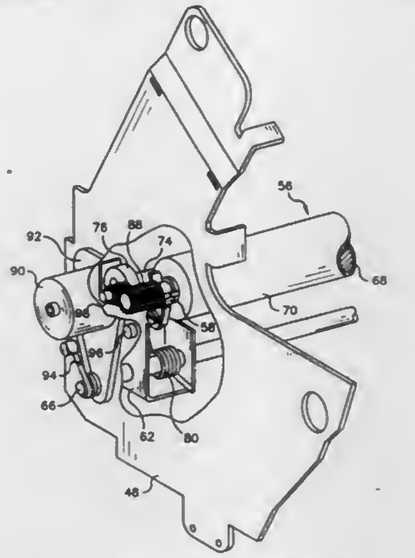
MOTORIZED WICK FOR FUSING APPARATUS

John Marcelletti, Rochester; John C. Fournier, Jr., Depew, and James A. Micket, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1997, Ser. No. 903,618

Int. Cl.^{6} G03G *15/20*

U.S. Cl. 399—325 **11 Claims**



1. A fuser for fixing a toner image to a receiver sheet, said fuser including:

a housing;

a fusing roller mounted for rotation within said housing;

a rotatable wick for applying offset-preventing liquid to the fusing roller, said rotatable wick being adjustable between a first position in frictional contact with the fusing roller, wherein the rotatable wick is rotated by the fusing roller and applies an amount of offset-preventing liquid to the fusing roller, and a second position spaced from the fusing roller;

actuation structure for selectively moving the rotatable wick between its first and second positions;

a motor; and

a transmission interconnecting the motor and the rotatable wick at least when the rotatable wick is in its second position to effect rotation of the rotatable wick to inhibit settlement of offset-preventing liquid in the rotatable wick.

5,852,762

TONER MAGAZINE AND CLEANER FOR AN ELECTROPHOTOGRAPHIC APPARATUS

Hirotaka Hatta, Ebina, and Shigemi Kanda, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 802,878, Feb. 19, 1997, which is a continuation of Ser. No. 672,039, Jun. 26, 1996, Pat. No. 5,697,038, which is a continuation of Ser. No. 177,318, Jan. 4, 1994, Pat. No. 5,555,081. This application Aug. 1, 1997, Ser. No. 904,690

Claims priority, application Japan, Jan. 12, 1993, 5-003435; Mar. 2, 1993, 5-041246; Oct. 27, 1993, 5-269019; Aug. 2, 1996, 8-204806; May 14, 1997, 9-124310

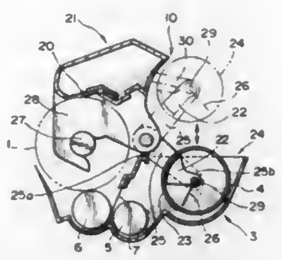
Int. Cl.^{6} G03G *21/10*

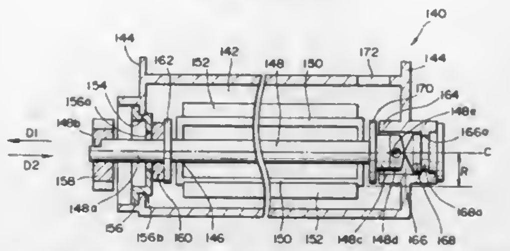
U.S. Cl. 399—358 **23 Claims**

1. A cleaner and toner magazine (CTM) for replenishing a developing device of an electrophotographic apparatus with toner, comprising:

a waste toner tank for removing toner left on a photoconductive element of said electrophotographic apparatus after image transfer and collecting said toner;

a fresh toner tank having bosses and constructed integrally with said waste toner tank for replenishing said developing device with fresh toner; and





a connector having support portions and integrally connecting said waste toner tank and said fresh toner tank such that said bosses of said fresh toner tank are supported by said support portions of said connector.

5,852,763

IMAGE HEATING APPARATUS

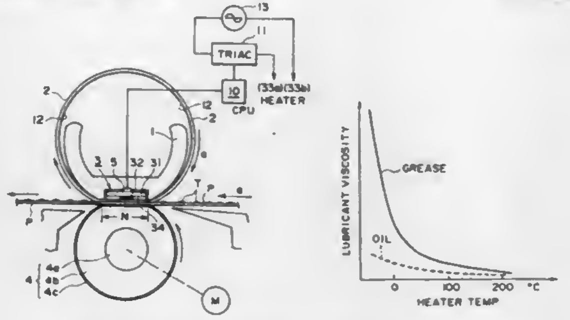
Kouichi Okuda; Yasumasa Ohtsuka, both of Yokohama; Yohji Tomoyuki, Ichikawa; Akira Hayakawa, Tokyo; Manabu Takano, Tokyo; Daizo Fukuzawa, Tokyo, and Atsuyoshi Abe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 234,957, Apr. 28, 1994, abandoned. This application Apr. 21, 1997, Ser. No. 844,624

Claims priority, application Japan, Apr. 28, 1993, 5-125042

Int. Cl.⁶ G03G *15/20*

U.S. Cl. 399—329 **35 Claims**



1. An image heating apparatus, comprising:

a heater;

a film having a first side for sliding movement relative to said heater through a lubricant and a second side contactable to a recording material carrying an image; and

a driving member for driving said film in contact therewith;

wherein a friction between said film and said driving member is smaller than a friction between said film and said heater when said heater is not in its heating operation and said driving member is contacted to said film without a decrease of pressure.

5,852,764

SHEET POST-PROCESSING APPARATUS

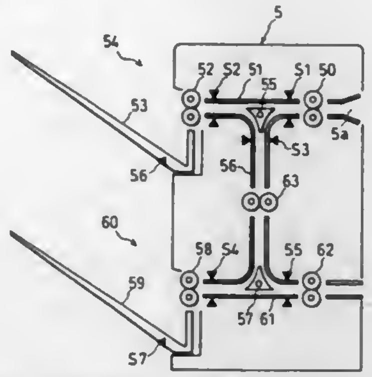
Hiroshi Kida, Yamatokoriyama, and Syoichiro Yoshiura, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1997, Ser. No. 855,216

Claims priority, application Japan, May 30, 1996, 8-136529; May 14, 1996, 8-119315

Int. Cl.⁶ G03G *15/00*

U.S. Cl. 399—401 **20 Claims**



1. A sheet post-processing apparatus which receives a sheet having an image formed thereon, that is discharged from an image forming apparatus according to page order, comprising:

first and second discharge trays being provided in a number of at least two;

a first transport path for guiding to said first discharge tray the sheet having an image formed thereon discharged through a sheet discharge opening of said image forming apparatus;

a branched transport path being branched from said first transport path;

a second transport path connected to said branched transport path, for guiding the sheet having an image formed thereon to said second discharge tray;

sheet transport means for transporting a sheet being transported in each transport path between a normal direction and a reverse direction, wherein said sheet transport means includes:

first transport rollers for discharging the sheet to said first discharge tray, which permits a transport direction of the sheet to be reversed, said first transport rollers being formed along said first transport path, and

second transport rollers for discharging a sheet to said second discharge tray, which permits the transport direction of the sheet to be reversed, said second transport rollers being formed along said second transport path; wherein

a distance between said first transport rollers and said second transport rollers is set shorter than a length of a minimum size sheet that can be processed in said image forming apparatus in a sheet transport direction; and

a transport path switching member for switching the transport path for the sheet, said transport path switching member being provided at a function between said first transport path and said branched transport path.

5,852,765

IMAGE FORMING SYSTEM AND FINISHER

Hiroki Yamashita, Okazaki; Tatsuya Shinno, and Yoshihito Hirano, both of Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 18, 1996, Ser. No. 718,736

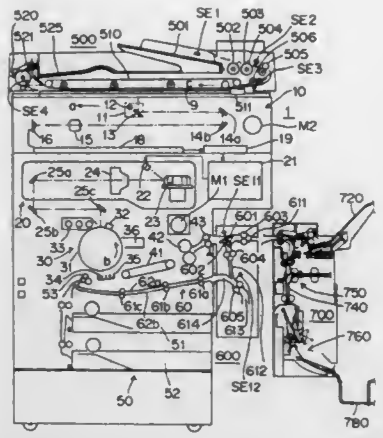
Claims priority, application Japan, Sep. 19, 1995, 7-239553; Dec. 8, 1995, 7-320388

Int. Cl.⁶ G03G *15/00;* **B65H** *35/06*

U.S. Cl. 399—407 **29 Claims**

11. A finisher comprising:

a folding means for receiving a sheet and folding the sheet in two; and



a transporting means for transporting the sheet after being folded by the folding means to a next process section, the transporting means, when a first mode is set, transporting the sheet to the next process section with the sheet unfolded, and when a second mode is set, transporting the sheet to the next process with the sheet folded.

5,852,766

METHOD FOR ACCURATE REPLICATION OF SHAPED ARTICLES USING SINTERABLE POWDERS

Thomas Chadwick, Nipomo, and Ron DeMoss, Los Osos, both of Calif., assignors to Den-Mat Corporation, Santa Maria, Calif.

Filed May 21, 1998, Ser. No. 82,546

Int. Cl.⁶ B22F *3/10;* **A61C** *13/08*

U.S. Cl. 419—2 **13 Claims**

1. A method for producing a shaped article having at least one dimensionally accurate surface adapted to mate with a mating surface of a second shaped article, which comprises:

a) preparing a swellable polymer cavity model of all or a portion of said second shaped article, including a mating surface thereof;

b) create an enlarged cavity model by swelling said cavity model to a predetermined extent by immersing it in a swelling agent system at a pre-selected temperature and for a predetermined period of time;

c) fill the enlarged cavity model with a casting mixture and allow the casting mixture to cure to produce a solid enlarged replica of all or a portion of said second shaped article;

d) cover the mating surface of said enlarged replica with molten wax and optionally add and shape additional wax thereon;

e) after the wax has hardened, separate the resulting wax model from the enlarged replica;

f) use the separated wax model to produce a slip casting mold;

g) fill the slip casting mold with a sinterable powder compact composition whose coefficient of shrinkage is essentially equal to the coefficient of expansion of the swellable polymer when immersed in the swelling agent system employed in step b) under the conditions set forth therein;

h) after the sinterable powder compact has hardened, remove the slip casting mold from around the sinterable powder compact; and

i) heat the sinterable powder compact in accordance with a predetermined heating schedule to produce a solid shaped article having at least one dimensionally accurate mating surface.

5,852,767

RADIO COMMUNICATION SYSTEM AND COMMUNICATION TERMINAL EQUIPMENTS THEREOF

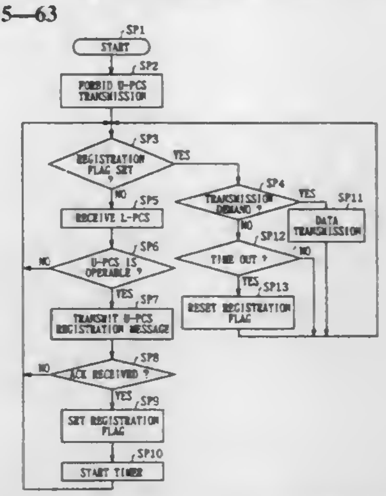
Takehiro Sugita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1996, Ser. No. 636,404

Claims priority, application Japan, Apr. 28, 1995, 7-128967

Int. Cl.⁶ H04B *1/10;15/00*

U.S. Cl. 455—63 **9 Claims**



1. A radio communication system for communicating between a first communication terminal equipment and second communication terminal equipment by using a frequency band of an existing microwave transmission system, wherein:

said first communication terminal equipment comprises

demodulating means for demodulating a signal transmitted from a base station of another radio communication system giving no interference with the existing microwave transmission system;

means for judging whether a present position of said first communication terminal equipment is within an area in which communication can occur without interference with the existing microwave transmission system, based on information specifying the position of said base station of said another radio communication system giving no interference with the existing microwave transmission system, and

means responsive to a determination by said means for judging that the present position is within said area for shifting to a transmission state and transmitting a registration message indicative of said transmission state to said second communication terminal equipment; and

said second communication terminal equipment comprises means for shifting a transmission state in response to receiving said registration message.

5,852,768

PROCESS FOR PRODUCING PRECIOUS METAL POWDERS

Hauke Jacobsen, Bruchkoebel; Werner Hartmann, Babenhausen; Stipan Katusic, Kelkheim, and Karl-Anton Starz, Rodenbach, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 30, 1996, Ser. No. 723,549

Claims priority, application Germany, Dec. 6, 1995, 195 45 455.3

Int. Cl.⁶ B22F *9/24*

U.S. Cl. 419—63 **1 Claim**

1. A process for producing a precious metal powder, comprising dissolving a precious metal compound in a solvent therefore, converting the precious metal compound dissolved in said solvent into an aerosol, passing said aerosol into a zone of elevated temperature sufficient to substantially free the aerosol of solvent and thereafter introducing the aerosol into a flame reactor in the

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presence of fuel gas at temperatures above the decomposition temperature of the precious metal compound or oxide thereof and separating the resulting precious metal powder, wherein the aerosol is substantially freed of solvent at temperatures above the boiling point of the solvent before it is introduced into the flame reactor, wherein the fuel gas is hydrogen/oxygen or hydrogen/air fuel and the temperature in the flame reactor is sufficiently high to allow the precious metal powder to sinter.

5,852,769

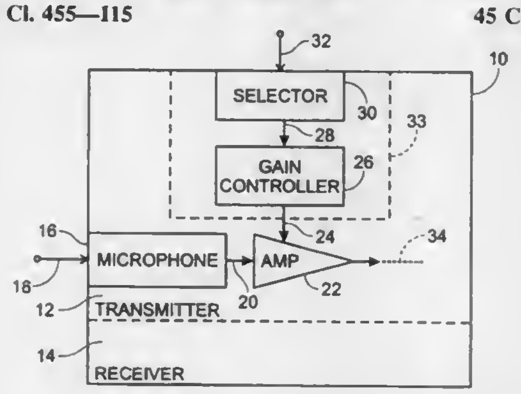
CELLULAR TELEPHONE AUDIO INPUT COMPENSATION SYSTEM AND METHOD

Syed Arif Ahmed, Camas, and Douglas James Millar, Vancouver, both of Wash., assignors to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 569,936, Dec. 8, 1995, abandoned. This application Oct. 8, 1997, Ser. No. 946,807

Int. Cl.⁶ H01G *11/12*

U.S. Cl. 455—115 **45 Claims**



1. In a telephone including a transmitter for transmitting information, the information selectively including audio signals from a microphone incorporated into the telephone, the transmitter including audio circuitry to accept audio signals from the microphone and to provide amplified audio signals, and transmission circuitry to accept amplified audio signals from the audio circuitry, the transmitter audio circuitry comprising:

- a microphone audio amplifier having an input operatively connected to the output of the microphone to receive audio signals from the microphone, and an output providing an amplified audio signal for processing in subsequent transmission circuitry as part of an operative communication to the receiver of a communicating telephone, said microphone audio amplifier having a gain which is selectable to maintain the power level of the amplified audio signal within a predetermined range of power levels, and having a gain control input to which gain selection information is supplied for use in setting the gain of said microphone audio amplifier, whereby said microphone audio amplifier gain is selected to compensate for a low volume input audio signal from the microphone, to provide an amplified audio signal having an improved signal to noise ratio;
- a gain controller operatively connected to said gain control input of said microphone audio amplifier for supplying gain control information to said microphone audio amplifier; and
- a user-operable selector operatively connected to said controller for selecting the gain of said microphone audio amplifier, whereby the signal to noise ratio of the transmitted signal carrying a low volume audio input is improved to provide the speaker of communicating telephone receiver with an increased volume audio signal.

5,852,770

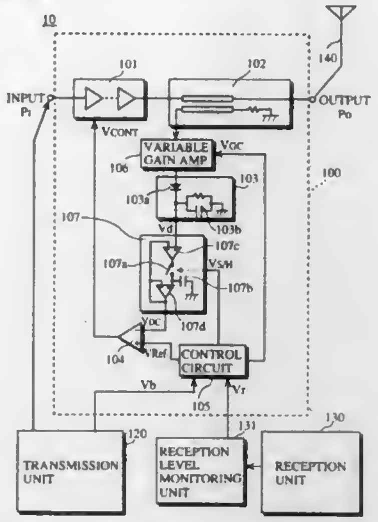
TRANSMISSION POWER CONTROL DEVICE FOR A PORTABLE TERMINAL

Hideki Kasamatsu, Hirakata, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 19, 1995, Ser. No. 530,415

Int. Cl.⁶ H04B *1/04*

U.S. Cl. 455—126 **18 Claims**



7. A device for controlling radio output of a mobile terminal, comprising:

- a transmission output amplifier for amplifying a signal to be transmitted, with an amplification factor decided by a first control signal;
- monitoring means, disposed on an output side of the transmission output amplifier, for monitoring power of a transmission output;
- a variable gain amplifier for amplifying the monitored transmission output, with an amplification factor being decided by a second control signal;
- detection means, with a diode as a main component, for detecting an output signal from the variable gain amplifier;
- differential amplification means for comparing an output of the detection means and a reference signal and amplifying a difference between the two signals so as to generate the first control signal; and
- control means for generating the second control signal and the reference signal,
- wherein the second control signal is adjusted to become a value for setting a gain of the variable gain amplifier so that a level of an output of the monitoring means falls within a range for which detection by the detection means is possible, and the reference signal is adjusted as a function of the second control signal;
- wherein the transmission signal amplification means is constructed of first amplification means and second amplification means which are arranged in series and which have their respective amplification ratios varied by means of applied control signals, with the first control signal being applied to the first amplification means and a third control signal from the control means being applied to the second amplification means;
- wherein the first amplification means is amplification means for amplifying a signal in an IF frequency range, while the second amplification means is amplification means for amplifying a signal in an RF frequency range,
- and the device for controlling radio output further comprises frequency conversion means disposed between the first amplification means and the second amplification means, for converting the signal in the IF frequency range to a signal in the RF frequency range.

5,852,771

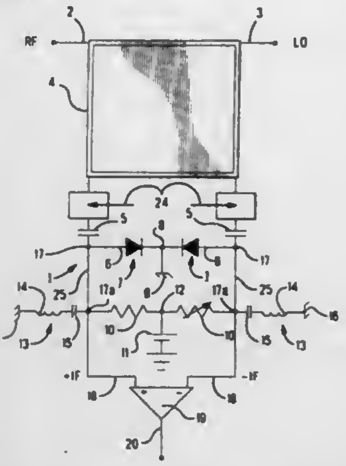
MIXER WITH TWO DIODES INCLUDING DC COUPLED IF

Nitin Jain, Nashua, N.H., and Scott B. Doyle, Sudbury, Mass., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 14, 1996, Ser. No. 663,762

Int. Cl.⁶ H04B *1/26*

U.S. Cl. 455—330 **11 Claims**



1. A mixer comprising: an RF port and an LO port supplying two diodes, a junction of the diodes referenced to ground, and a differential amplifier being supplied with +IF and −IF from outputs of the diodes, and the differential amplifier supplying low LO AM noise and low frequency response of an IF port at an output of the differential amplifier.

5,852,772

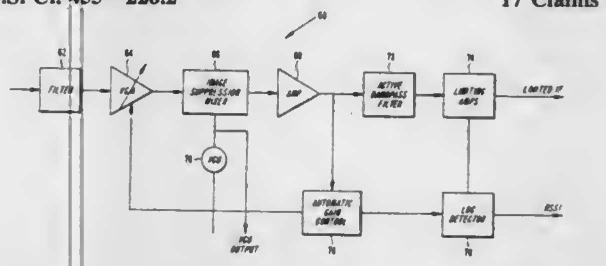
RECEIVER IF SYSTEM WITH ACTIVE FILTERS

Ross W. Lampe; John T. Gillette, both of Raleigh; Rodney A. Dolman, Cary, and Antonio Montalvo, Raleigh, all of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 25, 1997, Ser. No. 804,671

Int. Cl.⁶ H04B *1/26*

U.S. Cl. 455—226.2 **17 Claims**



1. A high dynamic range receiver IF system using limited dynamic range IF filters, comprising:

- a variable gain amplifier for amplifying a first IF signal;
- an image suppression mixer for suppressing an image component of the amplified first IF signal to provide adequate image suppression for a radio system, said image suppression mixer outputting an image suppressed second IF signal;
- first active bandpass filter means for filtering the unwanted components from the second IF signal;
- limiting amplifier means for hard limiting the filtered signal and outputting a limited IF signal; and
- a logarithmic detector means for providing a received signal strength indicator.

5,852,773

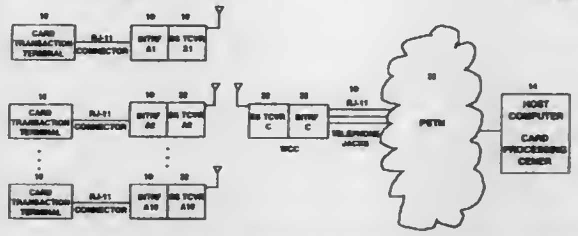
PSTN TRANSACTION PROCESSING NETWORK EMPLOYING WIRELESS CONCENTRATOR/CONTROLLER

Michael W. Hu, Menlo Park, Calif., assignor to Wireless Transactions Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 380,776, Jan. 30, 1995, Pat. No. 5,722,066. This application Sep. 7, 1995, Ser. No. 525,965

Int. Cl.⁶ H04Q *7/20*

U.S. Cl. 455—403 **14 Claims**



1. A local area wireless business transaction network requiring no FCC site license comprising:

- a) a plurality of standard unmodified card transaction terminals for receiving customer information from customer cards, each terminal including an RJ-11 telephone line connector,
- b) first interfaces including RJ-11 connectors for mating with said telephone line connectors of said terminals and converting analog signals from said terminals to encoded digital signals and for decoding digital signals going to said terminals to analog signals, and circuitry for sensing loop current from Tip and Ring for the detection of off-hook and on-hook conditions and for providing dial-tone, busy, and ring signals to said terminal,
- c) first spread spectrum wireless transceivers connected with said first interfaces for transmitting encoded digital signals from said first interfaces and for receiving encoded digital signals for said first interfaces,
- d) a public switched telephone network and having a plurality of network connectors including at least one network connector connected to a centrally located computer processing center,
- e) a second interface including at least one RJ-11 connector for mating with one of said network connectors and converting encoded digital signals to analog signals going to said network connector and converting analog signals from said network connector to encoded digital signals, said second interface including means for polling each of said first interfaces and for selectively connecting signals from said first interfaces to said public switched telephone network through said network connector, and
- f) a second spread spectrum wireless transceiver connected with said second interface for transmitting encoded digital signals from said second interface to said first wireless transceivers and for receiving encoded digital signals for said second interface from said first wireless transceivers.

5,852,774

SIDETONE LEVEL REDUCTION CIRCUIT AND METHOD

Stephen George Kropp, Surrey, Canada, assignor to VTech Communications, Ltd., Tai Po, Hong Kong

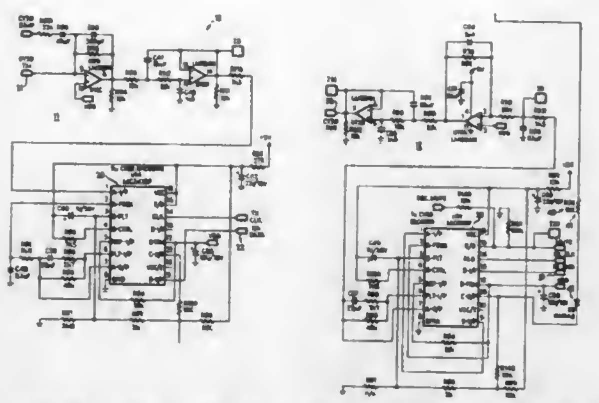
Filed Sep. 3, 1996, Ser. No. 706,826

Int. Cl.⁶ H04B *1/10;1/62*

U.S. Cl. 455—403 **3 Claims**

1. A sidetone level reduction circuit for reducing the sidetone level in digital cordless telephones incorporating continuously variable slope delta modulator/demodulator (CVSD) digital to analog technology, said sidetone level reduction circuit comprising:

- a CVSD encoder for converting an analog signal to a digital signal for transmission from the baseset unit to the handset unit, the CVSD encoder having a coincidence output;
- a CVSD decoder for converting a digital signal received from the handset unit to an analog signal voice signal, the CVSD decoder having a coincidence output; and



coupling means connected in series between the coincidence output of the CVSD encoder and the coincidence output of the CVSD decoder in a manner such that the coincidence output of the CVSD decoder can affect the CVSD encoder but the CVSD encoder cannot affect the CVSD decoder.

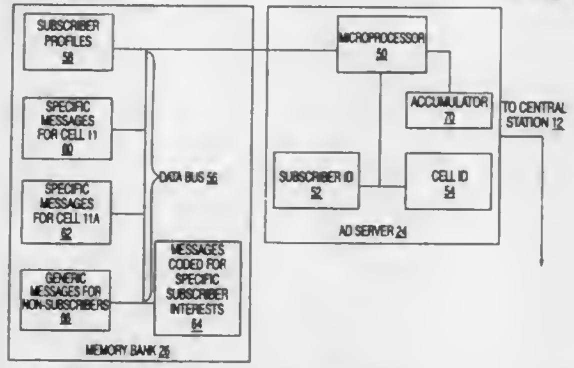
5,852,775
CELLULAR TELEPHONE ADVERTISING SYSTEM

Murray Hidary, New York, N.Y., assignor to Earthweb, Inc., New York, N.Y.

Filed Sep. 12, 1996, Ser. No. 712,864

Int. Cl.^{6} H04Q *7/22*

U.S. Cl. 455—404 **19 Claims**


SUBSCRIBER PROFILES 58
SPECIFIC MESSAGES FOR CELL 11 60
SPECIFIC MESSAGES FOR CELL 11A 62
GENERIC MESSAGES FOR NON-SUBSCRIBERS 66
MESSAGES CODED FOR SPECIFIC SUBSCRIBER INTERESTS 64
DATA BUS 56
MICROPROCESSOR 50
ACCUMULATOR 70
SUBSCRIBER ID 52
CELL ID 54
AD SERVER 24
TO CENTRAL STATION 12
MEMORY BANK 26

1. A cellular telephone system comprising:
a central station;
a plurality of cells, each cell corresponding to a geographic area and having a cell transceiver in communication with said central station; and
a plurality of mobile telephones, each telephone being associated with a subscriber;
wherein said central station includes:
(a) first connectors for exchanging information with said telephones through said cell transceivers;
(b) second connectors for connecting said central station to a standard hardwired telephone system;
(c) a commercial message center for providing a commercial message to a specific mobile telephone when said mobile telephone establishes communication with said central station, said commercial message being unrelated to the operation of said mobile telephone; and
(d) a selector receiving commands from one of said subscribers indicative of whether said subscriber desires to receive commercial messages, said selector providing said commercial message to said subscriber if said one subscriber has indicated that he accepts commercial messages;
wherein said selector includes an emergency sensor for sensing an emergency command from said one subscriber, said selector connecting said one subscriber to a channel of communication in the presence of said emergency command.

5. A commercial message center for a cellular telephone system, said telephone system being formed of a central station and a plurality of cells, each cell corresponding having a transceiver in communication with said central station and a plurality of subscriber telephones, each telephone being located in one of said cells, said center comprising:
a receiver for receiving a communication request from one of said subscriber telephones;
a first identifier for identifying the subscriber of said one subscriber telephone from said communication request and the cell from which said one subscriber is calling;
a memory bank holding a plurality of messages;
a correlator for correlating one of said messages from said memory bank with data associated with said one subscriber based on said cell; and
a transmitter for transmitting said message to said one subscriber.

5,852,776
TELECOMMUNICATIONS SYSTEM WITH PERSON/SUBSCRIBER-ASSOCIATED IDENTIFICATION

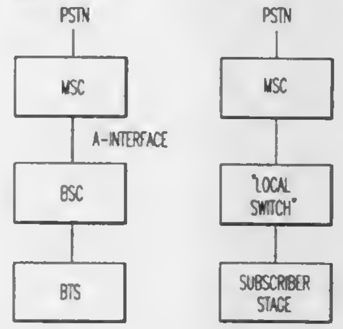
Bo Ohlsson, Haninge, Sweden, assignor to Telia AB, Farsta, Sweden

Filed Mar. 25, 1996, Ser. No. 622,286

Claims priority, application Sweden, Mar. 23, 1995, 9501051

Int. Cl.^{6} H04Q *7/00*

U.S. Cl. 455—406 **19 Claims**



1. A telecommunications system comprising:
a fixed communications system, including at least one of a subscriber line and an extension line;
a mobile unit including a connection device for connecting to the at least one of a subscriber line and an extension line of the fixed communications system;
a mobile radio communications system for communication with the mobile unit; and
an identification device for identifying to the fixed communications system via said connection device that said mobile unit is connected to the fixed communications system to enable debiting based on the mobile unit's use of the fixed system.

5,852,777
METHOD AND APPARATUS FOR SCREENING A CALL IN A WIRELESS SYSTEM

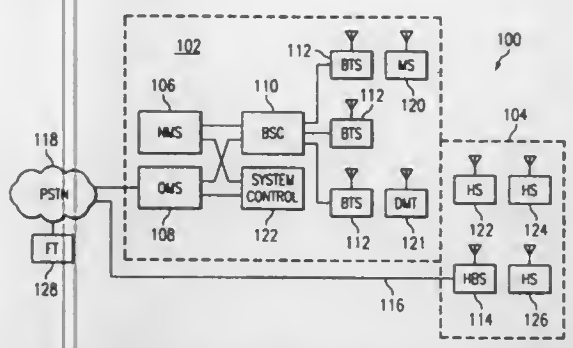
Peter Harrison, Ascot, United Kingdom, assignor to Nokia Mobile Phones Limited, Espoo, Finland

Filed Jun. 11, 1996, Ser. No. 661,863

Int. Cl.^{6} H04M *3/42*

U.S. Cl. 455—414 **15 Claims**

1. In a telecommunications network having a first system comprising a first plurality of subscriber stations, each assigned a unique subscriber number and a second system comprising a second plurality of subscriber stations, all assigned a single common subscriber number, wherein a first and second subscriber station of said first and second plurality of subscriber stations, respectively, are associated by a predetermined relationship, a method of screening a call, said method comprising the steps of:
receiving a setup request for a call to the common subscriber number assigned to said second plurality of subscriber stations;



determining whether said setup request was forwarded following a call setup attempt to a selected subscriber number assigned to said first subscriber station; and,
if it is so determined, selectively alerting only said second subscriber station of said second plurality of subscriber stations;
else, alerting each of the second plurality of subscriber stations.

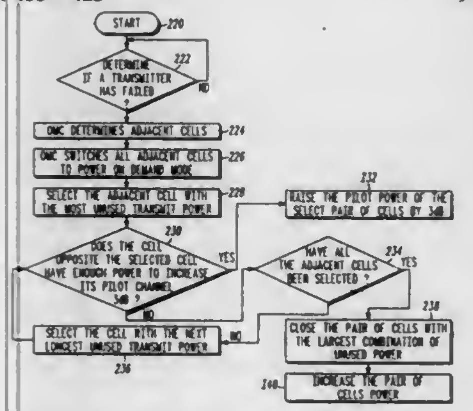
5,852,778
METHOD AND SYSTEM FOR PROVIDING COMMUNICATIONS SERVICE TO A COVERAGE HOLE

Gerald Paul Labedz, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 421,012, Apr. 12, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 797,012

Int. Cl.^{6} H04Q *7/36*

U.S. Cl. 455—423 **9 Claims**


START 220
DETERMINE IF A TRANSMITTER HAS FAILED 222
NO
OMC DETERMINES ADJACENT CELLS 224
OMC SWITCHES ALL ADJACENT CELLS TO POWER ON DEMAND MODE 226
SELECT THE ADJACENT CELL WITH THE MOST UNUSED TRANSMIT POWER 228
DOES THE CELL OPPOSITE THE SELECTED CELL HAVE ENOUGH POWER TO INCREASE ITS PILOT CHANNEL 5dB ? 230
YES
NO
RAISE THE PILOT POWER OF THE SELECT PAIR OF CELLS BY 5dB 232
HAVE ALL THE ADJACENT CELLS BEEN SELECTED ? 234
YES
NO
SELECT THE CELL WITH THE NEXT LONGEST UNUSED TRANSMIT POWER 236
CLOSE THE PAIR OF CELLS WITH THE LARGEST COMBINATION OF UNUSED POWER 238
INCREASE THE PAIR OF CELLS POWER 240

1. A method of providing communication service to a coverage hole, comprising the steps of:
(a) determining a plurality of base sites having coverage areas adjacent to the coverage hole;
(b) placing a power amplifier associated with the plurality of base sites adjacent to the coverage hole in a power on demand mode;
(c) choosing a selected base site from one of the plurality of base sites having coverage areas adjacent to the coverage hole, based on a quantity of unused transmitter power in the selected base site;
(d) determining if an opposite base site has a sufficient quantity of unused transmitter power; and
(c) when the opposite base site has the sufficient quantity of unused transmitter power increasing a pilot channel power to the selected base site and the opposite base site.

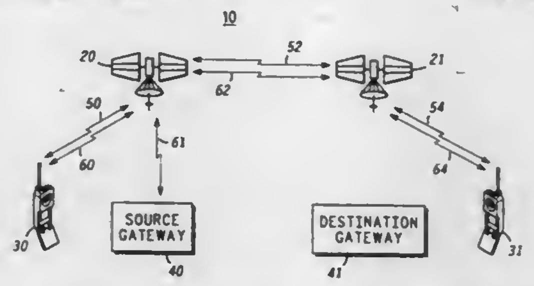
5,852,779
SYSTEM AND METHOD FOR HAVING A SINGLE GATEWAY SET-UP AND MAINTAIN LOCAL SIGNALLING CONNECTIONS

Steven Paul Sawyer, Fountain Hills, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,402

Int. Cl.^{6} H04Q *7/36*

U.S. Cl. 455—445 **14 Claims**



1. A method for setting-up and maintaining communication between a first subscriber unit located in a region serviced by a first gateway and a second subscriber unit located in a region serviced by a second gateway, comprising the steps of:
a) establishing a first local connection between the first subscriber unit and the first gateway; and
b) establishing a second local connection between the second subscriber unit and the first gateway without establishing a transit connection between the first gateway and the second gateway.

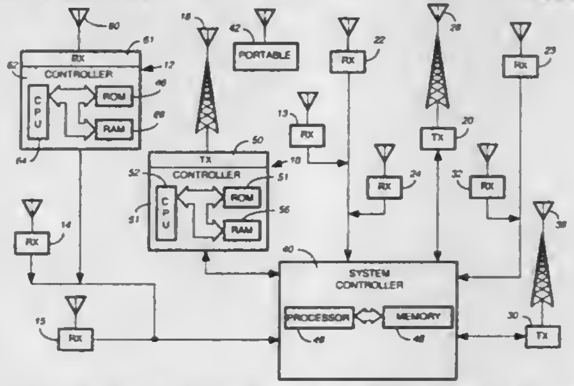
5,852,780
SYSTEM AND METHOD FOR ALLOCATING FREQUENCY CHANNELS IN A TWO-WAY MESSAGING NETWORK

Zhonghe Wang, Lakeworth, and Robert J. Schwendeman, Pompano Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 502,399, Jul. 14, 1995, Pat. No. 5,737,691. This application Nov. 28, 1997, Ser. No. 980,297

Int. Cl.^{6} H04B *17/00*

U.S. Cl. 455—450 **17 Claims**



1. In a radio frequency communication network having a plurality of transmitter units and receiver units for communication with a portable two-way selective call communication device, a method for allocating a plurality of frequency channels to a plurality of said transmitter units for which there is a demand that the transmitter units transmit messages comprising:
calculating a zone priority value for a zone including one or more of said plurality of transmitter units with each transmitter unit in a zone simulcasting a message, said zone priority value determining the order in which a zone is assigned a frequency channel;
calculating for each zone a channel priority value for each of the frequency channels that the transmitters of a zone can access, said channel priority value determining the order in which an available channel is considered for assignment to the zone;

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storing for each transmitter unit an interference data matrix including information identifying interfering transmitter units and for each of said interfering transmitter units a co-channel interference value and an adjacent channel interference value; and

determining whether a proposed available channel is acceptable for assignment to a given transmitter unit based upon the data stored in the interference matrix of said given transmitter unit for other transmitter units currently using the same channel as said proposed channel or a channel adjacent to said proposed channel and upon the data stored in the interference matrices of other transmitter units currently using the same channel or a channel adjacent to said proposed channel for said given transmitter unit and further upon the zone priority value and the channel priority value;

determining whether a proposed available channel has an acceptable quality for assignment to a given zone; and

assigning the proposed available channel to said given zone if it is determined that the proposed channel has an acceptable quality.

5,852,781
ESTABLISHING A GROUP CALL IN A MOBILE RADIO SYSTEM

Jouko Ahvenainen, Helsinki, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

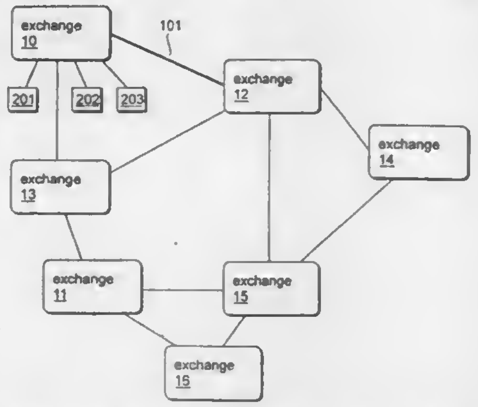
PCT No. PCT/FI95/00614, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO96/15639, PCT Pub. Date May 23, 1996

PCT Filed Nov. 10, 1995, Ser. No. 676,176

Claims priority, application Finland, Nov. 11, 1994, 945330

Int. Cl.^{6} H04B *7/155*

U.S. Cl. 455—509 **4 Claims**



1. A method for establishing a group call extending into the respective service areas of a plurality of exchanges in a mobile radio system which includes at least a first and a second exchange, a telecommunication transmission medium between said first and second exchanges, and a plurality of mobile stations communicating via said exchanges, said method comprising the steps of:

starting to establish a group call involving a plurality of said mobile stations, located within the respective service areas of a plurality of said exchanges, including said first and the second exchanges,

selecting said second exchange to be one to which the group call is to be routed from said first exchange,

maintaining a database which indicates, specifically for each group call, the telecommunication transmission medium that is allocated for that group call on each connection between respective ones of said exchanges,

checking said database before routing said group call starting to be established from said first to said second exchange, to see whether a telecommunication transmission medium has been previously allocated on the respective said connection from said first to said second exchange for said group call starting to be established,

routing said group call starting to be established from said first to said second exchange using a respective previously allocated telecommunication medium, without allocating a new telecommunication transmission medium to the respective said connection, if a telecommunication transmission medium has been previously allocated on the respective said connection for said group call starting to be established, as determined from said checking.

5,852,782
TRANSMISSION POWER CONTROL METHOD

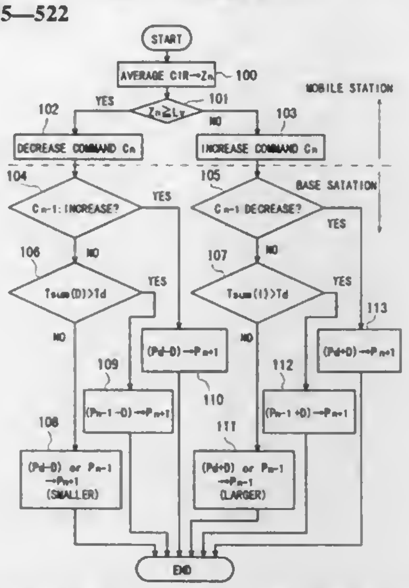
Masahiro Komatsu, Tokyo, Japan, assignor to NEC Corp., Japan

Filed Dec. 27, 1996, Ser. No. 774,201

Claims priority, application Japan, Dec. 28, 1995, 7-342518

Int. Cl.^{6} H04B *1/00*

U.S. Cl. 455—522 **1 Claim**



1. A transmission power control method for a cellular type mobile communication network, in which a radio communication channel is established between a base station and a mobile station for performing communications;

said method comprising the steps of:

(a) detecting a current command for a current control period transmitted from a station on the receiving side by a station on the transmitting side; and

(b) judging whether or not the content of said detected current command is the same as that of a preceding command for a preceding control period that has been detected by said station on the transmitting side;

when the content of said current command is not the same as that of said preceding command, the transmitting power for a next control period is set as a first value;

and said first value is obtained by either adding a predetermined value to a prior value of the transmission power for a prior control period that is prior to said current control period by a delay time, or subtracting said predetermined value from said prior value of the transmission power according to the content of said detected current command;

and said delay time is defined as a time from detection of said current command by said station on the transmitting side to realization of said detected current command;

and when the content of said current command is the same as that of said preceding command, and at the same time, a sum period of successive control periods having the same command which are prior to said current control period is not longer than said delay time, the transmission power for said next control period is set as a second value;

and said second value is a lower or higher one of said first value and said preceding value of the transmission power according to the content of said detected current command;

and when the content of said current command is the same as that of the preceding command, and at the same time, said sum period is longer than said delay time, the transmission power for said next control period is set as a third value;

and said third value is obtained by either adding said predetermined value to said preceding value of the transmission power, or subtracting said predetermined value from said preceding value of the transmission power according to the content of said detected current command.

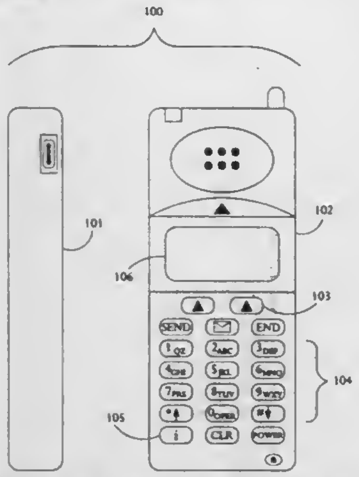
5,852,783
INFORMATION TOOLS WITH MULTI-FUNCTIONAL INFORMATION KEY

Kazushi Tabe, San Diego, Calif., and Masayuki Hisamura, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Jan. 3, 1996, Ser. No. 582,541

Int. Cl.^{6} H04Q *7/00*

U.S. Cl. 455—550 **8 Claims**



1. A method for a multi-functional information tool for use on a cellular phone for producing a display screen appropriate to the current status of the cellular phone, said method comprising:

pressing a multi-functional information key on said cellular phone to provide further information and to automatically extend functions; and

displaying a display screen with said extension and further information to a user according to said current status of said cellular phone and a current function being performed, said displaying being performed in response to said pressing of said multi-functional information key, wherein said further information includes a plurality of help messages, including status report, description of active functions and user instructions.

5,852,784
MULTIBAND MOBILE UNIT COMMUNICATION APPARATUS

Fumio Ito; Seiichi Yamaguchi; Fujio Sasaki, all of Yokohama, and Hiroaki Kosugi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 7, 1997, Ser. No. 813,117

Claims priority, application Japan, Apr. 8, 1996, 8-110570

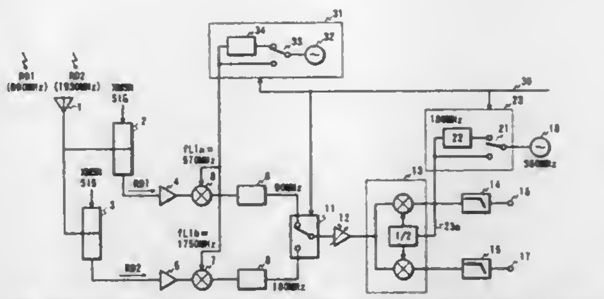
Int. Cl.^{6} H04B *1/40*

U.S. Cl. 455—552 **12 Claims**

10. A multiband mobile unit communication apparatus comprising:

an antenna for receiving first and second bands of radio wave signals including quadrature modulation signals;

a first local oscillation circuit for generating a first local oscillation signal;



first and second receiving circuits for generating first and second intermediate frequency signals from said first and second bands of radio wave signals using said first local oscillation signal respectively;

switching means responsive to a switching control signal indicative of first and second modes for outputting said first intermediate frequency signal in said first mode and outputting said second intermediate frequency signal in said second mode;

a second local oscillation circuit for generating second and third local oscillation signals in said first and second modes respectively; and

quadrature demodulation means for demodulating an output from said switching means using said second and third local oscillation signals in said first and second modes respectively and outputting demodulated signals.

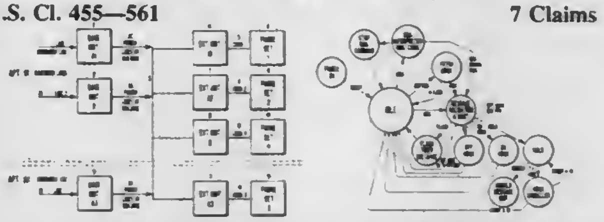
5,852,785
SECURE ACCESS TELEPHONE EXTENSION SYSTEM AND METHOD IN A CORDLESS TELEPHONE SYSTEM

David B. Bartholomew, 5047 Cree Drive, West Valley City, Utah 84120; A. Ray Ivie, 1174 S.-400W, Orem, Utah 84058, and Alma K. Schurig, 1175 E. 1220 N., Orem, Utah 84097

Continuation of Ser. No. 34,086, Mar. 22, 1993, Pat. No. 5,530,737. This application Apr. 29, 1996, Ser. No. 639,508

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—561 **7 Claims**



1. A secure access telephone communications system for transmitting and receiving telephone communications between a base unit and an extension unit, the system comprising:

(a) a base unit and an extension unit, said base and extension unit each comprising:
  (i) means for sensing the operating status of said base and extension unit and its inputs from phone apparatus and lines;
  (ii) means for generating a transmission carrier;
  (iii) means for modulating said transmission carrier with audio and data signals;
  (iv) means for controlling the transmission of audio, digital, telephone and rf signals out of said base and extension unit between subsystems, between base and extension units, between central office subscriber line and base unit and between extension unit and phone set;
  (v) means for controlling said signals on the basis of data and other signals;
  (vi) means for coupling said transmission carrier to a communications medium;

(b) means for coupling a subscriber telephone line to said base unit;

(c) means for coupling a phone apparatus to said extension unit.

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5,852,786
PROCESS FOR DECONTAMINATING RADIOACTIVE MATERIALS

David Bradbury, and George Richard Elder, both of Gloucester, United Kingdom, assignors to Bradtec Limited, Bristol, United Kingdom

PCT No. PCT/GB95/02919, § 371 Date Jul. 7, 1997, § 102(e) Date Jul. 7, 1997, PCT Pub. No. WO96/19812, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 14, 1995, Ser. No. 849,812

Claims priority, application United Kingdom, Dec. 22, 1994, 9426023

Int. Cl.^{6} G21F *9/00*

U.S. Cl. 588—1 **12 Claims**

1. A process for the decontamination of radioactive materials which process comprises the steps of:

i) contacting the material to be decontaminated with a dilute carbonate-containing solution in the presence of ion exchange particles which either contain or have a chelating function bound to them; and

ii) separating the ion exchange particles from the dilute carbonate-containing solution.

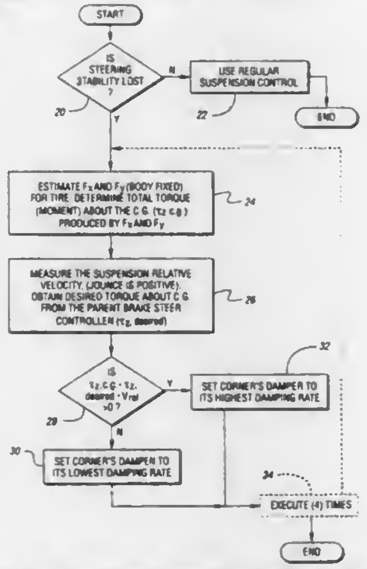
5,852,787
VEHICLE SUSPENSION CONTROL

Michael Glenn Fodor, and Davorin D. Hrovat, both of Dearborn, Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Sep. 3, 1996, Ser. No. 706,869

Int. Cl.^{6} G06F *17/00;7/00*

U.S. Cl. 701—6 **3 Claims**


START
IS STEERING STABILITY LOST ?
N
Y
USE REGULAR SUSPENSION CONTROL
END
20
22
ESTIMATE F_x AND F_y (BODY FIXED) FOR TIRE. DETERMINE TOTAL TORQUE (MOMENT) ABOUT THE C.G. ($\tau_{Z\,C.G.}$) PRODUCED BY F_x AND F_y
24
MEASURE THE SUSPENSION RELATIVE VELOCITY. (JOUNCE IS POSITIVE). OBTAIN DESIRED TORQUE ABOUT C.G. FROM THE PARENT BRAKE STEER CONTROLLER ($\tau_{Z,\ desired}$)
26
SET CORNER'S DAMPER TO ITS HIGHEST DAMPING RATE
32
28
30
SET CORNER'S DAMPER TO ITS LOWEST DAMPING RATE
34
EXECUTE (4) TIMES
END

1. A method for improving steering stability in a vehicle in which steering stability is a function of tire deflection, the vehicle including a plurality of wheels, each wheel having a tire, a hub, and an adjustable damper, and the vehicle having a center of gravity and a brake steer controller which provides a desired torque, the method comprising:

a) estimating lateral force acting on one of the tires;

b) estimating longitudinal force acting on said one tire;

c) determining total torque generated about the center of gravity based upon the estimated lateral and longitudinal forces on said one tire;

d) measuring relative velocity of the respective hub with respect to the vehicle body, wherein hub movement toward the body is positive and away from the body is negative;

e) determining the sign of the product of the desired torque, the determined total torque and the measured relative velocity;

f) setting the respective damper to its highest damping rate if the determined sign is positive;

g) setting the respective damper to its lowest damping rate if said sign is negative; and

h) repeating steps a) through g) for the remainder of said plurality of tires.

5,852,788
WHEEL SPEED CORRECTION METHOD THAT ACCOUNTS FOR USE OF A MINI TIRE

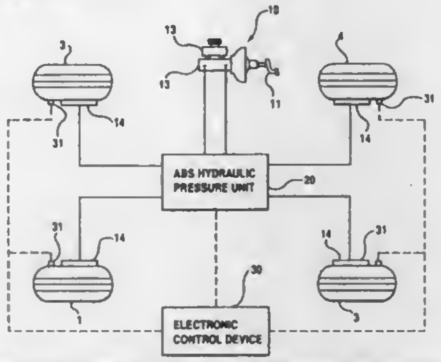
Keiji Toyoda, and Noriyuki Takemasa, both of Hamakita, Japan, assignors to Nisshinbo Industries Inc., Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 638,924

Claims priority, application Japan, Oct. 4, 1995, 7-282531

Int. Cl.^{6} B60K *28/16;* **G01P** *3/56*

U.S. Cl. 701—74 **6 Claims**



1. A method to correct ABS control for wheel speed for a vehicle equipped with a mini tire to be used as a spare tire and having a nonvolatile memory device comprising:

determining the presence or absence of a mounted mini tire on a vehicle while the vehicle is in motion and producing mounting information if a mini tire is mounted;

storing the mounting information in a nonvolatile memory, if a mini tire is mounted;

correcting an ABS control for the mini tire using the mounting information stored in the nonvolatile memory, if an antilock control is triggered after the vehicle is restarted and in motion: and

comparing an observed wheel speed to a formula relating wheel base and tread of the vehicle to wheel speed, if the formula is not satisfied, then inferring that a mini tire is mounted,

wherein the formula is:

$$V1^2+V4^2=V2^2+V3^2$$

where V1=Speed of left front wheel;
V2=Speed of right front wheel;
V3=Speed of left rear wheel; and
V4=Speed of right rear wheel.

5,852,789
ENGINE ANALYZER WITH PATTERN LIBRARY LINKED TO VEHICLE ID AND DISPLAY SCOPE CONFIGURATION

Dale A. Trsar, Mt. Prospect; Yosuf M. Taraki, Evanston; Richard H. Shepherd, McHenry; Tyrone J. Moritz, Morton Grove, and Mark H. Petersen, Mundelein, all of Ill., assignors to Snap-on Technologies, Inc., Lincolnshire, Ill.

Filed Apr. 10, 1996, Ser. No. 631,309

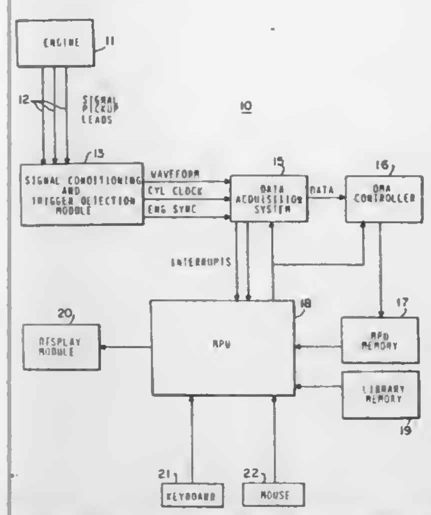
Int. Cl.^{6} G06G *7/70*

U.S. Cl. 701—102 **16 Claims**

1. Apparatus for selecting from a library of a plurality of pre-programmed digitized waveform patterns a set of patterns meeting predetermined criteria, said apparatus comprising:

a memory simultaneously storing the library of preprogrammed waveform patterns along with identifying data including a group identifier for each such pattern,

said memory including means for storing lists of groups of the waveform patterns with each list including patterns with the same group identifier criterion, and wherein said criteria include a selected group identifier,



a user-operable switch for selective determining of the criteria, and

a processor coupled to the memory and to the switch and operable under stored program control for automatically comparing the identifying data for the patterns in the library with the criteria and selecting a set of those patterns which meet all the criteria,

said processor including means for initially selecting the list of library patterns having a group identifier corresponding to that of the group identifier criterion, and then comparing the patterns in the list one at-a-time with each of the remaining criteria and eliminating from the list those patterns which fail to meet all the remaining criteria.

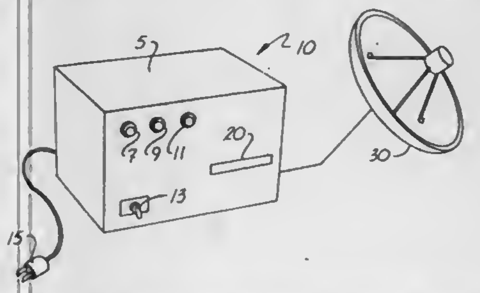
5,852,790
GLOBAL POSITIONING SYSTEM RECORDER AND METHOD GOVERNMENT RIGHTS

David W. Hayes; Kenneth J. Hofstetter; Robert F. Eakle, Jr., all of Aiken, and George E. Reeves, Graniteville, all of S.C., assignors to Westinghouse Savannah River Company, Aiken, S.C.

Filed Apr. 22, 1996, Ser. No. 635,476

Int. Cl.^{6} G06F *165/00*

U.S. Cl. 701—213 **26 Claims**



1. A method of recording the global position of an object, comprising the steps of:

providing an object with a global positioning system recorder having: GPS circuitry, control circuitry including programming, an antenna, and a memory element slot;

placing operational parameters for said recorder on a memory element;

placing said memory element into said memory element slot;

providing power to said recorder;

automatically reading said operational parameters from said memory element using said recorder, said automatic reading step controlled by said programming and performed after said providing power step;

automatically determining the position of said object with said GPS circuitry by use of a signal emitted from GPS satellites and received by said antenna; and

automatically writing said position of said object on said memory element in the form of at least one data file in accordance with said operational parameters using said control circuitry, said automatic writing step controlled by said programming and performed after said automatic reading step.

5,852,791
VEHICLE NAVIGATION WITH VEHICLE POSITION CORRECTION FEATURE

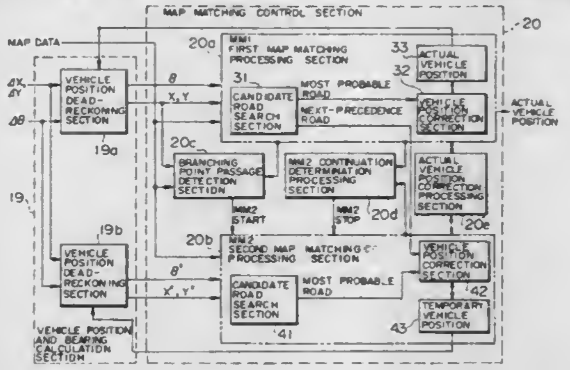
Yoshikazu Sato, Iwaki, and Kan Shishido, Haga-gun, both of Japan, assignors to Alpine Electronics, and Honda Giken Kogyo Kabushiki Kaisha

Filed Nov. 22, 1996, Ser. No. 755,270

Claims priority, application Japan, Dec. 28, 1995, 7-342644

Int. Cl.^{6} G06F *165/00*

U.S. Cl. 701—217 **19 Claims**


MAP MATCHING CONTROL SECTION
20
MAP DATA
20a
MM1 FIRST MAP MATCHING PROCESSING SECTION
33
ACTUAL VEHICLE POSITION
32
ΔX, ΔY
VEHICLE POSITION DEAD-RECKONING SECTION
θ
X, Y
31
MOST PROBABLE ROAD
CANDIDATE ROAD SEARCH SECTION
NEXT-PRECEDENCE ROAD
VEHICLE POSITION CORRECTION SECTION
ACTUAL VEHICLE POSITION
Δθ
19a
20c
BRANCHING POINT PASSAGE DETECTION SECTION
MM2 CONTINUATION DETERMINATION PROCESSING SECTION
ACTUAL VEHICLE POSITION CORRECTION PROCESSING SECTION
19
MM2 START
MM2 STOP
20d
20e
19b
20b
MM2 SECOND MAP MATCHING PROCESSING SECTION
VEHICLE POSITION DEAD-RECKONING SECTION
θ'
X', Y'
CANDIDATE ROAD SEARCH SECTION
MOST PROBABLE ROAD
VEHICLE POSITION CORRECTION SECTION
42
TEMPORARY VEHICLE POSITION
43
41
VEHICLE POSITION AND BEARING CALCULATION SECTION

1. A vehicle navigation method in which a position of a vehicle is dead-reckoned when a predetermined distance is traveled by the vehicle, a most probable candidate road satisfying a predetermined condition is obtained from the dead-reckoned vehicle position and by map matching processing, the vehicle position is corrected to a position on a most probable candidate road, and the map matching processing is thereafter continued by dead-reckoning the vehicle position, said method comprising:

monitoring whether a point from which two or more branch roads extend has been passed;

obtaining a most probable candidate road and a candidate road different from the most probable candidate road and satisfying said predetermined condition by map matching processing after passing the point;

correcting the dead-reckoned vehicle position to a position on the most probable candidate road to regard the corrected position as an actual vehicle position;

correcting the dead-reckoned vehicle position to be a position on the other candidate road, to set the corrected position as a temporary vehicle position;

thereafter executing map matching processing based on the actual vehicle position and map matching processing based on the temporary vehicle position when the predetermined distance is traveled; and

continuing map matching processing by setting the temporary vehicle position as the actual vehicle position when the map matching processing based on the actual vehicle position finds no road satisfying said predetermined condition.

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5,852,792

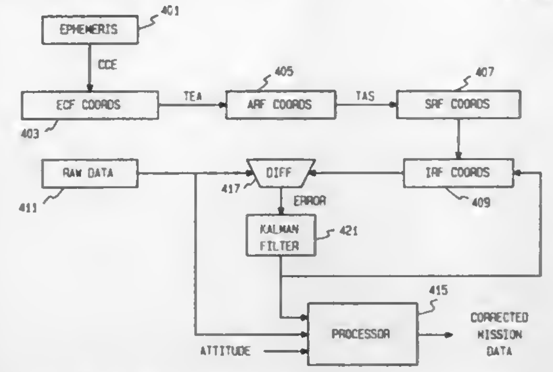
SPACECRAFT BORESIGHT CALIBRATION FILTER

Marlin Craig Nielson, Boulder, Colo., assignor to Lockheed Martin Corporation, Bethesda, Md.

Filed Oct. 3, 1996, Ser. No. 725,433

Int. Cl.^{6} G06G *7/78*

U.S. Cl. 701—222 **14 Claims**



1. In a spacecraft imaging system, a boresight correction system comprising, in combination:

an array of a plurality of sensing elements for producing signals indicative of an imposed image thereon;

means for predicting the position of a known image in terms of given ones of said sensing elements;

means for determining a sensing element receiving the known image imposed on said array;

spacecraft attitude determining means;

means responsive to the predicting means, to the spacecraft attitude determining means, and to the sensing element determining means for supplying error signals representative of the differences between the actual locations and predicted locations of said images on the array; and

estimator means for supplying best-estimate correction offsets to be applied to observation data from said array of sensing elements.

5,852,793

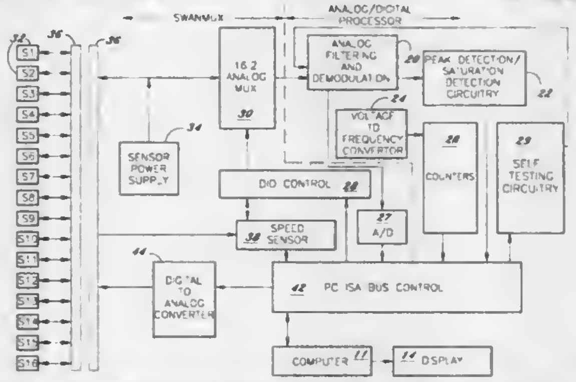
METHOD AND APPARATUS FOR PREDICTIVE DIAGNOSIS OF MOVING MACHINE PARTS

David B. Board, Boca Raton; Harold Cates, and Eric Rawlings, both of Orlando, all of Fla., assignors to DME Corporation, Fort Lauderdale, Fla.

Filed Feb. 18, 1997, Ser. No. 800,812

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 702—56 **36 Claims**



14. A system for predicting failures in rotary and reciprocating machinery, including bearings, gears, lubricants, and the like, said system comprising:

a plurality of stress wave sensor transducers for attachment to the machinery at selected points to produce a corresponding number of electrical signals corresponding to vibration, friction, and shock waves produced in the machinery during operation;

multiplexing means, in electrical communication with said transducers, for receiving said electrical signals from said transducers and transmitting at least one selected signal corresponding to at least one preselected transducer;

filtering means, in electrical communication with said multiplexing means, for filtering out frequencies corresponding to vibration and passing only friction and shock waves, said filtering means deriving a resultant signal for each said preselected signal, said resultant signal being in a predetermined frequency range corresponding to said transducers;

digital processor means, in electrical communication with said filtering means, for converting analog signals to digital, for computing stress wave energy corresponding to said envelopes and for providing control and display logic to select transducers to be monitored; and

control processing means, in electrical communication with said multiplexing means and said digital processing means for selecting said at least one selected signal, for communicating with said transducers and for displaying friction and shock wave energy measurements and envelope measurements.

5,852,794

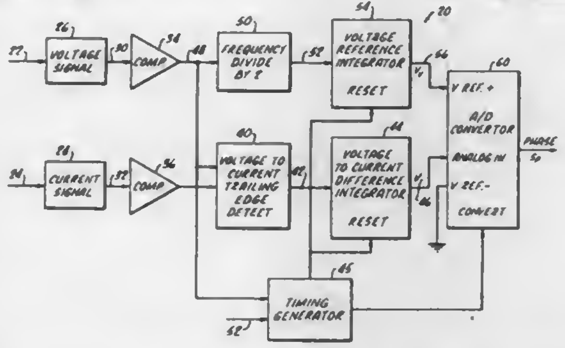
MULTIPLE FREQUENCY UNAMBIGUOUS PHASE DETECTOR FOR PHACOEMULSIFICATION SYSTEM

James W. Staggs, Laguna Niguel, Calif., assignor to Allergan, Waco, Tex.

Filed Jan. 22, 1997, Ser. No. 787,229

Int. Cl.^{6} G01R *13/00*

U.S. Cl. 702—72 **6 Claims**



6. Apparatus for determining the voltage current phase relationship of a piezoelectric phacoemulsification handpiece, said method comprising the steps of:

means for obtaining an AC voltage signal corresponding to the operating AC voltage of a piezoelectric handpiece;

means for obtaining an AC current signal corresponding to the operating AC current of the piezoelectric handpiece;

means for determining onset of a current cycle from said AC current signal;

means for producing a voltage (V_I) corresponding to a time necessary for the AC current signal to reach a maximum value after onset of the current cycle;

means for producing a voltage (V_v) corresponding to a time necessary for the AC voltage signal to reach a maximum value after onset of the current cycle; and

A/D converter means for comparing (V_v) and (V_I) to determine the phase relationship between the voltage and current of the piezoelectric phacoemulsification handpiece and generating a phase signal (S_p) corresponding thereto, said phase signal being frequency independent.

5,852,795

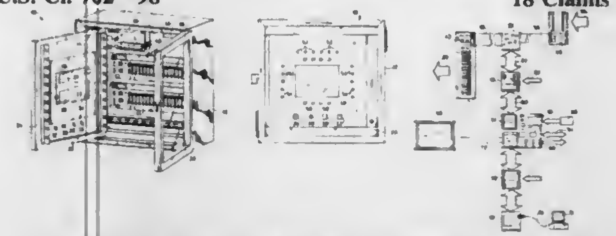
APPARATUS FOR CONTROLLING A MULTIPLICITY OF COMPRESSORS

Scott E. Neumann, Clarence, and Ewan Choroszylow, East Aurora, both of N.Y., assignors to New York Gas Group, New York, N.Y.

Filed Nov. 22, 1996, Ser. No. 754,837

Int. Cl.^{6} H04Q *1/00;1/18*

U.S. Cl. 702—98 **18 Claims**



1. A controller especially adapted for controlling the flow of fluid in a multiplicity of compressors comprised of a central processing unit, at least about 32 analog input channels operatively connected to the central processing unit, at least about 48 digital input channels operatively connected to the central processing unit, at least about 32 digital output channels operatively connected to the central processing unit, at least 20 control input channels connected to the central processing unit, and electroluminescent display means for displaying graphical information connected to the central processing unit.

5,852,796

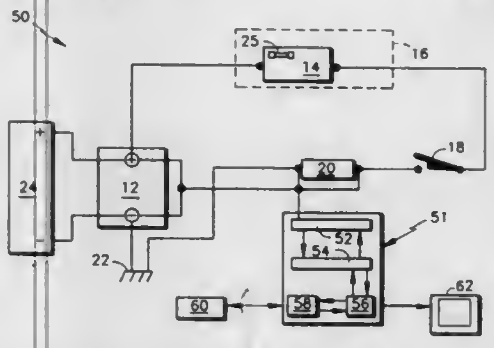
COMPUTERIZED TESTING METHOD AND SYSTEM FOR WIRE HARNESSES

Walter K. Stepanenko, Jr., St. Clair Shores, Mich., assignor to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Nov. 15, 1996, Ser. No. 751,198

Int. Cl.^{6} G01R *31/327;31/02;31/07*

U.S. Cl. 702—176 **19 Claims**



1. A computerized method for testing a wire harness assembly comprising the steps of:

converting an analog response characteristic of a wire harness assembly over a time interval to a digital data set;

selecting a first peak response value from said digital data set and marking a first time associated with said first peak response value;

selecting a first zero value from said digital data set and marking a second time associated with said first zero value; and

calculating an opening time by subtracting said second time from said first time;

indicating that the wire harness assembly is acceptable if the opening time is less than a critical time and that the wire harness assembly is unacceptable if the opening time is greater than the critical time.

5,852,797

SECURE ELECTRONIC CHRONOMETRY DEVICE

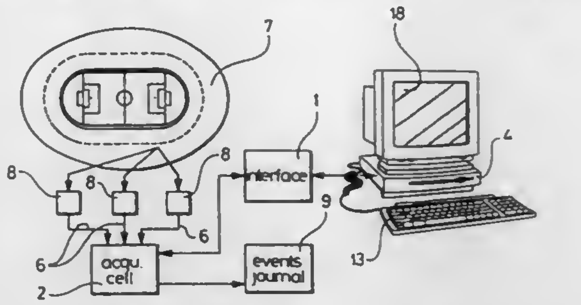
Jean-Pierre Bovay, Bienne, and Silvio Chianese, Evilard, both of Switzerland, assignors to Omega Electronics S.A., Bienne, Switzerland

Filed Jul. 10, 1997, Ser. No. 891,329

Claims priority, application Switzerland, Jul. 11, 1996, 1741/96

Int. Cl.^{6} G44F *7/06*

U.S. Cl. 702—178 **3 Claims**



1. An electronic chronometry device comprising an acquisition cell arranged to receive time data coming from at least one time events measuring sensor, a storing unit for storing said time data, and a processing unit for processing said time data and which is associated with said acquisition cell,

wherein said storage unit is associated with an interface which is arranged in such a way as to allow said processing unit to access said storage unit and to read certain of said time data which are stored in said storage unit without allowing modification of said storage unit by said processing unit.

5,852,798

MACHINE TRANSLATION APPARATUS AND METHOD FOR TRANSLATING RECEIVED DATA DURING DATA COMMUNICATION

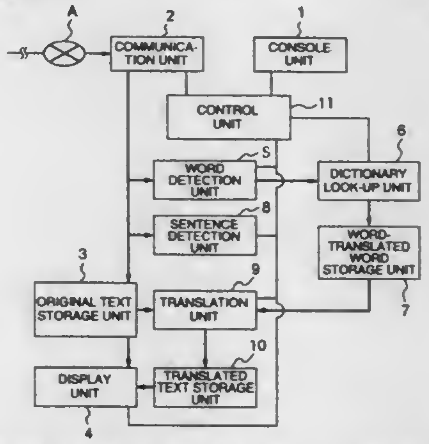
Junzo Ikuta; Hitomi Kinoshita, and Kazutoshi Kurita, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd.

Filed Jun. 28, 1996, Ser. No. 671,577

Claims priority, application Japan, Aug. 8, 1995, 7-233157

Int. Cl.^{6} G06F *17/28*

U.S. Cl. 704—2 **10 Claims**



1. A machine translation apparatus which receives and translates original text data including a plurality of sentences, said apparatus comprising:

reception means for receiving the original text data;

display means for displaying the original text data;

translation means for receiving the original text data from said reception means and translating a predetermined unit of said plurality of sentences of the original text data prior to completion of reception of the original text data by said reception means; and

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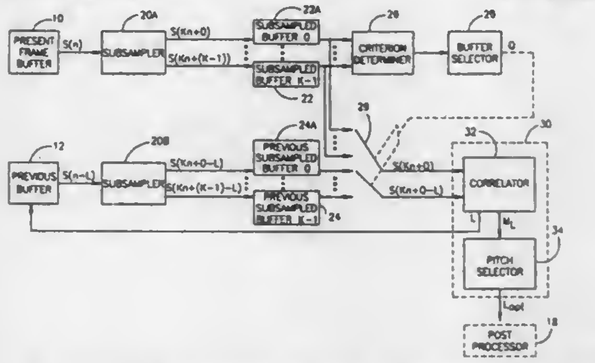
control means for allowing said display means to display a translation result of said predetermined unit of said plurality of sentences of the original text data prior to completion of reception of said original text data.

5,852,799
PITCH DETERMINATION USING LOW TIME RESOLUTION INPUT SIGNALS

Felix Flomen, Rishon Lezion, and Leon Bialik, Or Yehuda, both of Israel, assignors to AudioCodes Ltd., Or Yehuda, Israel

Filed Oct. 18, 1996, Ser. No. 731,391
Claims priority, application Israel, Oct. 19, 1995, 115697
Int. Cl.^{6} G10L *9/08*
U.S. Cl. 704—207 **14 Claims**



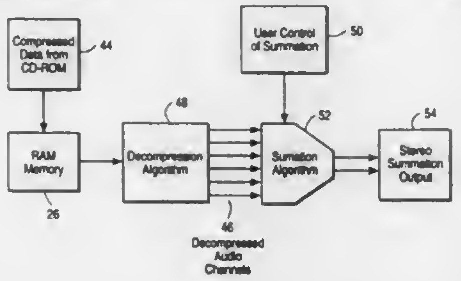
1. A method for determining the pitch of an input signal, the method comprising the steps of:

a. separating said input signal into K lower resolution input signals;
b. selecting one of said K lower resolution input signals for processing, in accordance with a predetermined quality criterion;
c. performing pitch determination utilizing the selected lower resolution input signal.

5,852,800
METHOD AND APPARATUS FOR USER CONTROLLED MODULATION AND MIXING OF DIGITALLY STORED COMPRESSED DATA

A. Robert Modeste, East Palo Alto, and Gerald W. Kearby, Redwood City, both of Calif., assignors to Liquid Audio, Inc., Redwood City, Calif.

Filed Oct. 20, 1995, Ser. No. 546,438
Int. Cl.^{6} G10L *3/02;9/00;* **H04B** *1/00*
U.S. Cl. 704—211 **6 Claims**



Decode/Mixing Process

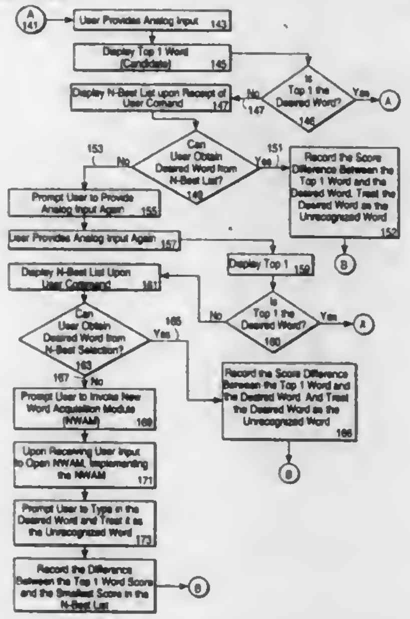
6. A method of programmably modulating and combining a plurality of channels of a CD-ROM selection into a summation signal which comprises the steps of:

(a) individually recording each of the plurality of channels;
(b) establishing a format of the CD-ROM selection to individually contain a digital record of each of the recorded plurality of channels;
(c) digitally storing each of the plurality of channels onto a CD-ROM in accordance with the format of step (b);
(d) reading the plurality of channels from the CD-ROM; and
(e) programmably generating a summation signal by combining the plurality of channels at individually selected intensity levels whereby an operator programmably selects the intensity levels of each of the plurality of channels and combines the plurality of channels at each of the programmable intensity levels to produce the summation signal.

5,852,801
METHOD AND APPARATUS FOR AUTOMATICALLY INVOKING A NEW WORD MODULE FOR UNRECOGNIZED USER INPUT

Hsiao-Wuen Hon, and Yen-Lu Chow, both of Saratoga, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 4, 1995, Ser. No. 538,919
Int. Cl.^{6} G01L *5/06*
U.S. Cl. 704—244 **15 Claims**


A
141
User Provides Analog Input 143
Display Top 1 Word (Candidate) 145
Is Top 1 the Desired Word? 146
Yes
A
No
147
Display N-Best List upon Receipt of User Comand 147
Can User Obtain Desired Word from N-Best List? 149
153
No
151
Yes
Record the Score Difference Between the Top 1 Word and the Desired Word. Treat the Desired Word as the Unrecognized Word 152
B
Prompt User to Provide Analog Input Again 155
User Provides Analog Input Again 157
Display Top 1 159
Is Top 1 the Desired Word? 160
Yes
A
No
Display N-Best List Upon User Command 161
Can User Obtain Desired Word from N-Best Selection? 163
165
Yes
Record the Score Difference Between the Top 1 Word and the Desired Word. And Treat the Desired Word as the Unrecognized Word 166
B
167
No
Prompt User to Invoke New Word Acquisition Module (NWAM) 169
Upon Receiving User Input to Open NWAM, Implementing the NWAM 171
Prompt User to Type in the Desired Word and Treat it as the Unrecognized Word 173
Record the Difference Between the Top 1 Word Score and the Smallest Score in the N-Best List
B

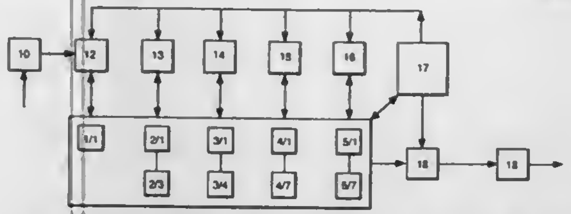
1. A computer implemented method for improving the accuracy of a speech recognition system, said method comprising the steps of:

a) detecting a user speech signal;
b) if the user speech signal is not found by the user from an alternative user input candidate list, instructing the user to input the user speech signal again;
c) if the user speech signal is still not found by the user in the alternative user input candidate list, prompting the user to input a representation of the speech signal using a keyboard and invoking a new word module; and
d) adapting a language model using the new word module.

5,852,802
SPEED ENGINE FOR ANALYZING SYMBOLIC TEXT AND PRODUCING THE SPEECH EQUIVALENT THEREOF

Andrew P. Breen; Andrew Lowry, and Margaret Gaved, all of Ipswich, England, assignors to British Telecommunications Public Limited Company, London, England

Continuation of Ser. No. 272,533, Jul. 11, 1994, abandoned. This application May 1, 1997, Ser. No. 847,246
Claims priority, application European Pat. Off., May 23, 1994, 94303675.6
Int. Cl.^{6} G10L *5/00*
U.S. Cl. 704—260 **13 Claims**



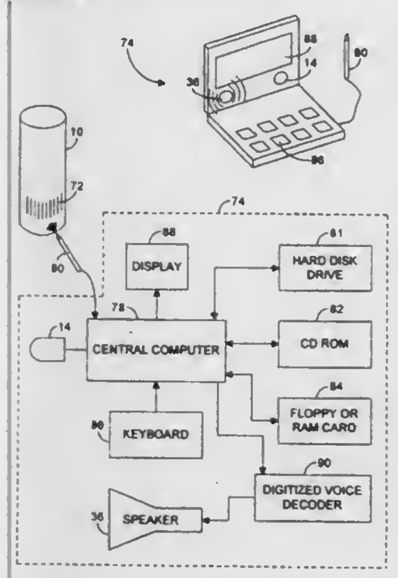
1. A linguistic analyser adapted to receive an input signal representing a symbolic text and to analyse said input signal into a plurality of elemental signals each of which represents a linguistic element of said input text, wherein said linguistic analyser comprises:

(a) a plurality of symbolic processors for processing the input signal and generating intermediate signals;
(b) a skeletal database for storing intermediate signals relating to the analysis;
(c) a plurality of the symbolic processors operatively connected to the skeletal database so that each of said processors is enabled to receive input from said skeletal database and to return its output to said skeletal database, wherein the skeletal database has a structure which includes storage locations of said intermediate signals, said storage locations being organised so that the linguistic relationships between the signals stored therein are defined.

5,852,803
APPARATUS, SYSTEM AND METHOD FOR RECORDING AND/OR RETRIEVING AUDIO INFORMATION

James C. Ashby, III, and Roy G. Tiemann, both of Priddy, Tex., assignors to Chips International, Inc., Priddy, Tex.

Filed Mar. 20, 1992, Ser. No. 854,192
Int. Cl.^{6} G10L *7/08*
U.S. Cl. 704—270 **4 Claims**



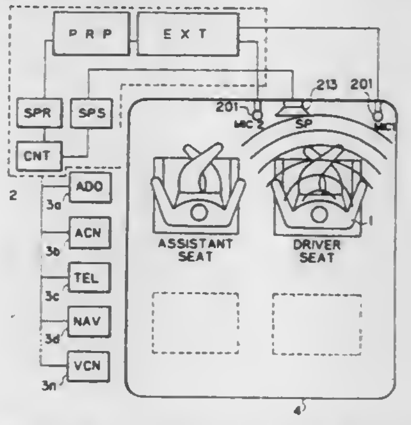
1. A method for audio labeling products with a reusable label, comprising:

releasibly securing a label bearing an audio recorder to a first product;
sending a first verbal message concerning said first product to said label;
recording said first verbal message in said recorder;
subsequently retrieving said first verbal message in audio format from said recorder;
releasing said label from said first product and thereafter releasibly securing said label to a second product;
while erasing said first verbal message, sending a second verbal message concerning said second product to said label;
recording said second verbal message in said recorder; and
subsequently retrieving said second verbal message in audio format from said recorder.

5,852,804
METHOD AND APPARATUS FOR SPEECH RECOGNITION

Kazuya Sako, Kakogawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 253,218, Jun. 2, 1994, abandoned, which is a continuation of Ser. No. 801,546, Dec. 2, 1991, abandoned. This application Apr. 11, 1997, Ser. No. 838,909
Claims priority, application Japan, Nov. 30, 1990, 2-334766
Int. Cl.^{6} G10L *5/02;5/06;9/00*
U.S. Cl. 704—275 **4 Claims**



1. An apparatus for recognizing speech, that stores a registration pattern of a speech command and a corresponding operation, both the speech command and the corresponding operation being not prepared, and that controls an external apparatus connected thereto in accordance with the corresponding operation when the speech command is recognized by processing of speech input, comprising:

input means for inputting speech;
speech recognizing means for recognizing, in a command registration mode, an input speech pattern in the speech input by said input means;
confirmation output means for providing a confirmation of a result from said speech recognizing means;
storage means for storing a registration pattern containing a speech command included in the input speech pattern recognized by said speech recognizing means and a corresponding operation; and
apparatus control means for controlling said external apparatus by outputting and inputting control data for the corresponding operation to and from the external apparatus and, in the command registration mode, registering into said storage means the corresponding operation consisting of manipulation data produced by the external apparatus either immediately before or after input of the speech containing the input speech pattern including the speech command.

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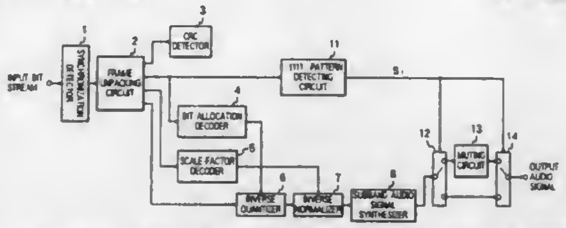
5,852,805
MPEG AUDIO DECODER FOR DETECTING AND CORRECTING IRREGULAR PATTERNS

Yukari Hiratsuka, and Kazuhiro Sugiyama, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 621,615
Claims priority, application Japan, Jun. 1, 1995, 7-135075
Int. Cl.^{6} G10L *9/14;5/00*
U.S. Cl. 704—500 **20 Claims**



1. An MPEG audio decoder for decoding an input bit stream including a plurality of frames coded according to an MPEG audio coding method, comprising:

frame unpacking means for unpacking header information, bit allocation information, scale-factor information, and sample data from each of said frames;

bit allocation decoding means coupled to said frame unpacking means, for decoding said bit allocation information to obtain decoded bit allocation values;

scale-factor decoding means coupled to said frame unpacking means, for decoding said scale-factor information to obtain decoded scale-factor values;

inverse quantizing means coupled to said frame unpacking means, for dequantizing said sample data according to said decoded bit allocation information to obtain dequantized sample values;

inverse normalizing means coupled to said inverse quantizing means, for denormalizing said dequantized sample values according to said decoded scale-factor values to obtain denormalized sample values;

subband audio signal synthesizing means coupled to said inverse normalizing means, for synthesizing an output audio signal from said denormalized sample values; and

irregular-pattern processing means, coupled to at least one means among said frame unpacking means, said bit allocation decoding means, said scale-factor decoding means, said inverse quantizing means, said inverse normalizing means, and said subband audio signal synthesizing means, for detecting irregular patterns in said bit allocation information, said scale-factor information or said sample data and for altering at least one entity among said decoded scale-factor values, said sample data, said dequantized sample values, and said output audio signal, when said irregular patterns are detected, thereby preventing said irregular patterns from causing defects in said output audio signal.

5,852,806
SWITCHED FILTERBANK FOR USE IN AUDIO SIGNAL CODING

James David Johnston, Warren, and Deepen Sinha, Chatham, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

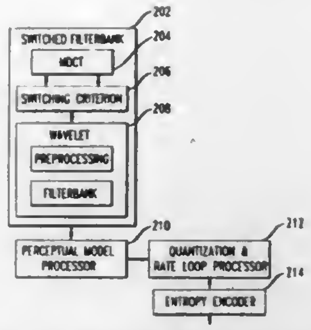
Filed Oct. 1, 1996, Ser. No. 720,757
Int. Cl.^{6} G10L *9/00;* **H04H** *5/00*
U.S. Cl. 704—500 **20 Claims**

1. A method for encoding an audio signal, said method comprising the steps of:

sampling said audio signal;

alternatively filtering said sampled audio signal by switching between a first filterbank and a wavelet filterbank to produce a filtered signal, said wavelet filterbank being a tree-structured non-uniform filterbank, said first filterbank being independent from said wavelet filterbank, and said switching occurring in response to the stationarity of said audio signal; and

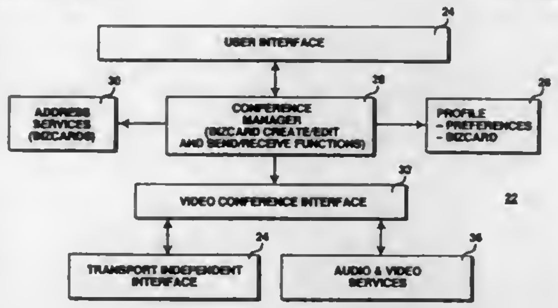
encoding said filtered signal to provide a compressed output signal.



5,852,807
METHOD AND APPARATUS FOR MODELING BUSINESS CARD EXCHANGES IN A POINT-TO-POINT OR A MULTI-POINT PERSONAL COMPUTER CONFERENCE

Rune A. Skarbo, Hillsboro; John D. Elliott, Aloha, and Anthony C. Salvador, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 444,020, May 18, 1995, abandoned, which is a continuation-in-part of Ser. No. 151,694, Nov. 24, 1993, Pat. No. 5,506,954. This application Aug. 8, 1997, Ser. No. 908,751
Int. Cl.^{6} G06F *17/60*
U.S. Cl. 705—7 **28 Claims**


24
USER INTERFACE
30
ADDRESS SERVICES (BIZCARDS)
38
CONFERENCE MANAGER (BIZCARD CREATE/EDIT AND SEND/RECEIVE FUNCTIONS)
28
PROFILE
- PREFERENCES
- BIZCARD
32
VIDEO CONFERENCE INTERFACE
22
24
TRANSPORT INDEPENDENT INTERFACE
36
AUDIO & VIDEO SERVICES

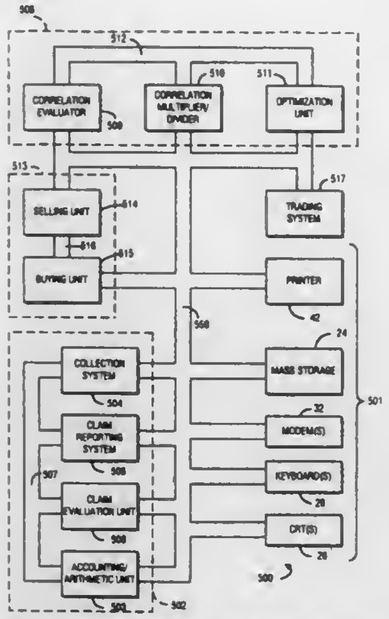
1. A personal computer (PC) conference system comprising a general purpose personal conference (GPPC) application having a conference manager that includes a first function for automatically transmitting a business card data structure having information commonly found in business cards for rendering on another PC conference system in a format that resembles a business card to model business card exchanges between conference participants of a face-to-face conference, whenever the PC conference system joins a PC conference.

5,852,808
METHOD AND APPARATUS FOR PROVIDING PROFESSIONAL LIABILITY COVERAGE

Julius Cherny, Monsey, N.Y., assignor to Mottola Cherny & Associates, Inc., New York, N.Y.

Filed Apr. 11, 1995, Ser. No. 420,364
Int. Cl.^{6} G06F *157/00*
U.S. Cl. 705—4 **110 Claims**

1. Apparatus for providing professional liability coverage to a professional, during a coverage period having a starting date and an ending date, said professional having clients including a substantial number of publicly traded corporations each having a respective securities price at a respective starting price on said starting date, and with respect to whom a professional liability triggering event could cause a decline in said respective securities price, said apparatus comprising:



correlation logic for determining a respective number of positions in securities of each of said publicly traded corporations needed to provide said professional liability coverage, based on market correlation between prices of securities of said publicly traded corporations, and on at least one of (a) probability that a professional liability triggering event will occur relative to any one or more of said publicly traded corporations, and (b) likely effect of said professional liability triggering event on said price of securities of said one or more publicly traded corporations;

a first trading system for securing at a respective cost a right to deliver at a respective delivery price, at any time at least as late as said ending date, said respective number of positions in securities of each of said publicly traded corporations;

an arithmetic unit for determining from said respective costs a payment to be charged to said professional in exchange for said coverage;

a second trading system for conferring, in exchange for said payment, a right to sell, at a respective claim price, at any time during said coverage period, up to said respective number of positions in securities of any one of said publicly traded corporations when there is a professional liability triggering event with respect to any of said publicly traded corporations; and

a printer for generating a coverage document setting forth said payment and evidencing said right to sell.

5,852,809
SYSTEM AND METHOD FOR ROUTING DATA AND COMMUNICATIONS

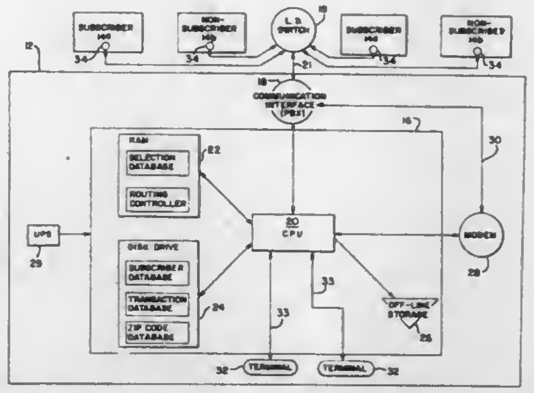
William D. Abel, and Thomas D. Call, both of Boca Raton, Fla., assignors to Memorylink, Inc., Boca Raton, Fla.

Continuation of Ser. No. 198,422, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 943,501, Sep. 11, 1992, Pat. No. 5,289,371. This application Jan. 24, 1995, Ser. No. 377,294
Int. Cl.^{6} G06F *17/60;153/00*
U.S. Cl. 705—26 **22 Claims**

1. A system for routing communications to one of a plurality of remote sites comprising:

a central processing unit;

a storage device operatively associated with the central processing unit to store routing data identifying a plurality of remote sites and associated with the number of times that each of the remote sites has sent a communication to other remote sites for a prior period and further associated with the number of times that each of the remote sites has received a communication from other remote sites for the prior period;



a selector operatively associated with the central processing unit to select a specific remote site to receive a particular communication based on the routing data; and

a communication interface operatively associated with the central processing unit for forwarding the particular communication to the specific remote sites,

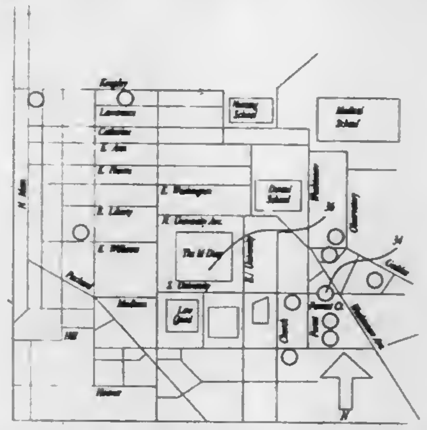
said central processing unit including means for automatically updating, without requiring human intervention, a ratio for at least one of the remote sites from (a) the number of times that a particular remote site has sent a communication to other remote sites and (b) the number of times that the particular remote site has received a communication from other remote sites, and

said selector employing the ratios for the remote sites to select the specific remote site to receive the particular communication.

5,852,810
GEOGRAPHIC SPECIFIC INFORMATION SEARCH SYSTEM AND METHOD

James P. Sotiroff, Whitmore Lake, and Gerald W. Walden, Ypsilanti, both of Mich., assignors to Student Housing Network, Ann Arbor, Mich.

Filed Jan. 29, 1996, Ser. No. 591,927
Int. Cl.^{6} G06F *17/60*
U.S. Cl. 705—27 **23 Claims**



1. A method of presenting, searching, selecting and maintaining geographic specific housing information contained in a database and supplied by various property managers, the method comprising the steps of:

presenting a graphical map depicting a large initial geographic area, said graphical map being divided into smaller selectable geographic regions;

narrowing said initial geographic area by recursively selecting and successively displaying said smaller geographic regions using a graphical tree structure;

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displaying a desired geographic region, said desired geographic region including individual highlighted points of interest corresponding to available housing;
recursively selecting highlighted points of interest and retrieving from the database information related to each selected point of interest; and
compiling an interest list of interesting properties, including a list of interesting properties and user information for contacting a person interested in said interesting properties contained in said list.

5,852,811

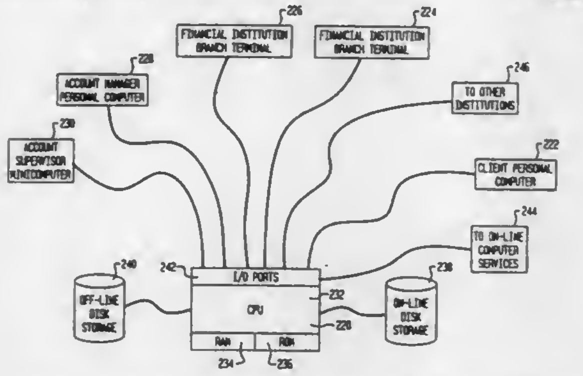
METHOD FOR MANAGING FINANCIAL ACCOUNTS BY A PREFERRED ALLOCATION OF FUNDS AMONG ACCOUNTS

Charles Agee Atkins, Charleston, S.C., assignor to Proprietary Financial Products, Inc., Charleston, S.C.

Continuation of Ser. No. 780,590, Oct. 23, 1991, which is a continuation-in-part of Ser. No. 686,319, Apr. 16, 1991, which is a continuation of Ser. No. 408,173, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 38,817, Apr. 15, 1987, Pat. No. 4,953,085. This application Jul. 25, 1994, Ser. No. 280,096

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 705—36 **39 Claims**


FINANCIAL INSTITUTION BRANCH TERMINAL
226
FINANCIAL INSTITUTION BRANCH TERMINAL
224
ACCOUNT MANAGER PERSONAL COMPUTER
228
ACCOUNT SUPERVISOR MINICOMPUTER
230
TO OTHER INSTITUTIONS
246
CLIENT PERSONAL COMPUTER
222
TO ON-LINE COMPUTER SERVICES
244
240
OFF-LINE DISK STORAGE
242
I/O PORTS
CPU
232
220
RAM
ROM
234
236
238
ON-LINE DISK STORAGE

1. A method for using a computer to operate at least one client financial account comprising the steps of:
maintaining on said computer system data for each financial account, each financial account comprising at least one investment asset account which receives funds for investment purposes and has an account balance that is periodically updated, a first liability account comprising a loan which is secured with a lien on at least one home and one or more of said investment asset accounts, and at least one additional liability account;
determining client preferences for operating the account;
determining an allocation to the investment asset account(s) and the liability account(s) based upon the client preferences;
allocating funds received in said financial account to pay interest on the loan with at least a portion of the remainder of said funds being allocated based upon the determined allocation rather than amortizing the loan; and
updating the allocation in accordance with changes to financial and economic variables.

5,852,812

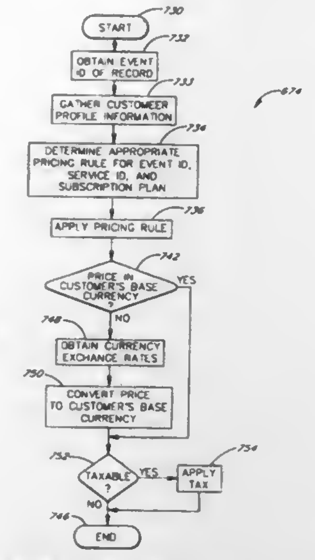
BILLING SYSTEM FOR A NETWORK

Mary Reeder, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Aug. 23, 1995, Ser. No. 518,253

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 705—39 **31 Claims**


730
START
732
OBTAIN EVENT ID OF RECORD
733
GATHER CUSTOMER PROFILE INFORMATION
674
734
DETERMINE APPROPRIATE PRICING RULE FOR EVENT ID, SERVICE ID, AND SUBSCRIPTION PLAN
736
APPLY PRICING RULE
742
PRICE IN CUSTOMER'S BASE CURRENCY
YES
NO
748
OBTAIN CURRENCY EXCHANGE RATES
750
CONVERT PRICE TO CUSTOMER'S BASE CURRENCY
752
TAXABLE ?
YES
APPLY TAX
754
NO
746
END

RETRIEVE CHARGE FROM RECORD

1. A method for billing in a computer network having a host data center, a plurality of network customers, and multiple local currencies at which transactions are charged to the network customers, the host data center generating a charge to a credit card account of a network customer in response to a transaction comprising the host data center providing a network resource, said method comprising the steps of:
receiving, by the host data center, notification of the transaction;
determining, a first local currency for billing the credit card account of the network customer for the transaction;
calculating a transaction charge price expressed in terms of the first local currency by applying a currency exchange rate to a stored price expressed in a second currency differing from the first local currency; and
transmitting, by the host data center after the calculating step, the transaction charge price to a credit processor.

5,852,813

METHOD AND ARRANGEMENT FOR ENTERING DATA INTO A POSTAGE METER MACHINE

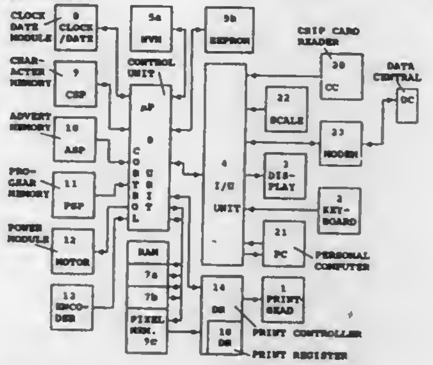
Stephan Guenther, and Ralf Kubatzki, both of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Dec. 20, 1996, Ser. No. 770,525

Claims priority, application Germany, Dec. 22, 1995, 195 49 305.2

Int. Cl.^{6} G07B *17/00*

U.S. Cl. 705—408 **18 Claims**



1. A method for entering data into a postage meter machine comprising the steps of:
(a) initializing a postage meter machine;
(b) calling non-volatilely stored setting data, for formulating a print data input, into said postage meter machine;
(c) conducting a routine including sub-routines for data entry, for forming request data, for automatic print data entry, for checking and for display of an image to be printed;

(d) entering into a communication between said postage meter machine and a remote data central and transmitting a plurality of sub-image data files and, if necessary, further data files to the postage meter machine from the data central on the basis of said request data communicated from the postage meter machine to the data central; and
(e) updating a franking image to be printed employing said sub-image data files and, if necessary, said further data files, including selectively positioning at least one of said sub-images in an overall franking image to be printed and modifying a control data file containing data corresponding to said franking image to be printed to incorporate any selected change in position of said at least sub-image.

5,852,814

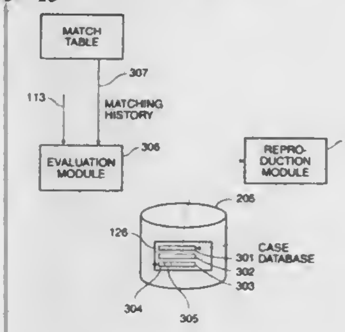
AUTONOMOUS LEARNING AND REASONING AGENT

Bradley P. Allen, Hermosa Beach, Calif., assignor to Inference Corporation, Novato, Calif.

Continuation of Ser. No. 518,850, Aug. 23, 1995, Pat. No. 5,586,218, which is a continuation of Ser. No. 869,926, Apr. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 664,561, Apr. 4, 1991, abandoned. This application Dec. 10, 1996, Ser. No. 763,005

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 706—13 **1 Claim**



1. In a case-based reasoning system, a method of altering a case base having a plurality of exemplar cases; said method comprising generating a case which has not been encountered before;
retrieving a set of matching cases from said case base;
evaluating said case in response to (a) said set of matching cases, or (b) said set of matching cases and a reinforcement received from an environment;
modifying weights of said set of matching cases to reflect the accuracy or inaccuracy of the evaluation; and
selecting a limited set of cases in which the evaluation was inaccurate for addition into said case base which provides a preferred model of said environment.

5,852,815

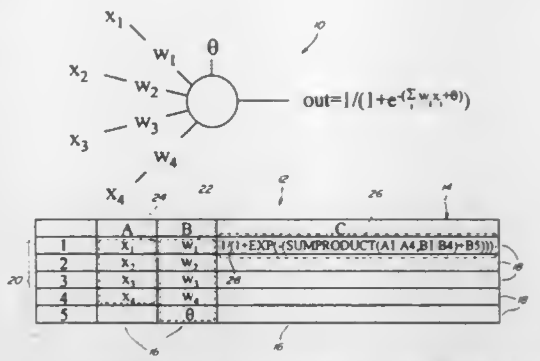
NEURAL NETWORK BASED PROTOTYPING SYSTEM AND METHOD

Stephen L. Thaler, 12906 Autumn View Dr., St. Louis, Mo. 63146

Division of Ser. No. 592,767, Jan. 26, 1996. This application May 15, 1998, Ser. No. 79,730

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 706—16 **13 Claims**


x_1
x_2
x_3
x_4
w_1
w_2
w_3
w_4
θ
10
$out=1/(1+e^{-(\Sigma_i w_i x_i+\theta)})$
24
22
12
26
14
A
B
C
1/(1+EXP(-(SUMPRODUCT(A1:A4,B1:B4)+B5)))
28
20
18
16

1. A neural network based prototyping system for prototyping construction of a device from a plurality of known components, wherein a desired relationship between inputs and outputs of the device being prototyped is known, comprising:
a computer operable to electronically generate a data space including a plurality of cells which are interrelatable through relative cell referencing,
a plurality of component neural networks, each component neural network trained within a knowledge domain of one of the known components so as to emulate a relationship between inputs and outputs to the known component, each component neural network implemented in said data space,
a prototyping neural network implemented in said data space and including at least one hidden layer having a plurality of neurons, at least one hidden layer neuron represented by one of said component neural networks, and an output layer having at least one neuron, each hidden layer neuron and each output layer neuron having at least one numeric weighting value associated therewith for weighting inputs thereto, and
means for adjusting at least some of said numeric weighting values so as to incorporate into said prototyping neural network a knowledge domain represented by the known desired relationship between inputs and outputs of the device being prototyped, so that, after said knowledge domain represented by the known desired relationship between inputs and outputs of the device being prototyped has been incorporated into said prototyping neural network, said numeric weighting values are indicative of how the known components should be interconnected in order to construct the device being prototyped.

5,852,816

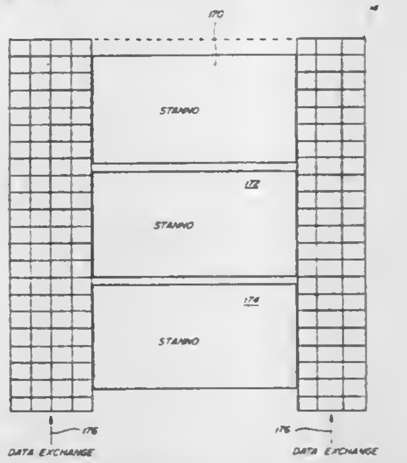
NEURAL NETWORK BASED DATABASE SCANNING SYSTEM

Stephen L. Thaler, 12906 Autumn View Dr., St. Louis, Mo. 63146

Division of Ser. No. 592,767, Jan. 26, 1996. This application May 15, 1998, Ser. No. 79,731

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 706—20 **2 Claims**



1. A database scanning pattern recognition device capable of scanning a database for any set of n data values having a predetermined pattern, comprising:
a first neural network including a knowledge domain defined by the predetermined pattern, said first neural network including n inputs and at least one output, said first neural network operable to output a predetermined output in response to a given set of n inputs if said given set of n inputs falls within said knowledge domain thereof,

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means for applying a series of sets of n data values from said database to said first neural network as inputs thereto.

5,852,817

INTELLIGENT CONTROL APPARATUS

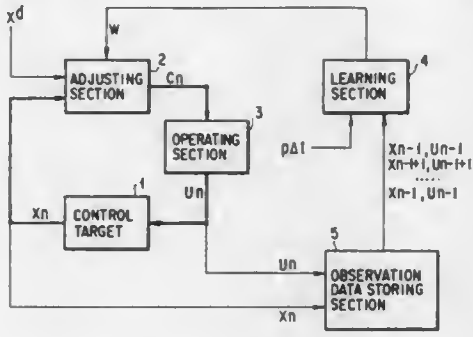
Makoto Kano, Urayasu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 199,014, Feb. 18, 1994, Pat. No. 5,566,275, which is a continuation-in-part of Ser. No. 929,111, Aug. 13, 1992, Pat. No. 5,428,559. This application Oct. 10, 1996, Ser. No. 732,966

Claims priority, application Japan, Aug. 14, 1991, 3-204494; Feb. 19, 1993, 5-030580; Oct. 13, 1995, 7-265086

Int. Cl.^{6} G06F *15/46;15/18*

U.S. Cl. 706—23 **38 Claims**



1. A control apparatus for controlling a control amount of a control target by changing an operating amount which is supplied to the control target, comprising:

adjusting means for calculating an adjustment signal in accordance with the control amount measured by said control target and a target control amount;

operating means for transmitting an operating amount to said control target in accordance with the adjustment signal calculated by said adjusting means;

observation data storing means for storing observation data having control amounts and operating amounts observed previously; and

learning means for learning internal parameters for said adjusting means in accordance with response time taken for the control target from input of the operating amount from said operating means to said control target to appearance of an influence of the operating amount on the control amount and observation data stored in said observation data storing means.

5,852,818

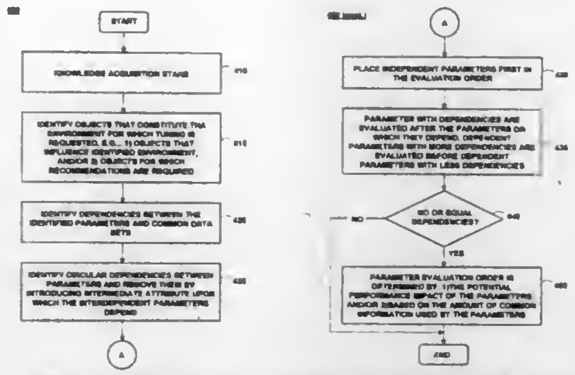
NON-RECURSIVE METHOD FOR PARAMETER EVALUATION WITHIN AN INFORMATION MANAGEMENT SYSTEM

Todd Guay; Gregory Smith; Geoffrey Wilson, all of Nashua; Gaylen Royal, Bedford, and Jonathan Riel, Nashua, all of N.H., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Dec. 23, 1996, Ser. No. 772,298

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—1 **24 Claims**


START
KNOWLEDGE ACQUISITION STAGE
IDENTIFY OBJECTS THAT CONSTITUTE THE ENVIRONMENT FOR WHICH TUNING IS REQUESTED, E.G., 1) OBJECTS THAT INFLUENCE IDENTIFIED ENVIRONMENT, AND/OR 2) OBJECTS FOR WHICH RECOMMENDATIONS ARE REQUIRED
IDENTIFY DEPENDENCIES BETWEEN THE IDENTIFIED PARAMETERS AND COMMON DATA SETS
IDENTIFY CIRCULAR DEPENDENCIES BETWEEN PARAMETERS AND REMOVE THEM BY INTRODUCING INTERMEDIATE ATTRIBUTE UPON WHICH THE INTERDEPENDENT PARAMETERS DEPEND
A
A
PLACE INDEPENDENT PARAMETERS FIRST IN THE EVALUATION ORDER
PARAMETER WITH DEPENDENCIES ARE EVALUATED AFTER THE PARAMETERS ON WHICH THEY DEPEND. DEPENDENT PARAMETERS WITH MORE DEPENDENCIES ARE EVALUATED BEFORE DEPENDENT PARAMETERS WITH LESS DEPENDENCIES
NO OR EQUAL DEPENDENCIES?
NO
YES
PARAMETER EVALUATION ORDER IS DETERMINED BY 1)THE POTENTIAL PERFORMANCE IMPACT OF THE PARAMETERS AND/OR 2)BASED ON THE AMOUNT OF COMMON INFORMATION USED BY THE PARAMETERS
END

1. In a relational database management system having a processor coupled to a bus and a computer readable memory unit coupled to said bus, a method of performance tuning, said method comprising the steps of:

a) automatically generating a non-recursive parameter evaluation sequence from said computer readable memory unit, said non-recursive parameter evaluation sequence containing rules for evaluating a plurality of parameters which adjust resources within a database environment wherein parameter dependencies exist within parameters of said plurality of parameters, said step a) comprising the steps of:

removing circular dependencies within said plurality of parameters; and

ordering said plurality of parameters into said non-recursive evaluation sequence by placing independent parameters first and placing dependent parameters following parameters on which said dependent parameters depend wherein parameters are placed higher in said non-recursive parameter evaluation sequence based on the number of parameters that are data dependent on said parameters;

b) evaluating said plurality of parameters using said non-recursive parameter evaluation sequence to determine a set of recommended values for said plurality of parameters, said step of evaluating performed in a single non-recursive evaluation path; and

c) performance tuning said database environment by applying said set of recommended values to said plurality of parameters.

5,852,819

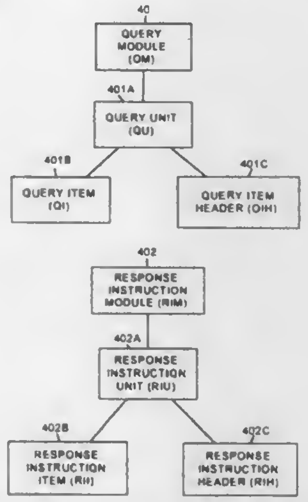
FLEXIBLE, MODULAR ELECTRONIC ELEMENT PATTERNING METHOD AND APPARATUS FOR COMPILING, PROCESSING, TRANSMITTING, AND REPORTING DATA AND INFORMATION

Stephen E. Beller, 130 Hastings Ave., Croton on Hudson, N.Y. 10520

Filed Jan. 30, 1997, Ser. No. 790,549

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—1 **19 Claims**


40
QUERY MODULE (QM)
401A
QUERY UNIT (QU)
401B
QUERY ITEM (QI)
401C
QUERY ITEM HEADER (QIH)
402
RESPONSE INSTRUCTION MODULE (RIM)
402A
RESPONSE INSTRUCTION UNIT (RIU)
402B
RESPONSE INSTRUCTION ITEM (RII)
402C
RESPONSE INSTRUCTION HEADER (RIH)

1. An apparatus with a modular structure for acquiring, storing, analyzing, integrating, organizing, transmitting, and reporting information and/or data and for presenting the information and/or data as digital signals, comprising:

(a) an electronic execution means providing control over said apparatus via instructions from at least one algorithm, stored in at least one file, comprised of at least one of computer programming code, macros, functions, and formulas;

(b) a user input means for entering commands providing further control over said apparatus, and for entering said digital signals and algorithms into said apparatus;

(c) a memory means for maintaining said digital signals in electronic and/or magnetic form;

(d) a data and information compilation means for acquiring and storing said digital signals;

(e) a storage means for storing at least one of said digital signals and algorithms;

(f) at least one independent record file and/or at least one internal database file providing a means for storing and transmitting said information and/or data referring to a single entity or occurrence;

(g) at least one processing file providing a means for processing said digital signals;

(h) at least one portable report file providing a means for storing and transmitting said digital signals in report ready format;

(i) at least one report format file providing a means for structuring report formats and retrieving information and/or data from external sources;

(j) a presentation means for providing an indication of said operation of said apparatus and for displaying said reports; and

(k) an output means for outputting said reports;

whereby said modular structure provides a substantially flexible and efficient means by which to compile, process, transmit, and report data and information, including the ability to readily modify modules without disrupting the structure or content of the other modules; the ability to compile a multitude of data efficiently and with minimal sparseness and overhead; the ability to enter a multitude of data types in a single field; the ability to utilize independent record files with differing fields; the ability to track data and information longitudinally; the ability to integrate, analyze, and organize a multitude of data and information from a multitude of sources utilizing a multitude of algorithms and a multitude of data, information, and computer function and formula patterns; the ability to transmit raw and processed data and information in a substantially compact and efficient form; and the ability to generate, with substantial ease and flexibility, reports comprised of a multitude of formats and contents.

5,852,820

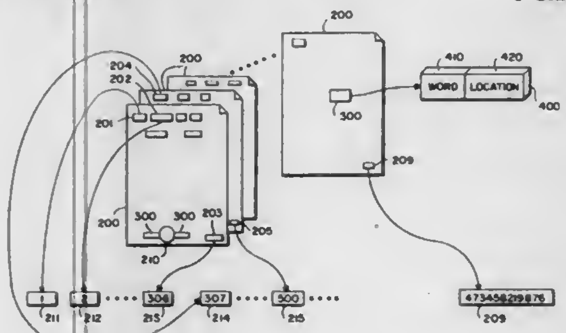
METHOD FOR OPTIMIZING ENTRIES FOR SEARCHING AN INDEX

Michael Burrows, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 9, 1996, Ser. No. 689,542

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—2 **1 Claim**



1. A method for optimizing an index of information stored as records of a database, comprising:

generating index entries in the index, each index entry including a word entry immediately followed by one or more location entries, each index entry encoding a unique portion of information of the records, and the location entries encoding occurrences of the unique portion of information;

processing a phrase of a query, the phrase corresponding to a concatenation of adjacent portions of indexed information;

recording a measure of the amount of time required to process the phrase of the query; and

if the measure exceeds a threshold, generating an optimized index entry where the word entry encodes the concatenation of the adjacent portions of information, and the location entry encodes the location of a first portion the concatenation.

5,852,821

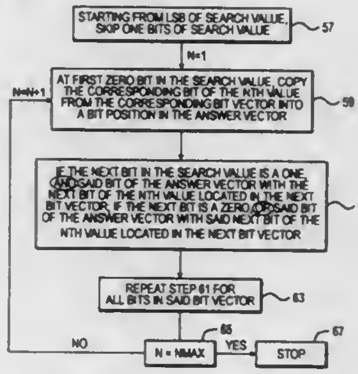
HIGH-SPEED DATA BASE QUERY METHOD AND APPARATUS

Yong Min Chen, Wellesley; Steven A. Kirk, Chelmsford; Peter W. White, Andover, and Clark D. French, Pepperell, all of Mass., assignors to Sybase, Inc., Emeryville, Calif.

Continuation-in-part of Ser. No. 627,060, Apr. 3, 1996, Pat. No. 5,649,181, which is a continuation of Ser. No. 48,637, Apr. 16, 1993, abandoned, and a continuation of Ser. No. 570,183, Dec. 11, 1995, Pat. No. 5,794,229, and a continuation of Ser. No. 820,864, Mar. 20, 1997. This application Jun. 25, 1997, Ser. No. 882,678

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—2 **30 Claims**


STARTING FROM LSB OF SEARCH VALUE, SKIP ONE BITS OF SEARCH VALUE
57
N=1
AT FIRST ZERO BIT IN THE SEARCH VALUE, COPY THE CORRESPONDING BIT OF THE NTH VALUE FROM THE CORRESPONDING BIT VECTOR INTO A BIT POSITION IN THE ANSWER VECTOR
59
N=N+1
IF THE NEXT BIT IN THE SEARCH VALUE IS A ONE, AND SAID BIT OF THE ANSWER VECTOR WITH THE NEXT BIT OF THE NTH VALUE LOCATED IN THE NEXT BIT VECTOR; IF THE NEXT BIT IS A ZERO, OR SAID BIT OF THE ANSWER VECTOR WITH SAID NEXT BIT OF THE NTH VALUE LOCATED IN THE NEXT BIT VECTOR
61
REPEAT STEP 61 FOR ALL BITS IN SAID BIT VECTOR
63
65
NO
N = NMAX
YES
STOP
67

1. In a database system for representing information in database tables and for retrieving information from database tables in response to database queries, each database table comprising data records storing information categorized into one or more database fields, each database field storing information in a particular data type, a method for optimizing database range queries, the method comprising:

(a) receiving a database range query having a query condition which specifies selection of data records satisfying a particular range;

(b) if the query condition specifies selection of values of a particular database field of the data records which are less than or equal to a maximum key value, performing substeps of:

(i) if the maximum key value represents the maximum value possible for the particular data type of the particular database field, creating a result set indicating that all data records have values for the particular database field which satisfy the query condition, otherwise

(ii) incrementing the maximum key value by one and creating a result set indicating those data records having values for the particular database field which are less than the incremented maximum key value; and

(c) if the query condition specifies selection of values of a particular database field of the data records which are greater than or equal to a minimum key value, performing substeps of:

(i) if the minimum key value represents the minimum value possible for the particular data type of the particular database field, creating a result set indicating that all data records have values for the particular database field which satisfy the query condition, otherwise

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(ii) decrementing the minimum key value by one and creating a result set indicating those data records having values for the particular database field which are greater than the decremented minimum key value.

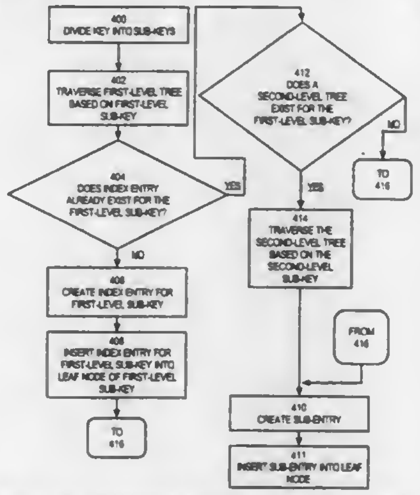
5,852,822

INDEX-ONLY TABLES WITH NESTED GROUP KEYS

Jagannathan Srinivasan, Nashua; Samuel DeFazio, Hollis; Jayanta Banerjee, Nashua; Chuck Freiwald, Milford, and Souripriya Das, Nashua, all of N.H., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Dec. 9, 1996, Ser. No. 764,112
Int. Cl.^{6} G06F *17/00*

U.S. Cl. 707—4 **20 Claims**


400 DIVIDE KEY INTO SUB-KEYS
402 TRAVERSE FIRST-LEVEL TREE BASED ON FIRST-LEVEL SUB-KEY
404 DOES INDEX ENTRY ALREADY EXIST FOR THE FIRST-LEVEL SUB-KEY?
YES
NO
408 CREATE INDEX ENTRY FOR FIRST-LEVEL SUB-KEY
408 INSERT INDEX ENTRY FOR FIRST-LEVEL SUB-KEY INTO LEAF NODE OF FIRST-LEVEL SUB-KEY
TO 416
412 DOES A SECOND-LEVEL TREE EXIST FOR THE FIRST-LEVEL SUB-KEY?
NO
TO 416
YES
414 TRAVERSE THE SECOND-LEVEL TREE BASED ON THE SECOND-LEVEL SUB-KEY
FROM 416
410 CREATE SUB-ENTRY
411 INSERT SUB-ENTRY INTO LEAF NODE

1. A method for building a multiple-level index on a key, the method comprising the steps of:

dividing said key into a plurality of sub-keys;

building a first-level data retrieval structure based on a first-level sub-key of said plurality of sub-keys, said first-level data retrieval structure including an index entry associated with a particular first-level sub-key value; and

building a second-level data retrieval structure for said particular first-level sub-key value, said second-level data retrieval structure being built on a second-level sub-key of said plurality of sub-keys; and

establishing a link between said index entry associated with said particular first-level sub-key value and said second-level data retrieval structure.

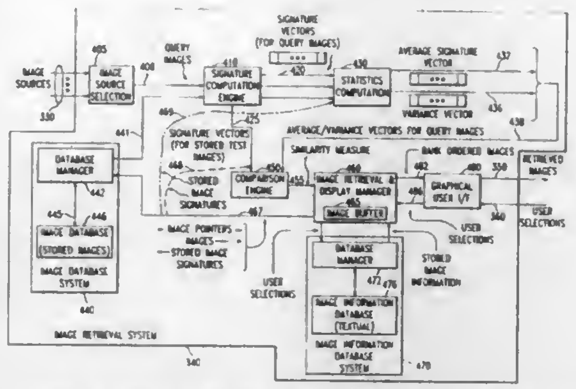
5,852,823

IMAGE CLASSIFICATION AND RETRIEVAL SYSTEM USING A QUERY-BY-EXAMPLE PARADIGM

Jeremy S. De Bonet, Cambridge, Mass., assignor to Microsoft, Redmond, Wash.

Filed Oct. 16, 1996, Ser. No. 732,615
Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—6 **96 Claims**



1. A system, responsive to a query image set, for retrieving, from a stored database, a desired image that is visually similar to the image set, said set containing at least one query image, said system comprising:

an image database having stored images therein;

a signature generator, responsive to an input image and having three successive convolution filters, for producing a signature for the input image, the signature containing a numeric measure of each of a plurality of pre-defined characteristics of the input image; wherein the signature generator, in response to the query image set, generates a corresponding signature for each image in the query image set, and, in response to a test image accessed from the stored database, generates a corresponding test signature;

a statistics generator, responsive to the signature for each image in the query image set, for providing a separate pre-defined statistical measure, for each of the pre-defined characteristics, that represents variability of said each pre-defined characteristic across all images in the query image set;

a image database manager, operative in conjunction with the image database, for retrieving successive ones of a plurality of stored images from the database and for routing each one of the plurality of successive images as the test image to the signature generator so as to generate a plurality of corresponding test signatures;

a comparator for comparing, across all of the pre-defined characteristics, the statistical measure for each of the pre-defined characteristics against a corresponding numeric measure in each one of the test signatures so as to yield a similarity measure, the similarity measure for said one of the test images being reflective of a degree of visual similarity between the one test image and the query image set; and

a manager, responsive to the similarity measure for each of the test images and operative in conjunction with the image database manager, for selecting at least one of the test images having a highest relative similarity measure as a retrieved image and providing the retrieved image as output.

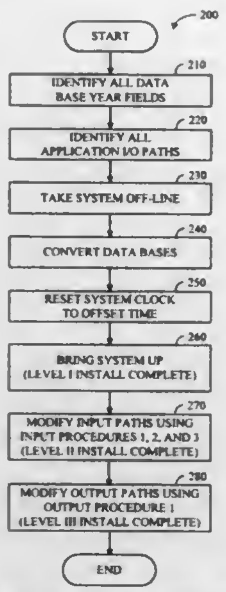
5,852,824

APPARATUS AND METHOD FOR PROCESSING YEAR-DATE DATA IN COMPUTER SYSTEMS

Roger W. Brown, 8521 E. McDowell Rd., Apt. #142, Scottsdale, Ariz. 85257

Filed May 22, 1997, Ser. No. 861,557
Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—6 **16 Claims**


START
200
210 IDENTIFY ALL DATA BASE YEAR FIELDS
220 IDENTIFY ALL APPLICATION I/O PATHS
230 TAKE SYSTEM OFF-LINE
240 CONVERT DATA BASES
250 RESET SYSTEM CLOCK TO OFFSET TIME
260 BRING SYSTEM UP (LEVEL I INSTALL COMPLETE)
270 MODIFY INPUT PATHS USING INPUT PROCEDURES 1, 2, AND 3 (LEVEL II INSTALL COMPLETE)
280 MODIFY OUTPUT PATHS USING OUTPUT PROCEDURE 1 (LEVEL III INSTALL COMPLETE)
END

1. An apparatus for processing year-date data in a computer system, the apparatus comprising:

a CPU;

a bus coupled to the CPU;

a memory coupled to the bus;

a system clock coupled to the bus, wherein the system clock is set to an offset time wherein the offset time is a time other than the actual time;

at least one application program stored in the memory and being executed by the CPU;

a least one database file stored in the memory containing records with year-date data with years being represented by at least one of two-digit, three-digit, or four-digit year-date data representations; and

a mechanism for converting the year-date data in the database file to a two-digit year-date data representation wherein each of the converted two-digit year-date data representations can include both positive and negative numbers which represent a 199-year span including dates from up to three centuries and wherein the converted two-digit year-date data representations are processed by the at least one application program without changing the at least one application program.

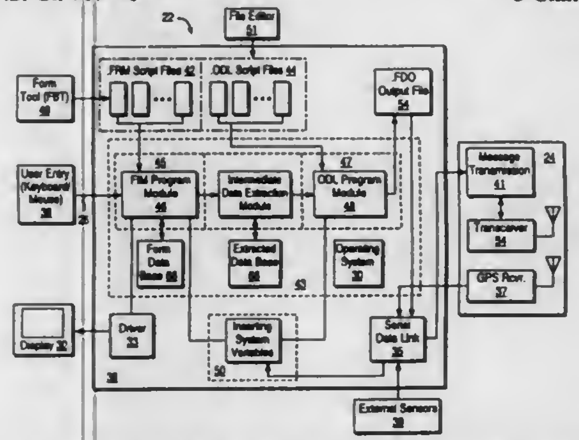
5,852,825

FORM DATA MESSAGE FORMATTING METHOD, PROGRAM AND SYSTEM

Phillip D. Winslow, Hayward, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation of Ser. No. 349,409, Dec. 5, 1994, abandoned. This application Aug. 11, 1997, Ser. No. 909,464
Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—6 **5 Claims**



1. A computer program product provided on a computer readable medium having a plurality of computer readable program instructions recorded thereon for controlling the entry and display of data elements on an MES system, and subsequently reformatting form data elements into message data elements to be transmitted, said computer program product comprising:

instruction means for sequentially interpreting and executing data structures from a form data file, for controlling the display of a plurality of form data elements;

instruction means for displaying the plurality of form data elements;

instruction means for storing the plurality of form data elements in a form data base;

instruction means for receiving user entered data (UED) for altering at least one of the respective form data elements;

instruction means for updating the respective altered form data elements in the form data base until the user data entry is complete;

instruction means for successively interpreting and executing a sequence of output description language (ODL) instructions from an output description language control file (.ODL file), the ODL instructions defining operations on at least one of the stored form data elements;

instruction means for creating a second sequence of reformatted message data elements responsive to the interpreted and executed .ODL instructions and the values of the form data elements;

instruction means for signaling a communication device to transmit the reformatted message data elements to a remote receiving site,

whereby the second sequence of reformatted message data elements is transmitted in a desired format.

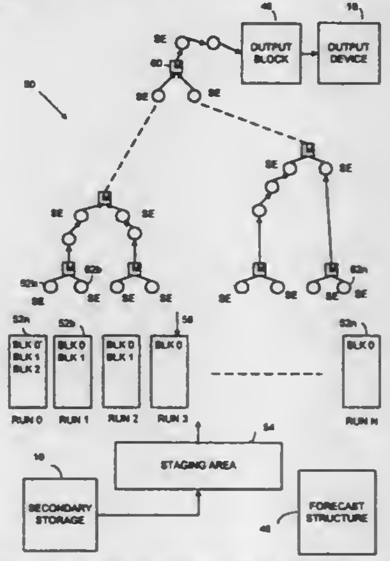
5,852,826

PARALLEL MERGE SORT METHOD AND APPARATUS

Gary Graunke, Beaverton; Leonard D. Shapiro, Portland, and Sujata Ramamoorthy, Beaverton, all of Oreg., assignors to Sequent Computer Systems, Inc., Beaverton, Oreg.

Filed Jan. 26, 1996, Ser. No. 592,012
Int. Cl.^{6} G06F *7/16*

U.S. Cl. 707—7 **29 Claims**



1. A method of sorting records with a multiprocessor computer system having memory and a set of processes running in parallel, comprising:

a) repeating the following steps a.1–a.5 until the records to be sorted are read from an input device and stored in secondary storage:
  a.1) reading blocks of records from the input device and writing the blocks to memory;
  a.2) sorting the records within each block simultaneously to create a run;
  a.3) constructing a merge tree in memory for merging the runs into an intermediate run that is output by the tree, the merge tree having nodes where two runs are merged to form another run;
  a.4) simultaneously merging the runs throughout the merge tree to form the intermediate run; and
  a.5) writing the intermediate run to secondary storage;

b) after the records to be sorted are stored in intermediate runs in secondary storage:
  b.1) determining an order in which run blocks of the intermediate runs will be read from secondary storage;
  b.2) constructing a merge tree for merging the run blocks into a complete run that is output by the tree, the merge tree having nodes where two runs are merged to form another run;
  b.3) reading the run blocks from the secondary storage and writing the run blocks to memory in the determined order for merging in the merge tree;
  b.4) simultaneously merging runs throughout the merge tree to form the complete run; and
  b.5) writing the complete run to an output device.

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PATENTS

GRANTED December 22, 1998

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D25—007	D403,078

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DESIGNS

DECEMBER 22, 1998

402,785

HANDKERCHIEF ARTICLE FOR WEAR ON THE BODY

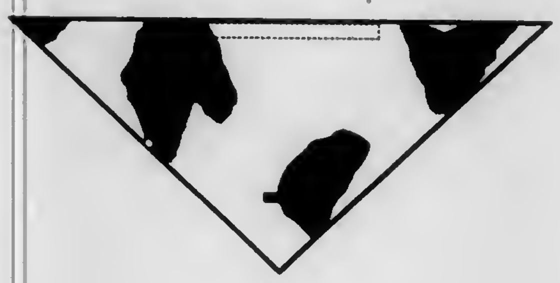
Mark S. Franzreb, Simpsonville, S.C., assignor to B-BRO LLC, Greenville, S.C.

Continuation-in-part of Ser. No. 29,296, Oct. 3, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 49,112

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D2—500



402,786

SPORTS PANTS

Takako Fujii, and Risa Saka, both of Kyoto, Japan, assignors to Wacoal Corporation, Japan

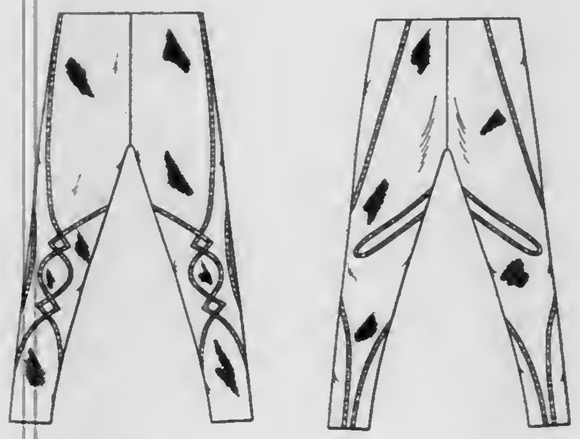
Filed Sep. 19, 1997, Ser. No. 76,994

Claims priority, application Japan, Mar. 21, 1997, 098207

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—731



402,787

JACKET FOR SPORTSMEN

Andrew R. E. Kerr, 524 Hagley Road West, Quinton, Birmingham, United Kingdom

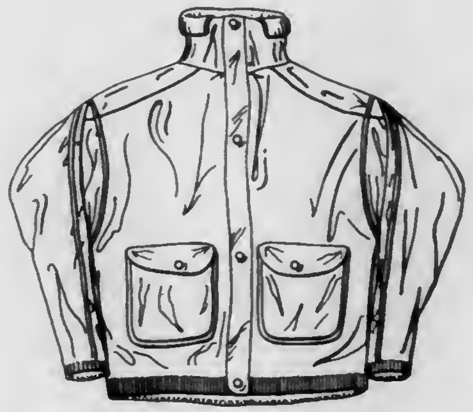
Filed Sep. 8, 1997, Ser. No. 76,175

Claims priority, application United Kingdom, Mar. 14, 1997, 2064122

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—837



402,788

POLICE UTILITY VEST

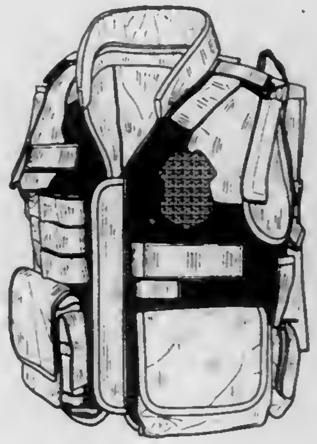
William Franklin Blankenship, Jr., P.O. Box 868, Mentone, Calif. 92359-0868

Filed Feb. 28, 1997, Ser. No. 68,944

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—839



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402,789

CHEESE STADIUM SEAT

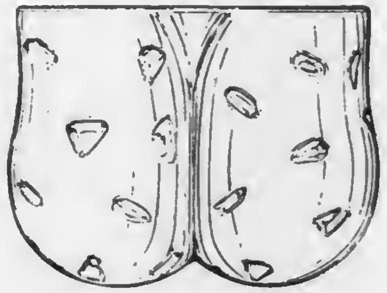
Dennis J Detrie, 2926 Maple Grove Rd., Suamico, Wis. 54173

Filed Aug. 29, 1997, Ser. No. 76,011

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—860



402,790

ROLL OF DISPOSABLE BABY BIBS

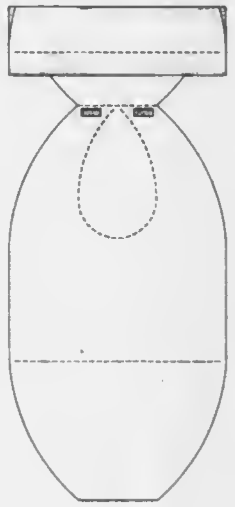
Shari M. Tennier-Wilson, 667 Byngmount Ave., Mississauga, Ontario, Canada, L5G 1R3

Filed Jan. 23, 1997, Ser. No. 65,189

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—861



402,791

INSTRUMENT METEOROLOGICAL CONDITIONS SIMULATION HEADWEAR

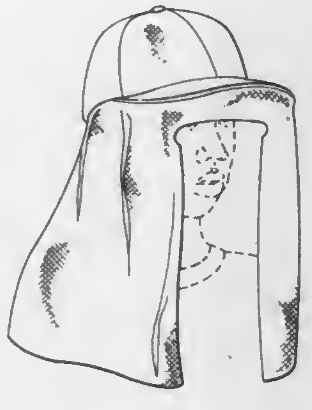
Samuel Mishal, 3219-M Post Woods Dr., NW., Atlanta, Ga. 30339

Filed Sep. 4, 1997, Ser. No. 76,115

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—879



402,792

SHOE

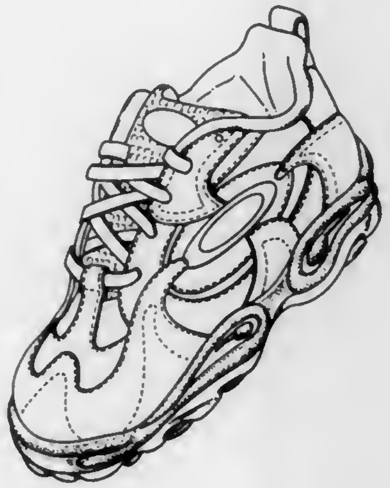
Marc R. Loverin, Arlington, Mass., assignor to SRL, Inc., Wilmington, Del.

Filed Feb. 10, 1997, Ser. No. 66,270

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—902



402,793

SHOE

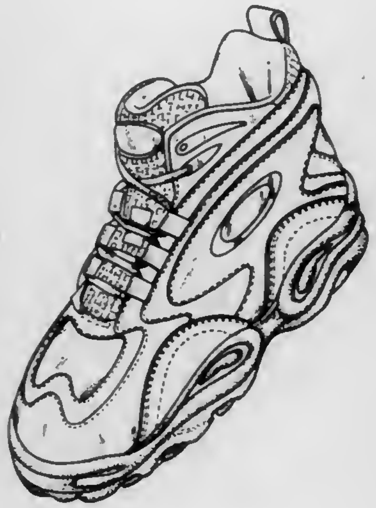
Marc R. Loverin, Arlington, Mass., assignor to SRL, Inc., Wilmington, Del.

Filed Feb. 10, 1997, Ser. No. 66,271

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—902



402,794

PAIR OF REVERSED CONTRAST SHOES

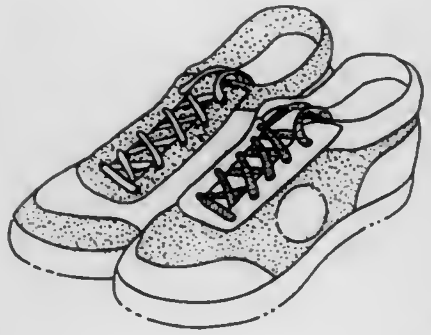
Delbert R. Spriggs, 1129 NW. 102nd St., Oklahoma City, Okla. 73114

Filed May 23, 1997, Ser. No. 71,222

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—907



402,795

SHOE UPPER AND SOLE PERIPHERY

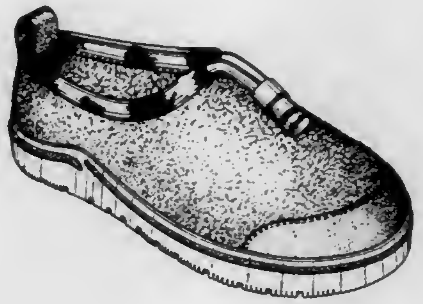
Laurie C. Moll, Haverhill, and Hal B. Parton, Sharon, both of Mass., assignors to Bennett Importing, Inc., Newton, Mass.

Filed Jul. 25, 1997, Ser. No. 74,131

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—923



402,796

SLIPPER FOR REHABILITATION EXERCISERS

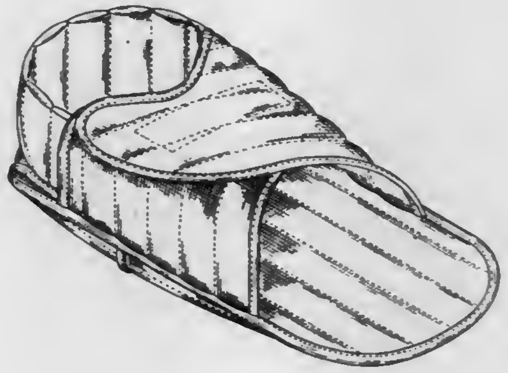
Mario C. Garcia, and Carol A. Garcia, both of West St. Paul, Minn., assignors to Prevent Products, Inc., West St. Paul, Minn.

Filed Jun. 30, 1997, Ser. No. 72,772

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—943

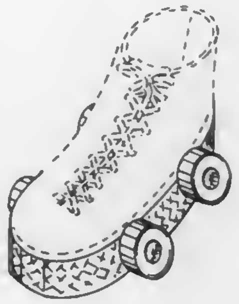


402,797
SOLE FOR A TENNIS SHOE

Donald R. Kracke, 39 Cresta Verde Dr., Rolling Hills Estates, Calif. 90274

Filed Dec. 3, 1997, Ser. No. 80,364
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—948

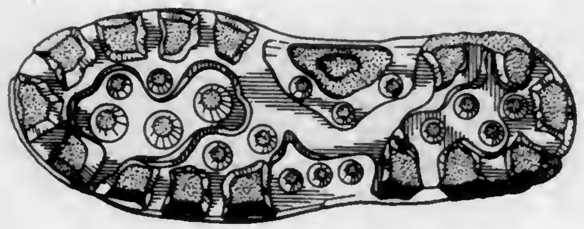


402,798
SHOE SOLE

Denis Norton, and Diana A. Wurfbain, both of Athens, Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio

Filed Feb. 24, 1998, Ser. No. 84,098
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—954

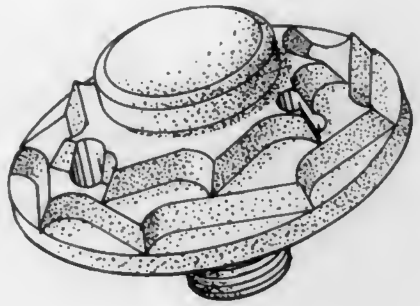


402,799
GOLF SHOE CLEAT

Kenneth Santos, 140 High St., Apt. 2R, Taunton, Mass. 02780, and Joel A. Singer, 175-1 Centre St. #906, Quincy, Mass. 02169

Filed Jul. 24, 1997, Ser. No. 73,943
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—962

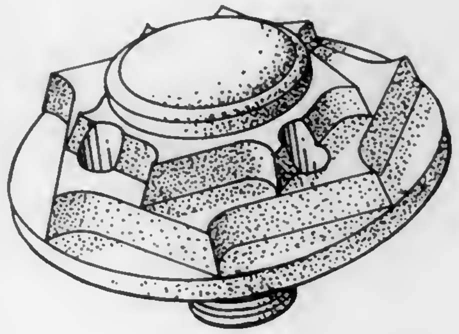


402,800
GOLF SHOE CLEAT

Kenneth Santos, 140 High St., Apt. 2R, Taunton, Mass. 02780, and Joel A. Singer, 175-1 Centre St. #906, Quincy, Mass. 02169

Filed Jul. 24, 1997, Ser. No. 73,946
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—962

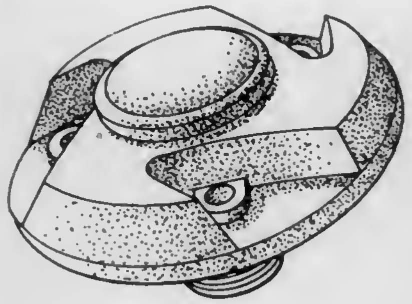


402,801
GOLF SHOE CLEAT

Kenneth Santos, 140 High St., Apt. 2R, Taunton, Mass. 02780, and Joel A. Singer, 175-1 Centre St. #906, Quincy, Mass. 02169

Filed Jul. 24, 1997, Ser. No. 73,958
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—962

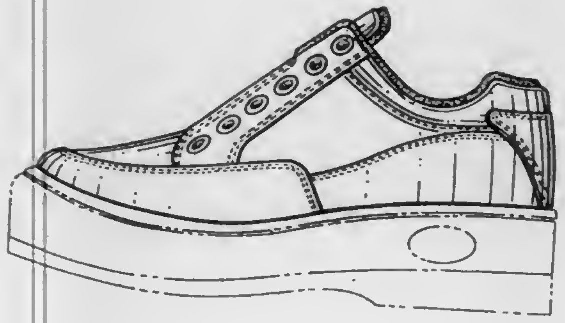


402,802
SHOE UPPER

Michelle Kelchak, Manhattan Beach, Calif., assignor to Skechers U.S.A., Inc., Manhattan Beach, Calif.

Filed Feb. 11, 1998, Ser. No. 83,572
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—969

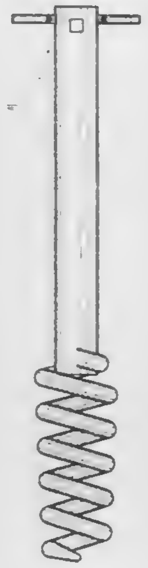


402,803
BEACH UMBRELLA ANCHOR

Steve Goldberg, 17313 MacDuff Ave., Olney, Md. 20832, and Karen Koenick, 505 Whitcliff Ct., Gaithersburg, Md. 20878

Filed Jun. 26, 1997, Ser. No. 72,957
Term of patent 14 years
LOC (6) Cl. 03 - *03*

U.S. Cl. D3—12

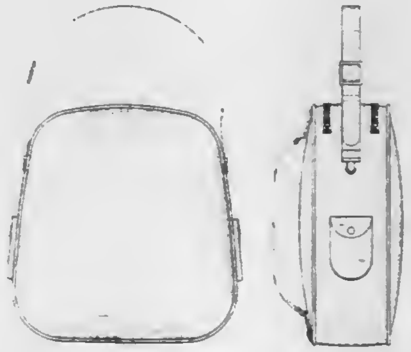


402,804
ADJUSTABLE BACK-PACK

Richard E Ramirez, 31770 Alvarado Blvd. #8, Union City, Calif. 94587

Filed Jul. 21, 1997, Ser. No. 73,306
Term of patent 14 years
LOC (6) Cl. 03 - *01*

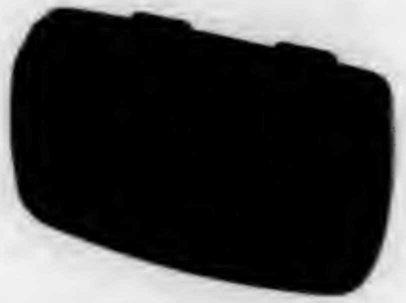
U.S. Cl. D3—217



402,805

PAGER CASE

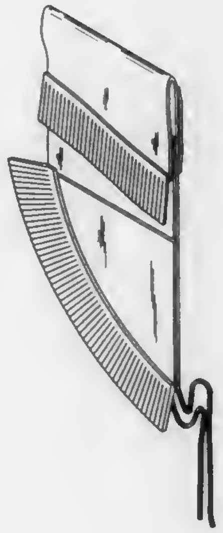
Katsumi Nagano; Hiroki Nishii; Masao Tamura, and Toshiro Iizuka, all of Kanagawa, Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Japan
Filed Mar. 7, 1997, Ser. No. 67,564
Claims priority, application Japan, Sep. 12, 1996, 8-27422
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—218



402,806

HOLSTER PURSE

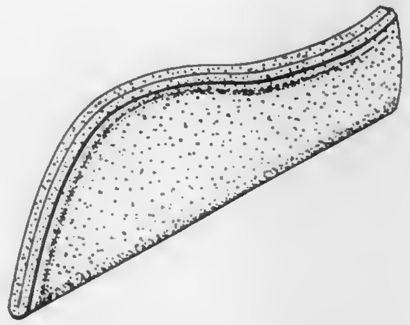
James E. MacGregor, Tampa, Fla., assignor to Lori MacGregor, and James D. Magliulo, Tampa, Fla.
Filed Apr. 14, 1997, Ser. No. 69,188
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—226



402,807

PROTECTIVE COVER FOR FISHING ROD TIP

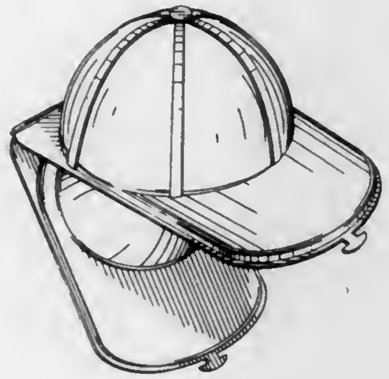
Thomas E. Brown, 5352 Kumole St., Kapaa, Hi. 96746
Filed Apr. 10, 1997, Ser. No. 69,092
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—260



402,808

CAP PROTECTOR AND DISPLAY DEVICE

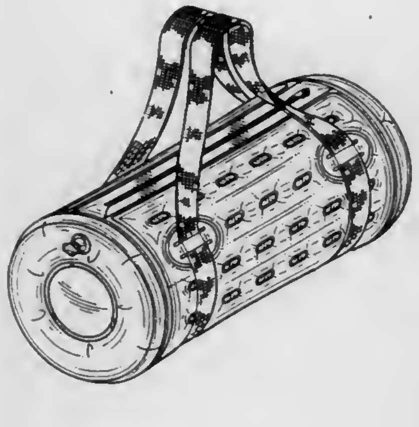
Steven G. Deloach, 5525 N. Camelback Canyon Dr., Phoenix, Ariz. 85018
Filed Sep. 23, 1997, Ser. No. 76,868
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—269



402,809

INFLATABLE CARRY BAG

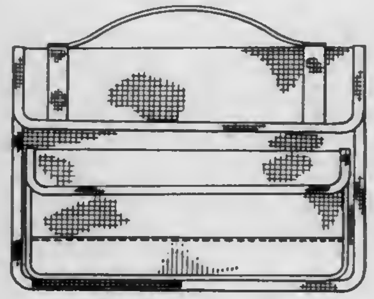
Russell H. Bauman, 21021 Devonshire Blvd. Suite 202, Chatsworth, Calif. 91311
Filed Nov. 25, 1997, Ser. No. 79,889
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—276



402,810

ELECTRICAL COMPONENT CASE WITH ACCESS OPENINGS

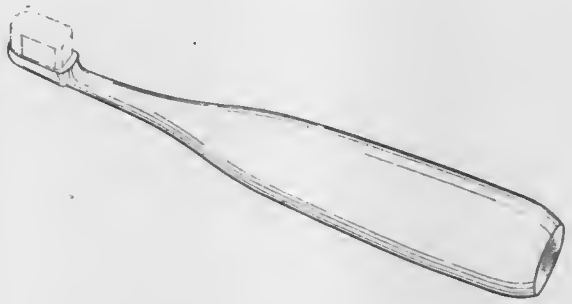
Kasidy W. Alves, Oxnard, Calif., assignor to Scosche Industries, Inc., Oxnard, Calif.
Filed Jul. 1, 1997, Ser. No. 72,841
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—289



402,811

ELECTRIC TOOTHBRUSH HEAD AND HANDLE UNIT

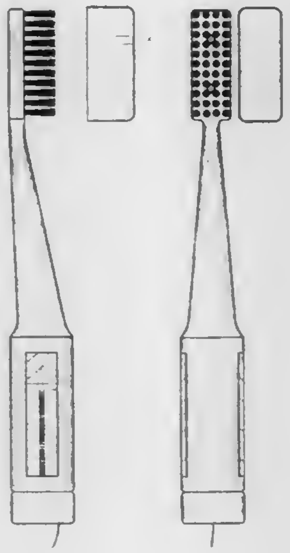
Benjamin H. Stansbury, Jr., Alexandria, Va., assignor to Pulse Innovations, Inc., Ontario, Canada
Continuation-in-part of Ser. No. 41,677, Jul. 21, 1995, abandoned. This application Jan. 2, 1996, Ser. No. 48,526
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—101



402,812

TOOTHPASTE DISPENSING TOOTHBRUSH WITH FLOSS DISPENSER AND CAP

Amy Goff, 7400 Bayou Paul Rd., Saint Gabriel, La. 70776
Filed Dec. 11, 1997, Ser. No. 80,520
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—114



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402,813

LANDSCAPE MIRROR

Larry D. Hazen, and Gary A. Huffstetler, both of Lenoir, N.C., assignors to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Aug. 28, 1997, Ser. No. 75,997
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—300

402,814

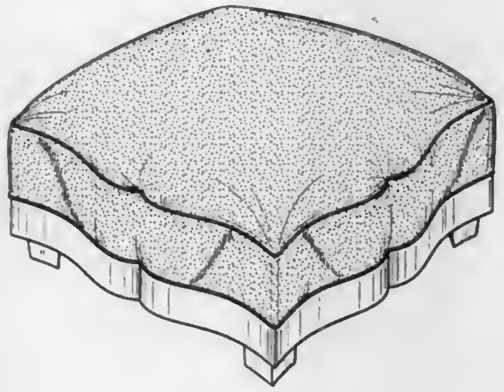
VERTICAL MIRROR

Larry D. Hazen, and Gary A. Huffstetler, both of Lenoir, N.C., assignors to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Aug. 28, 1997, Ser. No. 76,043
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—300

402,815

HASSOCK

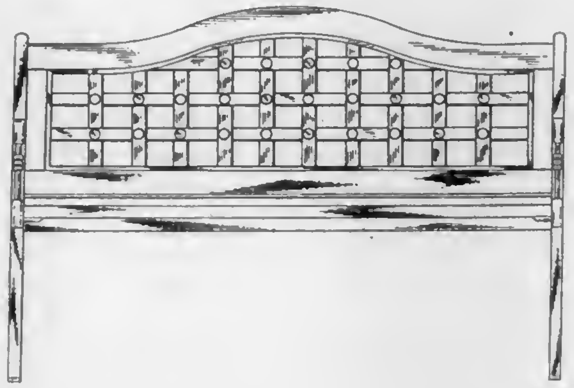
Don Silva, Emeryville, Calif., assignor to National Upholstering Company, Oakland, Calif.
Filed Aug. 5, 1997, Ser. No. 74,535
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349



402,816

STYLIZED BENCH

Chary Jeng, La Mirada, Calif., assignor to Berkeley Products, Inc, La Mirada, Calif.
Filed Jun. 27, 1996, Ser. No. 57,729
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



402,817

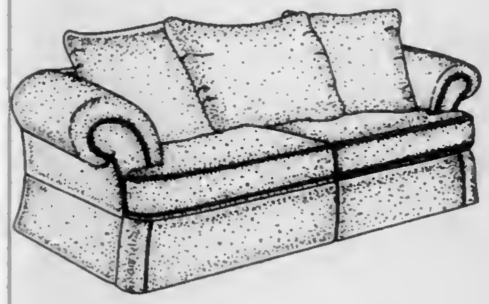
CHAIR

Moses Richard Schultz, 144 Hillcrest Rd., Barto, Pa. 19504
Filed Jul. 16, 1997, Ser. No. 73,728
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—374

402,818

SEAT

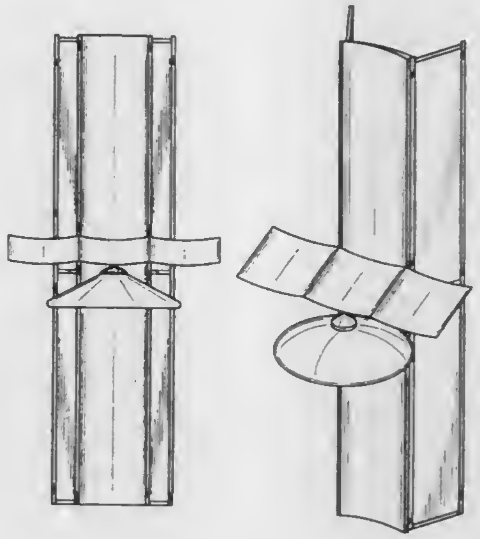
Robert Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc. (BenchCraft Division), High Point, N.C.
Filed Feb. 27, 1997, Ser. No. 67,853
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



402,819

DISPLAY UNIT

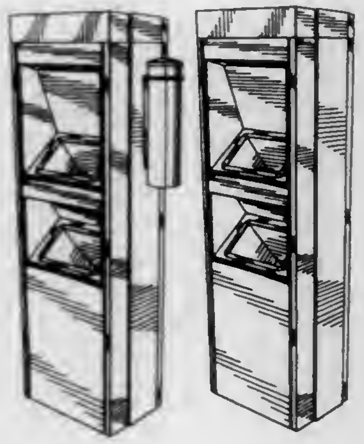
Daniel Weil, London, Great Britain, assignor to Swatch AG(Swatch SA) (Swatch Ltd.), Bienne, Switzerland
Filed Aug. 6, 1996, Ser. No. 58,025
Claims priority, application Hague Agreement, Feb. 6, 1996, DM/03545
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—396



402,820

GLASS CLEANING CENTER FOR HOLDING WATER AND SQUEEGEES

Jim Morison, Oshawa, and Paul Whittington, Thornhill, both of Canada, assignors to Gorrie Advertising Management Limited, Mississauga, Canada
Filed Nov. 20, 1995, Ser. No. 46,543
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—397



402,821

COMBINED TUB RACK AND CARDHOLDER

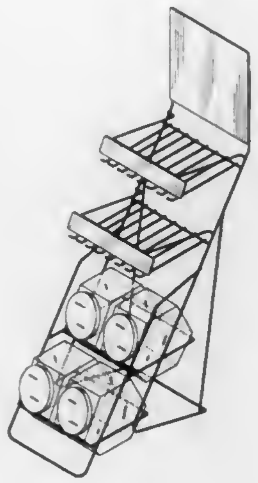
Burton Kozak, 1300 N. Lake Shore Dr., #28C, Chicago, Ill. 60610

Filed May 6, 1996, Ser. No. 54,031

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D6—397



402,822

POT PLANT HOLDER

Martyn Leslie Dawson, 6A Hawthorn Crescent, Stokes Valley, Wellington, New Zealand

Filed Aug. 20, 1997, Ser. No. 75,434

Claims priority, application New Zealand, Feb. 21, 1997, 28264

Term of patent 14 years

LOC (6) Cl. 06 - *06*

U.S. Cl. D6—404

402,823

DISPLAY AND SERVING CASE

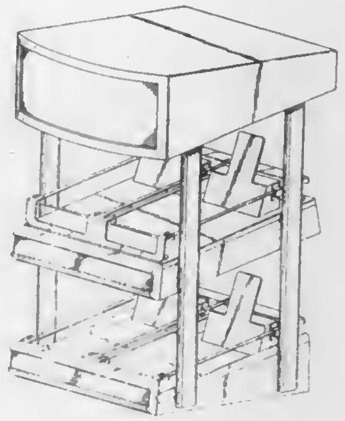
Robert H. Anderson, Blue Bell, Pa.; Stanley J. Jurgenburg, Los Angeles, Calif.; David C. Rolston, and Mark E. Gilpatric, both of Milwaukee, Wis., assignors to J & J Snack Foods Corp., Pennsauken, N.J.

Filed Dec. 18, 1997, Ser. No. 80,867

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—408



402,824

PODIUM

Mark Gareau, Alexandria, and Harb Singh, Gloucester, both of Canada, assignors to University of Ottawa, Ottawa, Canada

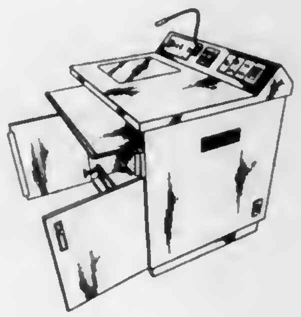
Filed Jan. 30, 1997, Ser. No. 68,788

Claims priority, application Canada, Sep. 13, 1996, 2057

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—419



402,825

ENTERTAINMENT UNIT AND WARDROBE

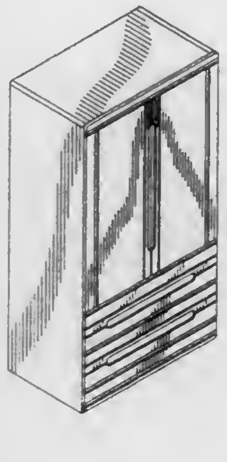
Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture, Ltd., Winnipeg, Canada

Filed Mar. 10, 1997, Ser. No. 67,493

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—439



402,826

PLUSH TOY DISPLAY STAND

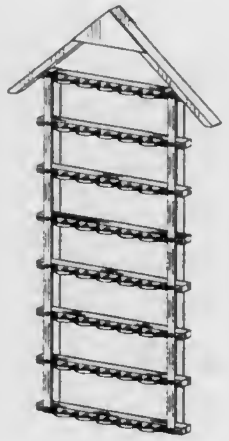
Randall J. Barkley, 2930 W. Parnell Ave. #2, Milwaukee, Wis. 53221

Filed Jan. 2, 1998, Ser. No. 81,453

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—450



402,827

SPECTACLE DISPLAY HOLDER

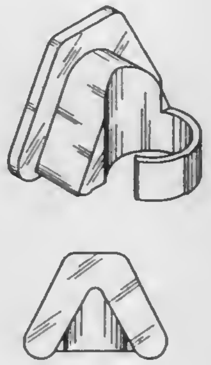
Jan S. Ennis, 16709 NE. 41st St., Redmond, Wash. 98052

Division of Ser. No. 23,869, Jun. 2, 1994, Pat. No. Des. 367,571, which is a continuation-in-part of Ser. No. 5,674, Mar. 8, 1993, Pat. No. Des. 351,955. This application Dec. 11, 1995, Ser. No. 47,687

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—466



402,828

TABLE

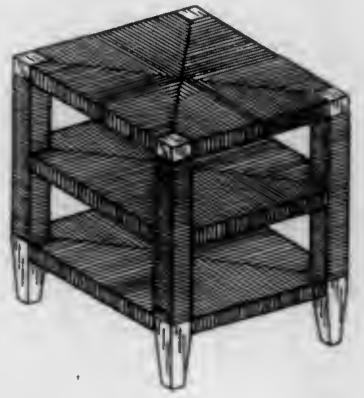
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.

Filed Mar. 13, 1997, Ser. No. 68,631

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—479



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402,829

MODULAR DISPLAY RACK

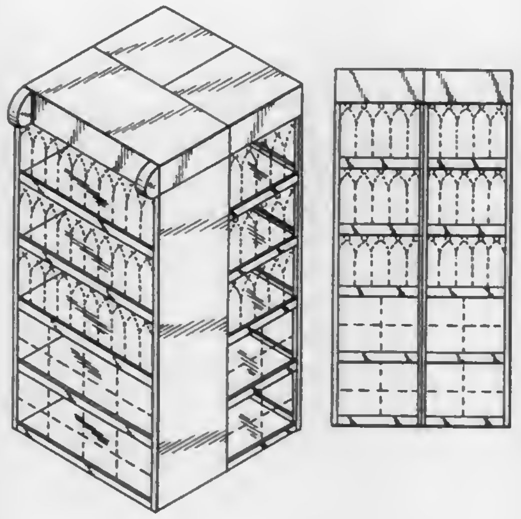
Richard Jay, Westport, Conn., assignor to Display Technologies, Inc., Whitestone, N.Y.

Filed Feb. 13, 1998, Ser. No. 83,648

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—479



402,830

TABLE

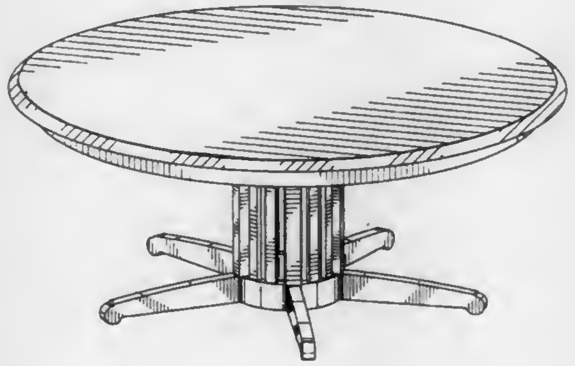
Richard R. Chalmers, Camden, Me., assignor to Imagineering, Inc., Rockland, Me.

Filed Feb. 5, 1998, Ser. No. 83,151

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—486



402,831

TABLE BASE

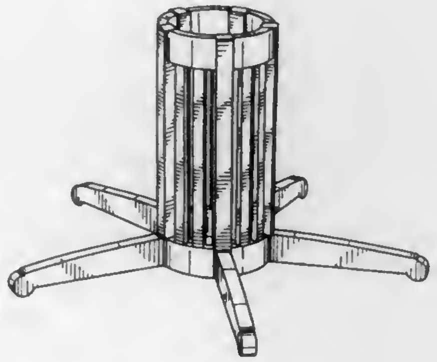
Richard R. Chalmers, Camden, Me., assignor to Imagineering, Inc., Rockland, Me.

Filed Feb. 5, 1998, Ser. No. 83,226

Term of patent 14 years

LOC (6) Cl. 06 - *03*

U.S. Cl. D6—498



402,832

HEAD REST FOR AN INTEGRATED CHILD CAR SEAT

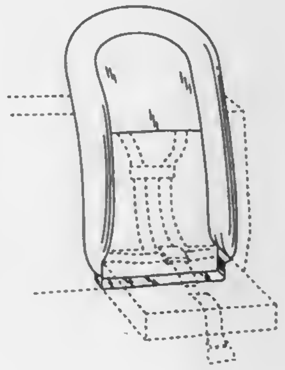
Teresa Lance, 32675 Winnemace Rd., Richwood, Ohio 43344

Filed Jun. 17, 1997, Ser. No. 72,428

Term of patent 14 years

LOC (6) Cl. 06 - *06*

U.S. Cl. D6—501



402,833

POSTER HEADBOARD

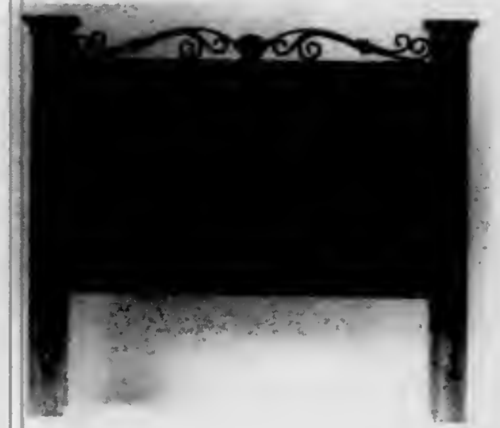
Larry D. Hazen, and Gary A. Huffstetler, both of Lenoir, N.C., assignors to Broyhill Furniture Industries, Inc., Lenoir, N.C.

Filed Aug. 28, 1997, Ser. No. 75,994

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—505



402,834

CONTOURED HEADBOARD

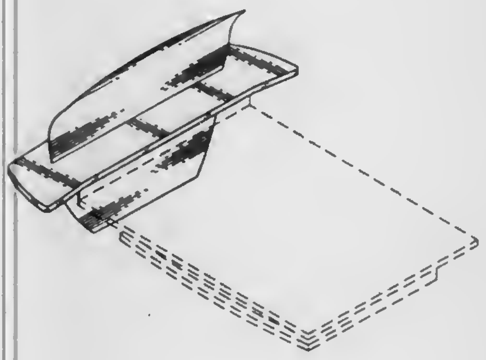
John Arbak, 702 Lakeside Ave. South, Seattle, Wash. 98144

Filed Dec. 22, 1997, Ser. No. 81,012

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—505



402,835

DISPLAY CASE

Roch Cyr, Montreal, and John Wardrope, Winnipeg, both of Canada, assignors to Imperial Tobacco Limited, Montreal, Canada

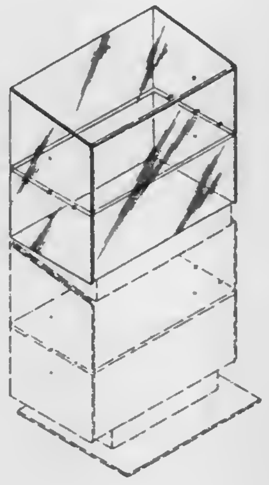
Filed Dec. 30, 1997, Ser. No. 81,310

Claims priority, application Canada, Nov. 4, 1997, 19972842

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—509



402,836

DESK ADAPTER FOR REMOVABLY MOUNTING A PORTABLE FILE STORAGE BOX

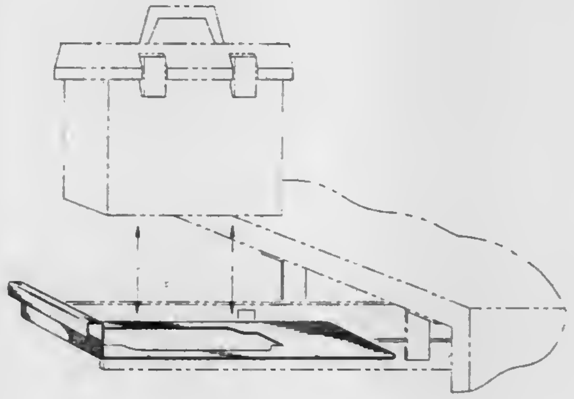
Jeffrey C. Waddell, Grand Prairie, Tex., assignor to Waddell Group, Inc., Grand Prairie, Tex.

Filed Oct. 6, 1997, Ser. No. 82,700

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—509



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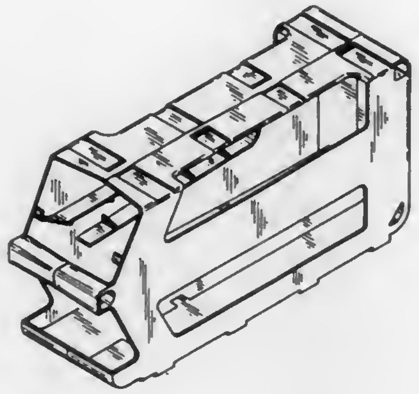
402,837
BEVERAGE CAN HOLDER

William A. Boire, Shorewood; Kim L. Olson, Chaska, and Douglas J. Hoffbeck, White Bear Lake, all of Minn., assignors to Emplast, Inc., Waconia, Minn.
Filed Nov. 19, 1997, Ser. No. 79,837
Term of patent 14 years
LOC (6) Cl. 06 - *99*

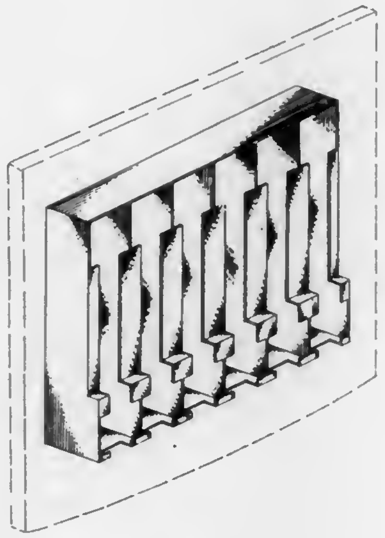
U.S. Cl. D6—515



402,838
BABY FOOD ORGANIZER

Larry J. Sherbet, 1815 Brown Rd., Starr, S.C. 29684
Filed Nov. 24, 1997, Ser. No. 80,079
Term of patent 14 years
LOC (6) Cl. 07 - *07*

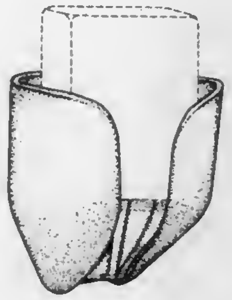
U.S. Cl. D6—515



402,839
COMBINED HOLDER FOR BAR SOAP AND LIQUID SOAP DISPENSERS

Anthony J. Bova, and Sher K. Malik, both of Stockton, Calif., assignors to Blue Magic Products, Inc., Stockton, Calif.
Filed May 8, 1997, Ser. No. 70,499
Term of patent 14 years
LOC (6) Cl. 23 - *02*

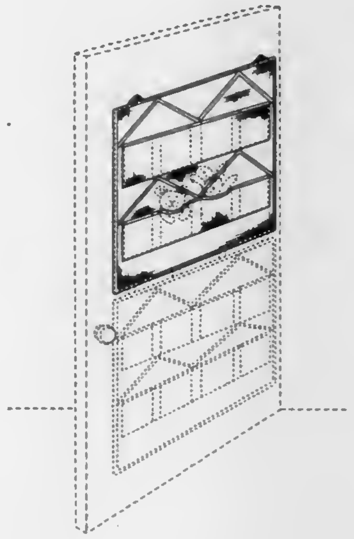
U.S. Cl. D6—540



402,840
CONVERTIBLE HANGING/CARRYING BAG

Sherry Servis, Bensalem, Pa., assignor to Tricks Are For Kids, Inc., Jobstown, N.J.
Filed May 28, 1997, Ser. No. 71,342
Term of patent 14 years
LOC (6) Cl. 06 - *04*

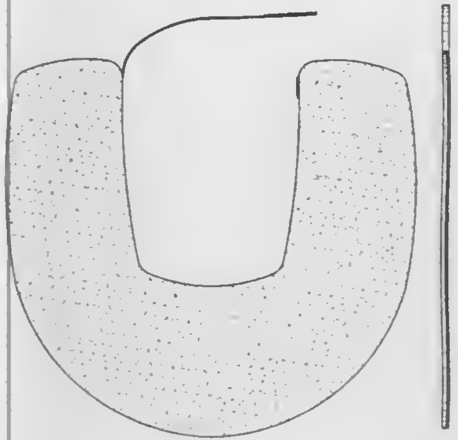
U.S. Cl. D6—553



402,841
SECURABLE BATHROOM RUG

Rosa L. Dobbs, 337 E. Airy St., Norristown, Pa. 19401
Filed Oct. 10, 1997, Ser. No. 77,974
Term of patent 14 years
LOC (6) Cl. 06 - *11*

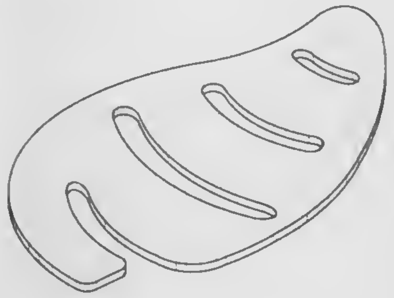
U.S. Cl. D6—583



402,842
SHELL APPLIQUE

Patty Flauto, Rocky River, and Mark Harvey, Lakewood, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 16, 1997, Ser. No. 64,972
Term of patent 14 years
LOC (6) Cl. 06 - *11*

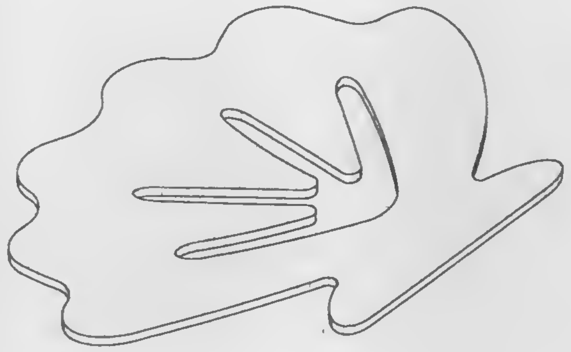
U.S. Cl. D6—584



402,843
SHELL APPLIQUE

Patty Flauto, Rocky River, and Mark Harvey, Lakewood, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 16, 1997, Ser. No. 64,974
Term of patent 14 years
LOC (6) Cl. 06 - *11*

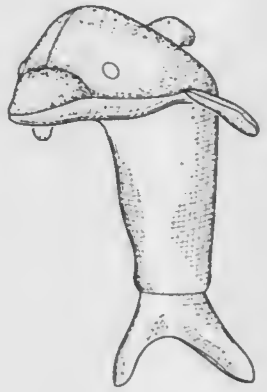
U.S. Cl. D6—584



402,844
AROMATHERAPY PILLOW

Lauren Rosenstadt, Bethesda, and Shi Lian Chen, Silver Spring, both of Md., assignors to HerbalAnimals, Inc., Bethesda, Md.
Filed Dec. 24, 1997, Ser. No. 81,201
Term of patent 14 years
LOC (6) Cl. 06 - *09*

U.S. Cl. D6—598



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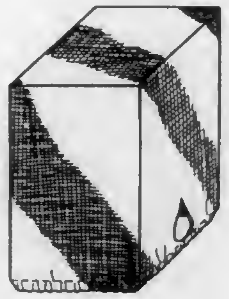
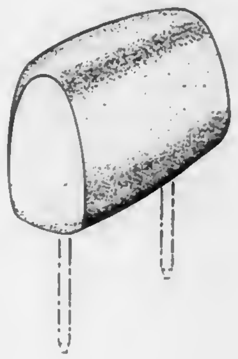
402,845
COVER FOR WATER DISPENSERS

Robert B. Hanzok, 19 Cooper Tomlinson Rd., Medford, N.J. 08055
Filed Jul. 25, 1996, Ser. No. 58,844
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—610



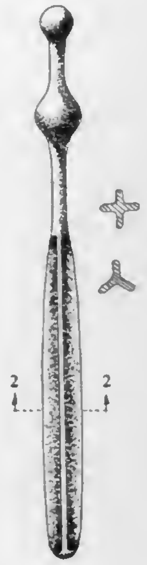
402,846
COVER FOR AUTOMOBILE HEADRESTS

Sandra Licata, 2 W. 65 Ter., and Philip Licata, 2 W. 6th Ter., both of Kansas City, Mo. 64113
Filed Jun. 20, 1997, Ser. No. 72,614
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—611



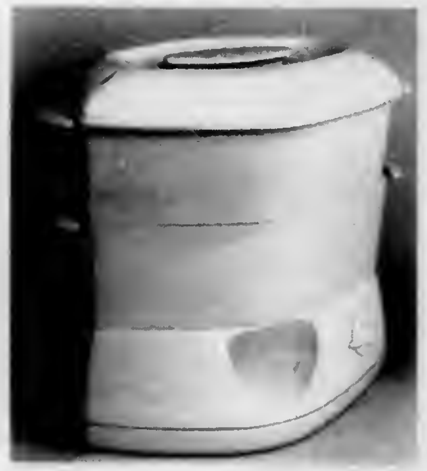
402,847
CARBOY STIRRING WAND

Benjamin C. Kinder, R.R. 3 Bernon Bridge, Pei, Canada, C0A2E0, assignor to Benjamin C. Kinder, Canada
Filed May 16, 1997, Ser. No. 70,805
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—688



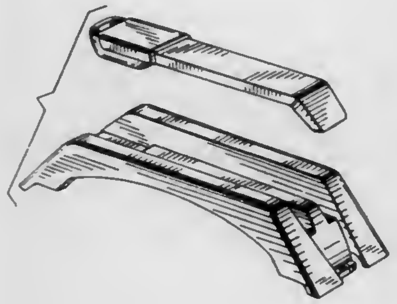
402,848
STEAM COOKER

Philippe Piret, Ifs, France, assignor to Moulinex S.A., Paris, France
Filed Jun. 2, 1997, Ser. No. 71,559
Claims priority, application France, Dec. 2, 1996, 96 6824
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—356



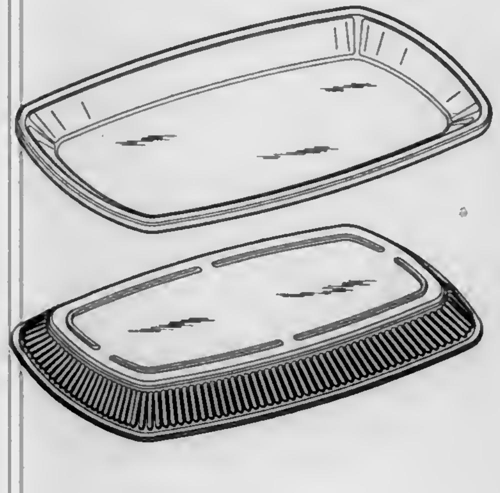
402,849
COMBINED MEASURING SPOON AND CARRYING HANDLE FOR A CAROUSEL STORAGE DEVICE

Frans M. Weterrings, Tuscumbia; E. Stanley Robbins, Killen, and Rodney W. Robbins, Florence, all of Ala., assignors to Robbins Industries, Inc., Florence, Ala.
Filed Jan. 21, 1998, Ser. No. 82,089
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—401.1



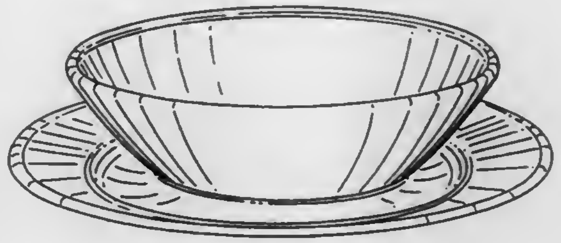
402,850
PLATTER BASKET

Barry J. Davis, Mundelein, Ill.; Scott J. Collins, and Craig A. Fluegge, both of Milwaukee, Wis., assignors to Tablecraft Products Company, Gurnee, Ill.
Filed Feb. 6, 1998, Ser. No. 83,258
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—550



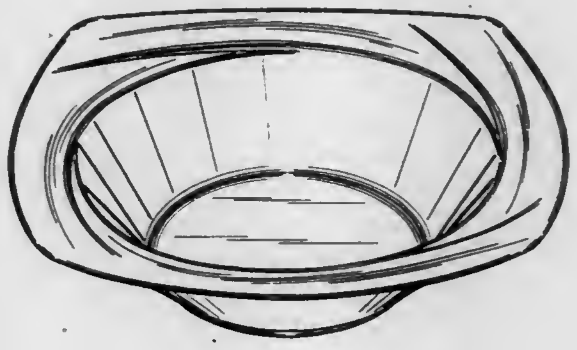
402,851
COMBINATION BOWL/SAUCER

Rita A. Stauffer, 5650 N. Sheridan Rd., Chicago, Ill. 60660
Filed Jan. 7, 1998, Ser. No. 81,615
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—505



402,852
BOWL

Kenneth R. Benson, Southbury, Conn., assignor to Syracuse China Company, Syracuse, N.Y.
Filed Jul. 31, 1997, Ser. No. 74,788
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—545



402,853
SINGLE STAGE BULK FOOD DISPENSER

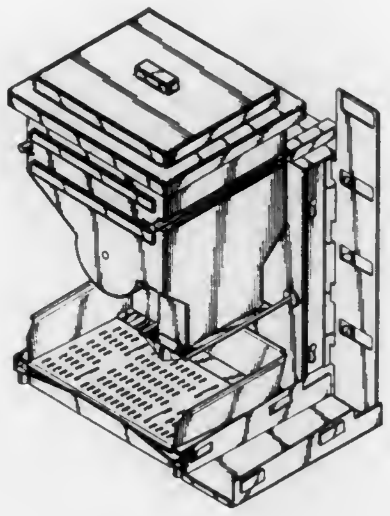
Karl J. Fritze, Denmark Township; Bruce H. Koerner, Red Wing; Ferdinand J. Herpers, Minnetonka, and Kirby J. Kuhlemeier, Cottage Grove, all of Minn., assignors to RAM Center, Inc., Red Wing, Minn.

Filed Jun. 10, 1997, Ser. No. 71,984

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—589



402,854
PLATE

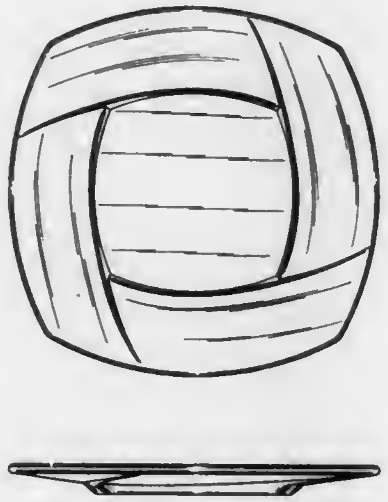
Kenneth R. Benson, Southbury, Conn., assignor to Syracuse China Company, Syracuse, N.Y.

Filed Jul. 31, 1997, Ser. No. 74,789

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—584



402,855
FOODWARE SUPPORT UTILITY BASKET

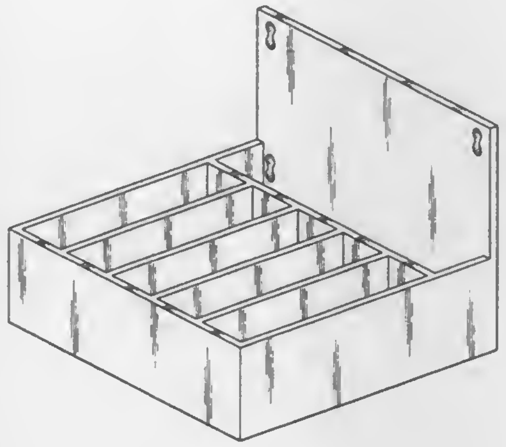
Richard A. Zapata, 8501 Truxton Ave., Los Angeles, Calif. 90045

Filed Jul. 9, 1997, Ser. No. 73,536

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D7—637



402,856
KNIFE

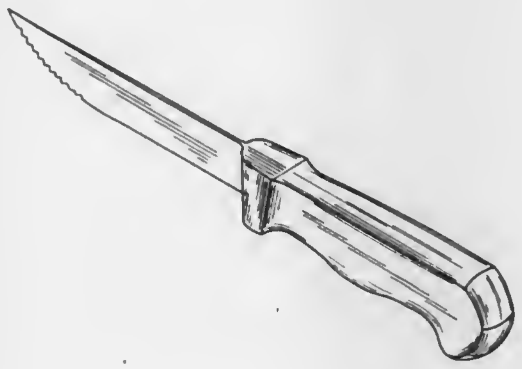
Milton L. Cohen, Hewlett Bay Park; Jeff Siegel, Center Island, and Adam Krent, Brooklyn, all of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.

Division of Ser. No. 57,956, Aug. 5, 1996. This application Dec. 29, 1997, Ser. No. 81,274

Term of patent 14 years

LOC (6) Cl. 07 - *03*

U.S. Cl. D7—649



402,857
SPOON

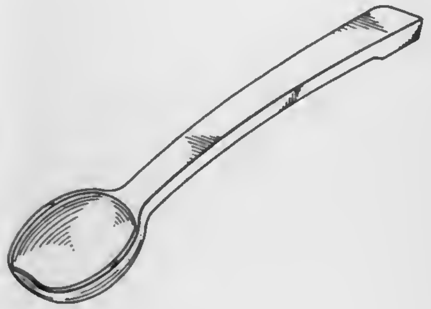
Sheri K. Roberts, 200 J. Brown Rd., Saline, La. 71070

Filed Mar. 2, 1998, Ser. No. 84,357

Term of patent 14 years

LOC (6) Cl. 07 - *03*

U.S. Cl. D7—653



402,858
COMBINED RAVIOLI ROLLER AND COVER THEREFOR

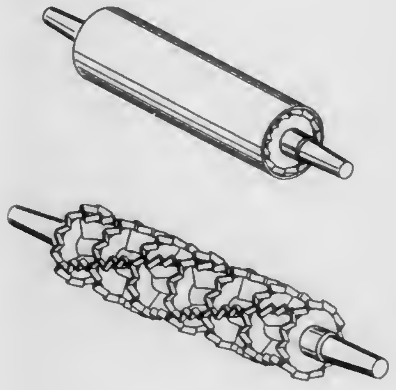
Daniel Andrew Iannuzzi, deceased, late of Unionville, Canada, and by Arnold Iannuzzi, administrator, 646 Village Parkway, Unit 52, Unionville, Ontario L3R 2S7, Canada

Filed Oct. 31, 1997, Ser. No. 78,646

Term of patent 14 years

LOC (6) Cl. 07 - *04*

U.S. Cl. D7—672



402,859
GRINDER FOR FOODSTUFFS

Berndt Diefenbach, Mahon, Spain, assignor to Maxpat Trading & Marketing (Far East) Limited, Kowloon, Hong Kong

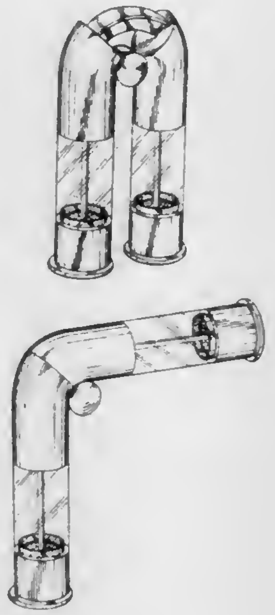
Filed Dec. 15, 1997, Ser. No. 80,740

Claims priority, application United Kingdom, Jun. 25, 1997, 2066912

Term of patent 14 years

LOC (6) Cl. 07 - *04*

U.S. Cl. D7—679



402,860
FORK

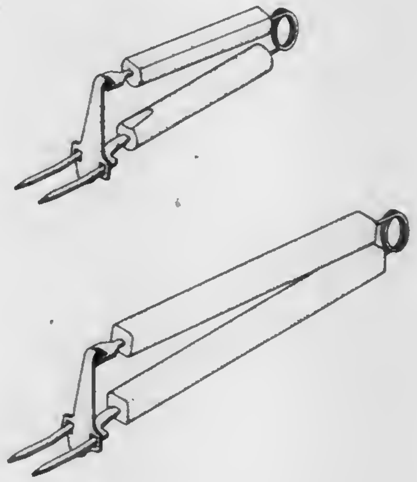
James L. Stills, 331 Curt Jarrett Rd., Ashville, Ala. 35953

Filed Feb. 9, 1998, Ser. No. 83,272

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—683



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402,861

PERFORATED HOLLOW SPIKE TO FACILITATE THE WATERING OF PLANTS

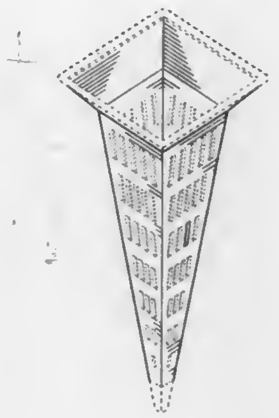
Andrew D. Rose, 8813 E. Charter Oak Dr., Scottsdale, Ariz. 85260

Continuation-in-part of Ser. No. 594,346, Jan. 30, 1996. This application Jan. 29, 1997, Ser. No. 65,547

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—1



402,862

PERFORATED SPIKE TO FACILITATE WATERING OF PLANTS

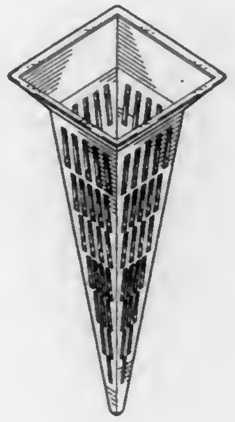
Andrew D. Rose, 8813 E. Charter Oak Dr., Scottsdale, Ariz. 85260

Continuation-in-part of Ser. No. 594,346, Jan. 30, 1996, Pat. No. 5,692,338. This application Jan. 30, 1997, Ser. No. 65,609

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—1



402,863

PLANT TAG

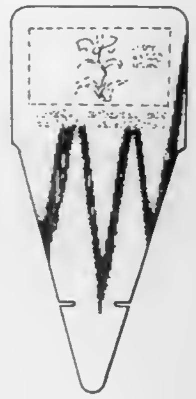
Robert C. Hickmott, Lansing, Mich., assignor to The John Henry Company, Lansing, Mich.

Filed Mar. 31, 1997, Ser. No. 69,656

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—1



402,864

Patent Not Issued For This Number

402,865

HIGH HANGER HOOKER

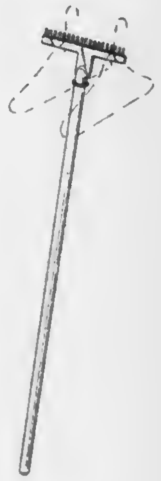
Richard Thomas Buser, 11101 Ashford Dr., Yukon, Okla. 73099

Filed Dec. 3, 1997, Ser. No. 80,552

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—14



402,866

WRENCH

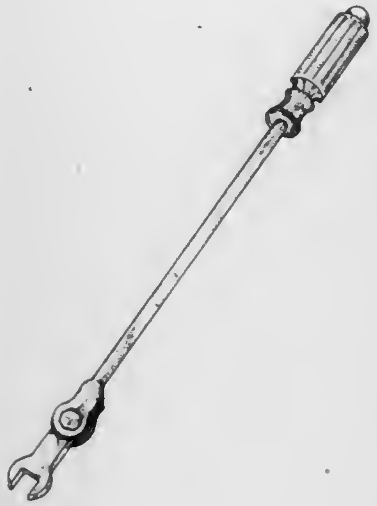
William J. Janssen, 109 Powell Ave., Rockville Centre, N.Y. 11570

Filed Dec. 23, 1997, Ser. No. 81,121

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—22



402,867

RATCHET WRENCH

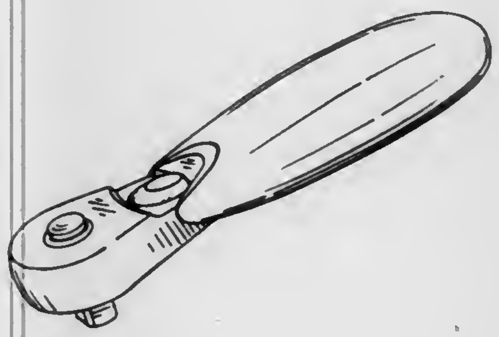
Richard J. Macor, Greenwich Township, Warren County, N.J., assignor to Proprietary Technologies, Inc., Stewartsville, N.J.

Filed Jun. 16, 1997, Ser. No. 72,381

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—25



402,868

PLIERS WITH MULTIPLE TOOLS

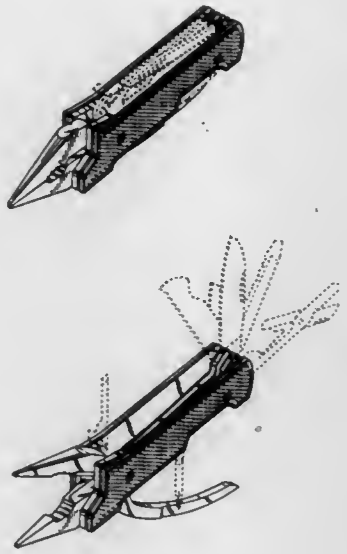
John Richard Mullett, Leawood, Kans., assignor to Brunswick Corporation, Tulsa, Okla.

Filed Aug. 25, 1997, Ser. No. 75,818

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—52



402,869

PAIR OF SCISSORS BLADES

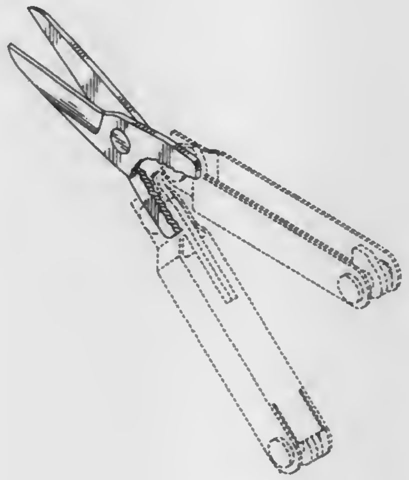
Benjamin C. Rivera, West Linn, Oreg., assignor to Leatherman Tool Group, Inc., Portland, Oreg.

Division of Ser. No. 47,298, Nov. 29, 1995, Pat. No. Des. 385,168. This application Oct. 16, 1997, Ser. No. 78,070

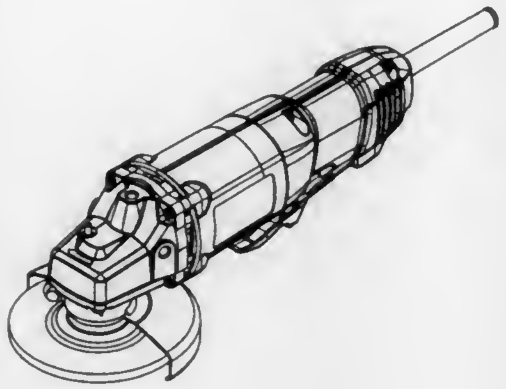
Term of patent 14 years

LOC (6) Cl. 08 - *05*

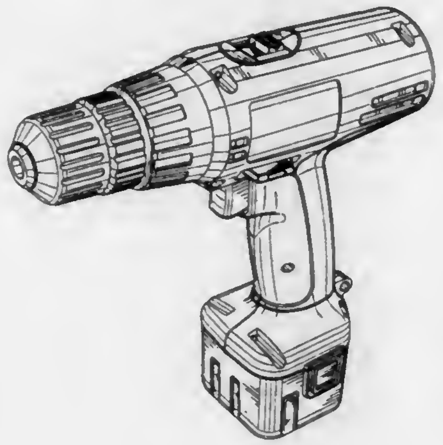
U.S. Cl. D8—57



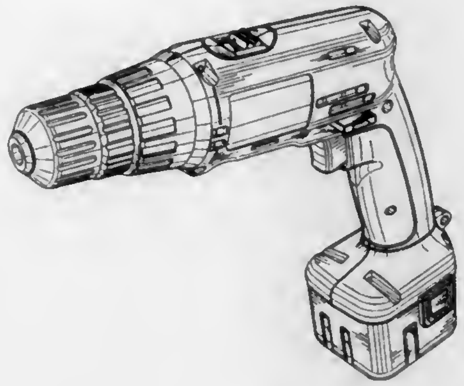
402,870
GRINDER
Mark A. Etter, and John C. Smith, both of Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed Jun. 9, 1997, Ser. No. 71,943
Term of patent 14 years
LOC (6) Cl. 08 - *02*
U.S. Cl. D8—62



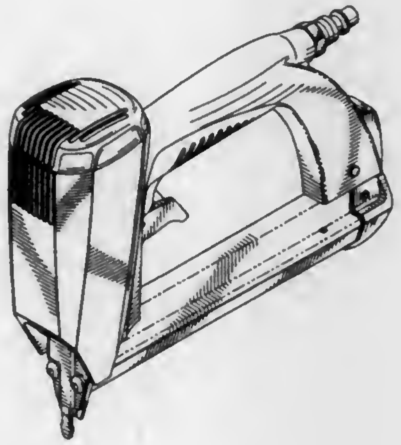
402,871
BATTERY POWERED T-HANDLE DRILL
Earl Clowers, and Mark A. Etter, both of Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed Jul. 1, 1997, Ser. No. 73,126
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—68



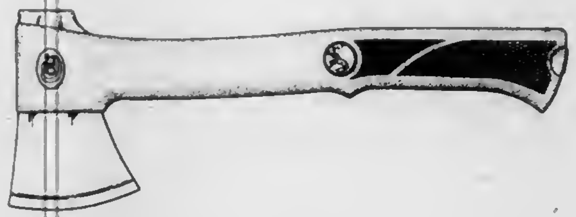
402,872
BATTERY POWERED PUSH-HANDLE DRILL
Earl Clowers, and Mark A. Etter, both of Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed Dec. 22, 1997, Ser. No. 83,105
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—68



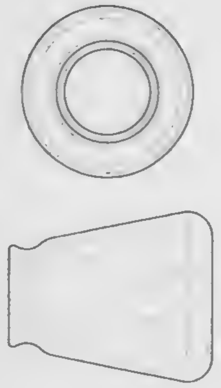
402,873
PNEUMATIC FASTENER DRIVING TOOL
Jim F. Warner, Hoboken, and Robert J. Croft, Jersey City, both of N.J., assignors to Senco Products, Inc., Cincinnati, Ohio
Filed Aug. 8, 1997, Ser. No. 74,839
Term of patent 14 years
LOC (6) Cl. 08 - *02*
U.S. Cl. D8—69



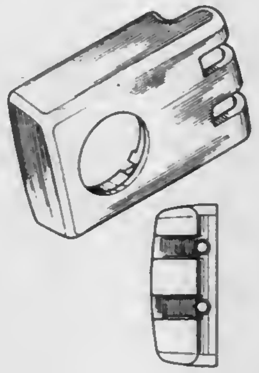
402,874
AXE
David K. Hall, Kodak, and Kit Rae, Sevierville, both of Tenn., assignors to United Cutlery Corporation, Sevierville, Tenn.
Filed May 13, 1996, Ser. No. 54,366
Term of patent 14 years
LOC (6) Cl. 08 - *02*
U.S. Cl. D8—76



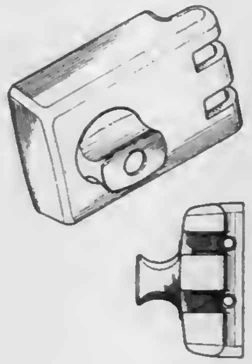
402,875
DOOR KNOB COVER
Lorraine E Bethea, 1382 Winslow Ave., Union, N.J. 07083
Filed Apr. 29, 1997, Ser. No. 70,093
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—322



402,876
DEADLOCK CASE
Donald John Newman, Somerville, and David Garfield Blanch, Noting Hill, both of Australia, assignors to Lockwood Australia Pty. Limited, Waterloo, Australia
Filed Aug. 14, 1997, Ser. No. 74,950
Claims priority, application Australia, Feb. 14, 1997, 435/97
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—341



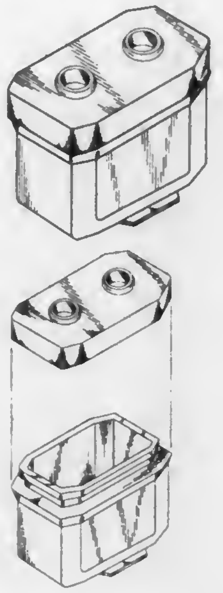
402,877
DEADLOCK
Donald John Newman, Somerville, and David Garfield Blanch, Notting Hill, both of Australia, assignors to Lockwood Australia Pty. Limited, Waterloo, Australia
Filed Aug. 14, 1997, Ser. No. 74,951
Claims priority, application Australia, Feb. 14, 1997, 434/19
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—341



402,878

WATER-PROOF PADLOCK PROTECTOR

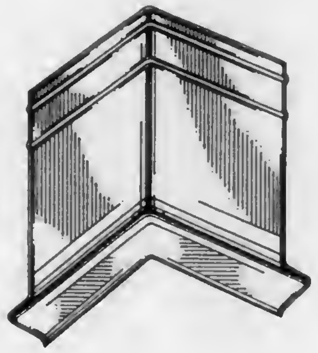
Jackie Liu, P. O. Box 87-432, Taipei, Taiwan
Filed Jul. 3, 1996, Ser. No. 56,619
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



402,879

THREE COAT PLASTERING CORNER

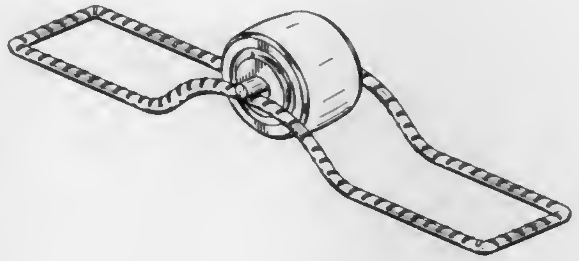
Harold W. Beard, Jr., P.O. Box 5485, Carefree, Ariz. 85377
Filed Sep. 29, 1995, Ser. No. 44,700
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



402,880

COMBINED REBAR CAGE SPACER WHEEL AND SUPPORT

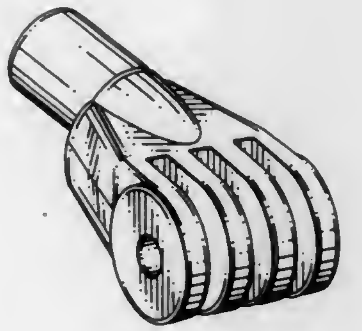
Frankie A. R. Queen, Lawrenceville, Ga., assignor to Lowtech Corporation, Inc., Lawrenceville, Ga.
Filed Dec. 13, 1996, Ser. No. 63,694
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



402,881

SOCKET FOR BRACKET ASSEMBLY

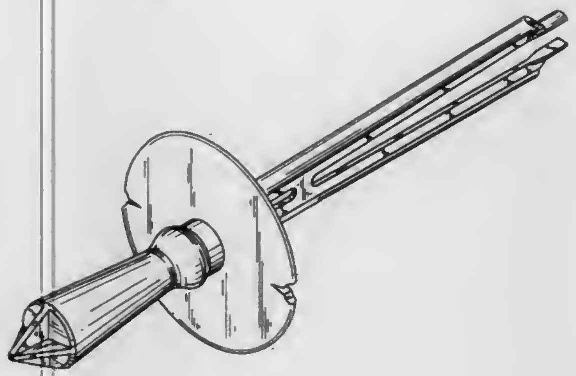
Roy Fischer, 7641 E. Gray Rd., Scottsdale, Ariz. 85260
Filed Jun. 6, 1997, Ser. No. 71,764
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



402,882

LINE SPOOL HOLDER

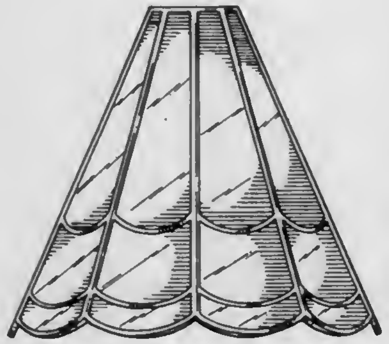
Jeff S. McBain, Brookfield, Wis., assignor to Hempe Manufacturing Co., Inc., New Berlin, Wis.
Filed May 12, 1997, Ser. No. 70,596
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



402,883

FINIAL FOR DRAPERY CURTAIN ROD

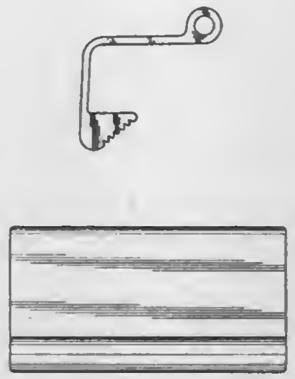
Alan Arthur Ford, Sturgis, Mich., assignor to Kirsch Inc., Sturgis, Mich.
Filed May 8, 1997, Ser. No. 70,489
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—378



402,884

PLASTIC CLIP

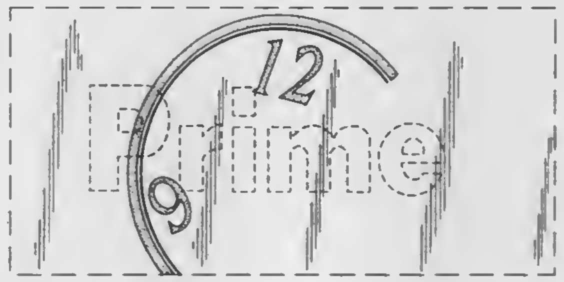
Timothy E. Wood, Weare, N.H., assignor to Poly Vac, Inc., Manchester, N.H.
Filed Nov. 21, 1997, Ser. No. 79,956
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—394



402,885

PORTION OF A PACKAGE

Hae Geun Yoon, Seoul, Rep. of Korea, assignor to Lotte Confectionery Company, Ltd., Rep. of Korea
Filed Oct. 14, 1996, Ser. No. 62,418
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D9—305



402,886

CONTAINER

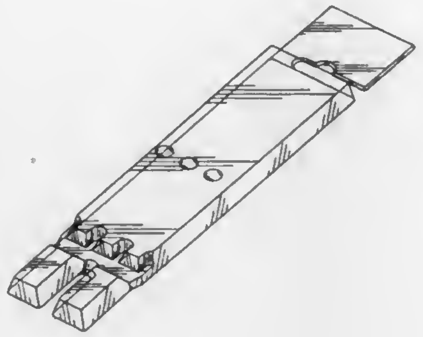
Paul Von Stein, Moon Township, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jul. 3, 1997, Ser. No. 73,204

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—415



402,887

CAN END

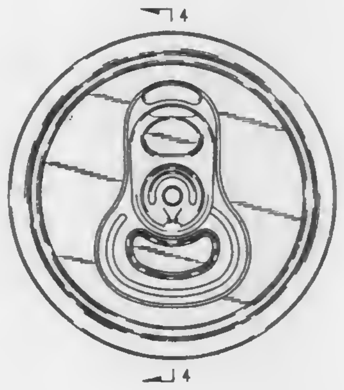
Robert L. Hurst, Golden, Colo., assignor to Coors Brewing Company, Golden, Colo.

Filed May 15, 1997, Ser. No. 70,769

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—438



402,888

CAP FOR A TUBULAR CONTAINER

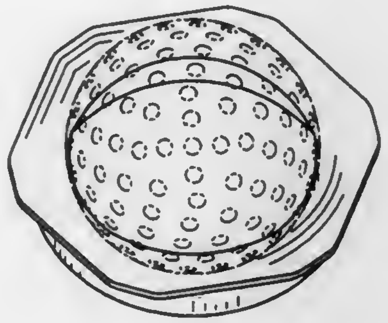
J. Thomas Goserud, 3152 Woodridge Dr., Landisville, Pa. 17538

Filed Jun. 23, 1997, Ser. No. 72,722

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—439



402,889

BOTTLE CLOSURE

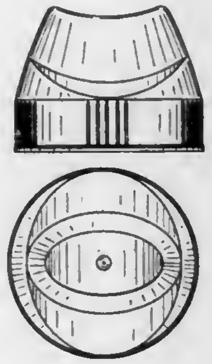
Bryce Rutter, St. Louis, Mo., assignor to Stokely-Van Camp, Inc., Chicago, Ill.

Filed Dec. 6, 1996, Ser. No. 63,416

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—447



402,890

AEROSOL ACTUATOR FOR MOUSSE PRODUCT

Georges Guillemot, Plaisir, France, assignor to Precision Valve Corporation, Yonkers, N.Y.

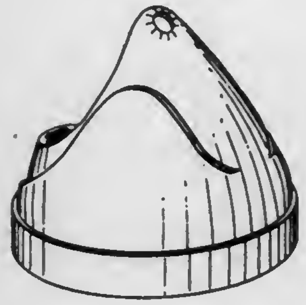
Filed Jun. 27, 1997, Ser. No. 72,988

Claims priority, application Hague Agreement, Dec. 27, 1996, DM 038632

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—448



402,891

LIQUID DISPENSER TOP

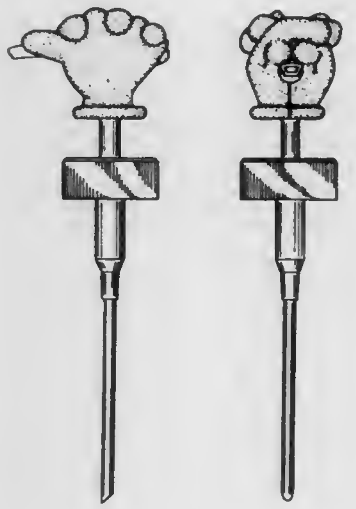
Stephen Joseph McPhilliamy, Chicago, Ill., and Ingrid Christine Hoilrah, Neenah, Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation-in-part of Ser. No. 37,488, Apr. 13, 1995, abandoned. This application Nov. 20, 1996, Ser. No. 65,754

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—451



402,892

BOTTLE CAP

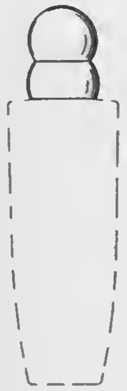
Rolf Hering, Kronach, Germany, assignor to Heinz-Glas GmbH, Keintettau, Germany

Filed Nov. 18, 1996, Ser. No. 62,566

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—454



402,893

BOTTLE

Robert Monaghan, London, United Kingdom, assignor to Reckitt & Colman Products Limited, London, United Kingdom

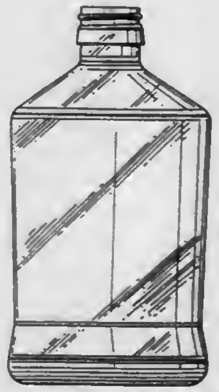
Filed Jan. 23, 1997, Ser. No. 65,209

Claims priority, application United Kingdom, Aug. 10, 1996, 2058400; Aug. 10, 1996, 2058401

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—500



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1217
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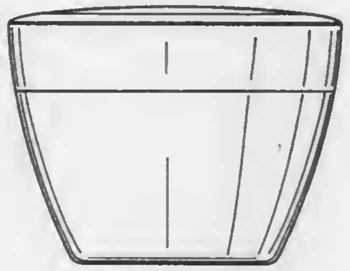
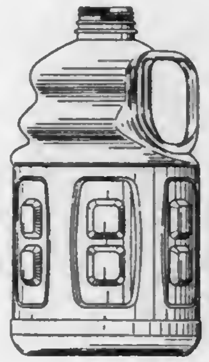
402,894
CONTAINER FOR COSMETIC PRODUCTS

Zaki Elia, London, England, assignor to L'Oreal, Paris, France
Filed Apr. 10, 1996, Ser. No. 52,860
Claims priority, application France, Oct. 11, 1995, 955486
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—504



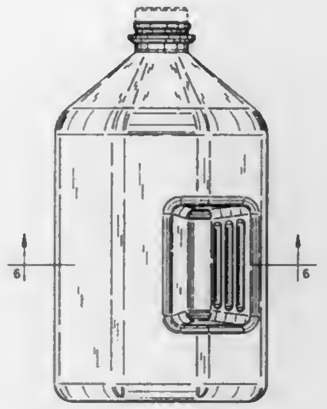
402,895
CONTAINER WITH HANDLE

Tetsuo Takahashi, Soka, and Hiroaki Sugiura, Hachioji, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan, and Ocean Spray Cranberries, Inc., Lakeville-Middleboro, Mass.
Filed Apr. 3, 1997, Ser. No. 68,332
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



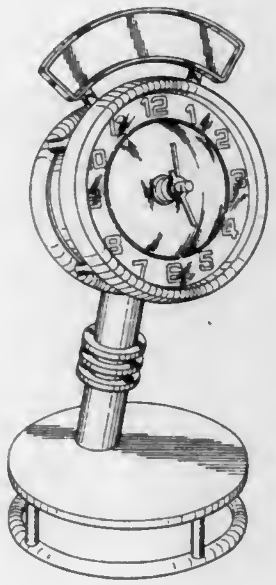
402,896
OCTAGONAL CONTAINER WITH PINCH GRIP

George A. Conrad, Alpharetta, Ga., assignor to Ball Corporation, Muncie, Ind.
Filed Dec. 24, 1997, Ser. No. 81,189
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—543



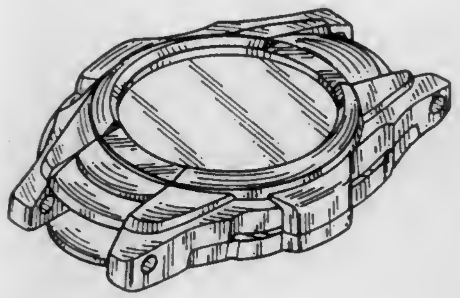
402,897
CLOCK

Garry Williams, 7045 California St., Hammond, Ind.
Filed Feb. 3, 1998, Ser. No. 83,404
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—6



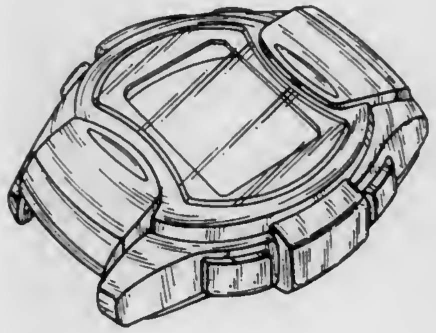
402,898
WATCH CASE

Shigeru Hanagata, Kodaira, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 17, 1998, Ser. No. 83,697
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



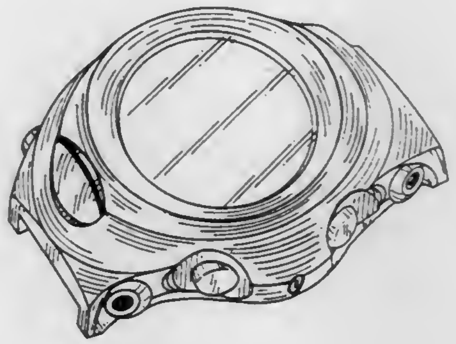
402,899
WATCH CASE

Takao Matsuda, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1997, Ser. No. 81,245
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



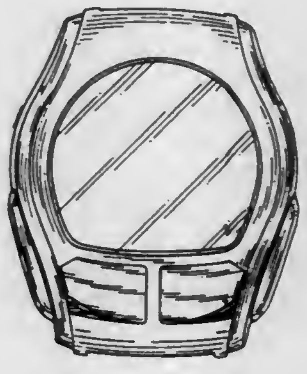
402,900
WATCH CASE

Shigeru Hanagata, Kodaira, Japan; Dick Powell, West Sussex, and Akio Shindate, London, both of United Kingdom, assignors to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 23, 1998, Ser. No. 84,011
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



402,901
WATCH CASE

Akihiro Sugisawa, Fussa, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 23, 1998, Ser. No. 84,014
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



402,902

TIMER

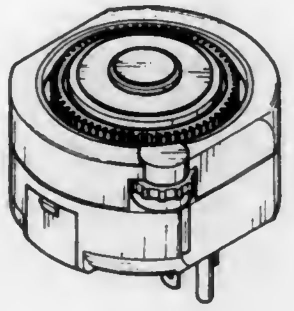
Chan-Fu Chen, Taipei Hsien, Taiwan, assignor to Mingjong Electric Industry Co., Ltd., Taiwan

Filed Nov. 26, 1997, Ser. No. 79,740

Term of patent 14 years

LOC (6) Cl. 10 - *03*

U.S. Cl. D10—40



402,903

TIMER

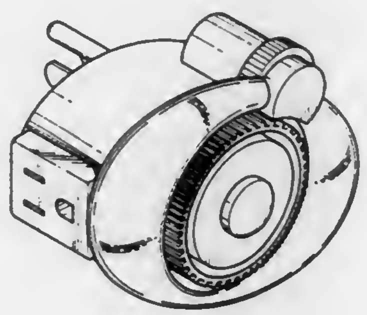
Chan-Fu Chen, Taipei Hsien, Taiwan, assignor to Mingjong Electric Industry Co., Ltd., Taiwan

Filed Nov. 26, 1997, Ser. No. 79,741

Term of patent 14 years

LOC (6) Cl. 10 - *03*

U.S. Cl. D2—839



402,904

ELECTRONIC CLINICAL THERMOMETER

Yoko Sugimoto, Nishinomiya; Troy Sauvé , Osaka; Akinobu Kanza, Hyogo, and Hisayoshi Matoba, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

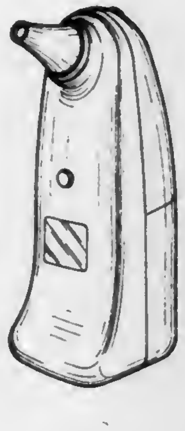
Filed Feb. 23, 1998, Ser. No. 84,000

Claims priority, application Japan, Aug. 27, 1997, 9-66052

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—57



402,905

ELECTRONIC CLINICAL THERMOMETER

Akinobu Kanza; Yoko Sugimoto, both of Hyogo, and Hisayoshi Matoba, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

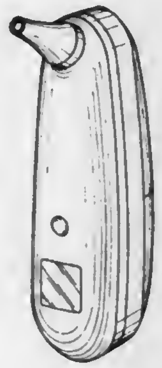
Filed Feb. 23, 1998, Ser. No. 84,001

Claims priority, application Japan, Aug. 27, 1997, 9-66053

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—57



402,906

SLIDING SCALE MAP COORDINATE LOCATOR CARD

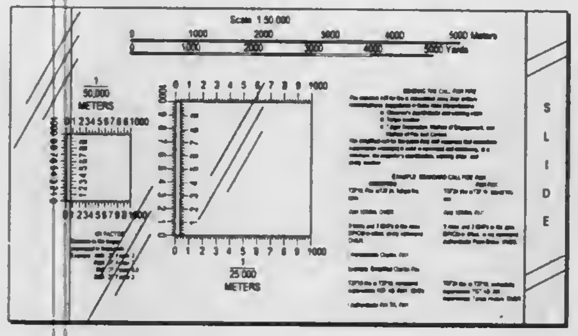
Robert F. Sullivan, 70 Summit Rd., Medford, Mass. 02155

Filed Oct. 24, 1995, Ser. No. 45,574

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—64



402,907

FROST PROTECTION DEVICE FOR WATER METER PITS

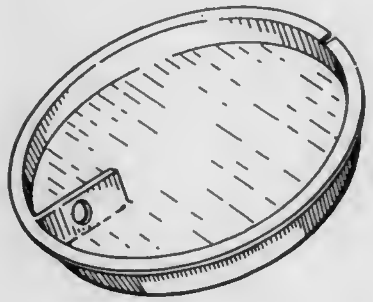
Thomas B. Ruff, 2142 S. Zeno St., Aurora, Colo. 80013

Filed Nov. 17, 1997, Ser. No. 79,454

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—103



402,908

ENGRAVED SURVEYOR'S MARKER

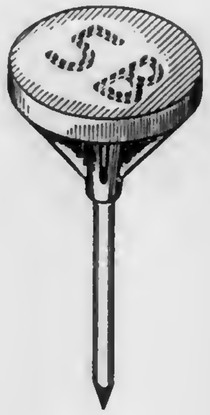
James F. Machen, 2817 Goddard Rd., Toledo, Ohio 43606-3058, and Frederick G. VanKoughnet, 4606 Oakridge Dr., Toledo, Ohio 43623

Filed Jul. 31, 1995, Ser. No. 42,020

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—109



402,909

LIGHT BAR HOUSING

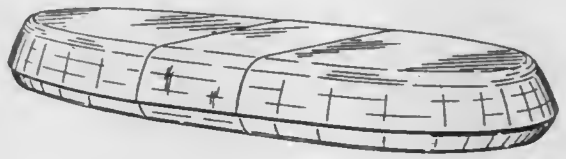
Edward S. Stanuch, 15242 S. Central Ave., Oak Forest, Ill. 60452

Continuation of Ser. No. 61,568, Oct. 25, 1996. This application Mar. 21, 1997, Ser. No. 68,522

Term of patent 14 years

LOC (6) Cl. 10 - *05*

U.S. Cl. D10—114



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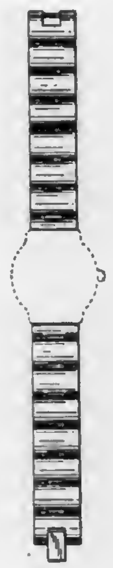
402,910

METAL WATCH BAND WITH PIN AND BLOCK CLASP

Charlotte Kjoelbye Jorst, 867 Donna Dr., Incline Village, Nev. 89451

Filed Jan. 13, 1998, Ser. No. 82,030
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—3



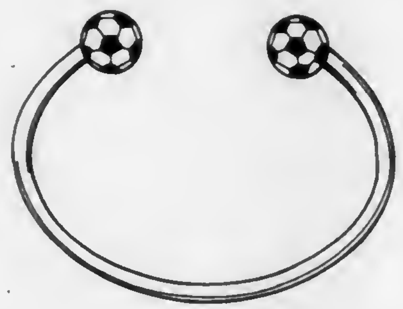
402,911

BRACELET

Carmen Miranda Barcon, Madrid, Spain, assignor to Grupo Rayma, S.A., Palma De Mallorca, Spain

Continuation of Ser. No. 36,445, Mar. 16, 1995, abandoned. This application Sep. 10, 1997, Ser. No. 79,032
Claims priority, application Spain, Sep. 16, 1994, 133420
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—4



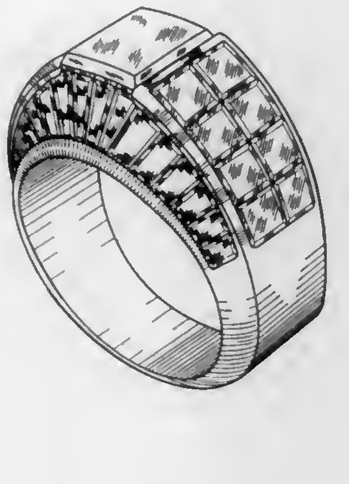
402,912

FINGER RING

Israel Itzkowitz, Los Angeles, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.

Filed Mar. 10, 1997, Ser. No. 67,488
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—29



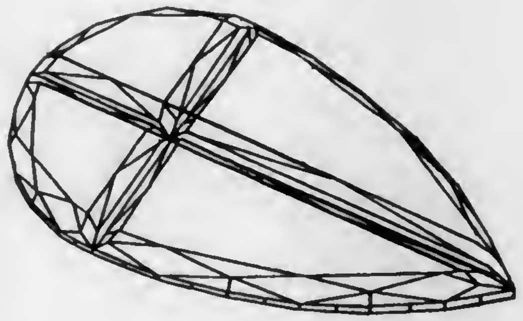
402,913

GEMSTONE

Avi Katz, 63/15 Harav Kook St., Netanya 42260, Israel

Division of Ser. No. 38,470, May 4, 1995, Pat. No. Des. 373,971. This application Jun. 24, 1996, Ser. No. 56,148
Term of patent 14 years
LOC (6) Cl. 11 - *01*

U.S. Cl. D11—90



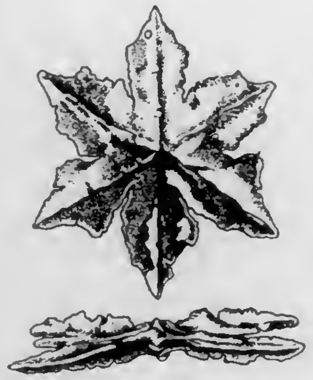
402,914

CHRISTMAS TREE ORNAMENT

Leonhardt J. Andersen, 2005 James St., Jefferson, La. 70121

Division of Ser. No. 43,275, Aug. 30, 1995, Pat. No. Des. 380,406. This application Jun. 30, 1997, Ser. No. 73,159
Term of patent 14 years
LOC (6) Cl. 11 - *05*

U.S. Cl. D11—121



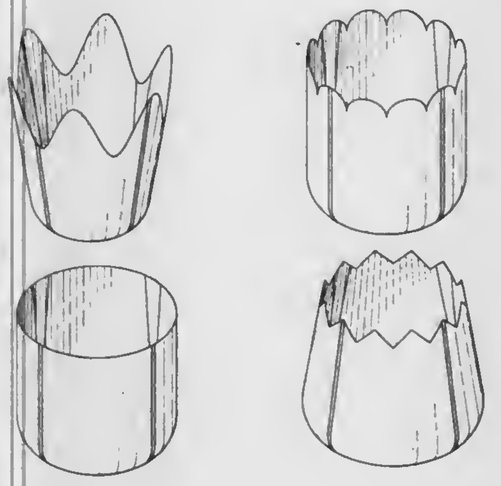
402,915

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.

Division of Ser. No. 54,062, May 6, 1996, Pat. No. Des. 388,740, which is a division of Ser. No. 3,682, Jan. 13, 1993, Pat. No. Des. 371,520, which is a continuation-in-part of Ser. No. 809,080, Dec. 16, 1991, Pat. No. Des. 361,961, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jun. 20, 1997, Ser. No. 72,640
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



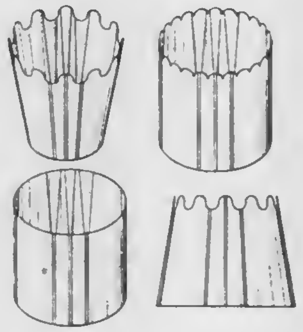
402,916

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. Trustee

Division of Ser. No. 55,813, May 3, 1996, Pat. No. Des. 386,717, which is a division of Ser. No. 3,340, Jan. 5, 1993, Pat. No. Des. 371,519, which is a continuation-in-part of Ser. No. 808,560, Dec. 16, 1991, Pat. No. Des. 358,566, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned.
This application Jun. 23, 1997, Ser. No. 72,680
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



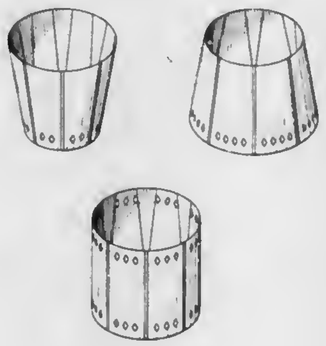
402,917

FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.

Division of Ser. No. 49,795, Jan. 31, 1996, Pat. No. Des. 387,010, which is a division of Ser. No. 7,353, Jan. 5, 1993, Pat. No. Des. 370,433, which is a continuation-in-part of Ser. No. 808,561, Dec. 16, 1991, Pat. No. Des. 363,449, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jun. 23, 1997, Ser. No. 74,673
Term of patent 14 years
LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



402,918
BOW

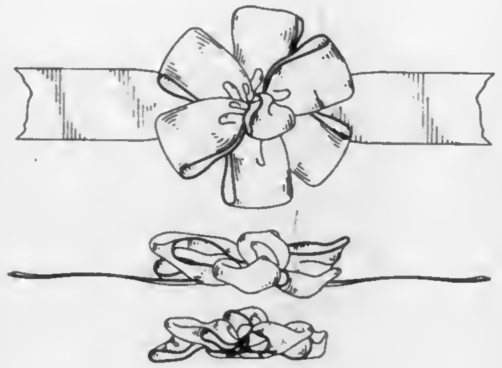
Cheryl A. Pacheco, 450 Prospect St., Somerset, Mass. 02726, and Karen J. Kalisz, 210 Goddard Row, Newport, R.I. 02840

Filed Feb. 10, 1997, Ser. No. 66,486

Term of patent 14 years

LOC (6) Cl. 11 - *99*

U.S. Cl. D11—184



402,919
BUCKLE

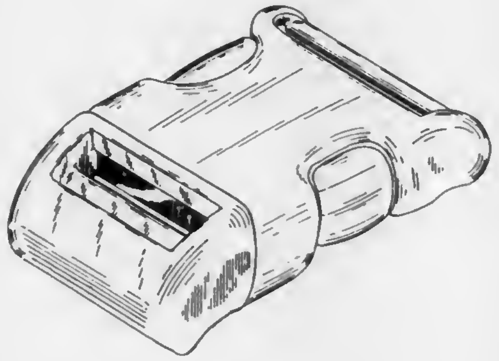
Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corporation, Farmingdale, N.Y.

Filed Feb. 12, 1998, Ser. No. 83,578

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D11—218



402,920
SECURITY ZIPPER PULL

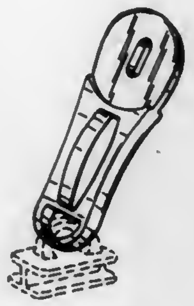
Mark Schuster; Glenn Rodgers, both of San Francisco, and David Pitcher, Menlo Park, all of Calif., assignors to ACCO Brands, Inc., Lincoinshire, Ill.

Filed Nov. 14, 1997, Ser. No. 79,559

Term of patent 14 years

LOC (6) Cl. 11 - *01*

U.S. Cl. D11—221



402,921
AUTOMOBILE

Richard David Hamblin, Solihull, United Kingdom, assignor to Rolls-Royce Motor Cars Limited, Cheshire, England

Filed Nov. 21, 1996, Ser. No. 62,699

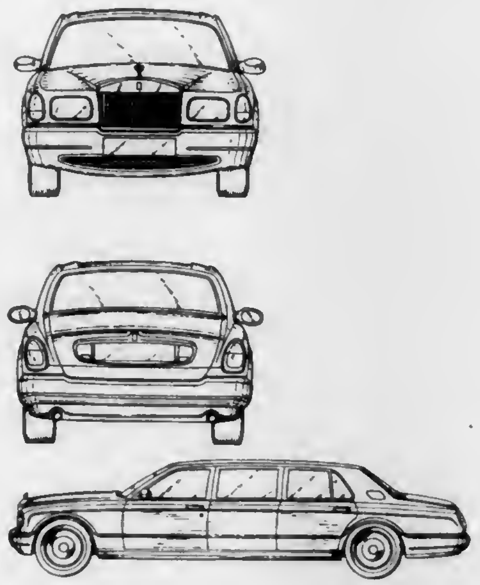
Claims priority, application United Kingdom, May 23, 1996, 2056489

The portion of the term of this patent subsequent to Jul. 14, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—92



402,922
RACING SPORTS CAR BODY

Norbert Singer, Vaihingen, and Anthony-Robert Hatter, Rutesheim, both of Germany, assignors to Dr. Ing.h.c.F. Porsche AG, Weissach, Germany

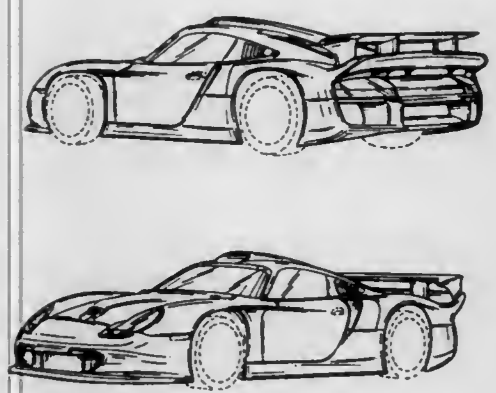
Filed Jun. 20, 1997, Ser. No. 72,631

Claims priority, application Germany, Dec. 20, 1996, M 96 10 850.9

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—92



402,923
TRAILER

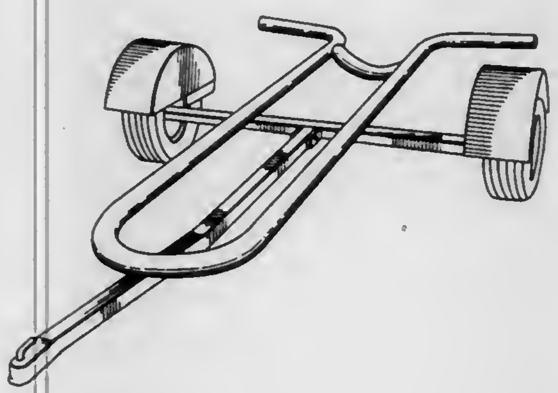
Michel Neault, 583 St-Ovide, Ste-Sophie-de-Lévrard, Canada, G0X 3C0, and René Bellerose, 4455 Gatineau, Rock Forest, Québec, Canada, J1N 3B4

Division of Ser. No. 59,563, Sep. 13, 1996, Pat. No. Des. 392,598. This application Sep. 11, 1997, Ser. No. 76,446

Term of patent 14 years

LOC (6) Cl. 12 - *10*

U.S. Cl. D12—101



402,924
TRAILER

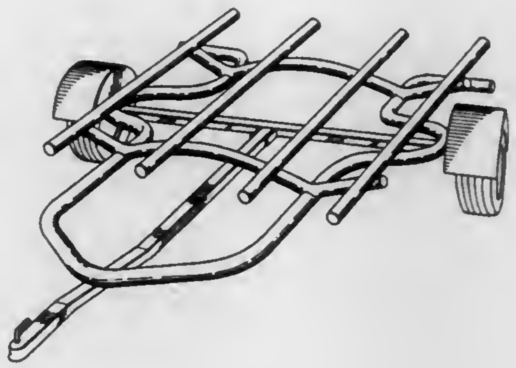
Michel Neault, 583, St-Ovide, Ste-Sophie-de-Lévrard, Canada, G0X 3C0, and René Bellerose, 4455 Gatineau, Rock Forest, Canada, J1N 3B4

Division of Ser. No. 59,563, Sep. 13, 1996, Pat. No. Des. 392,598. This application Sep. 11, 1997, Ser. No. 80,132

Term of patent 14 years

LOC (6) Cl. 12 - *10*

U.S. Cl. D12—101



402,925
MOTOR-ASSISTED BICYCLE

Akira Kino; Seiji Higashihara, and Yoshiharu Hashimoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

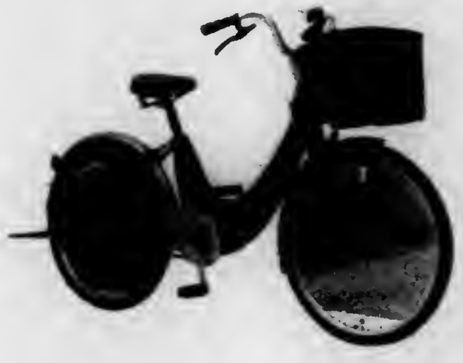
Filed Dec. 10, 1996, Ser. No. 63,537

Claims priority, application Japan, Jun. 10, 1996, 8-17187

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—110



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402,926
BICYCLE FRAME ASSEMBLY

Bernhard Kciuk, Beistein, Germany, assignor to Dr. Ing.h.c.F. Porsche AG, Weissach, Germany

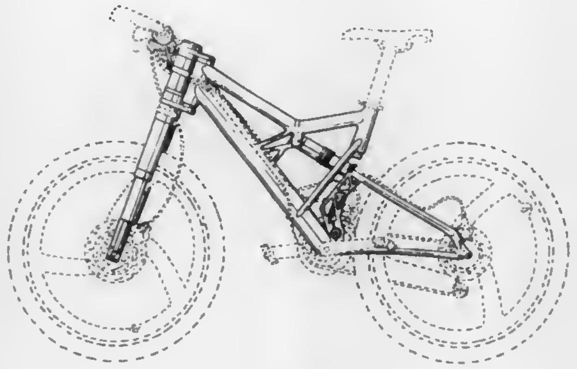
Filed Sep. 12, 1997, Ser. No. 76,511

Claims priority, application Germany, Mar. 15, 1997, M 97 02 554.2

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—111



402,927
FENDERTIP TRIM

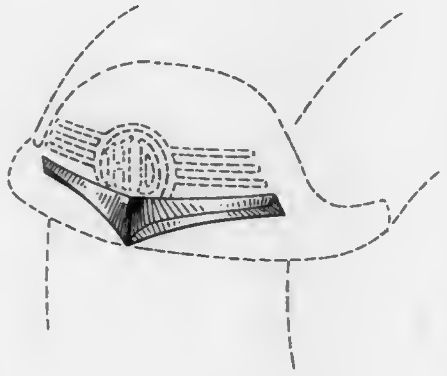
William G. Davidson, Delafield, and Raymond W. Drea, Whitefish Bay, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jul. 9, 1997, Ser. No. 73,438

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—114



402,928
FRONT SURFACE PORTION OF A MOTORCYCLE MASTER CYLINDER COVER

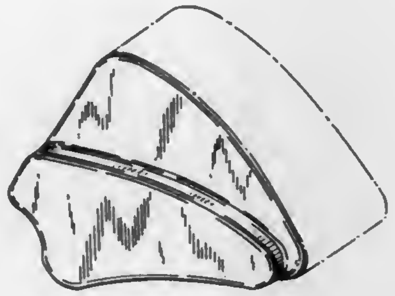
Dale R. Swenson, Wales, Wis.; Wyatt Fuller, Hickory, N.C., and Sandy McDonald, Waukesha, Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jul. 22, 1997, Ser. No. 73,980

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—126



402,929
MOTORCYCLE TAPPET COVER

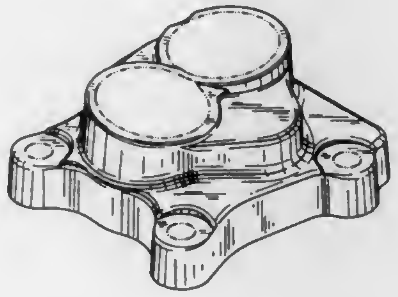
Earl F. Golden, Milwaukee, and Louis N. Netz, Grafton, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Sep. 18, 1997, Ser. No. 76,817

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—126



402,930
BABY STROLLER CONVERSION UNIT

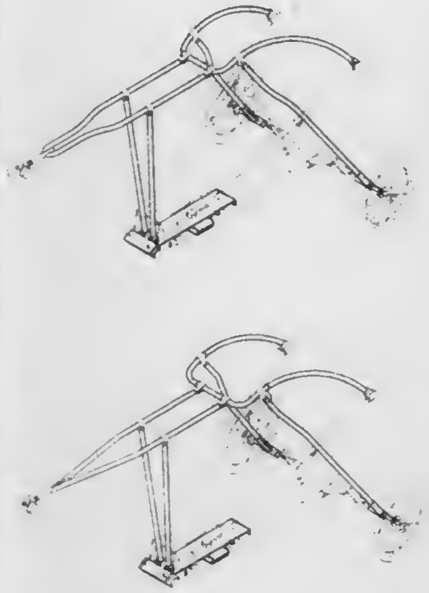
Philip A. Baechler; Joseph P. Delorme, and Michael F. Arnold, all of Yakima, Wash., assignors to Racing Strollers, Inc., Yakima, Wash.

Continuation-in-part of Ser. No. 530,787, Sep. 19, 1995, Pat. No. 5,695,208. This application Jul. 17, 1996, Ser. No. 57,128

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—133



402,931
UPPER FRAME OF BABY WALKER

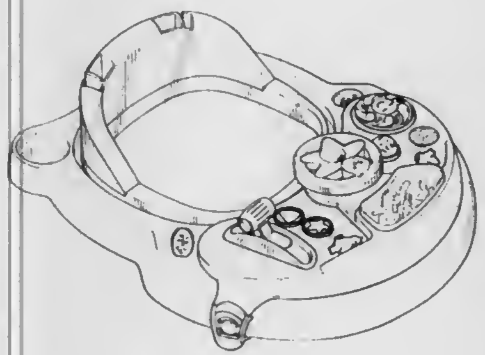
Li-Chu Chen Huang, Chiayi, Taiwan, assignor to Discovery International Co., Ltd., Tortoia, United Kingdom

Filed Oct. 9, 1997, Ser. No. 77,691

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—133



402,932
TIRE TREAD

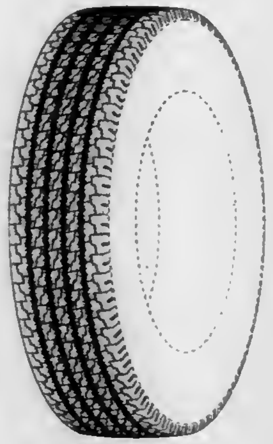
Jean-Michel Gillard, Luxemborg, and Jacques Collette, Bastogne, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 3, 1997, Ser. No. 80,015

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—142



402,933
TIRE TREAD

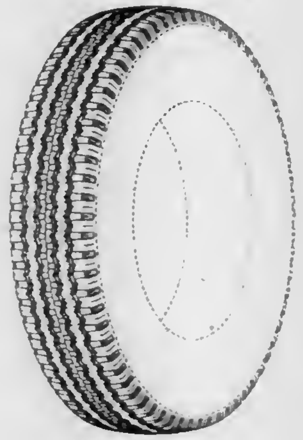
Jean-Michel Gillard, Mersch, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 9, 1997, Ser. No. 80,441

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—142



402,934

TIRE TREAD

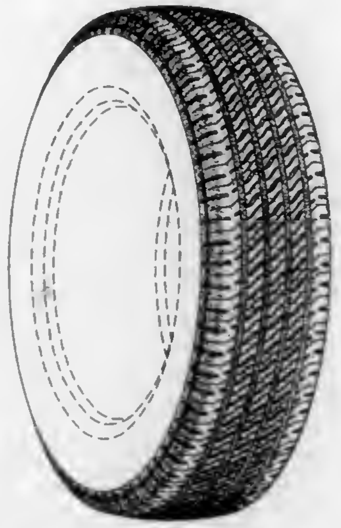
Joseph Nicholas Brown, IV, Simpsonville, S.C., assignor to Michelin Recherche et Technique, Granges-Paccot, Switzerland

Filed Nov. 10, 1997, Ser. No. 79,240

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—146



402,935

TIRE TREAD

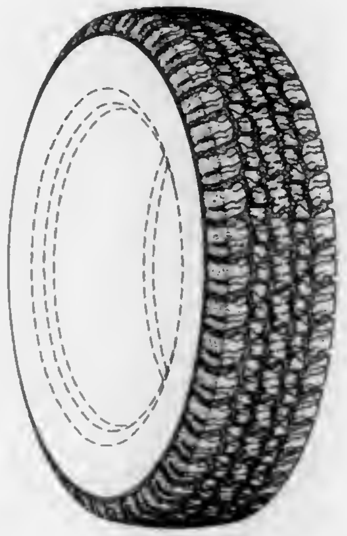
Jane Kathleen Oliver, Plezer, S.C., assignor to Michelin Recherche et Technique, Switzerland

Filed Nov. 10, 1997, Ser. No. 79,241

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—146



402,936

TIRE TREAD

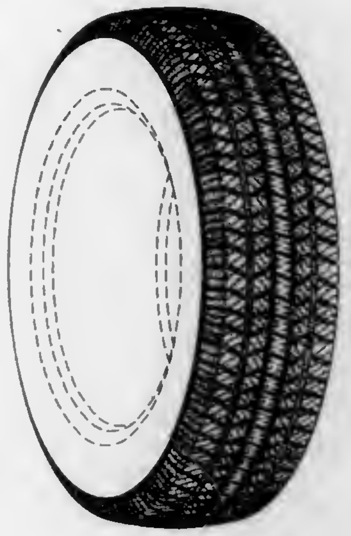
Ellen MacDonald Williams, Greer, S.C., assignor to Michelin Recherche Et Technique S.A., Switzerland

Filed Nov. 17, 1997, Ser. No. 79,456

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—146



402,937

TIRE TREAD

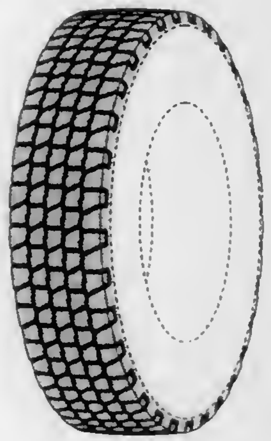
Michel Pierre Charles Robert, Sibret, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 13, 1997, Ser. No. 79,932

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—146



402,938

TIRE TREAD

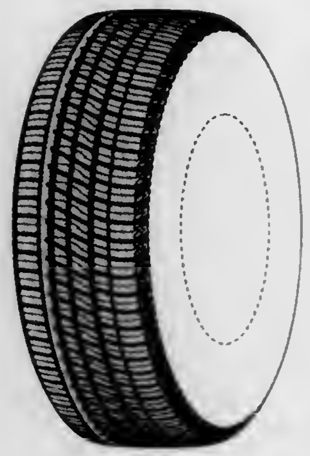
William Urbano Villamizar, Mersch, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 9, 1997, Ser. No. 80,446

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—146



402,939

TIRE TREAD

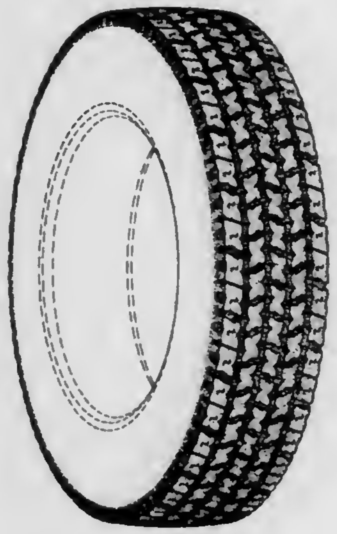
Patrick Lurois, Greenville, and Ralston Horace Moore, Fountain Inn, both of S.C., assignors to Michelin Recherche et Technique S.A., Switzerland

Filed Jul. 25, 1997, Ser. No. 74,156

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



402,940

TIRE TREAD

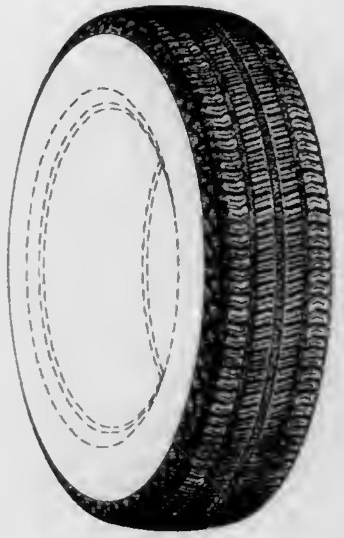
Eileen Ann McKisson, Richfield, Ohio, and Ellen MacDonald Williams, Greet, S.C., assignors to Michelin Recherche et Technique S.A., Switzerland

Filed Oct. 20, 1997, Ser. No. 78,314

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



402,941

TIRE TREAD

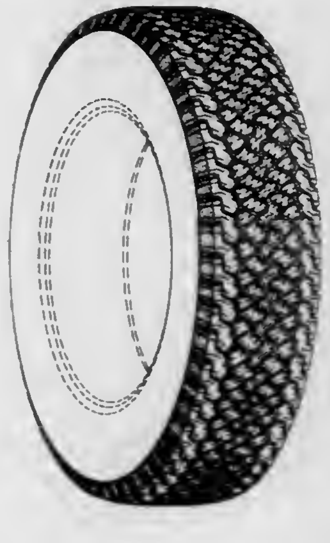
Robert Vanstory Teeple, Simpsonville, and Frank S. Willis, Greenville, both of S.C., assignors to Michelin Recherche et Technique, Switzerland

Filed Nov. 17, 1997, Ser. No. 79,438

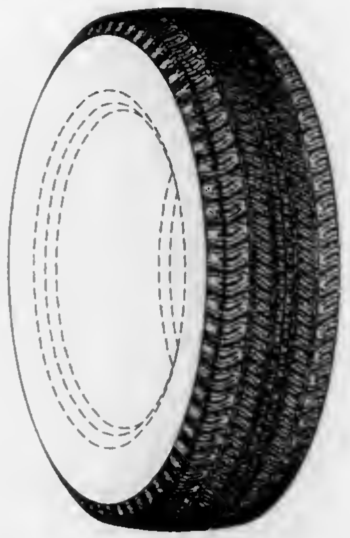
Term of patent 14 years

LOC (6) Cl. 12 - *15*

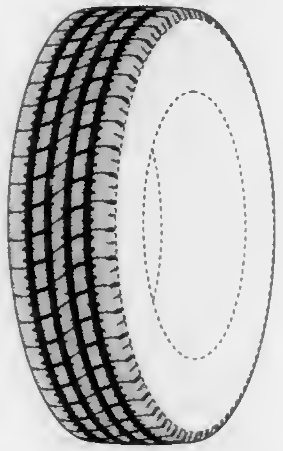
U.S. Cl. D12—147



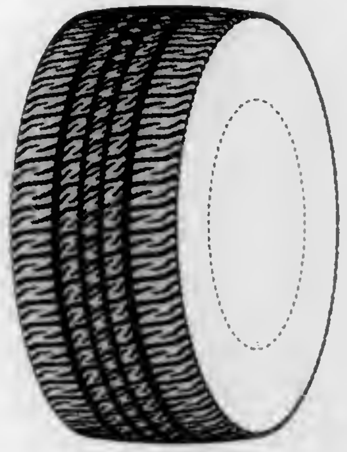
402,942
TIRE TREAD
John A. Custons, Jr., Mauldin; Frank S. Willis, Greenville, and William A. Downey, Simpsonville, all of S.C., assignors to Michelin Recherche et Technique, Switzerland
Filed Dec. 8, 1997, Ser. No. 79,615
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



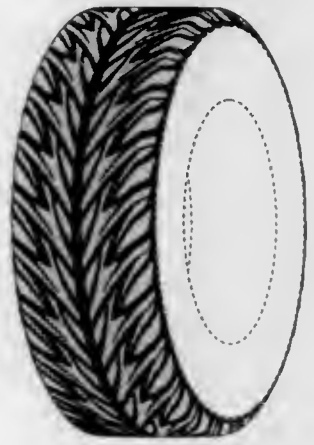
402,943
TIRE TREAD
Marco Albert, Stradtbredimus, and Michele Marie Joseph Emile Spriet, Steinsel, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 20, 1997, Ser. No. 79,676
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



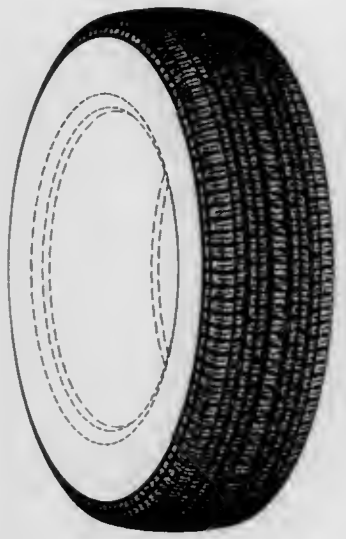
402,944
TIRE TREAD
Billy Joe Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 11, 1997, Ser. No. 80,601
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



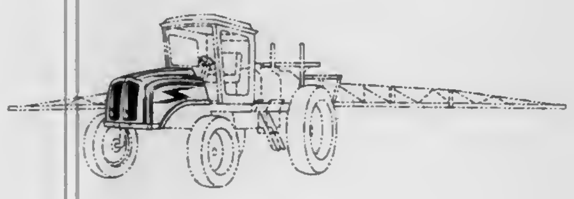
402,945
TIRE TREAD
Paul Bryan Maxwell, Munroe Falls, and Billy Joe Ratliff, Jr., Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 11, 1997, Ser. No. 80,617
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



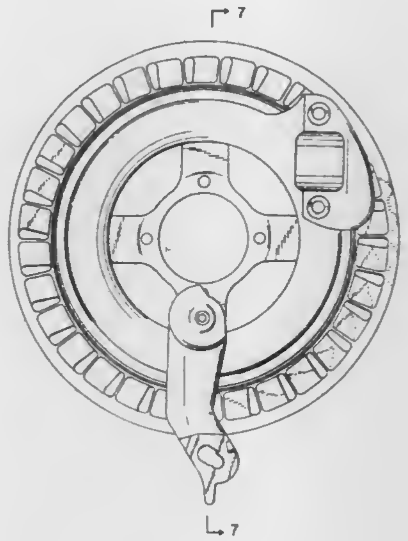
402,946
TIRE TREAD
Eileen Ann McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Switzerland
Filed May 22, 1997, Ser. No. 80,839
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



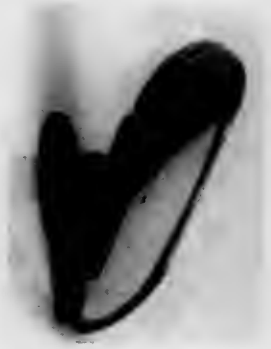
402,947
HOOD FOR AN AGRICULTURAL MACHINE
Kenneth E. Weddle, Trafalgar, Ind., assignor to Equipment Technologies, L.L.C., Indianapolis, Ind.
Filed Oct. 6, 1997, Ser. No. 77,560
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—173



402,948
BRAKE UNIT FOR A BICYCLE
Tomohiko Nishimura, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Filed Nov. 13, 1996, Ser. No. 62,391
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—180



402,949
COMBINED MIRROR AND STAND
Patrick Marguerie, Charvonnex, France, assignor to Impex, Les Abrets, France
Filed Jan. 6, 1997, Ser. No. 64,559
Claims priority, application Hague Agreement, Jul. 8, 1996, DM/036912
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—187



402,950
MIRROR

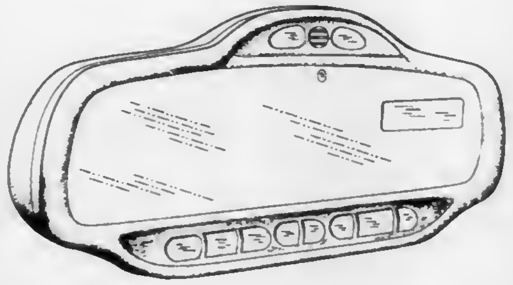
Robert C. Fitzpatrick, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jan. 20, 1998, Ser. No. 82,338

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—187



402,951
FRONT FACE OF A MOTOR VEHICLE WHEEL

Daniel Wechner, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

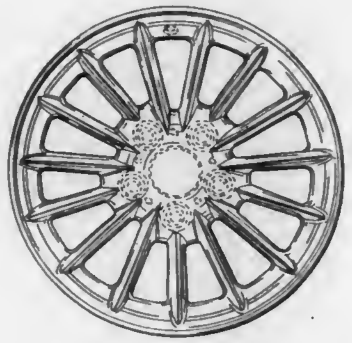
Filed Nov. 21, 1997, Ser. No. 79,696

Claims priority, application Germany, May 21, 1997, M 97 04 929.8

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—211



402,952
FRONT FACE OF A MOTOR VEHICLE WHEEL

Thomas Sycha, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

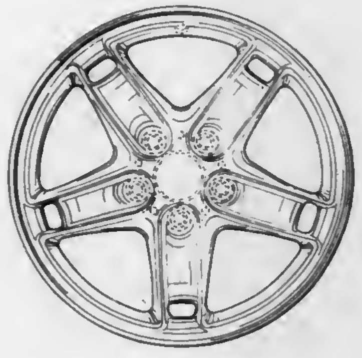
Filed Nov. 21, 1997, Ser. No. 79,697

Claims priority, application Germany, May 21, 1997, M 97 04 929.8

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—211



402,953
WIPER BLADE ADAPTER FOR A VEHICLE WINDSHIELD

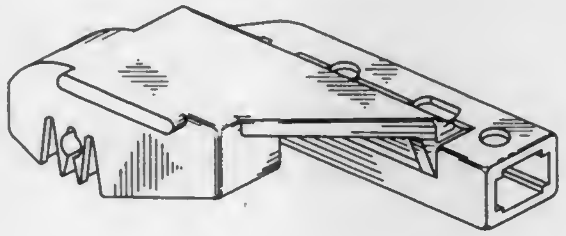
In-kyu Kim, 3-1306 Yesguiin Apt. 583 Sungpo-Dong, Ansan-Si, Kyungki-Do, Rep. of Korea

Filed Dec. 17, 1996, Ser. No. 63,853

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—220



402,954
BATTERY FOR A MOBILE TELEPHONE

Thomas William Waldner, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

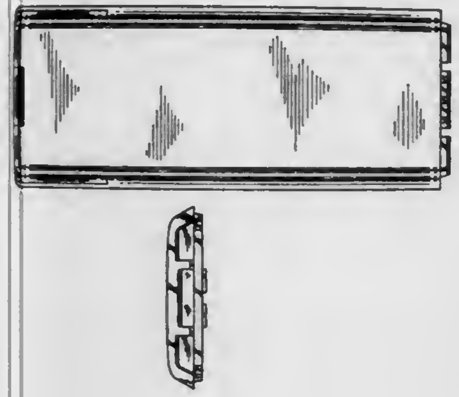
Filed Jun. 30, 1997, Ser. No. 73,461

Claims priority, application Sweden, Dec. 30, 1996, 96-2725

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



402,955
BATTERY CASE

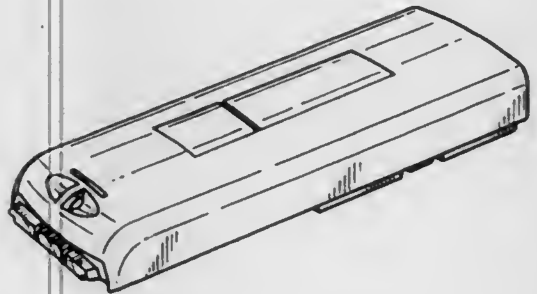
Richard B. Smith; David Suske, both of Bethel, and Cely O'Brien, Danbury, all of Conn., assignors to Duracell Inc., Bethel, Conn.

Filed Jan. 23, 1998, Ser. No. 82,528

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



402,956
TRAVELING CHARGER

Richard Lindahl, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

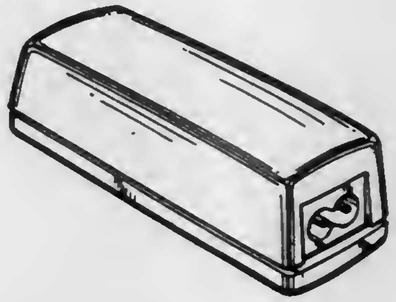
Filed Nov. 18, 1996, Ser. No. 62,521

Claims priority, application Sweden, May 17, 1996, 96-1133

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—107



402,957
BATTERY CHARGER FOR PORTABLE WIRELESS PHONE

Tatsuo Kuwayama; Tetsufumi Takayasu, and Hiroshi Fujiwara, all of Tokyo, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan

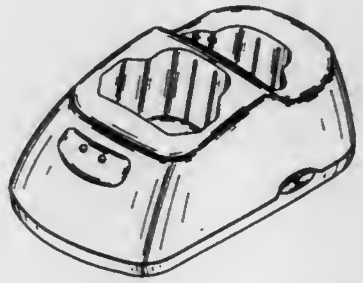
Filed Dec. 9, 1996, Ser. No. 63,465

Claims priority, application Japan, Jun. 14, 1996, 8-17720

Term of patent 14 years

LOC (6) Cl. 13 - *02*

U.S. Cl. D13—108



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402,958

CABLE GROUNDING DEVICE

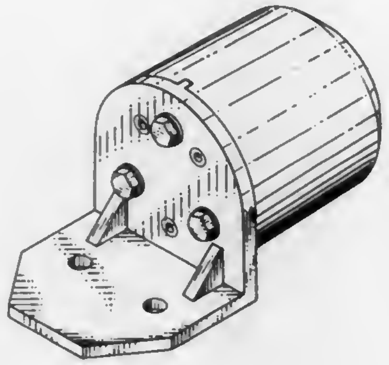
Kenneth N. Sontag, Winnipeg, Canada, assignor to Norscan Instruments Ltd., Winnipeg, Canada

Filed Nov. 26, 1997, Ser. No. 80,062

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—133



402,959

BULB SOCKET

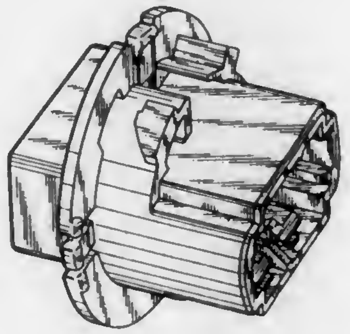
Tadashi Harada, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Shizuoka, Japan

Filed May 9, 1997, Ser. No. 70,443

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—134



402,960

BULB SOCKET

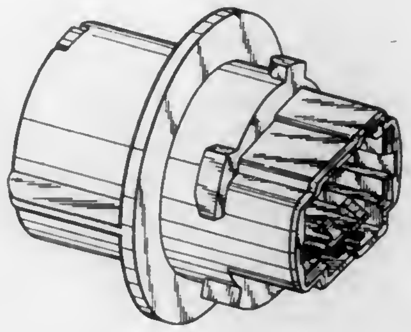
Tadashi Harada, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed May 9, 1997, Ser. No. 70,444

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—134



402,961

BULB SOCKET

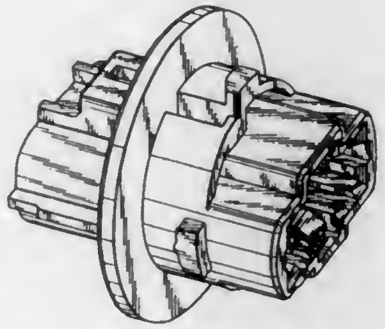
Tadashi Harada, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed May 9, 1997, Ser. No. 70,445

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—134



402,962

ELECTRICAL PLUG BODY

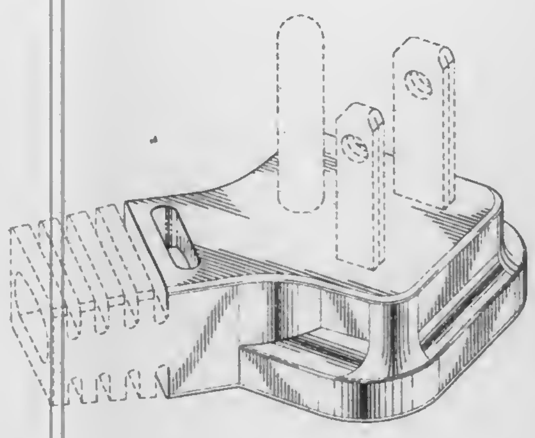
Paul A. Hedrick, Alexandria, Ky., assignor to General Cable Corporation, Highlands Heights, Ky.

Filed Dec. 12, 1997, Ser. No. 80,642

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—138.2



402,963

POWER BAR

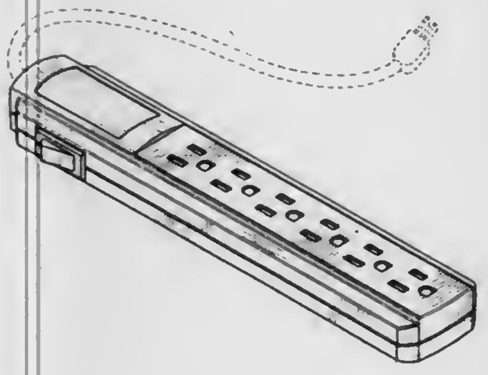
David A. Parshad, Markham, Canada, assignor to Noma Inc, Canada

Filed Mar. 21, 1997, Ser. No. 68,256

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—139.6



402,964

LIGHTING FIXTURE TRACK SYSTEM

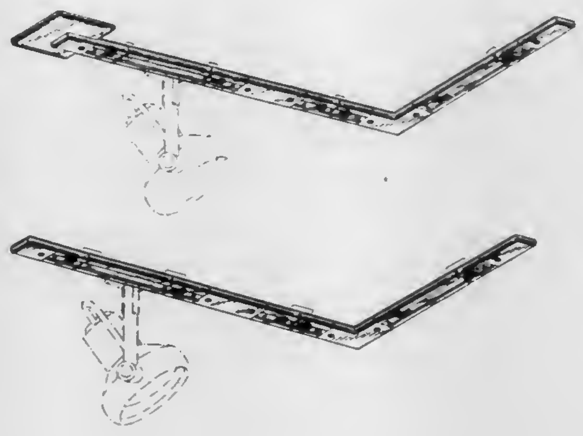
James Kuchar, Fall River, and Anthony Donato, Wellesley, both of Mass., assignors to Lightolier Divsion of the Genlyte Group Incorporated, Union, N.J.

Filed Apr. 8, 1996, Ser. No. 52,910

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—155



402,965

MODULAR HOUSING FOR ELECTRICAL CIRCUITS

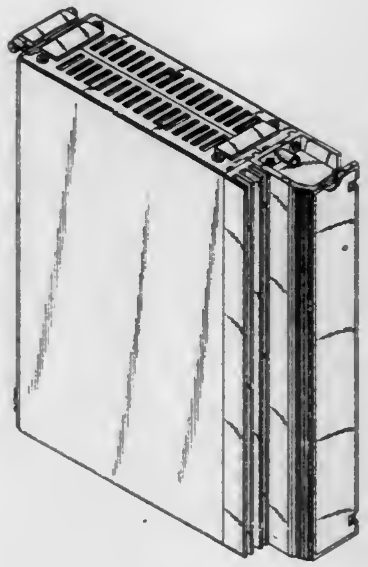
Werner Bender, Ostfildern, Germany, assignor to Pilz GmbH & Co., Ostfildern, Germany

Division of Ser. No. 44,162, Sep. 19, 1995, Pat. No. Des. 394,642. This application Dec. 11, 1997, Ser. No. 80,625

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—162



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402,966
AUTOCLAVABLE SURGICAL REMOTE CONTROL

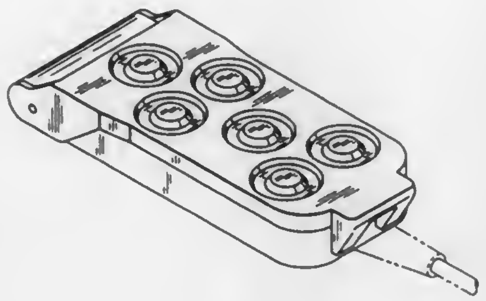
Joepert R. Lim, Palm Harbor, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Apr. 16, 1997, Ser. No. 69,371

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—168



402,967
HANDHELD COMPUTER

Norihito Hanafsa, Yokohama; Hiroaki Hishiyama, Tachikawa, and Yukinori Ido, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

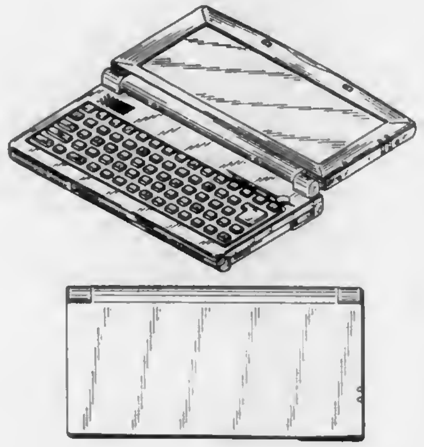
Filed Nov. 20, 1997, Ser. No. 79,792

Claims priority, application Japan, Oct. 20, 1997, 9-71724

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—100



402,968
LAPTOP COMPUTER

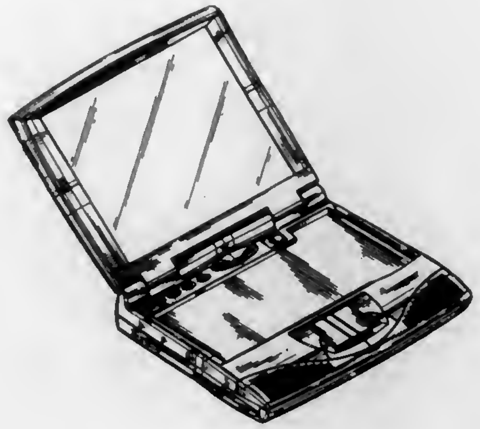
Stacy Wolff, and Wayne Brezovar, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 5, 1996, Ser. No. 63,314

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—106



402,969
SCANNER

Hidetoshi Fujimoto, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Japan

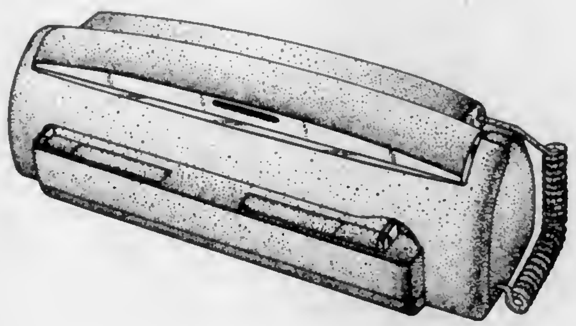
Filed Jun. 24, 1997, Ser. No. 75,916

Claims priority, application Japan, Dec. 24, 1996, 8-39193

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—107



402,970
DEPLOYABLE MONITOR

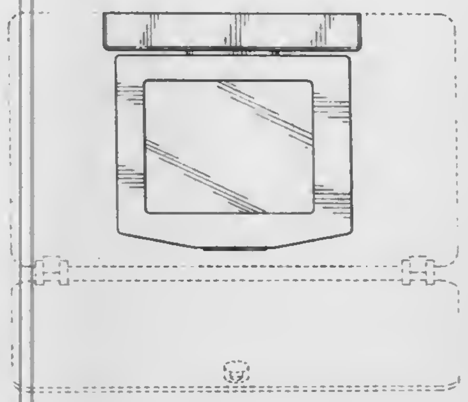
John B. Rosen, Eugene, Oreg., assignor to Advanced Multimedia Products Corporation, Eugene, Oreg.

Filed Aug. 29, 1997, Ser. No. 75,857

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D14—113



402,971
KEYBOARD SUPPORT ASSEMBLY

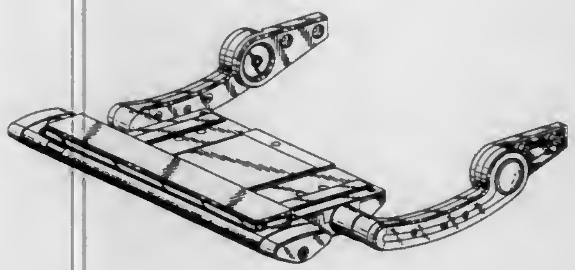
Kenneth J. Kirchhoff, Gem Lake; Robert J. Wolf, Woodbury, both of Minn.; Lawrence J. Fenske, and Manfred W. Suhr, both of Oregon, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 50,543, Jan. 16, 1996, Pat. No. Des. 387,744. This application Aug. 15, 1997, Ser. No. 74,971

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



402,972
MOUSE HOUSE

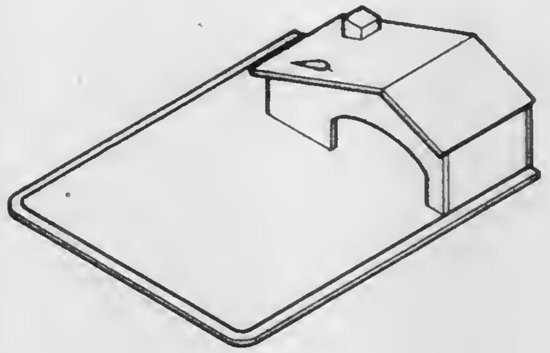
Jan-Nan Chen, No. 3, Kuang Min Street, Chien Ching District, Kaohsiung, Taiwan

Filed Sep. 16, 1997, Ser. No. 76,945

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



402,973
COMPUTER POINTING DEVICE

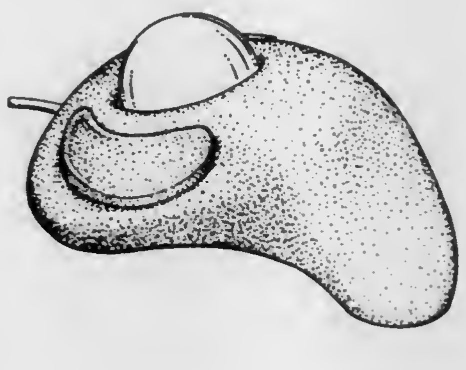
Mark A. Edwards, and Debra M. Reich, both of San Francisco, Calif., assignors to ACCO Brands, Inc., Lincolnshire, Ill.

Filed Oct. 8, 1997, Ser. No. 77,760

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



402,974

Patent Not Issued For This Number

402,975

COMBINED TOP AND BOTTOM CARTRIDGE SHELLS

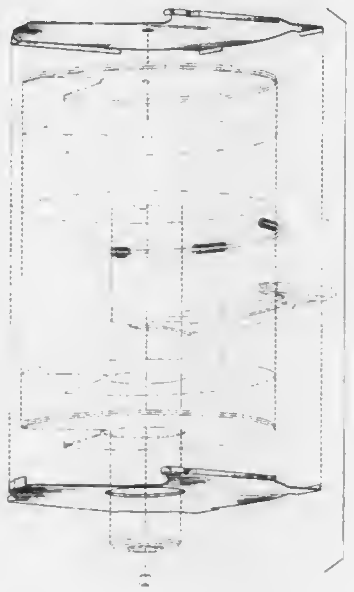
Brian Schick, San Diego, Calif.; Shane Nowell, Riverdale, Utah, and Jonathan Guerra, San Francisco, Calif., assignors to Iomega Corporation, Roy, Utah

Filed Nov. 12, 1997, Ser. No. 79,349

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



402,976

VIDEO GAME CONTROLLER

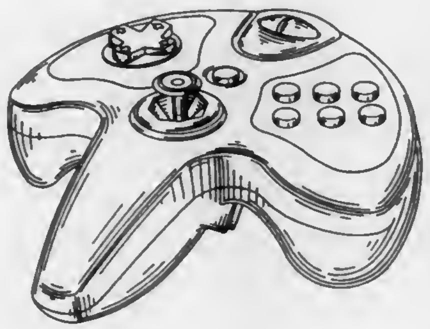
Leny Heung, Hong Kong, China, assignor to STD Manufacturing Ltd., Hong Kong, Hong Kong

Filed May 21, 1997, Ser. No. 72,143

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D14—117.1



402,977

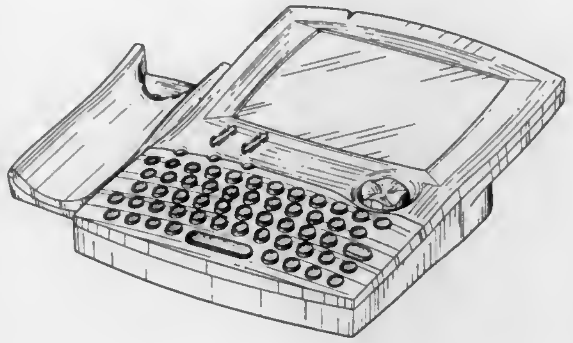
TELEPHONE BASE

Ronald Leroy Lytel, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jan. 23, 1998, Ser. No. 82,489

Term of patent 14 years

U.S. Cl. D14—130



402,978

STAND ALONE VIDEOPHONE

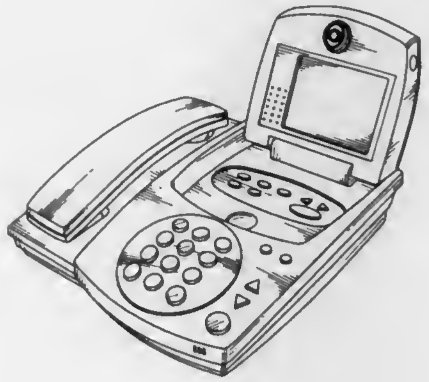
Chia-Wen Wang; Yu-Lin Chao, and Jeng-Yeong Tyan, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 28, 1998, Ser. No. 82,839

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—130



402,979

DISC PLAYER/RECORDER

Shinichi Ogasawara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

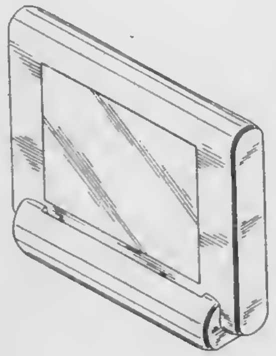
Filed May 9, 1997, Ser. No. 70,552

Claims priority, application Japan, Nov. 29, 1996, 8-36325

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—136



402,980

TELEPHONE

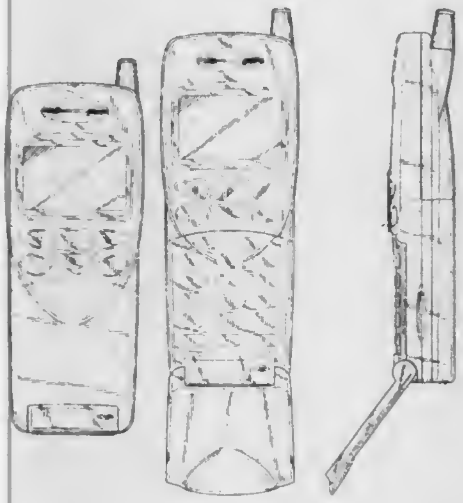
Douglas M. Galletti; Anthony D. Shoemaker; Douglas N. Laube; Ronald J. Guillard; Kevin S. Hodge, all of Plano; Hideharu Suzuki; Manijeh Moghis, both of Dallas, and Leo J. Moster, Richardson, all of Tex., assignors to Fujitsu Network Communications, Inc., Richardson, Tex.

Filed Sep. 5, 1997, Ser. No. 76,055

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—138



402,981

TELEPHONE

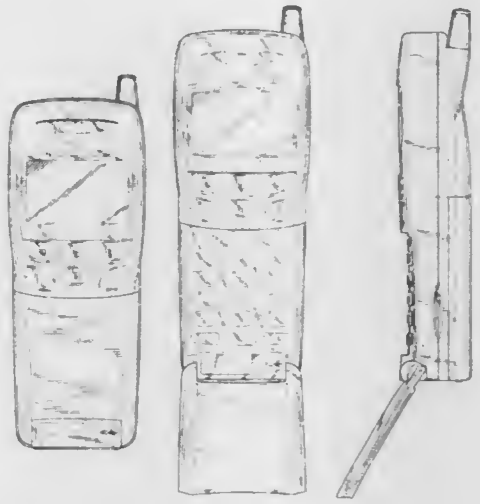
Douglas M. Galletti; Anthony D. Shoemaker; Douglas N. Laube; Ronald J. Guillard; Kevin S. Hodge, all of Plano; Hideharu Suzuki; Manijeh Moghis, both of Dallas, and Leo J. Moster, Richardson, all of Tex., assignors to Fujitsu Network Communications, Inc., Richardson, Tex.

Filed Sep. 5, 1997, Ser. No. 76,063

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—138



402,982

WIRELESS TELEPHONE

Katsumi Nagano; Hiroki Nishii; Masao Tamura, and Toshiro Iizuka, all of Kanagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

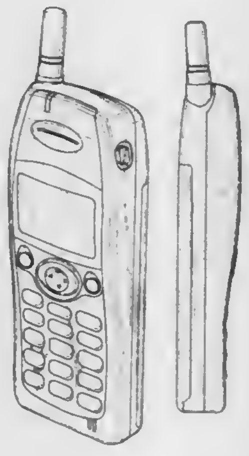
Filed Nov. 17, 1997, Ser. No. 79,455

Claims priority, application Japan, Jun. 12, 1997, 9-57854

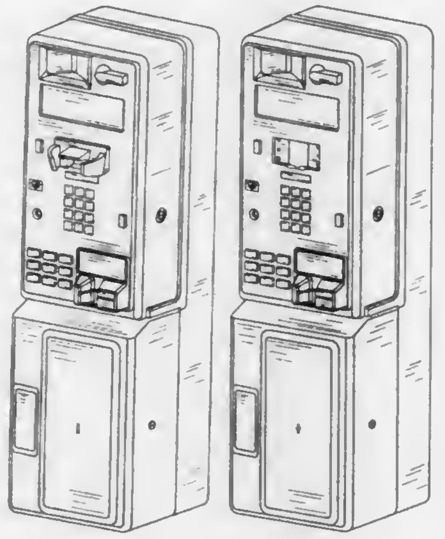
Term of patent 14 years

LOC (6) Cl. 14 - *03*

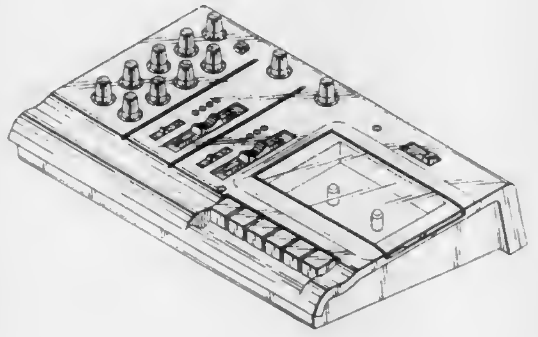
U.S. Cl. D14—138



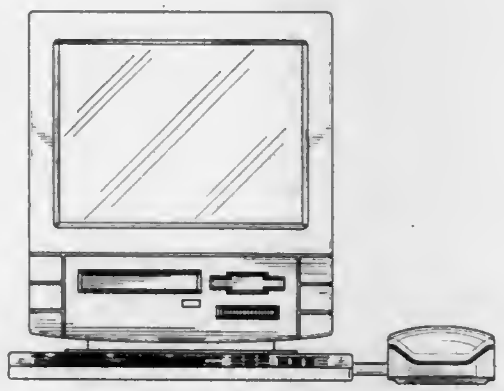
402,983
PAY TELEPHONE
Ronald L. Wild, Carmel; Robert R. Goodrich, and Ray G. Jackson, both of Indianapolis, all of Ind., assignors to Lucent Technologies, Inc., Murray Hill, N.J.
Filed Jul. 23, 1997, Ser. No. 73,990
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—146



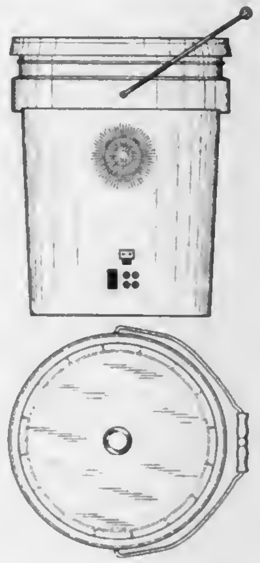
402,984
COMBINED AUDIO MIXER AND TAPE RECORDER
Masafumi Ito; Haruki Takita, and Yasunobu Shimizu, all of Musashino, Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Feb. 24, 1998, Ser. No. 84,116
Claims priority, application Japan, Aug. 27, 1997, 9-65917
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—162



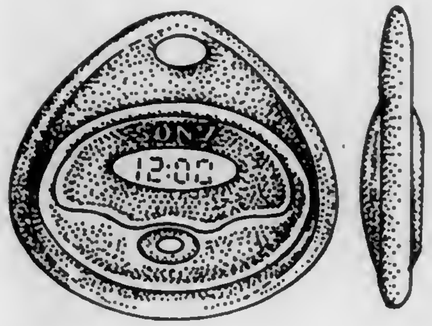
402,985
RADIO
Joelle Fu Lam Ho, Kowloon, Hong Kong, assignor to Hedworth Limited, Hong Kong
Filed May 22, 1997, Ser. No. 71,160
Claims priority, application United Kingdom, Nov. 25, 1996, 2061152
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—189



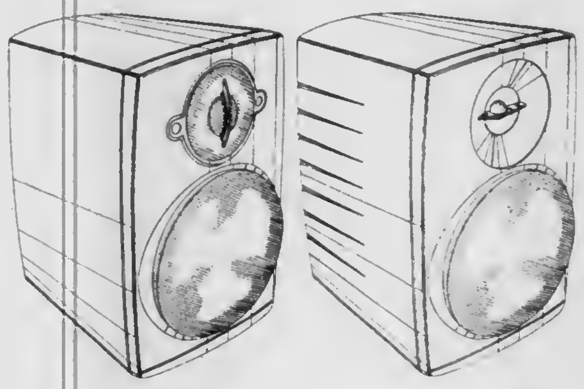
402,986
COMBINED BUCKET RADIO AND POWER SUPPLY
Thomas W. Doak, 515 Shirk La., SW., Albuquerque, N. Mex. 87105
Filed Oct. 3, 1997, Ser. No. 77,545
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—189



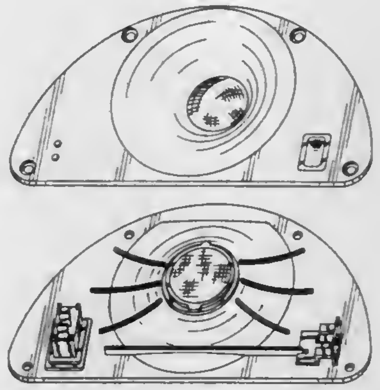
402,987
PAGER PENDANT
James E. Wicks, San Francisco, Calif., assignor to Sony Corporation, Japan, and Sony Electronics,Inc, Park Ridge, N.J.
Filed Feb. 28, 1997, Ser. No. 68,950
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



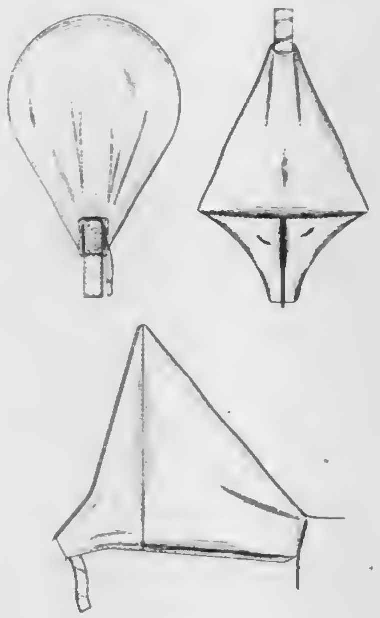
402,988
LOUDSPEAKER
Jay Shin, Brooklyn, and Charles Rozier, New York, both of N.Y., assignors to Boston Acoustics, Inc., Peabody, Mass.
Filed Sep. 3, 1996, Ser. No. 59,099
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—214



402,989
SPEAKER WAVE GUIDE
Gary E. Church, Jenison; Randall J. Lezman, Sand Lake, and Lee Victor Barker, Wyoming, all of Mich., assignors to Rockford Corporation, Tempe, Ariz.
Filed Oct. 22, 1997, Ser. No. 78,372
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—216



402,990
SATELLITE DISH COVER
David Z. Kelly, and Michael G. Ryan, both of Newark, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Feb. 5, 1997, Ser. No. 66,125
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—230



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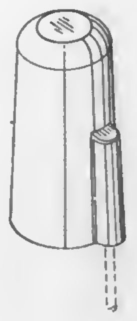
402,991

PORTABLE TELEPHONE ANTENNA COUPLER

Harrison Vance Mosser, Dayton, Ohio, assignor to Valor Enterprises, Inc., Piqua, Ohio

Filed Jul. 21, 1997, Ser. No. 73,823
Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—230



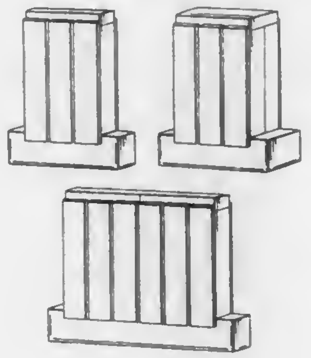
402,992

CROSS CONNECTION CABINET

Claus Sander, Berlin, Germany, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Aug. 30, 1996, Ser. No. 59,035
Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—240



402,993

CRADLE FOR A HANDSET

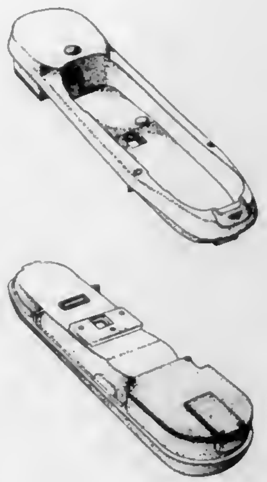
Neil James, Worthing, and Alan Clifford Dowsett, Lancing, both of England, assignors to MBM Technology Limited, United Kingdom

Filed Feb. 28, 1997, Ser. No. 66,959

Claims priority, application United Kingdom, Aug. 30, 1996, 9618149; Sep. 9, 1996, 2059174

Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—253



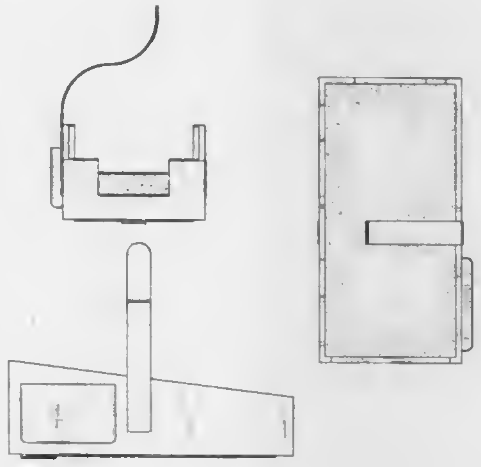
402,994

CELLULAR PHONE HOLDING AND TRANSPORTING DEVICE

Artemio J. Acosta, 107 Pennsylvania Rd., Glassboro, N.J. 08028

Filed Mar. 5, 1997, Ser. No. 67,367
Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—253



402,995

DRIVE PLATE FOR A MOTOR VEHICLE

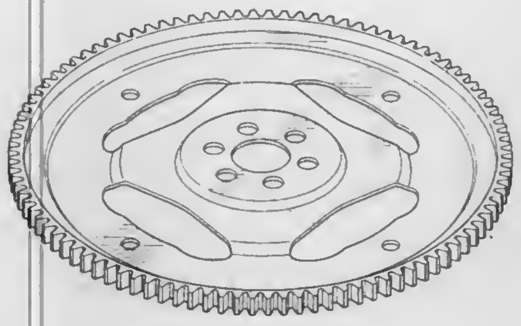
Norihiko Hakamata, Shizuoka-ken, Japan, assignor to Fujikiko Kabushiki Kaisha, Japan

Filed Nov. 25, 1997, Ser. No. 79,982

Claims priority, application Japan, May 30, 1997, 9-55963

Term of patent 14 years
LOC (6) Cl. 15 - *01*

U.S. Cl. D15—5



402,996

DRIVE PLATE FOR A MOTOR VEHICLE

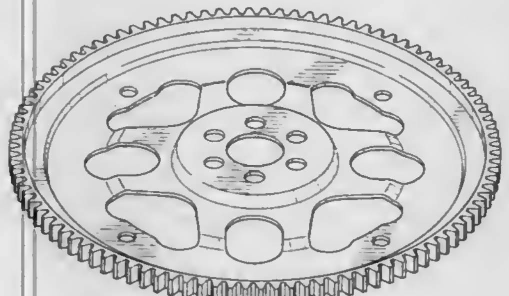
Hiroshi Watanabe, Shizuoka-ken, Japan, assignor to Fujikiko Kabushiki Kaisha, Japan

Filed Nov. 25, 1997, Ser. No. 79,989

Claims priority, application Japan, Jun. 5, 1997, 9-56698

Term of patent 14 years
LOC (6) Cl. 15 - *01*

U.S. Cl. D15—5



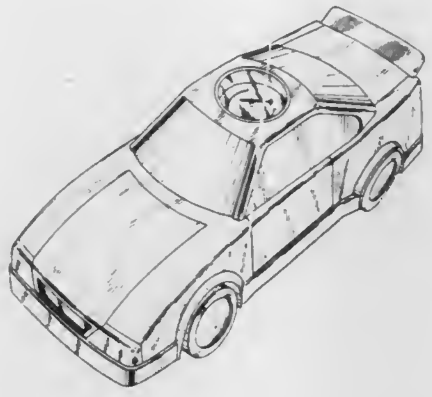
402,997

POWERED AIR INFLATOR

John B. Campbell, Harrison; Kurt W. Kamka, Loveland, and Randy A. Smith, Harrison, all of Ohio, assignors to Campbell Hausfeld/ Scott Fetzer Company, Harrison, Ohio

Filed Aug. 5, 1997, Ser. No. 74,896
Term of patent 14 years
LOC (6) Cl. 15 - *02*

U.S. Cl. D15—7



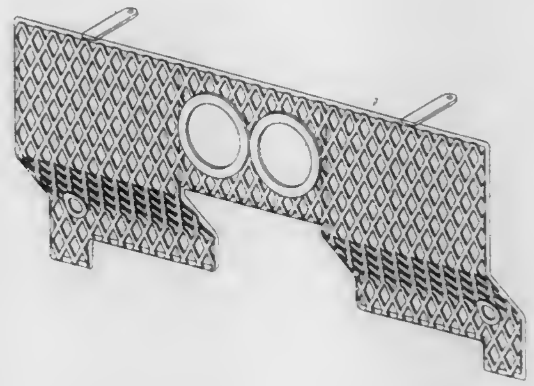
402,998

VENTILATED QUICK ACCESS INSPECTION PLATE FOR RIDING TROWELS

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corp., Paragould, Ark.

Filed Dec. 12, 1997, Ser. No. 80,691
Term of patent 14 years
LOC (6) Cl. 15 - *04*

U.S. Cl. D15—28



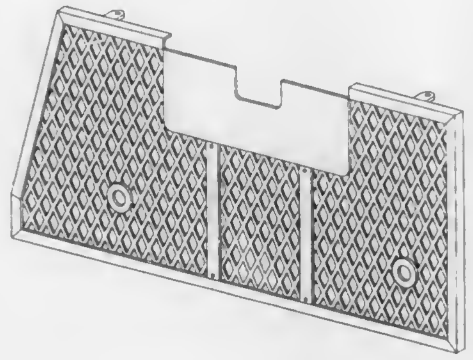
402,999

VENTILATED QUICK ACCESS INSPECTION PLATE FOR RIDING TROWELS

J. DeWayne Allen, Paragould, Ark., assignor to Allen Engineering Corp., Paragould, Ark.

Filed Dec. 12, 1997, Ser. No. 80,693
Term of patent 14 years
LOC (6) Cl. 15 - *04*

U.S. Cl. D15—28



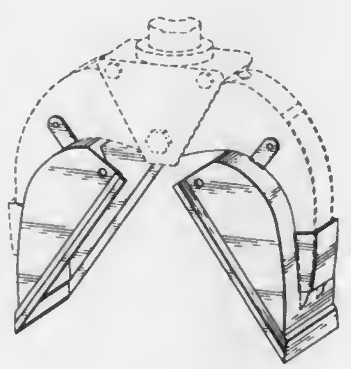
403,000

CLAM SHELL BUCKET FOR GRAPPLE

Stanley S. Leach, P.O. Box 280, French Gulch, Calif. 96033

Filed Feb. 20, 1997, Ser. No. 66,729
Term of patent 14 years
LOC (6) Cl. 15 - *04*

U.S. Cl. D15—32



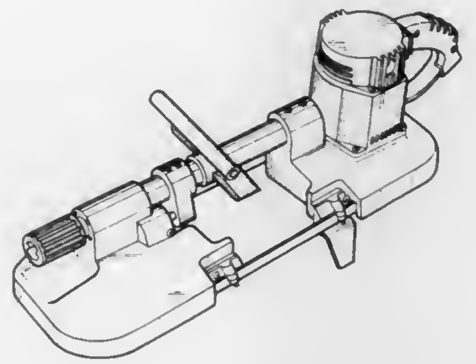
403,001

METAL CUTTING BAND-SAW

Kuo-Chuan Lin, P.O. Box 63-247, Taichung, Taiwan

Filed Jan. 22, 1998, Ser. No. 82,454
Term of patent 14 years
LOC (6) Cl. 15 - *09*

U.S. Cl. D15—134



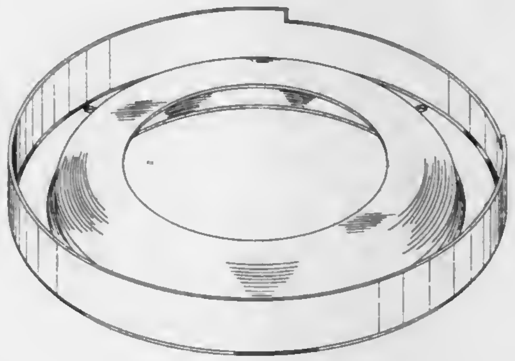
403,002

SHIELD AND COVER FOR TARGET OF SPUTTER COATING APPARATUS

Andrew William Tudhope, Danville; David Bruce Jordan, San Jose, and Josè Luis Gonzalez, Redwood City, all of Calif., assignors to Semiconductor Equipment Technology, Inc., San Jose, Calif.

Filed Jan. 27, 1998, Ser. No. 82,648
Term of patent 14 years
LOC (6) Cl. 15 - *09*

U.S. Cl. D15—138



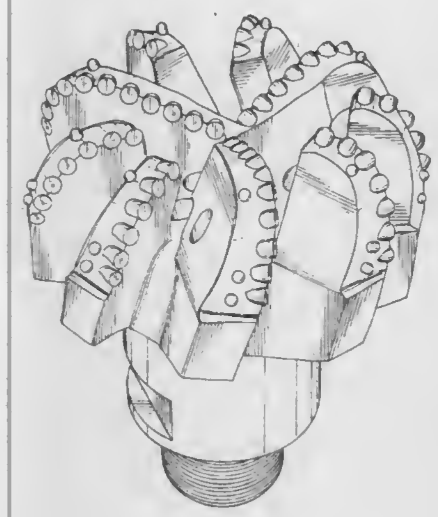
403,003

NINE BLADE DRILL BIT

Robert W. Arfele; George A. Espiritu, both of Houston, and Ed R. Martin, Jr., Spring, all of Tex., assignors to Dresser Industries, Inc., Houston, Tex.

Filed Mar. 5, 1998, Ser. No. 84,544
Term of patent 14 years
LOC (6) Cl. 15 - *09*

U.S. Cl. D15—139



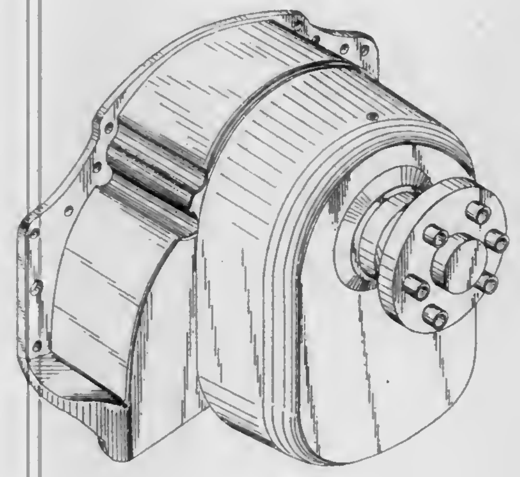
403,004

TRANSMISSION HOUSING

Kenneth B. Kaye, 10277 S. Appaloosa Ave., Floral City, Fla. 34436

Filed May 22, 1997, Ser. No. 71,176
Term of patent 14 years
LOC (6) Cl. 15 - *09*

U.S. Cl. D15—149



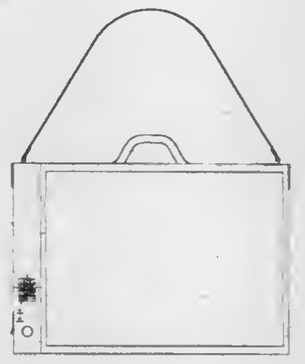
403,005

COMPUTER AIDED DRAFTING PORTABLE VIEWER

Barry S. Herman, 39 Icknield Drive Gants Hill, Essex, United Kingdom, IG2 6SE

Filed Oct. 22, 1997, Ser. No. 78,169
Term of patent 14 years
LOC (6) Cl. 16 - *06*

U.S. Cl. D16—130



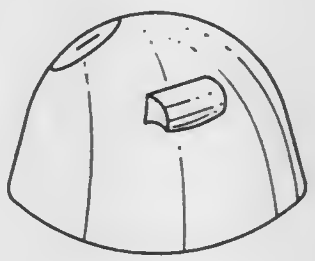
403,006

COUNTERFEIT DETECTION VIEWER FOR PAPER CURRENCY

Camille Romano, 7436 SW. 117th Ave., Suite 208, Miami, Fla. 33183

Division of Ser. No. 64,213, Dec. 24, 1996, Pat. No. Des. 394,667. This application Jul. 25, 1997, Ser. No. 73,957
Term of patent 14 years
LOC (6) Cl. 16 - *06*

U.S. Cl. D16—135



403,007

WATER PROOF CASE FOR VIDEO CAMERA COMBINED WITH VIDEO TAPE RECORDER

Daisuke Ishii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

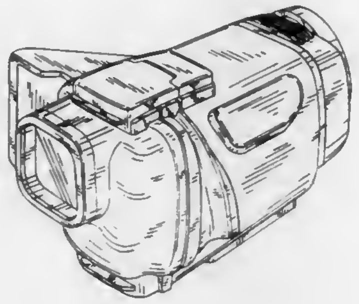
Filed Jan. 31, 1997, Ser. No. 65,283

Claims priority, application Japan, Aug. 8, 1996, 8-23681

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—204



403,008

EYEGLASS FRAME

Isao Hyoui, Sakai-gun, Japan, assignor to Nikon Corporation, Tokyo, Japan

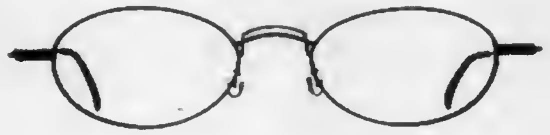
Division of Ser. No. 59,796, Sep. 16, 1996, Pat. No. Des. 392,667. This application Dec. 5, 1997, Ser. No. 80,562

Claims priority, application Japan, Apr. 22, 1996, 8-11659; Apr. 22, 1996, 8-11660

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—327



403,009

LIQUID CRYSTAL PROJECTOR

Yoichi Yamazaki, Sagamihara, and Aki Nanjo, Tokyo, both of Japan, assignors to Fujitsu General Limited, Japan

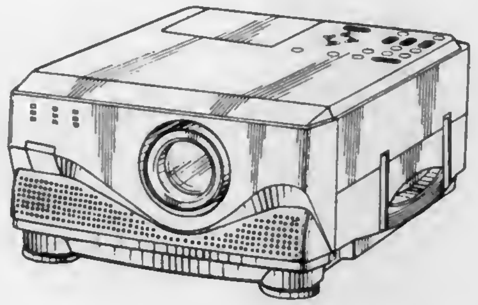
Filed Feb. 24, 1998, Ser. No. 84,099

Claims priority, application Japan, Aug. 26, 1997, 9-65775

Term of patent 14 years

LOC (6) Cl. 16 - *02*

U.S. Cl. D16—225



403,010

EYEWEAR

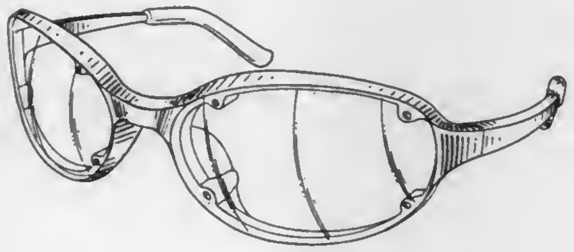
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 1, 1997, Ser. No. 70,154

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



403,011

SUNGLASSES

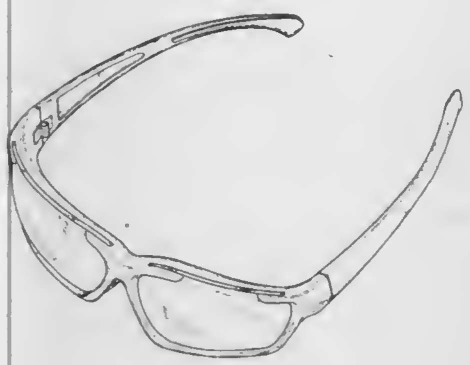
Bryan S. Davis, Sun Valley, Id., assignor to Smith Sport Optics, Inc., Ketchum, Id.

Filed Feb. 25, 1998, Ser. No. 84,130

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



403,012

GUITAR PRACTICE DEVICE

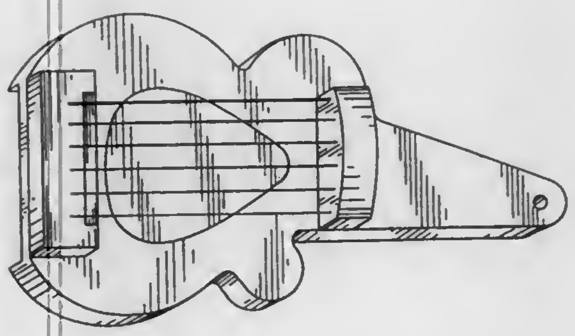
Wayne T. Anderko, 3914 Hwy. Ave., Highland, Ind. 46322

Filed Apr. 22, 1997, Ser. No. 69,508

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—14



403,013

ELECTRIC VIOLIN

Takashi Honda, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

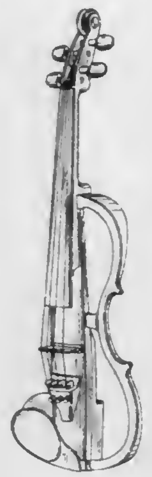
Filed Oct. 10, 1997, Ser. No. 77,977

Claims priority, application Japan, May 20, 1997, 9-54881

Term of patent 14 years

LOC (6) Cl. 17 - *03*

U.S. Cl. D17—17



403,014

TONER BOTTLE

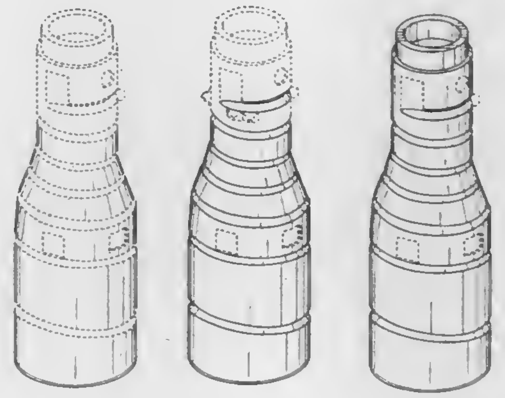
Akihiro Kura; Masami Eda, both of Kobe, and Keisuke Ito, Toyohashi, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Mar. 12, 1997, Ser. No. 68,473

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—43



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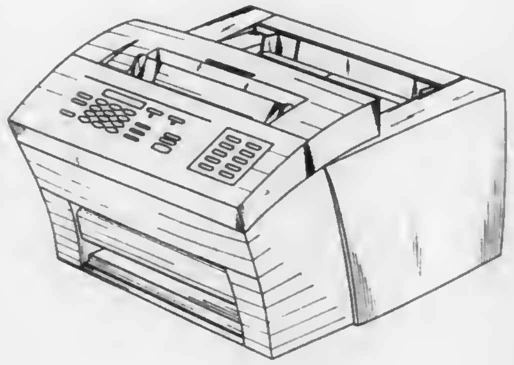
403,015
DOCUMENT PRINTER

Will G. Fetherolf, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 19, 1997, Ser. No. 72,513
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D18—55

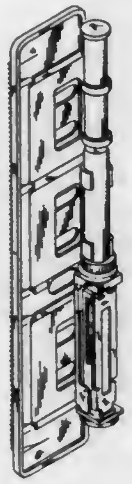


403,016
TAPE, GLUE AND STAPLER WITH HOLDER

Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711, and Doug Noyes, Upland, Calif., assignors to Mark A. Bedol, Claremont, Calif.

Filed Nov. 13, 1997, Ser. No. 79,933
Term of patent 14 years
LOC (6) Cl. 19 - *04*

U.S. Cl. D19—32

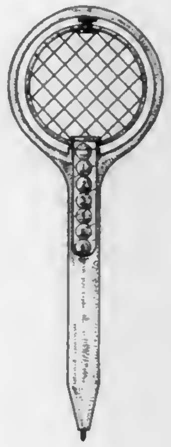


403,017
NUMBER SELECTING PEN

Cecilia S. Barrozo, 4280 Comet Cir., Union City, Calif. 94587

Filed Oct. 31, 1997, Ser. No. 78,804
Term of patent 14 years
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—36

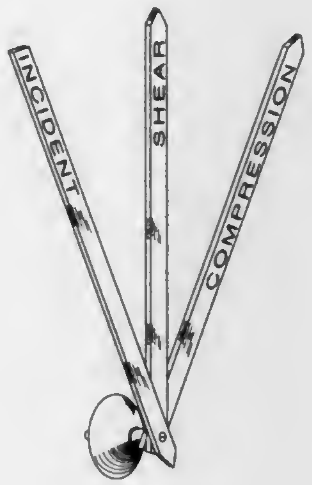


403,018
TEACHING AID FOR ULTRASOUND WAVE THEORY

Joseph Scott Powell, Port St. John, Fla., assignor to Joseph S. Powell, Port St. John, Fla.

Filed Oct. 1, 1996, Ser. No. 60,583
Term of patent 14 years
LOC (6) Cl. 19 - *07*

U.S. Cl. D19—59

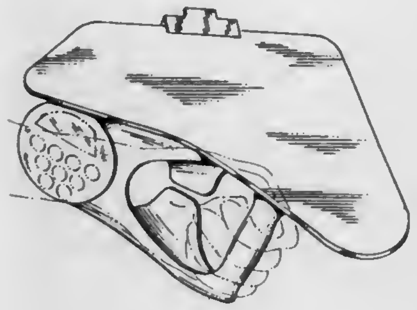


403,019
CLIPBOARD

Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711, and Edward Wong, Alhambra, Calif., assignors to Mark A. Bedol, Claremont, Calif.

Filed Feb. 7, 1998, Ser. No. 83,354
Term of patent 14 years
LOC (6) Cl. 19 - *02*

U.S. Cl. D19—88

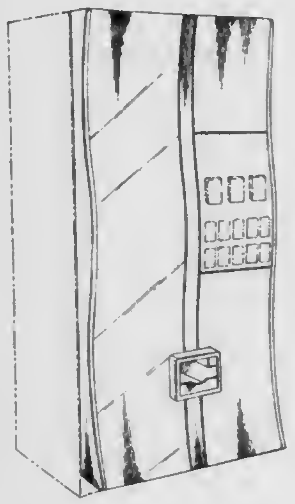


403,020
CONTOUR VENDING MACHINE FACE

William James Saunders, Lithonia, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 27, 1997, Ser. No. 75,880
Term of patent 14 years
LOC (6) Cl. 20 - *01*

U.S. Cl. D20—8



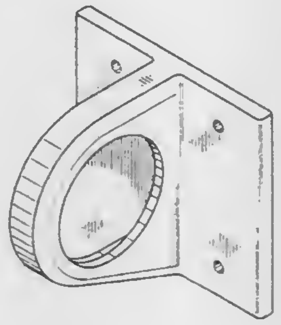
403,021
COIN SLOT GUARD

W. Thomas McClellan, 3541 W. State Rd. 84, Fort Lauderdale, Fla. 33312

Continuation-in-part of Ser. No. 53,075, Apr. 16, 1996, Pat. No. Des. 389,521. This application Aug. 21, 1997, Ser. No. 75,471

Term of patent 14 years
LOC (6) Cl. 20 - *01*

U.S. Cl. D20—9

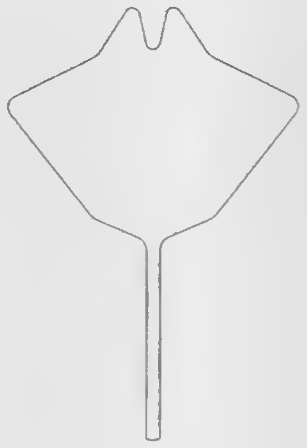


403,022
NOVELTY SPORTS RATTLE

Charles S. Palardis, 8408 N. Edison Ave., Tampa, Fla. 33604

Filed Feb. 4, 1998, Ser. No. 83,124
Term of patent 14 years
LOC (6) Cl. 20 - *03*

U.S. Cl. D20—29



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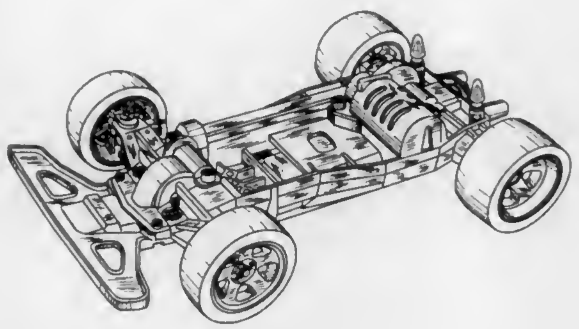
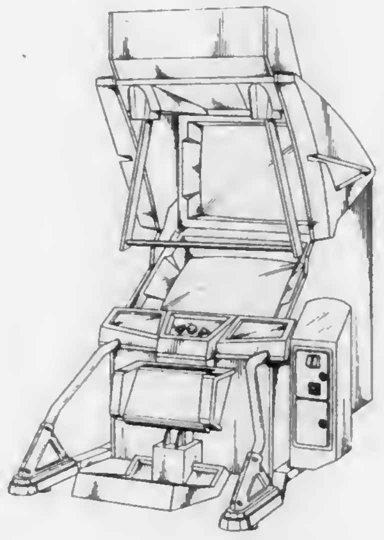
403,023
CHASSIS OF RADIO-CONTROLLED MODEL VEHICLE

Shigeki Araki, Shizuoka, Japan, assignor to Tamiya, Inc., Shizuoka, Japan
Filed Aug. 25, 1997, Ser. No. 75,788
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—141



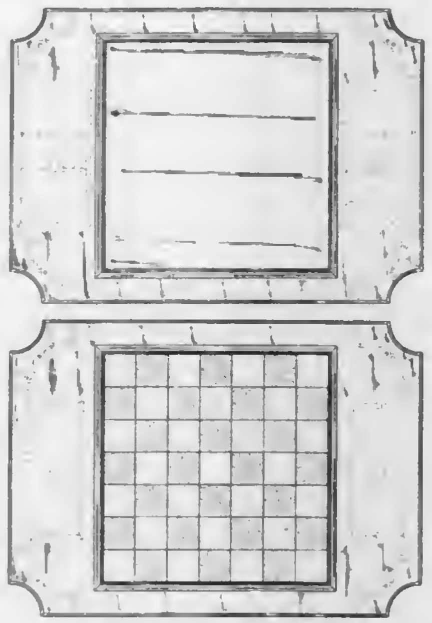
403,024
GAME MACHINE

Hiroyuki Muraki; Katsunori Okita, and Satoshi Uchiyama, all of Kobe, Japan, assignors to Konami Co. Ltd., Hyogo-ken, Japan
Filed Aug. 4, 1997, Ser. No. 74,518
Claims priority, application Japan, Feb. 5, 1997, 9-3224
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—326



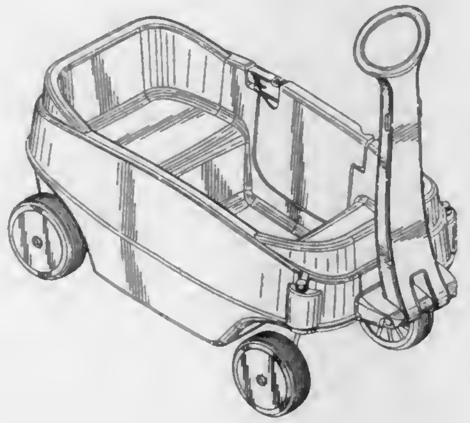
403,025
WALL MOUNTED GAME BOARD

Anastacio G. Martinez, 2410 S. 20th St., Milwaukee, Wis. 53215
Filed Jul. 21, 1997, Ser. No. 73,972
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—337



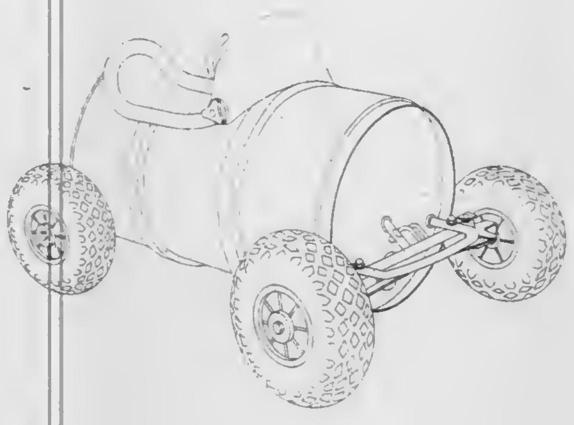
403,026
CHILDREN'S RIDING VEHICLE

Antonio J. Pasin, 675 Lake St., Apt. No. 315, Oak Park, Ill. 60301
Filed Oct. 31, 1997, Ser. No. 78,892
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—425



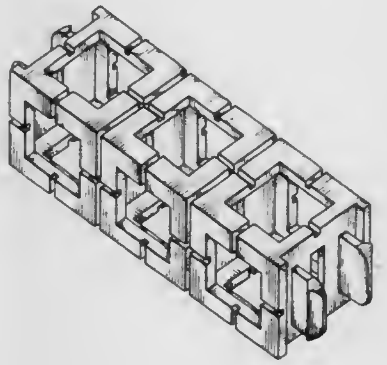
403,027
PEDAL CAR

Guillaume Pourtout, 16 Avenue du Bel-Air, 75012 Paris, France
Filed Dec. 30, 1996, Ser. No. 64,348
Claims priority, application France, Jul. 8, 1996, 963968
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—433



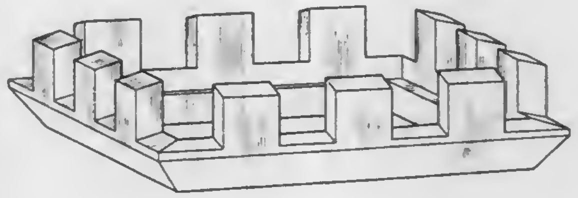
403,028
BEAM IN A BUILDING STRUCTURE PROVIDING PATHS OF MOVEMENT FOR A TOY VEHICLE

William M. Barton, Jr., Encinitas, and Lonnie C. Pogue, San Diego, both of Calif., assignors to Rokenbok Toy Company, Cardiff, Calif.
Filed Jan. 8, 1998, Ser. No. 81,672
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—486



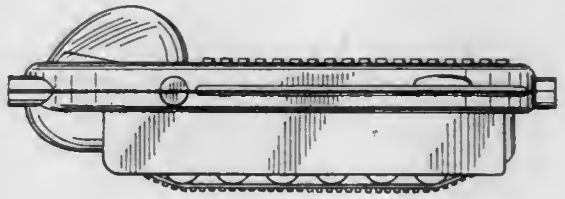
403,029
TOY CASTLE TOP

Gary B. Van Wagenen, San Marino, Calif., assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Feb. 3, 1997, Ser. No. 66,050
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—494



403,030
TRACKED VEHICLE TOY

Gilbert Y. Yue, Kowloon, Hong Kong, assignor to Alert Enterprises, Inc., San Diego, Calif.
Filed Nov. 19, 1997, Ser. No. 79,951
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—539



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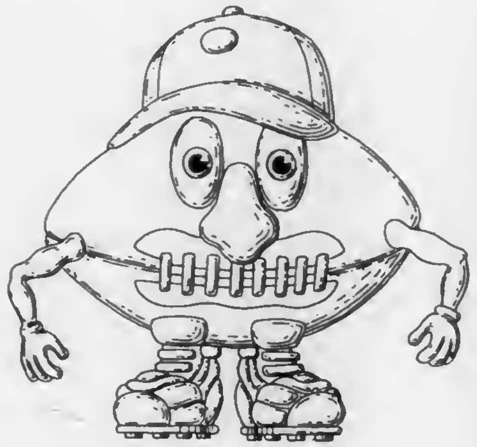
403,031

TOY CARICATURE IN THE FORM OF SPORTS EQUIPMENT WITH REMOVABLE FACIAL FEATURES AND APPENDAGES

Grant R. Stousland, Marshall, and David J. Sanders, Pewaukee, both of Wis., assignors to Th MJ Grant Company, Marshall, Wis.

Filed Jan. 31, 1997, Ser. No. 68,098
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—627



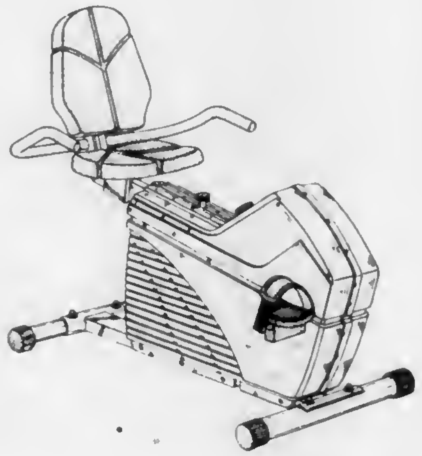
403,032

EXERCISER

Hui-Mei Huang, No. 61, Mai Jou II Rd., I Lan City, Taiwan

Filed Sep. 30, 1997, Ser. No. 77,317
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—666



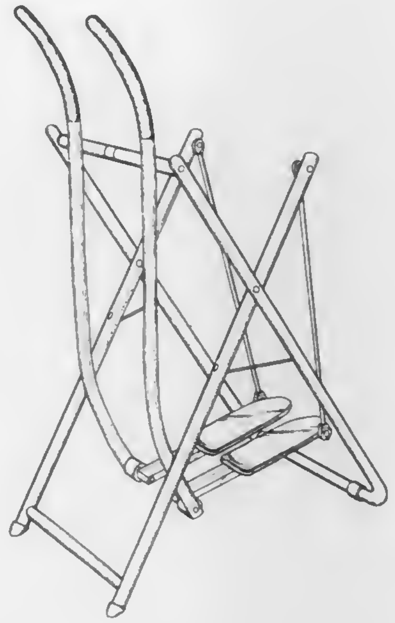
403,033

STRIDING DEVICE

Royce H. Husted, R.R. 4, Box 550, Forest, Va. 24551, and Joel P. Husted, Forest, Va., assignors to Royce H. Husted, Forest, Va.

Filed Dec. 9, 1997, Ser. No. 81,583
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—668



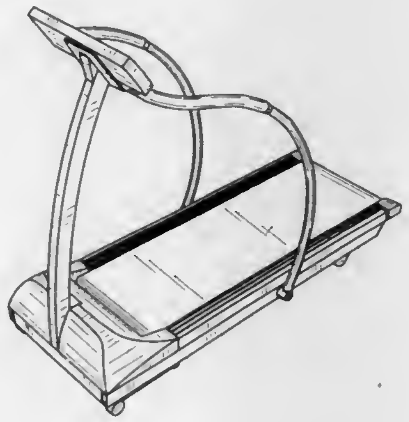
403,034

TREADMILL

Dan Moon, Riverview, Ill.; Stanley J. Goldfader, St. Louis, Mo.; David Green, St. Charles, Mo.; Frank R. Trulaske, St. Louis, Mo., and Scott Eyler, St. Peters, Mo., assignors to True Fitness Technology, Inc., O'Fallon, Mo.

Filed Aug. 13, 1997, Ser. No. 75,227
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—669



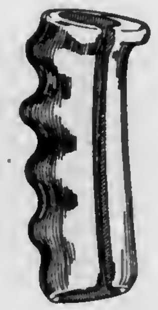
403,035

HAND EXERCISING GRIP FOR STEERING WHEEL

William James MacPherson, P.O. Box 535, Campbellton, New Brunswick, Canada, E3N 3G9

Filed Jul. 21, 1997, Ser. No. 73,733
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D8—303



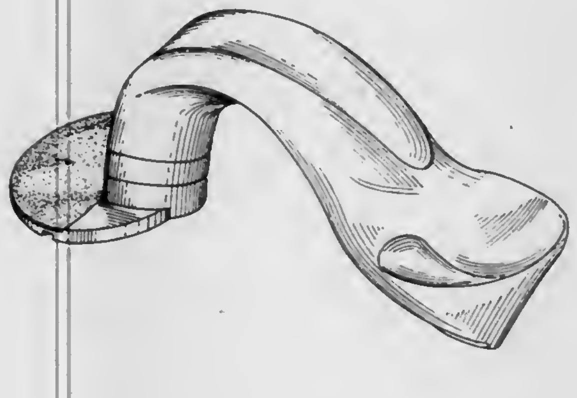
403,036

EXERCISER

Daniel Ashcraft, Torrance; Deanna Griffith, Long Beach, and Kurt Solland, Redondo Beach, all of Calif., assignors to SK Productions, L.L.C., Los Angeles, Calif.

Filed Sep. 3, 1997, Ser. No. 75,630
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—686



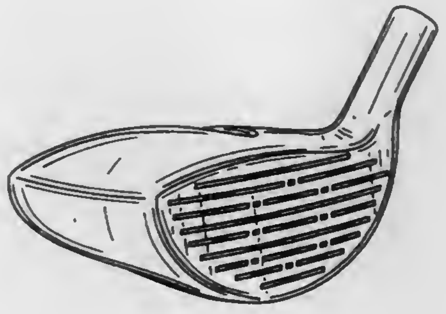
403,037

WOOD-TYPE GOLF CLUB HEAD

Daniel J. Stone, Long Beach; Stephen Chi-Yu Chien, Irvine; Joseph Lemus, III, Long Beach, and John A. Creel, Newport Beach, all of Calif., assignors to Roger Cleveland Golf Company, Inc., Cypress, Calif.

Filed Aug. 26, 1997, Ser. No. 75,326
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—733



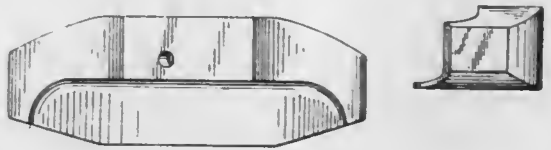
403,038

HEAD FOR GOLF PUTTER

Wayne D. Masterjohn, 22842 Orellana, Mission Viejo, Calif. 92691

Filed May 23, 1997, Ser. No. 71,241
Term of patent 14 years
LOC (6) Cl. 21 - *02*

U.S. Cl. D21—736



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403,039

BALL STRIKING FACE PLATE OF A GOLF WOOD

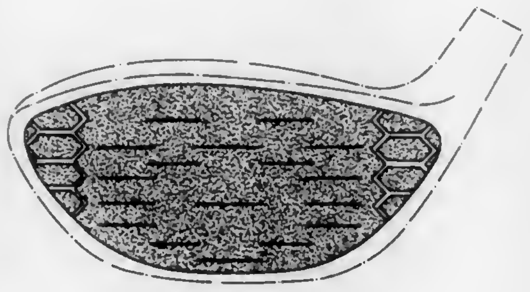
John B. Hoeflich, Lafayette, Colo., assignor to H.D. Golf Development, Inc., Denver, Colo.

Filed Jan. 21, 1997, Ser. No. 65,101

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—753



403,040

SUPPORT STAND FOR PLAYGROUND GLOBE

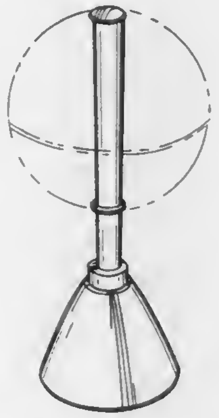
Simone Koutsouflakis, Farmington, Mo., assignor to Rubbermaid Corporation, Wooster, Ohio

Filed Nov. 21, 1997, Ser. No. 79,655

Term of patent 14 years

LOC (6) Cl. 21 - *03*

U.S. Cl. D21—811



403,041

TENT HAVING TRUNCATED CORNERS

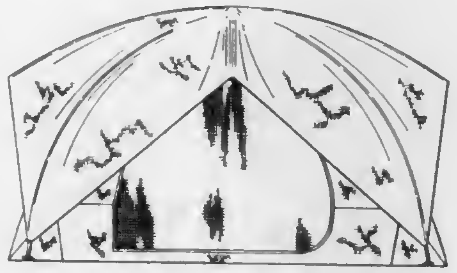
David H. Funk, Libertyville, Ill., assignor to American Recreation Products, Inc., New Haven, Mo.

Filed Mar. 5, 1997, Ser. No. 67,372

Term of patent 14 years

LOC (6) Cl. 21 - *04*

U.S. Cl. D21—834



403,042

PNEUMATIC SPORTING GUN FOR UNDERWATER HUNTING

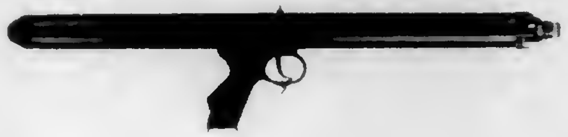
Jury B. Kozlovtzev, "Pravda" av 14-107, 220116 Minsk, Belarus

Filed Feb. 9, 1995, Ser. No. 36,604

Term of patent 14 years

LOC (6) Cl. 22 - *01*

U.S. Cl. D22—102



403,043

RIFLE

Friedrich Spekner, Graz, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

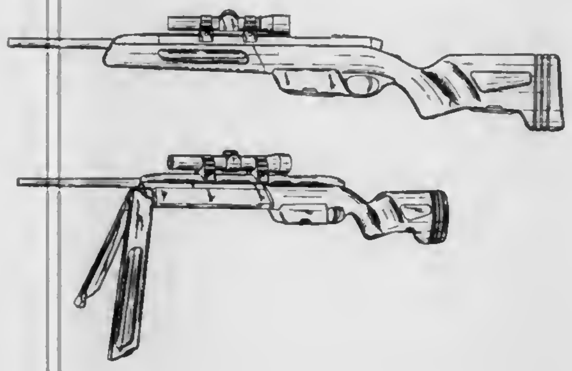
Filed Mar. 14, 1997, Ser. No. 70,902

Claims priority, application Austria, Sep. 17, 1996, MU3505/96

Term of patent 14 years

LOC (6) Cl. 22 - *01*

U.S. Cl. D22—103



403,044

REEL SEAT FOR FISHING ROD

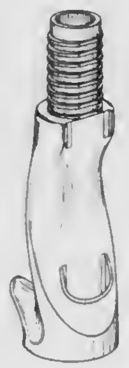
Kunio Tayama, Musashino; Shigeru Yamamoto, and Teiji Matsubara, both of Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jun. 25, 1997, Ser. No. 72,469

Term of patent 14 years

LOC (6) Cl. 22 - *05*

U.S. Cl. D22—142



403,045

REEL SEAT FOR FISHING ROD

Shigeru Yamamoto, Higashikurume; Shinya Takizawa, Musashino, and Teiji Matsubara, Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

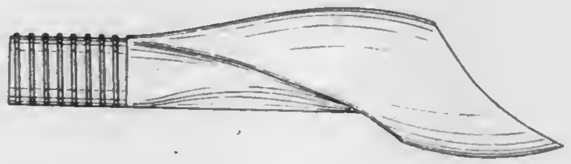
Filed Oct. 27, 1997, Ser. No. 78,471

Claims priority, application Japan, Apr. 30, 1997, 9-53062

Term of patent 14 years

LOC (6) Cl. 22 - *05*

U.S. Cl. D22—142



403,046

MAGIC SHADOW FOUNTAIN

Chung-Kuei Lin, 6F-4, No. 1, Wuchuan 1st Rd., Wuku Industrial Dist., Hsinchuang City, Taipei Hsien, Taiwan

Filed Jun. 24, 1997, Ser. No. 72,553

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—201

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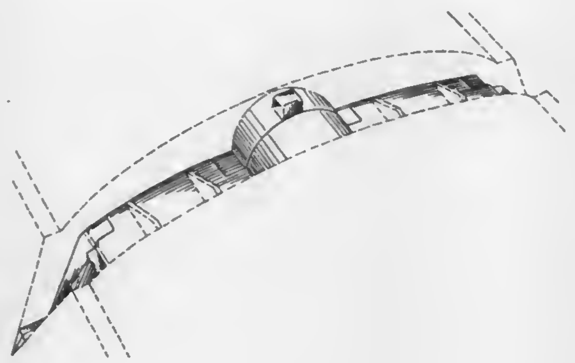
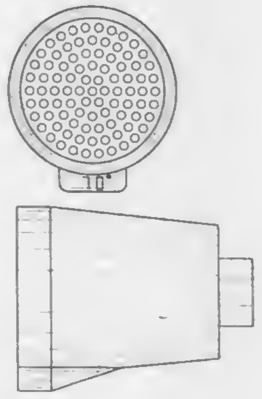
403,047
POST AND DOME INTERCONNECT FOR LEACHING CHAMBERS

Terrance H. Gray, 28 Webber Ave., Bath, Me. 04530
Continuation-in-part of Ser. No. 51,471, Mar. 11, 1996, which is a continuation-in-part of Ser. No. 320,496, Oct. 7, 1994, Pat. No. 5,498,104. This application Jan. 16, 1997, Ser. No. 64,977
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—207



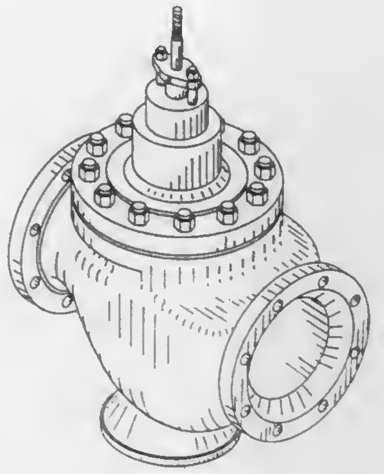
403,048
SHOWER HEAD WITH TEMPERATURE DISPLAY

Karriem Allah, 813 Northwest 116 Ter., Oklahoma City, Okla. 73114
Filed Jan. 15, 1998, Ser. No. 82,117
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—228



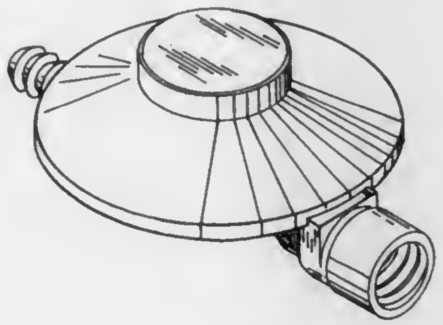
403,049
DOUBLE-SEATED CONTROL VALVE

Hideo Ohtani; Ryoji Okutsu; Hiroshi Yamamoto, and Koji Izumi, all of Kanagawa Pref., Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1997, Ser. No. 73,245
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—233



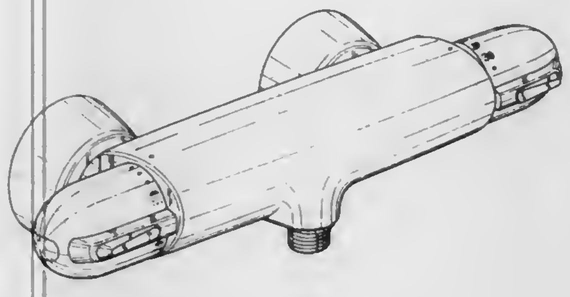
403,050
GAS REGULATOR

Bernard Schlick, 97 Via Stazione, 25011 Calcinato, Italy
Filed Jun. 27, 1996, Ser. No. 56,372
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—235



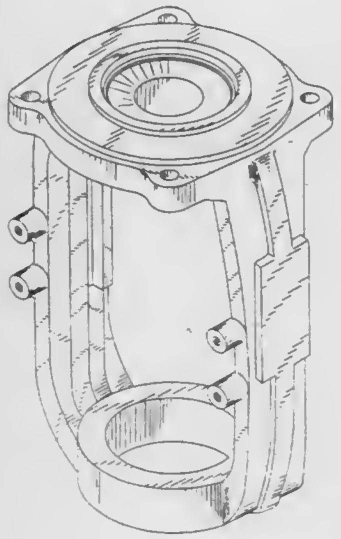
403,051
SHOWER FAUCET

Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe AG, Hemer, Germany
Filed May 12, 1997, Ser. No. 70,584
Claims priority, application Germany, Nov. 19, 1996, 96 09 977.1
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241



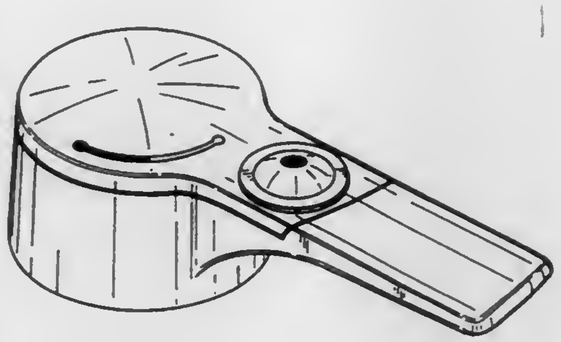
403,052
YOKE OF VALVE

Hideo Ohtani; Ryoji Okutsu; Hiroshi Yamamoto, and Koji Izumi, all of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1997, Ser. No. 73,244
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—249



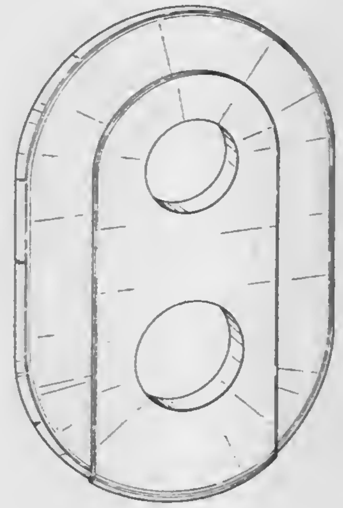
403,053
FAUCET HANDLE

Rudi Biller, and Frank Haase, both of Iserlohn, Germany, assignors to Friedrich Grohe AG, Hemer, Germany
Filed Jun. 10, 1997, Ser. No. 71,980
Claims priority, application Germany, Jan. 10, 1997, M 97 00 181.3
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—252



403,054
PLUMBING FIXTURE WALL ESCUTCHEON

Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe AG, Hemer, Germany
Filed May 12, 1997, Ser. No. 70,586
Claims priority, application Germany, Nov. 19, 1996, M 96 09 977.1
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—254



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403,055

SPOUT BODY

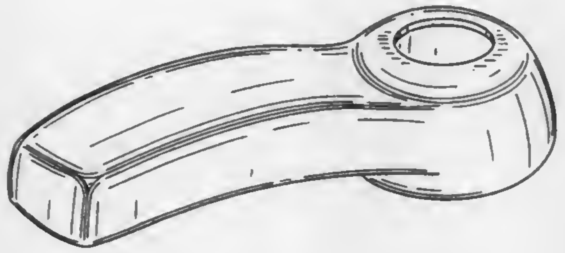
Luan Nguyen, Morristown, N.J., assignor to American Standard Inc., Piscataway, N.J.

Filed Apr. 11, 1997, Ser. No. 69,133

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—255



403,056

HOSE COUPLING

Franco Clivio, Erlenbach, Switzerland, assignor to Gardena Kress + Kastner GmbH, Germany

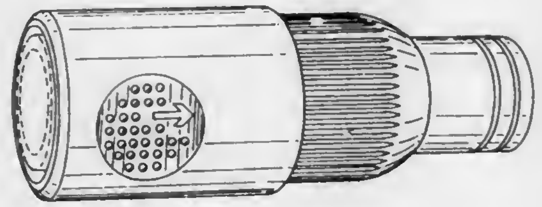
Filed Feb. 12, 1996, Ser. No. 50,231

Claims priority, application Germany, Aug. 10, 1995, M 95 06 385. 4

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—262



403,057

WASH BASIN

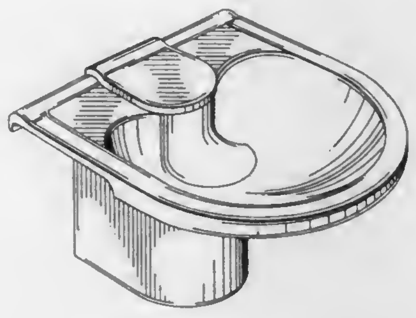
Karel Carl Van Marcke, Kruishoutem, Belgium, assignor to International Sanitary Ware Manufacturing CY, S.A., Belgium

Filed Dec. 30, 1997, Ser. No. 81,342

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—292



403,058

OPENING AND CLOSING DEVICE FOR THE SEAT OR THE SEAT LID OF A TOILET BOWL

Akira Sorimachi, Kanagawa, Japan, assignor to Katoh Electrical Machinery Co., Ltd., Kanagawa, Japan

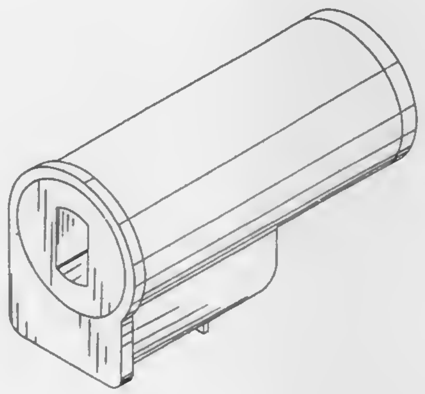
Filed Mar. 12, 1997, Ser. No. 67,795

Claims priority, application Japan, Sep. 17, 1996, 8-27679

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—309



403,059

CONTAINMENT BASIN, WHICH CAN HOLD SILT-COLLECTING SOCK, SORBENT MATERIAL DISC AND LOCKING, SEALING FRAME

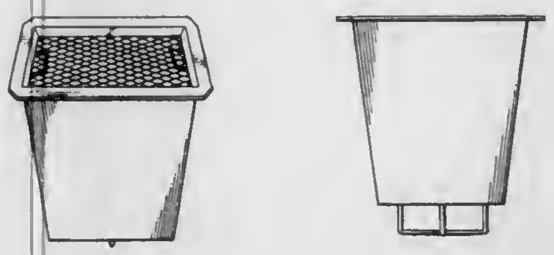
Nicolo Flor, Oakville; Harry F. Nicholson, Hamilton, and Richard Kapuscinski, Burlington, all of Canada, assignors to Imbibitive Technologies Corp., Wilmington, Del.

Filed Oct. 21, 1997, Ser. No. 81,509

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365



403,060

LINEARLY EXTENDING MULTIPLE REGION CONTAINMENT BASIN WHICH CAN HOLD SILT-COLLECTING FILTERS ABSORBENT AND LOWER DISCS FOR ABSORBING ORGANIC SPILLS

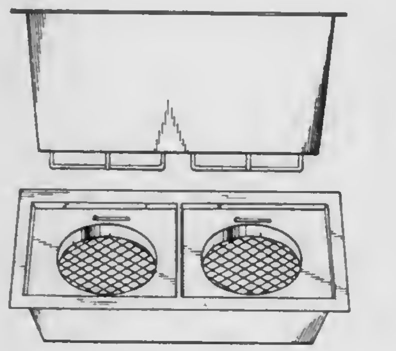
Nicolo Flor, Oakville; John Christopher Polis, St. Catherines, and Harry F. Nicholson, Hamilton, all of Canada, assignors to Imbibitive Technologies Corp., Wilmington, Del.

Filed Feb. 27, 1998, Ser. No. 84,233

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365



403,061

COMBINED CEILING FAN AND LIGHT FIXTURE UNIT

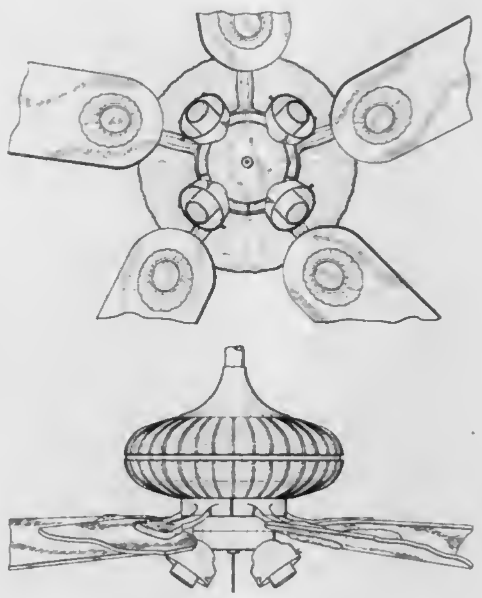
Jan Jaspers-Fayer, Idyllwild, and Dean Dal Ponte, Los Angeles, both of Calif., assignors to Minka Lighting, Inc., Corona, Calif.

Division of Ser. No. 48,994, Jan. 16, 1996, which is a continuation of Ser. No. 17,922, Jan. 25, 1994, abandoned. This application Jan. 6, 1998, Ser. No. 82,755

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—377



403,062

HEADBAND FOR EAR PROTECTION

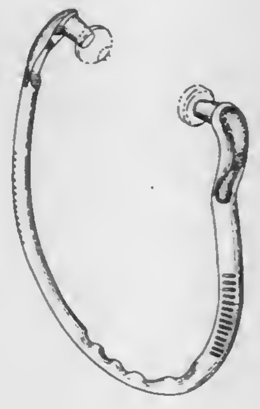
Dan Dix, Irvine, Calif., assignor to Moldex-Metric, Inc, Culver City, Calif.

Filed Oct. 21, 1996, Ser. No. 61,297

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—106



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403,063

EJECTOR HOLDER FOR A SYRINGE-TYPE CARTRIDGE

Gerd Brandhorst, Landsberg, and Klaus Hammen, Gilching, both of Germany, assignors to Thera Patent GmbH & Co., Seefeld, Germany

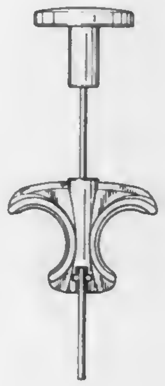
Filed Feb. 25, 1997, Ser. No. 66,893

Claims priority, application Germany, Sep. 2, 1996, M 96 07 559.7

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—113



403,064

SYRINGE

Yehuda Einay, Holon, and Dror Eyal, Rehovot, both of Israel, assignors to Bio-Technology General Corp., Iselin, N.J.

Filed Jun. 28, 1995, Ser. No. 40,830

Claims priority, application Israel, Jan. 22, 1995, 23832

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—114

403,065

STETHOSCOPE COMPONENT

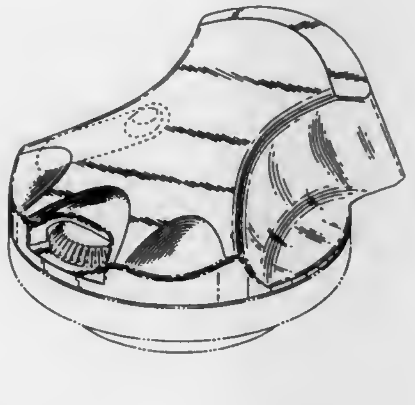
Alan P. Dieken, Oakdale; Edward J. Moe, St. Paul, both of Minn.; Joy A. Packard; Thomas J. Packard, both of Somerset, Wis.; Thomas A. Turgeon, Fridley, Minn., and Thomas W. Reeder, Asheville, N.C., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 48,848, Jan. 11, 1996, Pat. No. Des. 379,512, which is a continuation of Ser. No. 46,196, Nov. 10, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 67,461

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—134



403,066

SURGICAL RETRACTOR

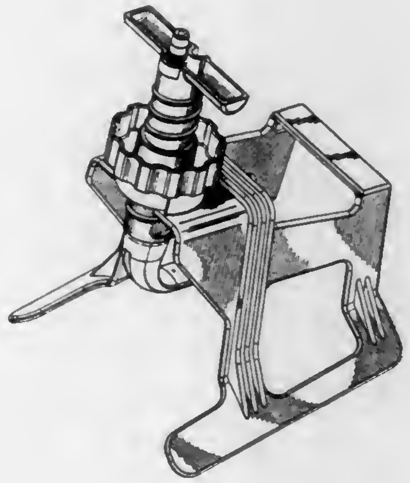
Stephan A. DeFonzo, Bridgeport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 56,875, Jul. 10, 1996, abandoned. This application Jan. 28, 1997, Ser. No. 65,397

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—135



403,067

Patent Not Issued For This Number

403,068

DEVICE FOR REMOVING CONTACT LENS

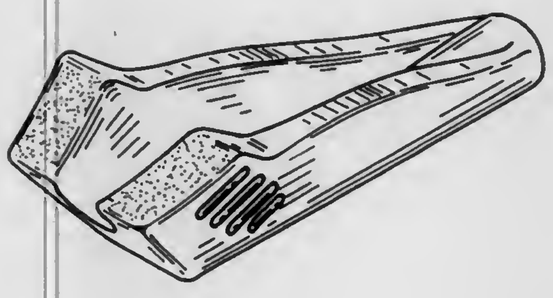
Robert C. England, 1024 Military Rd., Zanesville, Ohio 43701

Filed Sep. 30, 1996, Ser. No. 60,494

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—150



403,069

ORTHOPEDIC BONE SUPPORT

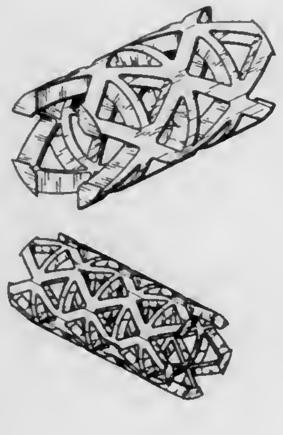
Troy Drewry, and Michael C. Sherman, both of Memphis, Tenn., assignors to SDGI Holdings, Inc., Willmington, Del.

Filed Jun. 2, 1997, Ser. No. 71,561

Term of patent 14 years

LOC (6) Cl. 24 - *03*

U.S. Cl. D24—155



403,070

SPHYGMOMANOMETER

Yasunari Maeda, Düsseldorf, and Maki Hirakawa, Osaka-fu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

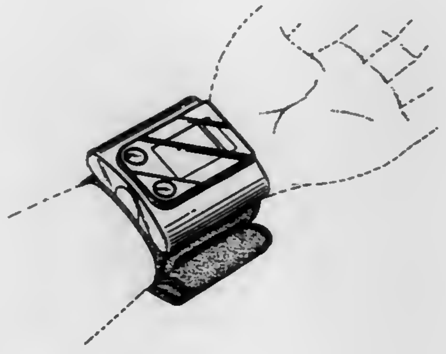
Filed Oct. 14, 1997, Ser. No. 77,904

Claims priority, application Japan, Apr. 11, 1997, 9-51071

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—165



403,071

HIP ORTHOSIS

Lutz Biedermann, and Ilka Buchholz, both of VS-Villingen, Germany, assignors to Biedermann Motech GmbH, VS-Schwenningen, Germany

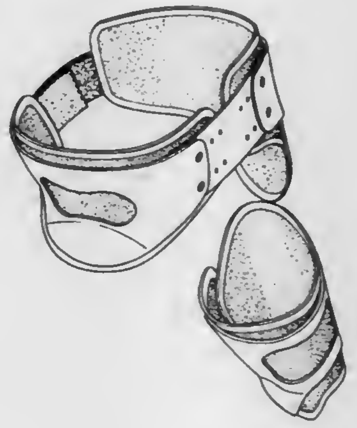
Filed Sep. 3, 1997, Ser. No. 75,651

Claims priority, application Germany, Mar. 10, 1997, M 97 02 539.9

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—190



403,072

COMBINATION TEETHER AND BOTTLE COLLAR SET

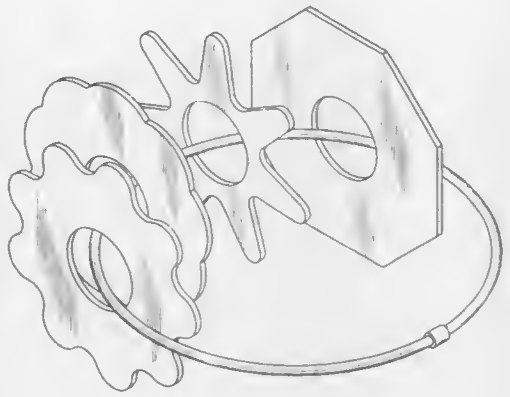
Jamie L. Rogers Huante, 1409 Priscillia La., Newport Beach, Calif. 92660

Filed Sep. 11, 1997, Ser. No. 76,416

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—194



403,073

BABY BOTTLE HOLDER

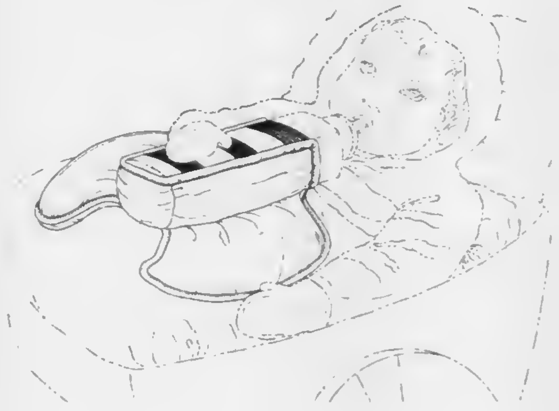
Jacqueline P. Hrdlicka, 7011 W. 63rd St., Chicago, Ill. 60638

Filed Apr. 20, 1998, Ser. No. 86,810

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D24—199



403,074

HOT WATER BOTTLE

Fasoli Piergiorgio, and Bozzoli Lorenza, both of Foro Bonaparte 54-20121, Milan, Italy

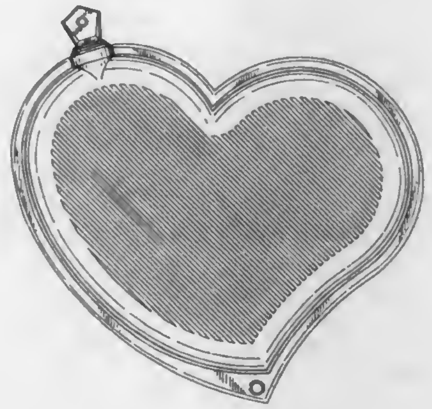
Filed Oct. 24, 1996, Ser. No. 61,461

Claims priority, application Italy, Aug. 8, 1996, DM/037183

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—208



403,075

SUCTION FACIAL MASSAGER

Sen-Nen Lie, Kowloon, Hong Kong, assignor to Kolvin Industries Limited, Hong Kong

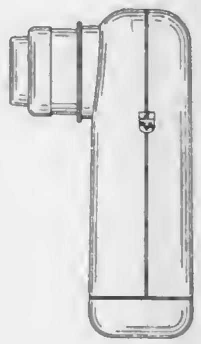
Filed Aug. 9, 1994, Ser. No. 27,253

Claims priority, application United Kingdom, Feb. 14, 1994, 2037117

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D24—214



403,076

HAND HELD MASSAGE BALL

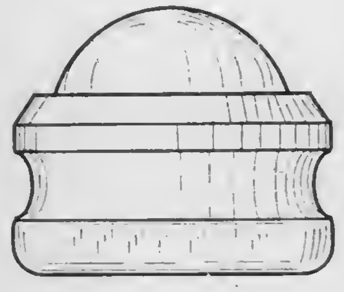
Guy W York, 7610 Stanley Dr., Anchorage, Ak. 99518

Filed Nov. 12, 1996, Ser. No. 62,274

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D24—214



403,077

MICROORGANISM CULTURE TRAY

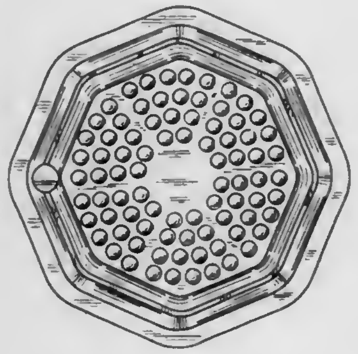
Lon Maynard Bohannon, Lansing, Mich.; Raymond Louis Miller, Lindenwold, and Sudhakar Vulimiri, Gibbstown, both of N.J., assignors to Neogen Corporation, Lansing, Mich.

Filed May 12, 1997, Ser. No. 70,591

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—224



403,078

MULTIMEDIA ENCLOSURE

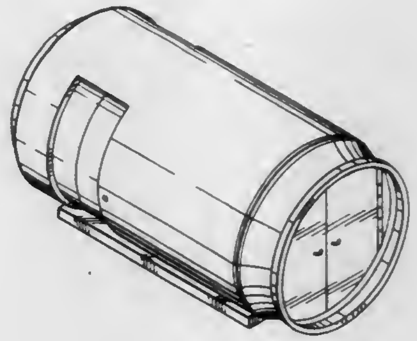
Glen Murray Allan, Penticton, and Clifford James Elliott, North Vancouver, both of Canada, assignors to Intergalactic Conceptions, Inc., Penticton, Canada

Filed Sep. 22, 1997, Ser. No. 76,985

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D25—7



403,079

CHEMICAL VESSEL

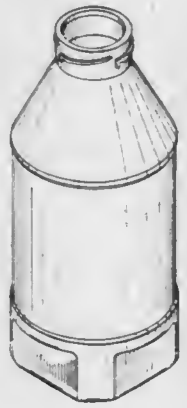
Kenneth E. Pawlak, Vernon Hills; Dilip H. Shah, Buffalo Grove, and Donald C. Walker, Mundelein, all of Ill., assignors to Aksys, Ltd., Lincolnshire, Ill.

Continuation-in-part of Ser. No. 57,448, Jul. 25, 1996, Pat. No. Des. 395,517, which is a continuation-in-part of Ser. No. 388,275, Feb. 13, 1995, Pat. No. 5,591,344. This application Dec. 12, 1997, Ser. No. 80,688

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—224



403,080

POOL COPING

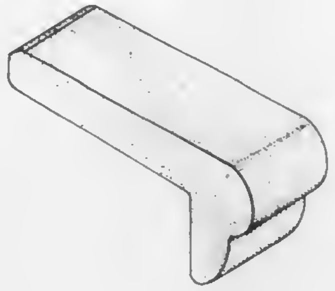
Michael Mignone, Jr., 5612 NW. 8th St., Margate, Fla. 33068

Filed Mar. 4, 1997, Ser. No. 67,348

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D25—2



403,081

PARKING SPACE COVER

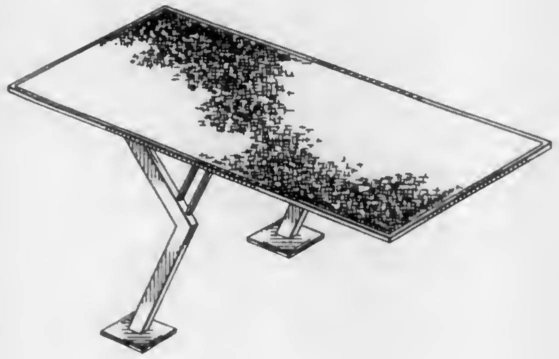
Lucio J. Luzzardi, and Tamara L. Luzzardi, both of 6885 E. Cochise Rd., #204, Scottsdale, Ariz. 85253

Filed Apr. 21, 1997, Ser. No. 69,798

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—56



403,082

ROOF STRUCTURE

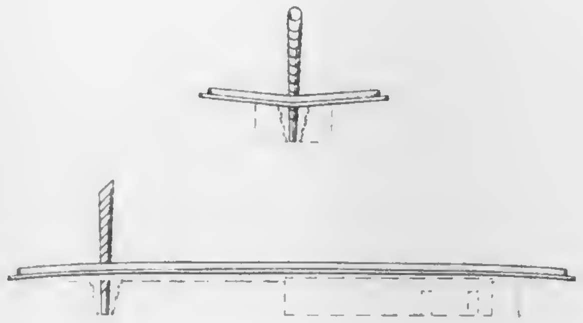
Timothy D. Love, Boston, Mass.; Raymond M. Poelvoorde, and Peter A. Dixon, both of New York, N.Y., assignors to America's Drive-In Trust, Reno, Nev.

Filed Oct. 22, 1997, Ser. No. 78,233

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—56



403,083

ROOF STRUCTURE

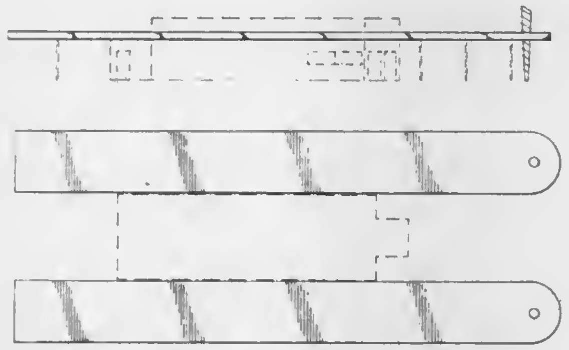
Raymond M. Poelvoorde, and Peter A. Dixon, both of New York, N.Y., assignors to America's Drive-In Trust, Reno, Nev.

Filed Oct. 22, 1997, Ser. No. 78,346

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—56



403,084

PATIO COVER END CAP

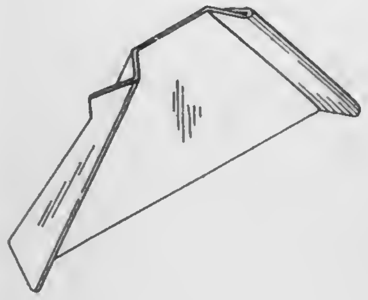
Roger D. Wax, Sr., 8571 S. Union Rd., Miamisburg, Ohio 45342

Filed Dec. 24, 1997, Ser. No. 81,224

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—57



403,085

EXTRUDED SLATWALL SECTION

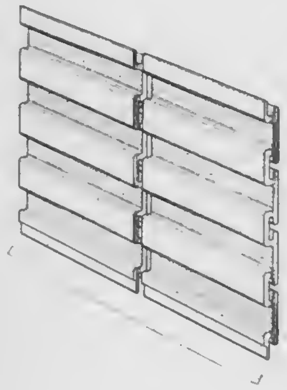
Wayne A. Current, Holmdel, N.J., assignor to International Visual Corporation, Port Washington, N.Y.

Filed Oct. 31, 1996, Ser. No. 61,832

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—123



403,086

PIPE RAILING TERMINAL FITTING

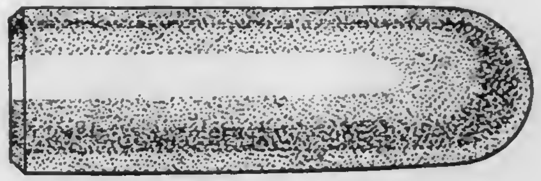
Michael A. Auciello, Newton; Ralph J. Auciello, West Boylston, and Anthony R. Auciello, Scituate, all of Mass., assignors to Auciello Iron Works, Inc., Hudson, Mass.

Filed Oct. 27, 1995, Ser. No. 46,712

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—135



403,087

LAMINATED ROOFING SHINGLE

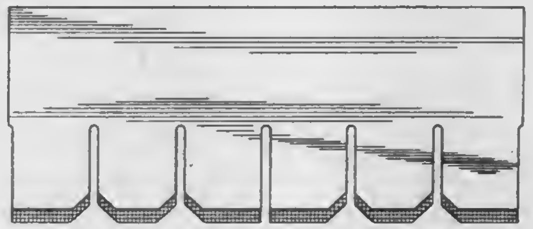
Frederick W. Sieling, Bound Brook; William R. Carroll, Sussex, and Alfredo A. Bondoc, Somerset, all of N.J., assignors to Building Materials Corporation of America, Wayne, N.J.

Filed Oct. 15, 1997, Ser. No. 78,009

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—139



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403,088

LAMINATED ROOFING SHINGLE

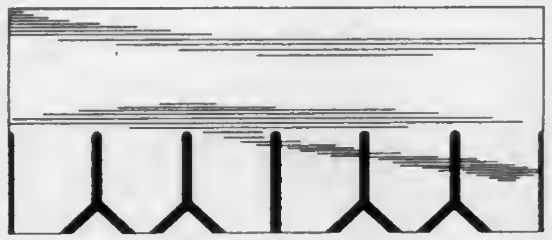
William R. Carroll; Alfredo A. Bondoc, both of Sussex, and Frederick W. Sieling, Bound Brook, all of N.J., assignors to Building Materials Corporation of America, Wayne, N.J.

Filed Oct. 15, 1997, Ser. No. 78,022

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—143



403,089

NAVIGATION LIGHT

Moise Arribard, Ploermel, France, assignor to Plastimo, Lorient, France

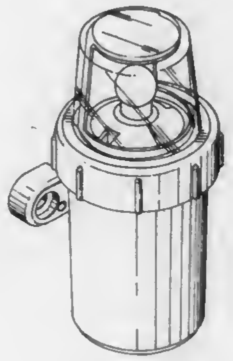
Filed Jun. 30, 1997, Ser. No. 72,783

Claims priority, application France, Dec. 30, 1996, 967366

Term of patent 14 years

LOC (6) Cl. 26 - *06*

U.S. Cl. D26—28



403,090

FLASHLIGHT CASE

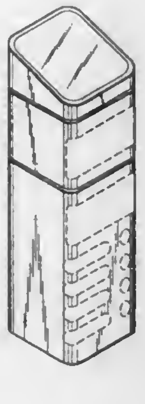
William L. King, Denver, Colo., and Gregory W. O'Connor, 4701 Homestead, Littleton, Colo. 80123, assignors to Gregory W. O'Connor, Littleton, Colo.

Filed Jan. 30, 1998, Ser. No. 82,920

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



403,091

COMBINATION FLASHLIGHT AND POWERED SCREWDRIVER

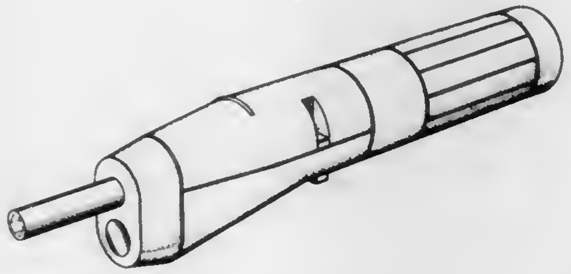
Gavin McCalla, Cumming, Ga., assignor to McCalla Company, Alpharetta, Ga.

Filed Feb. 18, 1997, Ser. No. 67,262

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—38



403,092

RECHARGEABLE UTILITY LIGHT

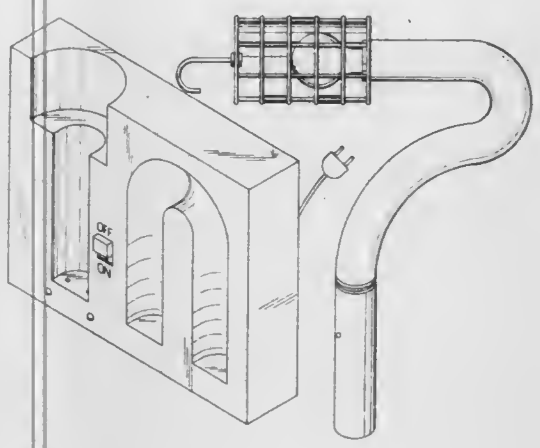
Kenneth E Mohr, Jr., 327 3rd St., East Greenville, Pa. 18041

Filed Feb. 5, 1998, Ser. No. 83,140

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—38



403,093

COMBINED COMPASS AND FLASHLIGHT

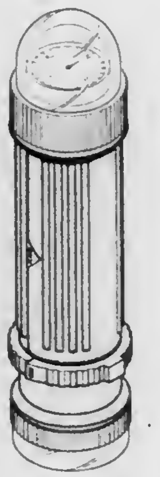
Chun-Li Tseng, P.O. Box 63-247, Taichung, Taiwan

Filed Mar. 6, 1998, Ser. No. 84,645

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—38



403,094

WORK LIGHT

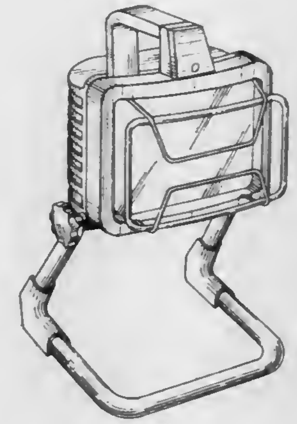
Gary M. Grossman, Riverside, Conn.; Donald Andrus, High Point, and Brian Spitler, Elon College, both of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.

Filed Sep. 11, 1997, Ser. No. 76,391

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—63



403,095

POLE MOUNTED STREET LUMINAIRE

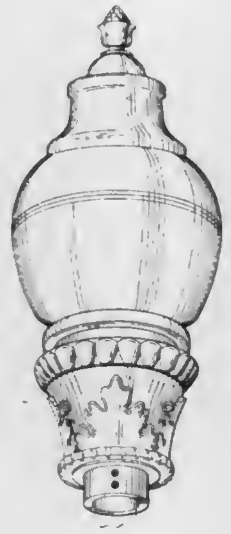
Robert Lowell Ewing, Newark, and Richard Albert Peterson, Columbus, both of Ohio, assignors to Holophane Corporation, Newark, Ohio

Filed Oct. 8, 1997, Ser. No. 81,072

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—67



403,096
LIGHTING FIXTURE

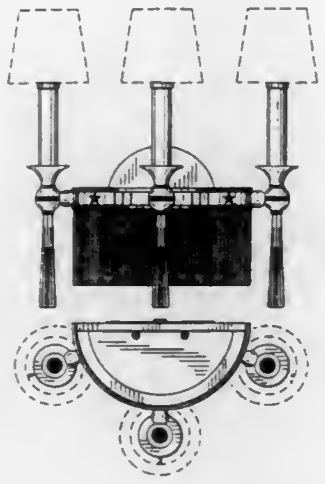
Sandra E. Littman, and Kirina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, Inc., New York, N.Y.

Division of Ser. No. 48,308, Dec. 26, 1995, Pat. No. Des. 383,869. This application Jun. 12, 1997, Ser. No. 72,049

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—87



403,097
LIGHTING FIXTURE

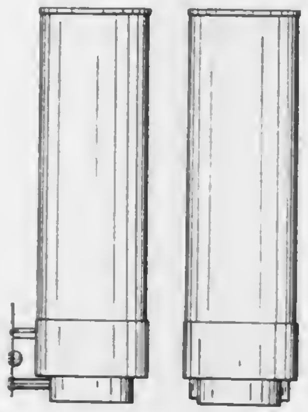
Sandra E. Littman, New York, N.Y., assignor to Sandy Littman, Inc., New York, N.Y.

Division of Ser. No. 48,304, Dec. 26, 1995, Pat. No. Des. 384,764. This application Jun. 12, 1997, Ser. No. 72,050

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—87



403,098
LIGHTING FIXTURE

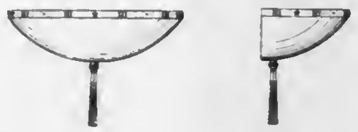
Sandra E. Littman, and Kirina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, Inc., New York, N.Y.

Division of Ser. No. 48,312, Dec. 26, 1995, Pat. No. Des. 383,868. This application Jun. 12, 1997, Ser. No. 72,186

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—87



403,099
FLOOR LAMP

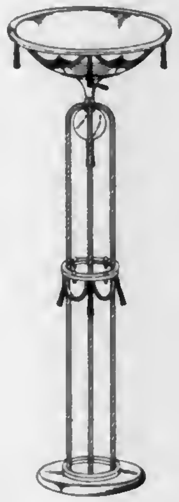
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan

Filed Dec. 4, 1997, Ser. No. 80,311

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—112



403,100
LAMPHOLDER ASSEMBLY WITH INTEGRAL BALLAST FOR A STANDING LAMP

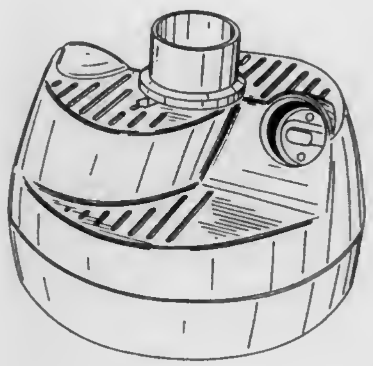
William E. Bartasevich, Kent; John J. Andrisin, III, Akron, and John J. McEllen, Chagrin Falls, all of Ohio, assignors to Advanced Lighting Technologies, Inc., Solon, Ohio

Filed Nov. 5, 1997, Ser. No. 78,976

Term of patent 14 years

LOC (6) Cl. 26 - *99*

U.S. Cl. D26—113



403,101
CHANDELIER BASKET

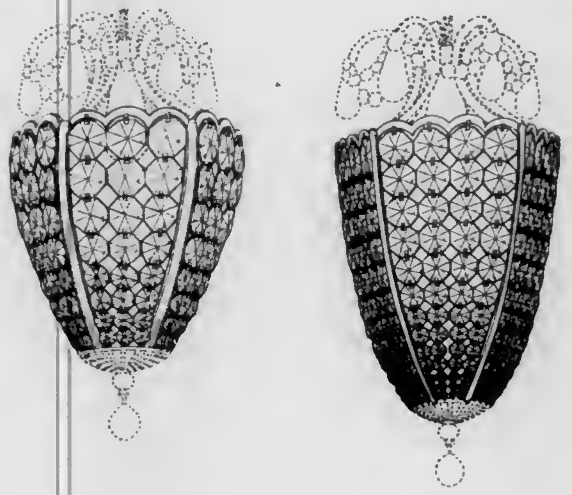
Georg Bayer, Plattsburg, and Roslyn Yando, Brainardsville, both of N.Y., assignors to Schonbek Worldwide Lighting, Inc., Plattsburgh, N.Y.

Filed Oct. 14, 1997, Ser. No. 77,825

Term of patent 14 years

LOC (6) Cl. 26 - *99*

U.S. Cl. D26—118



403,102
LIGHT DIFFUSER

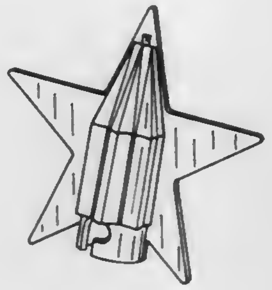
Alan Alfred Archambault, Smithfield, R.I., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1997, Ser. No. 76,034

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—125



403,103
LIGHT FIXTURE DECORATION

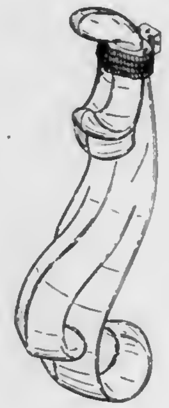
D-jen Wang, Taipei Hsien, Taiwan, assignor to International Lighting Manufacturing Company, St. Louis, Mo.

Filed Nov. 6, 1997, Ser. No. 78,948

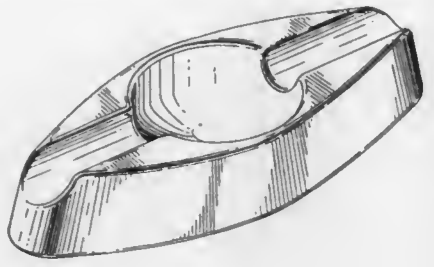
Term of patent 14 years

LOC (6) Cl. 26 - *99*

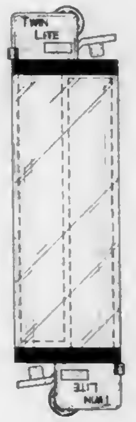
U.S. Cl. D26—155



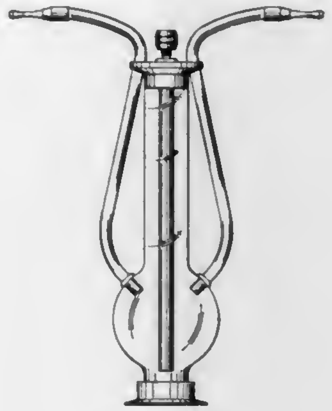
403,104
CIGAR ASHTRAY
Geoffrey K. Ries, One Hedgerow, Spring House, Pa. 19477
Filed Oct. 30, 1997, Ser. No. 78,554
Term of patent 14 years
LOC (6) Cl. 27 - *03*
U.S. Cl. D27—102



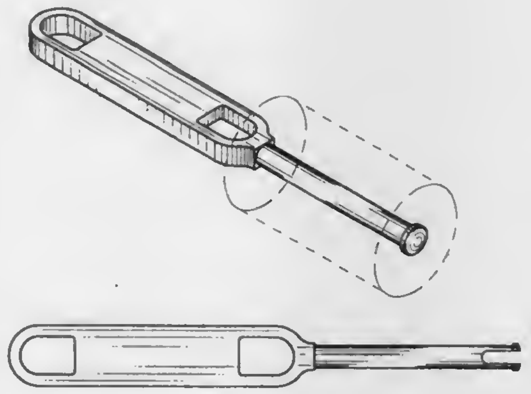
403,105
DOUBLE HEADED CIGARETTE LIGHTER
Stanley R. Dillick, Jr., 4433 Rio Del Oro, Yorba Linda, Calif. 92886
Filed Dec. 11, 1997, Ser. No. 80,588
Term of patent 14 years
LOC (6) Cl. 27 - *05*
U.S. Cl. D27—156



403,106
TOBACCO HOOKAH
Marvin L. Barmes, Vincennes, Ind., assignor to Sandbar Wholesale Trust, Vincenes, Ind.
Filed Dec. 12, 1996, Ser. No. 63,667
Term of patent 14 years
LOC (6) Cl. 27 - *02*
U.S. Cl. D27—162

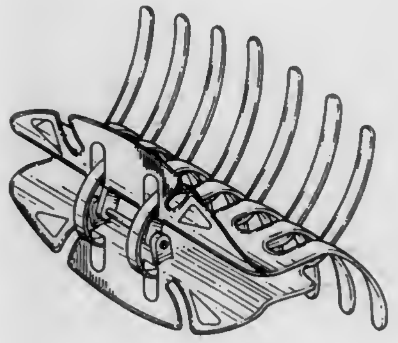


403,107
INTEGRAL PLASTIC HOLDER FOR ROTATIVELY SUPPORTING A LOTION-APPLYING SPONGE ROLLER
Margaret A. Ness, 1778 Ala Moana, Honolulu, Hi. 96815, and Gary C. Knight, 737 Bishop St., Honolulu, Hi. 96813
Filed Feb. 24, 1997, Ser. No. 66,907
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—7

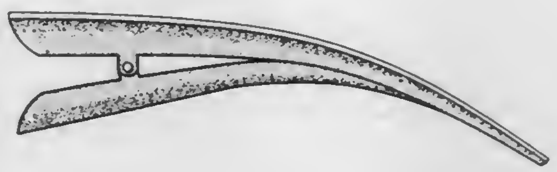


403,108
COMB CUTTER
Mario Granito, 40 Hill Road, Abingdon, Oxfordshire, United Kingdom, OX14 5NS
Filed Jul. 20, 1995, Ser. No. 42,993
Claims priority, application United Kingdom, Jan. 27, 1995, 2044808
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—25

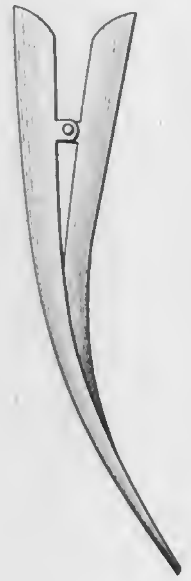
403,109
HAIR CLIP WITH ANNULAR SPRINGS
Christian Potut, Arbent, France, assignor to C.S.P. DIFFUSION, société anonyme, Arbent, France
Continuation of Ser. No. 607,172, Feb. 26, 1996, which is a continuation of Ser. No. 394,260, Feb. 24, 1995, Pat. No. 5,494,060. This application Feb. 13, 1997, Ser. No. 66,417
Claims priority, application France, Feb. 28, 1994, 94 02408
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—40



403,110
RIDGED FLAMINGO BILL HAIR CLIP
Samir Patel, Montebello, Calif., assignor to California Clips, Inc., Van Nuys, Calif.
Filed Jun. 23, 1997, Ser. No. 75,474
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—40



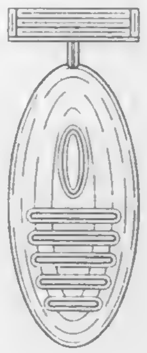
403,111
FLAMINGO-BILL HAIR CLIP
Samir Patel, Montebello, Calif., assignor to California Clips, Inc., Van Nuys, Calif.
Filed Jun. 23, 1997, Ser. No. 75,475
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—40



403,112

SHAVING CREAM DISPENSING RAZOR

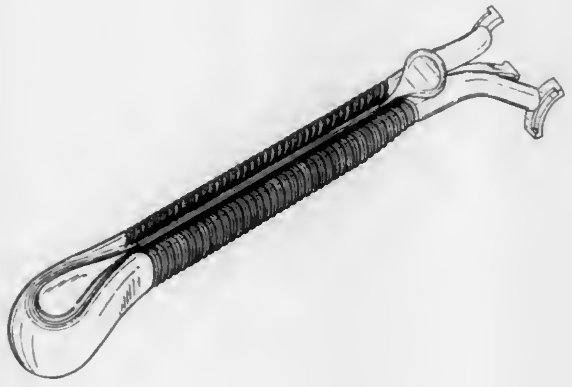
Chris Engel, 5048 E. Rock Grove Rd., Rock City, Ill. 61070
Filed Mar. 26, 1998, Ser. No. 85,615
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—46



403,113

RAZOR HANDLE

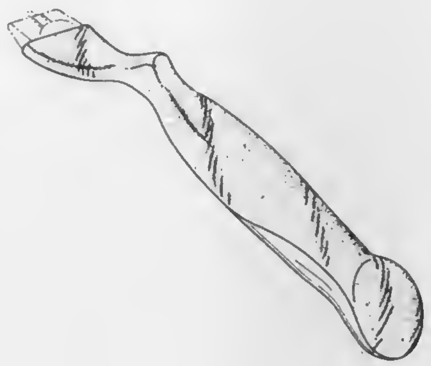
Douglas Robert Kohring, Chelmsford, and Jill Marie Shurtleff, South Boston, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Dec. 19, 1997, Ser. No. 80,939
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—48



403,114

RAZOR HANDLE

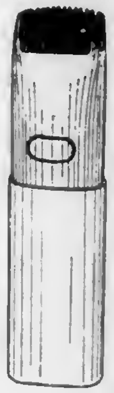
Jill Marie Shurtleff, South Boston, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 22, 1997, Ser. No. 81,031
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—48



403,115

ELECTRIC HAIR CUTTER

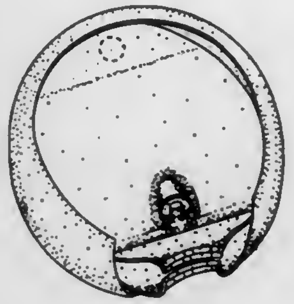
Yosuke Tanaka, Kobe, and Kazuo Takada, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jul. 21, 1997, Ser. No. 74,067
Claims priority, application Japan, Jan. 23, 1997, 9-1763
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D28—53



403,116

COMBINATION NAIL CLIPPER AND COVER THEREFOR

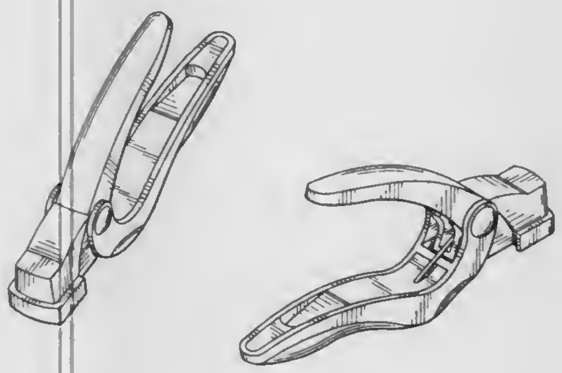
Daniel Ross, 35-24 72nd St., Apt. 6D, Jackson Heights, N.Y. 11372
Filed Mar. 22, 1996, Ser. No. 52,090
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—60



403,117

ERGONOMIC ACRYLIC NAIL TRIMMER

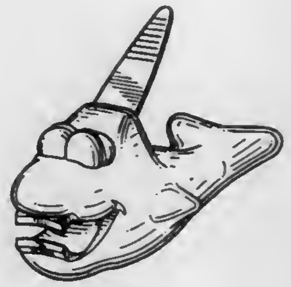
Steven Toshi Kaneko, Seattle, Wash., assignor to Kenneth Goodell, and Virginia Goodell, both of Tigard, Oreg.
Continuation-in-part of Ser. No. 49,872, Feb. 2, 1996, Pat. No. Des. 402,409. This application Dec. 30, 1996, Ser. No. 64,385
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—60



403,118

SEA CREATURE NAIL CLIPPER

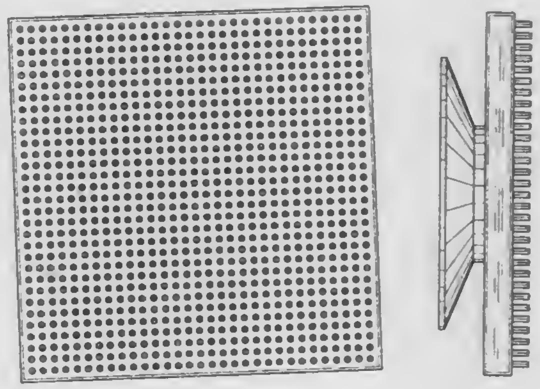
Dennis A. Farrell, Katonah, and Cynthia A. Woodie, New York, both of N.Y., assignors to Daftco, Carmel, N.Y.
Filed Feb. 24, 1998, Ser. No. 84,107
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—60



403,119

SHOWER BACK SCRUBBER

Frank Vazquez, 5633 N. Winthrop, Chicago, Ill. 60660
Filed Mar. 26, 1998, Ser. No. 85,621
Term of patent 14 years
LOC (6) Cl. 28 - *63*
U.S. Cl. D28—63



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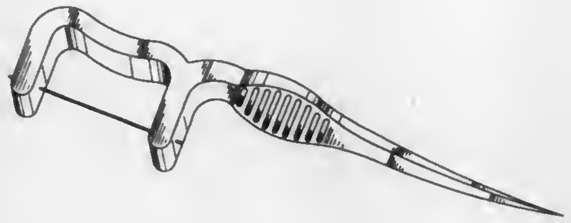
403,120
DENTAL FLOSSING SWORD

Daniel F. Enriquez, Corona, Calif., assignor to Plak Smacker, Inc., Riverside, Calif.
Filed Feb. 11, 1998, Ser. No. 83,487
Term of patent 14 years
LOC (6) Cl. 28 - *03*

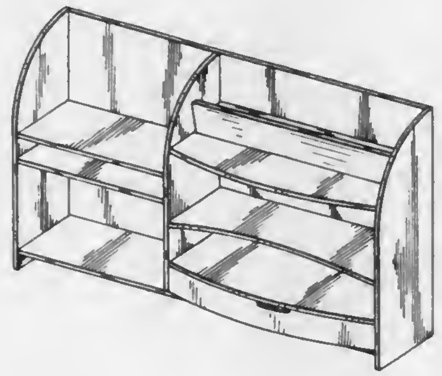
U.S. Cl. D28—68



403,121
COSMETIC ORGANIZER

Robert Sussman, 10120 Vestal Ct., Coral Springs, Fla. 33071
Filed Jan. 10, 1997, Ser. No. 64,788
Term of patent 14 years
LOC (6) Cl. 28 - *03*

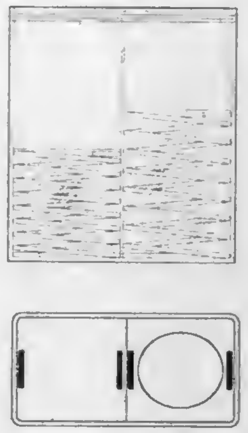
U.S. Cl. D28—73



403,122
COTTON PAD DISPENSING APPARATUS

Adam Thomas Love, Jr., P.O. Box 272333, Concord, Calif. 94527-2333
Filed Feb. 28, 1997, Ser. No. 67,236
Term of patent 14 years
LOC (6) Cl. 28 - *03*

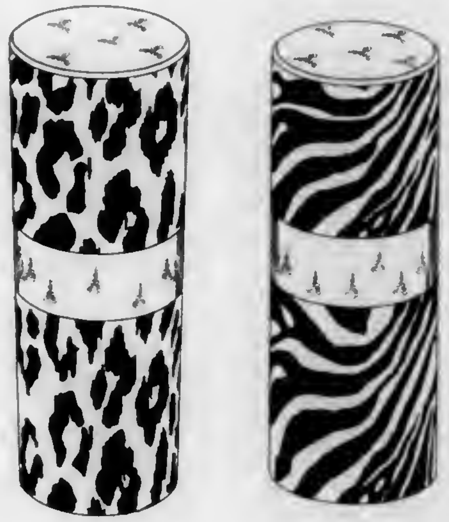
U.S. Cl. D28—73



403,123
CONTAINER FOR PERFUMES AND OTHER TOILETRIES

Giovanni Sgariboldi, Monza, Italy, assignor to Euroitalia S.r.l., Monza, Italy
Filed Dec. 18, 1997, Ser. No. 80,866
Claims priority, application Italy, Jul. 8, 1997, MI97A000405
Term of patent 14 years
LOC (6) Cl. 28 - *03*

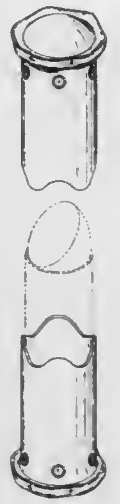
U.S. Cl. D28—76



403,124
LIPSTICK CASE

Susan Regina Wacker, New York, N.Y., assignor to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.
Filed Dec. 2, 1994, Ser. No. 31,709
Term of patent 14 years
LOC (6) Cl. 28 - *02*

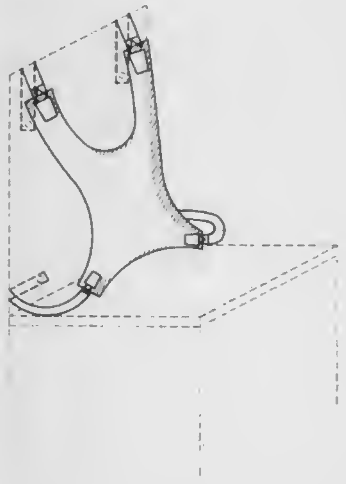
U.S. Cl. D28—88



403,125
NYLON COVERED ANTERIOR TRUNK SUPPORT

Debora M. Larsen, 28 Diamond Dr., N. Waterboro, Me. 04061, and Kim S. D'Amato, 20 Columbia Way, Newbury, Mass. 01951
Filed Mar. 3, 1997, Ser. No. 66,532
Term of patent 14 years
LOC (6) Cl. 29 - *02*

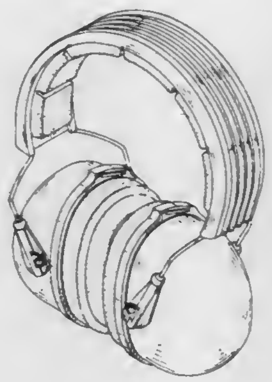
U.S. Cl. D29—111



403,126
SOUND REDUCTION HEADSET

Thomas A. Scanlon, and Sean T. Scanlon, both of 37 Tripps La., East Providence, R.I. 02914
Filed Feb. 18, 1997, Ser. No. 66,766
Term of patent 14 years
LOC (6) Cl. 29 - *02*

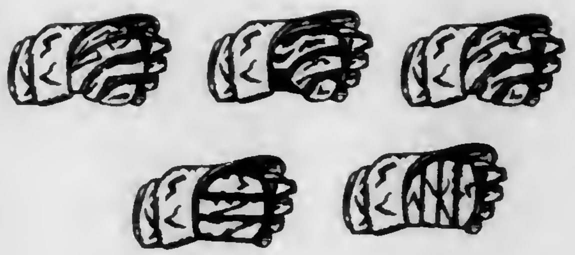
U.S. Cl. D29—112



403,127
GLOVE

Alain Castonguay, Boisbriand, and Wilson Minnaar, Harrow, both of Canada, assignors to Tropsport Acquisitions Inc., Lachine, Canada
Filed Jun. 5, 1997, Ser. No. 71,653
Claims priority, application Canada, Apr. 17, 1997, 1997-0937
Term of patent 14 years
LOC (6) Cl. 29 - *02*

U.S. Cl. D29—117



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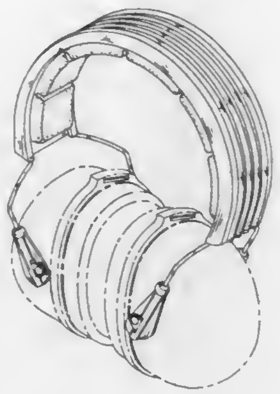
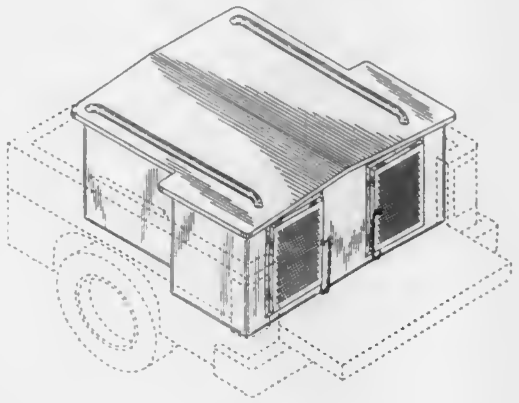
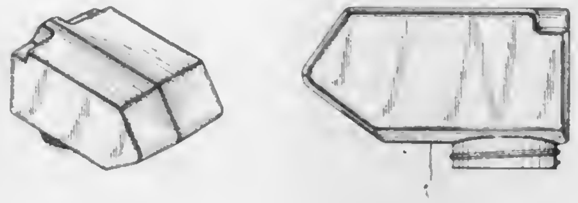
403,128
HEADBAND FOR SOUND REDUCTION HEADSET
Thomas A. Scanlon, and Sean T. Scanlon, both of 37 Tripps La., East Providence, R.I. 02914
Filed Feb. 18, 1997, Ser. No. 66,767
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—122



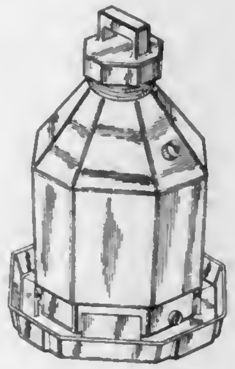
403,129
ANIMAL CONTAINER FOR USE ON A TRUCK BED
Hubert Calvin Mentz, 9051 Old Coach Trail, Mechanicsville, Va. 23111
Division of Ser. No. 73,006, Jun. 27, 1997. This application Jan. 29, 1998, Ser. No. 82,743
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—109



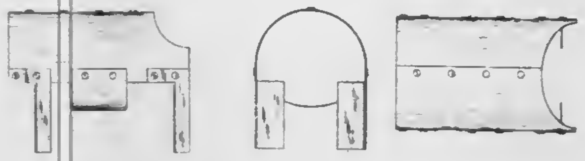
403,130
BOTTLE
Gary B. Bunney, P.O. Box 2, Joppa, Md. 21085; John E. Sheaffer, 1644 Greenspring Ave., Perryville, Md. 21903, and Dale R. Murray, 6 White Pine Ct., Elkton, Md. 21921
Filed Nov. 1, 1996, Ser. No. 61,905
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—121



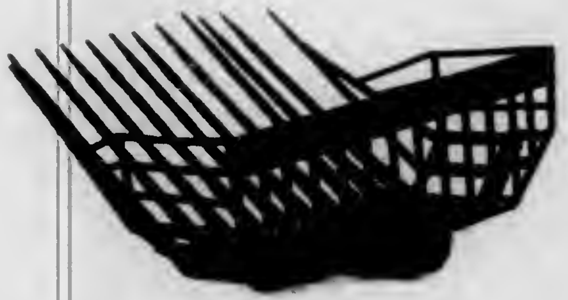
403,131
POULTRY FOUNTAIN
J. David Bowell, Vadnais Heights, and George R. Peterson, Brooklyn Park, both of Minn., assignors to Miller Manufacturing Company, Eagan, Minn.
Filed Nov. 7, 1997, Ser. No. 79,052
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—132



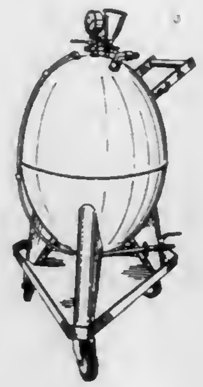
403,132
PET RESTRAINING JACKET
Iris H. Campbell-Henderson, 384 Mount Pleasant Road, #710, Toronto, Ontario, Canada, M4S-3C8
Filed Jan. 12, 1998, Ser. No. 82,843
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—145



403,133
STALL CLEANING FORK
J. David Bowell, Vadnais Heights, and George R. Peterson, Brooklyn Park, both of Minn., assignors to Miller Manufacturing Company, Eagan, Minn.
Filed Jun. 4, 1997, Ser. No. 72,115
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—162



403,134
APPARATUS FOR PRESSURIZED CLEANING OF REFRIGERATION CIRCUITS IN AUTOMOBILE VEHICLE ENGINES
Juan Ramon Garcia Martinez, Plaza de la Cruz, 3, Alicante, Spain, 03011
Filed Jul. 23, 1997, Ser. No. 74,029
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—1



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF DECEMBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: *See—*
  - Timperi, Jukka, 5,851,350, Cl. 162-52.000.
- A E Goetze GmbH: *See—*
  - Germann, Erwin; Neureuter, Lothar; Zutz, Hans-Henning; and Veutgen, Hans-Jürgen, 5,851,014, Cl. 277-406.000.
- Aasted, Lars, to Aasted Mikroverk ApS. Apparatus for continuous tempering of fat-containing, chocolate masses. 5,850,782, Cl. 99-455.000.
- Aasted Mikroverk ApS: *See—*
  - Aasted, Lars, 5,850,782, Cl. 99-455.000.
- ABB Research Ltd.: *See—*
  - Harris, Christopher; Konstantinov, Andrei; and Janzén, Erik, 5,851,908, Cl. 438-520.000.
- Abbott Laboratories: *See—*
  - Adamczyk, Maciej; Chen, Yon-Yih; Walling, John A.; James, Bryan D.; and Artrip, Sharon G., 5,851,781, Cl. 435-7.900.
  - Patel, Hemantkumar H., 5,852,180, Cl. 536-7.400.
- Abboud, Amna, to Kraft Foods, Inc. Method for making a spray dried fat replacement composition containing inulin. 5,851,576, Cl. 426-550.000.
- Abdi, Mesfin B.: *See—*
  - Rutkowski, William F.; Frisbee, Steven E.; and Abdi, Mesfin B., 5,851,454, Cl. 264-8.000.
- Abe, Akiharu: *See—*
  - Habuchi, Ryoji; Kuramochi, Kojiro; Kinoshita, Masafumi; and Abe, Akiharu, 5,851,164, Cl. 477-127.000.
- Abe, Atsuyoshi: *See—*
  - Okuda, Kouichi; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; Takano, Manabu; Fukuzawa, Daizo; and Abe, Atsuyoshi, 5,852,763, Cl. 399-329.000.
- Abe, Masanori: *See—*
  - Higuchi, Shintaro; Abe, Shinichi; Honma, Hiroyuki; Sekimukai, Hiroshi; and Abe, Masanori, 5,850,985, Cl. 242-586.200.
- Abe, Shinichi: *See—*
  - Higuchi, Shintaro; Abe, Shinichi; Honma, Hiroyuki; Sekimukai, Hiroshi; and Abe, Masanori, 5,850,985, Cl. 242-586.200.
- Abe, Toshihumi: *See—*
  - Maehara, Yoshiaki; and Abe, Toshihumi, 5,852,501, Cl. 358-505.000.
- Abel, William D.; and Cali, Thomas D., to Memorylink, Inc. System and method for routing data and communications. 5,852,809, Cl. 705-26.000.
- Aberdeen University: *See—*
  - Rodger, Albert Alexander; and Littlejohn, Gavin Stuart, 5,850,884, Cl. 173-91.000.
- Abusleme, Julio A.; and Albano, Margherita, to Ausimont S.p.A. Fluoroelastomers substantially free from polar terminals and related preparation process. 5,852,149, Cl. 526-247.000.
- Acacia Laboratories, Inc.: *See—*
  - Ritger, Philip L.; and Leon, Miguel, 5,851,201, Cl. 604-240.000.
- ACCO Brands, Inc.: *See—*
  - Rosenbaum, W. John; and Bendit, Mark A., 5,850,964, Cl. 229-117.160.
- Ackerman, John F.: *See—*
  - Stowell, William R.; Ackerman, John F.; Skoog, Andrew J.; Cook, George E.; and Varney, Glenn E., 5,851,679, Cl. 428-472.000.
- Ackermann, Jürgen: *See—*
  - Krüger, Ralf; Ackermann, Jürgen; Wrobel, Dieter; and Steinberger, Helmut, 5,852,125, Cl. 525-326.200.
- Actodyne General, Inc.: *See—*
  - Steinberg, Grant Kenneth; Chaplin, John Philip Dunlop; and Quinn, Scott N., 5,852,249, Cl. 84-293.000.
- Adachi, Sadashi: *See—*
  - Muto, Yasutoshi; Moriwaki, Hisataka; Ninomiya, Mitsuo; Adachi, Sadashi; Saito, Akiko; Takasaki, Takeshi; Tanaka, Takuji; Tsurumi, Kaito; Okuno, Masataka; Tomita, Eiichi; Nakamura, Toshiyuki; and Kojima, Takao, 5,852,057, Cl. 514-560.000.
- Adamczyk, Maciej; Chen, Yon-Yih; Walling, John A.; James, Bryan D.; and Artrip, Sharon G., to Abbott Laboratories. Reagents and methods for the detection and quantification of testosterone in fluid samples. 5,851,781, Cl. 435-7.900.
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- Adams, Lewis E., III; and Spearman, Christopher L., to Intel Corporation. Method and apparatus for interfacing a media independent interface with DVB-compliant modulators. 5,852,609, Cl. 370-465.000.
- Adams, Mark D.: *See—*
  - Green, John M.; and Adams, Mark D., 5,851,814, Cl. 435-218.000.
- Adams, Paul E.: *See—*
  - Baker, Mark R.; Adams, Paul E.; and Dietz, Jeffry G., 5,851,966, Cl. 508-452.000.
- Adams, Robert M.; and Adams, Shirley R. Fifth wheel adaptable tonneau cover for pickup. 5,851,047, Cl. 296-100.180.
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- Adamson, Lars; Walum, Erik; Dixelius, Johan; and Lie, Kristina Lima, to Pharmacia & Upjohn AB. Process for producing a protein. 5,851,800, Cl. 435-69.100.
- ADC Telecommunications, Inc.: *See—*
  - Russell, David S.; Fischer, Larry G.; Wala, Philip M.; Ratliff, Charles R.; and Brennan, Jeffrey, 5,852,651, Cl. 379-56.200.
- Adey, Nils B.: *See—*
  - Kay, Brian K.; and Adey, Nils B., 5,852,167, Cl. 530-300.000.
- Adey, Walter H., to Aquatic Bioenhancement Systems, Inc. Algal turf water purification method. 5,851,398, Cl. 210-602.000.
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- Advanced Cardiovascular Systems, Inc.: *See—*
  - Gasson, Jonathan G., 5,851,171, Cl. 600-3.000.
- Advanced Elastomer Systems, L.P.: *See—*
  - Horrion, Jacques; and Ouhadi, Trazollah, 5,852,118, Cl. 525-90.000.
- Advanced Micro Devices: *See—*
  - Gardner, Mark I.; and Gilmer, Mark C., 5,851,901, Cl. 438-439.000.
- Advanced Micro Devices, Inc.: *See—*
  - Brennan, William S.; Dawson, Robert; Fulford, H. Jim, Jr.; Hause, Fred N.; Bandyopadhyay, Basab; and Michael, Mark W., 5,851,913, Cl. 438-622.000.
  - Chen, Herbert M.K., 5,852,661, Cl. 379-406.000.
  - Cleveland, Lee E.; Tang, Yuan; Su, Jonathan; Chang, Chi; and Chang, Chung K., 5,852,582, Cl. 365-222.000.
  - Dawson, Robert; Fulford, H. Jim, Jr.; Gardner, Mark I.; Hause, Frederick N.; Michael, Mark W.; Moore, Bradley T.; and Wristers, Derick J., 5,851,891, Cl. 438-305.000.
  - Gardner, Mark I.; Kadosh, Daniel; and Hause, Fred N., 5,851,883, Cl. 438-275.000.
  - Gardner, Mark I.; and Gilmer, Mark C., 5,851,888, Cl. 438-301.000.
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  - Kadosh, Daniel; Garnder, Mark I.; and Cheek, Jon D., 5,852,310, Cl. 257-67.000.
  - Kalkunte, Mohan; Kadambi, Jayant; Mangin, Jim; and Merchant, Shashank, 5,852,723, Cl. 395-200.650.
  - Kubinec, James, 5,852,616, Cl. 371-21.100.
  - Le, Binh Quang; Chen, Pau-Ling; Hollmer, Shane Charles; Kawamura, Shoichi; Chung, Michael Shingche; Leung, Vincent C.; and Yano, Masaru, 5,852,576, Cl. 365-185.330.
  - Michael, Mark W.; and Dawson, Robert, 5,851,889, Cl. 438-301.000.
  - Narayan, Rammohan; and Tran, Thang M., 5,852,727, Cl. 395-391.000.
  - Peng, Jack Zezhong, 5,851,886, Cl. 438-289.000.
- Advanced Polymer Systems, Inc.: *See—*
  - Froix, Michael; Pukshansky, Masha; and Nacht, Sergio, 5,851,538, Cl. 424-401.000.
- Advanced Technology Materials, Inc.: *See—*
  - Olander, W. Karl, 5,851,270, Cl. 96-144.000.
- Advantest Corp.: *See—*
  - Fujisaki, Kenichi, 5,852,618, Cl. 371-27.100.
  - Shimura, Michio, 5,852,619, Cl. 371-27.700.
- Aer Research, Inc.: *See—*
  - Tyer, Robert R., 5,851,447, Cl. 261-122.100.
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Parsons, Keith P.; Buckingham, Mark R.; Diamond, James H.; Ilkka, Steven J.; and Nowak, Petra, 5,851,663, Cl. 428-355.000.
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Merchant, Abid Nazarali; Minor, Barbara Haviland; and Moiyadi, Shoeb Akberali, 5,851,436, Cl. 252-364.000.
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- Dugan, Marlene H.: *See—*
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- Duggal, Anil Raj: *See—*
  - Doughty, Douglas Allen; Duggal, Anil Raj; and Liu, Yung Sheng, 5,851,063, Cl. 362-231.000.
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  - Askew, Ben C.; Hartman, George D.; Duggan, Mark E.; Young, Steven D.; Hutchinson, John H.; Wai, John S.; Egbertson, Melissa S.; Vassallo, Laura M.; Libby, Laura A.; Krause, Amy E.; Halczenko, Wasyl; and Ihle, Nathan C., 5,852,045, Cl. 514-318.000.
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- Dumbs, Alfred: *See—*
  - Wolf, Bernhard; Baumann, Werner; Dumbs, Alfred; Sulz, Gerd; and Sieben, Ulrich, 5,851,489, Cl. 422-82.020.
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- Duncan, C. Warren: *See—*
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- Dunn, Peter: *See—*
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- Duong, Thai H.: *See—*
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- Dvorak, Ryan T. Collapsible boat anchor. 5,850,802, Cl. 114-303.000.
- Dworkin, James Douglas: *See—*
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- Dynagen, Inc.: *See—*
  - Raheman, Fazal; Istrate, Nicolae; Muni, Gita; and Brauner, Edgard, 5,851,534, Cl. 424-260.100.
- DynaLab Inc.: *See—*
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- Earth-Block International Corporation: *See—*
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- Earthweb, Inc.: *See—*
  - Hidary, Murray, 5,852,775, Cl. 455-404.000.
- Eastman Chemical Company: *See—*
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  - Chen, Jiann H.; Binga, Tonya D.; and Staudenmayer, William J., 5,851,673, Cl. 428-421.000.
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  - Marcelletti, John; Fournier, John C., Jr.; and Micket, James A., 5,852,761, Cl. 399-325.000.
  - No, Young, 5,851,076, Cl. 400-248.000.
  - Reznik, Svetlana; Furlani, Edward P.; and Schmidtmann, William E., 5,852,393, Cl. 335-284.000.
  - Rieger, John Brian; and Michno, Drake Matthew, 5,851,746, Cl. 430-510.000.
  - Tang, Ping-Wah; Cowan, Stanley W.; Decker, David J.; and Rosiek, Thomas A., 5,851,748, Cl. 430-557.000.
- Eastwood Company, The: *See—*
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- Eaton Corporation: *See—*
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- Eaton-Williams Group Limited: *See—*
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- Ebara Corporation: *See—*
  - Harada, Hideomi; and Takei, Kazuo, 5,851,103, Cl. 415-17.000.
  - Hatakeyama, Masahiro; Ichiki, Katsunori, Kato, Takao; Kajiyama, Masaaki; Tsuzuki, Takashi; Hatamura, Yotaro; and Nakao, Masayuki, 5,852,298, Cl. 250-492.200.
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- Ebert, Wolfgang; Hufen, Ralf; Pantke, Heidemarie; and Berg, Klaus, to Bayer AG. (Co) polycarbonates stabilised against γ-radiation. 5,852,070, Cl. 523-136.000.
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  - Iwamatsu, Takanori, 5,852,629, Cl. 375-211.000.
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  - Brennan, William S.; Dawson, Robert; Fulford, H. Jim, Jr.; Hause, Fred N.; Bandyopadhyay, Basab; and Michael, Mark W., 5,851,913, Cl. 438-622.000.
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  - Takahashi, Jin; Hokkirigawa, Kazuo; Okabe, Toshihiro; and Saito, Koji, 5,850,900, Cl. 192-107.00M.
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  - Marano, April A.; Field, Jeffrey F.; and Funderburk, Jeffery V., 5,851,197, Cl. 604-135.000.
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  - Buchecker, Richard; Friedrichsen, Willy; Fünfschilling, Jürg; and Lüpfert, Sandra, 5,851,425, Cl. 252-299.610.
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  - Shiroyama, Kaisuke; Ueki, Tatsuhiko; and Murota, George, 5,850,837, Cl. 128-892.000.
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  - Kuramoto, Shinichi; Tomita, Masami; and Fushimi, Hiroyuki, 5,851,716, Cl. 433-110.000.
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Chen, Barbara B.; Chen, Helen Y.; Clare, Michael; Docter, Stephen H.; Khanna, Ish Kumar; Koszyk, Francis Jan; Malecha, James W.; Miyashiro, Julie Marion; Penning, Thomas D.; Rico, Joseph G.; Ruminski, Peter G.; Russell, Mark A.; Weier, Richard Mathias; Xu, Xiangdong; Yu, Stella S.; and Yu, Yi, 5,852,210, Cl. 562-439.000.
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Galante, Denise Christine; Hoy, Richard Charles; Joseph, Albert Ferris; King, Stephen Wayne; Smith, Charles Arnold; and Wizda, Cheryl Marie, to Union Carbide Chemicals & Plastics Technology Corporation. Ketone-based surfactant and method for treating industrial, commercial, and institutional waste-water. 5,851,434, Cl. 252-358.000.
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Gamboa, Martin G. Air bag deactivation buckle. 5,851,025, Cl. 280-735.000.
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Hasz, Wayne Charles; Borom, Marcus Preston; and Johnson, Curtis Alan, 5,851,678, Cl. 428-469.000.
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Hatch, Edwin B.: *See—*

Jones, Corbett B.; Hatch, Edwin B.; Gonring, Steven J.; Jones, David D.; and Pomeroy, Joseph H., 5,850,803, Cl. 114-343.000.

Hatta, Hirotaka; and Kanda, Shigemi, to Ricoh Company, Ltd. Toner magazine and cleaner for an electrophotographic apparatus. 5,852,762, Cl. 399-358.000.

Hattori, Kazuhiko: *See—*

Nakata, Hiroyuki; and Hattori, Kazuhiko, 5,851,128, Cl. 439-752.000.

Hattori, Kazuo: *See—*

Kimura, Katsumi; Otsuka, Michio; Ogata, Hiroshi; Hattori, Kazuo; and Ebisui, Masahiko, 5,850,897, Cl. 192-3.300.

Hattori, Kei: *See—*

Matsunaga, Tadao; Matsushita, Takaya; and Hattori, Kei, 5,851,641, Cl. 428-209.000.

Hattori, Yasuyuki: *See—*

Nakai, Shinya; Katsumata, Masashi; Hattori, Yasuyuki; Nagai, Kenta; Fukumitsu, Yoshiaki; and Ishizuka, Takehiko, 5,852,388, Cl. 331-177.00V.

Hauck, Mark: *See—*

Pawlowski, Norman E., Jr.; Hauck, Mark; and Barinaga, John A., 5,852,459, Cl. 347-86.000.

Hauquier, Guido: *See—*

Coppens, Paul; Hauquier, Guido; Verschueren, Eric; and Hoes, Eric, 5,851,722, Cl. 430-204.000.

Hause, Fred N.: *See—*

Brennan, William S.; Dawson, Robert; Fulford, H. Jim, Jr.; Hause, Fred N.; Bandyopadhyay, Basab; and Michael, Mark W., 5,851,913, Cl. 438-622.000.

Gardner, Mark I.; Kadosh, Daniel; and Hause, Fred N., 5,851,883, Cl. 438-275.000.

Gardner, Mark I.; and Hause, Fred N., 5,851,921, Cl. 438-655.000.

Hause, Frederick N.: *See—*

Dawson, Robert; Fulford, H. Jim, Jr.; Gardner, Mark I.; Hause, Frederick N.; Michael, Mark W.; Moore, Bradley T.; and Wristers, Derick J., 5,851,891, Cl. 438-305.000.

Haven, Ken: *See—*

Radloff, Timothy; and Haven, Ken, 5,852,546, Cl. 361-685.000.

Havens, Frank C.: *See—*

Trudeau, Howard D.; Sutphin, David L.; Damon, Donald E.; Bedegrew, Ernest R.; Cabrera, Filamon T.; Pereyda, Douglas B.; MacDonald, Robert J.; Hada, Daniel H.; Havens, Frank C.; Tomasek, Allan R.; Taylor, Lee O.; and Edwards, Larry W., 5,850,989, Cl. 244-63.000.

Hawkins, Andrew L.; Narayana, Pidugu L.; and Knaack, Roland T., to Cypress Semiconductor Corp. Programmable read-write word line equality signal generation for FIFOs. 5,852,748, Cl. 395-874.000.

Hayakawa, Akira: *See—*

Okuda, Kouichi; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; Takano, Manabu; Fukuzawa, Daizo; and Abe, Atsuyoshi, 5,852,763, Cl. 399-329.000.

Hayakawa, Masatoshi: *See—*

Matsunaga, Tohru; Kaneyama, Naoyuki; Saito, Takehiko; and Hayakawa, Masatoshi, 5,852,536, Cl. 360-122.000.

Hayakawa, Satoru: *See—*

Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,851,622, Cl. 428-65.300.

Hayamizu, Shunichi: *See—*

Nishida, Naoki; Iwamoto, Tsuyoshi; and Hayamizu, Shunichi, 5,852,702, Cl. 385-130.000.

Hayano, Katsuya: *See—*

Hasegawa, Norio; Murai, Fumio; and Hayano, Katsuya, 5,851,703, Cl. 430-5.000.

Hayasaka, Nobuo: *See—*

Katsumata, Ryota; Hayasaka, Nobuo; Yasuda, Naoki; Miyajima, Hideshi; Higashikawa, Iwao; and Hotta, Masaki, 5,851,842, Cl. 438-9.000.

Hayashi, Akio: *See—*

Yamada, Yousuke; Fujioka, Yoshio; Isono, Ryuichi; Takahashi, Nobuo; Hayashi, Akio; Ogawa, Koichi; Watanabe, Norio; and Satoh, Yutaka, 5,851,305, Cl. 134-10.000.

Hayashi, Kenji; Koyama, Mikio; Kikuchi, Tomoe; Yamazaki, Hiroshi; Hirose, Naohiro; Suzuki, Shinichi; Iwamoto, Tsutomu; and Nishimori, Yoshiki, to Konica Corporation. Toner for developing an electrostatic latent image. 5,851,713, Cl. 430-109.000.

Hayashi, Kiyoshi: *See—*

Harada, Keizo; Watanabe, Kenichi; Yamanaka, Shosaku; Hayashi, Kiyoshi; Morishita, Nobuyasu; Takeshima, Hiroki; Kaiya, Hideo; and Ikoma, Munehisa, 5,851,599, Cl. 427-531.000.

Hayashi, Masafumi; Maeda, Mitsuru; and Kobayashi, Norikatsu, to Dai Nippon Printing Co., Ltd. Ink composition for thermal transfer sheet and thermal transfer sheet utilizing same. 5,852,081, Cl. 524-90.000.

Hayashi, Masaho: *See—*

Matsuo, Kiyoshi; Hayashi, Masaho; and Uchida, Atsushi, 5,852,675, Cl. 382-167.000.

Hayashi, Motoo, to Sumitomo Rubber Industries, Ltd. Pneumatic tire including groove and sipe extending along parabola. 5,851,322, Cl. 152-209.00R.

Hayashi, Norio: *See—*

Okada, Yuji; Okada, Masamichi; Ishikawa, Tsutomu; Yamamoto, Takumi; Sawamura, Tatsuhiko; Hayashi, Norio; and Ito, Takayuki, 5,850,868, Cl. 164-132.000.

Hayashi, Shigeki, to Nusco Co. Ltd. Method of controlling fly cutting rotary shear. 5,850,772, Cl. 83-37.000.

Hayashi, Shun-ichi: *See—*

Omote, Toshihiko; Hayashi, Shun-ichi; and Fujii, Hirofumi, 5,851,736, Cl. 430-325.000.

Hayashi, Takashi, to Toyota Jidosha Kabushiki Kaisha. Supercharging pressure control device. 5,850,738, Cl. 60-602.000.

Hayashi, Tokuji: *See—*

Kimura, Koji; Hayashi, Tokuji; Hachiwaka, Masayoshi; and Satake, Takeshi, 5,852,694, Cl. 385-78.000.

Hayashi, Toshio: *See—*

Makino, Kenya; Fukuhara, Seiji; Kuroda, Kyoko; and Hayashi, Toshio, 5,852,109, Cl. 524-811.000.

Hayashi, Yumiko: *See—*

Wang, Lin; Hayashi, Yumiko; and Rezai, Ebrahim, 5,851,672, Cl. 428-407.000.

Hayes, David W.; Hofstetter, Kenneth J.; Eakle, Robert F., Jr.; and Reeves, George E., to Westinghouse Savannah River Company. Global positioning system recorder and method government rights. 5,852,790, Cl. 701-213.000.

Hayes, Robert O. Electric drive for blow molding head. 5,851,570, Cl. 425-532.000.

Hayes, Thomas H., to Anchor Hocking Packaging Company. Package with push-pull dispensing closure. 5,850,951, Cl. 222-525.000.

Hayley, Mark Allen: *See—*

Fenn, Gary Michael; Heater, Thomas John; and Hayley, Mark Allen, 5,850,814, Cl. 123-195.00R.

Hayward, William C., Jr. Supportable food tray with bib. 5,850,956, Cl. 224-270.000.

Haywood, John: *See—*

Tsai, Jiunn-Yann; Haywood, John; and Lee, Ming Yi, 5,851,890, Cl. 438-303.000.

He, Haiyin: *See—*

Handelsman, Jo; Silo-Suh, Laura; Clardy, Jon; and He, Haiyin, 5,852,054, Cl. 514-488.000.

Heading, Liam R.: *See—*

Lane, Scott; Shah, Dinesh; Colman, Ronald; Heading, Liam R.; and Simpson, Eric, 5,851,293, Cl. 118-715.000.

Headley, Clifford: *See—*

Clayton, Jane Bilecky; Eskildsen, Lars Erik; Hansen, Per Bang; Headley, Clifford; and Reed, William Alfred, 5,851,259, Cl. 65-377.000.

Heater, Thomas John: *See—*

Fenn, Gary Michael; Heater, Thomas John; and Hayley, Mark Allen, 5,850,814, Cl. 123-195.00R.

Heath, William F., Jr.: *See—*

Basinski, Margret B.; DiMarchi, Richard D.; Flora, David B.; Heath, William F., Jr.; Hoffmann, James A.; Schoner, Brigitte E.; Shields, James E.; and Smiley, David L., 5,851,995, Cl. 514-12.000.

Heau, Christophe, to Tecmachine. Boron-doped titanium nitride coatings and coated parts. 5,851,680, Cl. 428-472.000.

Hebert, James J.; Krohn, Ronald W.; and Renaud, James M., to Agfa Division - Bayer Corporation. Output conveyor for thermal imaging apparatus. 5,852,464, Cl. 347-215.000.

Hebert, Tony J. System and method for storing compounds. 5,850,938, Cl. 222-51.000.

Hebrew University of Jerusalem, Yissum Research, Development Company of the: *See—*

Ullrich, Axel; Risau, Werner; Millauer, Birgit; Gazit, Aviv; and Levitzki, Alex, 5,851,999, Cl. 514-44.000.

Hede, Jean Marc; and Petzl, Paul, to Zedel. Self-locking descender for a rope with an operating lever. 5,850,893, Cl. 182-193.000.

Heeringa, Schelte, to U.S. Philips Corporation. Power-supply circuit. 5,852,549, Cl. 363-18.000.

Heflin, William M.: *See—*

Van Allman, Don T.; Syvarth, James H.; Heflin, William M.; and Mc Connell, Ronnie L., 5,851,153, Cl. 470-40.000.

Hegarty, William, to Hegarty, William. Recessed emergency lighting with movable mirror. 5,851,061, Cl. 362-20.000.

Heid, Hans: *See—*

Berleth, Manfred; and Heid, Hans, 5,851,213, Cl. 606-167.000.

Heijnsdijk, Alexander Marnix: *See—*

Batenburg, Arie Cornelis; Van Bekkum, Aart Jan; Van Den Berg, Cornelis Hendrik; Heijnsdijk, Alexander Marnix; Kramers, Casparus Henricus Marius; Visser, Teunis; and Van Zutphen, Antonie Cornelis, 5,852,362, Cl. 324-204.000.

Heimlich, Yehuda: *See—*

Rozenshtein, Vladimir; and Heimlich, Yehuda, 5,851,498, Cl. 422-211.000.

Heinau, Martina: *See—*

Krutzsch, Bernd; Seibold, Andrea; Walz, Leonhard; Boegner, Walter; Heinau, Martina; Hartweg, Martin; and Konrad, Brigitte, 5,851,501, Cl. 423-213.200.

Heindl, Detlef; and Erdrich, Albert, to Heraeus Kulzer GmbH. Filler based on silicon dioxide, method for its preparation, and its use. 5,852,096, Cl. 524-492.000.

Heinemann, Mario: *See—*

Barthel, Herbert; Heinemann, Mario; Herrmann, Franz; and Altenbuchner, August, 5,851,715, Cl. 430-110.000.

Heinrich Baumgarten KG: *See—*

Fischbach, Wolfgang, 5,850,778, Cl. 99-342.000.

Heins, Douglas: *See—*

Vondran, Gary L., Jr.; Nottingham, James R.; Clouthier, Scott C.; Heins, Douglas; and Hoffmann, Brian E., 5,852,742, Cl. 395-800.280.

Held, Robert Paul, to Du Pont de Nemours, E. I., and Company. Surfactant system for ink jet inks for printing on hydrophobic surfaces. 5,852,075, Cl. 523-161.000.

Helene Curtis, Inc.: *See—*

Esser, Isabelle Claire; Jones, Shirley; and Wigglesworth, Steven, 5,851,515, Cl. 424-65.000.

Helman, Norman Leon, to Helman, Norman Leon. Apparatus for indicating failure of an air filtration system in a diesel engine. 5,852,398, Cl. 340-438.000.

Helsinki University Licensing, Ltd.: *See—*

de la Chapelle, Albert; Huhtaniemi, Ilpo; and Aittomäki, Kristiina, 5,851,768, Cl. 435-6.000.

Hemlock Semiconductor Corporation: *See—*

Hwang, Lydia Lee-York; and Porsche, Arthur Francis, 5,851,303, Cl. 134-3.000.

Hemment, Peter Layton Francis: *See—*

Komoda, Takuya; and Hemment, Peter Layton Francis, 5,852,346, Cl. 315-169.300.

Hempel, Eugene O., Jr., to Texas Instruments Incorporated. Polishing pad conditioning system and method. 5,851,138, Cl. 451-56.000.

Henda, Yoshimitu; Kobashi, Kiyoshi; Watanabe, Yoshimasa; Araki, Yasushi; Nagai, Youichi; and Ban, Syunsuke, to Toyota Jidosha Kabushiki Kaisha; and Sumitomo Electric Industries, Ltd. Particulate trap for a diesel engine. 5,851,249, Cl. 55-486.000.

Henderson, Ian: *See—*

Dillard, Lawrence W.; Henderson, Ian; Ohlmeyer, Michael H. J.; and Reader, John C., 5,851,494, Cl. 422-131.000.

Hendrickson, Gary Thomas: *See—*

Boerstler, David William; Eichelberger, Edward Baxter; Hendrickson, Gary Thomas; and Winn, Charles Barry, 5,852,367, Cl. 326-80.000.

Henkel Corporation: *See—*

Schnur, Nicholas E., 5,851,968, Cl. 508-485.000.

Steinbrecher, Lester E.; and Zens, Timothy J., 5,851,371, Cl. 204-486.000.

Hennessy, Richard D.: *See—*

Vigneaux, Stevan; Wheeler, Blair F.; Mason, Philip; Pierceall, Richard M.; Scott, Adrian; Boucher, Roland J., Jr.; Morrison, William C.; and Hennessy, Richard D., 5,852,435, Cl. 345-302.000.

Hentze, Joachim: *See—*

Lissotschenko, Vitaly; and Hentze, Joachim, 5,852,699, Cl. 385-115.000.

Heo, Hwan Kee: *See—*

Kim, Sang Ryul; Kwag, Chong Yun; Heo, Hwan Kee; and Lee, Jong-Pill, 5,851,420, Cl. 252-186.270.

Her, Tong X. Toilet ventilation system. 5,850,638, Cl. 4-213.000.

Heraeus Kulzer GmbH: *See—*

Heindl, Detlef; and Erdrich, Albert, 5,852,096, Cl. 524-492.000.

Herberts GmbH: *See—*

Bederke, Klaus; Dücoffre, Volker; Gräf, Knut; and Schubert, Walter, 5,852,120, Cl. 525-124.000.

Hergenrother, William L.; Kerns, Michael L.; and Lawson, David F., to Bridgestone Corporation. Tertiaryaminoalkyllithium initiators and the preparation thereof. 5,852,189, Cl. 540-582.000.

Herman, Gerald M.: *See—*

Skubitz, Frank L.; Herman, Gerald M.; and Williams, Terrell M., 5,851,226, Cl. 607-126.000.

Herman, Ira M., to Trustees of Tufts College. Enhancing keratinocyte migration. 5,851,522, Cl. 424-94.670.

Herrmann, Franz: *See—*

Barthel, Herbert; Heinemann, Mario; Herrmann, Franz; and Altenbuchner, August, 5,851,715, Cl. 430-110.000.

Hertweck, Gernot: *See—*

Aschner, Werner; Hanauer, Horst; and Hertweck, Gernot, 5,850,737, Cl. 60-602.000.

Heubner, Wilhelm: *See—*

Böhme, Holger; Heubner, Wilhelm; Oberlack, Norbert; Peuker, Karl; and Sauer, Herbert, 5,850,898, Cl. 192-54.300.

Heulot, Jacques-Henri: *See—*

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Heusser, Rolf: *See—*

Fleischli, Markus; Heusser, Rolf; and Streiff, Felix, 5,851,067, Cl. 366-337.000.

Hewlett-Packard Company: *See—*

Campbell, Russell, 5,852,711, Cl. 395-117.000.

Donald, David K., 5,852,689, Cl. 385-21.000.

Fontal, Juan B. Belon; Adroher, Joseph Giralt; and Mackenzie, Andrew David, 5,852,745, Cl. 395-835.000.

Lloyd, Michael B.; and Johnson, Wallace K., 5,852,462, Cl. 347-156.000.

Morris, Peter C.; Donovan, David H.; Lane, Gregg A.; and Deardurff, Larrie A., 5,851,273, Cl. 106-31.270.

Pawlowski, Norman E., Jr.; Hauck, Mark; and Barinaga, John A., 5,852,459, Cl. 347-86.000.

Richardson, Kenneth G.; Millican, Mark; Habbinga, Erik; Mills, Mark E.; Uhlmann, Stephen G.; and Nash, Mark E., 5,852,535, Cl. 360-77.120.

Sakai, Ikuo, 5,851,902, Cl. 438-459.000.

Schaeffer, Sara E.; and Gunther, Max S., 5,852,460, Cl. 347-87.000.

Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,852,458, Cl. 347-86.000.

Vondran, Gary L., Jr.; Nottingham, James R.; Clouthier, Scott C.; Heins, Douglas; and Hoffmann, Brian E., 5,852,742, Cl. 395-800.280.

Wibbels, Mark, 5,852,758, Cl. 399-176.000.

Hexcel Corpation: *See—*

Custer, Milton F.; and Ng, Hoover Larry, 5,851,326, Cl. 156-89.220.

Heym, Beate; Cole, Stewart; Young, Douglas; Zhang, Ying; Honore, Nadine; Telenti, Amalio; and Bodmer, Thomas, to Institut Pasteur. Rapid detection of antibiotic resistance in mycobacterium tuberculosis. 5,851,763, Cl. 435-6.000.

Hibbert, Christopher T.: *See—*

Miller, Mark S.; Tribble, E. Dean; Hardy, Norman; Hill, Eric C.; and Hibbert, Christopher T., 5,852,666, Cl. 380-4.000.

Hicks, Timothy J.; Bogle, David W.; Sirgo, Scott J.; and Greve, Christopher G., to Laitram Corporation, The. Transferring articles from a moving belt edge onto a normally disposed moving conveyor belt. 5,850,902, Cl. 198-457.000.

Hidary, Murray, to Earthweb, Inc. Cellular telephone advertising system. 5,852,775, Cl. 455-404.000.

Hider, Robert Charles; and Canas-Rodriguez, Anthony, to British Technology Group Limited. Polymeric compositions. 5,851,518, Cl. 424-78.350.

Hiestand, Peter; Naef, Reto; Naegeli, Hans-Ulrich; Oberer, Lukas; Revesz, Laszlo; and Roth, Hans-Jörg, to Novartis AG. Tetracyclic triterpenes. 5,852,005, Cl. 514-169.000.

Higashikawa, Iwao: *See—*

Katsumata, Ryota; Hayasaka, Nobuo; Yasuda, Naoki; Miyajima, Hideshi; Higashikawa, Iwao; and Hotta, Masaki, 5,851,842, Cl. 438-9.000.

Higashikawa, Tetsuro; and Suzuki, Hirokazu, to Tetsuro Higashikawa. Syringe, its sealing structure and sealing method and sliding valve for syringe. 5,851,200, Cl. 604-199.000.

Higgins, Christopher Francis: *See—*

Dougan, Gordan; Chatfield, Steven Neville; Higgins, Christopher Francis; and Dorman, Charles James, 5,851,519, Cl. 424-93.200.

Higgins, Paul J.: *See—*

Ko, Jone-Long; Higgins, Paul J.; and Yeh, C. Grace, 5,851,528, Cl. 424-185.100.

Higuchi, Masahiro: *See—*

Kaise, Kazuhito; Higuchi, Masahiro; Sasaki, Kenji; and Sato, Tsunenori, 5,852,594, Cl. 369-75.100.

Higuchi, Shintaro; Abe, Shinichi; Honma, Hiroyuki; Sekimukai, Hiroshi; and Abe, Masanori, to Sony Corporation. Attachment structure onto tape reel of tape body, attachment method thereof, deforming apparatus for the tape body, and tape cassette. 5,850,985, Cl. 242-586.200.

Higuchi, Susumu: *See—*

Yanagisawa, Munehisa; Higuchi, Susumu; Tamura, Yuuki; Nakamura, Akio; and Otaki, Toshio, 5,851,850, Cl. 438-46.000.

Hill, Clark M.: *See—*

Meresz, Henry; Griffin, Wayne P.; Hill, Clark M.; and Matt, Richard, 5,851,169, Cl. 494-12.000.

Hill, Eric C.: *See—*

Miller, Mark S.; Tribble, E. Dean; Hardy, Norman; Hill, Eric C.; and Hibbert, Christopher T., 5,852,666, Cl. 380-4.000.

Hill, Jeremy Paul; Boland, Michael John; and Smith, Andrew Faulks, to New Zealand Dairy Board. Milk compositions having low fouling rates selected by reference to β-lactoglobulin phenotypes. 5,850,804, Cl. 119-14.020.

Hill, Rudolf: *See—*

Schittenhelm, Hans-Joachim; and Hill, Rudolf, 5,851,587, Cl. 427-212.000.

Hill, William J.: *See—*

Ristey, William J.; Senich, George A.; Hill, William J.; and Anderson, Harry S., 5,851,610, Cl. 428-34.900.

Hillenius, Steven James: *See—*

Bevk, Joze; Fuertsch, Matthias Werner; Georgiou, George E.; and Hillenius, Steven James, 5,851,922, Cl. 438-655.000.

Hillman, Jennifer L.; and Goli, Surya K., to Incyte Pharmaceuticals, Inc. Human MLF3 protein. 5,851,774, Cl. 435-6.000.

Hills, Inc.: *See—*

Haggard, Jeff S.; and Norcott, Bryan, 5,851,562, Cl. 425-131.500.

Himi, Hiroaki: *See—*

Matsui, Masaki; Nagaya, Masatake; Fukaya, Akinari; and Himi, Hiroaki, 5,851,846, Cl. 438-17.000.

Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Weisenberger, Johannes; Eisert, Wolfgang; and Mueller, Thomas, to Dr. Karl Thomae GmbH. Cyclic urea derivatives, pharmaceutical compositions containing these compounds and processes for preparing them. 5,852,192, Cl. 546-210.000.

Hirabayashi, Yoshio: *See—*

- Fukuda, Minoru; Kanamori, Akiko; and Hirabayashi, Yoshio, 5,851,788, Cl. 435-29.000.

Hirahara, Shuzo; Nagato, Hitoshi; Nomura, Yuko; Ishii, Koichi; Hosaka, Yasuo; Nakao, Hideyuki; and Murakami, Teruo, to Kabushiki Kaisha Toshiba. Ink-jet printer. 5,852,453, Cl. 347-55.000.

Hirai, Makoto: *See—*
- Hashimoto, Tsutomu; and Hirai, Makoto, 5,852,446, Cl. 345-441.000.

Hirai, Nobuaki: *See—*
- Ishida, Masayuki; Endo, Kazuhito; Tsukamoto, Manabu; Hirai, Nobuaki; and Ishida, Yoshinobu, 5,852,593, Cl. 369-54.000.

Hirai, Takehiro: *See—*
- Fujii, Taizo; Hirai, Takehiro; and Fujinaga, Sugao, 5,851,863, Cl. 438-203.000.

Hirai, Wataru: *See—*
- Mogi, Seiichi; Hirai, Wataru; Fujiwara, Muneyoshi; Okuda, Osamu; and Honkawa, Hirokazu, 5,850,689, Cl. 29-834.000.

Hiraishi, Masahiro; Yoshida, Toshihiko; Waki, Hiroaki; Yoshida, Sunao; and Kuroda, Shinichi, to Shimadzu Corporation. Cylindrical multiple-pole mass filter with CVD-deposited electrode layers. 5,852,302, Cl. 250-292.000.

Hiraki, Akio: *See—*
- Moriyama, Noboru; Hiraki, Akio; Ichinose, Toshimitsu; and Sakamoto, Koichi, 5,851,245, Cl. 44-301.000.

Hirano, Yoshihito: *See—*
- Yamashita, Hiroki; Shinno, Tatsuya; and Hirano, Yoshihito, 5,852,765, Cl. 399-407.000.

Hirasawa, Koji: *See—*
- Ando, Hiroshi; Saito, Fumiaki; Tanaka, Chikao; Takeshita, Shinji; Hirasawa, Koji; Nagano, Sei; Ito, Hajime; and Yamamura, Shinji, 5,851,258, Cl. 65-329.000.

Hirasawa, Takeshi: *See—*
- Fujioka, Keiji; Hirasawa, Takeshi; Kajihara, Masako; Sano, Akihiko; Sugawara, Shuichi; and Urabe, Yosuke, 5,851,547, Cl. 424-426.000.

Hiratsuka, Yukari; and Sugiyama, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. MPEG audio decoder for detecting and correcting irregular patterns. 5,852,805, Cl. 704-500.000.

Hirose Electric Co., Ltd.: *See—*
- Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.

Hirose, Hirokazu: *See—*
- Kawaguchi, Yasuhiko; Takahashi, Akio; Shimizu, Masaki; Hirose, Hirokazu; and Kurono, Yoshikazu, 5,850,791, Cl. 112-275.000.

Hirose, Naohiro: *See—*
- Hayashi, Kenji; Koyama, Mikio; Kikuchi, Tomoe; Yamazaki, Hiroshi; Hirose, Naohiro; Suzuki, Shinichi; Iwamoto, Tsutomu; and Nishimori, Yoshiki, 5,851,713, Cl. 430-109.000.

Hirsch, Hans-Ludwig: *See—*
- Pohl, Ludwig; Poetsch, Eike; Hirsch, Hans-Ludwig; Schumann, Herbert; and Weiss, Karin, 5,851,946, Cl. 502-131.000.

Hirschkorn, Ingo, to Krupp Kunststofftechnik GmbH. Multiple-extruder head assembly with pivotal head parts. 5,851,561, Cl. 425-131.100.

Hirvonen, Pekka: *See—*
- Hyyrynen, Altti; Sarpola, Jussi; and Hirvonen, Pekka, 5,852,650, Cl. 379-29.000.

Hisada, Kenichi; Kido, Tsutomu; and Mishima, Yoshitaka, to Uni-Charm Corporation. Disposable undergarment having a tape fastener. 5,851,205, Cl. 604-390.000.

Hisaka Works, Ltd: *See—*
- Ishimaru, Osamu; Takigawa, Masao; and Nomura, Satoshi, 5,850,651, Cl. 8-152.000.

Hisamitsu, Shinji; Ishihara, Teruhisa; Tamaki, Katsuya; Kuramoto, Shigefumi; Sakai, Yasuhiro; and Takasaki, Shinji, to Matsushita Electric Industrial Co., Ltd.; and Nippon Shokubai Co., Ltd. Adhesive particulate composition, adhesive spacers for liquid crystal display panel, and liquid crystal display panel. 5,851,605, Cl. 428-1.000.

Hisamura, Masayuki: *See—*
- Tabe, Kazushi; and Hisamura, Masayuki, 5,852,783, Cl. 455-550.000.

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  McArdle, Ciaran B.; and Burke, Joseph, 5,851,644, Cl. 428-213.000.
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  Schiedegger, Charles E.; Nurenberg, Aundrea; MacLeod, Richard J.; Clark, Michael C.; and Logan, J. Richard, 5,850,717, Cl. 52-288.100.
Lograsso, Barbara K.: *See—*
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Lohmeijer, Johannes Hubertus G. M.: *See—*
  Bussink, Jan; Gaymans, Reinoud Jaap; Lohmeijer, Johannes Hubertus G. M.; Mamalis, Ilias Nicholas; Smith, Gary F.; and van Bennekom, Antoinette Cornelia Maria, 5,852,155, Cl. 528-170.000.
Lohr, Linda: *See—*
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Lohse, Lester J. Hand portable grain threshing device. 5,851,145, Cl. 460-61.000.
Lois, William A. Venous stent. 5,851,232, Cl. 623-1.000.
Lojek, Bohumil; and McRae, Joseph M., to Cypress Semiconductor Corp. Fabrication sequence employing an oxide formed with minimized inducted charge and/or maximized breakdown voltage. 5,851,892, Cl. 438-305.000.
Long, Raymond D.; and Greene, Scott. Equine dental float adapter. 5,851,111, Cl. 433-1.000.
Long, Steve P.: *See—*
  Dobreski, David V.; and Long, Steve P., 5,851,070, Cl. 383-63.000.
Longino, Marc A.: *See—*
  Counsell, Raymond E.; Longino, Marc A.; Weichert, Jamey P.; and Bakan, Douglas A., 5,851,510, Cl. 424-9.450.
Loomis, Gary L.; Izbicki, Michael J.; and Flammino, Anthony, to Novon International, Inc. Biodegradable thermoplastic polymer blend compositions with accelerated biodegradation. 5,852,114, Cl. 525-57.000.
Loomis, Gary L.: *See—*
  Lentz, David J.; Loomis, Gary L.; Moroni, Antonio; and DePreker, Jennifer, 5,851,229, Cl. 623-1.000.
Lopresti, Daniel P.; and Sandberg, Jonathan S., to Panasonic Technologies, Inc. Multimedia rendering marker and method. 5,852,684, Cl. 382-309.000.
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  Mellul, Myriam; and Arnaud, Pascal, 5,851,539, Cl. 424-401.000.
  Mougin, Nathalie; and Mondet, Jean, 5,851,517, Cl. 424-78.020.
Loreth, Wolfgang, to Continental Aktiengesellschaft. Rubber composition for tires. 5,852,079, Cl. 524-35.000.
Lott, A. W. Multi-deck poker progressive wagering system with multiple winners and including jackpot, bust, and insurance options. 5,851,011, Cl. 273-292.000.
Loudermilk, Alan R.: *See—*
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Lov, Piseth: *See—*
  McAfee, Carl David; Lov, Piseth; Hughes, David Thomas; and Chase, Michael Wayne, 5,851,731, Cl. 430-286.100.
Lovin, Kenneth Paul. Baseball glove with elongated strap. 5,850,633, Cl. 2-19.000.
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  Meier, Helmut-Martin; Löwer, Hartmut; Ebert, Wolfgang; and Haese, Wilfried, 5,852,138, Cl. 525-463.000.
Lowry, Andrew: *See—*
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LSI Logic Corporation: *See—*
  Tsai, Jiunn-Yann; Haywood, John; and Lee, Ming Yi, 5,851,890, Cl. 438-303.000.
Lu, Shin-Yee, to University of California, The Regents of the. Image system for three dimensional, 360 DEGREE, time sequence surface mapping of moving objects. 5,852,672, Cl. 382-154.000.
Lu, Yao-Chou: *See—*
  Shyu, Jyuo-Min; Lu, Yao-Chou; Deng, Hsi-Chou; and Cheng, Hsu-Huang, 5,852,708, Cl. 395-3.000.
Lubic, Marko Konstantin: *See—*
  Olms, Joseph Jeffery; Crance, Gerald Thomas; and Lubic, Marko Konstantin, 5,850,891, Cl. 182-127.000.
Lubisch, Wilfried; Behl, Berthold; and Hofmann, Hans Peter, to BASF Aktiengesellschaft. 2,3 (1H, 4H)-quinoxalinediones. 5,852,017, Cl. 514-249.000.
Lubrizol Corporation, The: *See—*
  Baker, Mark R.; Adams, Paul E.; and Dietz, Jeffry G., 5,851,966, Cl. 508-452.000.
  Bush, James H., 5,851,377, Cl. 208-48.0AA.
  Magyar, James S., 5,851,961, Cl. 507-119.000.
  Magyar, James Steven, 5,851,429, Cl. 252-311.000.
Luburic, Frano; and Roper, Robert R., to Ropak Corporation. Container with shoulder flange and removable sidewall portions, and related method. 5,850,935, Cl. 220-675.000.
Lucas, Charles H.: *See—*
  Allen, Michael J.; Crain, Gregory K.; Fischer, Stephen A.; Gelsinger, Patrick P.; Gray, David R.; Hopkins, Stuart T.; Laub, Gustay, III; Lucas, Charles H.; Pashley, Richard D.; Sabi, Babak; Schutz, Joseph D.; Shield, David J.; and Sullivan, Stephen F., 5,852,712, Cl. 395-182.030.
Lucas Industries Public Limited Co.: *See—*
  Bouchauveau, Pierre; Guillot, Dany; and Leveque, Claude, 5,850,817, Cl. 123-458.000.
Lucchesi, Shirley A.: *See—*
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Lucent Technologies Inc.: *See—*
  Alugbin, Dayo; Leung, Chung Wai; Radosevich, Joseph Rudolph; Singh, Ranbir; and Wroge, Daniel Mark, 5,851,870, Cl. 438-239.000.
  Bevk, Joze; Fuertsch, Matthias Werner; Georgiou, George E.; and Hillenius, Steven James, 5,851,922, Cl. 438-655.000.
  Clayton, Jane Bilecky; Eskildsen, Lars Erik; Hansen, Per Bang; Headley, Clifford; and Reed, William Alfred, 5,851,259, Cl. 65-377.000.
  Comizzoli, Robert Benedict; Dautartas, Mindaugas Fernand; and Osenbach, John William, 5,851,849, Cl. 438-38.000.
  Eleftheriadis, Alexandros; and Jacquin, Arnaud Eric, 5,852,669, Cl. 382-118.000.
  Forgues, Scott L., 5,852,662, Cl. 380-9.000.
  Johnston, James David; and Sinha, Deepen, 5,852,806, Cl. 704-500.000.
  Li, Yuan P., 5,852,505, Cl. 359-118.000.
Luciano, Robert A., Jr.: *See—*
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Ludwig Institute for Cancer Research.: *See—*
  Townsend, Alan; Bastin, Judy; Boon-Falleur, Thierry; van der Bruggen, Pierre; Coulie, Pierre; and Gajewski, Thomas, 5,851,523, Cl. 424-185.100.
  Welt, Sydney; Ritter, Gerd; Cohen, Leonard; Williams, Clarence, Jr.; Richards, Elizabeth Carswell; John, Mary; and Old, Lloyd J., 5,851,526, Cl. 424-156.100.
  Wilks, Andrew Frederick; and Harpur, Ailsa, 5,852,184, Cl. 536-23.200.
Luebke, Charles P.; Leet, William A.; Zimmermann, Joseph E.; Vangelisti, Ronald J.; and Marker, Terry L., to UOP LLC. Process for performing a swing bed regeneration operation with minimal downstream upsets. 5,851,944, Cl. 502-22.000.
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  Broger, Emil Albin; Buchecker, Richard; Crameri, Yvo; and Lukàc, Teodor, 5,852,212, Cl. 562-602.000.
Luke, George P.: *See—*
  Romines, Karen Rene; Bundy, Gordon L.; Schwartz, Theresa M.; Tommasi, Ruben A.; Strohbach, Joseph W.; Turner, Steven Ronald; Thaisrivongs, Suvit; Aristoff, Paul Adrian; Johnson, Paul D.; Skulnick, Harvey Irving; Skaletzky, Louis L.; Anderson, David John; Morris, Joel; Gammill, Ronald B.; and Luke, George P., 5,852,195, Cl. 546-282.100.
Lukyanov, Anatoly N.: *See—*
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Luman, David P.: *See—*
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Lumb, Simon Mark: *See—*
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Lumonics Ltd.: *See—*
  Elliman, Anthony D.; and McNulty, Martin P., 5,852,695, Cl. 385-82.000.
Lund, David. Windshield visor for motor vehicles. 5,851,044, Cl. 296-95.100.
Lund, David R. Broaching cutter. 5,850,769, Cl. 82-1.300.
Lüpfert, Sandra: *See—*
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Lurier, Jeanette: *See—*
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Luu, Phuong Van: *See—*
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Lynch, Gary S.; and Rogers, Gary A., to University of California, The Regents of the. Heteroatom substituted benzoyl derivatives that enhance synaptic response mediated by receptors. 5,852,008, Cl. 514-212.000.
Lyons, Charles E., Jr.: *See—*
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Lyons, Harold W., to Whelen Engineering Company, Inc. Integrated warning light and rear-view mirror. 5,851,064, Cl. 362-494.000.
Lysov, Yuri Petrovich: *See—*

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M. A. Hanna Company: *See*—
McAfee, Carl David; Lov, Piseth; Hughes, David Thomas; and Chase, Michael Wayne, 5,851,731, Cl. 430-286.100.
Macaulay, John M.; Searson, Peter C.; Duboc, Robert M., Jr.; and Spindt, Christopher J., to Candescent Technologies Corporation. Field-emission device that utilizes filamentary electron-emissive elements and typically has self-aligned gate. 5,851,669, Cl. 428-401.000.
MacDonald, Robert J.: *See*—
Trudeau, Howard D.; Sutphin, David L.; Damon, Donald E.; Bedegrew, Ernest R.; Cabrera, Filamon T.; Pereyda, Douglas B.; MacDonald, Robert J.; Hada, Daniel H.; Havens, Frank C.; Tomasek, Allan R.; Taylor, Lee O.; and Edwards, Larry W., 5,850,989, Cl. 244-63.000.
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Xidos, John; MacDougall, Ross; Carrigan, David; Hammond, Gary; Little, Pamela; and Reid, Bruce, 5,851,149, Cl. 463-42.000.
Macho, Heinz: *See*—
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Mack, Helmut: *See*—
Böhm, Hans-Joachim; Koser, Stefan; Mack, Helmut; Pfeiffer, Thomas; Seitz, Werner; Höffken, Hans Wolfgang; Hornberger, Wilfried; and Zierke, Thomas, 5,852,051, Cl. 549-423.000.
Mack, Newton E.: *See*—
Zirps, Christopher T.; and Mack, Newton E., 5,851,212, Cl. 606-167.000.
MacKarvich, Charles J. Foundation for manufactured home. 5,850,718, Cl. 52-292.000.
Mackenzie, Andrew David: *See*—
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Mackey, Paul William: *See*—
Gillis, Herbert Russell; and Mackey, Paul William, 5,852,107, Cl. 524-724.000.
Mackie, David M., to United States of America, Army. Self-imaging waveguide optical polarization or wavelength splitters. 5,852,691, Cl. 385-39.000.
Mackiewicz, Miro: *See*—
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Maeda, Hiroaki; Eda, Yasuyuki; Kimachi, Kazuhiko; Ono, Yoichi; and Tokiyoshi, Sachio, to Juridical Foundation The Chemo-Sero-Therapeutic Research Institute. Dog-mouse heterohybridoma and gene fragment coding for constant region of canine immunoglobulins. 5,852,183, Cl. 536-23.100.
Maeda, Mitsuru: *See*—
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Maejima, Takamichi, to Yazaki Corporation. Terminal insertion apparatus and terminal posture correcting device and method. 5,850,694, Cl. 29-884.000.
Magazzu', Antonio: *See*—
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Magendantz, Margaret: *See*—
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Magenta Corporation: *See*—
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Magnecomp Corp.: *See*—
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MagneTek, Inc.: *See*—
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Magyar, James S., to Lubrizol Corporation, The. Anti-settling lubricity agent for water/oil dispersion compositions. 5,851,961, Cl. 507-119.000.
Magyar, James Steven, to Lubrizol Corporation, The. Dispersions of waxy pour point depressants. 5,851,429, Cl. 252-311.000.
Mahdi, Syed Z.: *See*—
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Maher, Veronica M.: *See*—
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Mahoney, Dominick E. Rose cone cover with indicia. 5,850,709, Cl. 47-21.000.
Mahoney, Robert: *See*—
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Mahood, Monty; and Beardsley, Fred A. Umbrella supported by vehicle wheel. 5,850,843, Cl. 135-88.060.
Maienfisch, Peter; and Gsell, Laurenz, to Novartis Corporation. Oxadiazine derivatives. 5,852,012, Cl. 514-229.200.
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Güntherberg, Norbert; Hofmann, Jürgen; Mailahn, Elmar; Ohlig, Hilmar; Grabowski, Sven; Czauderna, Bernhard; and Bus, Klaus, 5,852,113, Cl. 525-53.000.
Mailen, Gregory S.: *See*—
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Maitland Co., The: *See*—
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Maitz, Franz: *See*—
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Majid, Naveed; Mobers, Tom; and Seinen, Erwin G. R., to Philips Electronics North America Corporation. Switched-mode power supply circuit having a very low power stand-by mode. 5,852,550, Cl. 363-21.000.
Mak, Chi Kin, Wo, Ka Hong; and Yeung, Wai Man, to Windmere Corporation. Clothes iron with automatic shut off system controlled by multiple switches. 5,852,279, Cl. 219-257.000.
Makhol, Friedhelm: *See*—
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Makino, Kenya; Fukuhara, Seiji; Kuroda, Kyoko; and Hayashi, Toshio, to JSR Corporation. Poly-α-amino acid particles, emulsions containing the same and process for preparing the same. 5,852,109, Cl. 524-811.000.
Makino, Tomoaki: *See*—
Kawase, Tatsuo; Nozaki, Takashi; Makino, Tomoaki; and Utsunomiya, Satoshi, 5,851,163, Cl. 475-183.000.
Makita, Naoki; and Funai, Takashi, to Sharp Kabushiki Kaisha. Semiconductor device and method for producing the same. 5,851,860, Cl. 438-166.000.
Makuta, Toshiyuki: *See*—
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Maldonado, David, to Qualcomm Incorporated. Dual-band antenna coupler for a portable radiotelephone. 5,852,421, Cl. 343-702.000.
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Chen, Barbara B.; Chen, Helen Y.; Clare, Michael; Docter, Stephen H.; Khanna, Ish Kumar; Koszyk, Francis Jan; Malecha, James W.; Miyashiro, Julie Marion; Penning, Thomas D.; Rico, Joseph G.; Ruminski, Peter G.; Russell, Mark A.; Weier, Richard Mathias; Xu, Xiangdong; Yu, Stella S.; and Yu, Yi, 5,852,210, Cl. 562-439.000.
Mali, Marku: *See*—
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Malik, Dale W.; La Pierre, Stephen Randolph; Koch, Robert A.; and Raji, Alexander David, to BellSouth Corporation. Method for visual delivery to a caller of selected information associated with a telephone number in an advanced intelligent network via public switch telephone network. 5,852,657, Cl. 379-93.250.
Malinge, Jean, to Elf Atochem S.A. Prepolymer for the polymerization of olefing combining a number of solid catalytic components. 5,852,141, Cl. 526-119.000.
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Young, Dennis C.; Chlystek, Stanley J.; Malloy, Robert; and Rios, Ivan, 5,852,115, Cl. 525-64.000.
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Mama, Takashi: *See*—
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Mamalis, Ilias Nicholas: *See*—
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Mang, Michael N.: *See*—
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Manner, Otto. Needle valve nozzle for injection molds and valve needle. 5,851,571, Cl. 425-564.000.
Mannesmann Aktiengesellschaft: *See*—
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Pleschiutschnigg, Fritz-Peter; Stalleicken, Dieter; Parschat, Lothar; von Hagen, Ingo; Menne, Ulrich; El Gammal, Tarek; Hamacher, Peter Lorenz; and Vonderbank, Michael, 5,850,869, Cl. 164-419.000.
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Manoharan, Muthiah: *See*—
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Maracas, George N.; Reber, William L.; and Perttunen, Cary D., to Motorola Corporation. Automated electrophoresis system and method. 5,851,370, Cl. 204-450.000.
Marano, April A.; Field, Jeffrey F.; and Funderburk, Jeffery V., to Minimed Inc. Injector for a subcutaneous infusion set. 5,851,197, Cl. 604-135.000.
Marasco, Wayne A.; and Haseltine, William A., to Dana-Farber Cancer Institute. Method of intracellular binding of target molecules. 5,851,829, Cl. 435-328.000.
Marasco, Wayne A.: *See*—
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Marathon Monitors, Inc.: *See*—
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Marc, Jean-Pierre; and Barré , Bernard, to JPB Systeme. Self-locking union for pipes. 5,851,035, Cl. 285-86.000.
Marcelletti, John; Fournier, John C., Jr.; and Micket, James A., to Eastman Kodak Company. Motorized wick for fusing apparatus. 5,852,761, Cl. 399-325.000.
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Marcotte, Robert G., to Matsushita Electric Industries. Large-area color AC plasma display employing dual discharge sites at each pixel site. 5,852,347, Cl. 315-169.400.
Marcus, Ilan, to Du Pont de Nemours, E. I., and Company. Fiberfill structure. 5,851,665, Cl. 428-357.000.
Marcus, Ronald N.; and Martini, Brenda, to Bristol-Myers Squibb Company. Nefazodone: use in treating post traumatic stress disorder. 5,852,020, Cl. 514-252.000.
Margolis, Brian S. Interproximal cleaner and method of use. 5,851,116, Cl. 433-216.000.
Mark, Fred; Northrup, Richard; Ouellette, Larry; Schipp, Roberto; Ihrie, Ronald; Boyer, Edward; and Somers, William F., to Flash Technology Corporation of America. Controllable strobe light system and method for directing the movements of fish. 5,850,806, Cl. 119-219.000.
Marker, Terry L.: *See*—
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Markkula, Juha: *See*—
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Marklin, Mark W.; and Prince, Glen D., to Coltec Industries Inc. Floating wrist pin coupling for a piston assembly. 5,850,777, Cl. 92-187.000.
Marko, Myroslaw, to Boeing North American, Inc. Loose-tight-loose twist, twisted-tape insert solar central receiver. 5,850,831, Cl. 126-645.000.
Markum, Randall: *See*—
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Markusch, Peter H.; and Cline, Robert L., to Bayer Corporation. Process for the production of polyurea encapsulated fertilizer particles and the encapsulated fertilizer particles produced by this process. 5,851,261, Cl. 71-64.070.
Marshall, Christopher B., to U.S. Philips Corporation. Data coding system. 5,852,634, Cl. 375-259.000.
Marshall, Larry Ray, to Du Pont de Nemours, E. I., and Company. Elongation for flash spun products. 5,851,936, Cl. 442-334.000.
Marsolais, Hugo: *See*—
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Martin, Annette L.: *See*—
Thakur, Randhir P. S.; and Martin, Annette L., 5,851,929, Cl. 438-795.000.
Martin, Donald R.: *See*—
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Martin, Lawrence L.: *See*—
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  - Yoshimura, Yoshikazu, 5,852,390, Cl. 333-21.00A.
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  - Aghajanian, Michael Kevork; Langensiepen, Ralph Alfred; Kennedy, Christopher Robin; Rocazella, Michael Angelo; Wiener, Robert James; Hannon, Gregory Eugene; Crowther, John Jennings; and McCormick, Allyn Leslie, 5,851,686, Cl. 428-614.000.
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Murakami, Yasuyuki, 5,852,639, Cl. 375-354.000.

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Ushiro, Tomoaki, 5,850,682, Cl. 29-608.000.
Wada, Hiroyuki; Sano, Harunobu; and Sakamoto, Norihiko, 5,852,542, Cl. 361-321.500.

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Ryoichi, Morimoto, 5,850,677, Cl. 29-25.350.

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Ikeda, Sadao; Kito, Makoto; Taguchi, Yoshio; Tanaka, Atsushi; Inoue, Shigeki; Murata, Naoyuki; Ninomiya, Shinichi; and Kimura, Yoshitaka, 5,851,065, Cl. 366-76.600.

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Murphy, Anthony J., to Pacesetter, Inc. System and method for automatic adjustment of shock parameters. 5,851,220, Cl. 607-5.000.

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Muller, Franz; and Mussbacher, Gunther, 5,851,340, Cl. 156-293.000.

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Yujiri, Mikio L.; Mussetto, Michael S.; and Uyeno, Gerald P., 5,852,419, Cl. 342-351.000.

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Jewel, Tsai, 5,852,683, Cl. 382-284.000.

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Diamant, Joram; and Myers, Henry L., 5,851,311, Cl. 148-23.000.

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Froix, Michael; Pukshansky, Masha; and Nacht, Sergio, 5,851,538, Cl. 424-401.000.

Nachtkamp, Klaus: *See—*
Wilmes, Oswald; Baumbach, Beate; Nachtkamp, Klaus; König, Eberhard; Dearth, Randall; Bock, Manfred; and Wieczorrek, Wolfhart, 5,852,106, Cl. 524-591.000.

Nady, Louie A.: *See—*
Javdani, Kambiz; Nady, Louie A.; and Rodriguez, Gilbert, 5,852,215, Cl. 564-277.000.

Naef, Reto: *See—*
Hiestand, Peter; Naef, Reto; Naegeli, Hans-Ulrich; Oberer, Lukas; Revesz, Laszlo; and Roth, Hans-Jörg, 5,852,005, Cl. 514-169.000.

Naegeli, Hans-Ulrich: *See—*
Hiestand, Peter; Naef, Reto; Naegeli, Hans-Ulrich; Oberer, Lukas; Revesz, Laszlo; and Roth, Hans-Jörg, 5,852,005, Cl. 514-169.000.

Nagahara, Akira: *See—*
Tooda, Toshio; Yamaguchi, Yoshio; Kuwabara, Nobuo; Sato, Mituru; Watanabe, Haruyasu; Nagahara, Akira; Sasaki, Sachio; Ishiyama, Yoshiya; Kera, Hiroshi; Nishido, Masanori; and Hanzawa, Hisashi, 5,852,757, Cl. 399-119.000.

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Takechi, Nobuyuki; Ohtani, Seiji; and Nagai, Akihiro, 5,851,451, Cl. 264-4.100.

Nagai, Kenta: *See—*
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Nagai, Takeshi; Kikuchi, Yoshihiro; Watanabe, Toshiaki; and Chujoh, Takeshi, to Kabushiki Kaisha Toshiba. Moving picture coding and/or decoding systems, and variable-length coding and/or decoding system. 5,852,469, Cl. 348-384.000.

Nagai, Toru: *See—*
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Nagai, Youichi: *See—*
Henda, Yoshimitu; Kobashi, Kiyoshi; Watanabe, Yoshimasa; Araki, Yasushi; Nagai, Youichi; and Ban, Syunsuke, 5,851,249, Cl. 55-486.000.

Naganawa, Tsutomu: *See—*
Ishikawa, Hiroki; Naganawa, Tsutomu; and Ona, Isao, 5,851,431, Cl. 252-312.000.

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Ando, Hiroshi; Saito, Fumiaki; Tanaka, Chikao; Takeshita, Shinji; Hirasawa, Koji; Nagano, Sei; Ito, Hajime; and Yamamura, Shinji, 5,851,258, Cl. 65-329.000.

Naganuma, Kazunori: *See—*
Ishibashi, Shigeo; Yokohama, Itaru; Ishida, Yuzo; and Naganuma, Kazunori, 5,851,284, Cl. 117-35.000.

Nagaoka, Hiroshi: *See—*
Kawagoe, Kenji; Murakami, Takuya; Satou, Masaharu; Uno, Takaaki; Aimoto, Hideo; Kasahara, Tamiyoshi; and Nagaoka, Hiroshi, 5,851,016, Cl. 280-124.148.

Nagasawa, Hiroshi: *See—*
Uchino, Tuguo; Matumoto, Iwao; and Nagasawa, Hiroshi, 5,851,449, Cl. 264-1.700.

Nagase & Co., Ltd.: *See—*
Nohira, Hiroyuki; Saijo, Shigeya; Moriwaki, Masafumi; Kamiyama, Shunji; Toyoda, Kazutoshi; Matsumoto, Jun; Maruo, Kohichi; and Fujimoto, Taizo, 5,852,209, Cl. 562-401.000.

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Nagata, Norinari; and Kuriyama, Yuji, to Toyoda Tosei Co., Ltd. Air bag device for passenger seat. 5,851,023, Cl. 280-728.300.

Nagata, Norinari: *See—*
Yamamoto, Tadashi; Masuya, Chisato; and Nagata, Norinari, 5,851,022, Cl. 280-728.300.

Nagatani, Yuji; and Hashimoto, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Automobile multiplex communication system. 5,852,613, Cl. 370-546.000.

Nagato, Hitoshi: *See—*
Hirahara, Shuzo; Nagato, Hitoshi; Nomura, Yuko; Ishii, Koichi; Hosaka, Yasuo; Nakao, Hideyuki; and Murakami, Teruo, 5,852,453, Cl. 347-55.000.

Nagaya, Masatake: *See—*
Matsui, Masaki; Nagaya, Masatake; Fukaya, Akinari; and Himi, Hiroaki, 5,851,846, Cl. 438-17.000.

Nagler, Arnon: *See—*
Pines, Mark; and Nagler, Arnon, 5,852,024, Cl. 514-259.000.

Nagura, Masahiko, to Yamaha Corporation. Manufacture of application-specific IC. 5,851,856, Cl. 438-130.000.

Nairne, Robert J. D.: *See—*
Wallis, Julian M.; Nairne, Robert J. D.; and Zinn-Warner, Alexis, 5,851,751, Cl. 430-567.000.

Naji, Peter K., to Motorola, Inc. High density magnetoresistive random access memory device and operating method thereof. 5,852,574, Cl. 365-158.000.

Nakagahara, Makoto: *See—*
Kotani, Kozo; Negawa, Hideo; Sakaya, Taiichi; Nakagahara, Makoto; and Kudo, Aki, 5,851,682, Cl. 428-500.000.

Nakagaki, Nobufumi; Minemoto, Takeshi; Hoshino, Takeshi; Aoki, Masahide; and Ishibashi, Atsushi, to Hitachi, Ltd. Television receiver including playback mode for storing screen image information for predetermined time to reproduce and its method. 5,852,474, Cl. 348-564.000.

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Miura, Natsushi; Hagano, Hiroyuki; and Nakagawa, Masayuki, 5,850,851, Cl. 137-583.000.

Nakagawa, Mitsuo: *See—*
Oyagi, Tomohito; Nakagawa, Mitsuo; Sakai, Junji; Yasutomi, Yoshiyuki; and Okouchi, Takahiko, 5,851,675, Cl. 428-426.000.

Nakagawa, Tatsuya: *See—*
Mukawa, Tatsuhiko; Nakagawa, Tatsuya; and Ezaki, Yasuo, 5,851,456, Cl. 264-40.100.

Nakagawa, Yoshiki: *See—*
Kusakabe, Masato; Kitano, Kenichi; and Nakagawa, Yoshiki, 5,852,129, Cl. 525-330.300.

Nakai, Shinya; Katsumata, Masashi; Hattori, Yasuyuki; Nagai, Kenta; Fukumitsu, Yoshiaki; and Ishizuka, Takehiko, to TDK Corporation. Voltage controlled oscillator and sensitivity adjustment. 5,852,388, Cl. 331-177.00V.

Nakajima, Hiroshi; Hasegawa, Tetsuya; and Niwa, Takafumi, to Victor Company of Japan, Ltd. Disc metal mold and recorded disc. 5,851,620, Cl. 428-64.100.

Nakajima, Junji: *See—*
Inoue, Kazuo; Uemura, Tsuyoshi; and Nakajima, Junji, 5,852,484, Cl. 349-86.000.

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Nakajima, Satoshi; Pitt, George H., III; Belfiore, Joseph D.; and Guzak, Christopher J., to Microsoft Corporation. Shell extensions for an operating system. 5,852,441, Cl. 345-352.000.

Nakajima, Yuki: *See—*
Matsunaga, Akio; Nakajima, Yuki; Kohno, Hiroshi; Komatsu, Hironori; Edatsugi, Hajime; Iwata, Daiji; and Takezawa, Kimiko, 5,852,011, Cl. 514-228.200.

Nakamachi, Mikako: *See—*
Furukawa, Takashi; Tsushima, Kazunori; Iwasaki, Tomonori; Kisida, Hirosi; Nakamachi, Mikako; and Takada, Yoji, 5,852,048, Cl. 514-384.000.

Nakamura, Akio: *See—*
Yanagisawa, Munehisa; Higuchi, Susumu; Tamura, Yuuki; Nakamura, Akio; and Otaki, Toshio, 5,851,850, Cl. 438-46.000.

Nakamura, Atsuro: *See—*
Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.

Nakamura, Hiroshi: *See—*
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Nakamura, Hitoshi: *See—*
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Nakamura, Koji; and Mizuno, Masayuki, to Mita Industrial Co., Ltd. Image data processing apparatus. 5,852,677, Cl. 382-173.000.

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Nakamura, Shoei: *See—*
Konno, Norikatsu; and Nakamura, Shoei, 5,852,749, Cl. 396-55.000.

Nakamura, Tadashi: *See—*
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Nakamura, Toshiyuki: *See—*
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Nakamura, Tsutomu: *See—*
Okumura, Makoto; Okuda, Toshiaki; Nakamura, Tsutomu; and Yajima, Motoyuki, 5,852,050, Cl. 514-468.000.

Nakamura, Yumiko; Nakamura, Hiroshi; Kamikawa, Maki; Watanabe, Hiroshi; Fujitani, Shin; and Yonezu, Ikuo, to Sanyo Electric Co., Ltd. Hydrogen absorbing alloys. 5,851,690, Cl. 429-59.000.

Nakane, Masami: *See—*
Ito, Fumitaka; Kokura, Toshihide; Nakane, Masami; Satake, Kunio; and Wakabayashi, Hiroaki, 5,852,038, Cl. 514-305.000.

Nakanishi, Takao; and Hosokawa, Tetsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with pop-up strobe unit. 5,852,752, Cl. 396-176.000.

Nakano, Hideki: *See—*
Ozaki, Atsushi; Urano, Masahiko; Harada, Isamu; Kakegawa, Tomohiro; and Nakano, Hideki, 5,851,286, Cl. 117-201.000.

Nakao, Hideyuki: *See—*
Hirahara, Shuzo; Nagato, Hitoshi; Nomura, Yuko; Ishii, Koichi; Hosaka, Yasuo; Nakao, Hideyuki; and Murakami, Teruo, 5,852,453, Cl. 347-55.000.

Nakao, Masayuki: *See—*
Hatakeyama, Masahiro; Ichiki, Katsunori; Kato, Takao; Kajiyama, Masaaki; Tsuzuki, Takashi; Hatamura, Yotaro; and Nakao, Masayuki, 5,852,298, Cl. 250-492.200.

Nakaoka, Hiroaki: *See—*
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Nakashima, Kohji: *See—*
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Nakashima, Masato: *See—*
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Nakashima, Mutsuo: *See—*
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Nakashima, Seiichi; and Sasahara, Kenji, to Toyota Jidosha Kabushiki Kaisha. Acceleration slip control system for motor vehicle. 5,850,887, Cl. 180-197.000.

Nakashima, Shinobu: *See—*
Yamanaka, Toru; Sotokawa, Mitsunari; and Nakashima, Shinobu, 5,852,108, Cl. 524-790.000.

Nakashima, Yoshihiko, to Noritsu Koki Co., Ltd. System for controlling circulation of developing liquid. 5,852,755, Cl. 396-626.000.

Nakata, Hiroyuki; and Hattori, Kazuhiko, to Sumitomo Wiring Systems, Ltd. Electrical connector. 5,851,128, Cl. 439-752.000.

Nakatani, Izumi: *See—*
Nagase, Hiroshi; Mizusuna, Akira; Kawai, Koji; and Nakatani, Izumi, 5,852,030, Cl. 514-279.000.

Nakaya, Hideo: *See—*
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Nakayama, Ichiro: *See—*

Mizuno, Bunji; Nakaoka, Hiroaki; Takase, Michihiko; and Nakayama, Ichiro, 5,851,906, Cl. 438-513.000.
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, to Nihon Shinku Gijutsu Kabushiki Kaisha. Method for thermal chemical vapor deposition. 5,851,589, Cl. 427-248.100.
Nakayama, Yoko: *See—*
Ohsuga, Minoru; Shiraishi, Takuya; Nakayama, Yoko; and Fujieda, Mamoru, 5,850,816, Cl. 123-430.000.
Nakazawa, Atsuo; Mukai, Yuuichirou; and Tajiri, Tomoaki, to Komatsu Electronic Metals Co., Ltd. Method for fabricating semiconductor wafers. 5,851,924, Cl. 438-691.000.
Nakazawa, Atsushi; and Nishikawa, Mitsuru, to Sumitomo Electric Industries, Ltd. Bar code scanning apparatus. 5,852,288, Cl. 235-472.000.
Nakazawa, Ikuo: *See—*
Koide, Hiroichi; Shimizu, Sadatsugu; and Nakazawa, Ikuo, 5,851,157, Cl. 473-305.000.
Naldi, Valter, to SELCO S.r.l. Panel cutting machine. 5,850,774, Cl. 83-418.000.
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Nanao Corporation: *See—*
Ito, Hiroshi, 5,852,431, Cl. 345-145.000.
Nanba, Katsuyuki: *See—*
Inoue, Manabu; Yagura, Hirokazu; Hamaguchi, Kouji; Wada, Shigeru; Matsumoto, Hiroyuki; and Nanba, Katsuyuki, 5,852,707, Cl. 386-128.000.
Nankee, Robert J., II: *See—*
Seitz, Gary L.; Cheng, Yi; Hope, Mark E.; Huff, Shean; Joyce, Mary; Kennie, Jerry; Krozek, Dennis A.; and Nankee, Robert J., II, 5,850,824, Cl. 123-688.000.
Nanomaterials Research Corporation: *See—*
Pirzada, Shahid; and Yadav, Tapesh, 5,851,507, Cl. 423-659.000.
Narayan, Rammohan; and Tran, Thang M., to Advanced Micro Devices, Inc. Instruction scanning unit for locating instructions via parallel scanning of start and end byte information. 5,852,727, Cl. 395-391.000.
Narayana, Pidugu L.: *See—*
Hawkins, Andrew L.; Narayana, Pidugu L.; and Knaack, Roland T., 5,852,748, Cl. 395-874.000.
Narisawa, Motoyuki: *See—*
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Naruse, Hideaki: *See—*
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Närväinen, Aimo: *See—*
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Nash, Mark E.: *See—*
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Nashimoto, Keiichi, to Fuji Xerox Co., Ltd. Ferroelectric thin film element and production method thereof. 5,852,703, Cl. 385-130.000.
Nathoo, Salim A.: *See—*
Hassan, Mahmoud; Dixit, Nagaraj; Prencipe, Michael; Viscio, David B.; and Nathoo, Salim A., 5,851,514, Cl. 424-53.000.
National Institutes of Health: *See—*
Gottesman, Michael M.; Pastan, Ira; and Ueda, Kazumitsu, 5,851,819, Cl. 435-320.100.
National Instruments Corporation: *See—*
Xia, Xiang-Gen; and Qian, Shie, 5,852,567, Cl. 364-725.010.
National Jewish Center For Immunology and Respiratory Medicine: *See—*
Johnson, Gary L., 5,851,786, Cl. 435-29.000.
National Semiconductor Corporation: *See—*
Berman, Rina, 5,852,317, Cl. 257-390.000.
Bikowsky, Zeev, 5,852,737, Cl. 395-750.050.
National Space Development Agency of Japan: *See—*
Sezai, Toshihiro, 5,852,420, Cl. 342-382.000.
National Starch and Chemical Investment Holding Corporation: *See—*
Philbin, Michael T.; Billmers, Robert L.; and Paul, Charles W., 5,852,080, Cl. 524-51.000.
Schoenberg, Jules E.; and Harlan, Robert D., 5,852,117, Cl. 525-67.000.
Neal, Thomas Garrett, Jr.: *See—*
Fiscus, Mark Wilson; and Neal, Thomas Garrett, Jr., 5,851,353, Cl. 162-113.000.
NEC Corporation: *See—*
Arai, Minari, 5,852,584, Cl. 365-230.030.
Chikamatsu, Kiyoshi; Watanabe, Toshiro; Inoue, Toshiaki; and Kose, Yasushi, 5,852,318, Cl. 257-390.000.
Fujita, Mamoru, 5,852,586, Cl. 365-233.000.
Ishige, Ryuuichi; and Kondo, Reishi, 5,852,668, Cl. 381-312.000.
Izumikawa, Masanori, 5,852,385, Cl. 331-57.000.
Komatsu, Masahiro, 5,852,782, Cl. 455-522.000.
Kubo, Shinya; Yamamoto, Tetsuichiro; and Matsumoto, Yasushi, 5,852,686, Cl. 382-313.000.
Matsui, Tsutomu, 5,852,595, Cl. 369-116.000.
Matsuoka, Shin-Ichi, 5,852,652, Cl. 379-88.000.
Miyakawa, Kuniko, 5,851,915, Cl. 438-622.000.
Sugawara, Tsugio, 5,852,602, Cl. 370-231.000.
Takahashi, Mitsuasa, 5,852,366, Cl. 326-68.000.
Tohyama, Shigeru, 5,852,321, Cl. 257-443.000.
Yajima, Akihiro; and Nakashima, Kohji, 5,852,480, Cl. 349-40.000.
Zenke, Masanobu, 5,851,581, Cl. 427-97.000.
Neculescu, Cristian M.: *See—*
Oriaran, T. Philips; Harper, Frank D.; Awofeso, Anthony O.; Neculescu, Cristian M.; Luu, Phuong Van; Kershaw, Thomas N.; and Schulz, Galyn A., 5,851,629, Cl. 428-153.000.
Negawa, Hideo: *See—*
Kotani, Kozo; Negawa, Hideo; Sakaya, Taiichi; Nakagahara, Makoto; and Kudo, Aki, 5,851,682, Cl. 428-500.000.
Nellcor Puritan Bennett Incorporated: *See—*
Ritson, Carl; Mannheimer, Paul; Levinson, Mitchell; and Casciani, James R., 5,851,179, Cl. 600-338.000.
Nelson, Jeff W.: *See—*
Stoetzel, William Lee; Larson, Eric George; and Nelson, Jeff W., 5,851,247, Cl. 51-295.000.
Nemoto, Peter A.: *See—*
Palermo, Mark G.; Martin, Lawrence L.; and Nemoto, Peter A., 5,852,022, Cl. 514-255.000.
Neri, Carlo; Bizzarri, Marco; and Pallini, Luciano, to Great Lakes Chemical Italia S.r.l. Crystalline form of tetrakis-(2,4-di-t-butylphenyl)-4,4'-biphenylene. 5,852,084, Cl. 524-126.000.
Nervig, Deanna J.: *See—*
Sloan, Mark A.; Sloan, Jack C.; and Nervig, Deanna J., 5,850,940, Cl. 222-78.000.
Neste Oy: *See—*
Järvelin, Harri; Lindqvist, Petri; and Tamminen, Esa, 5,852,220, Cl. 568-697.000.
Nestegard, Mark K.: *See—*
Bennett, Richard E.; Bird, Gerald C.; Nestegard, Mark K.; and Rudin, Eleanor, 5,851,664, Cl. 428-355.0BL.
Neturen Co., Ltd.: *See—*
Matsuda, Naotoshi; Tamatani, Masaaki; Okumura, Miwa; Albessard, Keiko; Kawasaki, Kazuhiro; Yokota, Seiji; Motoki, Shinjiro; and Inoue, Yoshiaki, 5,851,428, Cl. 252-301.40R.
Network Equipment Technologies, Inc.: *See—*
Newman, Peter; Glover, Willie T.; Singh, Gururaj; Gupta, Amar; and Buckley, Clifford James, 5,852,601, Cl. 370-230.000.
Neumann, Reuben G., to Baker Hughes Incorporated. Filter plate feed port clamp. 5,851,387, Cl. 210-229.000.
Neumann, Scott E.; and Choroszylow, Ewan, to New York Gas Group. Apparatus for controlling a multiplicity of compressors. 5,852,795, Cl. 702-98.000.
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Germann, Erwin; Neureuter, Lothar; Zutz, Hans-Henning; and Veutgen, Hans-Jürgen, 5,851,014, Cl. 277-406.000.
NeuroMetrix, Inc.: *See—*
Gozani, Shai N., 5,851,191, Cl. 600-554.000.
Neurospheres, Ltd.: *See—*
Weiss, Samuel; Reynolds, Brent; Hammang, Joseph P.; and Baetge, E. Edward, 5,851,832, Cl. 435-368.000.
Neuse, Douglas M.: *See—*
Esslinger, Mark A.; Clarke, Allan D.; Howard, Robert M.; Matchett, Douglas K.; Neuse, Douglas M.; Palmer, James R.; and West, Carolyn W., 5,852,449, Cl. 345-473.000.
Neutzler, Ulrich: *See—*
Lenz, Udo; Neutzler, Ulrich; Schoengen, Anton; and Sigg, Reinhard, 5,852,201, Cl. 560-77.000.
Nevill, Leland R.: *See—*
Beffa, Ray; Nevill, Leland R.; Farnworth, Warren M.; Cloud, Eugene H.; and Waller, William K., 5,852,581, Cl. 365-201.000.
New England Deaconess Hospital Corp.: *See—*
Sodroski, Joseph G.; Marasco, Wayne A.; Posner, Marshall R.; and Haseltine, William A., 5,852,186, Cl. 536-23.530.
New Focus, Inc.: *See—*
Do, Khiem Ba; and Arnone, David F., 5,852,519, Cl. 359-822.000.
New Oji Paper Co., Ltd.: *See—*
Suzuki, Kenji; Kunihiro, Akira; and Ohhashi, Hiroyuki, 5,851,662, Cl. 428-352.000.
New York Gas Group: *See—*
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Hill, Jeremy Paul; Boland, Michael John; and Smith, Andrew Faulks, 5,850,804, Cl. 119-14.020.
Newman, David P., to Camax Tool Co. Ratchet reversing mechanism. 5,850,767, Cl. 81-58.300.
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Gathje, John C.; and Simmons, Gary L., 5,851,499, Cl. 423-23.000.
Newstead, Robert Clifford; and Peregrine, Peter Michael, to Nokia Mobile Phones, Ltd. Back illuminated LCD apparatus with light attenuating means for even light distribution and method of manufacture. 5,852,483, Cl. 349-62.000.
Ng, Hoover Larry: *See—*
Custer, Milton F.; and Ng, Hoover Larry, 5,851,326, Cl. 156-89.220.
Ngai Keung Metal & Plastic Mfy Ltd.: *See—*
Chiu, Shun Pui, 5,851,134, Cl. 446-468.000.
NGK Insulators, Ltd.: *See—*

Hanzawa, Shigeru, 5,851,941, Cl. 501-88.000.
Kato, Yasushi; and Hashimoto, Shigeharu, 5,852,285, Cl. 219-553.000.
Okada, Shigeki; Shimogawa, Natsumi; and Takahashi, Nobou, 5,852,456, Cl. 347-71.000.
Takeuchi, Yukihisa; Kimura, Koji; and Takahashi, Masao, 5,852,337, Cl. 310-328.000.
NGK Spark Plug Co., Ltd.: *See—*
Inoue, Nobuhiro; Harada, Sadamitsu; and Imamura, Osamu, 5,852,234, Cl. 73-116.000.
Ito, Yukihiko; and Goto, Eigo, 5,852,340, Cl. 313-141.000.
Mizuno, Takanori, 5,852,280, Cl. 219-270.000.
Yamamoto, Hiroshi; Okamura, Takashi; and Iio, Satoshi, 5,851,658, Cl. 428-334.000.
Nguyen, Chuong D.: *See—*
Chan, Virginia M.; Muller, Stephen C.; Berger, Douglas M.; and Nguyen, Chuong D., 5,852,561, Cl. 364-488.000.
Nguyen, My N., to Johnson Matthey, Inc. Organosilicon-containing compositions having enhanced adhesive properties. 5,852,092, Cl. 524-404.000.
Nguyen, Tue; Charneski, Lawrence J.; and Hsu, Sheng Teng, to Sharp Microelectronics Technology, Inc.; and Sharp Kabushiki Kaisha. Differential copper deposition on integrated circuit surfaces and method for same. 5,851,367, Cl. 204-192.340.
Nickell, William Kenneth. Sexual assistance device. 5,851,175, Cl. 600-38.000.
Nicolle, Rémy; and Jourdan-Laforte, Eric, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Hygienic agent for use in hemodialysis. 5,851,483, Cl. 422-28.000.
Nielson, Marlin Craig, to Lockheed Martin Corporation. Spacecraft boresight calibration filter. 5,852,792, Cl. 701-222.000.
Niessner, Manfred: *See—*
Linhart, Friedrich; Stange, Andreas; Schuhmacher, Rudolf; Hartmann, Heinrich; Denzinger, Walter; Niessner, Manfred; Nilz, Claudia; Reuther, Wolfgang; and Meixner, Hubert, 5,851,300, Cl. 127-32.000.
Nifco Inc.: *See—*
Takahashi, Kenji; Kogami, Mitsuru; and Miyasaka, Kazunari, 5,850,676, Cl. 24-297.000.
Nightingale, John Lawrence; Jansen, Michael; Mehl, Ronii Chris; and Hmelar, Michael, to Coherent, Inc. Tapered optical fiber delivery system for laser diode. 5,852,692, Cl. 385-43.000.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See—*
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 5,851,589, Cl. 427-248.100.
Niimura, Nobuo; Karasawa, Yuuko; Takahashi, Kenji; and Saito, Hiroki, to Fuji Photo Film Co., Ltd.; and Japan Atomic Energy Research Institute. Method for forming neutron images. 5,852,301, Cl. 250-583.000.
Nikitenko, Antonina A.: *See—*
Gluzman, Yakov, deceased; LaRocque, James P.; O'Hara, Bryan M.; Morin, John E.; Ellestad, George A.; Mitsner, Boris; Ding, Wei-Dong; Raifeld, Yuri E.; and Nikitenko, Antonina A., 5,852,015, Cl. 514-245.000.
Nikon Corporation: *See—*
Hatasawa, Masato; and Ikeda, Masatoshi, 5,852,518, Cl. 359-822.000.
Kai, Tadao; and Miyamoto, Hidenori, 5,852,750, Cl. 396-55.000.
Konno, Norikatsu; and Nakamura, Shoei, 5,852,749, Cl. 396-55.000.
Kurita, Shinichi; Matsumoto, Hiroyuki; Horikawa, Masashi; and Ishii, Koichiro, 5,852,596, Cl. 369-120.000.
Matsuyama, Tomoyuki, 5,852,490, Cl. 355-67.000.
Shibuya, Masato; Ooki, Hiroshi; Okamoto, Kazuya; and Owa, Soichi, 5,851,707, Cl. 430-5.000.
Takagi, Tadao, 5,852,336, Cl. 310-323.000.
Uchiyama, Takayuki; and Kawahara, Atsushi, 5,851,060, Cl. 353-94.000.
Nilsson, Tommy: *See—*
Jönsson, Leif; and Nilsson, Tommy, 5,850,930, Cl. 215-226.000.
Nilz, Claudia: *See—*
Linhart, Friedrich; Stange, Andreas; Schuhmacher, Rudolf; Hartmann, Heinrich; Denzinger, Walter; Niessner, Manfred; Nilz, Claudia; Reuther, Wolfgang; and Meixner, Hubert, 5,851,300, Cl. 127-32.000.
Nimblett, Donald W.; Evans, Bruno J.; and Jenkins, Gary K., to Lockheed Martin Vought Systems Corp. Fused lasar range/intensity image display for a human interpretation of lasar data. 5,852,492, Cl. 356-5.040.
Ninomiya, Mitsuo: *See—*
Muto, Yasutoshi; Moriwaki, Hisataka; Ninomiya, Mitsuo; Adachi, Sadashi; Saito, Akiko; Takasaki, Takeshi; Tanaka, Takuji; Tsurumi, Kaito; Okuno, Masataka; Tomita, Eiichi; Nakamura, Toshiyuki; and Kojima, Takao, 5,852,057, Cl. 514-560.000.
Ninomiya, Shinichi: *See—*
Ikeda, Sadao; Kito, Makoto; Taguchi, Yoshio; Tanaka, Atsushi; Inoue, Shigeki; Murata, Naoyuki; Ninomiya, Shinichi; and Kimura, Yoshitaka, 5,851,065, Cl. 366-76.600.
Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Miyake, Norihisa; Tendo, Atsushi; Takeda, Hiromitsu; Ishida, Michiko; and Shinozaki, Haruhiko, 5,852,006, Cl. 514-183.000.
Nippon Electric Glass Co., Ltd.: *See—*
Miwa, Shinkichi, 5,851,939, Cl. 501-70.000.
Nippon Shoji Kaisha Ltd.: *See—*
Enomoto, Masayasu, 5,851,836, Cl. 436-69.000.
Nippon Shokubai Co., Ltd.: *See—*
Hisamitsu, Shinji; Ishihara, Teruhisa; Tamaki, Katsuya; Kuramoto, Shigefumi; Sakai, Yasuhiro; and Takasaki, Shinji, 5,851,605, Cl. 428-1.000.
Nippon Soken, Inc.: *See—*
Watanabe, Kiyohiko; Yoshinaga, Tohru; Izawa, Akihiro; and Fujishiro, Osamu, 5,852,274, Cl. 219-117.100.
Nippon Steel Corporation: *See—*
Iijima, Takashi; Suzuki, Kimihito; and Sato, Maki, 5,851,697, Cl. 429-218.000.
Koshizuka, Atsuo, 5,852,585, Cl. 365-230.080.
Nippon Steel Semiconductor Corporation: *See—*
Murai, Ichiro; Arakawa, Hidemi; and Shigeta, Shinobu, 5,851,873, Cl. 438-253.000.
Nippon Telegraph and Telephone Corporation: *See—*
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Nippon Zeon Co., Ltd.: *See—*
Aimura, Yoshiaki; and Ito, Suguru, 5,852,093, Cl. 524-432.000.
Nippondenso Co., Ltd: *See—*
Kamiya, Chiharu; and Kanai, Yoshihide, 5,851,633, Cl. 428-158.000.
Matsui, Masaki; Nagaya, Masatake; Fukaya, Akinari; and Himi, Hiroaki, 5,851,846, Cl. 438-17.000.
Uenoyama, Hirofumi; Kanosue, Masakazu; Ao, Kenichi; and Suzuki, Yasutoshi, 5,851,851, Cl. 438-50.000.
Yoshiume, Naoki; and Miwa, Makoto, 5,850,818, Cl. 123-497.000.
Nishida, Naoki; Iwamoto, Tsuyoshi; and Hayamizu, Shunichi, to Minolta Co., Ltd. Thin film optical waveguide and optical deflecting device. 5,852,702, Cl. 385-130.000.
Nishide, Yoshiyuki; Minamikawa, Yoshitsugu; and Kokubu, Jun, to Mitsubishi Gas Chemical Company, Inc. Method of producing purified aqueous solution of hydrogen peroxide. 5,851,505, Cl. 423-584.000.
Nishido, Masanori: *See—*
Tooda, Toshio; Yamaguchi, Yoshio; Kuwabara, Nobuo; Sato, Mituru; Watanabe, Haruyasu; Nagahara, Akira; Sasaki, Sachio; Ishiyama, Yoshiya; Kera, Hiroshi; Nishido, Masanori; and Hanzawa, Hisashi, 5,852,757, Cl. 399-119.000.
Nishigaya, Takeshi: *See—*
Oka, Osamu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,851,616, Cl. 428-41.800.
Nishii, Junji; and Yamanaka, Hiroshi, to Agency of Industrial Science & Technology. Glass material variable in volume by irradiation with ultraviolet light. 5,851,938, Cl. 501-54.000.
Nishii, Michiharu: *See—*
Terazawa, Tadashi; and Nishii, Michiharu, 5,851,057, Cl. 303-155.000.
Nishikawa, Mitsuru: *See—*
Nakazawa, Atsushi; and Nishikawa, Mitsuru, 5,852,288, Cl. 235-472.000.
Nishikawa Rubber Co., Ltd.: *See—*
Fujita, Yasuyuki; and Inoue, Satoshi, 5,851,048, Cl. 296-107.040.
Nishikawa, Takahiro, to Tsubakimoto Chain Co. Rotor fixture. 5,851,084, Cl. 403-344.000.
Nishiki, Hirohiko: *See—*
Shimada, Yoshinori; Koyama, Tetsuro; Nishiki, Hirohiko; and Kataoka, Yoshiharu, 5,852,485, Cl. 349-141.000.
Nishikori, Hitoshi: *See—*
Kanematsu, Daigoro; Otsuka, Naoji; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,852,454, Cl. 347-43.000.
Nishimori, Yoshiki: *See—*
Hayashi, Kenji; Koyama, Mikio; Kikuchi, Tomoe; Yamazaki, Hiroshi; Hirose, Naohiro; Suzuki, Shinichi; Iwamoto, Tsutomu; and Nishimori, Yoshiki, 5,851,713, Cl. 430-109.000.
Nishimoto, Uichiro: *See—*
Sakata, Yuushi; Inokoshi, Junichi; Tachizawa, Osamu; Katoh, Tohru; Nishimoto, Uichiro; Ohtawa, Yasuki; Sakaguchi, Akira; Sotoya, Kohshiroh, deceased; and Yamaguchi, Noriko, 5,851,982, Cl. 510-515.000.
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Nishimura, Masayuki: *See—*
Kato, Takatoshi; Suetsugu, Yoshiyuki; and Nishimura, Masayuki, 5,852,701, Cl. 385-127.000.
Nishino, Shuichi: *See—*
Sano, Akihiro; Nishino, Shuichi; Daio, Fumio; Oguro, Shusuke; and Kondo, Masatsugu, 5,851,693, Cl. 429-174.000.
Nishio, Shoji, to Konica Corporation. Solid processing composition and method for processing silver halide photographic light-sensitive material. 5,851,742, Cl. 430-465.000.
Nishio, Takeyoshi: *See—*
Sadatoshi, Hajime; Suzuki, Haruyuki; Miyake, Yuichi; Nomura, Takao; and Nishio, Takeyoshi, 5,852,100, Cl. 524-505.000.
Nishioka, Futoshi; Yashiki, Seiji; and Hosokai, Tetsushi, to Mazda Motor Corporation. Catalyst degradation determination apparatus and method. 5,851,376, Cl. 205-784.500.
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Saito, Hiroshi; Takahashi, Chie; Nishizawa, Masahiro; Yamamoto, Hiroshi; and Takahashi, Kiyobumi, 5,851,970, Cl. 510-181.000.
Nissan Chemical Industries Ltd.: *See—*
Kashibara, Hiroshi; Suzuki, Mikio; and Ohara, Yoshio, 5,852,221, Cl. 568-814.000.

- Nissan Motor Co., Ltd.: *See—*
  - Kawagoe, Kenji; Murakami, Takuya; Satou, Masaharu; Uno, Takaaki; Aimoto, Hideo; Kasahara, Tamiyoshi; and Nagaoka, Hiroshi, 5,851,016, Cl. 280-124.148.
- Nissei Plastic Industrial Co., Ltd.: *See—*
  - Matsubayashi, Kouichi; and Takahashi, Nobusuke, 5,851,699, Cl. 429-593.000.
- Nisshinbo Industries Inc.: *See—*
  - Toyoda, Keiji; and Takemasa, Noriyuki, 5,852,788, Cl. 701-74.000.
- Nitta, Kazufuku: *See—*
  - Takaki, Toshihisa; Yasukawa, Mikio; Takabayashi, Hiroshi; Sugiura, Yasuhito; Suzuki, Katuyoshi; Kamada, Masahiro; Yamada, Yoshitugu; and Nitta, Kazufuku, 5,850,835, Cl. 128-204.180.
- Nitto Chemical Industry Co., Ltd.: *See—*
  - Saito, Hiroshi; Takahashi, Chie; Nishizawa, Masahiro; Yamamoto, Hiroshi; and Takahashi, Kiyobumi, 5,851,970, Cl. 510-181.000.
- Nitto Denko Corporation: *See—*
  - Kojima, Makoto; Tamai, Hironori; Kawaguchi, Yoshihide; Tanaka, Yoshikazu; and Kojima, Katsuhide, 5,852,119, Cl. 525-123.000.
  - Omote, Toshihiko; Hayashi, Shun-ichi; and Fujii, Hirofumi, 5,851,736, Cl. 430-325.000.
- Niwa, Takafumi: *See—*
  - Nakajima, Hiroshi; Hasegawa, Tetsuya; and Niwa, Takafumi, 5,851,620, Cl. 428-64.100.
- Njoroge, F. George; Vibulbhan, Bancha; Pinto, Patrick A.; and Girijavallabhan, Viyyoor M., to Schering Corporation. Benzo(5,6)cycloheptapyridine cyclic ureas and lactams useful as farnesyl protein transferase inhibitors. 5,852,034, Cl. 514-290.000.
- No, Kwang-soo: *See—*
  - Lim, Sung-chul; Woo, Sang-gyun; Kang, Ho-young; and No, Kwang-soo, 5,851,706, Cl. 430-5.000.
- No, Young, to Eastman Kodak Company. Printer adapted to guide a dye donor therein and method therefor. 5,851,076, Cl. 400-248.000.
- Noack, Ken DeVon: *See—*
  - Moore, Steven Christopher; and Noack, Ken DeVon, 5,851,569, Cl. 425-504.000.
- Nobel Biocare AB: *See—*
  - Carlsson, Lennart; and Lie, Anders, 5,851,115, Cl. 433-215.000.
- Nocifora, Frank; and Kruse, Charles E., to Aerators, Inc. Floating mixer. 5,851,066, Cl. 366-270.000.
- Noel, Roland, to Societe Anonyme Francaise D'Ingenierie et de Recherche. Process for demineralizing a liquid containing organic matter and salts in solution. 5,851,372, Cl. 204-523.000.
- Noga, Christoph: *See—*
  - Schmidhuber, Horst; and Noga, Christoph, 5,851,051, Cl. 296-216.060.
- Noguchi, Junichi, to Canon Kabushiki Kaisha. Image formation system and color misregistration correction system. 5,852,461, Cl. 347-116.000.
- Noguchi, Toshiharu, to Toyota Jidosha Kabushiki Kaisha. Engine having variable valve timing mechanism. 5,850,812, Cl. 123-90.170.
- Nohira, Hiroyuki; Saijo, Shigeya; Moriwaki, Masafumi; Kamiyama, Shunji; Toyoda, Kazutoshi; Matsumoto, Jun; Maruo, Kohichi; and Fujimoto, Taizo, to Nagase & Co., Ltd. Process for optically resolving 2-(3-benzoylphenyl) propionic acid. 5,852,209, Cl. 562-401.000.
- Nojima, Takeshi: *See—*
  - Hotta, Yasuhiro; Nojima, Takeshi; and Komatsu, Koji, 5,852,570, Cl. 365-104.000.
- Nokia Mobile Phones Limited: *See—*
  - Harrison, Peter, 5,852,777, Cl. 455-414.000.
  - Lehtinen, Kari; and Pesola, Mikko, 5,852,603, Cl. 370-280.000.
  - Newstead, Robert Clifford; and Peregrine, Peter Michael, 5,852,483, Cl. 349-62.000.
- Nokia Telecommunications OY: *See—*
  - Ahvenainen, Jouko, 5,852,781, Cl. 455-509.000.
  - Hyyrynen, Altti; Sarpola, Jussi; and Hirvonen, Pekka, 5,852,650, Cl. 379-29.000.
- Noll, Mike: *See—*
  - Prince, Jeff; Noll, Mike; Ferguson, Earl; Johnson, Bobby; and Ryals, Randy, 5,852,606, Cl. 370-393.000.
- Nomura, Masahide: *See—*
  - Sato, Yoshio; Nomura, Masahide; Yamamoto, Yasunori; and Toyama, Eiji, 5,850,740, Cl. 60-676.000.
- Nomura, Satoshi: *See—*
  - Ishimaru, Osamu; Takigawa, Masao; and Nomura, Satoshi, 5,850,651, Cl. 8-152.000.
- Nomura, Takao: *See—*
  - Sadatoshi, Hajime; Suzuki, Haruyuki; Miyake, Yuichi; Nomura, Takao; and Nishio, Takeyoshi, 5,852,100, Cl. 524-505.000.
- Nomura, Yuko: *See—*
  - Hirahara, Shuzo; Nagato, Hitoshi; Nomura, Yuko; Ishii, Koichi; Hosaka, Yasuo; Nakao, Hideyuki; and Murakami, Teruo, 5,852,453, Cl. 347-55.000.
- Nonaka, Tsuyoshi; Hosoya, Toshifumi; Kobayashi, Yuji; and Matsuda, Yasuo, to Sumitomo Electric Industries, Ltd. Plastic optical fiber preform, and process and apparatus for producing the same. 5,851,666, Cl. 428-380.000.
- Noomen, Arie; van Kesteren, Petrus Johannes Maria; and Schoonderwoerd, Nicolaas Antonius Maria, to Akzo Nobel NV. Moisture curing coating composition. 5,852,094, Cl. 524-433.000.
- Norcott, Bryan: *See—*
  - Haggard, Jeff S.; and Norcott, Bryan, 5,851,562, Cl. 425-131.500.
- Nordberg, Incorporated: *See—*
  - Jacobson, Charles R., 5,850,978, Cl. 241-215.000.
- Nordson Corporation: *See—*
  - Wilson, Timothy E.; Urig, Donald Leonard; Reighard, Michael A.; Ray, David L.; Koch, Dean A.; Shutic, Jeffrey R.; Chandler, Christopher Hart; Holland, Robert J.; and Kress, Andreas, 5,851,248, Cl. 55-357.000.
- Noritsu Koki Co., Ltd.: *See—*
  - Nakashima, Yoshihiko, 5,852,755, Cl. 396-626.000.
- Normoyle, Kevin B.: *See—*
  - Csoppenszky, Michael A.; and Normoyle, Kevin B., 5,852,608, Cl. 370-465.000.
- Norris, Donnie: *See—*
  - Degrasse, Steven E.; McDowell, Kenneth J.; Norris, Donnie; Lancaster, Patrick R., III; and Eldridge, David, 5,850,726, Cl. 53-588.000.
- Norsk Hydro, A. S.: *See—*
  - Auran, Lars; Rhinehart, Gary Hugh; and Mehta, Saumin Shantilal, 5,851,320, Cl. 148-552.000.
- North Carolina State University: *See—*
  - McIntosh, Forrest Gregg; Bedair, Salah Mohamed; El-Masry, Nadia Ahmed; and Roberts, John Claassen, 5,851,905, Cl. 438-492.000.
- Northeastern Ohio University: *See—*
  - Chiang, John Young Ling, 5,851,780, Cl. 435-7.600.
- Northern Telecom Limited: *See—*
  - Brown, Anthony Kevin Dale; Goulette, Richard Ralph; Wallace, Roderick Edgar; and Pike, Rodney David, 5,852,637, Cl. 375-316.000.
- Northrop Grumman Corporation: *See—*
  - Chantry, Peter J.; and Petronio, Carlo F., 5,852,386, Cl. 331-94.100.
  - Hamilton, Robin E.; Kennedy, Paul G.; and Smith, Raymond A., 5,852,339, Cl. 313-11.000.
  - Koon, Robert W.; and Steelman, Thomas E., 5,852,548, Cl. 361-704.000.
  - Ostop, John A.; and Chen, Li-Shu, 5,851,852, Cl. 438-106.000.
  - Petrisko, Robert A.; Stark, Gary Lee; Petrak, Daniel R.; and Jones, Richard E., 5,851,403, Cl. 210-670.000.
- Northrup, Richard: *See—*
  - Mark, Fred; Northrup, Richard; Ouellette, Larry; Schipp, Roberto; Ihrie, Ronald; Boyer, Edward; and Somers, William F., 5,850,806, Cl. 119-219.000.
- Nottingham, James R.: *See—*
  - Vondran, Gary L., Jr.; Nottingham, James R.; Clouthier, Scott C.; Heins, Douglas; and Hoffmann, Brian E., 5,852,742, Cl. 395-800.280.
- Novartis AG: *See—*
  - Barnard, Steven; and Rouilly, Marizel, 5,852,126, Cl. 525-326.300.
  - Hiestand, Peter; Naef, Reto; Naegeli, Hans-Ulrich; Oberer, Lukas; Revesz, Laszlo; and Roth, Hans-Jörg, 5,852,005, Cl. 514-169.000.
- Novartis Corporation: *See—*
  - Maienfisch, Peter; and Gsell, Laurenz, 5,852,012, Cl. 514-229.200.
- Novartis Finance Corporation: *See—*
  - Ryals, John A.; and Harms, Christian, 5,851,766, Cl. 435-6.000.
- Novo Nordisk A/S: *See—*
  - Pedersen, Anders Hjelholt; and Kierulff, Jesper Vallentin, 5,851,233, Cl. 8-102.000.
  - Sørensen, Hans Holmegaaard, 5,851,992, Cl. 514-12.000.
  - Svendsen, Allan; Patkar, Shamkant Anant; Gormsen, Erik; Clausen, Ib Groth; Okkels, Jens Sigurd; and Thellersen, Marianne, 5,852,185, Cl. 536-23.200.
  - Welinder, Karen Gjesing; and Andersen, Morten Birket, 5,851,811, Cl. 435-192.000.
- Novon International, Inc.: *See—*
  - Loomis, Gary L.; Izbicki, Michael J.; and Flammino, Anthony, 5,852,114, Cl. 525-57.000.
- Nowak, Petra: *See—*
  - Parsons, Keith P.; Buckingham, Mark R.; Diamond, James H.; Ilkka, Steven J.; and Nowak, Petra, 5,851,663, Cl. 428-355.000.
- Nozaki, Takashi: *See—*
  - Kawase, Tatsuo; Nozaki, Takashi; Makino, Tomoaki; and Utsunomiya, Satoshi, 5,851,163, Cl. 475-183.000.
- NSK Ltd.: *See—*
  - Ouchi, Hideo; and Miyazaki, Hiroya, 5,852,361, Cl. 324-174.000.
  - Sakamoto, Junshi, 5,851,074, Cl. 384-448.000.
- NT International, Inc.: *See—*
  - Englund, Diane L.; and Cucci, Gerald R., 5,852,244, Cl. 73-706.000.
- NTN Corporation: *See—*
  - Kawase, Tatsuo; Nozaki, Takashi; Makino, Tomoaki; and Utsunomiya, Satoshi, 5,851,163, Cl. 475-183.000.
- Nurenberg, Aundrea: *See—*
  - Schiedegger, Charles E.; Nurenberg, Aundrea; MacLeod, Richard J.; Clark, Michael C.; and Logan, J. Richard, 5,850,717, Cl. 52-288.100.
- Nusco Co. Ltd.: *See—*
  - Hayashi, Shigeki, 5,850,772, Cl. 83-37.000.
- Nussbaumer, Walter: *See—*
  - Werenicz, Harald; Maitz, Franz; Nussbaumer, Walter; Stingl, Ludwig; and Schmitz, Franz Peter, 5,851,661, Cl. 428-350.000.
- Nygren, Mats: *See—*
  - Johnsson, Mats; Ahlén, Niklas; Nygren, Mats; Ekelund, Magnus; and Brandt, Gunnar, 5,851,285, Cl. 117-87.000.
- Nyström, Bernt, to Air Innovation Sweden AB. Method and device for supplying air to a ventilated space. 5,851,144, Cl. 454-306.000.
- Oakley, Etheridge Odell, Jr.: *See—*

  - Sandor, Robert Bruce; Carter, Michele C.; Gillberg-LaForce, Gunilla E.; Clear, William F.; Flint, John A.; Lanieve, Herman Leslie; Thompson, Scott W.; Oakley, Etheridge Odell, Jr.; Kafchinski, Edward Ronald; and Haider, Mohammed Ishaq, 5,851,668, Cl. 428-397.000.
- Oare, Thomas Reed; Brayer, Randall Raymond; Kahrs, Jeffrey Wayne; Robinson, Beale Anthony; Trares, Keith Carl; and Mc Quate, Raymond Dean, to Goodyear Tire & Rubber Company, The. Radial ply pneumatic tire. 5,851,324, Cl. 152-517.000.
- Oberer, Lukas: *See—*
  - Hiestand, Peter; Naef, Reto; Naegeli, Hans-Ulrich; Oberer, Lukas; Revesz, Laszlo; and Roth, Hans-Jörg, 5,852,005, Cl. 514-169.000.
- Oberlack, Norbert: *See—*
  - Böhme, Holger; Heubner, Wilhelm; Oberlack, Norbert; Peuker, Karl; and Sauer, Herbert, 5,850,898, Cl. 192-54.300.
- Obermann, Hugo: *See—*
  - Zaby, Gottfried; Casper, Clemens; Kohlgrüber, Klemens; and Obermann, Hugo, 5,852,157, Cl. 528-196.000.
- O'Brien, John J.: *See—*
  - Parsey, Timothy J.; Coster, Daniel J.; Swan, Elizabeth B.; Hoenig, David V.; O'Brien, John J.; and Pierce, Susanne M., 5,850,998, Cl. 248-223.210.
- O'Bryant, Jeffrey Charles. Organic lubricant. 5,851,963, Cl. 508-216.000.
- O'Bryant, John V.: *See—*
  - Geisel, William C.; Ricciardi, Daniel V.; O'Bryant, John V.; Wade, Kenneth P.; and Thibodeau, David K., 5,850,799, Cl. 114-201.00R.
- Obsidian, Inc.: *See—*
  - Lee, Lawrence L., 5,851,136, Cl. 451-9.000.
- Occidental Chemical Corporation: *See—*
  - Chen, Hang-Chang Bobby; and Rowe, Edward A., 5,851,435, Cl. 252-364.000.
- OCE-Nederland, B.V.: *See—*
  - Van Ham, Rob Adrianus Maria; Eijmberts, Paulus Henricus; and Cox, Augustinus Mathias Wilhelmus, 5,852,455, Cl. 347-55.000.
- Oda, Masaaki: *See—*
  - Sakiyama, Masato; Asami, Takuya; Iwanaga, Tomoki; Oshio, Yasuhide; and Oda, Masaaki, 5,851,354, Cl. 162-123.000.
- Oder, Reuben E.: *See—*
  - Horstman, Richard L.; Oder, Reuben E.; Prosise, Robert L.; Pieper, Kathleen A.; Smith, Genevieve R.; Dirksing, Robert S.; and Baggott, Susan B., 5,851,079, Cl. 401-174.000.
- Odler, Ivan. Portland cement clinker and use thereof. 5,851,282, Cl. 106-733.000.
- Oertel, Achim: *See—*
  - Haghiri-Tehrani, Yahya; Ojster, Albert; and Oertel, Achim, 5,851,854, Cl. 438-118.000.
- Oestreicher, Don: *See—*
  - Bhide, Chandrashekhar W.; Singh, Jagdeep; and Oestreicher, Don, 5,852,717, Cl. 395-200.330.
- Offen, Walter W.: *See—*
  - Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., 5,852,036, Cl. 514-299.000.
  - Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., 5,852,037, Cl. 514-305.000.
- Offer, Henry Peter, to General Electric Company. Water exclusion device for underwater thermal processing. 5,852,271, Cl. 219-72.000.
- Ogata, Hiroshi: *See—*
  - Kimura, Katsumi; Otsuka, Michio; Ogata, Hiroshi; Hattori, Kazuo; and Ebisui, Masahiko, 5,850,897, Cl. 192-3.300.
- Ogawa, Katsuhisa: *See—*
  - Ohmi, Tadahiro; and Ogawa, Katsuhisa, 5,852,416, Cl. 341-144.000.
- Ogawa, Kazufumi: *See—*
  - Ikuta, Shigeo; Ogawa, Kazufumi; and Soga, Mamoru, 5,851,726, Cl. 430-269.000.
- Ogawa, Koichi: *See—*
  - Yamada, Yousuke; Fujioka, Yoshio; Isono, Ryuichi; Takahashi, Nobuo; Hayashi, Akio; Ogawa, Koichi; Watanabe, Norio; and Satoh, Yutaka, 5,851,305, Cl. 134-10.000.
- Ogawa, Shinichi: *See—*
  - Nishimura, Hiroshi; and Ogawa, Shinichi, 5,852,328, Cl. 257-774.000.
- Ogawa, Taro; and Goto, Fumio. Multi-layer seat having different hardness and method for manufacturing the same. 5,850,645, Cl. 5-653.000.
- Ogawa, Tetsuro: *See—*
  - Mitoh, Ayumi; and Ogawa, Tetsuro, 5,851,670, Cl. 428-403.000.
- Ogihara, Tsutomu: *See—*
  - Shimizu, Takaaki; Kaneko, Tatsushi; Ogihara, Tsutomu; and Nakashima, Mutsuo, 5,851,426, Cl. 252-299.610.
- Ogikubo, Junichi; and Katagiri, Tadashi, to Sony Corporation. Apparatus for recording and reproducing intra-frame and inter-frame encoded video data arranged into recording frames. 5,852,706, Cl. 386-111.000.
- Ogino, Hiroyuki, to Canon Kabushiki Kaisha. Image signal recording apparatus controlling the transfer of image data from temporary memory to non-volatile memory. 5,852,467, Cl. 348-231.000.
- Oguro, Masaki: *See—*
  - Kori, Teruhiko; Oguro, Masaki; and Iizuka, Ken, 5,852,528, Cl. 360-69.000.
- Oguro, Shusuke: *See—*
  - Sano, Akihiro; Nishino, Shuichi; Daio, Fumio; Oguro, Shusuke; and Kondo, Masatsugu, 5,851,693, Cl. 429-174.000.
- Oh, Chan S.; and Sternberg, James C., to Beckman Instruments, Inc. Analyte assay using a trifunctional conjugate. 5,851,778, Cl. 435-7.900.
- O'Halloran, James, to Radius Inc. Toothbrush with hexagonal bristles in hexagonal tuft holes. 5,850,660, Cl. 15-195.000.
- O'Hara, Bryan M.: *See—*
  - Gluzman, Yakov, deceased; LaRocque, James P.; O'Hara, Bryan M.; Morin, John E.; Ellestad, George A.; Mitsner, Boris; Ding, Wei-Dong; Raifeld, Yuri E.; and Nikitenko, Antonina A., 5,852,015, Cl. 514-245.000.
- Ohara, Yoshio: *See—*
  - Kashihara, Hiroshi; Suzuki, Mikio; and Ohara, Yoshio, 5,852,221, Cl. 568-814.000.
- Ohashi, Ryota: *See—*
  - Sakakura, Shinya; Ohashi, Ryota; and Sakikawa, Shigenori, 5,850,736, Cl. 60-464.000.
- Ohba, Akihiro; and Sasaki, Koki, to Teijin Limited. Easily dyeable meta-linkage-containing aromatic polyamide fibers. 5,852,087, Cl. 524-154.000.
- Ohhashi, Hiroyuki: *See—*
  - Suzuki, Kenji; Kunihiro, Akira; and Ohhashi, Hiroyuki, 5,851,662, Cl. 428-352.000.
- Ohkubo, Keiji; and Takizawa, Naoki, to Fuji Electric Co., Ltd. Magnetic recording medium and method for manufacturing the same. 5,851,628, Cl. 428-141.000.
- Ohkubo, Keiji, to Fuji Electric Co., Ltd. Magnetic recording medium. 5,851,656, Cl. 428-332.000.
- Ohlig, Hilmar: *See—*
  - Güntherberg, Norbert; Hofmann, Jürgen; Mailahn, Elmar; and Ohlig, Hilmar, 5,851,463, Cl. 264-101.000.
  - Güntherberg, Norbert; Hofmann, Jürgen; Mailahn, Elmar; Ohlig, Hilmar; Grabowski, Sven; Czauderna, Bernhard; and Bus, Klaus, 5,852,113, Cl. 525-53.000.
- Ohlmeyer, Michael H. J.: *See—*
  - Dillard, Lawrence W.; Henderson, Ian; Ohlmeyer, Michael H. J.; and Reader, John C., 5,851,494, Cl. 422-131.000.
- Ohlsson, Bo, to Telia AB. Telecommunications system with person/subscriber-associated identification. 5,852,776, Cl. 455-406.000.
- Ohmeda Inc.: *See—*
  - Aronow, Kurt Albert, 5,851,178, Cl. 600-323.000.
- Ohmi, Tadahiro; Yamaji, Michio; Ikeda, Nobukazu; and Morokoshi, Hiroshi, to Fujikin Incorporated; and Ohmi, Tadahiro. Fluid control system and valve to be used therein. 5,850,853, Cl. 137-606.000.
- Ohmi, Tadahiro; and Ogawa, Katsuhisa, to Canon Kabushiki Kaisha; and Ohmi, Tadahiro. High speed arithmetic logic circuit. 5,852,416, Cl. 341-144.000.
- Ohnishi, Tsuyoshi: *See—*
  - Ishitani, Tohru; and Ohnishi, Tsuyoshi, 5,852,297, Cl. 250-492.210.
- Ohno, Makoto: *See—*
  - Shibata, Kazuhisa; Kyo, Motoki; Sakurai, Hidehiko; and Ohno, Makoto, 5,851,394, Cl. 210-500.230.
- Ohsuga, Minoru; Shiraishi, Takuya; Nakayama, Yoko; and Fujieda, Mamoru, to Hitachi, Ltd. Method for stratifying air-fuel mixture in direct fuel injection internal combustion engine and electronic system engine control apparatus using above method. 5,850,816, Cl. 123-430.000.
- Ohta, Masayuki: *See—*
  - Ido, Kihei; and Ohta, Masayuki, 5,852,520, Cl. 360-40.000.
- Ohta, Naoki: *See—*
  - Takei, Masayuki; Yashiki, Yuichi; Akagi, Hideyuki; Ohta, Naoki; Sakata, Yasushi; and Tomonaga, Junichi, 5,851,719, Cl. 430-126.000.
- Ohta, Tomohiko: *See—*
  - Hoshi, Ryouji; Sonokawa, Masashi; Fusegawa, Izumi; and Ohta, Tomohiko, 5,851,283, Cl. 117-32.000.
- Ohtani, Hisashi; Takemura, Yasuhiko; Miyanaga, Akiharu; and Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of crystallizing a silicon film. 5,851,862, Cl. 438-166.000.
- Ohtani, Seiji: *See—*
  - Takechi, Nobuyuki; Ohtani, Seiji; and Nagai, Akihiro, 5,851,451, Cl. 264-4.100.
- Ohtawa, Yasuki: *See—*
  - Sakata, Yuushi; Inokoshi, Junichi; Tachizawa, Osamu; Katoh, Tohru; Nishimoto, Uichiro; Ohtawa, Yasuki; Sakaguchi, Akira; Sotoya, Kohshiroh, deceased; and Yamaguchi, Noriko, 5,851,982, Cl. 510-515.000.
- Ohtsuka, Eiko: *See—*
  - Sugiyama, Takashi; Kamimura, Takashi; Masuda, Kenichi; Okada, Masahiro; Ohtsuka, Eiko; Imaizumi, Atsushi; Watanabe, Kunihito; Suga, Tetsuya; Matsumoto, Yohichi; and Takeuchi, Akiko, 5,851,983, Cl. 514-2.000.
- Ohtsuka, Yasumasa: *See—*
  - Okuda, Kouichi; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; Takano, Manabu; Fukuzawa, Daizo; and Abe, Atsuyoshi, 5,852,763, Cl. 399-329.000.
- Ohtsuki, Motohiko; and Kikuchi, Kimihiro, to Alps Electric Co., Ltd. Method for manufacturing lens with lens barrel. 5,851,255, Cl. 65-60.100.
- Ohuchi, Tomoari: *See—*
  - Aoki, Tetsuya; Hasegawa, Tadashi; and Ohuchi, Tomoari, 5,851,003, Cl. 251-288.000.
- Ohwada, Takeshi; and Shintaku, Takashi, to Mitsubishi Chemical Corporation. Toner for electrostatic image development by heat. 5,851,718, Cl. 430-124.000.
- Oi Electric Co., Ltd.: *See—*
  - Tajima, Kazuaki, 5,850,915, Cl. 206-320.000.
- Oishi, Kunihiko: *See—*

- Ando, Daizo; Nakamura, Tadashi; Umeda, Shinji; and Oishi, Kunihiko, 5,850,688, Cl. 29-832.000.
- OJI Paper Co., Ltd.: *See—*
  - Tokiyoshi, Tomofumi; Ishizawa, Hitoshi; and Kato, Masaru, 5,851,655, Cl. 428-330.000.
  - Yamori, Tsunefumi; Matsuzawa, Shigeji; and Isu, Yutaka, 5,851,951, Cl. 503-216.000.
- Ojster, Albert: *See—*
  - Haghiri-Tehrani, Yahya; Ojster, Albert; and Oertel, Achim, 5,851,854, Cl. 438-118.000.
- Oka, Osamu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, to Tomoegawa Paper Co., Ltd. Adhesive tape for electronic parts and liquid adhesive. 5,851,616, Cl. 428-41.800.
- Okabe, Masato: *See—*
  - Iijima, Masayuki; and Okabe, Masato, 5,851,710, Cl. 430-20.000.
- Okabe, Toshihiro: *See—*
  - Takahashi, Jin; Hokkirigawa, Kazuo; Okabe, Toshihiro; and Saito, Koji, 5,850,900, Cl. 192-107.00M.
- Okada, Hidefumi, to Sanyo Electric Co., Ltd. 1-chip color video camera for generating inter-pixel color signal component by interpolating primary color signals from neighboring pixels. 5,852,468, Cl. 348-272.000.
- Okada, Masahiro: *See—*
  - Sugiyama, Takashi; Kamimura, Takashi; Masuda, Kenichi; Okada, Masahiro; Ohtsuka, Eiko; Imaizumi, Atsushi; Watanabe, Kunihito; Suga, Tetsuya; Matsumoto, Yohichi; and Takeuchi, Akiko, 5,851,983, Cl. 514-2.000.
- Okada, Masamichi: *See—*
  - Okada, Yuji; Okada, Masamichi; Ishikawa, Tsutomu; Yamamoto, Takumi; Sawamura, Tatsuhiko; Hayashi, Norio; and Ito, Takayuki, 5,850,868, Cl. 164-132.000.
- Okada, Shigeki; Shimogawa, Natsumi; and Takahashi, Nobou, to NGK Insulators, Ltd.; and Seiko Epson Corp. Plate assembly suitable for ink-jet-type printing head. 5,852,456, Cl. 347-71.000.
- Okada, Yuji; Okada, Masamichi; Ishikawa, Tsutomu; Yamamoto, Takumi; Sawamura, Tatsuhiko; Hayashi, Norio; and Ito, Takayuki, to Toyota Jidosha Kabushiki Kaisha; Aisin Seiki Kabushiki Kaisha; and Toshiba Silicon Kabushiki Kaisha. Casting method with improved resin core removal step. 5,850,868, Cl. 164-132.000.
- Okado, Kenji: *See—*
  - Taya, Masaaki; Okado, Kenji; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Iida, Wakashi; and Ida, Tetsuya, 5,851,714, Cl. 430-110.000.
- Okajima, Shinpei, to Shimano, Inc. Snowboard boot sole. 5,850,702, Cl. 36-31.000.
- Okamoto, Fumio: *See—*
  - Belscher, Kay M.; Morse, LeRoy R.; Okamoto, Fumio; and Sterlace, B. Jean, 5,851,366, Cl. 204-192.260.
- Okamoto, Kazuya: *See—*
  - Shibuya, Masato; Ooki, Hiroshi; Okamoto, Kazuya; and Owa, Soichi, 5,851,707, Cl. 430-5.000.
- Okamura, Takahiro: *See—*
  - Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.
- Okamura, Takashi: *See—*
  - Yamamoto, Hiroshi; Okamura, Takashi; and Iio, Satoshi, 5,851,658, Cl. 428-334.000.
- Okamura, Yasuhiro: *See—*
  - Shindou, Hirokazu; Okamura, Yasuhiro; and Narisawa, Motoyuki, 5,850,921, Cl. 206-711.000.
- Okawa, Atsuhiro; Makuta, Toshiyuki; and Taguchi, Toshiki, to Fuji Photo Film Co., Ltd. Color-developing agent, silver halide photographic light-sensitive material and image-forming method. 5,851,749, Cl. 430-566.000.
- Okawa, Takashi; Iizuka, Shigeharu, deceased (by Kazumi Iizuka, Toshiki Iizuka, legal representatives), to Hitachi Electronics Engineering Co., Ltd. Device and method for positioning a notched wafer. 5,851,102, Cl. 414-783.000.
- Okazaki, Hiroshi: *See—*
  - Padmanaban, Munirathna; Pawlowski, Georg; Kinoshita, Yoshiaki; Okazaki, Hiroshi; Masuda, Seiya; Funato, Satoru; and Yamamoto, Tetsu, 5,852,128, Cl. 525-328.800.
- Okazaki, Tadao; and Won, Yongsik, to Samsung Aerospace Industries, Ltd. Component mounting apparatus. 5,850,683, Cl. 29-740.000.
- Oki America, Inc.: *See—*
  - Agatone, Kevin; Orzol, Roman; Deppa, Tim; Hopkins, Jon; and Arumgam, Ponna, 5,852,744, Cl. 395-837.000.
- OKI Customer Advanced-Technology Co., LTD.: *See—*
  - Yanobu, Toshio, 5,852,267, Cl. 219-68.000.
- Oki Electric Industry Co., Ltd.: *See—*
  - Ikegami, Masami, 5,851,880, Cl. 438-258.000.
  - Koshida, Yoshinori; Tanabe, Shusaku; and Murakami, Satoshi, 5,852,463, Cl. 347-171.000.
  - Oshima, Mitsuo, 5,852,671, Cl. 382-154.000.
- Oki, Tsuneo: *See—*
  - Muto, Nariaki; Sumida, Keisuke; Iwasaki, Hiroaki; Oki, Tsuneo; Miyamoto, Eiichi; Hanatani, Yasuyuki; and Sakai, Hiroaki, 5,851,712, Cl. 430-83.000.
- Okkels, Jens Sigurd: *See—*
  - Svendsen, Allan; Patkar, Shamkant Anant; Gormsen, Erik; Clausen, Ib Groth; Okkels, Jens Sigurd; and Thellersen, Marianne, 5,852,185, Cl. 536-23.200.
- Oklahoma Medical Research Foundation: *See—*
  - Fukudome, Kenji; and Esmon, Charles T., 5,852,171, Cl. 530-350.000.
- Okouchi, Takahiko: *See—*
  - Oyagi, Tomohito; Nakagawa, Mitsuo; Sakai, Junji; Yasutomi, Yoshiyuki; and Okouchi, Takahiko, 5,851,675, Cl. 428-426.000.
- Okuda, Kouichi; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; Takano, Manabu; Fukuzawa, Daizo; and Abe, Atsuyoshi, to Canon Kabushiki Kaisha. Image heating apparatus. 5,852,763, Cl. 399-329.000.
- Okuda, Osamu: *See—*
  - Mogi, Seiichi; Hirai, Wataru; Fujiwara, Muneyoshi; Okuda, Osamu; and Honkawa, Hirokazu, 5,850,689, Cl. 29-834.000.
- Okuda, Toshiaki: *See—*
  - Okumura, Makoto; Okuda, Toshiaki; Nakamura, Tsutomu; and Yajima, Motoyuki, 5,852,050, Cl. 514-468.000.
- Okumura, Hisatake: *See—*
  - Ando, Mitsuru; and Okumura, Hisatake, 5,851,414, Cl. 222-602.000.
- Okumura, Makoto; Okuda, Toshiaki; Nakamura, Tsutomu; and Yajima, Motoyuki, to Kaken Pharmaceutical Co., Ltd.; and Toray Industries Inc. Preparation for treating wounds or hemorrhoids. 5,852,050, Cl. 514-468.000.
- Okumura, Miwa: *See—*
  - Matsuda, Naotoshi; Tamatani, Masaaki; Okumura, Miwa; Albessard, Keiko; Kawasaki, Kazuhiro; Yokota, Seiji; Motoki, Shinjiro; and Inoue, Yoshiaki, 5,851,428, Cl. 252-301.40R.
- Okuno, Masataka: *See—*
  - Muto, Yasutoshi; Moriwaki, Hisataka; Ninomiya, Mitsuo; Adachi, Sadashi; Saito, Akiko; Takasaki, Takeshi; Tanaka, Takuji; Tsurumi, Kaito; Okuno, Masataka; Tomita, Eiichi; Nakamura, Toshiyuki; and Kojima, Takao, 5,852,057, Cl. 514-560.000.
- Okuno, Yutato: *See—*
  - Shinohara, Masayuki; Okuno, Yutato; and Aoyama, Shigeru, 5,851,062, Cl. 362-31.000.
- Okuyama, Takashi: *See—*
  - Iwasaki, Etsuo; and Okuyama, Takashi, 5,852,293, Cl. 250-235.000.
- Olander, W. Karl, to Advanced Technology Materials, Inc. Low pressure gas source and dispensing apparatus with enhanced diffusive/extractive means. 5,851,270, Cl. 96-144.000.
- Olaniyan, Olajide O. Remote broadcast listening system which receives radio/broadcast signals using receivers which includes antennas and interconnects receivers to customer telephones/interface means. 5,852,610, Cl. 370-486.000.
- Old, Lloyd J.: *See—*
  - Welt, Sydney; Ritter, Gerd; Cohen, Leonard; Williams, Clarence, Jr.; Richards, Elizabeth Carswell; John, Mary; and Old, Lloyd J., 5,851,526, Cl. 424-156.100.
- Olinger, Ronald D.: *See—*
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  Buckenauer, Günter; Peiz, Roland; and Beutler, Hans, 5,851,098, Cl. 414-263.000.

Peleg, Alexander D.: *See—*
  Lin, Derrick; Vakkalagadda, Romamohan R.; Glew, Andrew F.; Mennemeier, Larry M.; Peleg, Alexander D.; Bistry, David; Mittal, Millind; Dulong, Carole; Kowashi, Eiichi; and Eitan, Benny, 5,852,726, Cl. 395-376.000.

Pellerite, Mark J.; Invic, Judith M.; and Zhu, Dong-Wei, to Minnesota Mining and Manufacturing Company. Antisoiling coatings for antireflective surfaces and methods of preparation. 5,851,674, Cl. 428-421.000.

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  Cree, Stephen H.; Penfold, John; Fanichet, Line F.; and Wilson, Craig A., 5,852,116, Cl. 525-72.000.

Peng, Jack Zezhong, to Advanced MIcro Devices, Inc. Method of large angle tilt implant of channel region. 5,851,886, Cl. 438-289.000.

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  Yang, Ching-Nan; and Peng, Li-Chun, 5,852,573, Cl. 365-154.000.

Pengov, Wayne A., to Tridelta Industries, Inc. Staggered pole switched reluctance motor. 5,852,334, Cl. 310-168.000.

Penn, Laurence Richard: *See—*
  Keller, Wilhelm A.; and Penn, Laurence Richard, 5,850,946, Cl. 222-219.000.

Penning, Thomas D.: *See—*
  Chen, Barbara B.; Chen, Helen Y.; Clare, Michael; Docter, Stephen H.; Khanna, Ish Kumar; Koszyk, Francis Jan; Malecha, James W.; Miyashiro, Julie Marion; Penning, Thomas D.; Rico, Joseph G.; Ruminski, Peter G.; Russell, Mark A.; Weier, Richard Mathias; Xu, Xiangdong; Yu, Stella S.; and Yu, Yi, 5,852,210, Cl. 562-439.000.

Penska, Christine; Santhanam, Uma; and Habif, Stephan, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic skin or hair care compositions containing fluorocarbons infused with carbon dioxide. 5,851,544, Cl. 424-401.000.

Perazzo, Nicholas J.: *See—*
  Bankuty, Geza E.; and Perazzo, Nicholas J., 5,851,042, Cl. 294-106.000.

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  Vallet Mas, José Alberto; Galan Valdivia, Francisco Javier; and Perdiguer, Nuria Carreras, 5,851,452, Cl. 264-4.600.

Perdu, Michel: *See—*
  Flament, Patrick; Perdu, Michel; Portier, Jean; and Brunet, Pierre, 5,850,992, Cl. 244-168.000.

Peregrine, Peter Michael: *See—*
  Newstead, Robert Clifford; and Peregrine, Peter Michael, 5,852,483, Cl. 349-62.000.

Pereira Construction, Inc.: *See—*
  Pereira, Lawrence; and Pereira, Richard Daniel, 5,850,845, Cl. 157-259.000.

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  Baptista, Fernando A.; and Pereira Dias Baptista, João M., 5,851,271, Cl. 96-286.000.

Pereyda, Douglas B.: *See—*
  Trudeau, Howard D.; Sutphin, David L.; Damon, Donald E.; Bedegrew, Ernest R.; Cabrera, Filamon T.; Pereyda, Douglas B.; MacDonald, Robert J.; Hada, Daniel H.; Havens, Frank C.; Tomasek, Allan R.; Taylor, Lee O.; and Edwards, Larry W., 5,850,989, Cl. 244-63.000.

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Perry, Haim, to Safeguards technology, inc. Intrusion detection system. 5,852,402, Cl. 340-541.000.

Perry, Martin John: *See—*
  Owens, Raymond John; Perry, Martin John; and Lumb, Simon Mark, 5,851,784, Cl. 435-19.000.

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  Maracas, George N.; Reber, William L.; and Perttunen, Cary D., 5,851,370, Cl. 204-450.000.

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  Lehtinen, Kari; and Pesola, Mikko, 5,852,603, Cl. 370-280.000.

Pet, Robert J.; and Timmermans, Josephus J., to U.S. Philips Corporation. Method of manufacturing quartz glass for a lamp vessel. 5,851,253, Cl. 65-32.100.

Petersen, Mark H.: *See—*
  Trsar, Dale A.; Taraki, Yosuf M.; Shepherd, Richard H.; Moritz, Tyrone J.; and Petersen, Mark H., 5,852,789, Cl. 701-102.000.

Peterson, Christopher J.: *See—*
  Curran, Neal J.; Radjenovic, Wally; and Peterson, Christopher J., 5,851,018, Cl. 280-250.100.

Peterson, Gordon J.; Groendal, Dale M.; and Punches, Edward H., to Steelcase Inc. Method of forming an upholstered foam plastic seat cushion. 5,851,457, Cl. 264-46.500.

Peterson, Rudolph Andrew, Jr., to Deere & Company. Overheat circuit for a utility vehicle. 5,852,539, Cl. 361-25.000.

Petrak, Daniel R.: *See—*
  Petrisko, Robert A.; Stark, Gary Lee; Petrak, Daniel R.; and Jones, Richard E., 5,851,403, Cl. 210-670.000.

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  Frey, John Herbert; Battice, David Robert; Sabram, Karla Asuncion; and Petroff, Lenin James, 5,852,065, Cl. 521-112.000.

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  Chantry, Peter J.; and Petronio, Carlo F., 5,852,386, Cl. 331-94.100.

Pettersson, Barbro; Berger, Ingemar; Andersson, Karl-Magnus; Englund, Tord; and Wåhlen, Bo, to Sandvik AB. Tool package. 5,850,916, Cl. 206-349.000.

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  Hede, Jean Marc; and Petzl, Paul, 5,850,893, Cl. 182-193.000.

Peuker, Karl: *See—*
  Böhme, Holger; Heubner, Wilhelm; Oberlack, Norbert; Peuker, Karl; and Sauer, Herbert, 5,850,898, Cl. 192-54.300.

Pfadenhauer, Ernest H.: *See—*
  Hunter, Thomas J.; and Pfadenhauer, Ernest H., 5,851,777, Cl. 435-7.100.

Pfahler, Gerhard: *See—*
  Zäh, Matthias; Pfahler, Gerhard; Gaa, Karl; and Keck-Antoine, Klaus, 5,852,159, Cl. 528-363.000.

Pfeiffer, Hartmut: *See—*
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Pfeiffer, Thomas: *See—*
  Böhm, Hans-Joachim; Koser, Stefan; Mack, Helmut; Pfeiffer, Thomas; Seitz, Werner; Höffken, Hans Wolfgang; Hornberger, Wilfried; and Zierke, Thomas, 5,852,051, Cl. 549-423.000.

Pfitzenreiter, Werner: *See—*
  Schock, Manfred; Frommer, Juergen; Illg, Manfred; and Pfitzenreiter, Werner, 5,850,692, Cl. 29-861.000.

Pfizer Inc: *See—*
  Ito, Fumitaka; Kokura, Toshihide; Nakane, Masami; Satake, Kunio; and Wakabayashi, Hiroaki, 5,852,038, Cl. 514-305.000.

Pfizer Inc.: *See—*
  Chenard, Bertrand Leo, 5,852,040, Cl. 514-312.000.
  Desai, Kishor A.; Fliri, Anton F. J.; and Sanner, Mark A., 5,852,031, Cl. 514-279.000.
  Fray, Michael Jonathan; Mowbray, Charles Eric; and Stobie, Alan, 5,852,016, Cl. 514-249.000.
  Thompson, David D., 5,852,059, Cl. 514-648.000.

Pfleger, Wolfgang: *See—*
  Kerschbaumer, Franz; Pfleger, Wolfgang; and Stoeppelmann, Georg, 5,850,855, Cl. 138-137.000.

Pflugrath, Lauren S.: *See—*
  Wood, Michael A.; Roncalez, Pascal; Pflugrath, Lauren S.; and Souquet, Jacques, 5,851,186, Cl. 600-437.000.

Pharma Mar, s.a.: *See—*
  Fernandez Puentes, Jose Luis; Garcia Gravalos, Dolores; and Rodriguez Quesada, Ana, 5,852,033, Cl. 514-283.000.

Pharmacia & Upjohn AB: *See—*
  Adamson, Lars; Walum, Erik; Dixelius, Johan; and Lie, Kristina Lima, 5,851,800, Cl. 435-69.100.

Pharmacia & Upjohn Company: *See—*
  Romines, Karen Rene; Bundy, Gordon L.; Schwartz, Theresa M.; Tommasi, Ruben A.; Strohbach, Joseph W.; Turner, Steven Ronald; Thaisrivongs, Suvit; Aristoff, Paul Adrian; Johnson, Paul D.; Skulnick, Harvey Irving; Skaletzky, Louis L.; Anderson, David John; Morris, Joel; Gammill, Ronald B.; and Luke, George P., 5,852,195, Cl. 546-282.100.

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  Dillard, Lawrence W.; Henderson, Ian; Ohlmeyer, Michael H. J.; and Reader, John C., 5,851,494, Cl. 422-131.000.

Philbin, Michael T.; Billmers, Robert L.; and Paul, Charles W., to National Starch and Chemical Investment Holding Corporation. Hot melt adhesives with compatible hydroxyl-containing ester waxes. 5,852,080, Cl. 524-51.000.

Philbrook, Carl M.: *See—*
Tseng, Mingchih M.; and Philbrook, Carl M., 5,851,551, Cl. 424-486.000.

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Jacobs, Eino; and Ang, Michael, 5,852,741, Cl. 395-800.240.
Majid, Naveed; Mobers, Tom; and Seinen, Erwin G. R., 5,852,550, Cl. 363-21.000.

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Badley, Rickey D., 5,852,144, Cl. 526-128.000.
Wells, Jan W., 5,851,380, Cl. 208-158.000.

Phillips, William; and Pinneo, John M., to Crystallume. Diamond film with sharp field emission turn-on. 5,852,341, Cl. 313-336.000.

Piazza, Gary A.: *See—*
Pamukcu, Rifat; and Piazza, Gary A., 5,852,035, Cl. 514-293.000.

Piccirilli, Mauro: *See—*
Di Giacomo, Tommaso; Piccirilli, Mauro; and Matricardi, Massimo, 5,851,635, Cl. 428-167.000.

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Piciaccia, Stefano: *See—*
Meli, Fausto; and Piciaccia, Stefano, 5,852,510, Cl. 359-341.000.

Pickover, Clifford A.: *See—*
Grossman, Bertrand M.; McLean, James Gordon; Pickover, Clifford A.; Schwartz, Michael Stephen; and Winarski, Daniel James, 5,852,440, Cl. 345-348.000.

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Cerami, Carla J.; Bucala, Richard J.; Vlassara, Helen; Cerami, Anthony; and Founds, Henry W., 5,850,840, Cl. 131-330.000.

Pienta, David J., to Automatic Handling, Inc. Roll package and method of making. 5,850,918, Cl. 206-410.000.

Pieper, Helmut: *See—*
Himmelsbach, Frank; Pieper, Helmut; Austel, Volkhard; Linz, Guenter; Weisenberger, Johannes; Eisert, Wolfgang; and Mueller, Thomas, 5,852,192, Cl. 546-210.000.

Pieper, Kathleen A.: *See—*
Horstman, Richard L.; Oder, Reuben E.; Prosise, Robert L.; Pieper, Kathleen A.; Smith, Genevieve R.; Dirksing, Robert S.; and Baggott, Susan B., 5,851,079, Cl. 401-174.000.

Pierburg AG: *See—*
Garthe, Christopher, 5,852,227, Cl. 73-23.320.

Pierce, Roger H.: *See—*
Siler, Buzz L.; and Pierce, Roger H., 5,850,966, Cl. 232-15.000.

Pierce, Susanne M.: *See—*
Parsey, Timothy J.; Coster, Daniel J.; Swan, Elizabeth B.; Hoenig, David V.; O'Brien, John J.; and Pierce, Susanne M., 5,850,998, Cl. 248-223.210.

Pierceall, Richard M.: *See—*
Vigneaux, Stevan; Wheeler, Blair F.; Mason, Philip; Pierceall, Richard M.; Scott, Adrian; Boucher, Roland J., Jr.; Morrison, William C.; and Hennessy, Richard D., 5,852,435, Cl. 345-302.000.

Pierrat, Christophe, to Micron Technology, Inc. Method and apparatus for the fabrication of semiconductor photomask. 5,851,704, Cl. 430-5.000.

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Le Riche, Frédéric Pierre Alain; and Pierre, Bernard Raymond, 5,851,592, Cl. 427-350.000.

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Perez, Michel; Halazy, Serge; John, Gareth; Valentin, Jean-Pierre; and Pauwels, Peter, 5,852,049, Cl. 514-415.000.

Pike, Charles: *See—*
Garand, Robert R.; Banda, John L.; and Pike, Charles, 5,851,288, Cl. 118-65.000.

Pike, Rodney David: *See—*
Brown, Anthony Kevin Dale; Goulette, Richard Ralph; Wallace, Roderick Edgar; and Pike, Rodney David, 5,852,637, Cl. 375-316.000.

Pilkington Glass Limited: *See—*
Quirk, Richard; Bird, David Alan; Shulver, Ian Nigel William; and McIntosh, Robin Maxwell, 5,851,256, Cl. 65-134.600.

Pinciaro, John. Hydrotherapy jet and fixtures for spa tubs and pools and a method of installation. 5,850,640, Cl. 4-541.600.

Pines, Mark; and Nagler, Arnon, to Hadasit; and Agricultural Research Organization. Treatment and prevention of adhesions. 5,852,024, Cl. 514-259.000.

Ping, Er-Xuan, to Micron Technology, Inc. Process for forming capacitor array structure for semiconductor devices. 5,851,875, Cl. 438-253.000.

Pinheiro, Orlando S., to Meadox Medicals, Inc. Implantable intraluminal prosthesis. 5,851,228, Cl. 623-1.000.

Pinneo, John M.: *See—*
Phillips, William; and Pinneo, John M., 5,852,341, Cl. 313-336.000.

Pinto, Patrick A.: *See—*
Njoroge, F. George; Vibulbhan, Bancha; Pinto, Patrick A.; and Girijavallabhan, Viyyoor M., 5,852,034, Cl. 514-290.000.

Pioneer Hi-Bred International, Inc.: *See—*
Fuller, Peter Armstrong; Schmidt, Herbert; Steiger, Debra Kay; and Grace, Dorman John, III, 5,852,226, Cl. 800-200.000.
Gebhardt, David John; Roach, Michael Thomas; and Soper, John, 5,852,225, Cl. 800-200.000.

Pirelli Cavi S.p.A.: *See—*
Meli, Fausto; and Piciaccia, Stefano, 5,852,510, Cl. 359-341.000.

Pirelli General plc: *See—*
Rennie, Andrew James; and Curley, Thomas, 5,851,450, Cl. 264-1.280.

Pirzada, Shahid; and Yadav, Tapesh, to Nanomaterials Research Corporation. Integrated thermal process for the continuous synthesis of nanoscale powders. 5,851,507, Cl. 423-659.000.

Pitcher, Philip G: *See—*
Miller, Joseph; Pearson, Derek P A; and Pitcher, Philip G, 5,851,363, Cl. 204-192.200.

Pitsch, Robert Alan, to Thomson Consumer Electronics, Inc. Reset circuit for ensuring proper reset when used with decaying power supplies. 5,852,377, Cl. 327-143.000.

Pitt, George H., III: *See—*
Nakajima, Satoshi; Pitt, George H., III; Belfiore, Joseph D.; and Guzak, Christopher J., 5,852,441, Cl. 345-352.000.

Plamthottam, Sebastian S.; and Callos, Bessie E., to Allegiance Corporation. Sequential copolymer based gloves. 5,851,683, Cl. 428-519.000.

Plass, David B.: *See—*
Schick, David B.; Plass, David B.; and Singer, Jonathan, 5,852,647, Cl. 378-53.000.

Plastipak Packaging, Inc.: *See—*
Young, William C.; Darr, Richard C.; and Behm, Dale H., 5,850,931, Cl. 215-375.000.

Pleschiutschnigg, Fritz-Peter; Stalleicken, Dieter; Parschat, Lothar; von Hagen, Ingo; Menne, Ulrich; El Gammal, Tarek; Hamacher, Peter Lorenz; and Vonderbank, Michael, to Mannesmann Aktiengesellschaft. Inversion casting device with crystallizer. 5,850,869, Cl. 164-419.000.

Plona, Thomas: *See—*
Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; and Randall, Curtis, 5,852,587, Cl. 367-25.000.

Plotkin, Neil D., to Medtronic, Inc. Spray spun filter cartridges for cardiotomy filter/defoamer. 5,851,486, Cl. 422-44.000.

Plzak, William J.: *See—*
Jandal, Daoud A.; Seewald, Jeffrey S.; Mullally, Ralph C.; and Plzak, William J., 5,850,848, Cl. 137-422.000.

Podtburg, Eric R.; Sandhage, Kenneth H.; Otto, Alexander; Masur, Lawrence J.; Craven, Christopher A.; and Schreiber, Jeffrey D., to American Superconductor Corporation. Oxide superconductor precursors. 5,851,957, Cl. 505-510.000.

Poetsch, Eike: *See—*
Pohl, Ludwig; Poetsch, Eike; Hirsch, Hans-Ludwig; Schumann, Herbert; and Weiss, Karin, 5,851,946, Cl. 502-131.000.

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Poland, Marc R.: *See—*
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Polarek, James: *See—*
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Polartechnics Limited: *See—*
Skladnev, Victor N.; Thompson, Richard L.; and Wunderman, Irwin, 5,852,494, Cl. 356-243.000.

Polizzotti, David M.: *See—*
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Polyplastics Co., Ltd.: *See—*
Kanai, Hiroyuki; Serizawa, Hajime; and Matsushima, Mitsunori, 5,852,135, Cl. 525-398.000.

Pomeroy, Joseph H.: *See—*
Jones, Corbett B.; Hatch, Edwin B.; Gonring, Steven J.; Jones, David D.; and Pomeroy, Joseph H., 5,850,803, Cl. 114-343.000.

Pomrink, Gregory J.: *See—*
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Pont, Guillermo: *See—*
Willis, Jeffrey W.; Pont, Guillermo; and Alder, Bruce L., Jr., 5,850,732, Cl. 60-39.360.

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Porato, Francette: *See—*
Yang, Yeong-Show; Porato, Francette; and Lequeux, Serge, 5,851,667, Cl. 428-396.000.

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Hwang, Lydia Lee-York; and Porsche, Arthur Francis, 5,851,303, Cl. 134-3.000.

Port Systems, L.L.C.: *See—*
Amidon, Gordon L.; and Crison, John R., 5,851,275, Cl. 106-148.100.

Porta, Checcacci & Botti: *See—*
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Portier, Jean: *See—*
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Posa, Richard P.: *See—*
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Posner, Marshall R.: *See—*

Sodroski, Joseph G.; Marasco, Wayne A.; Posner, Marshall R.; and Haseltine, William A., 5,852,186, Cl. 536-23.530.

Poterala, Joseph G.: *See—*
Poterala, Robert J.; and Poterala, Joseph G., 5,851,291, Cl. 118-612.000.

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Potjer, Bert; Sartor, Luigi; and Druschel, Robert Lindsay, to Avery Dennison. Applicator die. 5,851,566, Cl. 425-225.000.

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Pouille, Guy; and Ravel, Bernard, to Compagnie Generale des Establissements Michelin - Michelin & Cie. Rigid-core mold for annular treads intended, in particular, for the recapping of tires. 5,851,557, Cl. 425-46.000.

Powerchip Semiconductor Corp.: *See—*
Wu, Shye Lin, 5,851,897, Cl. 438-397.000.

PPG Industries, Inc.: *See—*
Gorton, Earl M.; Taylor, Tommy G.; and Olinger, Ronald D., 5,851,977, Cl. 510-412.000.

PPL Therapeutics (Scotland) Limited: *See—*
Cooper, Julian David; and Schnieke, Angelika Elisabeth, 5,852,224, Cl. 800-2.000.

Pramanik, Dipankar; Ghandehari, Kouros; Sethi, Satyendra S.; and Baker, Daniel C., to VLSI Technology, Inc. Method and apparatus for detecting edges under an opaque layer. 5,852,497, Cl. 356-401.000.

Prasad, Rama R.; Gutmann, Michael J.; and Ing, Stephen S., to Intel Corporation. Method and apparatus for connecting video sources and video sinks. 5,852,472, Cl. 348-552.000.

Prasad, Ravi; and Gottzmann, Christian Friedrich, to Praxair Technology,Inc. Hybrid solid electrolyte ionic conductor systems for purifying inert gases. 5,851,266, Cl. 95-54.000.

Prasad, Vidyanatha A.; Spicher, Jonathan D.; and Fischer, Warren A., to Bayer Corporation. Process for isolating N-(4-fluorophenyl)-N-(1-methylethyl)-2-[(5-trifluoromethyl)-1,3,4-thiadiazol-2-yl)oxy]acetamide. 5,852,202, Cl. 548-136.000.

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Premark FEG L.L.C.: *See—*
DeBrosse, Walter L.; and Tunney, Louis A., 5,850,904, Cl. 198-744.000.

Prencipe, Michael: *See—*
Hassan, Mahmoud; Dixit, Nagaraj; Prencipe, Michael; Viscio, David B.; and Nathoo, Salim A., 5,851,514, Cl. 424-53.000.

President and Fellows of Harvard College: *See—*
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Presky, David Howard: *See—*
Gubler, Ulrich Andreas; and Presky, David Howard, 5,852,176, Cl. 530-389.200.

Preutenborbeck, Maximilian: *See—*
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Prewett, Tacey L.: *See—*
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Prince Corporation: *See—*
Kalkman, Jesse; and Binish, Patrick W., 5,851,046, Cl. 296-97.110.

Prince, Glen D.: *See—*
Marklin, Mark W.; and Prince, Glen D., 5,850,777, Cl. 92-187.000.

Prince, Jeff; Noll, Mike; Ferguson, Earl; Johnson, Bobby; and Ryals, Randy, to Bay Networks, Inc. Method and apparatus for transmitting cells across an ATM switch bus. 5,852,606, Cl. 370-393.000.

Prior, David V.: *See—*
Sanghvi, Pradeepkumar P.; Misra, Tushar K.; and Prior, David V., 5,851,555, Cl. 424-464.000.

Procter & Gamble Company, The: *See—*
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Foley, Peter Robert, 5,851,973, Cl. 510-235.000.
Horstman, Richard L.; Oder, Reuben E.; Prosise, Robert L.; Pieper, Kathleen A.; Smith, Genevieve R.; Dirksing, Robert S.; and Baggott, Susan B., 5,851,079, Cl. 401-174.000.
Scialla, Stefano; Cardola, Sergio; and Bianchetti, Giulia Ottavia, 5,851,979, Cl. 510-417.000.
Stone, Keith Joseph; DesMarais, Thomas Allen; La Von, Gary Dean; Goldman, Stephen Allen; and Seiden, Paul, 5,851,648, Cl. 428-304.400.
Vinson, Kenneth Douglas; Ficke, Jonathan Andrew; and Deason, Howard Thomas, 5,851,352, Cl. 162-112.000.
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Stolowitz, Mark L., 5,852,178, Cl. 530-402.000.

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Re, Danilo, to SGS-Thomson Microelectronics, S.r.l. Process for manufacturing integrated capacitors in MOS technology. 5,851,871, Cl. 438-250.000.
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Kotani, Kozo; Negawa, Hideo; Sakaya, Taiichi; Nakagahara, Makoto; and Kudo, Aki, 5,851,682, Cl. 428-500.000.

Sakikawa, Shigenori: *See—*

Sakakura, Shinya; Ohashi, Ryota; and Sakikawa, Shigenori, 5,850,736, Cl. 60-464.000.

Sakiyama, Masato; Asami, Takuya; Iwanaga, Tomoki; Oshio, Yasuhide; and Oda, Masaaki, to Ask Corporation. Method of manufacturing calcium silicate board. 5,851,354, Cl. 162-123.000.

Sako, Kazuya, to Fujitsu Limited. Method and apparatus for speech recognition. 5,852,804, Cl. 704-275.000.

Sakuda, Mitsuhiro: *See—*

Yabuki, Kazuyuki; Ichiryu, Takaharu; Kuroki, Tadao; and Sakuda, Mitsuhiro, 5,851,466, Cl. 264-143.000.

Sakuma, Nobuo: *See—*

Tomita, Kan; Sakuma, Nobuo; and Mama, Takashi, 5,852,499, Cl. 356-429.000.

Sakurai, Hidehiko: *See—*

Shibata, Kazuhisa; Kyo, Motoki; Sakurai, Hidehiko; and Ohno, Makoto, 5,851,394, Cl. 210-500.230.

Sakurai, Kazuhiro, to Toyota Jidosha Kabushiki Kaisha. Catalytic device for cleaning exhaust gases of an internal combustion engine. 5,851,496, Cl. 422-174.000.

Sakurazawa, Mamoru: *See—*

Mikoshiba, Hisashi; Takizawa, Hiroo; Hosokawa, Junichiro; Ishii, Yoshio; Mihayashi, Keiji; Morigaki, Masakazu; and Sakurazawa, Mamoru, 5,851,754, Cl. 430-607.000.

Salee, David Alan: *See—*

Wagstaff, Frank Everton; Sinden, Aaron David; and Salee, David Alan, 5,850,870, Cl. 164-450.100.

Salk Institute for Biological Studies, The: *See—*

Evans, Glen A.; and Smith, Michael W., 5,851,760, Cl. 435-6.000.

Sallmetall B.V.: *See—*

Reinders, Johannes Antonius Maria, 5,851,639, Cl. 428-195.000.

Salminen, Samppa; and Närväinen, Aimo, to Valmet Corporation. Set of ribs in a dewatering device in a paper machine. 5,851,359, Cl. 162-301.000.

Salo, Robert A.: *See—*

Farone, Richard C.; Saunders, Craig M.; Kalman, Jeffrey M.; Stephens, Paul D.; Salo, Robert A.; Thur, Charles J.; and Wright, Michael F., 5,850,666, Cl. 15-339.000.

Salomon S.A.: *See—*

Grenetier, Alain; Renard, Philippe; and Rochet, Valerie, 5,851,331, Cl. 156-235.000.

Salte, Torstein, to Kverneland Klepp AS. Seed tine assembly. 5,850,790, Cl. 111-149.000.

Salvador, Anthony C.: *See—*

Skarbo, Rune A.; Elliott, John D.; and Salvador, Anthony C., 5,852,807, Cl. 705-7.000.

Samani, Hamid R.: *See—*

Mehmandoust, Yassin; Samani, Hamid R.; and Eltoukhy, Atef H., 5,851,601, Cl. 427-561.000.

Samid, Dvorit, to United States of America, Health and Human Services. Phenylacetate and derivatives alone or in combination with other compounds against neoplastic conditions and other disorders. 5,852,056, Cl. 514-510.000.

Samiee, Vahid: *See—*

Boeckmann, Eduard F.; Brethour, Vern; and Samiee, Vahid, 5,852,372, Cl. 326-83.000.

Samsavar, Amin; McWaid, Thomas; and Yudin, Sergey, to Kla-Tencor Corporation. Acoustic sensor as proximity detector. 5,852,232, Cl. 73-105.000.

Samsung Aerospace Industries, Ltd.: *See—*

Okazaki, Tadao; and Won, Yongsik, 5,850,683, Cl. 29-740.000.

Samsung Display Devices Co., Ltd.: *See—*

Kim, Chang-seob; Son, Seok-bong; Jeong, Bong-uk; and Kim, Sang-kyun, 5,852,342, Cl. 313-346.0DC.

Samsung Electro-Mechanics Co., Ltd.: *See—*

Kim, Chang Sik, 5,851,341, Cl. 156-294.000.

Samsung Electronic, Co., Ltd.: *See—*

Choi, Nag-Sig, 5,852,349, Cl. 318-439.000.

Samsung Electronics Co., Ltd.: *See—*

An, Sang-bae, 5,852,300, Cl. 250-559.220.

Choi, Sang-jun; Park, Chun-geun; and Koh, Young-bum, 5,851,727, Cl. 430-270.100.

Hong, Eui-kyung; Kim, Jae-in; and Jung, Seong-wook, 5,850,969, Cl. 236-49.300.

Jung, Kwang-Jo, 5,852,523, Cl. 360-49.000.

Jung, Soon-moon; and Shin, Yun-seung, 5,852,572, Cl. 365-154.000.

Kim, Cin Yong; Kim, Do Weon; Kim, Jin Soo; Jang, Sam Yong; and Lee, Geum Chan, 5,850,748, Cl. 68-23.200.

Kim, Dong-Gyu, 5,852,482, Cl. 349-46.000.

Kim, Jin-Soo, 5,850,749, Cl. 68-23.200.

Kim, Sung-bong, 5,851,868, Cl. 438-238.000.

Kim, Young-sun; Lee, Nae-in; and Ko, Dae-hong, 5,852,319, Cl. 257-412.000.

Ko, Jung-wan; and Kim, Soon-tae, 5,852,529, Cl. 360-77.140.

Kwon, Ki-ho; and Jang, Dong-soo, 5,852,311, Cl. 257-315.000.

Lee, Hwa Young; Jun, Jong Keun; Kim, Tae Hyuk; and Lee, Jae Won, 5,851,853, Cl. 438-108.000.

Lee, Ju-Hun, 5,852,544, Cl. 361-683.000.

Lee, Kwang-Heui, 5,852,522, Cl. 360-48.000.

Lee, Sang-in, 5,851,917, Cl. 438-627.000.

Lim, Sung-chul; Woo, Sang-gyun; Kang, Ho-young; and No, Kwang-soo, 5,851,706, Cl. 430-5.000.

Limberg, Allen L.R., 5,852,477, Cl. 348-725.000.

Limberg, Allen LeRoy, 5,852,476, Cl. 348-725.000.

Moon, Sung-teak; Choi, Sung-pil; and Lee, Dong-jun, 5,851,834, Cl. 436-5.000.

Mote, L. Randall, Jr., 5,852,617, Cl. 371-22.310.

Song, Jin-ho; and Kim, Won-joo, 5,851,918, Cl. 438-627.000.

Song, Moon-Jong, 5,852,654, Cl. 379-93.050.

Suh, Sang-Wook, 5,851,388, Cl. 210-257.200.

Samsung Heavy Industries Co., Ltd.: *See—*

Kim, Kee Young, 5,851,101, Cl. 414-713.000.

Sanchez, Robert R.: *See—*

Engelking, Steven; and Sanchez, Robert R., 5,851,308, Cl. 134-22.170.

Sandberg, Jonathan S.: *See—*

Lopresti, Daniel P.; and Sandberg, Jonathan S., 5,852,684, Cl. 382-309.000.

Sanders, Gale: *See—*

Anderson, Robert; Sanders, Gale; and Freund, Robert, 5,851,088, Cl. 405-284.000.

Sanders, Stuart E.; Cox, John L.; Stratton, David S.; Miller, Theodore, Jr.; and Opperthauser, Mark R., to MagneTek, Inc. Enclosure for glow bulb starter used with gas discharge lamps. 5,852,344, Cl. 315-61.000.

Sandhage, Kenneth H.: *See—*

Podtburg, Eric R.; Sandhage, Kenneth H.; Otto, Alexander; Masur, Lawrence J.; Craven, Christopher A.; and Schreiber, Jeffrey D., 5,851,957, Cl. 505-510.000.

Sandhu, Gurtej S.; and Doan, Trung Tri, to Micron Technology, Inc. System for real-time control of semiconductor wafer polishing. 5,851,135, Cl. 451-5.000.

Sandhu, Sukhvinder, to Colgate Palmolive Company. Light duty liquid cleaning composition. 5,851,974, Cl. 510-235.000.

Sandia Corporation: *See—*

Siegal, Michael P.; Overmyer, Donald L.; and Dominguez, Frank, 5,851,955, Cl. 505-120.000.

Sandor, Robert Bruce; Carter, Michele C.; Gillberg-LàForce, Gunilla E.; Clear, William F.; Flint, John A.; Lanieve, Herman Leslie; Thompson, Scott W.; Oakley, Etheridge Odell, Jr.; Kafchinski, Edward Ronald; and Haider, Mohammed Ishaq, to Hoechst Celanese Corp. Cut-resistant fiber containing a hard filler. 5,851,668, Cl. 428-397.000.

Sandoz Ltd.: *See—*

Fowler, Jeffrey D.; and Feinstein, Benjamin E., 5,851,545, Cl. 424-405.000.

Sandstrom, Richard L., to Cymer, Inc. Pulse laser with pulse energy trimmer. 5,852,621, Cl. 372-25.000.

Sandvik AB: *See—*

Johnsson, Mats; Ahlén, Niklas; Nygren, Mats; Ekelund, Magnus; and Brandt, Gunnar, 5,851,285, Cl. 117-87.000.

Ljungberg, Björn, 5,851,687, Cl. 428-689.000.

Pettersson, Barbro; Berger, Ingemar; Andersson, Karl-Magnus; Englund, Tord; and Wåhlen, Bo, 5,850,916, Cl. 206-349.000.

Sanft, Ulrich: *See—*

Jakobi, Harald; Knauf, Werner; Sanft, Ulrich; Kern, Manfred; Reuschling, Dieter Bernd; Linkies, Adolf Heinz; and Bonin, Werner, 5,852,042, Cl. 514-352.000.

Schaper, Wolfgang; Krautstrunk, Gerhard; Knauf, Werner; Sanft, Ulrich; Kern, Manfred; Pasenok, Sergej; Reuschling, Dieter Bernd; Linkies, Adolf Heinz; and Bonin, Werner, 5,852,023, Cl. 514-256.000.

Sanghvi, Pradeepkumar P.; Misra, Tushar K.; and Prior, David V., to Fuisz Technologies Ltd. Controlled release dosage forms containing water soluble drugs. 5,851,555, Cl. 424-464.000.

Sanner, Mark A.: *See—*

Desai, Kishor A.; Fliri, Anton F. J.; and Sanner, Mark A., 5,852,031, Cl. 514-279.000.

Sanner, Robert D.: *See—*

Hair, Lucy M.; Sanner, Robert D.; and Coronado, Paul R., 5,851,947, Cl. 502-258.000.

Sano, Akihiko: *See—*

Fujioka, Keiji; Hirasawa, Takeshi; Kajihara, Masako; Sano, Akihiko; Sugawara, Shuichi; and Urabe, Yosuke, 5,851,547, Cl. 424-426.000.

Sano, Akihiro; Nishino, Shuichi; Daio, Fumio; Oguro, Shusuke; and Kondo, Masatsugu, to Matsushita Electric Industrial Co., Ltd. Organic electrolyte batteries. 5,851,693, Cl. 429-174.000.

Sano, Harunobu: *See—*

Wada, Hiroyuki; Sano, Harunobu; and Sakamoto, Norihiko, 5,852,542, Cl. 361-321.500.

Sano, Kohtaro: *See—*

Kiuchi, Toshihiro; Sano, Kohtaro; Sato, Manabu; Kawamura, Jyo; and Yamada, Naoto, 5,851,975, Cl. 510-320.000.

Sanofi: *See—*

Gueudet, Christiane; Santucci, Vincent; and Soubrie, Philippe, 5,852,044, Cl. 514-317.000.

Sansone, Michael A.: *See—*

Gulcicek, Erol E.; Whitehouse, Craig M.; Burt, Allan G.; Sansone, Michael A.; and Catalano, Clement, 5,852,294, Cl. 250-292.000.

Santhanam, Uma: *See—*

Penska, Christine; Santhanam, Uma; and Habif, Stephan, 5,851,544, Cl. 424-401.000.

Santucci, Vincent: *See—*

Gueudet, Christiane; Santucci, Vincent; and Soubrie, Philippe, 5,852,044, Cl. 514-317.000.

Sanyo Electric Co., Ltd.: *See—*

Kasamatsu, Hideki, 5,852,770, Cl. 455-126.000.

Kazuma, Yasuo, 5,851,445, Cl. 261-103.000.

Nakamura, Yumiko; Nakamura, Hiroshi; Kamikawa, Maki; Watanabe, Hiroshi; Fujitani, Shin; and Yonezu, Ikuo, 5,851,690, Cl. 429-59.000.

Okada, Hidefumi, 5,852,468, Cl. 348-272.000.

Saraiya, Mukund Kantilal: *See—*

Dittman, Eberhard Siegfried; and Saraiya, Mukund Kantilal, 5,852,257, Cl. 174-59.000.

Sarpola, Jussi: *See—*

Hyyrynen, Altti; Sarpola, Jussi; and Hirvonen, Pekka, 5,852,650, Cl. 379-29.000.

Sartor, Luigi: *See—*

Potjer, Bert; Sartor, Luigi; and Druschel, Robert Lindsay, 5,851,566, Cl. 425-225.000.

Sasada, Reiko: *See—*

Senoo, Masaharu; Sasada, Reiko; Kurokawa, Tsutomu; and Igarashi, Koichi, 5,852,177, Cl. 530-399.000.

Sasahara, Kenji: *See—*

Nakashima, Seiichi; and Sasahara, Kenji, 5,850,887, Cl. 180-197.000.

Sasaki, Fujio: *See—*

Ito, Fumio; Yamaguchi, Seiichi; Sasaki, Fujio; and Kosugi, Hiroaki, 5,852,784, Cl. 455-552.000.

Sasaki, Kenji: *See—*

Kaise, Kazuhito; Higuchi, Masahiro; Sasaki, Kenji; and Sato, Tsunenori, 5,852,594, Cl. 369-75.100.

Sasaki, Koki: *See—*

Ohba, Akihiro; and Sasaki, Koki, 5,852,087, Cl. 524-154.000.

Sasaki, Makoto: *See—*

Takano, Akira; Kobayashi, Masayoshi; Kotaki, Yoshio; Sasaki, Makoto; and Ishiyama, Kazunori, 5,852,530, Cl. 360-95.000.

Sasaki, Sachio: *See—*

Tooda, Toshio; Yamaguchi, Yoshio; Kuwabara, Nobuo; Sato, Mituru; Watanabe, Haruyasu; Nagahara, Akira; Sasaki, Sachio; Ishiyama, Yoshiya; Kera, Hiroshi; Nishido, Masanori; and Hanzawa, Hisashi, 5,852,757, Cl. 399-119.000.

Sasaki, Tetsuro: *See—*

Miyauchi, Daisuke; Omata, Eiichi; Amano, Hajime; Sasaki, Tetsuro; and Uno, Yasufumi, 5,852,533, Cl. 360-113.000.

Sassak, Mark S. Grippable surface for throwable objects. 5,851,161, Cl. 473-596.000.

Satake, Kunio: *See—*

Ito, Fumitaka; Kokura, Toshihide; Nakane, Masami; Satake, Kunio; and Wakahayashi, Hiroaki, 5,852,038, Cl. 514-305.000.

Satake, Takeshi: *See—*

Kimura, Koji; Hayashi, Tokuji; Hachiwaka, Masayoshi; and Satake, Takeshi, 5,852,694, Cl. 385-78.000.

Satani, Kenji; Iwamoto, Yoshiyuki; and Matsuhashi, Kazuhiro, to Mazda Motor Corporation. Supplemental restraint side air bag apparatus for vehicle. 5,851,024, Cl. 280-730.200.

Satishchandran, C.: *See—*

Snyder, Linda Anne; and Satishchandran, C., 5,851,804, Cl. 435-91.100.

Sato, Hiroyuki: *See—*

Takahashi, Tsutomu; Tsujimoto, Yoshifumi; Kumada, Hiroaki; and Sato, Hiroyuki, 5,851,646, Cl. 428-294.100.

Sato, Kanji: *See—*

Miyabayashi, Mitsutaka; Sato, Kanji; Tayama, Toshiyuki; Kageyama, Yoshiteru; and Oyama, Haruo, 5,851,694, Cl. 429-105.000.

Sato, Kazuaki; and Yamato, Koji, to Fujitsu Limited. Electronic conference system and conference server apparatus. 5,852,656, Cl. 379-93.210.

Sato, Kimihiko: *See—*

Umeda, Masami; and Sato, Kimihiko, 5,851,612, Cl. 428-35.700.

Sato, Maki: *See—*

Iijima, Takashi; Suzuki, Kimihito; and Sato, Maki, 5,851,697, Cl. 429-218.000.

Sato, Manabu: *See—*

Kiuchi, Toshihiro; Sano, Kohtaro; Sato, Manabu; Kawamura, Jyo; and Yamada, Naoto, 5,851,975, Cl. 510-320.000.

Sato, Mituru: *See—*

Tooda, Toshio; Yamaguchi, Yoshio; Kuwabara, Nobuo; Sato, Mituru; Watanabe, Haruyasu; Nagahara, Akira; Sasaki, Sachio; Ishiyama, Yoshiya; Kera, Hiroshi; Nishido, Masanori; and Hanzawa, Hisashi, 5,852,757, Cl. 399-119.000.

Sato, Noboru: *See—*

Akai, Hideko; Tanaka, Katsuji; Fujimoto, Masahiko; and Sato, Noboru, 5,852,164, Cl. 528-279.000.

Sato, Noriko: *See—*

Kato, Masayuki; Aritake, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,852,504, Cl. 359-9.000.

Sato, Shogo; and Maniwa, Osamu, to Sony Corporation. Applicator. 5,851,289, Cl. 118-411.000.

Sato, Takanori: *See—*

Suzuki, Fumiyuki; Miyoshi, Takahito; Shirokura, Yukio; Sato, Takanori; and Sugihara, Hiroko, 5,851,744, Cl. 430-501.000.

Sato, Tsunenori: *See—*

Kaise, Kazuhito; Higuchi, Masahiro; Sasaki, Kenji; and Sato, Tsunenori, 5,852,594, Cl. 369-75.100.

Sato, Yasuhiko; and Fujita, Hiroaki, to Fuji Photo Optical Co. Ltd. Method of forming mold release film and making a glass optical element. 5,851,252, Cl. 65-24.000.

Sato, Yoshikazu; and Shishido, Kan, to Alpine Electronics; and Honda Giken Kogyo Kabushiki Kaisha. Vehicle navigation with vehicle position correction feature. 5,852,791, Cl. 701-217.000.

Sato, Yoshio; Nomura, Masahide; Yamamoto, Yasunori; and Toyama, Eiji, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaishia. Fluidized bed power plant, and control apparatus and method thereof. 5,850,740, Cl. 60-676.000.

Sato, Yukito; Yamaguchi, Takayuki; Shoji, Hiroyoshi; Azumi, Junichi; and Kaminishi, Morimasa, to Ricoh Company, Ltd.; Ricoh Elemex Corporation; and Ricoh Seiki Company, Ltd. Flow sensor having an intermediate heater between two temperature-sensing heating portions. 5,852,239, Cl. 73-204.260.

Satoh, Susumu: *See—*

Yazawa, Yoshihiro; Ujiro, Takumi; Satoh, Susumu; Kumazawa, Shintaro; Kobayashi, Makoto; and Kasai, Masayuki, 5,851,316, Cl. 148-325.000.

Satoh, Yutaka: *See—*

Yamada, Yousuke; Fujioka, Yoshio; Isono, Ryuichi; Takahashi, Nobuo; Hayashi, Akio; Ogawa, Koichi; Watanabe, Norio; and Satoh, Yutaka, 5,851,305, Cl. 134-10.000.

Satou, Masaharu: *See—*

Kawagoe, Kenji; Murakami, Takuya; Satou, Masaharu; Uno, Takaaki; Aimoto, Hideo; Kasahara, Tamiyoshi; and Nagaoka, Hiroshi, 5,851,016, Cl. 280-124.148.

Sauer, Herbert: *See—*

Böhme, Holger; Heubner, Wilhelm; Oberlack, Norbert; Peuker, Karl; and Sauer, Herbert, 5,850,898, Cl. 192-54.300.

Sauer, Joerg; Boeck, Wolfgang; von Hippel, Lukas; Burkhardt, Werner; Rautenberg, Stephan; Arntz, Dietrich; and Hofen, Willi, to Degussa Aktiengesellschaft. Catalyst, process for its preparation, and use for synthesis of methyl mercaptan. 5,852,219, Cl. 568-71.000.

Saul, Tom; Schwartz, Henry L.; Guion, Todd; and Ribi, Hans O., to Biocircuits Corporation. Apparatus for automatic electro-optical chemical assay determination. 5,851,488, Cl. 422-67.000.

Saunders, Craig M.: *See—*

Farone, Richard C.; Saunders, Craig M.; Kalman, Jeffrey M.; Stephens, Paul D.; Salo, Robert A.; Thur, Charles J.; and Wright, Michael F., 5,850,666, Cl. 15-339.000.

Saunders, Frederick G.: *See—*

Brahms, John C.; Lucchesi, Shirley A.; Saunders, Frederick G.; Gaffar, Abdul; and Shapiro, Stuart, 5,851,513, Cl. 424-49.000.

Sauvinet, Vincent; Bletry, Jean; Bonnaud, Micheline; and Trouve, Maurice, to Saint-Gobain Vitrage. Product produced by coating a substrate with an electrically conductive layer. 5,851,642, Cl. 428-212.000.

Savaides, Andrew: *See—*

Borish, Edward; Cohee, Judith A.; and Savaides, Andrew, 5,851,516, Cl. 424-70.100.

Savant, Inc.: *See—*

Selby, Theodore W.; Resin, Stephanie J.; Seer, Robert H.; and Cotter, James R., 5,852,230, Cl. 73-54.350.

Sawada, Michitaka: *See—*

Tsutsumi, Takehiro; and Sawada, Michitaka, 5,852,074, Cl. 523-161.000.

Sawamura, Tatsuhiko: *See—*

Okada, Yuji; Okada, Masamichi; Ishikawa, Tsutomu; Yamamoto, Takumi; Sawamura, Tatsuhiko; Hayashi, Norio; and Ito, Takayuki, 5,850,868, Cl. 164-132.000.

Sawyer, George M. Speckleless illumination of objects by laser light results when the laser light is transmitted or is reflected by a moving diffuser. 5,851,740, Cl. 430-363.000.

Sawyer, Steven Paul, to Motorola, Inc. System and method for having a single gateway set-up and maintain local signalling connections. 5,852,779, Cl. 455-445.000.

Scarborough, Robert M., to COR Therapeutics, Inc. Platelet aggregation inhibitors. 5,851,839, Cl. 436-518.000.

Schacht, Etienne: *See—*

Van Damme, Marc; Vermeersch, Joan; Schacht, Etienne; and Vansteenkiste, Stefan, 5,851,724, Cl. 430-253.000.

Schaeffer, Jon C.; Conner, Jeffrey A.; Dry, Dennis P.; Anselmi, Gregory J.; and Zigan, David C., to General Electric Company. Method for removing an environmental coating. 5,851,409, Cl. 216-2.000.

Schaeffer, Sara E.; and Gunther, Max S., to Hewlett-Packard Company. Inkjet print cartridge design to decrease deformation of the printhead when adhesively sealing the printhead to the print cartridge. 5,852,460, Cl. 347-87.000.

Schaper, Wolfgang; Krautstrunk, Gerhard; Knauf, Werner; Sanft, Ulrich; Kern, Manfred; Pasenok, Sergej; Reuschling, Dieter Bernd; Linkies, Adolf Heinz; and Bonin, Werner, to Hoechst Schering AgrEvo GmbH. Cyclohexylamino and cycloalkoxy nitrogen heterocycles, processes for their preparation, and their use as pesticides and fungicides. 5,852,023, Cl. 514-256.000.

Schatz, David G., to Yale University. Autoregulatory tetracycline-regulated system for inducible gene expression in eucaryotes. 5,851,796, Cl. 435-69.100.

Schauber, Claude C.; Truong, Nguyen Dinh; and Moorman, David Sterett. Dispersant viscosity index improving additive for lubricating oils. 5,851,967, Cl. 508-469.000.

Scheckenbach, Di Helmut, to Ticona GmbH. Mixtures of thermoplastics and oxidized polyarlene sulfides. 5,852,139, Cl. 525-537.000.

Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, to Hewlett-Packard Company. Inkjet print cartridge having a first inlet port for initial filling and a second inlet port for ink replenishment without removing the print cartridge from the printer. 5,852,458, Cl. 347-86.000.

Scheffer, Terry J.; and Clifton, Benjamin R., to In Focus Systems, Inc. Displaying gray shades on display panel implemented with phase-displaced multiple row selections. 5,852,429, Cl. 345-100.000.

Scheibli, Peter: *See—*

Känzig, Alex; Fritzsche, Katharina; and Scheibli, Peter, 5,851,240, Cl. 8-541.000.

Scheiblich, Stefan: *See—*

Karp, Gary Mitchell; Condon, Michael Edward; Kleeman, Axel; Scheiblich, Stefan; Maier, Thomas; and Baltruschat, Halmut Siegfried, 5,851,952, Cl. 504-251.000.

Schering Corporation: *See—*

Moore, Kevin W.; and Zaffaroni, Alejandro, 5,851,801, Cl. 435-69.600.

Njoroge, F. George; Vibulbhan, Bancha; Pinto, Patrick A.; and Girijavallabhan, Viyyoor M., 5,852,034, Cl. 514-290.000.

Schick, Brian R.: *See—*

Patterson, Robert S.; Schick, Brian R.; and Rich, Edward L., 5,850,914, Cl. 206-308.300.

Schick, David B.; Plass, David B.; and Singer, Jonathan, to Schick Technologies. Method and apparatus for measuring bone density. 5,852,647, Cl. 378-53.000.

Schick Technologies: *See—*

Schick, David B.; Plass, David B.; and Singer, Jonathan, 5,852,647, Cl. 378-53.000.

Schiedegger, Charles E.; Nurenberg, Aundrea; MacLeod, Richard J.; Clark, Michael C.; and Logan, J. Richard, to Tapco International. Dentil molding apparatus and method for securing a molding insert member. 5,850,717, Cl. 52-288.100.

Schiel, Christian: *See—*

Banning, Jürgen; and Schiel, Christian, 5,851,356, Cl. 162-203.000.

Schievella, Andrea R.: *See—*

Lin, Lih-Ling; Chen, Jennifer; Schievella, Andrea R.; and Graham, James, 5,852,173, Cl. 530-350.000.

Schiffswerft Oberelbe GmbH: *See—*

Grimmig, Dieter, 5,850,801, Cl. 114-242.000.

Schildmann, Manfred: *See—*

Bergmann, Erhard; Schildmann, Manfred; and Voss, Gerhard, 5,850,888, Cl. 180-406.000.

Schimanek, Ernst: *See—*

Levy, Alain; Schimanek, Ernst; and Dietze, Wolfram, 5,852,356, Cl. 318-719.000.

Schinazi, Raymond F.: *See—*

Liotta, Dennis C.; Schinazi, Raymond F.; and Choi, Woo-Baeq, 5,852,027, Cl. 514-274.000.

Schindler, Melvin M. S.: *See—*

Simon, Sanford M.; and Schindler, Melvin M. S., 5,851,789, Cl. 435-32.000.

Schipp, Roberto: *See—*

Mark, Fred; Northrup, Richard; Ouellette, Larry; Schipp, Roberto; Ihrie, Ronald; Boyer, Edward; and Somers, William F., 5,850,806, Cl. 119-219.000.

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Graunke, Gary; Shapiro, Leonard D.; and Ramamoorthy, Sujata, 5,852,826, Cl. 707-7.000.

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Brahms, John C.; Lucchesi, Shirley A.; Saunders, Frederick G.; Gaffar, Abdul; and Shapiro, Stuart, 5,851,513, Cl. 424-49.000.

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Ahmed, Syed Arif; and Millar, Douglas James, 5,852,769, Cl. 455-115.000.

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Hotta, Yasuhiro; Nojima, Takeshi; and Komatsu, Koji, 5,852,570, Cl. 365-104.000.

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Makita, Naoki; and Funai, Takashi, 5,851,860, Cl. 438-166.000.

Masui, Yoshitugu, 5,852,538, Cl. 361-18.000.

Nguyen, Tue; Charneski, Lawrence J.; and Hsu, Sheng Teng, 5,851,367, Cl. 204-192.340.

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Jones, Dennis J., Jr., 5,851,595, Cl. 427-393.400.

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Shearer, John W., 5,852,332, Cl. 307-43.000.

Sheerin, Howard H.: *See—*

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Trsar, Dale A.; Taraki, Yosuf M.; Shepherd, Richard H.; Moritz, Tyrone J.; and Petersen, Mark H., 5,852,789, Cl. 701-102.000.

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Allen, Michael J.; Crain, Gregory K.; Fischer, Stephen A.; Gelsinger, Patrick P.; Gray, David R.; Hopkins, Stuart T.; Laub, Gustay, III; Lucas, Charles H.; Pashley, Richard D.; Sabi, Babak; Schutz, Joseph D.; Shield, David J.; and Sullivan, Stephen F., 5,852,712, Cl. 395-182.030.

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Basinski, Margret B.; DiMarchi, Richard D.; Flora, David B.; Heath, William F., Jr.; Hoffmann, James A.; Schoner, Brigitte E.; Shields, James E.; and Smiley, David L., 5,851,995, Cl. 514-12.000.

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Sugimoto, Masanori, 5,850,761, Cl. 74-489.000.

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Okada, Shigeki; Shimogawa, Natsumi; and Takahashi, Nobou, 5,852,456, Cl. 347-71.000.

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Sugo, Michihiro; and Aoki, Hisashi, 5,852,153, Cl. 528-14.000.

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Ozaki, Atsushi; Urano, Masahiko; Harada, Isamu; Kakegawa, Tomohiro; and Nakano, Hideki, 5,851,286, Cl. 117-201.000.

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Thackeray, James W.; and Orsula, George W., 5,851,730, Cl. 430-271.100.

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Shirasawa, Naomi, to Harmonic Drive Systems, Inc. Flat wave gear drive. 5,850,765, Cl. 74-640.000.

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Shishido, Kan: *See—*

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Sukejima, Hajime; Tomita, Shinji; Sugita, Shuichi; and Ooga, Kazuhiko, 5,852,067, Cl. 522-53.000.

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Shyu, Jyuo-Min; Lu, Yao-Chou; Deng, Hsi-Chou; and Cheng, Hsu-Huang, to Industrial Technology Research Institute. Simplified architecture for defuzzification integrated circuit (IC) processor including circuits for estimating effective areas without overlapping errors. 5,852,708, Cl. 395-3.000.

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Cosford, Nicholas D.; and Vernier, Jean-Michel, 5,852,041, Cl. 514-351.000.

Harpold, Michael M.; Ellis, Steven B.; Williams, Mark E.; Feldman, Daniel H.; McCue, Ann F.; and Brenner, Robert, 5,851,824, Cl. 435-325.000.

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Sidel: *See—*

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Siden, Dennis: *See—*

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Mueller, Karlheinz, 5,851,858, Cl. 438-154.000.

Schuster, Rudolf; and Brugger, Rudolf, 5,850,901, Cl. 198-370.050.

Sezi, Recai; Leuschner, Rainer; and Schmidt, Erwin, 5,851,733, Cl. 430-311.000.

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Siemens Nixdorf Informationssysteme AG: *See—*

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Signäs, Christer: *See—*

Guss, Bengt; Höök, Magnus; Jönsson, Hans; Lindberg, Martin; Patti, Joseph; Signäs, Christer; and Switalski, Lech, 5,851,794, Cl. 435-69.100.

Signer, Hans, to Balzers Aktiengesellschaft. Heating system, vacuum process chamber comprising such a heating system and operation of such a vacuum process chamber. 5,852,275, Cl. 219-121.430.

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Engardio, Thomas J.; Dalsin, Philip D.; and Kang, Dae Ki, 5,852,112, Cl. 525-23.000.

Sigrist, Erik O. Folding smoking pipe with combined mouthpiece and bowl cover. 5,850,838, Cl. 131-180.000.

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Hainsworth, Barton J.; and Poland, Marc R., 5,850,991, Cl. 244-137.100.

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Silicon Systems Research Limited: *See—*

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Silverberg, Lawrence M. Electrostatically positioned blind insert for insulated glass. 5,850,861, Cl. 160-107.000.

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Thomas, Lewis Jones, III; Chiao, Richard Yung; and Silverstein, Seth David, 5,851,187, Cl. 600-447.000.

Simmons, Gary L.: *See—*

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Simon & Schuster, Inc.: *See—*

Golson, J. Geoffrey, 5,851,031, Cl. 281-19.100.

Simon, Sanford M.; and Schindler, Melvin M. S., to Rockefeller University, The; and Board of Trustees Operating Michigan State University. Methods and agents for measuring and controlling multidrug resistance. 5,851,789, Cl. 435-32.000.

Simons, Malcolm J., to Gene Type AG. Genomic mapping method by direct haplotyping using intron sequence analysis. 5,851,762, Cl. 435-6.000.

Simons, Stephen P., to Hydril Company. Blowout preventer packing element with metallic inserts. 5,851,013, Cl. 277-327.000.

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Wagstaff, Frank Everton; Sinden, Aaron David; and Salee, David Alan, 5,850,870, Cl. 164-450.100.

Singer, Jonathan: *See—*

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Singh, Gururaj: *See—*

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  - Wolf, Bernhard; Baumann, Werner; Dumbs, Alfred; Sulz, Gerd; and Sieben, Ulrich, 5,851,489, Cl. 422-82.020.
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  - Furukawa, Takashi; Tsushima, Kazunori; Iwasaki, Tomonori; Kisida, Hirosi; Nakamachi, Mikako; and Takada, Yoji, 5,852,048, Cl. 514-384.000.
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  - Harada, Keizo; Watanabe, Kenichi; Yamanaka, Shosaku; Hayashi, Kiyoshi; Morishita, Nobuyasu; Takeshima, Hiroki; Kaiya, Hideo; and Ikoma, Munehisa, 5,851,599, Cl. 427-531.000.
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  - Namikawa, Yasuo; Yao, Xin; Egami, Masahiro; and Shiohara, Yuh, 5,851,956, Cl. 505-450.000.
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  - Watanabe, Kunihiko; Kanagawa, Shuichi; Keishi, Tomohiro; and Arisaka, Shuji, 5,852,394, Cl. 336-66.000.
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  - Fujioka, Keiji; Hirasawa, Takeshi; Kajihara, Masako; Sano, Akihiko; Sugawara, Shuichi; and Urabe, Yosuke, 5,851,547, Cl. 424-426.000.
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  - Hayashi, Motoo, 5,851,322, Cl. 152-209.00R.
  - Kikuchi, Naohiko, 5,852,097, Cl. 524-492.000.
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  - Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.
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  - Nakata, Hiroyuki; and Hattori, Kazuhiko, 5,851,128, Cl. 439-752.000.
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- Summers, Robert N., to Magnecomp Corp. Double dimple disk drive suspension. 5,852,532, Cl. 360-104.000.
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  - Miller, Mark S.; Tribble, E. Dean; Hardy, Norman; Hill, Eric C.; and Hibbert, Christopher T., 5,852,666, Cl. 380-4.000.
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  - Hanko, James G.; and Kleiman, Steve, 5,852,705, Cl. 386-92.000.
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  - Chen, Ching Hsi, 5,851,462, Cl. 264-55.000.
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  - Gilman, Byron L.; and Kroll, Karl J. F., 5,850,920, Cl. 206-701.000.
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  - Higashikawa, Tetsuro; and Suzuki, Hirokazu, 5,851,200, Cl. 604-199.000.
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  - Takaki, Toshihisa; Yasukawa, Mikio; Takabayashi, Hiroshi; Sugiura, Yasuhito; Suzuki, Katuyoshi; Kamada, Masahiro; Yamada, Yoshitugu; and Nitta, Kazufuku, 5,850,835, Cl. 128-204.180.
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  - Honda, Yukio; Inaba, Nobuyuki; Suzuki, Mikio; Futamoto, Masaaki; Awano, Hiroyuki; Matsuda, Yoshibumi; and Shiroishi, Yoshihiro, 5,851,643, Cl. 428-212.000.
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  - Kasahara, Satoshi, 5,850,823, Cl. 123-572.000.
  - Muramatsu, Kazushige, 5,851,045, Cl. 296-96.210.
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  - Hayashi, Kenji; Koyama, Mikio; Kikuchi, Tomoe; Yamazaki, Hiroshi; Hirose, Naohiro; Suzuki, Shinichi; Iwamoto, Tsutomu; and Nishimori, Yoshiki, 5,851,713, Cl. 430-109.000.
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  - Kawase, Mitsuo; Kawase, Yuji; Yamada, Kazunari; Kobayashi, Kazukiyo; and Suzuki, Yasuo, 5,851,395, Cl. 210-500.270.
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  - Turner, Michael James, 5,852,355, Cl. 318-701.000.
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  - Chen, Yong Min; Kirk, Steven A.; White, Peter W.; and French, Clark D., 5,852,821, Cl. 707-2.000.
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  - Fagnant, Anthony G.; and Sykes, Joseph A., 5,851,333, Cl. 156-252.000.
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  - Cesarone, Morris Daniel, 5,851,207, Cl. 606-69.000.
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  - Iizuka, Takao; Oshida, Mamoru; and Takada, Makoto, 5,851,478, Cl. 264-520.000.
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  - Saito, Hiroshi; Takahashi, Chie; Nishizawa, Masahiro; Yamamoto, Hiroshi; and Takahashi, Kiyobumi, 5,851,970, Cl. 510-181.000.
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  - Kondo, Tetsujiro; Fujimori, Yasuhiro; Nakaya, Hideo; and Takahashi, Kenji, 5,852,470, Cl. 348-448.000.
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  - Kanematsu, Daigoro; Otsuka, Naoji; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,852,454, Cl. 347-43.000.
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  - Takeuchi, Yukihisa; Kimura, Koji; and Takahashi, Masao, 5,852,337, Cl. 310-328.000.
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  - Uchida, Kouji; and Takahashi, Miki, 5,852,082, Cl. 524-101.000.
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- Takano, Junichi, to Kawai Musical Instruments Manufacturing Co., Ltd. Chord progression input/modification device. 5,852,252, Cl. 84-650.000.
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  - Hisamitsu, Shinji; Ishihara, Teruhisa; Tamaki, Katsuya; Kuramoto, Shigefumi; Sakai, Yasuhiro; and Takasaki, Shinji, 5,851,605, Cl. 428-1.000.
- Takasaki, Takeshi: *See—*
  - Muto, Yasutoshi; Moriwaki, Hisataka; Ninomiya, Mitsuo; Adachi, Sadashi; Saito, Akiko; Takasaki, Takeshi; Tanaka, Takuji; Tsurumi, Kaito; Okuno, Masataka; Tomita, Eiichi; Nakamura, Toshiyuki; and Kojima, Takao, 5,852,057, Cl. 514-560.000.
- Takase, Michihiko: *See—*
  - Mizuno, Bunji; Nakaoka, Hiroaki; Takase, Michihiko; and Nakayama, Ichiro, 5,851,906, Cl. 438-513.000.
- Takaya, Soichi: *See—*
  - Matsuda, Koji; Takaya, Soichi; Miyazaki, Yoshihiro; Kurosawa, Kenichi; Yamaguchi, Shinichiro; Ishikawa, Sako; Yamagiwa, Akira; Inoue, Masao; and Kashiwagi, Kenji, 5,852,728, Cl. 395-556.000.
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- Takechi, Nobuyuki; Ohtani, Seiji; and Nagai, Akihiro, to Takeda Chemical Industries, Ltd. Production of microspheres. 5,851,451, Cl. 264-4.100.
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  - Fujishima, Akira; and Fukuda, Tsunehiko, 5,851,990, Cl. 514-12.000.
  - Senoo, Masaharu; Sasada, Reiko; Kurokawa, Tsutomu; and Igarashi, Koichi, 5,852,177, Cl. 530-399.000.
  - Sohda, Takashi; Taketomi, Shigehisa; and Baba, Atsuo, 5,852,039, Cl. 514-311.000.
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  - Masaki, Mitsuo; Miyake, Norihisa; Tendo, Atsushi; Takeda, Hiromitsu; Ishida, Michiko; and Shinozaki, Haruhiko, 5,852,006, Cl. 514-183.000.
- Takehana, Shinichi: *See—*
  - Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.
- Takei, Kazuo: *See—*
  - Harada, Hideomi; and Takei, Kazuo, 5,851,103, Cl. 415-17.000.
- Takei, Masayuki; Yashiki, Yuichi; Akagi, Hideyuki; Ohta, Naoki; Sakata, Yasushi; and Tomonaga, Junichi, to Fuji Xerox Co., Ltd. Developing sleeve for electrophotography and process for image formation. 5,851,719, Cl. 430-126.000.
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  - Toyoda, Keiji; and Takemasa, Noriyuki, 5,852,788, Cl. 701-74.000.
- Takemoto, Takashi: *See—*
  - Fujisawa, Shinichi; and Takemoto, Takashi, 5,852,597, Cl. 369-192.000.
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- Takemura, Yasuhiko: *See—*
  - Ohtani, Hisashi; Takemura, Yasuhiko; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,851,862, Cl. 438-166.000.
  - Suzawa, Hideomi; Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,851,861, Cl. 438-166.000.
- Takenaka, Hideki: *See—*
  - Aoyama, Norihito; Takenaka, Hideki; and Miike, Akira, 5,851,785, Cl. 435-28.000.
- Takenouchi, Masanori: *See—*
  - Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Yamamoto, Hisashi; and Hamasaki, Yuji, 5,852,457, Cl. 347-86.000.
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- Harada, Keizo; Watanabe, Kenichi; Yamanaka, Shosaku; Hayashi, Kiyoshi; Morishita, Nobuyasu; Takeshima, Hiroki; Kaiya, Hideo; and Ikoma, Munehisa, 5,851,599, Cl. 427-531.000.
- Takeshita, Shinji: *See—*
  - Ando, Hiroshi; Saito, Fumiaki; Tanaka, Chikao; Takeshita, Shinji; Hirasawa, Koji; Nagano, Sei; Ito, Hajime; and Yamamura, Shinji, 5,851,258, Cl. 65-329.000.
- Taketomi, Shigehisa: *See—*
  - Sohda, Takashi; Taketomi, Shigehisa; and Baba, Atsuo, 5,852,039, Cl. 514-311.000.
- Takeuchi, Akiko: *See—*
  - Sugiyama, Takashi; Kamimura, Takashi; Masuda, Kenichi; Okada, Masahiro; Ohtsuka, Eiko; Imaizumi, Atsushi; Watanabe, Kunihito; Suga, Tetsuya; Matsumoto, Yohichi; and Takeuchi, Akiko, 5,851,983, Cl. 514-2.000.
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- Takeuchi, Mitsuo, to Takeuchi Precision Works Co., Ltd. Ball linear guide. 5,851,073, Cl. 384-45.000.
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  - Takeuchi, Mitsuo, 5,851,073, Cl. 384-45.000.
- Takeuchi, Terumasa; and Mutsuura, Junji, to CKD Corporation. Fluid pressure cylinders provided with impact absorbing mechanisms. 5,850,776, Cl. 92-85.00R.
- Takeuchi, Yukihisa; Kimura, Koji; and Takahashi, Masao, to NGK Insulators, Ltd. Piezoelectric film-type element. 5,852,337, Cl. 310-328.000.
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  - Matsunaga, Akio; Nakajima, Yuki; Kohno, Hiroshi; Komatsu, Hironori; Edatsugi, Hajime; Iwata, Daiji; and Takezawa, Kimiko, 5,852,011, Cl. 514-228.200.
- Takigawa, Masao: *See—*
  - Ishimaru, Osamu; Takigawa, Masao; and Nomura, Satoshi, 5,850,651, Cl. 8-152.000.
- Takiguchi, Hideki: *See—*
  - Yamada, Taketoshi; Miura, Norio; Suzuki, Naoyo; Kashiwagi, Hiroshi; and Takiguchi, Hideki, 5,851,753, Cl. 430-603.000.
- Takiguchi, Tsuyoshi: *See—*
  - Taya, Masaaki; Okado, Kenji; Fujita, Ryoichi; Kanbayashi, Makoto; Takiguchi, Tsuyoshi; Iida, Wakashi; and Ida, Tetsuya, 5,851,714, Cl. 430-110.000.
- Takizawa, Hiroo: *See—*
  - Mikoshiba, Hisashi; Takizawa, Hiroo; Hosokawa, Junichiro; Ishii, Yoshio; Mihayashi, Keiji; Morigaki, Masakazu; and Sakurazawa, Mamoru, 5,851,754, Cl. 430-607.000.
- Takizawa, Naoki: *See—*
  - Ohkubo, Keiji; and Takizawa, Naoki, 5,851,628, Cl. 428-141.000.
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- Tamai, Hironori: *See—*
  - Kojima, Makoto; Tamai, Hironori; Kawaguchi, Yoshihide; Tanaka, Yoshikazu; and Kojima, Katsuhide, 5,852,119, Cl. 525-123.000.
- Tamaki, Katsuya: *See—*
  - Hisamitsu, Shinji; Ishihara, Teruhisa; Tamaki, Katsuya; Kuramoto, Shigefumi; Sakai, Yasuhiro; and Takasaki, Shinji, 5,851,605, Cl. 428-1.000.
- Tamari, Kousaku; and Doi, Takanori, to Toda Kogyo Corporation. Magnetic recording medium and process for producing the same. 5,851,582, Cl. 427-130.000.
- Tamatani, Masaaki: *See—*
  - Matsuda, Naotoshi; Tamatani, Masaaki; Okumura, Miwa; Albessard, Keiko; Kawasaki, Kazuhiro; Yokota, Seiji; Motoki, Shinjiro; and Inoue, Yoshiaki, 5,851,428, Cl. 252-301.40R.
- Tamba, Nobuo; Kusunoki, Mitsugu; Miyazaki, Takeshi; Masaki, Akira; and Yamagiwa, Akira, to Hitachi, Ltd. Variable logic circuit and semiconductor integrated circuit using the same. 5,852,365, Cl. 326-49.000.
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  - Raz, Yoav; and Tamer, Philip. 5,852,715, Cl. 395-200.310.
- Tamme, Rainer: *See—*
  - Bauer, Henri; Buck, Reiner; Seitz, Antje; and Tamme, Rainer, 5,851,460, Cl. 264-43.000.
- Tamminen, Esa: *See—*
  - Järvelin, Harri; Lindqvist, Petri; and Tamminen, Esa, 5,852,220, Cl. 568-697.000.
- Tamura, Kazutaka: *See—*
  - Oosedo, Hiroki; Kataoka, Mutsuo, deceased; Kanetsuki, by Shigeyoshi, legal representative; Tamura, Kazutaka; and Asano, Masaya, 5,851,739, Cl. 430-331.000.
- Tamura, Masayuki: *See—*
  - Takahashi, Shunzo; and Tamura, Masayuki, 5,850,711, Cl. 49-351.000.
- Tamura, Yuuki: *See—*
  - Yanagisawa, Munehisa; Higuchi, Susumu; Tamura, Yuuki; Nakamura, Akio; and Otaki, Toshio. 5,851,850, Cl. 438-46.000.
- Tanabe, Hiroshi: *See—*
  - Sakai, Hideo; Motai, Kojiro; Kishi, Satoru; Morita, Katsuyuki; Hosoyama, Nobuyuki; and Tanabe, Hiroshi, 5,851,619, Cl. 428-57.000.
- Tanabe, Shusaku: *See—*
  - Koshida, Yoshinori; Tanabe, Shusaku; and Murakami, Satoshi, 5,852,463, Cl. 347-171.000.
- Tanaka, Akira, to Yamaha Hatsudoki Kabushiki Kaisha. Shock absorber. 5,850,896, Cl. 188-266.200.
- Tanaka, Atsushi: *See—*
  - Ikeda, Sadao; Kito, Makoto; Taguchi, Yoshio; Tanaka, Atsushi; Inoue, Shigeki; Murata, Naoyuki; Ninomiya, Shinichi; and Kimura, Yoshitaka, 5,851,065, Cl. 366-76.600.
- Tanaka, Chikao: *See—*
  - Ando, Hiroshi; Saito, Fumiaki; Tanaka, Chikao; Takeshita, Shinji; Hirasawa, Koji; Nagano, Sei; Ito, Hajime; and Yamamura, Shinji, 5,851,258, Cl. 65-329.000.
- Tanaka, Hiroshi: *See—*
  - Yamamura, Nobumichi; and Tanaka, Hiroshi, 5,850,652, Cl. 14-18.000.
- Tanaka, Katsuji: *See—*
  - Akai, Hideko; Tanaka, Katsuji; Fujimoto, Masahiko; and Sato, Noboru, 5,852,164, Cl. 528-279.000.
- Tanaka, Meishi; and Sugiyama, Shuji, to Idemitsu Kosan Co., Ltd. Method of refining crude oil. 5,851,381, Cl. 208-210.000.
- Tanaka, Takeshi; and Mikami, Yoshiro, to Hitachi, Ltd. Semiconductor device and liquid crystal display apparatus using the same. 5,851,440, Cl. 257-66.000.
- Tanaka, Takuji: *See—*
  - Muto, Yasutoshi; Moriwaki, Hisataka; Ninomiya, Mitsuo; Adachi, Sadashi; Saito, Akiko; Takasaki, Takeshi; Tanaka, Takuji; Tsurumi, Kaito; Okuno, Masataka; Tomita, Eiichi; Nakamura, Toshiyuki; and Kojima, Takao, 5,852,057, Cl. 514-560.000.
- Tanaka, Toshiaki: *See—*
  - Araki, Yasushi; Mizuno, Tatsuji; and Tanaka, Toshiaki, 5,850,735, Cl. 60-274.000.
- Tanaka, Yoshiaki; Hagiwara, Seigo; Osaki, Norikazu; Kimoto, Kazuo; and Kawai, Naoki, to Matsushita Electric Industrial Co., Ltd. Arc welding and arc plasma cutting machines having improved DC high-voltage generator. 5,852,278, Cl. 219-130.400.
- Tanaka, Yoshikazu: *See—*
  - Kojima, Makoto; Tamai, Hironori; Kawaguchi, Yoshihide; Tanaka, Yoshikazu; and Kojima, Katsuhide, 5,852,119, Cl. 525-123.000.
- Tancrell, Roger H.: *See—*
  - Wilson, David T.; and Tancrell, Roger H., 5,852,589, Cl. 367-157.000.
- Tandem Computers Incorporated: *See—*
  - Fishler, Leonard R.; and Zargham, Bahman, 5,852,719, Cl. 395-200.460.
- Tang, Chaucer C.: *See—*
  - Donovan, David Herbert; Lane, Gregg Allen; and Tang, Chaucer C., 5,851,590, Cl. 427-265.000.
- Tang, Ching W.: *See—*
  - Grande, William J.; Fleming, Paul J.; and Tang, Ching W., 5,851,709, Cl. 430-7.000.
- Tang, Ping-Wah; Cowan, Stanley W.; Decker, David J.; and Rosiek, Thomas A., to Eastman Kodak Company. Photographic materials and process comprising a particular acylacetanilide yellow dye-forming coupler. 5,851,748, Cl. 430-557.000.
- Tang, Yuan: *See—*
  - Cleveland, Lee E.; Tang, Yuan; Su, Jonathan; Chang, Chi; and Chang, Chung K., 5,852,582, Cl. 365-222.000.
- Taniguchi, Tadashi; and Kojima, Chiaki, to Sony Corporation. Semiconductor optical device for code reader. 5,852,287, Cl. 235-462.000.
- Tanimizu, Toru: *See—*
  - Komuro, Katsuhiro; Kojima, Yoshitaka; Kurosawa, Yukio; Koguchi, Yoshio; Tanimizu, Toru; Hakamata, Yoshimi; and Endo, Shunkichi, 5,852,266, Cl. 218-119.000.
- Taniwatari, Tsuyoshi: *See—*
  - Suzuki, Makoto; Aoki, Masahiro; Takahashi, Makoto; and Taniwatari, Tsuyoshi, 5,852,304, Cl. 257-17.000.
- Tanizawa, Tetsu: *See—*
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Yale University: *See—*
- Schatz, David G., 5,851,796, Cl. 435-69.100.

Yamada, Kazuki; and Tsunoda, Hirotaka, to Dai Nippon Printing Co., Ltd. Paper container for liquid and process for producing the same. 5,851,608, Cl. 428-34.200.

Yamada, Kazunari: *See—*
- Kawase, Mitsuo; Kawase, Yuji; Yamada, Kazunari; Kobayashi, Kazukiyo; and Suzuki, Yasuo, 5,851,395, Cl. 210-500.270.

Yamada, Ken'ichiro, to Fujitsu Limited. Spinvalve magnetoresistive head and method of manufacturing the same and magnetic recording/reproducing apparatus. 5,852,531, Cl. 360-113.000.

Yamada, Naoto: *See—*
- Kiuchi, Toshihiro; Sano, Kohtaro; Sato, Manabu; Kawamura, Jyo; and Yamada, Naoto, 5,851,975, Cl. 510-320.000.

Yamada, Taketoshi; Miura, Norio; Suzuki, Naoyo; Kashiwagi, Hiroshi; and Takiguchi, Hideki, to Konica Corporation. Silver halide photographic light-sensitive material. 5,851,753, Cl. 430-603.000.

Yamada, Yoshitugu: *See—*
- Takaki, Toshihisa; Yasukawa, Mikio; Takabayashi, Hiroshi; Sugiura, Yasuhito; Suzuki, Katuyoshi; Kamada, Masahiro; Yamada, Yoshitugu; and Nitta, Kazufuku, 5,850,835, Cl. 128-204.180.

Yamada, Yousuke; Fujioka, Yoshio; Isono, Ryuichi; Takahashi, Nobuo; Hayashi, Akio; Ogawa, Koichi; Watanabe, Norio; and Satoh, Yutaka, to Zenken Co., Ltd.; Kinzolu Kako Gijutsu Kenkyusho Co., Ltd.; and Kuraray Co., Ltd. Washing apparatus and washing method. 5,851,305, Cl. 134-10.000.

Yamagiwa, Akira: *See—*
- Matsuda, Koji; Takaya, Soichi; Miyazaki, Yoshihiro; Kurosawa, Kenichi; Yamaguchi, Shinichiro; Ishikawa, Sako; Yamagiwa, Akira; Inoue, Masao; and Kashiwagi, Kenji, 5,852,728, Cl. 395-556.000.
- Tamba, Nobuo; Kusunoki, Mitsugu; Miyazaki, Takeshi; Masaki, Akira; and Yamagiwa, Akira, 5,852,365, Cl. 326-49.000.

Yamaguchi, Nobuyuki: *See—*
- Murayama, Tomohiro; Yamaguchi, Nobuyuki; Ono, Toshiro; and Asano, Shinichi, 5,850,979, Cl. 242-279.000.

Yamaguchi, Noriko: *See—*
- Sakata, Yuushi; Inokoshi, Junichi; Tachizawa, Osamu; Katoh, Tohru; Nishimoto, Uichiro; Ohtawa, Yasuki; Sakaguchi, Akira; Sotoya, Kohshiroh, deceased; and Yamaguchi, Noriko, 5,851,982, Cl. 510-515.000.

Yamaguchi, Seiichi: *See—*
- Ito, Fumio; Yamaguchi, Seiichi; Sasaki, Fujio; and Kosugi, Hiroaki, 5,852,784, Cl. 455-552.000.

Yamaguchi, Shinichiro: *See—*
- Matsuda, Koji; Takaya, Soichi; Miyazaki, Yoshihiro; Kurosawa, Kenichi; Yamaguchi, Shinichiro; Ishikawa, Sako; Yamagiwa, Akira; Inoue, Masao; and Kashiwagi, Kenji, 5,852,728, Cl. 395-556.000.

Yamaguchi, Takayuki: *See—*
- Sato, Yukito; Yamaguchi, Takayuki; Shoji, Hiroyoshi; Azumi, Junichi; and Kaminishi, Morimasa, 5,852,239, Cl. 73-204.260.

Yamaguchi, Yoshio: *See—*
- Tooda, Toshio; Yamaguchi, Yoshio; Kuwahara, Nobuo; Sato, Mituru; Watanabe, Haruyasu; Nagahara, Akira; Sasaki, Sachio; Ishiyama, Yoshiya; Kera, Hiroshi; Nishido, Masanori; and Hanzawa, Hisashi, 5,852,757, Cl. 399-119.000.

Yamaha Corporation: *See—*
- Nagura.,Masahiko, 5,851,856, Cl. 438-130.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
- Tanaka, Akira, 5,850,896, Cl. 188-266.200.

Yamaji, Michio: *See—*
- Ohmi, Tadahiro; Yamaji, Michio; Ikeda, Nobukazu; and Morokoshi, Hiroshi, 5,850,853, Cl. 137-606.000.

Yamakawa, Kazuto: *See—*
- Kaido, Hiroyuki; Yamakawa, Kazuto; Watanabe, Jiro; Shida, Zenichiro; and Hashimura, Yoshiaki, 5,851,323, Cl. 152-510.000.

Yamamoto, Hiroshi; Okamura, Takashi; and Iio, Satoshi, to NGK Spark Plug Co., Ltd. Diamond coated article and process for producing thereof. 5,851,658, Cl. 428-334.000.

Yamamoto, Hiroshi: *See—*
- Saito, Hiroshi; Takahashi, Chie; Nishizawa, Masahiro; Yamamoto, Hiroshi; and Takahashi, Kiyobumi, 5,851,970, Cl. 510-181.000.

Yamamoto, Hisashi: *See—*
- Kotaki, Yasuo; Takenouchi, Masanori; Saikawa, Hideo; Yamamoto, Hisashi; and Hamasaki, Yuji, 5,852,457, Cl. 347-86.000.

Yamamoto, Tadashi; Masuya, Chisato; and Nagata, Norinari, to Toyoda Gosei Co., Ltd. Air bag pad with decorative device. 5,851,022, Cl. 280-728.300.

Yamamoto, Takumi: *See—*
- Okada,. Yuji; Okada, Masamichi; Ishikawa, Tsutomu; Yamamoto, Takumi; Sawamura, Tatsuhiko; Hayashi, Norio; and Ito, Takayuki, 5,850,868, Cl. 164-132.000.

Yamamoto, Tetsu: *See—*
- Padmanaban, Munirathna; Pawlowski, Georg; Kinoshita, Yoshiaki; Okazaki, Hiroshi; Masuda, Seiya; Funato, Satoru; and Yamamoto, Tetsu, 5,852,128, Cl. 525-328.800.

Yamamoto, Tetsuichiro: *See—*
- Kubo, Shinya; Yamamoto, Tetsuichiro; and Matsumoto, Yasushi, 5,852,686, Cl. 382-313.000.

Yamamoto, Yasuhiro, to Kabushiki Kaisha Meidensha. Power inverter having three or more parallel driven PWM-type power inverting units. 5,852,554, Cl. 363-71.000.

Yamamoto, Yasunori: *See—*
- Sato, Yoshio; Nomura, Masahide; Yamamoto, Yasunori; and Toyama, Eiji, 5,850,740, Cl. 60-676.000.

Yamamura, Junichi: *See—*
- Takada, Yukihiro; Yamamura, Junichi; Goto, Masaaki; and Aoe, Seiichiro, 5,851,986, Cl. 514-2.000.

Yamamura, Nobumichi; and Tanaka, Hiroshi, to Hitachi Zosen Corporation. Method of suspending bridge-girder of suspension bridge. 5,850,652, Cl. 14-18.000.

Yamamura, Shinji: *See—*
- Ando, Hiroshi; Saito, Fumiaki; Tanaka, Chikao; Takeshita, Shinji; Hirasawa, Koji; Nagano, Sei; Ito, Hajime; and Yamamura, Shinji, 5,851,258, Cl. 65-329.000.

Yamanaka, Hideo, to Sony Corporation. Photonic device and process for fabricating the same. 5,851,847, Cl. 438-26.000.

Yamanaka, Hiroshi: *See—*
- Nishii, Junji; and Yamanaka, Hiroshi, 5,851,938, Cl. 501-54.000.

Yamanaka, Shosaku: *See—*
- Harada, Keizo; Watanabe, Kenichi; Yamanaka, Shosaku; Hayashi, Kiyoshi; Morishita, Nobuyasu; Takeshima, Hiroki; Kaiya, Hideo; and Ikoma, Munehisa, 5,851,599, Cl. 427-531.000.

Yamanaka, Toru; Sotokawa, Mitsunari; and Nakashima, Shinobu, to Toray Industries, Inc. Composite particulate material for resin reinforcement, production thereof, and reinforced resin composition incorporated therewith. 5,852,108, Cl. 524-790.000.

Yamanashi, Fumiyoshi: *See—*
- Oka, Osamu; Nishigaya, Takeshi; and Yamanashi, Fumiyoshi, 5,851,616, Cl. 428-41.800.

Yamashita, Hiroki; Shinno, Tatsuya; and Hirano, Yoshihito, to Minolta Co., Ltd. Image forming system and finisher. 5,852,765, Cl. 399-407.000.

Yamashita, Tomohiko: *See—*
- Komori, Shigeki; Yamashita, Tomohiko; and Inuishi, Masahide, 5,852,327, Cl. 257-748.000.

Yamashita, Tsutomu Tom: *See—*
- Chen, Tu; Yamashita, Tsutomu Tom; Chen, John Ko-Jen; Ranjan, Rajiv Yadav; Kadokura, Keith; and Yuen, Ting Joseph, 5,851,688, Cl. 428-694.00T.

Yamashita, Yukihiro; Iida, Hisashi; and Hasegawa, Jun, to Denso Corporation. Apparatus and method for controlling oxygen sensor heating. 5,852,228, Cl. 73-23.320.

Yamato, Koji: *See—*
- Sato, Kazuaki; and Yamato, Koji, 5,852,656, Cl. 379-93.210.

Yamauchi, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Phase adjusting circuit, system including the same and phase adjusting method. 5,852,380, Cl. 327-243.000.

Yamauchi, Toyoaki; and Kamiyama, Yasuyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Aqueous, silicone-modified acrylate polymer emulsion. 5,852,095, Cl. 524-460.000.

Yamauchi, Tsukasa: *See—*

Hosoya, Rituko; Yamauchi, Tsukasa; and Matsuda, Yasumasa, 5,852,447, Cl. 345-468.000.
Yamazaki, Etsuo; and Masuda, Teruo, to Fanuc Ltd. Laser machining resuming method. 5,852,276, Cl. 219-121.620.
Yamazaki, Hiroshi: *See—*
Hayashi, Kenji; Koyama, Mikio; Kikuchi, Tomoe; Yamazaki, Hiroshi; Hirose, Naohiro; Suzuki, Shinichi; Iwamoto, Tsutomu; and Nishimori, Yoshiki, 5,851,713, Cl. 430-109.000.
Yamazaki, Nobuo: *See—*
Kouno, Masakatsu; Ichikawa, Katsuhisa; Shinokawa, Masahide; and Yamazaki, Nobuo, 5,850,886, Cl. 180-6.240.
Yamazaki, Shunpei: *See—*
Ohtani, Hisashi; Takemura, Yasuhiko; Miyanaga, Akiharu; and Yamazaki, Shunpei, 5,851,862, Cl. 438-166.000.
Suzawa, Hideomi; Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,851,861, Cl. 438-166.000.
Yamori, Tsunefumi; Matsuzawa, Shigeji; and Isu, Yutaka, to Oji Paper Co., Ltd. Heat sensitive recording material. 5,851,951, Cl. 503-216.000.
Yanagisawa, Munehisa; Higuchi, Susumu; Tamura, Yuuki; Nakamura, Akio; and Otaki, Toshio, to Shin-Etsu Handotai Co., Ltd. Method for fabricating a gap type semiconductor substrate of red light emitting devices. 5,851,850, Cl. 438-46.000.
Yanase, Yukichi, to Anritsu Corporation. Capsule weight measuring apparatus. 5,852,259, Cl. 177-145.000.
Yancopoulos, George D.: *See—*
Valenzuela, David M.; Jones, Pamela F.; and Yancopoulos, George D., 5,851,797, Cl. 435-69.100.
Yang, Ching-Nan; and Peng, Li-Chun, to Mosel Vitelic Inc. Polyload sram memory cell with low stanby current. 5,852,573, Cl. 365-154.000.
Yang, Ching-Nan: *See—*
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Yang, Fu-Liang: *See—*
Kuo, Chan-Jen; and Yang, Fu-Liang, 5,851,874, Cl. 438-253.000.
Yang, Mary M.: *See—*
Youvan, Douglas C.; and Yang, Mary M., 5,852,498, Cl. 356-417.000.
Yang, Yeong-Show; Porato, Francette; and Lequeux, Serge, to Cray Valley S.A. Process for production of a composite product. 5,851,667, Cl. 428-396.000.
Yang, Zhi: *See—*
Vlassara, Helen; Yang, Zhi; and Cerami, Anthony, 5,852,174, Cl. 530-387.900.
Yano, Kentaro: *See—*
Kanematsu, Daigoro; Otsuka, Naoji; Yano, Kentaro; Takahashi, Kiichiro; Nishikori, Hitoshi; and Iwasaki, Osamu, 5,852,454, Cl. 347-43.000.
Yano, Masaru: *See—*
Le, Binh Quang; Chen, Pau-Ling; Hollmer, Shane Charles; Kawamura, Shoichi; Chung, Michael Shingche; Leung, Vincent C.; and Yano, Masaru, 5,852,576, Cl. 365-185.330.
Yano, Toru; Komoriya, Isao; Yasui, Yuji; Yonekura, Takahiro; Asano, Yutaka; Tatara, Yusuke; Kimura, Eisuke; and Hanada, Kohei, to Honda Giken Kogyo Kabushiki Kaisha. Control system and control process in internal combustion engine. 5,850,815, Cl. 123-417.000.
Yanobu, Toshio, to Taiyo Elecs Co., LTD.; and OKI Customer Advanced-Technology Co., LTD. Injection needle safety disposal apparatus. 5,852,267, Cl. 219-68.000.
Yao, Xin: *See—*
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Bhave, Aparna V.; Kolb, William B.; Milbourn, Thomas M.; Wallace, Lawrence B.; and Yapel, Robert A., 5,851,137, Cl. 451-28.000.
Yashiki, Seiji: *See—*
Nishioka, Futoshi; Yashiki, Seiji; and Hosokai, Tetsushi, 5,851,376, Cl. 205-784.500.
Yashiki, Yuichi: *See—*
Takei, Masayuki; Yashiki, Yuichi; Akagi, Hideyuki; Ohta, Naoki; Sakata, Yasushi; and Tomonaga, Junichi, 5,851,719, Cl. 430-126.000.
Yasuda, Kazuharu: *See—*
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Katsumata, Ryota; Hayasaka, Nobuo; Yasuda, Naoki; Miyajima, Hideshi; Higashikawa, Iwao; and Hotta, Masaki, 5,851,842, Cl. 438-9.000.
Yasui, Ken K., to McDonnell Douglas Corporation. Lightweight superplastically formed, diffusion bonded panel structure and process of manufacture. 5,850,722, Cl. 52-793.110.
Yasui, Yuji: *See—*
Yano, Toru; Komoriya, Isao; Yasui, Yuji; Yonekura, Takahiro; Asano, Yutaka; Tatara, Yusuke; Kimura, Eisuke; and Hanada, Kohei, 5,850,815, Cl. 123-417.000.
Yasukawa, Mikio: *See—*
Takaki, Toshihisa; Yasukawa, Mikio; Takahayashi, Hiroshi; Sugiura, Yasuhito; Suzuki, Katuyoshi; Kamada, Masahiro; Yamada, Yoshitugu; and Nitta, Kazufuku, 5,850,835, Cl. 128-204.180.
Yasuno, Michiaki; and Rokutan, Minoru, to Fuji Xerox Co., Ltd. Charging member. 5,851,657, Cl. 428-332.000.
Yasutomi, Yoshiyuki: *See—*
Oyagi, Tomohito; Nakagawa, Mitsuo; Sakai, Junji; Yasutomi, Yoshiyuki; and Okouchi, Takahiko, 5,851,675, Cl. 428-426.000.
Yasutoshi Muto: *See—*
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Yazaki Corporation: *See—*
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Maejima, Takamichi, 5,850,694, Cl. 29-884.000.
Yazawa, Yoshihiro; Ujiro, Takumi; Satoh, Susumu; Kumazawa, Shintaro; Kobayashi, Makoto; and Kasai, Masayuki, to Kawasaki Steel Corporation. Ferrite stainless steel sheet having less planar anisotropy and excellent anti-ridging characteristics and process for producing same. 5,851,316, Cl. 148-325.000.
Yeh, C. Grace: *See—*
Ko, Jone-Long; Higgins, Paul J.; and Yeh, C. Grace, 5,851,528, Cl. 424-185.100.
Yeh, Shih-Ping, to Twinhead International Corp. Method and apparatus for connecting a plug-and-play peripheral device to a computer. 5,852,743, Cl. 395-838.000.
Yen, Juei-Hsiang. PCI/ISA bus single board computer card/CPU card and backplane using eisa bus connectors and eisa bus slots. 5,852,725, Cl. 395-282.000.
Yeomans, Michael Anthony: *See—*
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Yeske, Philip E.: *See—*
Jonsson, E. Haakan; Wicks, Douglas A.; Yeske, Philip E.; and Gindin, Lyuba K., 5,852,203, Cl. 548-314.100.
Yeung, Alan C.: *See—*
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Yeung, Wai Man: *See—*
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YKK Corporation: *See—*
Murasaki, Ryuichi, 5,851,467, Cl. 264-167.000.
Yokohama, Itaru: *See—*
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Yokohama Rubber Co., Ltd., The: *See—*
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Yokohama Rubber Co., Ltd., The: *See—*
Kaido, Hiroyuki; Yamakawa, Kazuto; Watanabe, Jiro; Shida, Zenichiro; and Hashimura, Yoshiaki, 5,851,323, Cl. 152-510.000.
Midorikawa, Shingo; Kawakami, Kinya; and Miura, Eri, 5,851,321, Cl. 152-209.00R.
Yokota, Seiichi; Hashimoto, Hideyuki; and Takahashi, Kazuhiko, to Asahi Glass Company Ltd. Method of producing a plate-like material with a resinous member for a window. 5,851,470, Cl. 264-219.000.
Yokota, Seiji: *See—*
Matsuda, Naotoshi; Tamatani, Masaaki; Okumura, Miwa; Albessard, Keiko; Kawasaki, Kazuhiro; Yokota, Seiji; Motoki, Shinjiro; and Inoue, Yoshiaki, 5,851,428, Cl. 252-301.40R.
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Yokozawa, Hirokazu: *See—*
Ichitou, Toshikatsu; Ishioka, Hideyuki; Okamura, Takahiro; Nakamura, Atsuro; Takehana, Shinichi; Yokozawa, Hirokazu; and Hizawa, Toshiharu, 5,850,684, Cl. 29-748.000.
Yoneda, Norihiro; and Shikata, Kiyotaka, to Fujitsu Limited. Wireless LAN system. 5,852,405, Cl. 340-825.020.
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Yano, Toru; Komoriya, Isao; Yasui, Yuji; Yonekura, Takahiro; Asano, Yutaka; Tatara, Yusuke; Kimura, Eisuke; and Hanada, Kohei, 5,850,815, Cl. 123-417.000.
Yonezu, Ikuo: *See—*
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Yoo, Jin-Nyoung; Kim, Myung-Man; and Chang, Yeong-Rae, to LG Chemical Ltd. Process for preparing deodorized resin for dry toner. 5,852,147, Cl. 526-224.000.
Yoon, Hyun Nam: *See—*
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York, Peter: *See—*
Hanna, Mazen; and York, Peter, 5,851,453, Cl. 264-5.000.
Yoshida, Masayuki, to Canon Kabushiki Kaisha. Character processing apparatus and a character processing method. 5,852,680, Cl. 382-258.000.
Yoshida, Mikio: *See—*
Takeuchi, Atsushi; Igarashi, Shuichi; and Yoshida, Mikio, 5,851,729, Cl. 430-270.120.
Yoshida, Norio; and Kimura, Hiroshi, to Keytron Co., Ltd. Respiration aiding device. 5,850,834, Cl. 128-204.120.
Yoshida, Sunao: *See—*

Hiraishi, Masahiro; Yoshida, Toshihiko; Waki, Hiroaki; Yoshida, Sunao; and Kuroda, Shinichi, 5,852,302, Cl. 250-292.000.
Yoshida, Toshihiko: *See—*
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Yoshikawa, Hirohisa: *See—*
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Yoshikawa, Osamu, to SMK Corporation. Pressure sensitive three-dimensional tablet and manipulation date detecting method therefor. 5,852,260, Cl. 178-18.010.
Yoshikawa, Satoru; and Tanizawa, Tetsu, to Fujitsu Limited. Method of verifying integrated circuit operation by comparing stored data structures corresponding to integrated circuit logic cells. 5,852,445, Cl. 345-440.000.
Yoshimatsu, Takenobu: *See—*
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Yoshimoto, Kazunari: *See—*
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Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Circularly polarized wave-linearly polarized wave transducer. 5,852,390, Cl. 333-21.00A.
Yoshinaga, Tohru: *See—*
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Yoshino, Hitoshi; Miura, Kyo; and Kondo, Yuji, to Canon Kabushiki Kaisha. Recording medium and ink-jet recording method using the same. 5,851,654, Cl. 428-328.000.
Yoshino Kogyosho Co., Ltd.: *See—*
Iizuka, Takao; Oshida, Mamoru; and Takada, Makoto, 5,851,478, Cl. 264-520.000.
Yoshino, Motoaki, to Canon Kabushiki Kaisha. Image communication apparatus. 5,852,500, Cl. 358-440.000.
Yoshioka, Haruyuki: *See—*
Seki, Takahito; and Yoshioka, Haruyuki, 5,852,525, Cl. 360-51.000.
Yoshiume, Naoki; and Miwa, Makoto, to Nippondenso Co., Ltd. Fuel supply apparatus having abnormality detecting function. 5,850,818, Cl. 123-497.000.
Yoshiura, Syoichiro: *See—*
Kida, Hiroshi; and Yoshiura, Syoichiro, 5,852,764, Cl. 399-401.000.
Yoshizaki, Kouji; and Konya, Shogo, to Toyota Jidosha Kabushiki Kaisha. Electrically heated catalytic converter for an engine. 5,851,495, Cl. 422-174.000.
Yoshizato, Katsutoshi: *See—*
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Yost, Vincent G.: *See—*
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Youil, Rima: *See—*
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Young, Bruce Lynn; and Young, Katherine Marie. Locking wire connector. 5,851,124, Cl. 439-427.000.
Young, Dennis C.; Chlystek, Stanley J.; Malloy, Robert; and Rios, Ivan, to Lear Corporation. Recycling of carpet scrap. 5,852,115, Cl. 525-64.000.
Young, Douglas: *See—*
Heym, Beate; Cole, Stewart; Young, Douglas; Zhang, Ying; Honore, Nadine; Telenti, Amalio; and Bodmer, Thomas, 5,851,763, Cl. 435-6.000.
Young, Fredric S., to Chroma Graphics, Inc. Method for general image manipulation and composition. 5,852,673, Cl. 382-164.000.
Young, Katherine Marie: *See—*
Young, Bruce Lynn; and Young, Katherine Marie, 5,851,124, Cl. 439-427.000.
Young, Lydia J.; Matthiesen, Richard H.; Selitser, Simon; and Os, Ron van, to Watkins-Johnson Company. Gas injection system for semiconductor processing. 5,851,294, Cl. 118-715.000.
Young, Mark E.: *See—*
Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,852,458, Cl. 347-86.000.
Young, Steven D.: *See—*
Askew, Ben C.; Hartman, George D.; Duggan, Mark E.; Young, Steven D.; Hutchinson, John H.; Wai, John S.; Egbertson, Melissa S.; Vassallo, Laura M.; Libby, Laura A.; Krause, Amy E.; Halczenko, Wasyl; and Ihle, Nathan C., 5,852,045, Cl. 514-318.000.
Young, William C.; Darr, Richard C.; and Behm, Dale H., to Plastipak Packaging, Inc. Plastic blow molded freestanding container. 5,850,931, Cl. 215-375.000.
Youvan, Douglas C.; and Yang, Mary M., to KAIROS Scientific Inc. Optical instrument having a variable optical filter. 5,852,498, Cl. 356-417.000.
Yu, David H.: *See—*
Yu, Seymour H.; and Yu, David H., 5,852,414, Cl. 341-22.000.
Yu, Der-Jang: *See—*
Su, Alvin Wen-Yu; Chang, Ching-Min; Chien, Liang-Chen; and Yu, Der-Jang, 5,852,251, Cl. 84-645.000.
Yu, Seymour H.; and Yu, David H. 4-way triangular-shaped alphanumeric keyboard. 5,852,414, Cl. 341-22.000.
Yu, Stella S.: *See—*
Chen, Barbara B.; Chen, Helen Y.; Clare, Michael; Docter, Stephen H.; Khanna, Ish Kumar; Koszyk, Francis Jan; Malecha, James W.; Miyashiro, Julie Marion; Penning, Thomas D.; Rico, Joseph G.; Ruminski, Peter G.; Russell, Mark A.; Weier, Richard Mathias; Xu, Xiangdong; Yu, Stella S.; and Yu, Yi, 5,852,210, Cl. 562-439.000.
Yu, Yi: *See—*
Chen, Barbara B.; Chen, Helen Y.; Clare, Michael; Docter, Stephen H.; Khanna, Ish Kumar; Koszyk, Francis Jan; Malecha, James W.; Miyashiro, Julie Marion; Penning, Thomas D.; Rico, Joseph G.; Ruminski, Peter G.; Russell, Mark A.; Weier, Richard Mathias; Xu, Xiangdong; Yu, Stella S.; and Yu, Yi, 5,852,210, Cl. 562-439.000.
Yuasa Koki Co., Ltd: *See—*
Hojo, Yukinori, 5,850,713, Cl. 52-115.000.
Yudin, Sergey: *See—*
Samsavar, Amin; McWaid, Thomas; and Yudin, Sergey, 5,852,232, Cl. 73-105.000.
Yuen, Ting Joseph: *See—*
Chen, Tu; Yamashita, Tsutomu Tom; Chen, John Ko-Jen; Ranjan, Rajiv Yadav; Kadokura, Keith; and Yuen, Ting Joseph, 5,851,688, Cl. 428-694.00T.
Yujiri, Mikio L.; Mussetto, Michael S.; and Uyeno, Gerald P., to TRW Inc. Rotating mirror drum radiometer imaging system. 5,852,419, Cl. 342-351.000.
Yumoto, Daijiro, to Unisia Jecs Corporation. Vehicle acceleration slip control system. 5,852,330, Cl. 290-40.00R.
Zaby, Gottfried; Casper, Clemens; Kohlgrüber, Klemens; and Obermann, Hugo, to Bayer Aktiengesellschaft. Process for the production of polycarbonate agglomerate. 5,852,157, Cl. 528-196.000.
Zachert, Stefan: *See—*
Matscheko, Horst; and Zachert, Stefan, 5,851,684, Cl. 428-537.500.
Zaffaroni, Alejandro: *See—*
Moore, Kevin W.; and Zaffaroni, Alejandro, 5,851,801, Cl. 435-69.600.
Zäh, Matthias; Pfahler, Gerhard; Gaa, Karl; and Keck-Antoine, Klaus, to Hoechst Aktiengesellschaft. Plastic with reduced sulfur uptake rate. 5,852,159, Cl. 528-363.000.
Zainuddin, Zainul Fadziruddin Bin: *See—*
McAdam, Ruth Anne; Dale, Jeremy Watson; Zainuddin, Zainul Fadziruddin Bin; and Catty, David, 5,851,761, Cl. 435-6.000.
Zapata, Elizabeth: *See—*
Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,852,458, Cl. 347-86.000.
Zargham, Bahman: *See—*
Fishler, Leonard R.; and Zargham, Bahman, 5,852,719, Cl. 395-200.460.
Zart, Bryan: *See—*
Rieder, Eric M.; Gonzalez, Frank; Schulhauser, Randal C.; and Zart, Bryan, 5,851,221, Cl. 607-93.000.
Zawada, Joseph M.; and Zawada, Sandra K., to Composite Industries of America, Inc. Lightweight, waterproof, insulating, cementitious compositions and methods for forming and using such compositions. 5,852,077, Cl. 524-8.000.
Zawada, Sandra K.: *See—*
Zawada, Joseph M.; and Zawada, Sandra K., 5,852,077, Cl. 524-8.000.
Zedel: *See—*
Hede, Jean Marc; and Petzl, Paul, 5,850,893, Cl. 182-193.000.
Zeigler, Ronald F. Spilled fuel collector for boats. 5,850,858, Cl. 141-86.000.
Zeneca Limited: *See—*
Javdani, Kambiz; Nady, Louie A.; and Rodriguez, Gilbert, 5,852,215, Cl. 564-277.000.
Williams, Alfred Glyn; Bowden, Martin Charles; and Brown, Stephen Martin, 5,852,222, Cl. 570-134.000.
Zenke, Masanobu, to NEC Corporation. Semiconductor device fabrication method for preventing tungsten from removing. 5,851,581, Cl. 427-97.000.
Zenken Co., Ltd.: *See—*
Yamada, Yousuke; Fujioka, Yoshio; Isono, Ryuichi; Takahashi, Nobuo; Hayashi, Akio; Ogawa, Koichi; Watanabe, Norio; and Satoh, Yutaka, 5,851,305, Cl. 134-10.000.
Zens, Timothy J.: *See—*
Steinbrecher, Lester E.; and Zens, Timothy J., 5,851,371, Cl. 204-486.000.
Zepeda, Alfred: *See—*
Scheffelin, Joseph E.; Hunt, David S.; Young, Mark E.; Zapata, Elizabeth; Zepeda, Alfred; Schultz, Christopher J.; and Fong, Jon, 5,852,458, Cl. 347-86.000.
Zervos, Antonis S.: *See—*
Brent, Roger; and Zervos, Antonis S., 5,852,169, Cl. 530-350.000.
Zevo Golf Co., Inc.: *See—*
Wood, Donald C.; and Means, David W., 5,851,155, Cl. 473-246.000.
Zhang, Hong: *See—*
Bandman, Olga; Goli, Surya K.; and Zhang, Hong, 5,851,799, Cl. 435-69.100.
Zhang, Michael: *See—*
Chan, Chi-Ming; Zhang, Michael; Chandler, Daniel; Fang, Shou-Mean; Siden, Dennis; and Thompson, Mark, 5,852,397, Cl. 338-22.00R.
Zhang, Mingqian: *See—*
Chuang, Karl T.; Zhang, Mingqian; and Zhou, Bing, 5,851,948, Cl. 502-314.000.
Zhang, Ying: *See—*
Heym, Beate; Cole, Stewart; Young, Douglas; Zhang, Ying; Honore, Nadine; Telenti, Amalio; and Bodmer, Thomas, 5,851,763, Cl. 435-6.000.

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Zheng, Jian-Ping; and Jow, T. Richard, to United States of America, Army. Electrode materials from hydrous metal and/or hydrous mixed metal oxides and method of preparing the same. 5,851,506, Cl. 423-592.000.
Zhou, Bing: *See—*
  Chuang, Karl T.; Zhang, Mingqian; and Zhou, Bing, 5,851,948, Cl. 502-314.000.
Zhu, Dong-Wei: *See—*
  Pellerite, Mark J.; Invie, Judith M.; and Zhu, Dong-Wei, 5,851,674, Cl. 428-421.000.
Zierke, Thomas: *See—*
  Böhm, Hans-Joachim; Koser, Stefan; Mack, Helmut; Pfeiffer, Thomas; Seitz, Werner; Höffken, Hans Wolfgang; Hornberger, Wilfried; and Zierke, Thomas, 5,852,051, Cl. 549-423.000.
Zigan, David C.: *See—*
  Schaeffer, Jon C.; Conner, Jeffrey A.; Dry, Dennis P.; Anselmi, Gregory J.; and Zigan, David C., 5,851,409, Cl. 216-2.000.
Zimmerman, John A. R. Pan tilting apparatus. 5,850,779, Cl. 99-425.000.
Zimmermann, Joseph E.: *See—*
  Luebke, Charles P.; Leet, William A.; Zimmermann, Joseph E.; Vangelisti, Ronald J.; and Marker, Terry L., 5,851,944, Cl. 502-22.000.
Zinn-Warner, Alexis: *See—*
  Wallis, Julian M.; Nairne, Robert J. D.; and Zinn-Warner, Alexis, 5,851,751, Cl. 430-567.000.
Zioncheck, Thomas: *See—*
  Chamow, Steven; Modi, Nishit; Schwall, Ralph; and Zioncheck, Thomas, 5,851,989, Cl. 514-8.000.
Zirnstein, Michael: *See—*
  Kokel, Nicholas; Häberle, Karl; Beutler, Kuno; Reichert, Jürgen; Weyland, Peter; Dralle-Voss, Gabriele; Oppenländer, Knut; Zirnstein, Michael; Tischer, Gerlinde; Guettes, Bernd; and Licht, Ulrike, 5,852,104, Cl. 524-591.000.
Zirps, Christopher T.; and Mack, Newton E., to Endius Incorporated. Surgical instrument. 5,851,212, Cl. 606-167.000.
Zommer, Nathan: *See—*
  Kelberlau, Ulrich; and Zommer, Nathan, 5,851,857, Cl. 438-134.000.
Zupancic, Joseph J.: *See—*
  Smith, Marc L.; Lewarchik, Ronald J.; Zupancic, Joseph J.; and Algrim, Donald J., 5,852,162, Cl. 528-272.000.
Zutz, Hans-Henning: *See—*
  Germann, Erwin; Neureuter, Lothar; Zutz, Hans-Henning; and Veutgen, Hans-Jürgen, 5,851,014, Cl. 277-406.000.
Zwahlen, Eugen: *See—*
  Janser, Herbert; Zwahlen, Eugen; Gertsch, Peter; and Imhof, Robert, 5,850,788, Cl. 101-350.600.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF DECEMBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alco Kogyo Kabushiki Kaisha: *See—*
  Goto, Hisashi, RE. 35,998, Cl. 99-446.000.
Anderson, Dean S.: *See—*
  White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; and Steeby, Jon A., RE. 36,007, Cl. 477-91.000.
Automation Gages, Inc.: *See—*
  Herbeck, Lionel E., RE. 36,005, Cl. 384-49.000.
Bohannon, Brynne K.; and Syverson, Daniel J., to FSI International, Inc. Metal selective polymer removal. RE. 36,006, Cl. 438-734.000.
Cummins Engine Company, Inc.: *See—*
  White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; and Steeby, Jon A., RE. 36,007, Cl. 477-91.000.
Datte, Mark Allen: *See—*
  Siak, June-Sang; Whited, William Thomas; Datte, Mark Allen; and Schreck, Richard Michael, RE. 36,001, Cl. 164-525.000.
DeLonzor, Russell: *See—*
  Swedlow, David B.; DeLonzor, Russell; and Warring, Jessica, RE. 36,000, Cl. 128-633.000.
Du Pont de Nemours, E. I., and Company: *See—*
  Hindmarsh, Eric; Turner, John Arthur; and Parker, David, RE. 36,008, Cl. 562-414.000.
Elsby, John; Sanfead, Brian T.; and Greathead, Andrew, to SDS Digger Tools PTY, Ltd. Transmission sleeve for a down hole hammer. RE. 36,002, Cl. 175-296.000.
FSI International, Inc.: *See—*
  Bohannon, Brynne K.; and Syverson, Daniel J., RE. 36,006, Cl. 438-734.000.
General Motors Corporation: *See—*
  Siak, June-Sang; Whited, William Thomas; Datte, Mark Allen; and Schreck, Richard Michael, RE. 36,001, Cl. 164-525.000.
Goto, Hisashi, to Alco Kogyo Kabushiki Kaisha. Electric cooking apparatus. RE. 35,998, Cl. 99-446.000.
Greathead, Andrew: *See—*
  Elsby, John; Sanfead, Brian T.; and Greathead, Andrew, RE. 36,002, Cl. 175-296.000.
Gutknecht, Leroy H., to Thrilltime Entertainment International, Inc. Human amusement ride. RE. 35,999, Cl. 104-53.000.
Herbeck, Lionel E., to Automation Gages, Inc. Antifriction slide assemblies. RE. 36,005, Cl. 384-49.000.
Hindmarsh, Eric; Turner, John Arthur; and Parker, David, to Du Pont de Nemours, E. I., and Company. Process for the production of terephthalic acid. RE. 36,008, Cl. 562-414.000.
Hinnefeld, Jon D.; Jennings, Mark E.; and Wallace, Michael D., to NSI Enterprises, Inc. Inclined ceiling downlight fixtures. RE. 36,004, Cl. 362-366.000.
Jennings, Mark E.: *See—*
  Hinnefeld, Jon D.; Jennings, Mark E.; and Wallace, Michael D., RE. 36,004, Cl. 362-366.000.
Nellcor Puritan Bennett Incorporated: *See—*
  Swedlow, David B.; DeLonzor, Russell; and Warring, Jessica, RE. 36,000, Cl. 128-633.000.
Nihon Plast Co., Ltd.: *See—*
  Sato, Izumi, RE. 36,003, Cl. 280-728.300.
NSI Enterprises, Inc.: *See—*
  Hinnefeld, Jon D.; Jennings, Mark E.; and Wallace, Michael D., RE. 36,004, Cl. 362-366.000.
Parker, David: *See—*
  Hindmarsh, Eric; Turner, John Arthur; and Parker, David, RE. 36,008, Cl. 562-414.000.
Pinkerton, Dennis T., to Roper Holdings, Inc. Self cleaning reciprocating and/or rotating device. RE. 35,997, Cl. 92-170.100.
Roper Holdings, Inc.: *See—*
  Pinkerton, Dennis T., RE. 35,997, Cl. 92-170.100.
Sanfead, Brian T.: *See—*
  Elsby, John; Sanfead, Brian T.; and Greathead, Andrew, RE. 36,002, Cl. 175-296.000.
Sato, Izumi, to Nihon Plast Co., Ltd. Occupant restraint system. RE. 36,003, Cl. 280-728.300.
Schreck, Richard Michael: *See—*
  Siak, June-Sang; Whited, William Thomas; Datte, Mark Allen; and Schreck, Richard Michael, RE. 36,001, Cl. 164-525.000.
SDS Digger Tools PTY, Ltd.: *See—*
  Elsby, John; Sanfead, Brian T.; and Greathead, Andrew, RE. 36,002, Cl. 175-296.000.
Siak, June-Sang; Whited, William Thomas; Datte, Mark Allen; and Schreck, Richard Michael, to General Motors Corporation. Sand mold member and method. RE. 36,001, Cl. 164-525.000.
Steeby, Jon A.: *See—*
  White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; and Steeby, Jon A., RE. 36,007, Cl. 477-91.000.
Swedlow, David B.; DeLonzor, Russell; and Warring, Jessica, to Nellcor Puritan Bennett Incorporated. Adhesive pulse oximeter sensor with reusable portion. RE. 36,000, Cl. 128-633.000.
Syverson, Daniel J.: *See—*
  Bohannon, Brynne K.; and Syverson, Daniel J., RE. 36,006, Cl. 438-734.000.
Thrilltime Entertainment International, Inc.: *See—*
  Gutknecht, Leroy H., RE. 35,999, Cl. 104-53.000.
Turner, John Arthur: *See—*
  Hindmarsh, Eric; Turner, John Arthur; and Parker, David, RE. 36,008, Cl. 562-414.000.
Wallace, Michael D.: *See—*
  Hinnefeld, Jon D.; Jennings, Mark E.; and Wallace, Michael D., RE. 36,004, Cl. 362-366.000.
Warring, Jessica: *See—*
  Swedlow, David B.; DeLonzor, Russell; and Warring, Jessica, RE. 36,000, Cl. 128-633.000.
Webber, Larry R.: *See—*
  White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; and Steeby, Jon A., RE. 36,007, Cl. 477-91.000.
White, Gregory R.; Webber, Larry R.; Anderson, Dean S.; and Steeby, Jon A., to Cummins Engine Company, Inc. Method and apparatus for control of engine compression brakes before during and after an electronically controlled gear shift. RE. 36,007, Cl. 477-91.000.
Whited, William Thomas: *See—*
  Siak, June-Sang; Whited, William Thomas; Datte, Mark Allen; and Schreck, Richard Michael, RE. 36,001, Cl. 164-525.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Hammell, Susan B., to Schering Corporation. Clotrimazole-betamethasone dipropionate combination. B1 298,604, Cl. 514-180.000.
Luceri, Thomas J.; and Parr, Deborah J., to McNeil-PPC, Inc. Sanitary napkin with composite cover. B1 264,268, Cl. 428-138.000.
McNeil-PPC, Inc.: *See—*
  Luceri, Thomas J.; and Parr, Deborah J., B1 264,268, Cl. 428-138.000.
Parr, Deborah J.: *See—*
  Luceri, Thomas J.; and Parr, Deborah J., B1 264,268, Cl. 428-138.000.
Schering Corporation: *See—*
  Hammell, Susan B., B1 298,604, Cl. 514-180.000.

LIST OF DESIGN PATENTEES

ACCO Brands, Inc.: *See—*
  Edwards, Mark A.; and Reich, Debra M., 402,973, Cl. D14-114.000.
Schuster, Mark; Rodgers, Glenn; and Pitcher, David, 402,920, Cl. D11-221.000.

- Acosta, Artemio J. Cellular phone holding and transporting device. 402,994, Cl. D14-253.000.
- Advanced Lighting Technologies, Inc.: *See—*
  - Bartasevich, William E.; Andrisin, John J., III; and McEllen, John J., 403,100, Cl. D26-113.000.
- Advanced Multimedia Products Corporation: *See—*
  - Rosen, John B., 402,970, Cl. D14-113.000.
- Aksys, Ltd.: *See—*
  - Pawlak, Kenneth E.; Shah, Dilip H.; and Walker, Donald C., 403,079, Cl. D24-224.000.
- Albert, Marco; and Spriet, Michele Marie Joseph Emile, to Goodyear Tire & Rubber Company, The. Tire tread. 402,943, Cl. D12-147.000.
- Alert Enterprises, Inc.: *See—*
  - Yue, Gilbert Y., 403,030, Cl. D21-539.000.
- Allah, Karriem. Shower head with temperature display. 403,048, Cl. D23-228.000.
- Allan, Glen Murray; and Elliott, Clifford James, to Intergalactic Conceptions, Inc. Multimedia enclosure. 403,078, Cl. D25-7.000.
- Allen Engineering Corp.: *See—*
  - Allen, J. DeWayne, 402,999, Cl. D15-28.000.
  - Allen, J. Dewayne, 402,998, Cl. D15-28.000.
- Allen, J. Dewayne, to Allen Engineering Corp. Ventilated quick access inspection plate for riding trowels. 402,998, Cl. D15-28.000.
- Allen, J. DeWayne, to Allen Engineering Corp. Ventilated quick access inspection plate for riding trowels. 402,999, Cl. D15-28.000.
- Alves, Kasidy W., to Scosche Industries, Inc. Electrical component case with access openings. 402,810, Cl. D3-289.000.
- Ambar Diamonds Inc.: *See—*
  - Itzkowitz, Israel, 402,912, Cl. D11-29.000.
- American Recreation Products, Inc.: *See—*
  - Funk, David H., 403,041, Cl. D21-834.000.
- American Standard Inc.: *See—*
  - Nguyen, Luan, 403,055, Cl. D23-255.000.
- America's Drive-In Trust: *See—*
  - Love, Timothy D.; Poelvoorde, Raymond M.; and Dixon, Peter A., 403,082, Cl. D25-56.000.
  - Poelvoorde, Raymond M.; and Dixon, Peter A., 403,083, Cl. D25-56.000.
- Anderko, Wayne T. Guitar practice device. 403,012, Cl. D17-14.000.
- Andersen, Leonhardt J. Christmas tree ornament. 402,914, Cl. D11-121.000.
- Anderson, Robert H.; Jurgenburg, Stanley J.; Rolston, David C.; and Gilpatric, Mark E., to J & J Snack Foods Corp. Display and serving case. 402,823, Cl. D6-408.000.
- Andrisin, John J., III: *See—*
  - Bartasevich, William E.; Andrisin, John J., III; and McEllen, John J., 403,100, Cl. D26-113.000.
- Andrus, Donald: *See—*
  - Grossman, Gary M.; Andrus, Donald; and Spitler, Brian, 403,094, Cl. D26-63.000.
- Anscher, Joseph, to National Molding Corporation. Buckle. 402,919, Cl. D11-218.000.
- Araki, Shigeki, to Tamiya, Inc. Chassis of radio-controlled model vehicle. 403,023, Cl. D21-141.000.
- Arbak, John. Contoured headboard. 402,834, Cl. D6-505.000.
- Archambault, Alan Alfred, to General Electric Company. Light diffuser. 403,102, Cl. D26-125.000.
- Arfele, Robert W.; Espiritu, George A.; and Martin, Ed R., Jr., to Dresser Industries, Inc. Nine blade drill bit. 403,003, Cl. D15-139.000.
- Arnold, Michael F.: *See—*
  - Baechler, Philip A.; Delorme, Joseph P.; and Arnold, Michael F., 402,930, Cl. D12-133.000.
- Arribard, Moise, to Plastimo. Navigation light. 403,089, Cl. D26-28.000.
- Ashcraft, Daniel; Griffith, Deanna; and Solland, Kurt, to SK Productions, L.L.C. Exerciser. 403,036, Cl. D21-686.000.
- Auciello, Anthony R.: *See—*
  - Auciello, Michael A.; Auciello, Ralph J.; and Auciello, Anthony R., 403,086, Cl. D25-135.000.
- Auciello Iron Works, Inc.: *See—*
  - Auciello, Michael A.; Auciello, Ralph J.; and Auciello, Anthony R., 403,086, Cl. D25-135.000.
- Auciello, Michael A.; Auciello, Ralph J.; and Auciello, Anthony R., to Auciello Iron Works, Inc. Pipe railing terminal fitting. 403,086, Cl. D25-135.000.
- Auciello, Ralph J.: *See—*
  - Auciello, Michael A.; Auciello, Ralph J.; and Auciello, Anthony R., 403,086, Cl. D25-135.000.
- B-BRO LLC: *See—*
  - Franzreb, Mark S., 402,785, Cl. D2-500.000.
- Baechler, Philip A.; Delorme, Joseph P.; and Arnold, Michael F., to Racing Strollers, Inc. Baby stroller conversion unit. 402,930, Cl. D12-133.000.
- Ball Corporation: *See—*
  - Conrad, George A., 402,896, Cl. D9-543.000.
- Barcon, Carmen Miranda, to Grupo Rayma, S.A. Bracelet. 402,911, Cl. D11-4.000.
- Barker, Lee Victor: *See—*
  - Church, Gary E.; Lezman, Randall J.; and Barker, Lee Victor, 402,989, Cl. D14-216.000.
- Barkley, Randall J. Plush toy display stand. 402,826, Cl. D6-450.000.
- Barmes, Marvin L., to Sandbar Wholesale Trust. Tobacco hookah. 403,106, Cl. D27-162.000.
- Barrozo, Cecilia S. Number selecting pen. 403,017, Cl. D19-36.000.
- Bartasevich, William E.; Andrisin, John J., III; and McEllen, John J., to Advanced Lighting Technologies, Inc. Lampholder assembly with integral ballast for a standing lamp. 403,100, Cl. D26-113.000.
- Barton, William M., Jr.; and Pogue, Lonnie C., to Rokenbok Toy Company. Beam in a building structure providing paths of movement for a toy vehicle. 403,028, Cl. D21-486.000.
- Bauman, Russell H. Inflatable carry bag. 402,809, Cl. D3-276.000.
- Bausch & Lomb Incorporated: *See—*
  - Conway, Simon M., 403,010, Cl. D16-326.000.
- Bayer, Georg; and Yando, Roslyn, to Schonbek Worldwide Lighting, Inc. Chandelier basket. 403,101, Cl. D26-118.000.
- Bayerische Motoren Werke Aktiengesellschaft: *See—*
  - Sycha, Thomas, 402,952, Cl. D12-211.000.
  - Wechner, Daniel, 402,951, Cl. D12-211.000.
- Beard, Harold W., Jr. Three coat plastering corner. 402,879, Cl. D8-354.000.
- Bedol, Mark A.; and Noyes, Doug, to Bedol, Mark A. Tape, glue and stapler with holder. 403,016, Cl. D19-32.000.
- Bedol, Mark A.; and Wong, Edward, to Bedol, Mark A. Clipboard. 403,019, Cl. D19-88.000.
- Bellerose, René: *See—*
  - Neault, Michel; and Bellerose, René, 402,923, Cl. D12-101.000.
  - Neault, Michel; and Bellerose, René, 402,924, Cl. D12-101.000.
- Bender, Werner, to Pilz GmbH & Co. Modular housing for electrical circuits. 402,965, Cl. D13-162.000.
- Bennett Importing, Inc.: *See—*
  - Moll, Laurie C.; and Parton, Hal B., 402,795, Cl. D2-923.000.
- Benson, Kenneth R., to Syracuse China Company. Bowl. 402,852, Cl. D7-545.000.
- Benson, Kenneth R., to Syracuse China Company. Plate. 402,854, Cl. D7-584.000.
- Berkeley Products, Inc: *See—*
  - Jeng, Chary, 402,816, Cl. D6-370.000.
- Bethea, Lorraine E. Door knob cover. 402,875, Cl. D8-322.000.
- Biedermann, Lutz; and Buchholz, Ilka, to Biedermann Motech GmbH. Hip orthosis. 403,071, Cl. D24-190.000.
- Biedermann Motech GmbH: *See—*
  - Biedermann, Lutz; and Buchholz, Ilka, 403,071, Cl. D24-190.000.
- Biller, Rudi; and Haase, Frank, to Friedrich Grohe AG. Faucet handle. 403,053, Cl. D23-252.000.
- Bio-Technology General Corp.: *See—*
  - Einav, Yehuda; and Eyal, Dror, 403,064, Cl. D24-114.000.
- Blanch, David Garfield: *See—*
  - Newman, Donald John; and Blanch, David Garfield, 402,876, Cl. D8-341.000.
  - Newman, Donald John; and Blanch, David Garfield, 402,877, Cl. D8-341.000.
- Blankenship, William Franklin, Jr. Police utility vest. 402,788, Cl. D2-839.000.
- Blue Magic Products, Inc.: *See—*
  - Bova, Anthony J.; and Malik, Sher K., 402,839, Cl. D6-540.000.
- Bohannon, Lon Maynard; Miller, Raymond Louis; and Vulimiri, Sudhakar, to Neogen Corporation. Microorganism culture tray. 403,077, Cl. D24-224.000.
- Boire, William A.; Olson, Kim L.; and Hoffbeck, Douglas J., to Emplast, Inc. Beverage can holder. 402,837, Cl. D6-515.000.
- Bondoc, Alfredo A.: *See—*
  - Carroll, William R.; Bondoc, Alfredo A.; and Sieling, Frederick W., 403,088, Cl. D25-143.000.
  - Sieling, Frederick W.; Carroll, William R.; and Bondoc, Alfredo A., 403,087, Cl. D25-139.000.
- Boston Acoustics, Inc.: *See—*
  - Shin, Jay; and Rozier, Charles, 402,988, Cl. D14-214.000.
- Bova, Anthony J.; and Malik, Sher K., to Blue Magic Products, Inc. Combined holder for bar soap and liquid soap dispensers. 402,839, Cl. D6-540.000.
- Bowell, J. David; and Peterson, George R., to Miller Manufacturing Company. Poutry fountain. 403,131, Cl. D30-132.000.
- Bowell, J. David; and Peterson, George R., to Miller Manufacturing Company. Stall cleaning fork. 403,133, Cl. D30-162.000.
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676	5,850,740

CLASS 62

3.61	5,850,741
89	5,850,742
503	5,850,743

CLASS 65

23	5,851,251
24	5,851,252
32.1	5,851,253
35	5,851,254
60.1	5,851,255
134.6	5,851,256
320	5,851,257
329	5,851,258
377	5,851,259

CLASS 66

176	5,850,745

CLASS 68

12.06	5,850,746
15	5,850,747
23.2	5,850,748
	5,850,749
133	5,850,750

CLASS 70

26	5,850,751
276	5,850,752
278	5,850,753
456 R	5,850,754

CLASS 71

28	5,851,260
64.07	5,851,261

CLASS 72

261	5,850,755
344	5,850,756

CLASS 73

23.32	5,852,227
	5,852,228
24.06	5,852,229
54.35	5,852,230
61.56	5,852,231
105	5,852,232
	5,852,233
116	5,852,234
152.45	5,852,235
170.15	5,852,236
180	5,852,237
204.11	5,852,238
204.26	5,852,239
215	5,852,240
296	5,850,757
487	5,852,241
514.17	5,852,242
659	5,852,243
706	5,852,244
723	5,852,245
811	5,852,246
861.17	5,852,247

CLASS 74

371	5,850,758
471 X	5,850,759
473.11	5,850,760
489	5,850,761
490.03	5,850,762
502.4	5,850,763
603	5,850,764
640	5,850,765

CLASS 75

10.22	5,851,262
10.41	5,851,263
228	5,852,248
320	5,851,264

CLASS 81

57.34	5,850,766
58.3	5,850,767
413	5,850,768

CLASS 82

1.3	5,850,769
142	5,850,770

CLASS 83

23	5,850,771
37	5,850,772
159	5,850,773
418	5,850,774

CLASS 84

293	5,852,249
327	5,852,250
645	5,852,251
650	5,852,252

CLASS 89

1.41	5,852,253

CLASS 92

12.2	5,850,775
85 R	5,850,776
170.1	RE. 35,997
187	5,850,777

CLASS 95

54	5,851,266
159	5,851,265

CLASS 96

7	5,851,267
131	5,851,268
144	5,851,269
	5,851,270
.286	5,851,271

CLASS 99

342	5,850,778
425	5,850,779
427	5,850,780
443 C	5,850,781
446	RE. 35,998
455	5,850,782
483	5,850,783
485	5,850,784

CLASS 100

35	5,850,785
53	5,850,786

CLASS 101

105	5,850,787
350.6	5,850,788
486	5,850,789

CLASS 102

342	5,852,254
439	5,852,255
473	5,852,256

CLASS 104

53	RE. 35,999
281	5,850,794

CLASS 105

198.2	5,850,795

CLASS 106

11	5,851,272
31.27	5,851,273
31.43	5,851,274
148.1	5,851,275
281.1	5,851,276
287.25	5,851,278
287.35	5,851,277
410	5,851,279
472	5,851,280
697	5,851,281
733	5,851,282

CLASS 109

51	5,850,796

CLASS 111

149	5,850,790

CLASS 112

275	5,850,791
470 07	5,850,792

CLASS 114

67 A	5,850,793
201 R	5,850,799
230	5,850,800
242	5,850,801
303	5,850,802
343	5,850,803

CLASS 117

32	5,851,283
35	5,851,284
87	5,851,285
201	5,851,286
208	5,851,287

CLASS 118

65	5,851,288
411	5,851,289
420	5,851,290
612	5,851,291
629	5,851,292
715	5,851,293
	5,851,294
719	5,851,296
722	5,851,297
728	5,851,298
729	5,851,299

CLASS 119

14.02	5,850,804
54	5,850,805
61	5,850,797
170	5,850,798
219	5,850,806
799	5,850,807
903	5,850,808

CLASS 122

406.4	5,850,809

CLASS 123

45 A	5,850,810
90.15	5,850,811
90.17	5,850,812
184.46	5,850,813
195 R	5,850,814
417	5,850,815
430	5,850,816
458	5,850,817
497	5,850,818
520	5,850,819
	5,850,820
524	5,850,821
549	5,850,822
572	5,850,823
688	5,850,824

CLASS 124

35.2	5,850,825
62	5,850,826
91	5,850,827

CLASS 126

25 R	5,850,828
30	5,850,829
552	5,850,830
645	5,850,831

CLASS 127

32	5,851,300
67	5,851,301

CLASS 128

200.26	5,850,832
202.12	5,850,833
204.12	5,850,834
204.18	5,850,835
633	RE. 36,000
653.1	5,850,836
892	5,850,837

CLASS 131

180	5,850,838
274	5,850,839
330	5,850,840

CLASS 134

1.2	5,851,302
3	5,851,303
	5,851,304
10	5,851,305
22.1	5,851,306
	5,851,307
22.17	5,851,308
86	5,850,841
140	5,850,842

CLASS 135

88.06	5,850,843

CLASS 136

248	5,851,309
255	5,851,310

CLASS 137

111	5,850,844
315	5,850,846
422	5,850,848
446	5,850,849
486	5,850,850
583	5,850,851
596.16	5,850,852
606	5,850,853

CLASS 138

96 R	5,850,854
137	5,850,855

CLASS 141

59	5,850,856
	5,850,857
86	5,850,858
361	5,850,859

CLASS 142

56	5,850,860

CLASS 148

23	5,851,311
122	5,851,312
222	5,851,313
	5,851,314
239	5,851,315
325	5,851,316
403	5,851,317
410	5,851,318
525	5,851,319
552	5,851,320

CLASS 152

209 R	5,851,321
	5,851,322
510	5,851,323
517	5,851,324

CLASS 156

62.2	5,851,325
71	5,851,327
89.22	5,851,326
102	5,851,328
111	5,851,329
229	5,851,330
235	5,851,331
238	5,851,332
252	5,851,333
	5,851,334
257	5,851,335
272.2	5,851,336
275.3	5,851,337
278	5,851,338
290	5,851,339
293	5,851,340
294	5,851,341
324	5,851,342
345	5,851,343
379.6	5,851,344
510	5,851,345
542	5,851,346
576	5,851,347
577	5,851,348

CLASS 157

259	5,850,845

CLASS 160

107	5,850,861
133	5,850,862
168.1 R	5,850,863
268.1	5,850,864
310	5,850,865

CLASS 162

5	5,851,349
52	5,851,350
72	5,851,351
112	5,851,352
113	5,851,353
123	5,851,354
157.3	5,851,355
203	5,851,356
272	5,851,357
276	5,851,358
301	5,851,359

CLASS 164

5	5,850,866
22	5,850,867
132	5,850,868
419	5,850,869
450.1	5,850,870
451	5,850,871

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525	RE. 36,001

CLASS 165

41	5,850,872
255	5,850,873

CLASS 166

77.3	5,850,874
77.51	5,850,877
250.01	5,850,879
293	5,850,880
327	5,850,881
380	5,850,875

CLASS 169

61	5,850,876

CLASS 172

41	5,850,882
122	5,850,883

CLASS 173

91	5,850,884

CLASS 174

59	5,852,257

CLASS 175

296	RE. 36,002

CLASS 177

126	5,852,258
145	5,852,259

CLASS 178

18.01	5,852,260
18.04	5,852,261

CLASS 180

6.24	5,850,886
197	5,850,887
406	5,850,888

CLASS 181

106	5,852,262
131	5,852,263

CLASS 182

3	5,850,889
5	5,850,890
127	5,850,891
148	5,850,892
193	5,850,893
214	5,850,894

CLASS 187

292	5,852,264

CLASS 188

264 A	5,850,895
266.2	5,850,896

CLASS 192

3.3	5,850,897
54.3	5,850,898
70.14	5,850,899
107 M	5,850,900

CLASS 198

370.05	5,850,901
457	5,850,902
588	5,850,903
744	5,850,904
750.3	5,850,905
750.8	5,850,906
838	5,850,907

CLASS 200

501	5,850,909

CLASS 202

136	5,851,361

CLASS 203

57	5,851,362

CLASS 204

192.12	5,851,365
192.2	5,851,363
192.26	5,851,366
192.3	5,851,364
192.34	5,851,367
213	5,851,368
428	5,851,369
450	5,851,370
486	5,851,371
523	5,851,372

CLASS 205

139	5,851,373
471	5,851,374
701	5,851,375
784.5	5,851,376

CLASS 206

1.8	5,850,910
217	5,850,911
307	5,850,912
308.1	5,850,913
308.3	5,850,914
320	5,850,915
349	5,850,916
366	5,850,917
410	5,850,918
534	5,850,919
701	5,850,920
711	5,850,921
736	5,850,922

CLASS 208

48 AA	5,851,377
111	5,851,378
138	5,851,379
158	5,851,380
210	5,851,381
216 R	5,851,382
217	5,851,383

CLASS 209

417	5,850,923

CLASS 210

104	5,851,384
170	5,851,385
183	5,851,386
229	5,851,387
257.2	5,851,388
264	5,851,389
321.1	5,851,390
350	5,851,391
396	5,851,392
489	5,851,393
500.23	5,851,394
500.27	5,851,395
512.3	5,851,396
517	5,851,397
602	5,851,398
605	5,851,399
635	5,851,400
	5,851,401
651	5,851,402
670	5,851,403
723	5,851,404
724	5,851,405
755	5,851,406
759	5,851,407
764	5,851,408

CLASS 211

26	5,850,925
41.14	5,850,924
181.1	5,850,927

CLASS 212

285	5,850,928

CLASS 213

75 R	5,850,929

CLASS 215

226	5,850,930
375	5,850,931
	5,850,932

CLASS 216

2	5,851,409
23	5,851,411
27	5,851,412
92	5,851,413

CLASS 218

119	5,852,266

CLASS 219

68	5,852,267
69.12	5,852,268
	5,852,269
	5,852,270
72	5,852,271
76.14	5,852,272
110	5,852,273
117.1	5,852,274
121.43	5,852,275
121.62	5,852,276
121.67	5,852,277
130.4	5,852,278
257	5,852,279
270	5,852,280
441	5,852,281
449	5,852,283
467	5,852,282
522	5,852,284
553	5,852,285

CLASS 220

203.23	5,850,908
563	5,850,933
582	5,850,934
675	5,850,935
676	5,850,936

CLASS 221

2	5,850,937

CLASS 222

51	5,850,938
78	5,850,939
	5,850,940
79	5,850,941
146.5	5,850,942
153.11	5,850,943
158	5,850,944
212	5,850,945
219	5,850,946
321.4	5,850,947
321.9	5,850,948
475	5,850,949
519	5,850,950
525	5,850,951
530	5,850,952
571	5,850,953
602	5,851,414

CLASS 224

197	5,850,954
222	5,850,955
270	5,850,956
277	5,850,957
415	5,850,958
535	5,850,959

CLASS 225

58	5,850,960

CLASS 227

130	5,850,961

CLASS 228

33	5,850,962

CLASS 229

116.5	5,850,963
117.16	5,850,964
191	5,850,965

CLASS 232

15	5,850,966
17	5,850,967

CLASS 235

462	5,852,286
	5,852,287
472	5,852,288
492	5,852,289
	5,852,290

CLASS 236

44 C	5,850,968
49 3	5,850,969

CLASS 238

8	5,850,970

CLASS 239

44	5,850,972
312	5,850,973
420	5,850,971
546	5,850,974
657	5,850,975
698	5,850,976

CLASS 241

17	5,850,977
215	5,850,978

CLASS 242

279	5,850,979
344	5,850,980
385.1	5,850,981
413.5	5,850,982
483.7	5,850,983
555.5	5,850,984
586.2	5,850,985
596.7	5,850,986

CLASS 244

1 TD	5,850,987
31	5,850,988
63	5,850,989
105	5,850,990
137.1	5,850,991
168	5,850,992
169	5,850,993

CLASS 248

97	5,850,994
116	5,850,995
221.11	5,850,996
222.11	5,850,997
223.21	5,850,998
342	5,850,999
479	5,851,000
519	5,851,001

CLASS 249

117	5,851,415

CLASS 250

214 VT	5,852,291
221	5,852,292
235	5,852,293
292	5,852,294
	5,852,302
370.09	5,852,296
423 R	5,852,295
492.2	5,852,298
492.21	5,852,297
559 22	5,852,300
559.4	5,852,299
583	5,852,301

CLASS 251

121	5,851,002
288	5,851,003
331	5,851,004

CLASS 252

62.52	5,851,416
62.55	5,851,417
70	5,851,418
79	5,851,419
186.27	5,851,420
187.26	5,851,421
299.01	5,851,422
299.1	5,851,423
299.61	5,851,424
	5,851,425
	5,851,426
299.62	5,851,427
301.4 R	5,851,428
311	5,851,429
311.5	5,851,430
312	5,851,431
314	5,851,432
329	5,851,433
358	5,851,434
364	5,851,435
	5,851,436
500	5,851,437
514	5,851,438
586	5,851,439

CLASS 256

13.1	5,851,005

CLASS 257

9	5,852,303
17	5,852,304
59	5,852,305
66	5,851,440
67	5,852,310
252	5,852,308
295	5,852,307
315	5,852,306
	5,852,311
321	5,852,312
326	5,852,313
343	5,852,314
355	5,852,315
369	5,852,316
390	5,852,317
	5,852,318
412	5,852,319
419	5,852,320
443	5,852,321
459	5,852,322
530	5,852,323
675	5,852,324
692	5,852,326
748	5,852,327
774	5,852,328

CLASS 261

26	5,851,441
30	5,851,442
87	5,851,443
103	5,851,445
106	5,851,444
111	5,851,446
122.1	5,851,447
	5,851,448

CLASS 264

1.28	5,851,450
1.33	5,852,329
1.7	5,851,449
4.1	5,851,451
4 6	5,851,452
5	5,851,453
8	5,851,454
40.1	5,851,455
	5,851,456
43	5,851,460
46.5	5,851,457
	5,851,458
46.7	5,851,459
50	5,851,461
55	5,851,462
101	5,851,463
103	5,851,464
109	5,851,465
143	5,851,466
167	5,851,467
177.1	5,851,469
177.13	5,851,468
219	5,851,470
250	5,851,471
268	5,851,472
403	5,851,474
430	5,851,475
507	5,851,476
512	5,851,477
520	5,851,478
526	5,851,479

CLASS 267

273	5,851,006

CLASS 269

17	5,851,007

CLASS 271

4.07	5,851,008
270	5,851,009

CLASS 273

274	5,851,010
292	5,851,011
317	5,850,885
317.1	5,851,012

CLASS 277

327	5,851,013
406	5,851,014

CLASS 280

93.51	5,851,015
124.148	5,851,016
201	5,851,017
250.1	5,851,018
286	5,851,019
413	5,851,020
438.1	5,851,021
728.3	RE. 36,003
	5,851,022
	5,851,023
730.2	5,851,024
735	5,851,025
	5,851,026
736	5,851,027
	5,851,028
	5,851,029
741	5,851,030

CLASS 281

19.1	5,851,031

CLASS 283

72	5,851,032

CLASS 285

13	5,851,033
16	5,851,034
86	5,851,035
294.1	5,851,036
342	5,851,037

CLASS 290

40 R	5,852,330
55	5,852,331

CLASS 292

256.67	5,851,038

CLASS 294

82.11	5,851,040
106	5,851,041
	5,851,042

CLASS 296

39.2	5,851,043
95.1	5,851,044
96.21	5,851,045
97.11	5,851,046
100.18	5,851,047
107.04	5,851,048
146.4	5,851,049
	5,851,050
216.06	5,851,051

CLASS 297

16.2	5,851,052
273	5,851,053
411.35	5,851,054
483	5,851,055

CLASS 301

6.91	5,851,056

CLASS 303

155	5,851,057

CLASS 305

146	5,851 058

CLASS 307

43	5,852,332
87	5,852,333

CLASS 310

89	5,852,338
168	5,852,334
254	5,852,335
323	5,852,336
328	5,852,337

CLASS 312

334.11	5,851,059

CLASS 313

11	5,852,339
141	5,852,340
336	5,852,341
346 DC	5,852,342
493	5,852,343

CLASS 315

61	5,852,344
111.81	5,852,345
169.3	5,852,346
169.4	5,852,347
185 R	5,852,348

CLASS 316

175	5,852,751

CLASS 318

439	5,852,349
466	5,852,350
490	5,852,351
541	5,852,352
558	5,852,353
562	5,852,354
701	5,852,355
719	5,852,356

CLASS 323

239	5,852,357
240	5,852,358
274	5,852,359
316	5,852,360

CLASS 324

6	5,851,764
174	5,852,361
204	5,852,362
373	5,852,363
678	5,852,369
689	5,852,368

CLASS 326

16	5,852,364
49	5,852,365
68	5,852,366
80	5,852,367
81	5,852,370
	5,852,371
83	5,852,372
98	5,852,373

CLASS 327

77	5,852,374
108	5,852,375
143	5,852,376
	5,852,377
171	5,852,378
176	5,852,379
243	5,852,380
440	5,852,381
534	5,852,382
538	5,852,383

CLASS 331

68	5,852,384
57	5,852,385
94.1	5,852,386
111	5,852,387
177 V	5,852,388

CLASS 332

103	5,852,389

CLASS 333

21 A	5,852,390
246	5,852,391

CLASS 335

80	5,852,392
284	5,852,393

CLASS 336

66	5,852,394
174	5,852,395

CLASS 337

174	5,852,396

CLASS 338

22 R	5,852,397

CLASS 340

438	5,852,398
463	5,852,400
467	5,852,399
539	5,852,401
541	5,852,402
573	5,852,403
627	5,852,404
825.02	5,852,405
825.06	5,852,406
825.8	5,852,407
870.02	5,852,409
870.09	5,852,408
903	5,852,410
932.2	5,852,411
988	5,852,412

CLASS 341

13	5,852,413
22	5,852,414
120	5,852,415
144	5,852,416

CLASS 342

30	5,852,417
202	5,852,418
351	5,852,419
382	5,852,420

CLASS 343

702	5,852,421
	5,852,422
765	5,852,423
872	5,852,424

CLASS 345

92	5,852,425
96	5,852,426
97	5,852,427
100	5,852,428
	5,852,429
101	5,852,430
145	5,852,431
156	5,852,432
173	5,852,433
179	5,852,434
302	5,852,435
326	5,852,436
327	5,852,437
328	5,852,438
339	5,852,439
348	5,852,440
352	5,852,441
419	5,852,442
431	5,852,443
	5,852,444
440	5,852,445
441	5,852,446
468	5,852,447
469	5,852,448
473	5,852,449
	5,852,450
509	5,852,451

CLASS 347

8	5,852,452
43	5,852,454
55	5,852,453
	5,852,455
71	5,852,456
86	5,852,457
	5,852,458
	5,852,459
87	5,852,460
116	5,852,461
156	5,852,462
171	5,852,463
215	5,852,464

CLASS 348

15	5,852,466
231	5,852,467
272	5,852,468
384	5,852,469
448	5,852,470
465	5,852,471
552	5,852,472
558	5,852,473
564	5,852,474
606	5,852,475
725	5,852,476
	5,852,477
734	5,852,478

CLASS 349

9	5,852,479
40	5,852,480
43	5,852,481
46	5,852,482
62	5,852,483
86	5,852,484
141	5,852,485
156	5,852,486
162	5,852,487
187	5,852,488

CLASS 351

237	5,852,489

CLASS 353

94	5,851,060

CLASS 355

67	5,852,490

CLASS 356

5.01	5,852,491
5.04	5,852,492
141.1	5,852,493
243	5,852,494
344	5,852,495
345	5,852,496
401	5,852,497
417	5,852,498
429	5,852,499

CLASS 358

440	5,852,500
505	5,852,501
512	5,852,502
527	5,852,503

CLASS 359

9	5,852,504
118	5,852,505
155	5,852,506
192	5,852,507
271	5,852,509
341	5,852,510
355	5,852,508
362	5,852,511
463	5,852,512
580	5,852,513
599	5,852,514
660	5,852,515
676	5,852,516
811	5,852,517
822	5,852,518
	5,852,519

CLASS 360

40	5,852,520
46	5,852,521
48	5,852,522
49	5,852,523
51	5,852,524
	5,852,525
66	5,852,526
68	5,852,527
69	5,852,528
	5,852,534
77.12	5,852,535
77.14	5,852,529
95	5,852,530
104	5,852,532
113	5,852,531
	5,852,533
122	5,852,536
137	5,852,537

CLASS 361

18	5,852,538
25	5,852,539
111	5,852,540
	5,852,541
321.5	5,852,542
608	5,852,543
683	5,852,544
	5,852,545
685	5,852,546
695	5,852,547
704	5,852,548

CLASS 362

20	5,851,061
31	5,851,062
231	5,851,063
366	RE. 36,004
494	5,851,064

CLASS 363

18	5,852,549
21	5,852,550
39	5,852,551
60	5,852,552
64	5,852,553
71	5,852,554
	5,852,555
85	5,852,556
124	5,852,557
132	5,852,558
163	5,852,559

CLASS 364

468.03	5,852,560
488	5,852,561
491	5,852,562
528.17	5,852,563
578	5,852,564
715.02	5,852,565
724.1	5,852,566
725.01	5,852,567
788	5,852,568

CLASS 365

49	5,852,569
104	5,852,570
145	5,852,571
154	5,852,572
	5,852,573
158	5,852,574
184	5,852,575
185.23	5,852,577
185.28	5,852,578
185.33	5,852,576
189.05	5,852,579
200	5,852,580
201	5,852,581
222	5,852,582
230.03	5,852,584
230.06	5,852,583
230.08	5,852,585
233	5,852,586

CLASS 366

76.6	5,851,065
270	5,851,066
337	5,851,067
348	5,851,068

CLASS 367

25	5,852,587
38	5,852,588
157	5,852,589

CLASS 368

10	5,852,590

CLASS 369

13	5,852,591
44.35	5,852,592
54	5,852,593
75.1	5,852,594
116	5,852,595
120	5,852,596
192	5,852,597
272	5,852,598
275.4	5,852,599

CLASS 370

228	5,852,600
230	5,852,601
231	5,852,602
280	5,852,603
324	5,852,604
371	5,852,605
393	5,852,606
401	5,852,607
465	5,852,608
	5,852,609
486	5,852,610
498	5,852,611
537	5,852,612
546	5,852,613

CLASS 371

2.1	5,852,614
20.1	5,852,615
21.1	5,852,616
22.31	5,852,617
27.1	5,852,618
27.7	5,852,619

CLASS 372

22	5,852,620
25	5,852,621
39	5,852,622
41	5,852,623
44	5,852,624
96	5,852,625
103	5,852,626
108	5,852,627

CLASS 375

211	5,852,629
219	5,852,630
222	5,852,631
238	5,852,632
259	5,852,634
260	5,852,633
264	5,852,635
272	5,852,636
316	5,852,637
344	5,852,638
354	5,852,639
356	5,852,640
	5,852,641

CLASS 376

245	5,852,642
287	5,852,643
353	5,852,644
419	5,852,645

CLASS 378

8	5,852,646
53	5,852,647
62	5,852,648

CLASS 379

9	5,852,649
29	5,852,650
56.2	5,852,651
88	5,852,652
	5,852,653
93.05	5,852,654
93.14	5,852,655
93.21	5,852,656
93.25	5,852,657
106.03	5,852,658
116	5,852,659
230	5,852,660
406	5,852,661

CLASS 380

4	5,852,666
9	5,852,662
10	5,852,663
25	5,852,664
30	5,852,665

CLASS 381

71.1	5,852,667
312	5,852,668

CLASS 382

118	5,852,669
126	5,852,670
154	5,852,671
	5,852,672
164	5,852,673
167	5,852,674
	5,852,675
173	5,852,676
	5,852,677
176	5,852,678
180	5,852,679
258	5,852,680
268	5,852,681
	5,852,682
284	5,852,683
309	5,852,684
311	5,852,685
313	5,852,686

CLASS 383

38	5,851,069
63	5,851,070
	5,851,071
66	5,851,072

CLASS 384

45	5,851,073
49	RE. 36,005
448	5,851,074

CLASS 385

14	5,852,687
16	5,852,688
21	5,852,689
37	5,852,690
39	5,852,691
43	5,852,692
47	5,852,693
78	5,852,694
82	5,852,695
88	5,852,696
93	5,852,697
113	5,852,698
115	5,852,699
123	5,852,700
127	5,852,701
130	5,852,702
	5,852,703

CLASS 386

46	5,852,704
92	5,852,705
111	5,852,706
128	5,852,707

CLASS 394

82.1	5,851,039

CLASS 395

3	5,852,708
112	5,852,709
115	5,852,710
117	5,852,711
182.03	5,852,712
182.04	5,852,713
187.01	5,852,714
200.31	5,852,715
	5,852,716
200.33	5,852,717
200.38	5,852,718
200.46	5,852,719
200.47	5,852,720
	5,852,721
200.51	5,852,722
200.65	5,852,723
200.69	5,852,724
282	5,852,725
376	5,852,726
391	5,852,727
556	5,852,728
566	5,852,729
588	5,852,730
670	5,852,731
671	5,852,732
701	5,852,733
707	5,852,734
712	5,852,735
726	5,852,736
750.05	5,852,737
800.01	5,852,738
	5,852,739
800.15	5,852,740
800.24	5,852,741
800.28	5,852,742
835	5,852,745
837	5,852,744
838	5,852,743
860	5,852,747
874	5,852,748

CLASS 396

55	5,852,749
	5,852,750
176	5,852,752
323	5,852,753
427	5,852,754
626	5,852,755

CLASS 399

44	5,852,756
119	5,852,757
176	5,852,758
260	5,852,759
262	5,852,760
325	5,852,761
329	5,852,763
358	5,852,762
401	5,852,764
407	5,852,765

CLASS 400

120.14	5,851,075
248	5,851,076

CLASS 401

6	5,851,077
78	5,851,078
174	5,851,079
279	5,851,080

CLASS 403

91	5,851,081
133	5,851,082
337	5,851,083
344	5,851,084

CLASS 404

75	5,851,085
94	5,851,086

CLASS 405

127	5,851,087
259.1	5,851,089
284	5,851,088

CLASS 409

232	5,851,091
234	5,851,093
	5,851,094
293	5,851,090

CLASS 411

353	5,851,095
432	5,851,096
508	5,851,097

CLASS 414

263	5,851,098
398	5,851,099
408	5,851,100
713	5,851,101
783	5,851,102

CLASS 415

17	5,851,103
150	5,851,104
208.1	5,851,105

CLASS 416

63	5,851,106
244 R	5,851,107

CLASS 417

44.1	5,851,108
395	5,851,109

CLASS 419

2	5,852,766
63	5,852,768

CLASS 420

127	5,851,481
557	5,851,482

CLASS 422

28	5,851,483
	5,851,484
33	5,851,485
44	5,851,486
67	5,851,488
68.1	5,851,487
82.02	5,851,489
101	5,851,491
102	5,851,492
131	5,851,493
	5,851,494
174	5,851,495
	5,851,496
207	5,851,497
211	5,851,498

CLASS 423

23	5,851,499
97	5,851,490
178	5,851,500
213.2	5,851,501
335	5,851,502
445 B	5,851,503
447.2	5,851,504
584	5,851,505
592	5,851,506
659	5,851,507

CLASS 424

1.73	5,851,509
9.411	5,851,508
9.45	5,851,510
9.452	5,851,511
49	5,851,512
	5,851,513
53	5,851,514
65	5,851,515
70.1	5,851,516
78.02	5,851,517
78.35	5,851,518
93.2	5,851,519
	5,851,521
94.67	5,851,522
142.1	5,851,524
145.1	5,851,525
156.1	5,851,526
178.1	5,851,527
185.1	5,851,523
	5,851,528
188.1	5,851,529
195.1	5,851,531
199.1	5,851,532
229.1	5,851,533
260.1	5,851,534
273.1	5,851,535
400	5,851,536
	5,851,537
401	5,851,538
	5,851,539
	5,851,540
	5,851,541
	5,851,542
	5,851,543
	5,851,544
405	5,851,545
426	5,851,546
	5,851,547
448	5,851,549
450	5,851,548
464	5,851,550
	5,851,555
486	5,851,551
488	5,851,552
	5,851,553
569	5,851,554
639	5,851,556

CLASS 425

46	5,851,557

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1998
UMI

111 5,851,558
116 5,851,559
121 5,851,560
131.1 5,851,561
131.5 5,851,562
175 5,851,563
186 5,851,564
190 5,851,565
225 5,851,566
346 5,851,567
356 5,851,568
504 5,851,569
532 5,851,570
564 5,851,571

CLASS 426

2 5,851,572
74 5,851,573
285 5,851,574
471 5,851,575
550 5,851,576
582 5,851,577
590 5,851,578

CLASS 427

2.21 5,851,579
8 5,851,580
97 5,851,581
130 5,851,582
140 5,851,583
154 5,851,584
162 5,851,585
208.4 5,851,586
212 5,851,587
228 5,851,588
248.1 5,851,589
265 5,851,590
333 5,851,591
350 5,851,592
379 5,851,593
387 5,851,594
393.4 5,851,595
435 5,851,597
515 5,851,598
531 5,851,599
535 5,851,600
561 5,851,601
579 5,851,602
5,851,603

CLASS 428

1 5,851,604
5,851,605
15 5,851,606
5,851,607
34 5,851,609
34.2 5,851,608
34.9 5,851,610
35.7 5,851,611
5,851,612
36.3 5,851,613
40.1 5,851,614
5,851,615
41 8 5,851,616
5,851,617
5,851,618
57 5,851,619
64.1 5,851,620
5,851,621
65.3 5,851,622
68 5,851,623
5,851,624
95 5,851,625
5,851,626
137 5,851,627
138 B1 264,268
141 5,851,628
153 5,851,629
155 5,851,630
156 5,851,631
5,851,632
158 5,851,633
159 5,851,634
167 5,851,635
5,851,636
192 5,851,637
193 5,851,638
195 5,851,639
200 5,851,640
209 5,851,641
212 5,851,642
5,851,643
213 5,851,644
221 5,851,645
294.1 5,851,646
304.4 5,851,647
5,851,648
319.1 5,851,649
323 5,851,650
327 5,851,651
328 5,851,652
5,851,653
5,851,654
330 5,851,655
332 5,851,656
5,851,657
334 5,851,658
336 5,851,659
5,851,660
350 5,851,661
352 5,851,662
355 5,851,663
355 BL 5,851,664
357 5,851,665
380 5,851,666
396 5,851,667
397 5,851,668
401 5,851,669
403 5,851,670
407 5,851,672
421 5,851,673
5,851,674
426 5,851,675
437 5,851,676
446 5,851,677
469 5,851,678
472 5,851,679
5,851,680
473.5 5,851,681
500 5,851,682
519 5,851,683
537.5 5,851,684
573 5,851,685
614 5,851,686
689 5,851,687
694 T 5,851,688

CLASS 429

13 5,851,689
59 5,851,690
97 5,851,691
100 5,851,692
105 5,851,694
159 5,851,695
174 5,851,693
218 5,851,696
5,851,697
223 5,851,698
593 5,851,699

CLASS 430

2 5,851,700
5 5,851,701
5,851,702
5,851,703
5,851,704
5,851,705
5,851,706
5,851,707
5,851,708
7 5,851,709
20 5,851,710
45 5,851,711
83 5,851,712
109 5,851,713
110 5,851,714
5,851,715
111 5,851,717
124 5,851,718
126 5,851,719
201 5,851,720
203 5,851,721
204 5,851,722
5,851,723
253 5,851,724
269 5,851,725
5,851,726
270.1 5,851,727
5,851,728
270 12 5,851,729
271.1 5,851,730
286.1 5,851,731
311 5,851,733
312 5,851,734
321 5,851,732
322 5,851,735
325 5,851,736
5,851,737
327 5,851,738
331 5,851,739
363 5,851,740
380 5,851,741
465 5,851,742
501 5,851,743
5,851,744
505 5,851,745
510 5,851,746
517 5,851,243
531 5,851,747
557 5,851,748
566 5,851,749
567 5,851,750
5,851,751
572 5,851,752
603 5,851,753
607 5,851,754
619 5,851,755

CLASS 431

278 5,851,110

CLASS 433

1 5,851,111
29 5,851,112
5,851,113
68 5,851,114
110 5,851,716
215 5,851,115
216 5,851,116

CLASS 434

219 5,851,117
304 5,851,118
317 5,851,119

CLASS 435

2 5,851,756
4 5,851,757
5 5,851,758
5,851,759
6 5,851,760
5,851,761
5,851,762
5,851,763
5,851,765
5,851,766
5,851,767
5,851,768
5,851,769
5,851,770
5,851,771
5,851,772
5,851,773
5,851,774
5,851,775
7.1 5,851,776
5,851,777
5,851,779
7.6 5,851,780
7.71 5,851,782
7 9 5,851,778
5,851,781
7.92 5,851,783
19 5,851,784
28 5,851,785
29 5,851,786
5,851,788
32 5,851,789
40.51 5,851,790
68.1 5,851,792
69.1 5,851,787
5,851,793
5,851,794
5,851,795
5,851,796
5,851,797
5,851,798
5,851,799
5,851,800
69.6 5,851,801
69.7 5,851,802
91.1 5,851,804
91.2 5,851,805
91.41 5,851,806
168 1 5,851,791
172.3 5,851,808
183 5,851,809
189 5,851,810
192 5,851,811
194 5,851,812
218 5,851,814
219 5,851,815
235.1 5 851,813
240.2 5,851,816
252.3 5,851,817
289 1 5,851,820
311 5,851,807
320.1 5,851,818
5,851,819
5,851,821
5,851,822
5,851,823
325 5,851,824
5,851,826
5,851,827
328 5,851,828
5,851,829
334 5,851,830
368 5,851,832
378 5,851,833
383 5,851,831

CLASS 436

5 5,851,834
63 5,851,835
69 5,851,836
149 5,851,837
170 5,851,838
518 5,851,839
5,851,907
525 5,851,840

CLASS 437

60 5,851,841

CLASS 438

2 5,851,843
3 5,851,844
9 5,851,842
15 5,851,845
17 5,851,846
26 5,851,847
33 5,851,848
38 5,851,849
46 5,851,850
50 5,851,851
106 5,851,852
108 5,851,853
118 5,851,854
129 5,851,855
130 5,851,856
134 5,851,857
154 5,851,858
158 5,851,859
166 5,851,860
5,851,861
5,851,862
203 5,851,863
5,851,864
217 5,851,865
231 5,851,866
238 5,851,867
5,851,868
5,851,869
239 5,851,870
250 5,851,871
253 5,851,872
5,851,873
5,851,874
5,851,875
5,851,876
5,851,877
255 5,851,878
257 5,851,879
258 5,851,880
261 5,851,881
275 5,851,882
5,851,883
5,851,884
5,851,885
289 5,851,886
295 5,851,887
301 5,851,888
5,851,889
303 5,851,890
305 5,851,891
5,851,892
5,851,893
311 5,851,894
384 5,851,895
396 5,851,896
397 5,851,897
398 5,851,898
427 5,851,899
434 5,851,900
439 5,851,901
459 5,851,902
467 5,851,903
482 5,851,904
492 5,851,905
513 5,851,906
520 5,851,908
567 5,851,909
612 5,851,910
614 5,851,911
621 5,851,912
622 5,851,913
5,851,914
5,851,915
626 5,851,916
627 5,851,917
5,851,918
635 5,851,919
648 5,851,920
655 5,851,921
5,851,922
668 5,851,923
691 5,851,924
708 5,851,925
714 5,851,926
734 RE. 36,006
744 5,851,927
748 5,851,928
795 5,851,929

CLASS 439

17 5,851,120
63 5,851,121
172 5,851,123
427 5,851,124
541.5 5,851,125
620 5,851,122
622 5,851,127
752 5,851,128
764 5,851,129

CLASS 440

46 5,851,130
50 5,851,131
101 5,851,132

CLASS 442

60 5,851,930
62 5,851,931
135 5,851,932
180 5,851,933
288 5,851,934
328 5,851,935
334 5,851,936
394 5,851,937

CLASS 445

24 5,851,133

CLASS 446

468 5,851,134

CLASS 451

5 5,851,135
9 5,851,136
28 5,851,137
56 5,851,138
102 5,851,139
288 5,851,140
357 5,851,141
508 5,851,142

CLASS 454

57 5,851,143
306 5,851,144

CLASS 455

63 5,852,767
115 5,852,769
126 5,852,770
226.2 5,852,772
330 5,852,771
403 5,852,773
5,852,774
404 5,852,775
406 5,852,776
414 5,852,777
423 5,852,778
445 5,852,779
450 5,852,780
509 5,852,781
522 5,852,782
550 5,852,783
552 5,852,784
561 5,852,785

CLASS 460

61 5,851,145
142 5,851,146

CLASS 463

13 5,851,147
25 5,851,148
42 5,851,149

CLASS 464

69 5,851,150
106 5,851,151
181 5,851,152

CLASS 470

40 5,851,153

CLASS 472

44 5,851,154

CLASS 473

201 5,851,156
246 5,851,155
305 5,851,157
330 5,851,158
345 5,851,159
349 5,851,160
596 5,851,161

CLASS 475

150 5,851,162
183 5,851,163

CLASS 477

91 RE. 36,007
127 5,851,164

CLASS 482

63 5,851,165
79 5,851,166
122 5,851,167

CLASS 492

7 5,851,168

CLASS 494

12 5,851,169
20 5,851,170

CLASS 501

54 5,851,938
70 5,851,939
71 5,851,940
88 5,851,941
95.1 5,851,942
98.1 5,851,943

CLASS 502

22 5,851,944
103 5,851,945
131 5,851,946
258 5,851,947
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349 5,851,950

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51 : 402,811
403,033
403,129
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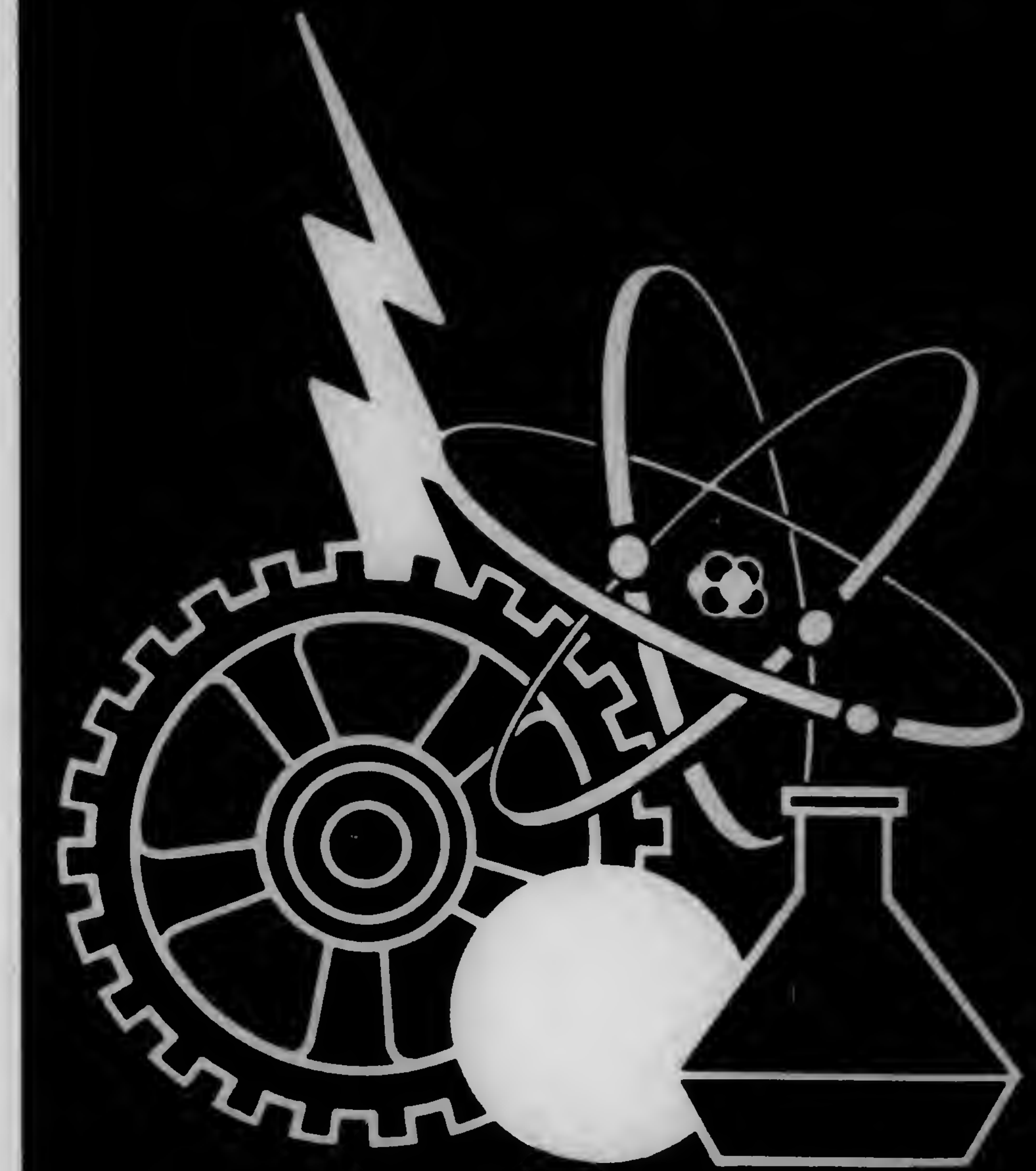
December 29, 1998



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1216 O.G. 30, on November 10, 1998.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997. A change in the maximum number of designation fees payable and a reduction for electronic filing, both with effect from January 1, 1999, were announced in the *Official Gazette* at 1217 O.G. 148, on December 29, 1998.

Certain domestic PCT fees have been changed by Public Law 105-358 of November 10, 1998, and were announced in the *Official Gazette* at 1217 O.G. 148, on December 29, 1998.

The schedule of PCT fees (in U.S. dollars), as of January 1, 1999, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	$240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	$700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a) and filing fee under 37 CFR 1.16(a) paid)	$450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	$210.00
European Patent Office as ISA	$1338.00
International fees	
Basic fee	$455.00
Basic supplemental fee (for each page over 30)	$10.00
Designation fee per country or region	
— For the first 10 national or regional offices designated	$105.00
— For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	$105.00
— Confirmation fee	$52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	$162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	$490.00
— Additional examination fee, per additional invention (payable only upon invitation)	$140.00
— USPTO was not ISA in PCT Chapter I	$750.00
— Additional examination fee, per additional invention (payable only upon invitation)	$270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	$48.00	$96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	$335.00	$670.00
USPTO was ISA but not IPEA	$380.00	$760.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	$485.00	$970.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	$420.00	$840.00
Other National fees		
— For each independent claim in excess of 3	$39.00	$78.00
— For each claim in excess of 20.	$9.00	$18.00
— For each application containing a multiple dependent claim	$130.00	$260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	$65.00	$130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	$130.00	$130.00

Dec. 8, 1998

Q. TODD DICKINSON
Deputy Assistant Secretary of
Commerce and Deputy Commissioner
of Patents and Trademarks

Patent Cooperation Treaty Update

The Assembly of the International Patent Cooperation Union (PCT Union), in a meeting held in Geneva from September 7 to 15, 1998, decided to reduce the maximum number of designation fees payable for PCT international applications from 11 to 10. This reduction will take effect from January 1, 1999.

The Assembly also decided to provide applicants who prepare their PCT international applications using the "PCT-EASY" (Electronic Application SYstem) software and meet certain other conditions with a reduction of $140.00 in their

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PCT international fees. to obtain the reduction, the international application must be filed with a computer printout of the request prepared using the PCT-EASY software, a copy of the request in electronic form prepared using that software and a copy of the abstract in electronic form. This reduction will also be available January 1, 1999.

Dec.8, 1998

Q. TODD DICKINSON
Deputy Assistant Secretary of
Commerce and Deputy Commissioner
of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on December 26, 1996 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,477,558 through 5,479,656
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 23, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,073,984 through 5,075,896
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 22, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,713,842 through 4,715,065
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$470.00
By other than a small entity	$940.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$950.00
By other than a small entity	$1900.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1455.00
By other than a small entity	$2910.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$700.00
(2) unintentional	$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON October 21, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,617,701	06/613,909	10/21/86
4,617,704	06/722,476	10/21/86
4,617,714	06/741,796	10/21/86
4,617,717	06/759,914	10/21/86
4,617,722	06/677,877	10/21/86
4,617,730	06/639,988	10/21/86
4,617,769	06/583,542	10/21/86
4,617,774	06/629,625	10/21/86
4,617,785	06/381,307	10/21/86
4,617,787	06/785,022	10/21/86
4,617,793	06/578,759	10/21/86
4,617,794	06/740,427	10/21/86
4,617,795	06/711,253	10/21/86
4,617,799	06/681,829	10/21/86
4,617,800	06/719,870	10/21/86
4,617,811	06/637,589	10/21/86
4,617,817	06/698,728	10/21/86
4,617,818	06/520,850	10/21/86
4,617,826	06/595,244	10/21/86
4,617,837	06/701.086	10/21/86
4,617,839	06/747,172	10/21/86
4,617,846	06/703,068	10/21/86
4,617,848	06/767,461	10/21/86
4,617,856	06/818,014	10/21/86
4,617,857	06/661,555	10/21/86
4,617,858	06/302,857	10/21/86
4,617,866	06/610,706	10/21/86
4,617,867	06/670,028	10/21/86
4,617,877	06/754,782	10/21/86
4,617,882	06/587,787	10/21/86
4,617,887	06/718,050	10/21/86
4,617,890	06/749.089	10/21/86
4,617,893	06/758,498	10/21/86
4,617,900	06/699,281	10/21/86
4,617,903	06/700,178	10/21/86
4,617,920	06/697,791	10/21/86
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4,617,994	06/800,852	10/21/86
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4,617,999	06/676,138	10/21/86
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4,618,004	06/653,095	10/21/86
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4,618,586	06/483,284	10/21/86
4,618,589	06/745,837	10/21/86
4,618,590	06/730,220	10/21/86

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PATENTS WHICH EXPIRED ON October 16, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date			
4,618,591	06/740,475	10/21/86	4,962,547	07/369,515	10/16/90
4,618,595	06/742,168	10/21/86	4,962,548	07/241,243	10/16/90
4,618,612	06/618,661	10/21/86	4,962,550	07/235,504	10/16/90
4,618,620	06/765,574	10/21/86	4,962,553	07/340,203	10/16/90
4,618,626	06/777,535	10/21/86	4,962,554	07/322,995	10/16/90
4,618,634	06/706,301	10/21/86	4,962,555	07/365,497	10/16/90
4,618,637	06/809,553	10/21/86	4,962,561	07/182,168	10/16/90
4,618,638	06/674,216	10/21/86	4,962,571	07/359,987	10/16/90
4,618,639	06/755,424	10/21/86	4,962,574	07/461,415	10/16/90
4,618,647	06/674,951	10/21/86	4,962,575	07/232,213	10/16/90
4,618,652	06/725,686	10/21/86	4,962,583	07/258,088	10/16/90
4,618,657	06/710,336	10/21/86	4,962,585	07/453,857	10/16/90
4,618,663	06/535,262	10/21/86	4,962,590	07/338,541	10/16/90
4,618,664	06/689,928	10/21/86	4,962,592	07/340,468	10/16/90
4,618,673	06/304,621	10/21/86	4,962,595	07/404,980	10/16/90
4,618,675	06/562,135	10/21/86	4,962,598	07/203,321	10/16/90
4,618,681	06/629,554	10/21/86	4,962,604	07/395,580	10/16/90
4,618,683	06/673,458	10/21/86	4,962,608	07/290,446	10/16/90
4,618,699	06/616,406	10/21/86	4,962,611	07/274,974	10/16/90
4,618,705	06/341,977	10/21/86	4,962,614	07/255,132	10/16/90
4,618,710	06/417,771	10/21/86	4,962,615	07/102,427	10/16/90
4,618,715	06/317,138	10/21/86	4,962,621	07/365,855	10/16/90
4,618,727	06/668,540	10/21/86	4,962,625	07/362,310	10/16/90
4,618,729	06/782,807	10/21/86	4,962,630	07/199,359	10/16/90
4,618,741	06/628,725	10/21/86	4,962,636	07/330,800	10/16/90
4,618,744	06/728,231	10/21/86	4,962,641	07/316,854	10/16/90
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4,618,764	06/797,740	10/21/86	4,962,656	07/373,531	10/16/90
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4,618,771	06/551,454	10/21/86	4,962,668	07/346,681	10/16/90
4,618,772	06/693,493	10/21/86	4,962,669	07/418,400	10/16/90
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4,618,793	06/714,473	10/21/86	4,962,685	07/263,053	10/16/90
4,618,802	06/665,896	10/21/86	4,962,691	07/506,599	10/16/90
4,618,803	06/673,101	10/21/86	4,962,692	07/386,624	10/16/90
4,618,808	06/696,568	10/21/86	4,962,698	07/456,536	10/16/90
4,618,813	06/708,197	10/21/86	4,962,708	07/282,757	10/16/90
4,618,817	06/775,152	10/21/86	4,962,709	07/259,052	10/16/90
4,618,822	06/601,681	10/21/86	4,962,712	07/338,689	10/16/90
4,618,823	06/537,536	10/21/86	4,962,714	07/355,932	10/16/90
4,618,841	06/699,949	10/21/86	4,962,720	07/402,829	10/16/90
4,618,852	06/706,208	10/21/86	4,962,724	07/393,871	10/16/90
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4,618,863	06/537,133	10/21/86	4,962,744	07/395,804	10/16/90
4,618,865	06/654,716	10/21/86	4,962,745	07/413,215	10/16/90
4,618,872	06/558,403	10/21/86	4,962,748	07/405,100	10/16/90
4,618,873	06/621,683	10/21/86	4,962,753	07/207,068	10/16/90
4,618,882	06/724,555	10/21/86	4,962,755	07/382,918	10/16/90
4,618,883	06/711,445	10/21/86	4,962,758	07/364,520	10/16/90
4,618,888	06/581,158	10/21/86	4,962,760	07/345,563	10/16/90
4,618,894	06/597,708	10/21/86	4,962,761	07/347,093	10/16/90
4,618,897	06/700,553	10/21/86	4,962,763	07/209,938	10/16/90
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4,618,941	06/533,484	10/21/86	4,962,782	07/418,194	10/16/90
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4,618,971	06/651,052	10/21/86	4,962,830	07/408,871	10/16/90
4,618,977	06/806,132	10/21/86	4,962,839	07/356,117	10/16/90
4,618,983	06/452,298	10/21/86	4,962,842	07/265,006	10/16/90
4,618,996	06/603,432	10/21/86	4,962,843	07/309,239	10/16/90
4,619,002	06/627,270	10/21/86	4,962,844	07/367,876	10/16/90
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			4,962,858	07/380,210	10/16/90

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			4,963,265	07/191,039	10/16/90
			4,963,268	07/312,225	10/16/90
			4,963,275	07/178,099	10/16/90
4,962,861	07/348,173	10/16/90	4,963,276	07/284,568	10/16/90
4,962,874	07/336,889	10/16/90	4,963,277	07/260,254	10/16/90
4,962,875	07/347,013	10/16/90	4,963,286	07/286,271	10/16/90
4,962,881	07/503,783	10/16/90	4,963,301	07/212,627	10/16/90
4,962,883	07/421,359	10/16/90	4,963,303	07/458,880	10/16/90
4,962,895	07/330,820	10/16/90	4,963,304	07/249,034	10/16/90
4,962,899	07/427,561	10/16/90	4,963,314	07/474,636	10/16/90
4,962,912	07/410,865	10/16/90	4,963,315	07/358,755	10/16/90
4,962,914	07/484,772	10/16/90	4,963,319	07/480,462	10/16/90
4,962,921	07/415,577	10/16/90	4,963,322	07/409,694	10/16/90
4,962,926	07/462,567	10/16/90	4,963,333	07/346,205	10/16/90
4,962,930	07/387,775	10/16/90	4,963,335	07/347,875	10/16/90
4,962,933	07/304,013	10/16/90	4,963,338	07/213,369	10/16/90
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4,962,946	07/334,835	10/16/90	4,963,346	07/200,681	10/16/90
4,962,947	07/271,308	10/16/90	4,963,347	07/282,556	10/16/90
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4,962,965	07/409,370	10/16/90	4,963,368	07/182,629	10/16/90
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4,962,967	07/355,432	10/16/90	4,963,376	07/136,450	10/16/90
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4,962,988	07/377,469	10/16/90	4,963,384	07/243,804	10/16/90
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4,963,012	07/259,634	10/16/90	4,963,386	07/411,913	10/16/90
4,963,013	06/616,577	10/16/90	4,963,389	07/294,990	10/16/90
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4,963,061	07/334,624	10/16/90	4,963,422	07/419,924	10/16/90
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4,963,072	07/397,863	10/16/90	4,963,429	07/291,546	10/16/90
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4,963,086	07/352,846	10/16/90	4,963,444	07/358,688	10/16/90
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4,963,101	07/314,440	10/16/90	4,963,449	07/272,371	10/16/90
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4,963,134	07/319,121	10/16/90	4,963,462	07/462,177	10/16/90
4,963,140	07/134,275	10/16/90	4,963,465	07/458,140	10/16/90
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4,963,156	07/305,112	10/16/90	4,963,494	07/319,857	10/16/90
4,963,169	07/296,446	10/16/90	4,963,499	07/315,363	10/16/90
4,963,173	07/345,512	10/16/90	4,963,501	07/412,253	10/16/90
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4,963,180	07/228,000	10/16/90	4,963,508	07/483,364	10/16/90
4,963,181	07/337,195	10/16/90	4,963,513	07/356,752	10/16/90
4,963,184	07/365,294	10/16/90	4,963,517	07/156,612	10/16/90
4,963,185	06/735,349	10/16/90	4,963,519	07/299,332	10/16/90
4,963,192	07/148,989	10/16/90	4,963,524	07/246,611	10/16/90
4,963,202	07/504,258	10/16/90	4,963,526	07/267,749	10/16/90
4,963,203	07/500,829	10/16/90	4,963,530	07/171,269	10/16/90
4,963,208	07/123,856	10/16/90	4,963,533	06/922,957	10/16/90
4,963,210	07/353,496	10/16/90	4,963,535	07/151,462	10/16/90
4,963,214	07/281,807	10/16/90	4,963,543	07/121,881	10/16/90
4,963,218	07/370,786	10/16/90	4,963,544	07/347,579	10/16/90
4,963,231	07/206,118	10/16/90	4,963,548	07/200,084	10/16/90
4,963,234	07/421,833	10/16/90	4,963,550	07/476,200	10/16/90
4,963,243	07/483,317	10/16/90	4,963,558	07/447,319	10/16/90
4,963,249	07/375,570	10/16/90	4,963,561	07/486,637	10/16/90
4,963,251	07/245,128	10/16/90	4,963,566	07/031,037	10/16/90
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4,963,262	07/341,935	10/16/90	4,963,570	07/376,635	10/16/90

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Patent Number	Application Number	Issue Date
4,963,571	07/272,226	10/16/90
4,963,585	07/310,323	10/16/90
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4,963,618	07/218,297	10/16/90
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4,963,622	07/372,466	10/16/90
4,963,632	07/291,803	10/16/90
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4,963,648	07/506,217	10/16/90
4,963,650	07/417,770	10/16/90
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4,963,670	07/277,084	10/16/90
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4,963,764	07/330,953	10/16/90
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4,963,787	07/469,127	10/16/90
4,963,789	07/345,575	10/16/90
4,963,794	07/241,721	10/16/90
4,963,797	07/353,245	10/16/90
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4,963,936	07/446,346	10/16/90
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4,963,943	07/410,453	10/16/90
4,963,950	07/188,887	10/16/90
4,963,954	07/340,273	10/16/90
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4,963,965	07/423,173	10/16/90
4,963,981	07/369,342	10/16/90
4,963,984	07/349,744	10/16/90
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4,963,995	07/289,776	10/16/90
4,963,997	07/358,212	10/16/90
4,964,004	07/368,244	10/16/90
4,964,006	07/412,365	10/16/90
4,964,031	07/254,900	10/16/90
4,964,038	07/113,310	10/16/90
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4,964,050	07/193,411	10/16/90
4,964,052	07/263,359	10/16/90
4,964,054	07/283,154	10/16/90
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4,964,069	07/334,787	10/16/90
4,964,076	07/351,274	10/16/90
4,964,088	07/430,704	10/16/90
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4,964,107	07/493,188	10/16/90
4,964,116	07/266,082	10/16/90
4,964,122	07/346,126	10/16/90
4,964,127	07/266,961	10/16/90
4,964,132	07/362,479	10/16/90
4,964,133	07/338,069	10/16/90
4,964,140	07/310,719	10/16/90
4,964,144	07/390,911	10/16/90
4,964,149	07/190,833	10/16/90
4,964,150	07/459,049	10/16/90
4,964,153	07/299,453	10/16/90
4,964,158	07/273,164	10/16/90
4,964,160	07/304,283	10/16/90
4,964,165	07/231,563	10/16/90
4,964,167	07/216,210	10/16/90
4,964,170	07/324,298	10/16/90

PATENTS WHICH EXPIRED ON October 18, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
5,355,535	08/052,633	10/18/94
5,355,537	08/059,643	10/18/94
5,355,538	08/035,184	10/18/94
5,355,539	08/005,825	10/18/94
5,355,543	08/138,869	10/18/94
5,355,544	08/216,598	10/18/94
5,355,551	08/053,916	10/18/94
5,355,553	07/964,255	10/18/94
5,355,558	08/103,867	10/18/94
5,355,562	08/120,527	10/18/94
5,355,563	07/741,509	10/18/94
5,355,569	07/951,169	10/18/94
5,355,570	08/046,518	10/18/94
5,355,574	08/107,910	10/18/94
5,355,576	08/024,520	10/18/94
5,355,592	08/097,152	10/18/94
5,355,598	08/101,002	10/18/94
5,355,605	07/976,475	10/18/94
5,355,608	08/073,766	10/18/94
5,355,609	08/118,288	10/18/94
5,355,610	08/144,355	10/18/94
5,355,613	08/009,817	10/18/94
5,355,614	08/070,607	10/18/94
5,355,619	08/129,492	10/18/94
5,355,622	08/030,917	10/18/94
5,355,623	08/123,115	10/18/94
5,355,624	07/992,796	10/18/94
5,355,631	07/978,727	10/18/94
5,355,633	07/996,041	10/18/94
5,355,639	08/001,163	10/18/94
5,355,640	08/177,128	10/18/94
5,355,642	07/984,703	10/18/94
5,355,649	07/924,184	10/18/94
5,355,652	07/656,155	10/18/94
5,355,653	08/038,785	10/18/94
5,355,658	07/972,926	10/18/94
5,355,683	08/169,922	10/18/94
5,355,684	07/876,406	10/18/94
5,355,686	08/105,493	10/18/94
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5,355,694	08/049,367	10/18/94
5,355,699	08/045,700	10/18/94
5,355,709	07/976,138	10/18/94
5,355,713	07/960,232	10/18/94
5,355,719	07/911,325	10/18/94
5,355,728	07/901,675	10/18/94
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5,355,767	06/241,156	10/18/94
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5,355,776	07/802,610	10/18/94
5,355,801	08/043,302	10/18/94
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5,355,839	08/124,206	10/18/94
5,355,844	08/067,712	10/18/94
5,355,848	08/140,639	10/18/94
5,355,857	08/105,715	10/18/94
5,355,866	08/124,335	10/18/94
5,355,867	08/037,314	10/18/94
5,355,871	07/943,514	10/18/94
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5,355,943	08/004,419	10/18/94
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5,355,946	08/131,286	10/18/94
5,355,948	07/971,273	10/18/94
5,355,949	08/052,158	10/18/94
5,355,951	08/031,777	10/18/94
5,355,962	07/874,587	10/18/94
5,355,963	07/955,974	10/18/94
5,355,974	08/044,726	10/18/94
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5,355,982	08/053,793	10/18/94
5,355,998	08/078,421	10/18/94
5,355,999	08/136,523	10/18/94
5,356,000	08/093,726	10/18/94
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5,356,003	07/919,070	10/18/94
5,356,006	07/991,602	10/18/94
5,356,008	08/093,015	10/18/94
5,356,012	08/059,216	10/18/94
5,356,023	08/147,031	10/18/94
5,356,028	07/937,859	10/18/94
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5,356,030	07/672,662	10/18/94
5,356,031	07/984,576	10/18/94
5,356,041	08/035,941	10/18/94
5,356,042	08/031,725	10/18/94
5,356,043	08/113,237	10/18/94
5,356,047	08/106,364	10/18/94
5,356,050	08/112,975	10/18/94
5,356,054	08/094,074	10/18/94
5,356,061	08/137,306	10/18/94
5,356,068	07/776,302	10/18/94
5,356,071	08/127,878	10/18/94
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5,356,140	08/047,715	10/18/94
5,356,144	07/917,868	10/18/94
5,356,148	08/101,420	10/18/94
5,356,149	07/996,964	10/18/94
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5,356,153	08/170,822	10/18/94
5,356,155	08/174,988	10/18/94
5,356,158	07/985,082	10/18/94
5,356,159	08/156,681	10/18/94
5,356,160	08/032,288	10/18/94
5,356,161	08/136,824	10/18/94
5,356,162	07/945,364	10/18/94
5,356,163	07/992,576	10/18/94
5,356,165	08/078,351	10/18/94
5,356,167	08/095,165	10/18/94
5,356,177	08/149,832	10/18/94
5,356,178	07/871,086	10/18/94
5,356,179	08/119,632	10/18/94
5,356,185	08/047,992	10/18/94
5,356,187	08/079,518	10/18/94
5,356,188	07/927,295	10/18/94
5,356,192	08/078,916	10/18/94
5,356,193	08/104,770	10/18/94
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5,356,199	07/927,402	10/18/94
5,356,202	07/849,952	10/18/94
5,356,204	08/062,172	10/18/94
5,356,209	08/063,303	10/18/94
5,356,210	08/184,747	10/18/94
5,356,211	08/127,032	10/18/94
5,356,224	08/059,594	10/18/94
5,356,225	08/170,441	10/18/94
5,356,235	07/955,689	10/18/94
5,356,237	07/992,020	10/18/94
5,356,241	07/958,167	10/18/94
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5,356,273	08/175,866	10/18/94
5,356,274	08/080,810	10/18/94
5,356,288	07/987,458	10/18/94

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5,356,293	08/076,423	10/18/94
5,356,296	07/911,155	10/18/94
5,356,297	08/030,716	10/18/94
5,356,315	08/157,708	10/18/94
5,356,319	08/006,977	10/18/94
5,356,323	08/064,139	10/18/94
5,356,324	08/122,048	10/18/94
5,356,327	08/065,835	10/18/94
5,356,328	07/981,130	10/18/94
5,356,338	08/053,125	10/18/94
5,356,341	08/081,068	10/18/94
5,356,343	07/922,070	10/18/94
5,356,345	08/169,405	10/18/94
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5,356,354	08/148,892	10/18/94
5,356,355	08/152,435	10/18/94
5,356,357	08/199,887	10/18/94
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5,356,363	08/056,548	10/18/94
5,356,383	07/653,421	10/18/94
5,356,384	08/012,331	10/18/94
5,356,387	07/867,419	10/18/94
5,356,393	07/918,968	10/18/94
5,356,394	07/959,221	10/18/94
5,356,401	07/962,693	10/18/94
5,356,402	08/054,474	10/18/94
5,356,409	07/977,579	10/18/94
5,356,427	08/063,068	10/18/94
5,356,435	08/009,932	10/18/94
5,356,438	08/001,645	10/18/94
5,356,444	08/143,559	10/18/94
5,356,452	08/065,026	10/18/94
5,356,457	07/990,163	10/18/94
5,356,465	08/095,855	10/18/94
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5,356,474	07/982,526	10/18/94
5,356,489	07/777,547	10/18/94
5,356,504	08/084,483	10/18/94
5,356,511	08/092,494	10/18/94
5,356,520	08/023,283	10/18/94
5,356,521	08/048,603	10/18/94
5,356,531	08/106,442	10/18/94
5,356,542	07/818,478	10/18/94
5,356,543	08/011,198	10/18/94
5,356,544	08/072,222	10/18/94
5,356,555	07/944,567	10/18/94
5,356,568	07/604,230	10/18/94
5,356,569	08/209,426	10/18/94
5,356,573	07/980,236	10/18/94
5,356,581	07/890,917	10/18/94
5,356,601	07/888,970	10/18/94
5,356,606	08/050,159	10/18/94
5,356,607	07/852,249	10/18/94
5,356,611	08/144,515	10/18/94
5,356,613	07/829,026	10/18/94
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5,356,638	08/029,617	10/18/94
5,356,641	08/058,706	10/18/94
5,356,645	08/132,906	10/18/94
5,356,649	08/002,887	10/18/94
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5,356,671	08/032,215	10/18/94
5,356,691	07/953,838	10/18/94
5,356,692	07/922,613	10/18/94
5,356,694	08/033,347	10/18/94
5,356,697	08/116,847	10/18/94
5,356,699	07/767,045	10/18/94
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5,356,702	08/153,577	10/18/94
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5,356,733	08/146,285	10/18/94
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5,356,773	07/762,735	10/18/94
5,356,779	07/624,730	10/18/94
5,356,794	07/941,218	10/18/94
5,356,798	08/048,938	10/18/94
5,356,808	08/178,226	10/18/94
5,356,831	07/968,057	10/18/94
5,356,858	08/075,094	10/18/94
5,356,862	07/915,838	10/18/94
5,356,872	08/215,778	10/18/94
5,356,876	07/933,981	10/18/94
5,356,879	07/835,496	10/18/94
5,356,880	07/889,709	10/18/94
5,356,881	07/952,062	10/18/94
5,356,882	08/084,433	10/18/94
5,356,886	07/965,260	10/18/94
5,356,887	08/118,832	10/18/94
5,356,888	07/780,549	10/18/94
5,356,889	07/966,969	10/18/94
5,356,891	07/974,816	10/18/94
5,356,893	07/945,878	10/18/94
5,356,899	08/113,482	10/18/94
5,356,903	08/052,027	10/18/94
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5,356,915	08/049,865	10/18/94
5,356,916	07/830,298	10/18/94
5,356,919	07/707,522	10/18/94
5,356,920	07/915,835	10/18/94
5,356,928	08/122,921	10/18/94
5,356,930	08/102,337	10/18/94
5,356,932	08/104,242	10/18/94
5,356,933	08/084,335	10/18/94
5,356,937	07/932,156	10/18/94
5,356,947	07/968,251	10/18/94
5,356,955	07/980,444	10/18/94
5,356,962	08/198,015	10/18/94
5,356,963	08/093,506	10/18/94
5,356,972	07/921,139	10/18/94
5,356,983	08/024,710	10/18/94
5,356,987	07/989,047	10/18/94
5,356,988	07/901,934	10/18/94
5,356,991	08/062,652	10/18/94
5,356,992	08/023,914	10/18/94
5,356,994	07/909,786	10/18/94
5,357,000	08/053,038	10/18/94
5,357,002	07/992,716	10/18/94
5,357,004	08/195,036	10/18/94
5,357,010	08/022,836	10/18/94
5,357,012	07/927,434	10/18/94
5,357,026	07/732,542	10/18/94
5,357,029	08/164,087	10/18/94
5,357,030	07/892,844	10/18/94
5,357,036	07/793,382	10/18/94
5,357,037	08/225,426	10/18/94
5,357,039	08/053,072	10/18/94
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5,357,094	07/861,067	10/18/94
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5,357,176	07/902,844	10/18/94
5,357,177	08/031,523	10/18/94
5,357,182	08/009,836	10/18/94
5,357,183	08/037,328	10/18/94
5,357,184	07/[illegible]75,374	10/18/94
5,357,224	08/1[illegible]2,206	10/18/94
5,357,243	07/961,496	10/18/94
5,357,246	07/872,362	10/18/94
5,357,249	07/779,756	10/18/94
5,357,260	08/005,880	10/18/94
5,357,283	08/124,426	10/18/94
5,357,287	08/142,054	10/18/94
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5,357,301	08/190,861	10/18/94
5,357,305	07/749,827	10/18/94
5,357,313	08/103,550	10/18/94
5,357,316	08/010,443	10/18/94
5,357,318	08/060,504	10/18/94
5,357,337	07/979,022	10/18/94
5,357,340	07/838,771	10/18/94
5,357,360	07/966,062	10/18/94
5,357,366	08/112,960	10/18/94
5,357,367	07/968,525	10/18/94
5,357,376	08/005,233	10/18/94
5,357,380	08/077,477	10/18/94
5,357,385	07/961,028	10/18/94
5,357,391	07/841,483	10/18/94
5,357,392	07/911,069	10/18/94
5,357,396	07/945,974	10/18/94
5,357,401	07/956,808	10/18/94
5,357,402	07/857,914	10/18/94
5,357,403	07/545,793	10/18/94
5,357,407	08/058,368	10/18/94
5,357,410	08/125,665	10/18/94
5,357,415	08/100,243	10/18/94
5,357,417	07/904,144	10/18/94
5,357,423	08/020,367	10/18/94
5,357,436	07/964,319	10/18/94
5,357,446	07/779,045	10/18/94
5,357,459	07/748,483	10/18/94
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5,357,487	07/639,986	10/18/94
5,357,497	07/824,562	10/18/94
5,357,517	07/862,553	10/18/94
5,357,521	08/033,066	10/18/94
5,357,552	08/101,728	10/18/94
5,357,554	08/129,970	10/18/94
5,357,566	08/045,918	10/18/94
5,357,573	07/928,006	10/18/94
5,357,586	07/700,691	10/18/94
5,357,587	07/995,833	10/18/94
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5,357,612	08/091,117	10/18/94
5,357,617	07/796,194	10/18/94
5,357,618	07/686,221	10/18/94
5,357,623	07/786,490	10/18/94

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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,566,125	06/447,868	12/08/82	01/21/86	10/26/98
4,574,277	06/527,944	08/30/83	03/04/86	10/26/98
4,588,762	06/673,552	11/20/84	05/13/86	10/29/98
4,757,022	07/122,395	11/19/87	07/12/88	10/23/98
4,764,088	07/040,858	04/21/87	08/16/88	10/26/98
4,828,979	06/669,334	11/08/84	05/09/89	10/26/98
4,833,698	06/891,597	08/01/86	05/23/89	10/23/98
4,840,571	07/132,706	12/11/87	06/20/89	10/26/98
4,890,694	07/277,638	11/29/88	01/02/90	10/26/98
4,901,048	07/323,674	03/15/89	02/13/90	10/29/98
4,926,397	07/434,338	11/13/89	05/15/90	10/29/98
4,934,466	07/314,556	02/23/89	06/19/90	10/29/98
4,935,895	07/236,986	08/26/88	06/19/90	10/26/98
4,944,802	07/245,330	09/16/88	07/31/90	10/26/98
5,127,544	07/509,318	04/13/90	07/07/92	10/26/98
5,130,695	07/611,166	11/08/90	07/14/92	10/26/98
5,134,260	07/776,898	10/16/91	07/28/92	10/26/98
5,135,232	07/694,375	05/01/91	08/04/92	10/23/98
5,177,694	07/684,905	04/30/91	01/05/93	10/23/98
5,201,731	07/721,032	06/26/91	04/13/93	10/29/98
5,255,666	07/257,506	10/13/88	10/26/93	10/26/98
5,279,259	07/741,847	08/07/91	01/18/94	10/23/98
5,293,518	07/746,602	08/19/91	03/08/94	10/26/98
5,298,687	08/043,990	04/07/93	03/29/94	10/26/98
5,301,826	07/926,848	08/06/92	04/12/94	10/29/98
5,313,005	08/120,644	09/13/93	05/17/94	10/26/98
5,320,596	07/990,160	12/14/92	06/14/94	10/29/98

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,775,624, Re. S.N. 09/185,663, Nov. 4, 1998, Cl. 435/226, VECTORS AND COMPOUNDS FOR EXPRESSION OF HUMAN PROTEIN C, Nils U. Bang, et. al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.*, Attorney or Agent: R. Danny Huntington, Ex. Gp.: 1641

4,940,727, Re. S.N. 09/188,158, Nov. 4, 1998, Cl. 514/450, NOVEL HMG-COA REDUCTASE INHIBITORS, E. S. Inamine, et. al., Owner of Record: *Merck & Co., Inc., Gwynedd Valley, Pa.*, Attorney or Agent: Carol S. Quagliat, Ex. Gp.: 1616

5,116,870, Re. S.N. 09/188,155, Nov. 4, 1998, Cl. 514/ , HMG-COA REDUCTASE INHIBITORS, Robert L. Smith, et. al., Owner of Record: *Merck & Co., Inc., Gwynedd Valley, Pa.*, Attorney or Agent: Carol S. Quagliat, Ex. Gp.: 1612

5,292,148, Re. S.N. 09/189,838, Nov. 12, 1998, Cl. 280/602, SKI OF NON-RECTANGULAR CROSS SECTION, Roger Abondance, et. al., Owner of Record: *Skis Rossignol S.A., Voiron, France*, Attorney or Agent: Paul T. Bowen, Ex. Gp.: 3611

5,340,764, Re. S.N. 09/167,919, Oct. 7, 1998, Cl. 438/052, INTEGRATION OF HIGH PERFORMANCE SUBMICRON

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CMOS AND DUAL-POLY NON-VOLATILE MEMORY DEVICES USING A THIRD POLYSILICON LAYER, Bradley J. Larsen, et. al., Owner of Record: *Atmel Corp., San Jose, Calif.*, Attorney or Agent: Thomas Schneck, Ex. Gp.: 2811

5,348,491, Re. S.N. 09/175,163, Oct. 19, 1998, Cl. 439/188, JACK MODULE, Dominic J. Louwagie, et. al., Owner of Record: *ADC Telecommunications Inc., Minneapolis, Minn.*, Attorney or Agent: Timothy A. Lindquist, Ex. Gp.: 3202

5,427,290, Re. S.N. 09/176,985, Oct. 22, 1998, Cl. 224/148, WATER POUCH BACKPACK, G. Bryce Thatcher, Owner of Record: *Ultimate Direction, Inc., Rexburg, Id.*, Attorney or Agent: Randall B. Bateman, Ex. Gp.: 3727

5,458,483, Re. S.N. 08/954,291, Oct. 20, 1997, Cl. 431/350, OXYGEN-FUEL BURNER WITH INTEGRAL STAGED OXYGEN SUPPLY, Curtis L. Taylor, Owner of Record: *Maxon Corp., Muncie, Ind.*, Attorney or Agent: Richard A. Rezek, Ex. Gp.: 3743

5,524,998, Re. S.N. 09/096,483, Jun. 10, 1998, Cl. 402/079, LEAF STRUCTURE WITH A HINGED REPOSITIONAL BINDING, David C. Schwartz, Owner of Record: *Productive Environments, Inc., Framingham, Mass.*, Attorney or Agent: None, Ex. Gp.: 3722

5,528,235, Re. S.N. 09/094,998, Jun. 15, 1998, Cl. 341/022, MULTI-STATUS MULTI-FUNCTION DATA PROCESSING KEY AND KEY ARRAY, Edward Lin, Owner of Record: *Inventor*, Attorney or Agent: Ray L. Weber, Ex. Gp.: 2211

5,562,536, Re. S.N. 09/168,346, Oct. 7, 1998, Cl. 453/009, COIN RECEIVING AND DISPENSING APPARATUS, Toshio Uchida, et. al., Owner of Record: *Asahi Seiko Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Alan J. Kasper, Ex. Gp.: 3617

5,563,616, Re. S.N. 09/168,826, Oct. 8, 1998, Cl. 343/753, ANTENNA DESIGN USING A HIGH INDEX, LOW LOSS MATERIAL, Richard C. Dempsey, et. al., Owner of Record: *Bank America Business Credit Inc., Pasadena, Calif.*, Attorney or Agent: Jeffrey K. Seto, Ex. Gp.: 2819

5,565,625, Re. S.N. 09/172,541, Dec. 1, 1994, Cl. 073/763, SENSOR WITH SEPARATE ACTUATOR & SENSE FINGERS, Roger T. Howe and Stephen Bart, Owner of Record: *Analog Devices, Inc.* Attorney or Agent: Donald R. Steinberg; Hale & Dorr, Boston, Mass., Ex. Gp.: 2214

5,571,170, Re. S.N. 09/186,589, Nov. 5,1998, Cl. 623/1.000, METHOD AND APPARATUS FOR BILATERAL INTRA-AORTIC BYPASS, Julio C. Palmaz, et. al., Owner of Record: *Expandable Grafts Partnership, San Antonio, Tex.*, Attorney or Agent: John P. Milnamow, Ex. Gp.: 3738

5,571,335, Re. S.N. 09/186,240, Nov. 5, 1998, Cl. 134/1.000, METHOD FOR REMOVAL OF SURFACE COATINGS, Daniel L. Lloyd, et. al., Owner of Record: *Cold Jet, Inc.*, Attorney or Agent: Rustan J. Hill, Ex. Gp.: 1313

5,571,814, Re. S.N. 08/471,574, Jun. 6, 1995, Cl. 514/258.000, N-[(4-HETEROARYL-1-PYRROLIDINYL)-ALKYL]PHTHALIMIDES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY, Joseph T. Strupczewski, et al., Owner of Record: *Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.*, Attorney or Agent: Lara C. Kelley, Ex. Gp.: 1611

5,571,979, Re. S.N. 09/187,093, Nov. 5, 1998, Cl. 84/95.2, TRANSMISSION MECHANISM FOR MUSIC BOX ORNAMENT, Yu-Kai Chen, Owner of Record: *Inventor*, Attorney or Agent: Benjamin E. Urcia, Ex. Gp.: 2837

5,572,639, Re. S.N. 09/186,270, Nov. 4, 1998, Cl. 395/133, METHOD AND APPARATUS FOR INTERACTIVELY MANIPULATING AND DISPLAYING PRESUMPTIVE RELATIONSHIPS BETWEEN GRAPHIC OBJECTS, Brian D. Gantt, Owner of Record: *Autodesk, Inc., San Rafael, Calif.*, Attorney or Agent: George H. Gates, Ex. Gp.: 2772

5,616,961, Re. S.N. 09/100,009, Jun. 19, 1998, Cl. 257/774, STRUCTURE OF CONTACT BETWEEN WIRING LAYERS IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, Yusuke Kohyama, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki, Japan*, Attorney or Agent: Michael J. Shea, Ex. Gp.: 2811

5,669,072, Re. S.N. 09/186,260, Nov. 4, 1998, Cl. 002/093.000, COAT CONSTRUCTION, B. Lennart Bjorklund, Owner of Record: *Hart Schaffner & Marx, Chicago, Ill.*, Attorney or Agent: William F. Prendergast, Ex. Gp.: 3741

5,734,778, Re. S.N. 09/177,910, Oct. 23, 1998, Cl. 385/140, VARIABLE ATTENUATOR CONNECTOR, John P. Loughlin, et. al., Owner of Record: *Johanson Manufacturing Corp., Boonton, N.J.*, Attorney or Agent: David E. Boundy, Ex. Gp.: 2874

5,743,575, Re. S.N. 09/173,309, Oct. 15, 1998, Cl. 292/336.300, FLUID-DAMPED AUTOMOTIVE DOOR LATCH ACTUATOR, Robert W. McFarland, Owner of Record: *Adac Plastics Inc., Grand Rapids, Mich.*, Attorney or Agent: Donald L. Wood, Ex. Gp.: 3633

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,316,472, Re. S.N. 90/005,125, Oct. 26, 1998, Cl. 607/009, CARDIOVERTING DEVICE WITH STORED ENERGY SELECTING MEANS AND DISCHARGE INITIATING MEANS, AND RELATED METHOD, Mieczyslaw Mirowski, et. al., Owner of Record: *Inventor*, Attorney or Agent: Ronald D. Cohn, Keck Mahin and Cate, Washington, D.C., Ex. Gp.: 3737, Requester: E. Thomas Wheelock, Morrison and Foerster, Palo Alto, Calif.

4,572,191, Re. S.N. 90/005,126, Oct. 26, 1998, Cl. 607/007, COMMAND ATRIAL CARDIOVERTER, Mieczyslaw Mirowski, et. al., Owner of Record: *Inventor*, Attorney or Agent: Ronald D. Cohn, Keck Mahin and Cate, Washington, D.C., Ex. Gp.: 3737, Requester: E. Thomas Wheelock, Morrison and Foerster, Palo Alto, Calif.

5,094,865, Re. S.N. 90/005,124, Oct. 9, 1998, Cl. 426/243, TWO STAGE PROCESS FOR COOKING/BROWNING/CRUSTING FOOD BY MICROWAVE ENERGY AND INFRARED ENERGY, Melvin L. Levinson, Owner of Record: *Inventor*, Attorney or Agent: Harry B. Keck, Zurawsky and Keck, Pittsburgh, Pa., Ex. Gp.: 1761, Requester: Whirlpool Corp., c/o Kevin W. Guynn, Hill and Simpson, Chicago, Ill.

5,176,973, Re. S.N. 90/005,128, Oct. 30, 1998, Cl. 430/015, LOW OPTICAL DOT GAIN PRE-PRESS PROOFS WHEREIN THE FIRST DOWN ADHESIVE LAYER THICKNESS IS AT LEAST TWICE THAT OF ANY ADDITIONAL THIN ADHESIVE LAYER, Charles J. Gifford, et. al., Owner of Record: *Imation Corp., St. Paul, Minn.*, Attorney or Agent: Michael S. Sherrell, Imation Corp., St. Paul, Minn., Ex. Gp.: 1752, Requester: Owner

5,669,731, Re. S.N. 90/005,127, Oct. 29, 1998, Cl. 403/405.1, COMPONENT RETAINING LEGS, Katsuhiro Hironaka, et. al., Owner of Record: *Daiwa Kasei Kabushiki Kaisha, Okazaki-shi, Japan*, Attorney or Agent: Burton Scheiner, Dennison Meserole Pollack and Scheiner, Arlington, Va., Ex. Gp.: 3626, Requester: Owner

5,762,189, Re. S.N. 90/005,129, Oct. 30, 1998, Cl. 206/315.7, GOLF BAG STAND SYSTEM, Eric W. Reimers, Owner of Record: *Inventor*, Attorney or Agent: Michael J. Hughes and Larry B. Guernsey, IPLO of Michael J. Hughes, Santa Clara, Calif., Ex. Gp.: 3727, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
November 9, 1998
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
120,330	71/106,308	.02/05/1918
120,399	71/105,401	02/05/1918
120,466	71/106,708	02/05/1918
354,053	71/389,813	02/01/1938
354,055	71/390,249	02/01/1938
354,095	71/396,469	02/01/1938
354,148	71/397,947	02/01/1938
354,150	71/397,958	02/01/1938
354,168	71/398,637	02/01/1938
657,922	71/700,416	02/04/1958
657,936	71/699,511	02/04/1958
657,942	72/024,002	02/04/1958
657,948	72/019,229	02/04/1958
657,951	72/020,164	02/04/1958
657,960	72/028,106	02/04/1958
657,962	72/028,229	02/04/1958
657,976	72/018,911	02/04/1958
657,980	72/023,014	02/04/1958
657,982	72/033,219	02/04/1958
657,992	72/025,584	02/04/1958
658,000	72/029,969	02/04/1958
658,002	72/030,435	02/04/1958
658,003	72/030,500	02/04/1958
658,007	72/006,617	02/04/1958
658,010	72/020,027	02/04/1958
658,014	72/028,672	02/04/1958
658,015	72/028,694	02/04/1958
658,018	72/031,682	02/04/1958
658,023	72/005,768	02/04/1958
658,026	72/016,900	02/04/1958
658,031	72/023,790	02/04/1958
658,038	72/033,381	02/04/1958
658,039	72/007,007	02/04/1958
658,041	72/016,916	02/04/1958
658,043	72/016,918	02/04/1958
658,045	72/017,372	02/04/1958
658,046	72/017,375	02/04/1958
658,048	72/020,253	02/04/1958
658,050	72/022,391	02/04/1958
658,057	72/029,173	02/04/1958
658,061	72/022,045	02/04/1958
658,062	72/034,042	02/04/1958
658,063	72/034,043	02/04/1958
658,065	72/029,541	02/04/1958
658,081	72/028,348	02/04/1958
658,082	72/028,593	02/04/1958
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658,093	72/028,227	02/04/1958
658,101	72/029,463	02/04/1958
658,105	72/024,344	02/04/1958
658,117	72/011,010	02/04/1958
658,118	72/019,990	02/04/1958
658,123	72/030,030	02/04/1958
658,131	72/003,485	02/04/1958
658,132	72/004,630	02/04/1958
658,135	72/021,640	02/04/1958
658,144	72/031,092	02/04/1958
658,151	72/017,719	02/04/1958
658,152	72/026,189	02/04/1958
658,160	72/030,276	02/04/1958
658,163	72/030,852	02/04/1958
658,170	72/028,843	02/04/1958
1,079,433	73/103,421	12/13/1977
1,081,869	73/098,163	01/10/1978
1,083,734	73/081,972	01/31/1978
1,083,741	73/105,936	01/31/1978
1,083,749	73/118,883	01/31/1978
1,083,750	73/120,341	01/31/1978
1,083,751	73/124,244	01/31/1978
1,083,757	73/132,246	01/31/1978
1,083,760	73/133,813	01/31/1978
1,083,763	73/132,926	01/31/1978
1,083,764	73/133,594	01/31/1978
1,083,766	73/060,065	01/31/1978
1,083,772	73/112,780	01/31/1978
1,083,773	73/115,024	01/31/1978
1,083,775	73/117,548	01/31/1978
1,083,776	73/118,763	01/31/1978
1.083,777	73/119,092	01/31/1978
1,083,779	73/119,667	01/31/1978
1,083,783	73/120,879	01/31/1978
1,083,794	73/127,307	01/31/1978
1,083,795	73/127,308	01/31/1978
1,083,796	73/127,331	01/31/1978
1,083,798	73/133,343	01/31/1978
1,083,806	73/133,022	01/31/1978
1,083,809	73/114,390	01/31/1978
1,083,810	73/114,421	01/31/1978
1,083,822	73/132,733	01/31/1978
1,083,823	73/132,764	01/31/1978
1,083,824	73/132,878	01/31/1978
1,083,825	73/133,285	01/31/1978
1,083,827	73/133,317	01/31/1978
1,083,828	73/133,319	01/31/1978
1,083,830	73/133,755	01/31/1978
1,083,840	73/131,749	01/31/1978
1,083,842	73/042,854	01/31/1978
1,083,845	73/102,447	01/31/1978
1,083,848	73/115,293	01/31/1978
1,083,853	73/132,808	01/31/1978
1,083,854	73/132,813	01/31/1978
1,083,859	73/133,481	01/31/1978
1,083,860	73/061,642	01/31/1978
1,083,863	73/076,596	01/31/1978
1,083,869	73/113,896	01/31/1978
1,083,870	73/114,367	01/31/1978
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1,083,879	73/132,738	01/31/1978
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1,083,890	73/093,897	01/31/1978
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1,083,902	73/122,302	01/31/1978
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1,083,926	73/134,493	01/31/1978
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1,083,979	73/071,086	01/31/1978
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1,083,985	73/121,526	01/31/1978
1,083,986	73/130,918	01/31/1978
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1,083,988	73/131,771	01/31/1978
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1,083,993	73/105,051	01/31/1978
1,084,006	73/127,085	01/31/1978
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1,084,011	73/128,835	01/31/1978
1,084,014	73/129,705	01/31/1978
1,084,023	73/094,863	01/31/1978
1,084,024	73/113,374	01/31/1978
1,084,025	73/118,337	01/31/1978
1,084,026	73/120,155	01/31/1978
1,084,028	73/130,220	01/31/1978
1,084,030	73/116,412	01/31/1978
1,084,038	73/126,336	01/31/1978
1,084,043	73/069,275	01/31/1978
1,084,046	73/096,108	01/31/1978
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1,084,048	73/098,039	01/31/1978
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1,084,093	73/123,436	01/31/1978
1,084,094	73/089,764	01/31/1978
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1,084,125	73/128,228	01/31/1978
1,084,130	73/131,255	01/31/1978
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1,084,146	73/130,353	01/31/1978
1,084,161	73/112,743	01/31/1978
1,084,164	73/126,714	01/31/1978
1,084,165	73/127,276	01/31/1978
1,084,166	73/127,306	01/31/1978
1,084,171	73/129,493	01/31/1978
1,084,172	73/129,494	01/31/1978
1,084,175	73/130,403	01/31/1978
1,084,177	73/130,962	01/31/1978
1,084,180	73/131,940	01/31/1978
1,084,188	73/116,450	01/31/1978
1,084,189	73/121,026	01/31/1978
1,084,190	73/124,216	01/31/1978
1,084,203	73/073,149	01/31/1978
1,084,205	73/091,998	01/31/1978
1,084,210	73/134,469	01/31/1978
1,084,214	73/101,676	01/31/1978
1,084,216	73/118,551	01/31/1978
1,084,218	73/127,655	01/31/1978
1,084,219	73/127,656	01/31/1978
1,084,222	73/134,342	01/31/1978
1,084,224	73/135,121	01/31/1978
1,084,225	73/135,191	01/31/1978
1,084,226	73/135,192	01/31/1978
1,084,227	73/135,252	01/31/1978
1,084,230	73/071,217	01/31/1978
1,084,232	73/090,546	01/31/1978
1,084,236	73/097,773	01/31/1978
1,084,238	73/108,157	01/31/1978
1,084,240	73/109,213	01/31/1978
1,084,245	73/124,657	01/31/1978
1,084,246	73/126,067	01/31/1978
1,084,255	73/096,995	01/31/1978
1,084,258	73/110,596	01/31/1978
1,084,260	73/115,958	01/31/1978
1,084,261	73/118,943	01/31/1978
1,084,262	73/120,606	01/31/1978
1,084,265	73/127,889	01/31/1978
1,084,266	73/128,090	01/31/1978
1,084,269	73/132,332	01/31/1978
1,084,270	73/096,884	01/31/1978
1,084,274	73/105,582	01/31/1978
1,084,277	73/120,888	01/31/1978
1,084,278	73/120,908	01/31/1978
1,084,280	73/130,793	01/31/1978
1,084,285	73/109,207	01/31/1978
1,084,289	73/094,956	01/31/1978
1,084,290	73/101,025	01/31/1978
1,084,294	73/108,156	01/31/1978
1,084,303	73/105,484	01/31/1978
1,084,305	73/111,035	01/31/1978
1,084,306	73/114,326	01/31/1978
1,084,307	73/114,633	01/31/1978
1,084,311	73/118,672	01/31/1978
1,084,320	73/125,626	01/31/1978
1,084,325	73/130,481	01/31/1978
1,084,327	73/131,269	01/31/1978
1,084,331	73/058,619	01/31/1978
1,084,338	73/087,689	01/31/1978
1,084,339	73/087,743	01/31/1978
1,084,344	73/100,338	01/31/1978
1,084,345	73/100,561	01/31/1978
1,084,346	73/101,520	01/31/1978
1,084,348	73/103,481	01/31/1978
1,084,349	73/104,954	01/31/1978
1,084,354	73/106,407	01/31/1978
1,084,357	73/109,994	01/31/1978
1,084,359	73/114,435	01/31/1978
1,084,360	73/116,962	01/31/1978
1,084,361	73/116,965	01/31/1978
1,084,364	73/118,652	01/31/1978
1,084,367	73/122,524	01/31/1978
1,084,372	73/124,596	01/31/1978
1,084,373	73/124,989	01/31/1978
1,084,377	73/128,507	01/31/1978
1,084,378	73/129,127	01/31/1978
1,084,381	73/129,694	01/31/1978
1,084,385	73/131,014	01/31/1978
1,084,387	73/131,450	01/31/1978
1,084,388	73/131,638	01/31/1978
1,084,389	73/131,774	01/31/1978
1,084,390	73/131,807	01/31/1978
1,084,397	73/132,917	01/31/1978
1,084,398	73/132,918	01/31/1978
1,084,399	73/133,032	01/31/1978
1,084,400	73/133,035	01/31/1978
1,084,411	73/136,028	01/31/1978

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner
for Patents (Acting)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No.: 980511124-8284-02]

Revision of Patent Cooperation Treaty Application Procedure

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office (Office or USPTO) is confirming the amendment of its rules of practice relating to applications filed under the Patent Cooperation Treaty (PCT). This amendment of the rules of practice conformed the United States rules of practice with the corresponding changes to the Regulations under the PCT which became effective July 1, 1998.

DATES: This final rule is effective on December 1, 1998. The interim rule, published at 63 FR 29614 (June 1, 1998), was effective on July 1, 1998.

FOR FURTHER INFORMATION CONTACT: Richard Lazarus, PCT Legal Office Supervisor, by telephone at (703) 308-6451; or by mail addressed to: Box PCT, Assistant Commissioner for Patents, Washington, DC 20231; or by facsimile to (703) 308-6459, marked to the attention of Richard Lazarus.

Supplementary Information: During a September-October 1997 meeting of the Governing Bodies of the World Intellectual Property Organization (WIPO), the PCT Assembly adopted amendments to the PCT Regulations. These amendments to the PCT Regulations took effect on July 1, 1998, and the amended PCT Regulations were published in the *Official Gazette* at 1210 *Off. Gaz. Pat. Office* 29 (May 12, 1998). An interim rule conforming the United States rules of practice to the corresponding changes in the PCT Regulations was published in the *Federal Register* at 63 FR 29614 (June 1, 1998), and in the *Official Gazette* at 1211 *Off. Gaz. Pat. Office* 76 (June 23, 1998).

The Office has received no comments on the changes to 37 CFR contained in the interim rule. Accordingly, the changes to 37 CFR contained in the above-mentioned interim rule are adopted as final in this final rule.

Applicants are again notified that PCT Rules 20.4(c) and 26.3ter(a) and (c) as amended are not compatible with the national law of the United States, and thus the USPTO has taken a reservation on adherence to these Rules through its notification to the Director General of WIPO to such effect. *See* PCT Rules 20.4(d) and 26.3ter(b) and (d). Similarly, the USPTO continues not to adhere to the unchanged provisions of PCT Rule 49.5(cbis) and (k) with respect to the translation requirements for United States national stage applications (35 U.S.C. 371(c)(2)). *See* PCT Rule 49.5(l).

The above-noted changes to the PCT Regulations include the addition of new PCT Rules 89bis and 89ter (directed to electronic filing and processing of international applications) which will enter into force at the same time as the modifications to the Administrative Instructions implementing those PCT Rules. Implementation of PCT Rules 89bis and 89ter is optional with each national office. In the event that the USPTO decides to implement PCT Rules 89bis and 89ter, the USPTO will provide notice to that effect in the *Federal Register* and *Official Gazette*.

Discussion of Specific Rules: A section-by-section discussion of the changes to title 37 of the Code of Federal Regulations adopted as final in this final rule is set forth in the above-mentioned interim rule at 63 FR 29614-17, and 1211 *Off. Gaz. Pat. Office* 77-78.

Other Considerations:

The United States rules of practice contained in title 37, CFR, must conform to the PCT Articles and the Regulations annexed to the PCT. *See* PCT Article 27(1). This final rule adopts as final changes required to conform the United States rules of practice for international applications to the amendments to the PCT Regulations which became effective on July 1, 1998. Thus, this final rule is covered by the foreign affairs function exception of 5 U.S.C. 553(a)(1), and may be adopted without prior notice and opportunity for public comment. *See International Brotherhood of Teamsters v. Pena,* 17 F.3d 1478, 1486 (D.C. Cir. 1994).

As prior notice and an opportunity for public comment are not required pursuant to 5 U.S.C. 553, or any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, are inapplicable. This final rule does not contain policies with federalism implications sufficient to warrant preparation of a Federalism Assessment under Executive Order 12612 (October 26, 1987). This final rule has been determined not to be significant for purposes of Executive Order 12866 (September 30, 1993).

This final rule contains information collection requirements which are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). The principal impact of this final rule is to adopt as final changes that conform the United States rules of practice relating to applications filed under the PCT to the corresponding amendments made to the Regulations under the PCT.

The general purpose of the PCT is to provide a single set of standards and procedures for the filing of patent applications on the same invention in any of the over ninety PCT member countries. The PCT provides a common filing procedure and a standardized application format for international applications.

The collection of information in this final rule has been reviewed and approved by OMB under control number 0651-0021. The public reporting burden for this collection of information is estimated to average 0.95 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the information. Send comments regarding this burden estimate or any other aspect of the data requirement, including suggestions for reducing the burden to Richard Lazarus at the address specified above and to the Office of Information and Regulatory Affairs, OMB, 725 17th Street, N.W., Washington, D.C., 20503 (Attn: PTO Desk Officer).

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

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List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record-keeping requirements, Small Businesses.

For the reasons set forth in the preamble, the interim rule amending 37 CFR Part 1 which was published at 63 FR 29614-29620 on June 1, 1998, is adopted as a final rule without change.

Nov. 23, 1998

Q. TODD DICKINSON
Deputy Assistant Secretary of Commerce and
Deputy Commissioner of Patents and Trademarks

Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from October through December 1998. Information includes:

- subclasses established or abolished (major changes)
- subclass title, indent, or position changes
- changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Park 3, Room 902
Washington, D.C. 20231

December 2, 1998

FREDERICK R. SCHMIDT
Administrator for Search and
Information Resources

RECLASSIFICATION ALERT REPORT

OCTOBER — DECEMBER 1998

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
PLT	1	6	ABOLISH	1707
PLT	7.1		ABOLISH	1707
PLT	8.1		ABOLISH	1707
PLT	8.2		ABOLISH	1707
PLT	9		ABOLISH	1707
PLT	10		ABOLISH	1707
PLT	10.1		ABOLISH	1707
PLT	11	29	ABOLISH	1707
PLT	30.1		ABOLISH	1707
PLT	31		ABOLISH	1707
PLT	32		ABOLISH	1707
PLT	32.2		ABOLISH	1707
PLT	33.1		ABOLISH	1707
PLT	34.1		ABOLISH	1707
PLT	35		ABOLISH	1707
PLT	35.1		ABOLISH	1707
PLT	35.2		ABOLISH	1707
PLT	36		ABOLISH	1707
PLT	37		ABOLISH	1707
PLT	38.1		ABOLISH	1707
PLT	38.2		ABOLISH	1707
PLT	39		ABOLISH	1707
PLT	40.1		ABOLISH	1707
PLT	41.1	41.4	ABOLISH	1707
PLT	42.1		ABOLISH	1707
PLT	43.1	43.3	ABOLISH	1707
PLT	44		ABOLISH	1707
PLT	45		ABOLISH	1707
PLT	46.1		ABOLISH	1707
PLT	46.2		ABOLISH	1707
PLT	47.1	47.3	ABOLISH	1707
PLT	48		ABOLISH	1707
PLT	49		ABOLISH	1707
PLT	49.1		ABOLISH	1707
PLT	50.1	50.3	ABOLISH	1707
PLT	51.1		ABOLISH	1707
PLT	52		ABOLISH	1707
PLT	53		ABOLISH	1707
PLT	53.1	53.7	ABOLISH	1707
PLT	54.1		ABOLISH	1707
PLT	55	67	ABOLISH	1707
PLT	67.1	67.8	ABOLISH	1707
PLT	68.1		ABOLISH	1707
PLT	69.1		ABOLISH	1707
PLT	69.2		ABOLISH	1707
PLT	70.1	70.7	ABOLISH	1707
PLT	71.1		ABOLISH	1707
PLT	72.1		ABOLISH	1707
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PLT	76	82	ABOLISH	1707
PLT	82.1	82.5	ABOLISH	1707
PLT	83	85	ABOLISH	1707
PLT	86.1	86.4	ABOLISH	1707
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PLT	87.11	87.18	ABOLISH	1707
PLT	87.2	87.9	ABOLISH	1707
PLT	88.1		ABOLISH	1707
PLT	88.11		ABOLISH	1707
PLT	88.2	88.9	ABOLISH	1707
PLT	90		ABOLISH	1707
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PLT	90.2		ABOLISH	1707
PLT	95		ABOLISH	1707
PLT	100		ABOLISH	1707
PLT	101	395	ESTABLISH	1707
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5			INDENT CHANGE	1710
5			DEFN. CHANGE	1711
8			DEFN. CHANGE	1711
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16			DEFN. CHANGE	1708
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29	25.03		TITLE CHANGE	1711
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43			DEFN. CHANGE	1711
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47			DEFN. CHANGE	1711
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62			DEFN. CHANGE	1711
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109			DEFN. CHANGE	1711
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118	76		TITLE CHANGE	1711
118	409		TITLE CHANGE	1711
118	416		TITLE CHANGE	1711
119			INDENT CHANGE	1710
127			DEFN. CHANGE	1709
134			DEFN. CHANGE	1711

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CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
137			DEFN. CHANGE	1711
138			DEFN. CHANGE	1711
141			DEFN. CHANGE	1711
148			DEFN. CHANGE	1711
149			DEFN. CHANGE	1711
156			DEFN. CHANGE	1711
159			DEFN. CHANGE	1711
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165			DEFN. CHANGE	1709
166			DEFN. CHANGE	1711
169			DEFN. CHANGE	1711
174			DEFN. CHANGE	1709
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182			INDENT CHANGE	1710
184			DEFN. CHANGE	1711
196			DEFN. CHANGE	1711
200			INDENT CHANGE	1710
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202			DEFN. CHANGE	1708
202			DEFN. CHANGE	1711
203			DEFN. CHANGE	1711
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204	228	231	ABOLISH	1709
204	243		ABOLISH	1709
204	196.01	196.38	ESTABLISH	1709
204	228.1	228.9	ESTABLISH	1709
204	230.1	230.8	ESTABLISH	1709
204	243.1		ESTABLISH	1709
204	247.1	247.5	ESTABLISH	1709
204			DEFN. CHANGE	1711
205			DEFN. CHANGE	1709
205			DEFN. CHANGE	1711
206			DEFN. CHANGE	1711
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220	810	849	ESTABLISH	1708
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222			DEFN. CHANGE	1711
229			DEFN. CHANGE	1708
232			INDENT CHANGE	1710
239			DEFN. CHANGE	1711
241			DEFN. CHANGE	1711
242			DEFN. CHANGE	1708
248			DEFN. CHANGE	1708
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252	311.5		ABOLISH	1711
252	312		ABOLISH	1711
252	313.1		ABOLISH	1711
252	313.2		ABOLISH	1711
252	314		ABOLISH	1711
252	315.01		ABOLISH	1711
252	315.1	315.7	ABOLISH	1711
252	318	358	ABOLISH	1711
252	1		TITLE CHANGE	1711
252	184		TITLE CHANGE	1711
252	389.22		TITLE CHANGE	1711
252	389.23		TITLE CHANGE	1711
252	608		TITLE CHANGE	1711
252			DEFN. CHANGE	1711
260			DEFN. CHANGE	1711
261			DEFN. CHANGE	1711
264			DEFN. CHANGE	1711
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307			INDENT CHANGE	1710
312			DEFN. CHANGE	1708
315			INDENT CHANGE	1710
340	545		ABOLISH	1710
340	568		ABOLISH	1710
340	572		ABOLISH	1710

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
340	573		ABOLISH	1710
340	686		ABOLISH	1710
340	691		ABOLISH	1710
340	693		ABOLISH	1710
340	545.1	545.9	ESTABLISH	1710
340	568.1	568.8	ESTABLISH	1710
340	572.1	572.9	ESTABLISH	1710
340	573.1	573.7	ESTABLISH	1710
340	686.1	686.6	ESTABLISH	1710
340	691.1	691.8	ESTABLISH	1710
340	693.1	693.9	ESTABLISH	1710
340	693.11	693.12	ESTABLISH	1710
340	999		ESTABLISH	1710
340	547	549	INDENT CHANGE	1710
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366			DEFN. CHANGE	1711
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392			DEFN. CHANGE	1711
401			DEFN. CHANGE	1711
420			DEFN. CHANGE	1711
422			DEFN. CHANGE	1709
422	12		TITLE CHANGE	1711
422	13		TITLE CHANGE	1711
422	186.05		TITLE CHANGE	1711
422			DEFN. CHANGE	1711
423	308		TITLE CHANGE	1711
423			DEFN. CHANGE	1711
424	402		TITLE CHANGE	1711
424			DEFN. CHANGE	1711
425			DEFN. CHANGE	1711
426			DEFN. CHANGE	1711
427	301		TITLE CHANGE	1711
427			DEFN. CHANGE	1711
428			DEFN. CHANGE	1709
428			DEFN. CHANGE	1711
429			DEFN. CHANGE	1711
430			DEFN. CHANGE	1711
435			DEFN. CHANGE	1711
436			DEFN. CHANGE	1711
446			DEFN. CHANGE	1711
454			DEFN. CHANGE	1711
455			INDENT CHANGE	1710
482			INDENT CHANGE	1710
501			DEFN. CHANGE	1711
502	405		TITLE CHANGE	1711
502			DEFN. CHANGE	1711
503			DEFN. CHANGE	1711
504			DEFN. CHANGE	1711
505			DEFN. CHANGE	1709
505			DEFN. CHANGE	1711
507			DEFN. CHANGE	1711
508	150		TITLE CHANGE	1711
508	185		TITLE CHANGE	1711
508	202		TITLE CHANGE	1711
508			DEFN. CHANGE	1711
510			DEFN. CHANGE	1711
512	2		TITLE CHANGE	1711
512	3		TITLE CHANGE	1711
512			DEFN. CHANGE	1711
514			DEFN. CHANGE	1711
516	1	204	ESTABLISH	1711
516	900	931	ESTABLISH	1711
516	DIG 1	DIG 7	ESTABLISH	1711
520			DEFN. CHANGE	1711
521			DEFN. CHANGE	1711
522			DEFN. CHANGE	1711
523			DEFN. CHANGE	1711
524			DEFN. CHANGE	1711
528			DEFN. CHANGE	1711
530			DEFN. CHANGE	1711
532			DEFN. CHANGE	1711
585			DEFN. CHANGE	1711
588			DEFN. CHANGE	1711
600			INDENT CHANGE	1710
600			DEFN. CHANGE	1711

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604			DEFN. CHANGE	1711
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DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 98-0713170-8289-03]

RIN 0651-AA96

Revision of Patent Fees for Fiscal Year 1999

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases to reduce patent "statutory" fee amounts to conform to the fee amounts set by law in the United States Patent and Trademark Office Reauthorization Act, Fiscal Year 1999 (Public Law 105-358). The PTO is reducing, by a corresponding amount, a few fees that track the statutory fees. The PTO is also reducing a non-statutory fee to reflect current business practice. This final rule supersedes the final rule that was published on July 24, 1998, and corrected on September 3, 1998.

EFFECTIVE DATE: The effective date for the amendments to the fee amounts in 37 CFR 1.16, 1.17(a) through (d), (l), and (m), 1.18, 1.20, and 1.492 is the date of enactment of Public Law 105-358 (November 10, 1998). The effective date for the amendments to the fee amounts in 37 CFR 1.17(r) and (s), and 1.21(a)(6)(ii) is December 8, 1998.

FOR FURTHER INFORMATION CONTACT: Matthew Lee by telephone at (703) 305-8051, by facsimile at (703) 305-8007, or by e-mail at matthew.lee@uspto.gov.

SUPPLEMENTARY INFORMATION: This final rule adjusts PTO fees in accordance with the United States Patent and Trademark Office Reauthorization Act, Fiscal Year 1999 (Public Law 105-358).

Background

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. The fees established under 35 U.S.C. 41(a) and (b) are referred to as the "statutory" fees. Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on an annual basis to reflect fluctuations in the Consumer Price Index (CPI). Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (amended by section 8001 of Public Law 103-66) provided that there would be a surcharge on all fees established under 35 U.S.C. 41(a) and (b). This surcharge provision was scheduled to expire on October 1, 1998.

Against this background, the PTO published a final rule in the Federal Register of July 24, 1998, that revised patent fees for fiscal year 1999 (63 FR 39731). See also 63 FR 46891 (September 3, 1998) (correcting one of the fee amounts specified in the July 24, 1998 final rule).The final rule had an effective date of October 1, 1998. The notice provided that if superseding legislation were passed, the PTO would publish a document in the Federal Register to ensure that the fees established under the final rule would not take effect.

Superseding legislation was passed. First, a series of continuing resolution appropriations bills were enacted that maintained PTO fee amounts at fiscal year 1998 rates from October 1, 1998, through October 21, 1998. See H.J. Res. 128, P.L. 105-240; H.J. Res. 133, P.L. 105-249; H.J. Res. 134, P.L. 105-254; H.J. Res. 135, P.L. 105-257; H.J. Res. 136, P.L. 105-260; and H.J. Res. 137, P.L. 105-273. In response, the PTO published a final rule in the Federal Register of October 1, 1998, which delayed the effective date of the July 24, 1998 final rule(63 FR 46891).

Second, the Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999 (P.L. 105-277) was signed by the President on October 21, 1998. It maintained patent fees at their September 30, 1998 (fiscal year 1998) rates through either enactment of a reauthorization statute, or if no such statute, then June 15, 1999. Thus, it also superseded the PTO's July 24, 1998 final rule.

Finally, the United States Patent and Trademark Office Reauthorization Act, Fiscal Year 1999 (Public Law 105-358) was signed by the President on November 10, 1998. Public Law 105-358 amends 35 U.S.C. 41(a) and (b) and, thus, statutorily resets 35 U.S.C. 41(a) and (b) fees.That is, the fees established under 35 U.S.C. 41(a) and (b)—which in previous years had been determined using a base amount, a surcharge amount, and cumulative CPI adjustments—are for the balance of fiscal year 1999 set at the amounts specified in Public Law 105-358. (In future years, these fees may be adjusted to reflect fluctuations in the CPI.)

This final rule conforms the patent fees set forth in 37 CFR 1.16, 1.17(a) through (d), (l), and (m), 1.18, 1.20, and 1.492 to the fee amounts specified in Public Law 105-358. Specifically, it amends the following sections to correspond to the patent fees specified in amended 35 U.S.C. 41(a):

1.16 (paragraphs (a) through (d), and (f) through (j)),
1.17 (paragraphs (a) through (d), (l) and (m)),
1.18 (paragraphs (a) through (c)), and
1.492 (paragraphs (a) through (d)).

Section 1.20 (paragraphs (d) through (g)) is amended to indicate the patent fees specified in amended 35 U.S.C. 41(b).

This final rule also adjusts two fees that track statutory fees, and one non-statutory fee. Section 1.17, paragraphs (r) and (s), is reduced to correspond to the fee provided in 35 U.S.C. 41(a)(1)(A), as amended by Public Law 105-358. Section 1.21(a)(6)(ii) is being reduced to reflect current business practice. The adjustment to section 1.21(a)(6)(ii) was announced in the July 24, 1998 final rule.

Public Law 105-358 supersedes Public Law 105-277. The present notice therefore supersedes any and all prior notices or corrections revising patent fees for fiscal year 1999.

A comparison of the September 30, 1998 fee amounts (i.e., the fiscal year 1998 fee amounts) and the new fee amounts for fiscal year 1999 is included as an Appendix to this final rule.

Procedures for determining the fee owed during the transition to the new fee schedule. With two exceptions, any fee amount that is paid on or after the effective date of the final fee adjustment would be subject to the new fees then in effect. As will be further explained below, the two exceptions are the filing fee required for a patent application filed under 35 U.S.C. 111 and the national fee for an application entering the national stage under 35 U.S.C. 371.

If a Certificate of Mailing or Transmission was used, and was proper under § 1.8(a)(1), the fee required is the lower of:

(1) the fee in effect on the date the PTO receives the fee; or

(2) the fee in effect on the date of mailing indicated on a proper Certificate of Mailing or Transmission under § 1.8(a)(1).

Items for which a Certificate of Mailing or Transmission under § 1.8(a)(1) is not proper include, for example, Continued Prosecution Applications (CPAs) under § 1.53(d) and other national and international applications for patents. See 37 CFR 1.8(a)(2).

Under § 1.10(a), any correspondence delivered by the "Express Mail Post Office to Addressee" service of the United States Postal Service (USPS) is considered filed or received in the Office on the date of deposit with the USPS. The date of deposit with the USPS is shown by the "date-in" on the "Express Mail" mailing label or other official USPS notation.

a. The filing fee for applications filed under 35 U.S.C. 111 and 37 CFR 1.53 35 U.S.C. 111 provides for the filing of a patent application with the PTO. If the filing fee for an application filed under 35 U.S.C. 111 is received when the application is filed, the filing fee required is the filing fee in effect on the filing date assigned the application. If the PTO receives the filing fee on a date later than the filing date assigned the application, the filing fee required is the higher of:

(1) the filing fee in effect on the filing date assigned the application; or
(2) the filing fee in effect on the date the PTO receives the filing fee.

The filing fee includes the basic fee, excess claims fees (if any), and the multiple dependent claim fee (if any), for claims present on filing (unless the excess or multiple dependent claims are canceled before the filing fee is paid). Of course, if the basic filing fee is received on a date later than the filing date assigned the application filed under 35 U.S.C. 111, a surcharge as set forth in § 1.16(e) is also required.

b. The fees for international applications entering the national stage under 35 U.S.C. 371 and 37 CFR 1.494 or 1.495

35 U.S.C. 371 provides for the national stage filing of a patent application under the Patent Cooperation Treaty. The basic national fee for an international application entering the national stage is due not later than the expiration of 20 months from the priority date in the international application (or 30 months from the priority date if the United States was elected prior to the expiration of 19 months from the priority date). The amount of the basic national fee that is required to be paid is the basic national fee in effect on the date the full fee is received.

The excess claim fees or the multiple dependent claim fee is the higher of:

(1) the excess claims fees and the multiple dependent claim fee in effect on the date the PTO receives the basic national fee; or
(2) the excess claims fees and the multiple dependent claim fee in effect on the date the PTO receives (any of) these fees.

In this respect, the practice for determining the fees due for excess claims and any multiple dependent claim when entering into the national stage is analogous to the practice for applications filed under 35 U.S.C. 111.

Fees for claims which are added after entry into the national stage are determined by the fees in effect (for excess claims and multiple dependent claim) on the date the PTO receives the fee(s).

Other Considerations

This final rule contains no information collection within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq. This final rule has been determined to be significant for purposes of Executive Order 12866.

This final rule conforms the patent fees indicated in Part 1 of title 37, Code of Federal Regulations, to the patent fee amounts set by law. Therefore, prior notice and an opportunity for public comment are not required pursuant to 5 U.S.C. 553 (or any other law), and 30-day prior publication in the Federal Register and the Official Gazette of the Patent and Trademark Office is not required pursuant to 35 U.S.C. 41(f). As prior notice and an opportunity for public comment are not required pursuant to 5 U.S.C. 553, or any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., are inapplicable

Lists of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a) through (d), and (f) through (j), to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except provisional, design or plant applications:

By a small entity (§ 1.9(f))	$380.00
By other than a small entity	$760.00

(b) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f))	$39.00
By other than a small entity	$78.00

(c) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each claim in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§ 1.9(f))	$9.00
By other than a small entity	$18.00

(d) In addition to the basic filing fee in an original application, except provisional applications, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f))	$130.00
By other than a small entity	$260.00

*****

(f) Basic fee for filing each design application:

By a small entity (§ 1.9(f))	$155.00
By other than a small entity	$310.00

(g) Basic fee for filing each plant application, except provisional applications:

By a small entity (§ 1.9(f))	$240.00
By other than a small entity	$480.00

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f))	$380.00
By other than a small entity	$760.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§ 1.9(f))	$39.00
By other than a small entity	$78.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the

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number of claims in the original patent (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§ 1.9(f)) $9.00
By other than a small entity $18.00

*****

3. Section 1.17 is amended by revising paragraphs (a)(1) through (5), (b) through (d), (l), (m), (r), and (s), to read as follows:

§ 1.17 Patent application processing fees.

(a)***

(1) For reply within first month:

By a small entity (§ 1.9(f)) $55.00
By other than a small entity $110.00

(2) For reply within second month:

By a small entity (§ 1.9(f)) $190.00
By other than a small entity $380.00

(3) For reply within third month:

By a small entity (§ 1.9(f)) $435.00
By other than a small entity $870.00

(4) For reply within fourth month:

By a small entity (§ 1.9(f)) $680.00
By other than a small entity $1,360.00

(5) For reply within fifth month:

By a small entity (§ 1.9(f)) $925.00
By other than a small entity $1,850.00

(b) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§ 1.9(f)) $150.00
By other than a small entity $300.00

(c) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§ 1.9 (f)) $150.00
By other than a small entity $300.00

(d) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:

By a small entity (§ 1.9(f)) $130.00
By other than a small entity $260.00

*****

(l) For filing a petition:

(1) For the revival of an unavoidably abandoned application under 35 U.S.C. 111, 133, 364, or 371, or

(2) For delayed payment of the issue fee under 35 U.S.C. 151 (§ 1.137(a)):

By a small entity (§ 1.9(f)) $55.00
By other than a small entity $110.00

(m) For filing a petition:

(1) For revival of an unintentionally abandoned application, or

(2) For the unintentionally delayed payment of the fee for issuing a patent (§ 1.137(b)):

By a small entity (§ 1.9(f)) $605.00
By other than a small entity $1,210.00

*****

(r) For entry of a submission after final rejection under §1.129(a):

By a small entity (§ 1.9(f)) $380.00
By other than a small entity $760.00

(s) For each additional invention requested to be examined under §1.129(b):

By a small entity (§ 1.9(f)) $380.00
By other than a small entity $760.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§ 1.9(f)) $605.00
By other than a small entity $1,210.00

(b) Issue fee for issuing a design patent:

By a small entity (§ 1.9(f)) $215.00
By other than a small entity $430.00

(c) Issue fee for issuing a plant patent:

By a small entity (§ 1.9(f)) $290.00
By other than a small entity $580.00

5. Section 1.20 is amended by revising paragraphs (d) through (g) to read as follows:

§ 1.20 Post issuance fees.

*****

(d) For filing each statutory disclaimer (§ 1.321):

By a small entity (§ 1.9(f)) $55.00
By other than a small entity $110.00

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $470.00
By other than a small entity $940.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $950.00
By other than a small entity $1,900.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,455.00
By other than a small entity $2,910.00

*****

6. Section 1.21 is amended by revising paragraph (a)(6)(ii) to read as follows:

§ 1.21 Miscellaneous fees and charges.

*****

(a)***

(6)***

(ii) Regrading of afternoon section
(Claim Drafting)..$230.00

*****

7. Section 1.492 is amended by revising paragraphs (a) through (d), to read as follows:

§ 1.492 National stage fees.

*****

(a) The basic national fee:

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $335.00
By other than a small entity $670.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f)) $380.00
By other than a small entity $760.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $485.00
By other than a small entity $970.00

(4) Where an international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f)) $48.00
By other than a small entity $96.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:

By a small entity (§ 1.9(f)) $420.00
By other than a small entity $840.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $39.00
By other than a small entity $78.00

(c) In addition to the basic national fee, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§ 1.9(f)) $9.00
By other than a small entity $18.00

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $130.00
By other than a small entity $260.00

*****

December 2, 1998

Q. TODD DICKINSON
Deputy Commissioner of
Patents and Trademarks

NOTE — The following appendix is provided as a courtesy to the public, but is not a substitute for the rules. It will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Prior and New Reduced Fee Amounts

— Indicates fees remain at FY 1998 amount

Fee Code	37 CFR Sec.	DESCRIPTION	FY 1998	FY 1999
101	1.16(a)	Basic Filing Fee	$790	$760
201	1.16(a)	Basic Filing Fee (Small Entity)	$395	$380
102	1.16(b)	Independent Claims	$82	$78
202	1.16(b)	Independent Claims (Small Entity)	$41	$39
103	1.16(c)	Claims in Excess of 20	$22	$18
203	1.16(c)	Claims in Excess of 20 (Small Entity)	$11	$9
104	1.16(d)	Multiple Dependent Claims	$270	$260
204	1.16(d)	Multiple Dependent Claims (Small Entity)	$135	$130
105	1.16(e)	Surcharge - Late Filing Fee	$130	-
205	1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	-
106	1.16(f)	Design Filing Fee	$330	$310
206	1.16(f)	Design Filing Fee (Small Entity)	$165	$155
107	1.16(g)	Plant Filing Fee	$540	$480
207	1.16(g)	Plant Filing Fee (Small Entity)	$270	$240
108	1.16(h)	Reissue Filing Fee	$790	$760
208	1.16(h)	Reissue Filing Fee (Small Entity)	$395	$380
109	1.16(i)	Reissue Independent Claims	$82	$78
209	1.16(i)	Reissue Independent Claims (Small Entity)	$41	$39
110	1.16(j)	Reissue Claims in Excess of 20	$22	$18

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Fee Code	37 CFR Sec.	DESCRIPTION	FY 1998	FY 1999
210	1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	$9
114	1.16(k)	Provisional Application Filing Fee	$150	-
214	1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	-
127	1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	-
227	1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	-
115	1.17(a)(1)	Extension - First Month	$110	-
215	1.17(a)(1)	Extension - First Month (Small Entity)	$55	-
116	1.17(a)(2)	Extension - Second Month	$400	$380
216	1.17(a)(2)	Extension - Second Month (Small Entity)	$200	$190
117	1.17(a)(3)	Extension - Third Month	$950	$870
217	1.17(a)(3)	Extension - Third Month (Small Entity)	$475	$435
118	1.17(a)(4)	Extension - Fourth Month	$1,510	$1,360
218	1.17(a)(4)	Extension - Fourth Month (Small Entity)	$755	$680
128	1.17(a)(5)	Extension - Fifth Month	$2,060	$1,850
228	1.17(a)(5)	Extension - Fifth Month (Small Entity)	$1,030	$925
119	1.17(b)	Notice of Appeal	$310	$300
219	1.17(b)	Notice of Appeal (Small Entity)	$155	$150
120	1.17(c)	Filing a Brief	$310	$300
220	1.17(c)	Filing a Brief (Small Entity)	$155	$150
121	1.17(d)	Request for Oral Hearing	$270	$260
221	1.17(d)	Request for Oral Hearing (Small Entity)	$135	$130
122	1.17(h)	Petition - Not All Inventors	$130	-
122	1.17(h)	Petition - Correction of Inventorship	$130	-
122	1.17(h)	Petition - Decision on Questions	$130	-
122	1.17(h)	Petition - Suspend Rules	$130	-
122	1.17(h)	Petition - Expedited License	$130	-
122	1.17(h)	Petition - Scope of License	$130	-
122	1.17(h)	Petition - Retroactive License	$130	-
122	1.17(h)	Petition - Refusing Maintenance Fee	$130	-
122	1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	-
122	1.17(h)	Petition - Interference	$130	-
122	1.17(h)	Petition - Reconsider Interference	$130	-
122	1.17(h)	Petition - Late Filing of Interference	$130	-
122	1.20(b)	Petition - Correction of Inventorship	$130	-
122	1.17(h)	Petition - Refusal to Publish SIR	$130	-
122	1.17(i)	Petition - For Assignment	$130	-
122	1.17(i)	Petition - For Application	$130	-
122	1.17(i)	Petition - Late Priority Papers	$130	-
122	1.17(i)	Petition - Suspend Action	$130	-
122	1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	-
122	1.17(i)	Petition - For Interference Agreement	$130	-
122	1.17(i)	Petition - Amendment After Issue	$130	-
122	1.17(i)	Petition - Withdrawal After Issue	$130	-
122	1.17(i)	Petition - Defer Issue	$130	-
122	1.17(i)	Petition - Issue to Assignee	$130	-
122	1.17(i)	Petition - Accord a Filing Date Under §1.53	$130	-
122	1.17(i)	Petition - Accord a Filing Date Under §1.62	$130	-
122	1.17(i)	Petition - Make Application Special	$130	-
138	1.17(j)	Petition - Public Use Proceeding	$1,510	-
139	1.17(k)	Non-English Specification	$130	-
140	1.17(l)	Petition - Revive Abandoned Appl.	$110	-
240	1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$55	-
141	1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$1,320	$1,210
241	1.17(m)	Petition - Revive Unintent Abandoned Appl. (Small Entity)	$660	$605
112	1.17(n)	SIR - Prior to Examiner's Action	$920	-
113	1.17(o)	SIR - After Examiner's Action	$1,840	-
126	1.17(p)	Submission of an Information Disclosure Statement (§1.97)	$240	-
123	1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$50	-
123	1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	-
123	1.17(q)	Petition - Entry of submission after final rejection (Prov. App.)	$50	-
146	1.17(r)	Filing a submission after final rejection (1.129(a))	$790	$760
246	1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$395	$380
149	1.17(s)	Per add'l invention to be examined (1.129(b))	$790	$760
249	1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$395	$380
142	1.18(a)	Issue Fee	$1,320	$1,210
242	1.18(a)	Issue Fee (Small Entity)	$660	$605
143	1.18(b)	Design Issue Fee	$450	$430
243	1.18(b)	Design Issue Fee (Small Entity)	$225	$215
144	1.18(c)	Plant Issue Fee	$670	$580
244	1.18(c)	Plant Issue Fee (Small Entity)	$335	$290
561	1.19(a)(1)(i)	Copy of Patent	$3	-
562	1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$6	-
563	1.19(a)(1)(iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$25	-
564	1.19(a)(2)	Plant Patent Copy	$15	-
565	1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$25	-
566	1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$15	-
567	1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$30	-
568	1.19(b)(2)	Cert or Uncert Copy of Patent-Related File Wrapper/Contents	$150	-
569	1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	-
570	1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	-
571	1.19(c)	Library Service	$50	-
572	1.19(d)	List of Patents in Subclass	$3	-
573	1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	-
574	1.19(f)	Copy of Non-U.S. Patent Document	$25	-
575	1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	-
576	1.19(h)	Duplicate or Corrected Filing Receipt	$25	-
145	1.20(a)	Certificate of Correction	$100	-
147	1.20(c)	Reexamination	$2,520	-
148	1.20(d)	Statutory Disclaimer	$110	-
248	1.20(d)	Statutory Disclaimer (Small Entity)	$55	-
183	1.20(e)	Maintenance Fee - 3.5 Years	$1,050	$940
283	1.20(e)	Maintenance Fee - 3.5 Years(Small Entity)	$525	$470
184	1.20(f)	Maintenance Fee - 7.5 Years	$2,100	$1,900
284	1.20(f)	Maintenance Fee - 7.5 Years(Small Entity)	$1,050	$950
185	1.20(g)	Maintenance Fee - 11.5 Years	$3,160	$2,910
285	1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,580	$1,455
186	1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	-
286	1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	-
187	1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$700	-
188	1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,640	-
111	1.20(j)(1)	Extension of Term of Patent Under 1.740	$1,120	-
124	1.20(j)(2)	Initial Application for Interim Extension Under 1.790	$420	-
125	1.20(j)(3)	Subsequent Application for Interim Extension Under 1.790	$220	-
609	1.21(a)(1)(i)	Application Fee (non-refundable)	$40	-
619	1.21(a)(1)(ii)	Registration examination fee	$310	-
610	1.21(a)(2)	Registration to Practice	$100	-
611	1.21(a)(3)	Reinstatement to Practice	$40	-
612	1.21(a)(4)	Certificate of Good Standing	$10	-
613	1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	-
615	1.21(a)(5)	Review of Decision of Director, OED	$130	-
616	1.21(a)(6)(i)	Regrading of A.M. section (PTO Practice and Procedure)	$230	-
620	1.21(a)(6)(ii)	Regrading of P.M. section (Claim Drafting	$540	$230
607	1.21(b)(1)	Establish Deposit Account	$10	-
608	1.21(b)(2)	Service Charge Below Minimum Balance	$25	-
608	1.21(b)(3)	Service Charge Below Minimum Balance	$25	-
577	1.21(c)	Filing a Disclosure Document	$10	-
578	1.21(d)	Box Rental	$50	-
579	1.21(e)	International Type Search Report	$40	-
580	1.21(g)	Self-Service Copy Charge	$.25	-
581	1.21(h)	Recording Patent Property	$40	-
583	1.21(i)	Publication in the OG	$25	-
584	1.21(j)	Labor Charges for Services	$40	-
585	1.21(k)	Unspecified Other Services	Actual Cost	-
592	1.21(k)	Terminal Use APS-CSIR (per hour)	$50	-
586	1.21(l)	Retaining abandoned application	$130	-
617	1.21(m)	Processing Returned Checks	$50	-
587	1.21(n)	Handling Fee - Incomplete Application	$130	-
588	1.21(o)	Terminal Use APS-TEXT	$40	-
590	1.24	Coupons for Patent and Trademark Copies	$3	-
589	1.296	Handling Fee - Withdrawal SIR	$130	-
150	1.445(a)(1)	Transmittal Fee	$240	-
153	1.445(a)(2)(i)	PCT Search Fee - Prior U.S. Application	$450	-
151	1.445(a)(2)(ii)	PCT Search Fee - No U.S. Application	$700	-
152	1.445(a)(3)	Supplemental Search	$210	-
190	1.482(a)(1)(i)	Preliminary Exam Fee	$490	-
191	1.482(a)(1)(ii)	Preliminary Exam Fee	$750	-
192	1.482(a)(2)(i)	Additional Invention	$140	-
193	1.482(a)(2)(ii)	Additional Invention	$270	-
956	1.492(a)(1)	Preliminary Examining Authority	$720	$670
957	1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$360	$335
958	1.492(a)(2)	Searching Authority	$790	$760
959	1.492(a)(2)	Searching Authority (Small Entity)	$395	$380
960	1.492(a)(3)	PTO Not ISA nor IPEA	$1,070	$970
961	1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$535	$485
962	1.492(a)(4)	Claims - IPEA	$98	$96
963	1.492(a)(4)	Claims - IPEA (Small Entity)	$49	$48

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Fee Code	37 CFR Sec.	DESCRIPTION	FY 1998	FY 1999
970	1.492(a)(5)	Filing with EPO/JPO Search Report	$930	$840
971	1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$465	$420
964	1.492(b)	Claims - Extra Individual (Over 3)	$82	$78
965	1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$41	34
966	1.492(c)	Claims - Extra Total (Over 20)	$22	$18
967	1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	$9
968	1.492(d)	Claims - Multiple Dependents	$270	$260
969	1.492(d)	Claims - Multiple Dependents (Small Entity)	$135	$130
154	1.492(e)	Surcharge	$130	-
254	1.492(e)	Surcharge (Small Entity)	$65	-
156	1.492(f)	English Translation - After 20 Months	$130	-
361	2.6(a)(1)	Application for Registration, Per Class	$245	-
362	2.6(a)(2)	Amendment to Allege Use, Per Class	$100	-
363	2.6(a)(3)	Statement of Use, Per Class	$100	-
364	2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	-
365	2.6(a)(5)	Application for Renewal, Per Class	$300	-
366	2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	-
367	2.6(a)(7)	Publication of Mark Under §12(c), Per Class	$100	-
368	2.6(a)(8)	Issuing New Certificate of Registration	$100	-
369	2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	-
370	2.6(a)(10)	Filing Disclaimer to Registration	$100	-
371	2.6(a)(11)	Filing Amendment to Registration	$100	-
372	2.6(a)(12)	Filing Affidavit Under Section 8, Per Class	$100	-
373	2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	$100	-
374	2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	-
375	2.6(a)(15)	Petitions to the Commissioner	$100	-
376	2.6(a)(16)	Petition to Cancel, Per Class	$200	-
377	2.6(a)(17)	Notice of Opposition, Per Class	$200	-
378	2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	-
379	2.6(a)(19)	Dividing an Application, Per New Application Created	$100	-
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467	2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$30	-
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465	2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$30	-
469	2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	-
481	2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	-
482	2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	-
470	2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	-
488	2.6(b)(8)	Terminal Use X-SEARCH	$40	-
480	2.6(b)(9)	Self-Service Copy Charge	$0.25	-
484	2.6(b)(10)	Labor Charges for Services	$40	-
485	2.6(b)(11)	Unspecified Other Services	Actual Cost	-

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Internor Trade, Inc., New York, N.Y., Reg. No. 1,201,190, for the mark "HIPOPPOTAMUS" and design, Canc. No. 27,558.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Service by Publication under 37 CFR § 1.646

U.S. Patent No. 5,390,861 to Raymond T. Bishop is currently involved in an interference proceeding under 37 CFR § 1.601 et seq. Correspondence relating to this interference was mailed via the United States Postal Service to Raymond T. Bishop at his last known address. The correspondence was returned to the United States Patent and Trademark Office (USPTO) due to the expiration of a forwarding order. Raymond T. Bishop is hereby requested to notify the USPTO of his current address. Notification should be mailed to the following address:

Box Interference
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Proceedings in the interference have been suspended pending publication of this notice in the Official Gazette but will resume **30 DAYS** from the date of publication of this notice in the Official Gazette. In the event that the USPTO fails to receive notification of Raymond T. Bishop's current address, the USPTO will no longer send any papers entered in the interference to Raymond T. Bishop or require that any papers filed by any opposing party in the interference be served on Raymond T. Bishop at his last known address.

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Ruoquian Shen) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/US96/00307 and was filed on 11 January 1996 in the names of Paul B. Fisher and Ruoquian Shen for the invention entitled Development of DNA Probes and Immunological Reagents Specific For Cell Surface-Expressed Molecules and Transformation-Associated Genes. The national stage application is assigned number 08/875,553 and has a 35 U.S.C. 371(c) date of 26 May 1998.

Errata

"All reference to Patent No. 5,814,937 to Vivek Mehrotra, et. al., of N.Y., for HOLLOW ELECTRODES FOR LOW PRESSURE DISCHARGE LAMPS, PARTICULARLY NARROW DIAMETER FLOURESCENT AND NEON LAMPS AND LAMPS CONTAINING THE SAME appearing in the Official Gazette of September 29, 1998 should be deleted since no patent was granted."

"All reference to Patent No. 5,847,769 to James C. Cooper, of Monte Sereno, Calif., for PULSE DETECTOR FOR ASCERTAINING THE PROCESSING DELAY OF A SIGNAL appearing in the Official Gazette of December 8, 1998 should be deleted since no patent was granted."

Certificates of Correction for December 29, 1998

D. 363,117
D. 385,609
D. 391,376
D. 393,270
D. 393,697
D. 394,747
D. 396,313
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5,821,757

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

November 9-13, 1998

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
11-9	EX	75/136,710	RRF Industries, Inc.	2(d)	Refusal Affirmed		"WINDBREAKER REGATTA" (and design) [jackets]	"WINDBREAKER" [jackets and coats of various stylings and lengths for outdoor and/or indoor wear, etc.]	No
11-10	EX	75/152,511	Roger Nierenberg	2(e)(1)	Refusal Reversed		"THE MUSIC PARADIGM" [educational services, namely, conducting classes, seminars, and workshops for training executives, employees, and the like to improve productivity and efficiency]		No
11-12	EX	74/588,773	Web Communications	genericness [whether matter asserted for registration is registrable, under Sec. 23, on the Supplemental Register]	Refusal Affirmed		"WEB COMMUNICATIONS" [consulting services to businesses and individuals who want to establish a site on a global computing network]		Yes
11-12	OPP	100,319	Ultratan Suntanning Centers, Inc. v. Ultra Tan Int'l. AB	2(d)	Opposition Sustained	"ULTRATAN" [operating tanning salons; ultraviolet lamp assemblies for tanning of the person; suntanning preparations being cosmetic or non-medicated toilet preparations]	"ULTRA TAN" (and design) [ultra-violet lamp assemblies and platforms and canopies equipped with ultra-violet lamps used in tanning the person, and sun lamps]		Yes

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Box REISSUE	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
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Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Washington, D.C. 20231

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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

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	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	(203) 946-8130
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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1610	Organic chemistry, bio-affecting & body treating composition	John E. Kittle	308-0193 308-7922	03/07/97
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1640	Combinatorial, linker & non-heterocyclic chemistry		308-8494	10/09/96
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1710	Synthetic resins	Theodore Morris	308-1495	04/04/97
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1730	Glass & paper making, tobacco, non-metallic molding, adhesive bonding, tires & coating apparatus			02/11/97
1740	Metallurgy, electrochemistry, cleaning, disinfecting, sterilizing, analytical chemistry & wave energy			12/23/96
1750	Chemical products & processes, solar cells & sputtering apparatuses	Esther M. Kepplinger	308-1495 305-3935	01/10/97
1760	Food technology, petroleum processing, coating & etching			06/04/96
2700	**COMMUNICATIONS AND INFORMATION PROCESSING**			
2710	Television	James L. Dwyer (Acting)	305-4800	09/02/96
2740	Audio, radio, telephone & speech processing		308-5401	10/17/96
2720	Image & Fax	Jin F. Ng	305-4800	10/18/96
2730	General communications & digital communication systems		305-5401	09/26/96
2750	Storage processing, multiple computers, & multiple process coordinating	Robert E. Garrett	305-0286 308-2177	07/08/96
2760	Specialized data processing	Joseph J. Rolla	305-9700 308-5355	07/08/96
2770	Computer graphics & data bases	Gerald Goldberg	305-9700 308-5355	07/03/96

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2800	**PHYSICS, OPTICS, SYSTEMS COMPONENTS & ELECTRICAL ENGINEERING**			
2810	Semiconductors, electrical circuits, static memory, digital logic	Rolf G. Hille	306-3421 308-7725	07/01/96
2820	Semiconductors & electrical circuits			03/21/97
2830	Power generation & distribution music, electrical components & control circuits	Stewart J. Levy	308-0658 308-7722	01/17/97
2850	Photocopying, recorders, printing, measuring & testing	Margaret A. Focarino	306-3421 308-7725	08/30/96
2870	Liquid crystals, optical elements, optical systems, fiber optics, lasers, electric lamps, registers, optics, measuring & radiant energy	Janice A. Howell	308-0530 305-3594	09/21/96
3600	**TRANSPORTATION, CONSTRUCTION, AGRICULTURE & NATIONAL SECURITY**			
3610	Surface transportation & material handling	Richard A. Bertsch	308-1134 308-2177	09/10/96
3620	Static structures, closures, machine elements & power transmissions, civil engineering, connections, hardware & furniture	Al Lawrence Smith	308-1020 305-3597	02/25/97
3630	Supports & sign exhibiting			06/27/97
3640	Aeronautics, agriculture, earth moving/working, petroleum & mining, plant & animal husbandry, butchering, optics, radio wave & acoustic wave communication, data processing for vehicles, weaponry, nuclear systems & national security	John F. Terapane, Jr.	306-4180 306-4195	12/07/95
3700	**MECHANICAL ENGINEERING, MANUFACTURING AND PRODUCTS**			
3710	Amusement and education devices	Ethel Rollins-Cross	308-1078	10/24/96
3720	Packages, containers, manufacturing devices & processes, machine tools & hand tools		305-3579	12/26/96
3730	Medical instruments, diagnostic equipment, treatment devices, surgery & surgical supplies	John J. Love	308-0873 305-3139	12/02/96
3740	Thermal & combustion technology, motive and fluid power systems, textile manufacturing & apparel	Donald G. Kelly	308-0975 308-7763	11/22/96
3750	Fluid handling & dispensing			11/22/96

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
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David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of November 1, 1998

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308-9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/11/98	08/10/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308-9102—South Tower, 5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/98	06/15/98
Law Office 103—Michael A. Szoke, Managing Attorney, (703) 308-9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/13/98	06/08/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/16/98	08/17/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—South Tower, 6th Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/11/98	07/06/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—South Tower, 7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/26/98	08/04/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/28/98	08/18/98
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—South Tower, 8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/98	08/17/98
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308-9109—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/23/98	09/15/98
Law Office 112—Janice O'Lear, Managing Attorney, (703) 308-9112—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/98	07/16/98
Law Office 113—Meryl Hershkowitz, Managing Attorney, (703) 308-9113—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9,20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/29/98	07/06/98
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Sims, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	08/14/98	—0—
Renewals (All Classes)	09/08/98	—0—
Section 12(c) Publications (All Classes)	08/25/98	—0—

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3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

DECEMBER 29, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,839,039 (3692nd)
AUTOMATIC FLOW-CONTROL DEVICE

Natan E. Parsons, Brookline, and Joel S. Novak, Sudbury, both of Mass., assignors to Recurrent Solutions Limited Partnership, Cambridge, Mass.

Reexamination Request Nos. 90/003,323, Jan. 24, 1994 and 90/003,635, Nov. 10, 1994.

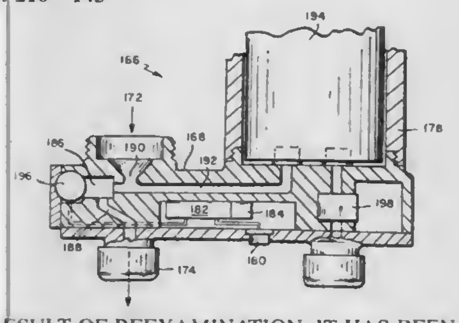
Reexamination Certificate for Patent 4,839,039, issued Jun. 13, 1989, Ser. No. 834,741, Feb. 28, 1986.

Reexamination Certificate B1 4,839,039, issued Feb. 22, 1994.

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.^{6} B01D *36/00;* E03C *1/05*

U.S. Cl. 210—143



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **22** and **31–35** is confirmed.

Claims **12**, **19**, **21**, **23** and **36** are cancelled.

Claims **1**,**13–17**, **20**, **24**, **25** and **37** are determined to be patentable as amended.

Claims **2–11**, **18** and **26–30**, dependent on an amended claim, are determined to be patentable.

New claims **38** and **39** are added and determined to be patentable.

33. For controlling the flow of fluid through a faucet, a flow-control device comprising:

A. a housing having a device inlet and first and second device outlets;
B. a first fluid conduit disposed in the housing for conducting fluid from the inlet to the outlet;
C. a second fluid conduit disposed in the housing for conducting fluid from the inlet to the second device outlet;
D. mounting means on the housing for mounting the device on the faucet with the device inlet in fluid communication with the faucet outlet;
E. sealing means for sealing the device inlet to the faucet outlet when the mounting means mounts the housing on the faucet so that fluid can flow from the faucet only by flowing through the flow-control device;
F. an electric valve interposed in the conduit and operable by application of control signals thereto to switch between an open state, in which the valve permits fluid flow through the first conduit, and a closed state, in which the valve prevents flow through the first conduit;
G. a filter element interposed in the second conduit andpresenting enough flow resistance so that the fluid does not flow through the second conduit when the valve permits fluid flow in the first conduit, the filter element permitting fluid flow therethrough when the valve is closed so that filtered water flows through the second outlet; and
H. a sensor circuit operable for sensing the presence of objects in the vicinity of the second outlet and to close the valve when it senses an object near the second outlet, the flow-control device thereby permitting flow of unfiltered water through the first-mentioned outlet when no object is sensed near the first outlet and directing fluid flow through the filter element so that filtered water issues through the second outlet when an object is near the second outlet.

B1 4,915,675 (3693rd)
PITCH EQUALIZED CHAIN WITH FREQUENCY MODULATED ENGAGEMENT

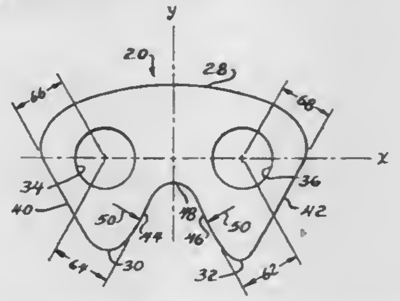
Stellios A. Avramidis, Martinsville, Ind., assignor to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Reexamination Request No. 90/004,428, Oct. 28, 1996.

Reexamination Certificate for Patent 4,915,675, issued Apr. 10, 1990, Ser. No. 316,776, Feb. 28, 1989.

Int. Cl.^{6} F16G *13/04*

U.S. Cl. 474—213



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **14**, **16–25** and **27** is confirmed.

Claims **1** and **26** are cancelled.

Claims **2**, **4–6**, **12**, **13** and **15** are determined to be patentable as amended.

Claims **3** and **7–11** dependent on an amended claim, are determined to be patentable.

2. A power transmission chain including a plurality of plain links arranged in side by side relationship to form a plurality of ranks of links, each of said plain links having apertures disposed about horizontal and vertical axes of *the* links,

a plurality of guide links having apertures disposed about horizontal and vertical axes thereof, said guide links being mounted *and press fit* on distal ends of pins connecting first alternate ranks of said plain links so as to form a guide link row, the other alternate ranks of said plain links being effective to form an articulated link row,

a plurality of guide link rows and a plurality of articulated rows being interweaved and interconnected by said pins to form said chain, comprising

said plurality of said plain links in each said guide link row being disposed between said guide links,

said plurality of guide links in each said guide link row each being equal in thickness and having a kidney shaped configuration that avoids any peripheral discontinuity, each of said plurality of guide [lines] *links* has a thickness different from a thickness of each of said plurality of said plain links,

[whereby when] said chain [is] *being* subjected to a load *sufficient to cause said guide links to permanently elongate and sufficient to otherwise cause said connecting pins to* *deform*, said *kidney shape guide link* configuration and said thickness of said guide links *differing sufficiently from said thickness of said plain links to* cause the guide links to *permanently* elongate substantially similarly to said plain links in each of said guide link rows thereby preventing deformation of said connecting pins and maintaining said pins substantially parallel to each other.

B1 5,044,096 (3694th)
SOLE STRUCTURE FOR FOOTWEAR

Mario Polegato, Crocetta Del Montello, Italy, assignor to Pol Scarpe Sportive S.r.l., Biade, Italy

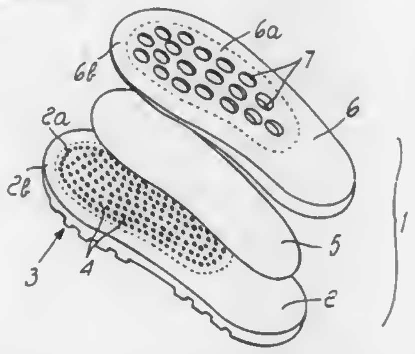
Reexamination Request No. 90/004,111, Jan. 16, 1996.

Reexamination Certificate for Patent 5,044,096, issued Sep. 3, 1991, Ser. No. 448,393, Dec. 11, 1989.

Claims priority, application Italy, Feb. 17, 1989, 41525 A/89

Int. Cl.⁶ A43B *7/06;13/00;13/12*

U.S. Cl. 36—3 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **5** are determined to be patentable as amended.

Claims **2-4** dependent on an amended claim, are determined to be patentable.

New claims **6** and **7** are added and determined to be patentable.

1. Sole structure for footwear, comprising an outsole which comprises at least one lower part and at least one upper part which are mutually united to form said outsole, said lower part defining an area at which a plurality of holes is provided which transverse said lower part, said upper part defining a zone at which through holes are provided which traverse said upper part, said outsole further comprising at least [on] *one* microporous waterproof membrane means sandwiched between said mutually united upper and lower parts, wherein said lower part defines a lower part perimetric region encompassing said area and said upper part defines an upper part perimetric region encompassing said zone, said lower part permietric region being a lower part coupling region and said upper part perimetric region being an upper part coupling region, said lower part and said upper part being mutually united at said upper part coupling region and said lower part coupling region in a manner to create a fluid-tight seal at said coupling regions, said membrane means being arranged between said upper part and said lower part inside said coupling regions thereof.

B1 5,129,900 (3695th)
SPINAL COLUMN RETAINING METHOD AND APPARATUS

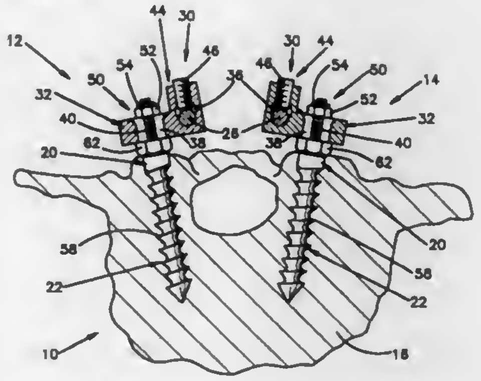
Marc A. Asher, Prairie Village, Kans.; Walter E. Strippgen, Golden, Colo.; Charles F. Heinig, Charlotte, N.C., and William Carson, Columbia, Mo., assignors to AcroMed Corp., Cleveland, Ohio

Reexamination Request No. 90/003,883, Jun. 29, 1995.

Reexamination Certificate for Patent 5,129,900, issued Jul. 14, 1992, Ser. No. 557,587, Jul. 24, 1990.

Int. Cl.⁶ A61F *5/00*

U.S. Cl. 606—61



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5–9** is confirmed.

Claims **1–4** are cancelled.

5. An apparatus for use in retaining spinal elements in a desired spatial relationship, said apparatus comprising a fastener having a first end portion with thread means for engaging a spinal element and a second end portion, a longitudinal member which is positionable along the spinal column, and connector means for interconnecting said longitudinal member and said fastener, said connector means including a connector member having first surface means for defining a first opening through which said longitudinal member extends, said first opening having a central axis which extends along at least a portion of said longitudinal member, first clamp means for holding said longitudinal member and connector member against movement relative to each other, said connector member having second surface means for defining an oblong second opening through which said second end portion of said fastener extends, said oblong second opening having a longitudinal axis extending perpendicular to the central axis of said first opening, said connector member being movable relative to said fastener through a range of movement along the longitudinal axis of said oblong second opening, and second clamp means for holding said fastener and connector member against movement relative to each other.

B1 5,300,564 (3696th)
DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS

David Avnir; Michael Ottolenghi; Sergei Braun, and Rivka Zusman, all of Jerusalem, Israel, assignors to Yissum, Research Development Company of the Hebrew University Jerusalem, Jerusalem, Israel

Reexamination Request No. 90/004,569, Feb. 28, 1997.

Reexamination Certificate for Patent 5,300,564, issued Apr. 5, 1994, Ser. No. 637,873, Jan. 8, 1991.

Claims priority, application Israel, Jan. 23, 1990, 93134

Int. Cl.⁶ C08G *63/48;* **G01N** *21/00;33/00*

U.S. Cl. 525—54.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–26**, dependent on an amended claim, are determined to be patentable.

New claim **27** is added and determined to be patentable.

1. A method for obtaining an interaction between a reagent and a component, comprising:

(a) trapping a reagent in an inorganic *sol-gel* porous glass formed by:

i. polymerization of at least one metal alkoxide, semi-metal alkoxide, metal ester or semi-metal ester monomers as such in admixture with said reagent, the reagent being permanently trapped in a pore system of the polymerized *sol-gel* glass by conducting the entire polymerization in the presence of the reagent, the reagent being reactive after preparation of the *sol-gel* glass polymer and the *sol-gel* glass polymer providing a solid support for the reagent,

ii. the polymerization including a gelling step conducted at not greater than room temperature, and

iii. the polymerization including a drying step conducted at not greater than 45° C.; and

(b) interacting the reagent permanently trapped in the *sol-gel* glass polymer with a component which is in a liquid or gas phase in pores of the *sol-gel* glass polymer and which is reactive with the reagent trapped in the pores of the *sol-gel* glass polymer.

B1 5,343,616 (3697th)
METHOD OF MAKING HIGH DENSITY SELF-ALIGNING CONDUCTIVE NETWORKS AND CONTACT CLUSTERS

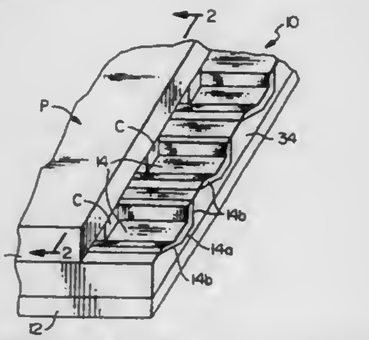
Joseph A. Roberts, Hudson, N.H., assignor to Rock Ltd., Grafton, N.H.

Reexamination Request No. 90/004,760, Sep. 25, 1997.

Reexamination Certificate for Patent 5,343,616, issued Sep. 6, 1994, Ser. No. 837,357, Feb. 14, 1992.

Int. Cl.⁶ H05K *3/02*

U.S. Cl. 29—846



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8–16** and **35–43** is confirmed.

Claims **2**, **17**, **18**, **19**, **21**, **22**, **23** and **44–50** are cancelled.

Claims **1**, **20**, **24**, **25**, **27**, **28**, **32** and **34** are determined to be patentable as amended.

Claims **3–7**, **26**, **29–31** and **33**, dependent on an amended claim, are determined to be patentable.

New claims **51** and **52** are added and determined to be patentable.

1. A method for manufacturing a conductive network comprising the steps of

forming a planar metallic sheets into a non-planar pattern having a dielectric material on a first side of said metallic sheet; [and]

removing raised portions of said metallic sheet from a second side of said metallic sheet to form electrically insulated conductive paths: *and*

adhering a sheet of spring material to said dielectric material.

B1 5,393,268 (3698th)
TANDEM SWING

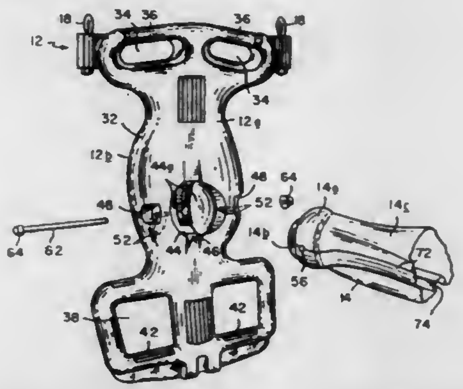
Joel C. Cunard, and Robert J. Boudreau, both of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.

Reexamination Request No. 90/005,007, Jun. 3, 1998.

Reexamination Certificate for Patent 5,393,268, issued Feb. 28, 1995, Ser. No. 30,667, Mar. 12, 1993.

Int. Cl.⁶ A63G *9/00*

U.S. Cl. 472—120



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A children's swing comprising an elongated rigid beam having opposite ends and means between said ends defining a seating platform for at least two children;

a pair of elongated rigid rockers, each rocker having upper and lower ends, a mid portion between the ends, hand grip means at said upper end and foot support means at said lower end;

first and second hinge means for pivotally connecting the mid portions of said rockers to the opposite ends of the beam so that each rocker can pivot about a pivot axis, the longitudinal axes of the beam and rockers being in a common plane which is perpendicular to said pivot axes;

means for confining the movement of each rocker relative to the beam substantially to movement about the pivot axis of said each rocker;

means for limiting the pivoting motion of each rocker about the corresponding pivot axis so that each rocker can swing between a first position wherein the included angle between the rocker axis and the beam is an acute angle and a second position wherein said included angle is an obtuse angle;

elongated support means spaced above the ground, said support means having a longitudinal axis;

first flexible suspension means having upper and lower ends;

first and second connection means connecting the upper and lower ends of said first suspension means to said support means and one rocker of said pair of rockers, respectively;

second flexible suspension means having upper and lower ends, and

third and fourth connection means connecting the upper and lower ends of said second suspension means to said support means and the other rocker of said pair of rockers, respectively, so that said beam axis is substantially perpendicular to said support means axis, said first and third connection means being spaced apart a distance less than the spacing of said first and second hinge means, so that when said swing is at rest, the rockers and the suspension means converge toward said support means.

B1 5,573,277 (3699th)
MAILPIECE AND/OR SHIPPING ITEM FOR SPECIAL MAILING AND A METHOD FOR ASSEMBLING A MAILPIECE AND/OR SHIPPING ITEM REQUIRING SPECIAL SERVICES

Glenn Petkovsek, 20 Tortoise Park Cove, Little Rock, Ark. 72211-2349

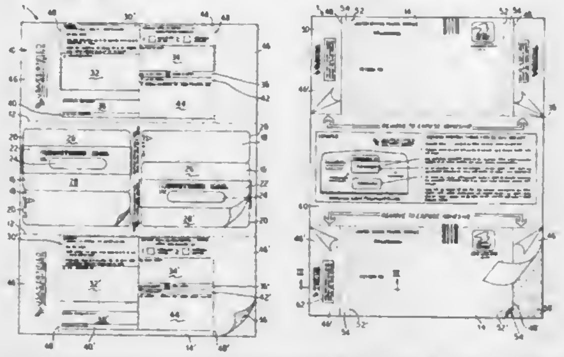
Reexamination Request No. 90/004,937, Mar. 10, 1998.

Reexamination Certificate for Patent 5,573,277, issued Nov. 12, 1996, Ser. No. 281,634, Jul. 28, 1994.

Continuation-in-part of Ser. No. 206,018, Mar. 4, 1994, abandoned.

Int. Cl.^{6} G09F *3/04*

U.S. Cl. 283—79



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–27** is confirmed.

1. A label/form for printing and addressing information relating to mail and shipping handling on a mailpiece or shipping item, the label/form comprising:

a multi-layer sheet, each layer having a front side and a back side wherein only the front side of a first layer and the back side of a second layer of the multi-layer sheet receive the information and further wherein the front side of the first layer and the back side of the second layer of the multi-layer sheet has a plurality of distinct sections vertically displaced from one another;

a plurality of parts associated with the multi-layer sheet wherein at least one of the plurality of parts is non-removably secured to the multi-layer sheet and at least one other of the plurality of parts in each of the plurality of distinct sections is removably secured to the sheet having an adhesive backing;

an adhesive layer on the back side of the first layer for removably securing at least one of the plurality of parts from the front side of the first layer of the multi-layer sheet; and

an identifier on at least one of the plurality of parts uniquely identifying the mailpiece or shipping item.

B1 Des. 362,917 (3700th)
WINDOW COMPONENT EXTRUSION

Sam S. Hosseini, Bellevue, Wash., assignor to Mikron Industries, Kent, Wash.

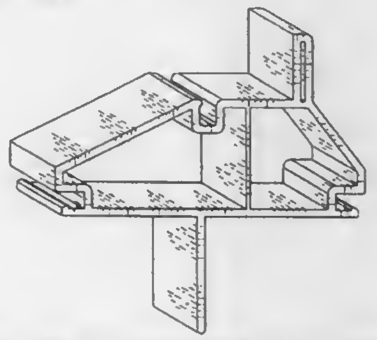
Reexamination Request No. 90/004,690, Jul. 3, 1997.

Reexamination Certificate for Patent Des. 362,917, issued Oct. 3, 1995, Ser. No. 19,731, Mar. 9, 1994.

The portion of the term of this patent subsequent to Sep. 27, 2008, has been disclaimed.

LOC (6) 25 *01*

U.S. Cl. D25—124



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The single claim is confirmed.

The ornamental design for a window component extrusion, as shown and described.

REISSUES

DECEMBER 29, 1998

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

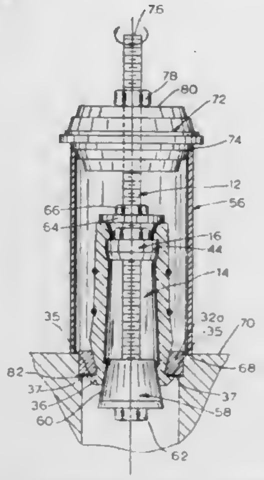
Re. 36,009
APPARATUS AND METHOD FOR REMOVING BEARINGS

William E. Shultz, 239 N. Main St., Lombard, Ill. 60148

Original No. 5,255,435, dated Oct. 26, 1993, Ser. No. 960,726, Oct. 14, 1992. Application for reissue Mar. 11, 1994, Ser. No. 208,688

Int. Cl.^{6} B23P *19/04*

U.S. Cl. 29—898.08 **21 Claims**



14. Apparatus for removing a bearing without removal of an internal mechanical part comprising:

an elongate bearing driving shaft:

contacting means axially and internally insertable through said bearing for contacting an annular bearing undersurface, said contacting means including a bearing-contacting shoulder, said contacting means being connected to said elongate driving shaft when operatively assembled for removing a bearing;

a mandrel expansion collar threadedly carried on said driving shaft for expanding an upper portion of said contacting means;

[tapered] adjusting means for adjusting said bearing driving shoulder, from an undersurface thereof, to a desired dimension to contact at least a portion of said annular bearing undersurface; and

thrust means for transmitting thrust from said driving shaft to said bearing drive shoulder such that rotation of said driving shaft forces said bearing undersurface upwardly for removal.

Re. 36,010

Patent Not Issued For This Number

Re. 36,011
PROTEIN SEPARATIONS BY CAPILLARY ELECTROPHORESIS USING AMINO ACID-CONTAINING BUFFERS

Eli Gruschka, D.N. Tzfon Yehuda, Israel, and Cheng-Ming Liu, Yorba Linda, Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Original No. 5,660,701, dated Aug. 26, 1997, Ser. No. 610,105, Feb. 29, 1996. Application for reissue Nov. 20, 1997, Ser. No. 975,179

Int. Cl.^{6} G01N *27/26;27/447*

U.S. Cl. 204—451 **18 Claims**

1. A method of separating a mixture of proteins in a liquid sample, said method comprising electrophoretically passing said sample through a capillary filled with an alkaline solution of an amino acid *at a sufficient concentration to be effective as a buffering agent, and in which said amino acid is the sole buffering agent in said alkaline solution*, by imposing an electric field across said capillary, wherein said capillary has an inner surface and said inner surface is uncoated.

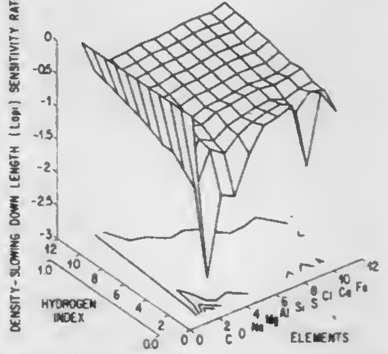
Re. 36,012
ACCELERATOR-BASED METHODS AND APPARATUS FOR MEASUREMENT-WHILE-DRILLING

William A. Loomis, Ridgefield, Conn.; Kenneth E. Stephenson, Cambridge, England; Jerome A. Truax, Brookfield, Conn.; Wolfgang P. Ziegler, Ridgefield, Conn.; S. Zema Chowdhuri, Bloomington, Ind.; Benoit Couet, Bethel, Conn.; Michael L. Evans, Missouri City, Tex.; Paul Albats; Bradley A. Roscoe, both of Ridgefield, Conn.; Jacques M. Holenka, Missouri City, Tex.; Keith A. Moriarty, Houston, Tex., and William R. Sloan, Missouri City, Tex., assignors to Schlumberger Technology Corporation, Ridgefield, Coon.

Original No. 5,539,225, dated Jul. 23, 1996, Ser. No. 307,894, Sep. 16, 1994. Application for reissue Sep. 25, 1996, Ser. No. 710,997

Int. Cl.^{6} G01V *5/10*

U.S. Cl. 250—269.4 **96 Claims**



51. An apparatus for measuring properties of earth formations surrounding a borehole, comprising:

a) a housing;

b) a high energy neutron accelerator in the housing for irradiating the formations from within the borehole;

c) a first neutron detector in said housing at a first spacing from the accelerator in the lengthwise direction of said housing, said first neutron detector having an output that is primarily proportional to the accelerator neutron flux;

d) a second neutron detector in said housing at a second, farther spacing from the accelerator in the lengthwise direction of said housing, said second neutron detector being sensitive to epithermal neutrons and having an output that is primarily responsive to the hydrogen concentration of the surrounding earth formation and only secondarily responsive to the density of the surrounding earth formation;

e) a third radiation detector in said housing at a third, still farther spacing from the accelerator in the lengthwise direction of said housing, said third detector having an output that is more responsive to the density of the surrounding earth formation and less responsive to the hydrogen concentration of the surrounding earth formation than is the second detector;

f) means for recording the respective outputs of said first, second and third detectors; and

g) means for determining a parameter related to the formation density from the respective outputs.

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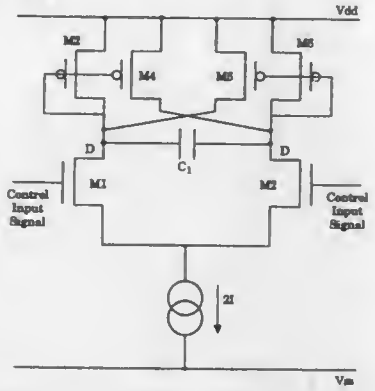
Re. 36,013
DIFFERENTIAL CHARGE PUMP CIRCUIT WITH HIGH DIFFERENTIAL AND LOW COMMON MODE IMPEDANCE

Thomas H. Lee, Cupertino, Calif., assignor to Rambus, Inc., Mountain View, Calif.

Original No. 5,422,529, dated Jun. 6, 1995, Ser. No. 165,398, Dec. 10, 1993. Application for reissue Jun. 6, 1997, Ser. No. 870,638

Int. Cl.^{6} H03K *17/56;* **H03F** *3/45*

U.S. Cl. 327—536 **15 Claims**



15. A method for generating charge across a capacitor in accordance with control signals, said method comprising the steps of:

providing first and second transistors each comprising a first terminal for receiving a biasing current, a second terminal for dispensing said biasing current, and a third terminal for controlling the amount of biasing current flowing from said first terminal to said second terminal;

inputting, on said third terminal of said first and second transistors, said control signals comprising large input swings sufficient to switch all of said biasing current in either said first transistor or said second transistor;

providing a positive differential load resistance;

coupling power from said positive differential load resistance to said first terminal of said first transistor and to said first terminal of said second transistor;

providing a negative differential load resistance comprising an absolute value being substantially equal to a value of said positive differential resistance;

coupling power from said negative differential load resistance to said first terminal of said second transistor and to said first terminal of said first transistor; and

generating a capacitance across said first terminal of said first transistor and said first terminal of said second transistor, wherein said load element exhibits high differential impedance to prohibit leakage of the at least one capacitor, said control signals controlling said third terminals of said first and second transistors so as to switch substantially half of all of said biasing current, in both directions, from said load element across said capacitance.

Re. 36,014
VOLTAGE STORAGE CIRCUITS

Ian J. Dedic, Middlesex, United Kingdom, assignor to Fujitsu Limited, Kawasaki, Japan

Original No. 5,384,570, dated Jan. 24, 1995, Ser. No. 115,986, Sep. 3, 1993. Application for reissue Jan. 23, 1997, Ser. No. 788,030

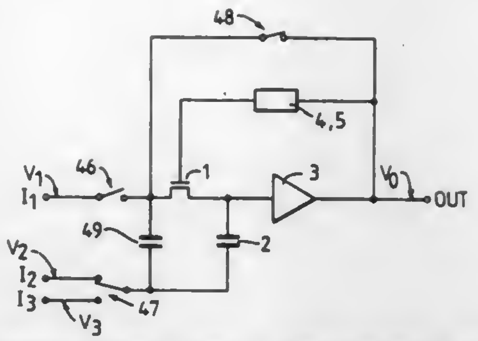
Claims priority, application United Kingdom, Sep. 8, 1992, 9218987

Int. Cl.^{6} H03M *1/12*

U.S. Cl. 341—172 **67 Claims**

1. A voltage storage circuit comprising:

a storage capacitor, one plate of which is connected to an input terminal of the circuit by way of an input switch element and the other plate of which is connected to a common terminal of the circuit, to store an input signal being applied between said input and common terminals when the circuit is in use; [and]



an amplifier element, having an input connected to said one plate and an output connected to an output terminal of the circuit, for providing an output signal, between said output and common terminals, dependent upon the voltage stored in said storage capacitor, which amplifier element includes an electronic input device having a controllable current path provided between respective first and second current-path electrodes of the electronic input device and also having a control electrode to which a potential is applied to control the magnitude of current in said controllable current path, said control electrode being connected to said one plate, and said first and second current-path electrodes being connected with a potential tracking device such that both the first current-path electrode potential and the second current-path electrode potential track the control electrode potential, whilst current flows in said controllable current path, so that the respective potentials of the first and second current-path electrodes are kept substantially fixed in relation to the potential of said one plate, *said voltage storage circuit being formed on a single substrate, an said input switch element and said input device of the amplifier element being located within one or more wells of the conductivity type oppasite to that of the surrounding material of said substrate; and*

means for causing each well potential to track the potential of said one plate.

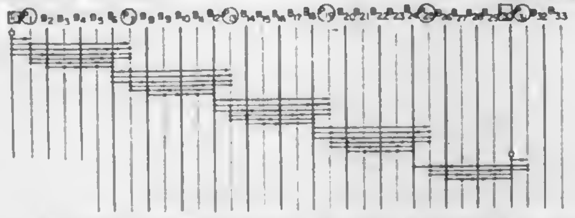
Re. 36,015
APPARATUS AND METHOD FOR PROCESSING GROUPS OF FIELDS IN A VIDEO DATA COMPRESSION SYSTEM

Siu Leong Iu, Falls Church, Va., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Original No. 5,293,229, dated Mar. 8, 1994, Ser. No. 859,145, Mar. 27, 1992. Application for reissue Oct. 2, 1995, Ser. No. 538,101

Int. Cl.^{6} H04N *7/32*

U.S. Cl. 348—415 **18 Claims**



1. A method for automatically encoding a sequence of video image fields comprising the steps of:

encoding each field in said sequence of video image fields in a predetermined order to produce a sequence of encoded fields wherein a plurality of the fields in the sequence of video image fields are bidirectionally predictively encoded;

decoding each field in the sequence of encoded fields to produce a sequence of decoded fields; and

storing each field in said sequence of decoded fields to produce a sequence of stored fields;

wherein, each field in said sequence of video image fields which is bidirectionally predictively encoded is encoded using data from one of said stored fields which is closest in position in said sequence of video image fields to the field being bidirectionally predictively encoded.

Re. 36,016
DISC STORAGE DEVICE HAVING AN INTEGRATED DRIVING SYSTEM

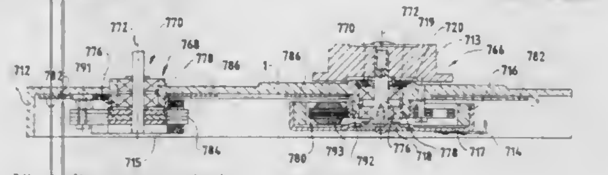
Heinrich Cap; Georg F. Papst, and Edgar Zuckschwert, all of St. Georgen, Germany, assignors to Papst Licensing, GmbH, Germany

Original No. 5,237,471, dated Aug. 17, 1993, Ser. No. 650,807, Feb. 5, 1991. Continuation of Ser. No. 399,405, Aug. 25, 1989, Pat. No. 4,991,211, which is a continuation of Ser. No. 942,834, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 733,218, May 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 684,460, Dec. 21, 1984, abandoned. Application for reissue Aug. 16, 1995, Ser. No. 515,963

Claims priority, application Switzerland, Nov. 29, 1984, 5685/84

Int. Cl.^{6} G11B *19/20;33/00*

U.S. Cl. 360—97.01 **68 Claims**



38. A disc storage device, comprising:

a housing defining a clean room,

at least one storage disc provided in said clean room;

at least one scanning head provided in said clean room;

a one-piece chassis forming part of said clean room, said chassis being formed of metal and having first and second motor mounting elements integrally formed thereon, said first and second motor mounting elements having first and second bores associated therewith, said bores having been precision machined concentric with first and second axes, respectively, in one machining step without rechucking said one-piece chassis to obtain a precisely adjusted relationship between said bores;

a disc motor mounted on said one-piece chassis, said disc motor having a shaft which is mounted on said first motor mounting element coaxial with said first bore and further including a disc mounting member supporting said at least one disc for rotation about said first axis;

a scanning head motor mounted on said second motor mounting element and operatively engaged with said at least one scanning head to allow said at least one scanning head to be moved relative to said at least one disc, said scanning head motor having a member aligned with said second bore for establishing the path of movement of said at least one scanning head; and

said at least one disc including a central opening through which said disk mounting member extends to support said at least one disc for rotation about said first axis and said disc motor being located in a space defined within said disc mounting member.

Re. 36,017
CELLULAR DIGITAL MOBILE RADIO SYSTEM AND METHOD OF TRANSMITTING INFORMATION IN A DIGITAL CELLULAR MOBILE RADIO SYSTEM

Jan E. Uddenfeldt, and Alex K. Raith, both of Stockholm, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

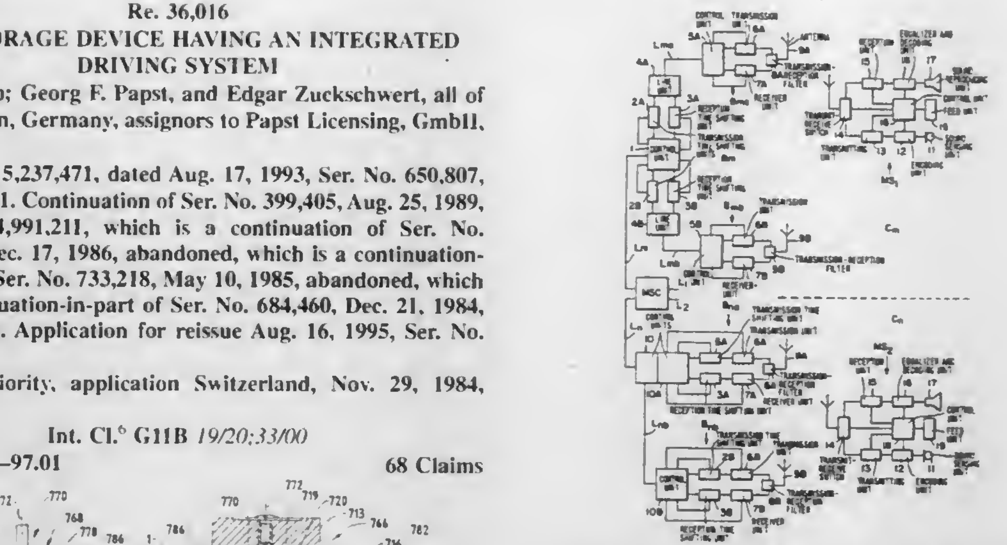
Original No. 5,088,108, dated Feb. 11, 1992, Ser. No. 579,283, Sep. 6, 1990. Continuation of Ser. No. 315,561, Feb. 27, 1989, abandoned. Application for reissue Oct. 15, 1993, Ser. No. 136,760

Claims priority, application Sweden, Feb. 29, 1988, 8800698

Int. Cl.^{6} H04B *7/04;7/26*

U.S. Cl. 375—230 **39 Claims**

10. A cellular mobile radio system for communicating message information within a geographic area that is divided into communication cells, comprising:



a plurality of base stations associated with said cells, some of said cells having at least two base stations associated therewith and located a distance from one another to transmit respective radio signals into a cell, which signals are digitally [encoded] *modulated* with the same message information and are transmitted at the same frequency and substantially simultaneously with one another,

each base station including means for digitally [encoding] *modulating* the radio signals with message information, said [encoding] *modulating* being carried out with modulation time intervals which are [no longer than] *within a time interval related to* the time required for [audio] *radio* signals to propagate a distance corresponding to the greatest transmitting distance between *said at least* two base stations associated with *said at least* one cell in said system: and

a plurality of mobile stations each having means for reconstructing the digital [encoding] *modulation* of plural corresponding radio signals respectively received over the same frequency range during a reception time interval from [the] *said at least* two base stations associated with [a] *said at least* cell, which reception time interval is at least as long as the time required for radio signals to propagate a distance corresponding to the greatest transmitting distance between *said at least* two base stations associated with [a] *said at least one* cell.

Re. 36,018
DUSTPROOF VIEW FINDER

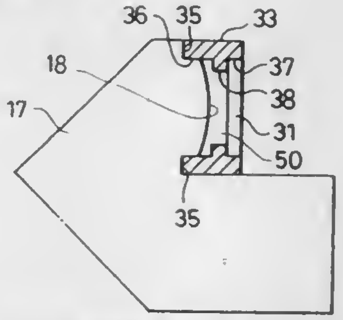
Tetsuya Abe, Hokkaido, and Katsuhiko Nozaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 5,250,969, dated Oct. 5, 1993, Ser. No. 795,179, Nov. 19, 1991. Application for reissue Oct. 3, 1995, Ser. No. 538,619

Claims priority, application Japan, Nov. 26, 1990, 2-123879 U

Int. Cl.^{6} G03B *13/02*

U.S. Cl. 396—382 **16 Claims**



1. A dustproof view finder in which an image formed by an objective optical system is erected by an image erecting optical system and is observed by an ocular optical system as an erect

image, said dustproof view finder comprising a pair of front and rear optical elements spaced from one another at a predetermined distance to define an aerial space therebetween, and an enclosing device which encloses the aerial space, the enclosed aerial space defining therein an image forming position at which an object image is formed by the objective optical system;

wherein the following relationship exists between focal length "fe" of the ocular optical system, [optical path length] *distance* "d" from the image forming position to a front surface of the front optical element, and refractive index "n" of the front optical element:

$$|(1000\times d)/\{n\times(fe)^2\}|\geqq 2.0.$$

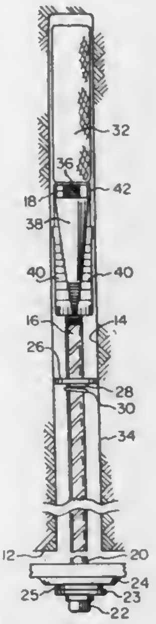
Re. 36,019
ROOF CONTROL SYSTEM

John C. Stankus, Cannonsburg, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Original No. 5,232,311, dated Aug. 3, 1993, Ser. No. 703,162, May 20, 1991. Application for reissue Jul. 31, 1995, Ser. No. 509,381

Int. Cl.⁶ E21D *20/02*

U.S. Cl. 405—259.6 13 Claims



1. Roof control system for underground strata, comprising:

a) an elongated bolt adapted for insertion into a hole bored in underground strata;

b) [anchor means] *an anchor assembly* for securely anchoring the bolt in the hole at a location where a significant length of the bolt remains between the opening of the borehole and the anchor [means] *assembly*;

c) tension means for placing said significant length of said bolt in tension by rotating the bolt at a predetermined torque, [torque] the *tension* means including a plate mounted on the bolt and located adjacent to the outer surface of the strata, and a nut [means] on the end of the bolt for engaging the plate;

d) tension/torque adjustment means for selectively adjusting friction between adjacent surfaces which rub against each other when the bolt is rotated, whereby the tension/torque ratio of the bolt is selected to match the desired level for a particular type of underground strata, the tension/torque adjustment means including *a friction reducing washer selected from* an array of friction reducing washers with different contact surface areas, for location between the nut [means] and plate.

7. A method of mine control for underground strata, comprising:

a) placing an elongated bolt into a hole bored in underground strata;

b) securely anchoring the bolt in the hole *by an anchor assembly* at a location where a significant length of the bolt remains between the opening of the borehole and the [anchor means] anchor *assembly*;

c) placing said significant length of said bolt in tension by rotating the bolt at a predetermined torque, wherein a plate is mounted on the bolt and located adjacent to the outer surface of the strata and a nut [means] is on the end of the bolt that engages the plate;

d) selectively adjusting the friction between adjacent surfaces which rub against each other when the bolt is rotated for adjusting the tension/torque ratio of the bolt to match the desired level for a particular type of underground strata, including selecting *a friction reducing washer* from an array of friction reducing washers with different contact surface areas and volumes of washer material and placing [one of said washers] *the selected friction reducing washer* between the nut [means] and plate prior to rotating the bolt.

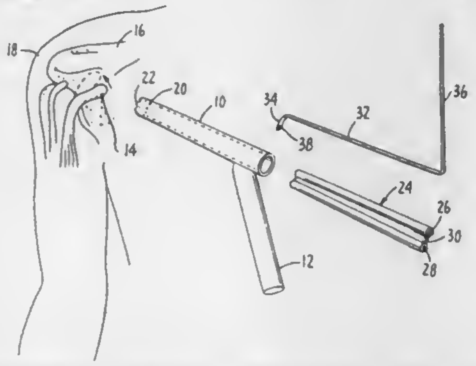
Re. 36,020
METHOD AND APPARATUS FOR TYING SUTURE TO BONE

Robert R. Moore, Hayward, Calif., and Arnold K. Cohn, Glenview, Ill., assignors to Orthopedic Systems, Inc., Union City, Calif.

Original No. 5,250,055, dated Oct. 5, 1993, Ser. No. 895,604, Jun. 8, 1992. Application for reissue Oct. 5, 1995, Ser. No. 547,645

Int. Cl.⁶ A61B *17/00*

U.S. Cl. 606—144 10 Claims



6. Apparatus for attaching a suture to bone under soft tissue, comprising, in combination:

a drill guide having at least two generally parallel bores; and

a suture pusher having a proximal section and a distal section, the distal section including a suture holding section laterally movable relative to the proximal section in response to manipulation of the proximal section to push a suture loop carried by the distal section through soft bone material between two parallel holes in the bone aligned with two of the bores in the drill guide.

PLANT PATENTS

GRANTED DECEMBER 29, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,737
MINIATURE ROSE PLANT NAMED 'POULEZY'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser ApS, Fredensborg, Denmark

Filed Apr. 7, 1997, Ser. No. 833,507

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—8.1 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein illustrated and described, as a distinct and novel rose variety due to its abundant flowers with good keepability, attractive long lasting foliage and compact growth, year round flowering under glasshouse conditions, suitability for production from softwood cuttings in pots, durable flowers and foliage which make the variety suitable for distribution in the floral industry.

10,738
MINIATURE ROSE PLANT NAMED 'POULRAT'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser APS, Fredensborg, Denmark

Filed Apr. 3, 1997, Ser. No. 832,299

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—8.2 1 Claim

1. A new and distinct cultivar of rose plant named 'POULrat', as illustrated and described.

10,739
APPLE TREE NAMED 'CRESTON'

Karl O. Lapins, Kelowna, and W. David Lane, Summerland, both of Canada, assignors to Okanagan Plant Improvement Co. Ltd.

Filed Jun. 19, 1997, Ser. No. 879,122

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—34.1 1 Claim

1. A new and distinct variety of apple tree, originating from a controlled cross of 'Golden Delicious'×'NJ 381049', substantially as illustrated and described, herein which is most similar to 'Jonagold' and characterized as to novelty by its distinct elllipsoid shape, moderately deep calyx and stem end and a skin color of 30% to 40% prominent orange/red stripes on a yellow/green background and the unique combination of taste, texture and juiciness which are different from other dessert quality apples.

10,740
APPLE TREE NAMED 'SILKEN'

W. David Lane, Summerland, Canada, assignor to Okanagan Plant Improvement Co. Ltd.

Filed Jun. 19, 1997, Ser. No. 879,123

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—35.1 1 Claim

1. A new and distinct variety of apple tree, originating from a controlled cross of 'Honeygold'×'Sunrise' substantially as illustrated and discribed herein, which is most similar to 'Golden Delicious' and characterized as to novelty by the ivory to pale yellow skin color, bright luster, oblong to globose conical and slightly truncate shape, distinct calyx lobing, and the unique combination of taste, texture and juiciness which are different from other dessert quality apples.

10,741
HIBISCUS PLANT NAMED 'BOST HYBRID NO. 5'

Georgia A. Bost, 1209 Pine Chase, Houston, Tex. 77055

Filed Aug. 11, 1997, Ser. No. 912,993

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—67.8 1 Claim

1. A new and distinct cultivar of Hibiscus plant, substantially as shown and described.

10,742
HELICHRYSUM PLANT NAMED 'HARVEST PLUM'

Rodolfo Valdoz Bautista, Half Moon Bay, Calif., assignor to Bay City Flower Company, Inc., Half Moon Bay, Calif.

Filed Apr. 22, 1997, Ser. No. 841,412

Int. Cl.⁶ A01H *5/00*

U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct variety of Helichrysum plant, as illustrated and described.

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PATENTS

GRANTED December 29, 1998

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Patents

For CLASS	See PATENT NO.
002—236	5,852,831
057—210	5,852,926
374—109	5,853,246
606—067	5,853,387
525—213	5,854,581
235—379	5,854,581
242—359	5,854,609
342—372	5,854,610
342—373	5,854,611
342—373	5,854,612
342—383	5,854,681
386—416	5,854,681
345—089	5,854,879
345—104	5,854,881

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PATENTS

GRANTED DECEMBER 29, 1998

GENERAL AND MECHANICAL

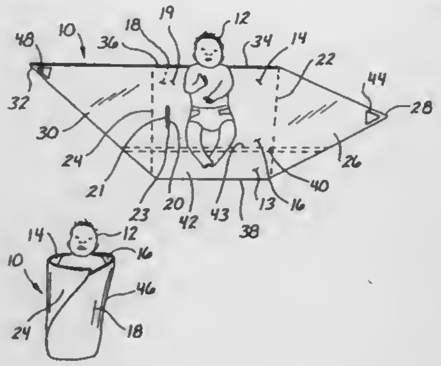
5,852,827

BABY WRAPPING BLANKET

Laura Lear, 38 El Cencerro, Rancho Santa Margarita, Calif. 92688, assignor to Laura Lear, Rancho Santa Margarita, Calif.

Filed Jun. 23, 1997, Ser. No. 880,845
Int. Cl.^{6} A41B *13/06*

U.S. Cl. 2—69.5 **20 Claims**



1. An article for wrapping an infant, said article comprising:

a sheet of flexible material having an inner surface for receiving the infant and an outer surface, said sheet of flexible material having in combination:

a central area extending between a first side and a second side, said central area having a slit disposed between said first side and said second side and extending between the inner and outer surfaces;

a first side flap extending outwardly from said first side of said central area to a first side flap end, said first side flap configured for folding around said infant and for inserting through said slit, and

a second side flap extending outwardly from said second side of said central area to a second side flap end, said second side flap configured for folding over a portion of the first side flap and the infant.

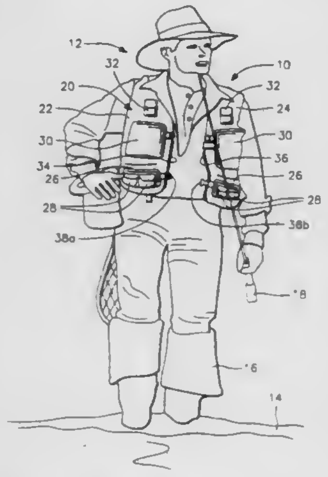
5,852,828

CONVERTIBLE FLY FISHING VEST

Ronald W. Foster, 3S322 Deerpath Rd., Batavia, Ill. 60510

Filed Aug. 12, 1997, Ser. No. 909,822
Int. Cl.^{6} A41D *13/00*

U.S. Cl. 2—102 **18 Claims**



1. A fly fishing vest comprising:

a front section including a plurality of pockets, and

a rear section including a mesh panel member covered by a rear panel portion, said rear panel portion being removable to expose said mesh panel member and allow ventilation of the fly fishing vest.

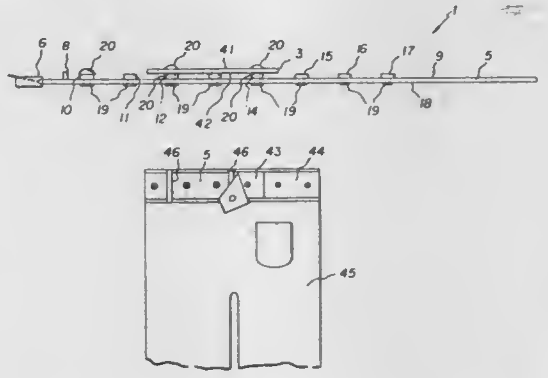
5,852,829

BELT WITH CHANGEABLE DECORATIVE STRIPS

Shadrach Relaford, 750 S. Dickerson, Apt. 412, Arlington, Va. 22204

Continuation-in-part of Ser. No. 707,374, Sep. 4, 1996, abandoned. This application Jun. 26, 1997, Ser. No. 883,084
Int. Cl.^{6} A41F *9/00*

U.S. Cl. 2—338 **6 Claims**



1. An interchangeable apparel belt set comprising:

a body encircling member insertable through belt loops on a garment and having an inner side and an outer side, said inner side being placed against a wearer's body when said belt is worn, said body encircling member including attachment means attached at substantially equally spaced intervals along the outer side; and

a set of interchangeable decorative strips of varying lengths, each of said strips having front and back sides, each of said front sides including indicia for communicating messages on said body encircling member, each of said back sides including corresponding attachment means positioned at opposite ends thereof and attachable to said attachment means on said body encircling member over belt loops on a garment, such that the belt loops are positioned between said body encircling member and said decorative strips, whereby said decorative strips substantially completely cover said belt loops.

5,852,830

PORTABLE URINAL DEVICE FOR BEDSIDE AND TRAVEL USE

Marlon Horn, P.O. Box 24870, Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 517,367, Aug. 21, 1995, Pat. No. 5,655,229. This application Jun. 19, 1997, Ser. No. 878,984
Int. Cl.^{6} A47K *11/12*

U.S. Cl. 4—144.1 **1 Claim**

1. A portable urinal device for bedside and travel use for allowing a user to urinate when toilet facilities are unavailable or unreachable comprising, in combination:

a flexible collapsible bag having an inverted frusto conical configuration with an oval planar top face having a pair of arcuate side edges which meet at opposed ends thereof, the bag further including a periphery having a plurality of undulations formed therein and being spaced in concentric rela-

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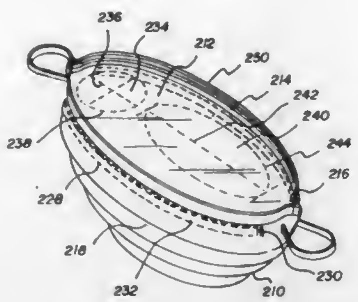


tionship for facilitating the collapsing of the bag, whereby a bottom face of the bag may be compacted to abut the top face and the side edges of the top face may be brought together thereby rendering the bag in a collapsed orientation;

an elastic ring having a central opening for receiving the bag when in the collapsed orientation thereof thereby maintaining the bag in such orientation;

a pair of closed loops each having a pair of ends coupled to an associated one of the opposed ends of the top face and extending outwardly therefrom for allowing the gripping thereof by a user, wherein each loop extends outwardly a length less than ¼ that of the top face of the bag;

a pair of thin elongated sleeves formed on the periphery of the bag adjacent to and in parallel with an associated one of the side edges of the top face, each sleeve having a pair of open ends;

a pair of slightly arcuate thin elongated resilient members adapted to be removably inserted within the sleeves of the bag for maintaining the top face in an extended planar orientation during use;

a first perforation situated adjacent a first end of the top face and including a pair of short slits having a cross-shaped configuration for allowing a male user to penetrate the top face for urinating within the bag, wherein the first perforation has a circular perforation surrounding the pair of short slits for facilitating the bending of pie-shaped portions defined by the short slits;

a second perforation including an elongated slit formed between a second end of the top face and the first perforation for allowing a female user to urinate within the bag, wherein the second perforation has an oval perforation surrounding the elongated slit; and

a pair of lips integrally coupled to the side edges of the top face of the bag and extended upwardly therefrom, the lips including a first lip with a pair of elongated tabs formed on an inner surface thereof along an entire length thereof and a second lip with a single elongated tab formed in an inner surface thereof along an entire length thereof for engaging the pair of elongated tabs of the first lip thereby allowing a user to selectively preclude access to the top face and further prevent the leaking of urine from the slits, wherein the lips are situated interior of the sleeves.

5,852,831
SELF-CLOSING TOILET SEAT AND LID

Donald G. Naughton, 8550 Katy Freeway, Suite 126, Houston, Tex. 77024, and Malcolm E. Smith, 1636 Birdsong Pl., El Cajon, Calif. 92021

Filed Jun. 23, 1997, Ser. No. 880,752

Int. Cl.^{6} A47K *13/12*

U.S. Cl. 4—236 **17 Claims**

1. An improved toilet seat for a toilet having a flush device, wherein the improvement comprises:

a bowl mount having at least two mounting lugs;

a seat having at least one seat lug and at least one seat locking member;

a lid having at least one lid lug and at least one lid locking member;

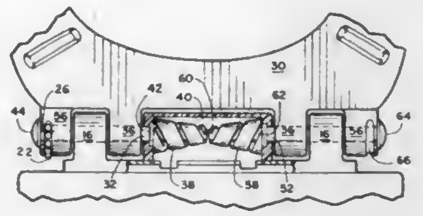
a seat hinge pin pivotally connecting said seat to said bowl mount through one of said at least one seat lug and one of said at least two mounting lugs, said seat attached in pivoting communication with said seat hinge pin by said at least one seat locking member;

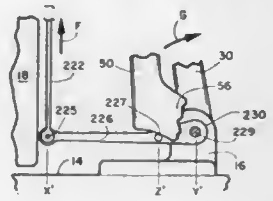
a lid hinge pin pivotally connecting said lid to said bowl mount through one of said at least one lid lug and the other of said at least two mounting lugs, said lid attached in pivoting communication with said lid hinge pin by said at least one lid locking member;

seat brake means, said seat brake means having a seat brake first end and a seat brake coupler, said seat brake means being substantially tapered at said seat brake first end and substantially resilient and substantially spiral-shaped, said tapered end adapted to friction grip said seat hinge pin as said seat descends to a closed position; and

closure initiating means attached to said toilet seat adapted to move the toilet seat from an upright resting position when the toilet is flushed to a point substantially beyond a vertical center such that the natural weight of the toilet seat causes the toilet seat to descend,

whereby, as the toilet seat descends, the seat brake tapered end friction grips the seat hinge pin and substantially coils and tightens therearound thereby braking the natural descent of the toilet seat but permitting the toilet seat to close.





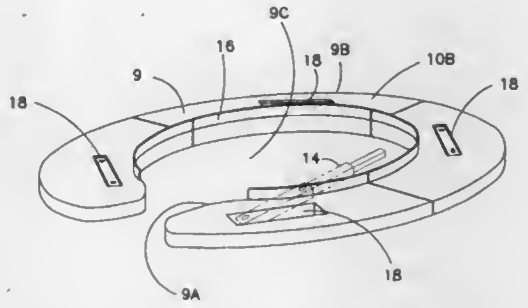
5,852,832
PORTABLE TOILET SEAT

Tricia Anne Voigt, and Trina Conant, both of 6050 Kelton Ave., LaMesa, Calif. 91942

Filed Aug. 20, 1997, Ser. No. 915,391

Int. Cl.^{6} A47K *13/00*

U.S. Cl. 4—237 **5 Claims**



1. A portable toilet seat comprising:

a) a base, horseshoe in shape like a conventional toilet seat, having an inner surface, an outer surface, a top surface, a bottom surface, a front region and an open center;

b) a plurality of telescoping legs extending downward from the bottom surface of the base, wherein said telescoping legs may be placed upon a surface such as the ground, thus supporting the base thereabove and allowing an individual to sanitarily and hygienically excrete waste through the open-center and wherein a plurality of recesses, one for each leg, are disposed about the bottom surface of the base, said recesses sized to accept and contain the telescoping legs flush therein when said legs have been collapsed, whereby the base of the portable toilet seat may be placed flush upon an existing toilet bowl to prevent bodily contact with the bowl during use thereof.

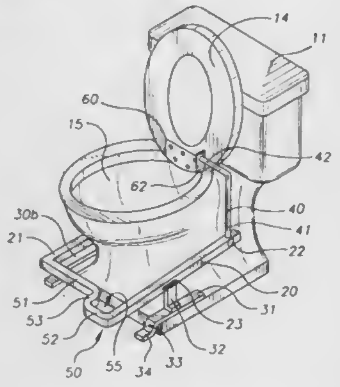
5,852,833
TOILET SEAT LIFTING DEVICE HAVING HIS AND HER FOOT PEDAL

Julius Gregoire, 5616 Shrimpers Row, Dulac, La. 70353

Filed Oct. 1, 1997, Ser. No. 942,315

Int. Cl.^{6} A47K *13/10*

U.S. Cl. 4—246.3 **17 Claims**



1. A toilet seat lifting device for lifting a toilet seat of a toilet, for use by men and women, comprising:

a foot pedal having a first bar member recessed under the front of a toilet bowl of the toilet and an arch-shaped member coupled to said first bar member wherein said arch-shaped member extends beyond the toilet bowl a sufficient distance accessible by a foot of a bathroom user and is offset to the side from the center of the front of the toilet;

a first support frame member coupled to said arch-shaped member;

a second support frame member parallel to said first support frame member and perpendicularly coupled to said first bar member; and,

a lifting arm member coupled to said toilet seat and to said first support frame member.

5,852,834
APPARATUS AND ASSOCIATED METHODS FOR UNCLOGGING A TOILET

Neil Harvey, 21 Ellsmere St., Worcester, Mass. 01604

Continuation of Ser. No. 897,071, Jul. 18, 1991, Pat. No. 5,768,719, which is a continuation of Ser. No. 523,133, Sep. 5, 1995, abandoned. This application May 28, 1998, Ser. No. 86,242

Int. Cl.^{6} E03D *9/00*

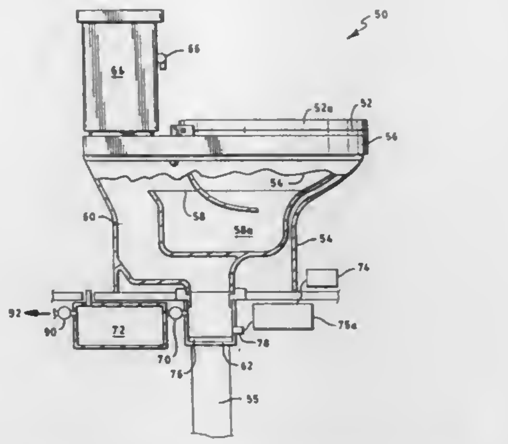
U.S. Cl. 4—255.01 **9 Claims**

1. A toilet of the type having a bowl with a trap, for containing flushable water therein, and having a void volume, for passing the water through to a sewer drain in a flush operation, comprising:

a valve for connecting the void volume to a vacuum source, the valve being selectively operable between an open state and a closed state, the open state creating a fluid communication path between the vacuum source and the void volume, the closed state providing a substantially airtight seal between the void volume and the vacuum source, and

a flapper positioned between the valve and the drain, the flapper being biased to a closed condition to provide a substantially airtight seal between the void volume and the sewer drain wherein the flapper is opened by waterflow, in an open condition, in order to place the void volume in fluid communication with the sewer drain,

wherein the flushable water is sucked into the void volume when the valve is in the open state and the flapper is in the closed condition, and wherein flushable water within the void volume passes into the sewer drain when the valve is in the closed state and causes the flapper valve to assume the open condition.



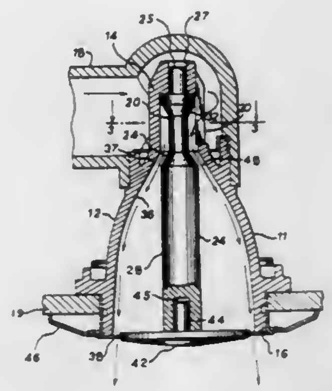
5,852,835
PLUMBING NOZZLE

Michael D. Steinhardt, Kiel; John A. Fiumefreddo, Plymouth, and Michael J. Kurth, Fond du Lac, all of Wis., assignors to Kohler Co., Kohler, Wis.

Continuation of Ser. No. 238,998, May 6, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,583

Int. Cl.^{6} A47K *3/22*

U.S. Cl. 4—541.6 **13 Claims**



1. A plumbing nozzle for discharging a continuous sheet of liquid, wherein the sheet defines a closed perimeter in a cross sectional plane and a cavity within the sheet, the nozzle comprising:

a nozzle body having an inner wall that encloses upon itself and defining a wall surface that diverges radially outward in a curved manner, the nozzle body having a radial inlet portion, and an outlet portion downstream thereof providing an unobstructed flow path along the inner wall;

a core member positioned within the inner wall and having thereon an angled outwardly directed surface, the angled surface being constructed and arranged to direct a flow of liquid against the adjacent inner diverging wall surface of the nozzle body, the inner wall being essentially conical in shape at the inlet portion and being essentially parallel to a central longitudinal axis of the nozzle body at the outlet portion, the sheet of liquid also being conical in the nozzle body but being

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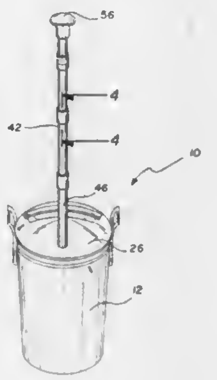
circular immediately after exiting the nozzle body adjacent an end of the inner wall;

baffle means operatively associated with the radial inlet portion of the nozzle body to distribute liquid around the core member in the nozzle body; and

inlet means for carrying liquid from a source to the inlet portion.

5,852,836
PORTABLE SHOWER

Doug Montrose, P.O. Box 1921, Elko, Nev. 89803
Filed Jul. 21, 1997, Ser. No. 897,895
Int. Cl.^{6} A47K *3/22*
U.S. Cl. 4—603 **9 Claims**



1. A portable shower comprising:

a cylindrical container having an open top, a closed bottom, a cylindrical side wall therebetween, the side wall having a pair of diametrically opposed handles pivotally disposed thereon downwardly of the open top;

a cover removably positioned over the open top of the container, the cover being engaged by the handles in a locked orientation, the cover having a grasping handle integrally formed therewith, an aperture extending through the cover offset from a center thereof;

a battery positioned within the container, said battery being positioned proximate said top opening such that said battery is supported above a top of an amount of water held in the container, said battery further being positioned such that the cover is positionable over the open top when the battery is positioned in the container;

a pump secured to an interior surface of the closed bottom of the container, the pump being in electrical communication with the battery, the pump having a water outlet;

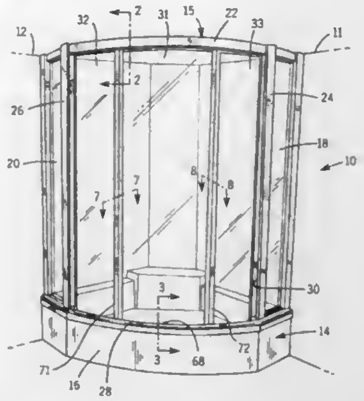
a flexible interior hose having a lower end coupled with the water outlet of the pump;

an elongated tube comprising a plurality of separable segments, a lower end of the tube being coupled to an upper end of the flexible interior hose such that the lower segment is in environmental communication with the flexible interior hose through the aperture in the cover, the lower end of the lower segment and the upper end of the flexible interior hose each being coupled to the cover around the aperture such that each is secured to the cover during use; and

a shower head coupled to an upper end of the elongated tube.

5,852,837
MULTIPLE SECTION SUSPENDED BATH DOORS WITH A LOWER STABILIZER

Thomas J. Husting, Sheboygan Falls, Wis., assignor to Kohler Co., Kohler, Wis.
Continuation of Ser. No. 377,895, Jan. 25, 1995, abandoned. This application Mar. 18, 1997, Ser. No. 816,815
Int. Cl.^{6} A47K *3/22*
U.S. Cl. 4—607 **25 Claims**



1. A door system for a bathing enclosure having a fixture that has raised barrier above which is an opening, said door system for selectively closing the opening and comprising:

a track assembly extending above the raised barrier;

a first door and a second door both of which are suspended from and slidable along said track assembly, and which are freely suspended above a portion of the raised barrier enabling said first and second doors to swing with respect to each other;

a third door suspended from and slidable along the track assembly;

a first door retainer attached to said first door and having a projection extending under said second door and upward on a side of said second door that is remote from said first door, said first door retainer restricting how much said second door may swing away from said first door;

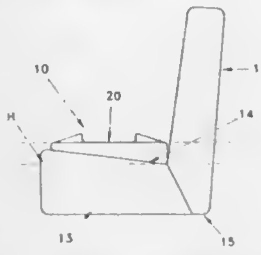
a first wing extending along a vertical edge of said first door;

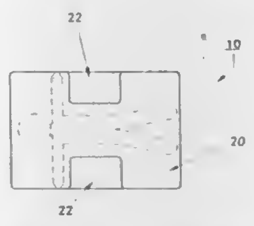
a second wing extending along a vertical edge of said second door, wherein the first wing abuts the second wing to prevent said first door and said second door from sliding entirely past one another; and

a stop member attached to the raised barrier and retaining said first door above the portion of the raised barrier.

5,852,838
CUSHION AND METHOD FOR PROVIDING A SUBSTANTIALLY FLAT DIAPER-CHANGING SURFACE FOR VEHICLE SEATS

Christopher W. Johnson, Rte. 5, Box 296M, Ft. Payne, Ala. 35967
Filed Sep. 12, 1997, Ser. No. 928,843
Int. Cl.^{6} A47D *5/00;7/00*
U.S. Cl. 5—655 **6 Claims**





1. A method of changing an infant's diaper in a vehicle seat by providing an approximately horizontal diaper changing surface on the angled surface of a vehicle seat, the method comprising the steps of:

(a) providing a diaper changing pad having a top surface and a bottom surface being angled relative to the top surface;

(b) positioning the diaper changing pad on the angled surface of the vehicle seat;

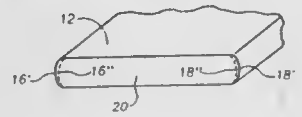
(c) aligning the diaper changing pad relative to the vehicle seat so that the top surface becomes approximately horizontal;

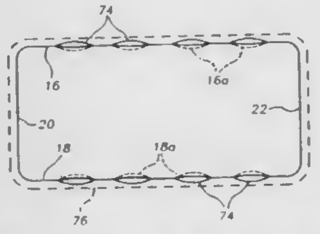
(d) placing an infant upon the approximately horizontal top surface; and

(e) changing the infant's diaper.

5,852,839
INFLATABLE DEVICES WITH FLEXIBLE WALLS HAVING SPRING-LIKE COUPLINGS EXTERNALLY OF AND/OR FORMING PART OF THE WALLS

Alan Brian Gancy, 8810 Wandering Way, Baldwinsville, N.Y. 13027
Division of Ser. No. 344,066, Nov. 23, 1994, Pat. No. 5,608,931, which is a continuation-in-part of Ser. No. 007,272, Jan. 21, 1993, abandoned. This application Feb. 4, 1997, Ser. No. 794,945
Int. Cl.^{6} A47C *27/08*
U.S. Cl. 5—706 **6 Claims**





1. In an inflatable device having flexible wall means forming at least a portion of a gas-impervious chamber, said wall means being outwardly moveable over a predetermined range of movement in response to pressure of a compressible fluid acting uniformly over an internal surface of said chamber, means resiliently opposing said outward movement over at least a portion of said range of movement, said resiliently opposing means comprising:

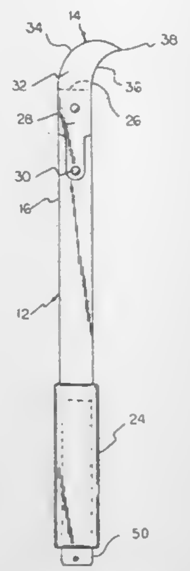
a) spring-like coupling means having opposite, terminal ends and being expandable by an applied force, said coupling means exerting an opposing force resisting expansion, at least a portion of said coupling means being positioned externally of said chamber; and

b) means connecting said opposite ends of said coupling means to spaced positions on said wall means for application of said fluid pressure to said coupling means as said applied force, whereby said coupling means is expanded by said fluid pressure and exerts said opposing force upon said wall means.

5,852,840
KNIFE AND TACKING DEVICE

Levi S. Lapp, 245 Hill Rd., New Holland, Pa. 17557
Filed Feb. 28, 1997, Ser. No. 808,425
Int. Cl.^{6} B26B *11/00*
U.S. Cl. 7—158 **1 Claim**

1. A knife and tacking device comprising:



a tacking means for driving an impact driven fastener into a surface in response to an impact of the tacking means against a surface, wherein the tacking means comprises an elongated upper channel member; an elongated lower channel member pivotally mounted to the elongated upper channel member at a rearward end thereof, the elongated lower channel member being positioned so as to be pivotally received within a bottom face the elongated upper channel member; and a dispensing means mounted within the elongated lower channel member for dispensing an impact driven fastener in response to a pivoting movement of the elongated lower channel member into the elongated upper channel member, whereby impacting the elongated lower channel member against a surface drives the lower channel member into the upper channel member thus effecting the dispensing of an impact fastener;

a cutting blade means secured to the tacking means for cutting an object in response to a manual manipulation of the tacking means, wherein the cutting blade means is mounted to the elongated upper channel member so as to project beyond a forward end thereof and comprises a planer mounting plate secured to an upper surface of the elongated upper channel member, the planer mounting plate continuing into a planar blade plate extending beyond a forward end of the upper channel member;

wherein the planar blade plate is shaped so as to define an outer arcuate edge projecting from a first side of the planar mounting plate and continuing through an arc of greater than 90 degrees such that the planar blade plate projects at least partially laterally of the upper channel member, the planar blade plate being further shaped so as to define an inner arcuate edge extending from a second side of the planar mounting plate and continuing through an arc of greater than 90 degrees to couple with the outer arcuate edge to define a piercing tip;

wherein the outer edge is blunt, with the inner arcuate edge and the piercing tip being sharp;

a handle cover extending about a rearward end of the elongated upper channel member and the lower channel member for gripping purposes and further affording a compartment to contain the fasteners which take the form of staples, the handle cover including a locking mechanism for allowing selective access to the staples within the compartment; and

a tab coupled to the mounting plate which extends along an entire length of the handle cover, the tab extending from the handle cover with an aperture formed therein, wherein the tab extends beyond the locking mechanism for preventing the inadvertent manipulation thereof.

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5,852,841
APPARATUS FOR AUTOMATIC CLEANING OF A SUBMERGED SURFACE

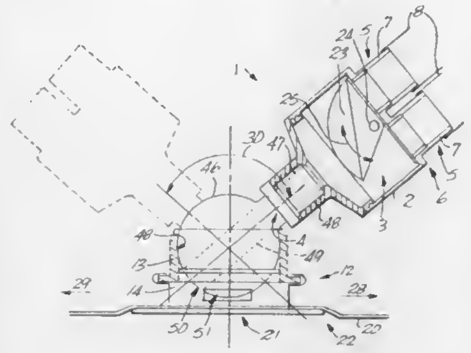
George Victor Rissik, Gauteng, South Africa, assignor to Galago Limited and Kenneth Dinner, New South Wales, Australia

Continuation-in-part of Ser. No. 857,915, May 16, 1997, abandoned. This application Apr. 27, 1998, Ser. No. 69,037

Claims priority, application South Africa, May 17, 1996, 96/3940

Int. Cl.^{6} E04H *4/16*

U.S. Cl. 15—1.7 **7 Claims**



1. A cleaning apparatus for automatic cleaning of a submerged surface which includes

a body defining an internal chamber having an inlet and a pair of outlets, with each outlet being connectable with a suction means;

a liquid flow transferring means located inside the chamber for alternately transferring flow of liquid to each of the pair of the outlets from the inlet;

a cleaning foot associated with the body and communicating with the inlet, the cleaning foot having an outer surface adapted to be located adjacent to and to travel over the submerged surface; with the body being pivotal relative to the foot about at least one axis that is substantially parallel to said outer surface, through an angle of at least 80°, between a first position which allows travel of the cleaning foot relative to the surface in a first direction, to a second position which allows travel of the cleaning foot relative to the surface in a second direction.

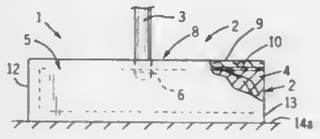
5,852,842
FLOOR TREATING DEVICE WITH SHEEPSKIN COVER

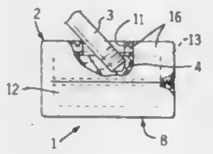
Jeffrey A. Stern, Bayside, Wis., assignor to Stern Tanning Co., Inc., Sheboygan Falls, Wis.

Filed Dec. 30, 1996, Ser. No. 777,530

Int. Cl.^{6} A47L *13/10;13/38*

U.S. Cl. 15—228 **16 Claims**





15. A floor treating device comprising a rigid wooden block having a top wall and a bottom wall, said bottom wall having a length and a width defining a floor treating area, a tubular sheepskin sleeve having an open end and close fitted over said wooden block and formed by at least one blank of tanned sheepskin and said blank having at least one longitudinal seam extending throughout the length of said block and defining said tubular sleeve and having said seam spaced from said bottom wall, said top wall of said wooden block having a handle coupling unit, said sheepskin sleeve having an opening aligned with said handle coupling unit, a handle releasably secured to said handle coupling unit and forming an interlock with said sleeve to stabilize the sleeve on said wooden block.

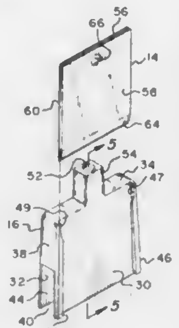
5,852,843
COMBINED BROOM AND DUSTPAN

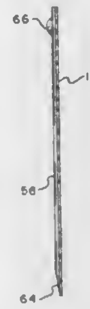
John Vosbikian, Medford, N.J., assignor to Big Ideas, LLC, Moorestown, N.J.

Division of Ser. No. 608,120, Feb. 28, 1996, Pat. No. 5,664,279. This application Sep. 8, 1997, Ser. No. 926,771

Int. Cl.^{6} A47L *13/52*

U.S. Cl. 15—257.1 **2 Claims**





1. A dustpan comprising:

a first panel;

a second panel;

hinge means for joining said first panel to said second panel so that said panels are movable between an open position and, wherein said panels are substantially side-by-side, to a folded position, wherein said panels overlie one another, each of said panels including a beveled bottom edge for facilitating the accumulation of dust particles and the like.

5,852,844
SUCTION APPARATUS FOR REMOVING WASTE FROM A DRAWING FRAME INLET

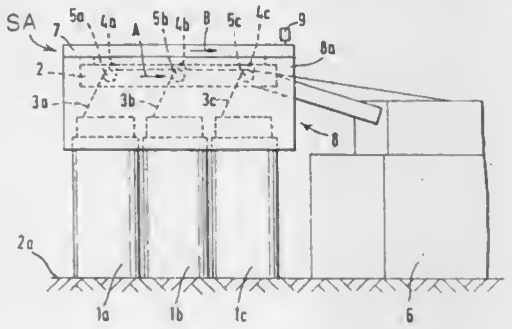
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed May 17, 1996, Ser. No. 648,985

Claims priority, application Germany, May 18, 1995, 195 18 302.9

Int. Cl.^{6} D01H *5/62*

U.S. Cl. 15—301 **18 Claims**



1. A combination of a sliver intake assembly for guiding and introducing simultaneously a plurality of slivers into a drawing frame and a suction assembly for removing waste; said slivers having a direction of advance through said sliver intake assembly; said sliver intake assembly comprising a plurality of rolls spaced in said direction of advance for guiding said slivers; said combination comprising

(a) an emplacement situated below said sliver intake assembly for accommodating a plurality of coiler cans from which slivers are withdrawn by said sliver intake assembly;

(b) a suction duct forming part of said suction assembly and extending along said sliver intake assembly in a region thereof for drawing waste thereinto by vacuum; and

(c) a common air guide extending along said sliver intake assembly over said plurality of rolls; said common air guide forming part of said suction assembly and being coupled to said suction duct for guiding air into said suction duct.

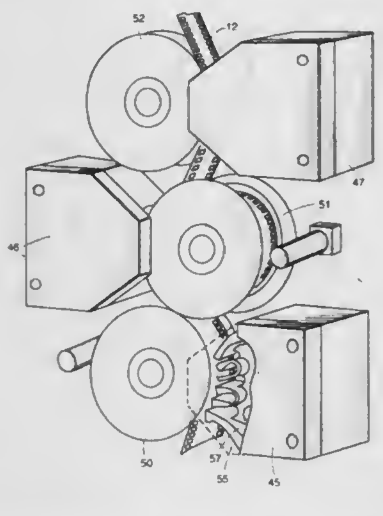
5,852,845
DEVICE FOR EXTRACTING WATER FROM PHOTOGRAPHIC FILM

Manfred G. Michelson, 4396 Park Vicente, Calabasas, Calif. 91302

Continuation-in-part of Ser. No. 362,208, Dec. 22, 1994, Pat. No. 5,568,822, which is a continuation-in-part of Ser. No. 103,285, Sep. 10, 1993, abandoned. This application Oct. 28, 1996, Ser. No. 739,513

Int. Cl.^{6} B08B *5/00*

U.S. Cl. 15—309.1 **5 Claims**



1. A manifold unit for extracting water from a photographic film strip having a broad face moving along in a curved path, the unit comprising:

a base member lying along a path adjacent the broad face of the curved film strip;

a number of elongated members extending from the base member towards the broad face of the film strip and spaced apart to define air conduits therebetween, the elongated members having terminal surfaces adjacent to the film strip, each forming an acute angle with the film strip path such that each trailing edge of the terminal surface is closest to the film strip;

air pressure means in communication with some of the air conduits; and

air suction means in communication with other of the air conduits;

and the base member includes a separator wall substantially along a plane bisecting the length of the film strip,

wherein said air pressure means being on one side of the separator wall and said air suction means being on the other side of said separator wall.

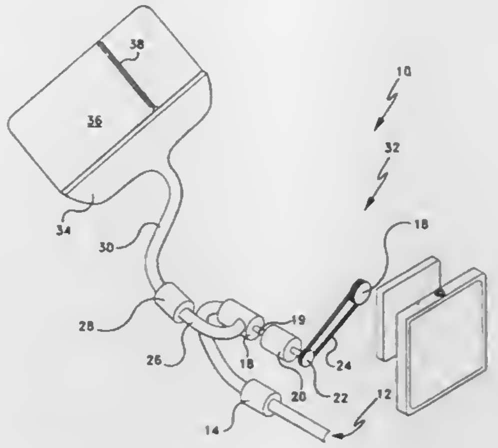
5,852,846
WINDSHIELD AIRSTREAM DEFLECTOR FOR VEHICLES

E. H. Gonzalez, P.O. Box 13931, Tucson, Ariz. 85732

Filed Jan. 17, 1997, Ser. No. 785,040

Int. Cl.^{6} B60S *1/54*

U.S. Cl. 15—313 **18 Claims**



1. A windshield airstream deflector for motor vehicles having a windshield, comprising:

a multi-stage turbine for compressing ambient air to a high pressure and high velocity compressed air, said multi-stage turbine having an air intake for receiving ambient air and an exhaust, port for expulsion of compressed air;

a powering means for driving said multi-stage turbine;

means for selectively controlling operation of said multi-stage turbine;

an output duct for ducting said compressed air from said exhaust port; and,

a windshield exhaust duct attached to said turbine output duct and positioned on the motor vehicle proximately below a windshield for dispensing a volume of said compressed air from said turbine substantially equally over the entire length of the windshield of the motor vehicle, said windshield exhaust duct including a body defining an air passage having a neck flaring into an enlarged cavity exiting at a trailing edge of said body and a plurality of air flow guides originating proximate to said neck and terminating proximate to said trailing edge, each of said plurality of air flow guides proportionally spaced apart from one another across said enlarged cavity to define a plurality of widening channels within said enlarged cavity.

5,852,847
HIGH-SPEED PICK-UP HEAD FOR A STREET SWEEPER

Christopher R. Weiss, St. Charles; Robert A. Jajko, Villa Park; Larry D. Granderson, Sr., and Norman L. Todd, both of Elgin, all of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Feb. 21, 1997, Ser. No. 805,076

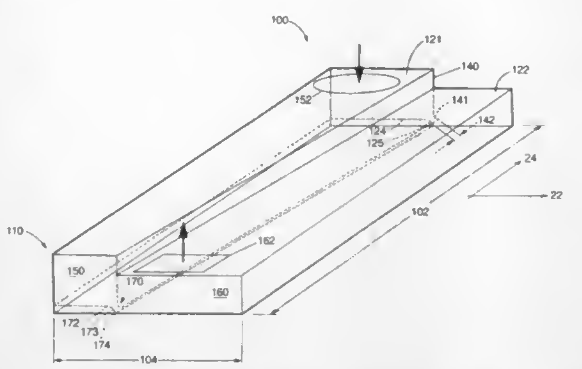
Int. Cl.^{6} E01H *1/08*

U.S. Cl. 15—346 **30 Claims**

29. A sweeper for removing debris from a surface to be cleaned, the sweeper comprising:

a vehicle including a chassis;

a pick-up head mounted to the chassis of the vehicle and arranged substantially adjacent to the surface to be cleaned, the pick-up head removing debris from the surface as the sweeper moves in a direction of travel, the pick-up head having a width extending in a transverse direction with respect to the direction of travel and defining a path of debris removal along the surface, the pick-up head including a housing having a closed top portion, a plurality of edge wall portions extending downwardly from the top portion, pressure



and suction chambers adjacently arranged within the housing and separated by a cross-member extending between opposed edge wall portions and disposed at an angle with respect to the transverse direction, and a nozzle formed by the cross-member and a bottom portion of the pressure chamber for discharging a jet of forced air from the pressure chamber to the suction chamber, the pressure chamber including an inlet for supplying pressurized air thereto, the suction chamber including an open bottom portion disposed adjacent to the surface to be cleaned and an outlet through which air and debris are evacuated, the jet of forced air including a vector component parallel to the transverse direction which moves debris towards the outlet of the suction chamber as the pick-up head moves in the direction of travel;

a hopper mounted to the chassis for collecting debris removed by the pick-up head, the hopper being connected to the outlet of the suction chamber and to the inlet of the pressure chamber;

a blower unit for generating a substantially recirculating air flow pattern through the outlet of the suction chamber, through the hopper, through the inlet of the pressure chamber, through the nozzle, and back through the outlet of the suction chamber; and

a debris separation system disposed within the hopper for separating relatively light debris from the recirculating air flow pattern.

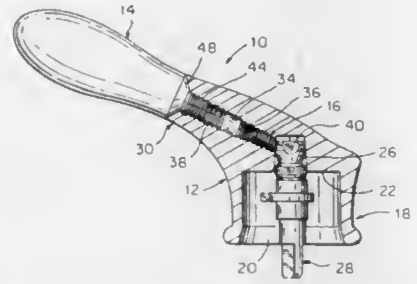
5,852,848
FAUCET HANDLE

Gordon L. Spurgeon, Conway, S.C., assignor to Wolverine Brass, Inc., Conway, S.C.

Filed Sep. 25, 1997, Ser. No. 937,167

Int. Cl.^{6} F16K ***31/60***

U.S. Cl. 16—114 R **11 Claims**



1. A faucet handle assembly comprising a handle base, a socket defined in said handle base for the selective reception of a valve control stem, a bore through said handle base communicating with said socket, said bore having an inner end portion adjacent said socket and an outer end portion opening exteriorly of said base, a retainer receivable within said bore inner end portion, first mounting means for threadedly mounting said retainer within said inner end portion of said bore for selective extension into said socket for engaging with and retention of the valve control stem received in said socket, a handle insert, said insert having a mounting portion receivable within said outer end portion of said bore, and second mounting means for retaining said handle insert mounting portion within said bore.

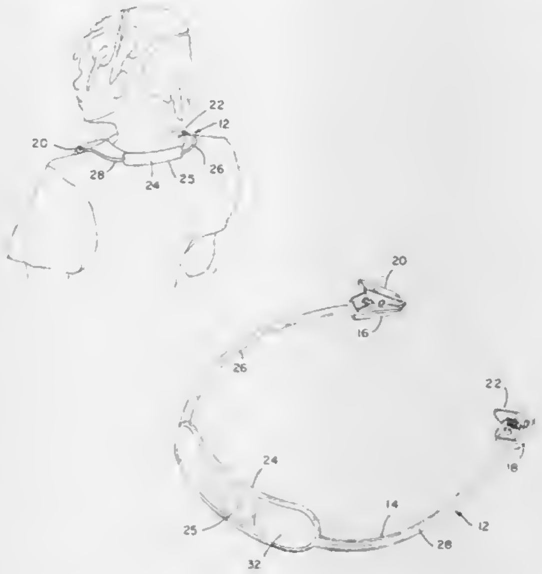
5,852,849
BIB HOLDER FOR HOLDING DENTAL BIBS

Thomas A. Lansing, Pine Springs, Minn., and Phillip E. Mark, Orlando, Fla., assignors to Pinnacle Products of Wisconsin, Inc., Lakeville, Minn.

Filed Jun. 24, 1997, Ser. No. 881,654

Int. Cl.^{6} A45F ***5/04***

U.S. Cl. 24—3.4 **10 Claims**



1. A bib holder suited for holding dental bibs comprising:

a flexible strap having a central expanded band portion with two flat sides and two opposite ends, and

two elongated rod portions attached to the opposite ends of the central band portion, the rod portions each having a terminal at an end thereof opposite the central band portion, the central band portion having a width greater than the width of the rod portions, the length of the flexible strap being sufficient to go at least partially around a patient's neck,

and a bib fastener secured to the terminal end of each rod portion.

5,852,850
CHAIN OF CLOSURE CLIPS AND DEVICE AND PROCESS FOR CLOSING ITS CLIPS

Jürgen Hanten, Rockenberg, Germany; Eggo Haschke, Deerfield, Ill.; Walter Grzondziel, Frankfurt am Main, and Günter Vermehren, Usingen, both of Germany, assignors to Poly-Clip System Corp., Mundelein, Ill.

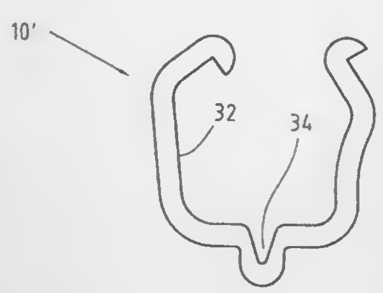
PCT No. PCT/EP96/00208, § 371 Date Nov. 10, 1997, § 102(e) Date Nov. 10, 1997, PCT Pub. No. WO96/25340, PCT Pub. Date Aug. 22, 1996

PCT Filed Jan. 15, 1996, Ser. No. 894,278

Claims priority, application Germany, Feb. 17, 1995, 195 05 359.1

Int. Cl.^{6} B65D ***33/16;*** **A43C** ***7/00***

U.S. Cl. 24—20 R **16 Claims**



1. A chain of interconnected closure clips, designed for necks of bags or film tubes, having a uniform cross-sectional profile and two free ends lockable together to close the closure clip, characterized in that the closure clips (**10**, **10'**, **10"**, **10'"**, **10""**, **10'""**) comprise projections (**16**) located in mutual alignment between the ends (**12**, **14**) on the outer contour (**18**) and are connected only in the region of these projections (**16**), such that the projections (**16**) form a through-web.

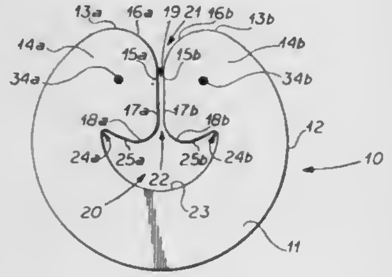
5,852,851
METHOD AND DEVICE FOR CONTAINING ARTICLES IN A BAG

Douglas W. Cooper, 5502 Rosser Rd., Stone Mountain, Ga. 30087

Filed Jul. 13, 1994, Ser. No. 274,383

Int. Cl.^{6} B65D ***77/10;*** **A44B** ***21/00***

U.S. Cl. 24—30.5 R **2 Claims**



1. A clasp releasably securing handles of a bag, comprising:

a) a wafer-like body having an outer peripheral edge;

b) two lobes in said body defined by generally C-shaped walls extending from said outer peripheral edge and disposed in spaced-apart backward-facing mirrored relation to define a channel opening into an interior aperture in said body;

c) said lobes each having a lower portion wall, said lower portion wall projecting into the interior of said aperture;

d) two niches, each on opposite sides of said channel, each niche having a first wall defined by said respective lower portion wall;

e) said niches each having a respective second wall defined by a respective side wall portion of the body defining said interior aperture;

f) said first and second walls intersecting and forming respective vertices, said vertices oppositely disposed from said respective lobe's lower portion end points;

g) said respective lobe's lower portion wall endpoint projecting into said aperture's interior, said projection being substantially greater than said respective vertex projection into said aperture's interior;

h) thereby the handles traversing said channel into the interior of said aperture being guided by said lobes into said niches releasably securing the bag.

5,852,852
TIGHTENING DEVICE WITH SERRATED STRAP AND RATCHET LOCKING MEMBER

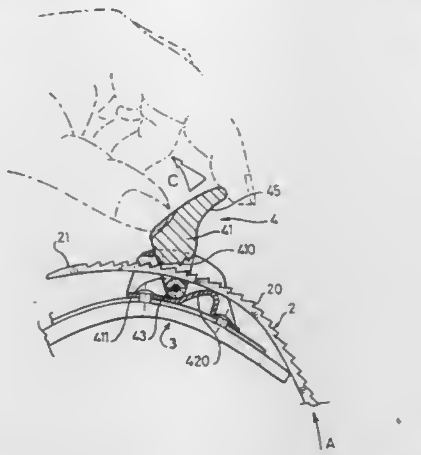
Jean-Pierre Rigal, La Balme De Sillingy, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Jun. 9, 1997, Ser. No. 871,667

Claims priority, application France, Jun. 13, 1996, 96 07595

Int. Cl.^{6} A43C ***11/00***

U.S. Cl. 24—68 R **18 Claims**



1. Tightening device including a strap portion provided with a serrated portion and with a tightening element, such as band or flap, on which is mounted a locking member including:

a base fixed on the tightening element;

a ratchet connected to the base by a journal and having at least one complementary retaining serrated portion cooperate with the serrated portion of the strap portion;

an elastic return device which maintains the serrated portions in contact with one another in the locking position; and

a lever that can be actuated against the force exerted by the elastic return device for disengaging the serrated portions, wherein the strap portion engages through the locking member into a space provided between the journal and a complementary retaining serrated portion of the ratchet, the complementary retaining serrated portion of the ratchet is being located with respect to the journal on the side where the strap portion engages into the locking member, such that in the locking position, the tightening torque that is exerted by the ratchet on the serrated portion increases proportionally to the tractional force exerted on the strap in the direction of disengagement out of the locking member.

5,852,853
CLOTHESLINE LINE TIGHTENER

Raymond P. Pennoyer, Jr., 97 Sturbridge La., Trumbull, Conn. 06611

Filed Jul. 28, 1997, Ser. No. 901,098

Int. Cl.^{6} B63B ***21/04***

U.S. Cl. 24—134 P **19 Claims**

1. A clothesline connector for connecting two ends of a clothesline to each other to form a loop, the clothesline connector comprising:

a first connection area adapted to fixedly connect a first one of the ends of the clothesline to the connector; and

a second connection area for adjustably connecting a second one of the ends of the clothesline to the connector, the second connection area having a through-hole enclosed on all sides except an entry and an exit for axially longitudinally inserting the second end into the second connection area, and the second connection area further comprising two spring loaded gripping members on opposite sides of and partially defining the through-hole, wherein the gripping members grip the second end directly therebetween, and wherein each gripping member has a finger projection adapted to be moved towards

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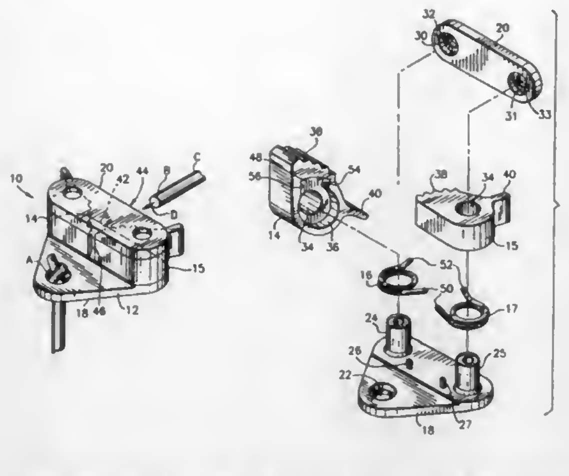
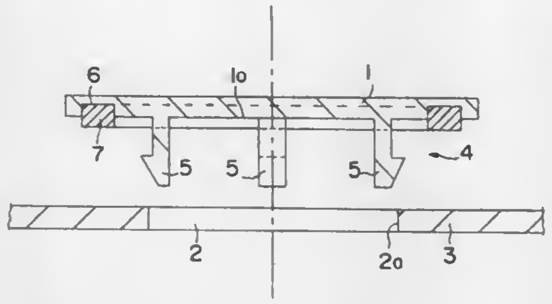


each other by a single hand of a user to rotate the gripping members in opposite directions and enlarge the through-hole.

5,852,854
PLUG FOR CLOSING ANY OPENING AND METHOD OF MANUFACTURING THIS PLUG

Jean-Michael Pierrot, Grosley Sur Risle; Jean-Pierre Leon, Houilles, and Philippe Vigouroux, Conflans Sainte Honorine, all of France, assignors to Rapid S.A., Paris, France
Filed Mar. 20, 1996, Ser. No. 618,561
Claims priority, application France, Mar. 21, 1995, 95 03284
Int. Cl.^{6} B65D *39/12*
U.S. Cl. 24—297 **13 Claims**



1. A plug for obturating an opening defined by an edge of a plate, the stopper plug comprising:

a surface having a dimension larger than the opening;

hooking lugs projecting from said surface for hooking said plug to the edge of the plate from inside the opening;

an annular groove between a free edge of the surface and the hooking lugs; and

a bead of a heat-fusible adhesive embedded in said annular groove and comprising:

(a) an adhesive mixture comprising a material selected from the group consisting of a terpolymer of ethylene/acrylic ester/maleic anhydride, a maleic anhydride-grafted copolymer of ethylene/acrylic ester, and combinations thereof,

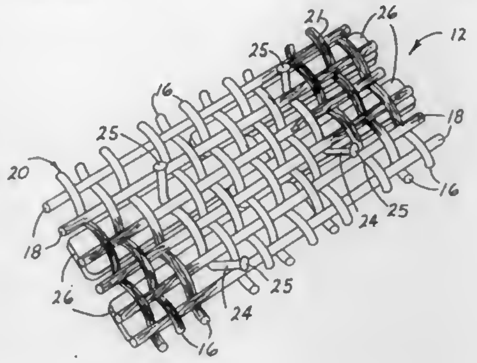
(b) a peroxide cross-linking agent,

(c) an azodicarbonamide expansion agent decomposing at a temperature close to a cross-linking temperature of the adhesive mixture, and

(d) additives for working purposes.

5,852,855
DISPOSABLE DIAPER WITH FASTENER

Kirit C. Mody, Shoreview, and Bernard D. Campbell, Fairmont, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 135,803, Oct. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 823,390, Jan. 21, 1992, Pat. No. 5,639,327, which is a division of Ser. No. 438,693, Nov. 17, 1989, Pat. No. 5,100,400. This application Dec. 2, 1996, Ser. No. 759,290
Int. Cl.^{6} A44B *18/00*
U.S. Cl. 24—445 **13 Claims**



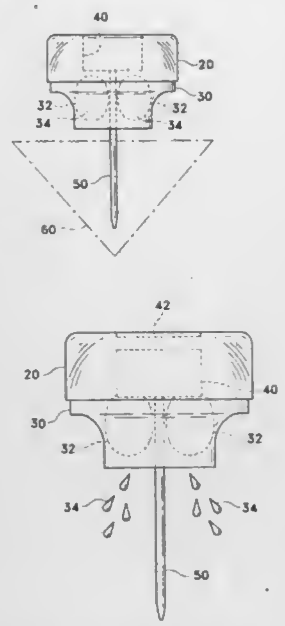
1. A fastener, comprising:

a first hook fastener portion comprising a plurality of warp yarns and a plurality of weft yarns, said warp and weft yarns being interwoven to form a woven backing having front and rear major surface, a plurality of pile monofilaments having portions woven into said backing portions projecting from the front surface of said backing in a generally upright manner and having mushroom shaped heads at their distal ends, and a layer of thermoplastic material along the rear surface of said backing, with said layer of thermoplastic material and the mechanical engagement of said portions of said pile monofilaments woven into said backing with said warp and weft yarns anchoring said monofilaments in said backing, said pile monofilaments are of a larger diameter than said warp and weft yarns and include portions passing around weft yarns that protrude along the rear surface of said woven backing, and said layer of thermoplastic material is discontinuous and formed of discrete layer portions located around the protruding portions of said pile monofilaments and adhering the protruding portions of the pile monofilaments to adjacent portions of the warp and weft yarns;

a second hook fastener portion comprising a plurality of warp yarns and a plurality of weft yarns, said warp and weft yarns being interwoven to form a woven backing having front and rear major surface, a plurality of pile monofilaments having portions woven into said backing portions projecting from the front surface of said backing in a generally upright manner and having mushroom shaped heads at their distal ends, and a layer of thermoplastic material along the rear surface of said backing, with said layer of thermoplastic material and the mechanical engagement of said portions of said pile monofilaments woven into said backing with said warp and weft yarns anchoring said monofilaments in said backing, said pile monofilaments are of a larger diameter than said warp and weft yarns and include portions passing around weft yarns that protrude along the rear surface of said woven backing, and said layer of thermoplastic material is discontinuous and formed of discrete layer portions located around the protruding portions of said pile monofilaments and adhering the protruding portions of the pile monofilaments to adjacent portions of the warp and weft yarns, such that said first hook fastener portion and said second hook fastener portion are adapted for releasable interengagement with each other, with the heads of the monofilaments of the first hook fastener portion and the heads of the monofilaments of the second hook fastener portion bypassing and engaging with each other to engage the fastener.

5,852,856
ANTI THEFT INK TAG

Stuart T. Seidel, 6531 Park of Commerce Blvd., Bldg. 150, Boca Raton, Fla. 33487
Filed Nov. 13, 1997, Ser. No. 969,991
Int. Cl.^{6} A44B *9/00;* **E05B** *65/00;* **F16B** *21/00*
U.S. Cl. 24—704.1 **8 Claims**



1. A device for deterring theft of articles, comprising:

a plurality of ampules;

a permanent staining substance to be contained in said ampules;

a housing which encloses said ampules, said housing comprising a base component supporting said ampules and a cover component to cover said base component, said cover component containing a break away element;

a means to allow said staining substance to escape if said ampules are fractured;

a means for attaching said device to the articles to be protected whereby unauthorized removal of said device causes said ampules to fracture; and

a means for detecting the escape of said staining substance if said ampules are fractured.

5,852,857
JAMMING DEVICE FOR CORD OR TAPE FASTENER SUCH AS SHOELACES

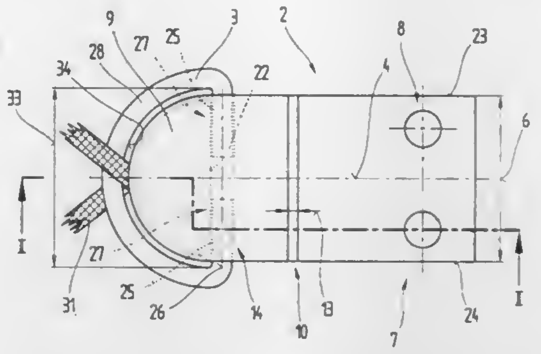
Rudolf Mark, Spital am Pyhrn 152, and Thomas Mark, Spital am Pyhrn 204, both of A-4582 Spital am Pyhrn, Austria
PCT No. PCT/AT96/00017, § 371 Date Aug. 5, 1997, § 102(e) Date Aug. 5, 1997, PCT Pub. No. WO96/24269, PCT Pub. Date Aug. 15, 1996
PCT Filed Feb. 5, 1996, Ser. No. 875,869
Claims priority, application Austria, Feb. 7, 1995, 221/95
Int. Cl.^{6} A43C *7/04*
U.S. Cl. 24—713.6 **20 Claims**

1. A jamming device for securing a cord or tape fastener of an article of clothing, comprising:

a ring lug for looping the tape fastener therethrough;

a rivet strap pivotally attached to the lug and adapted to be joined to the article of clothing; and

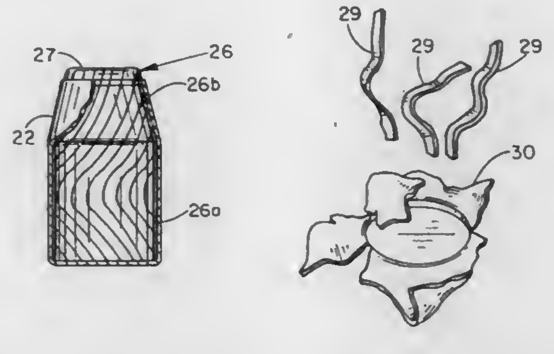
a jamming cleat joined to the rivet strap and provided with an end face which is surrounded by the ring lug when the ring lug is in a predetermined jamming position, the end face of the jamming cleat having a jamming surface which opposes and is spaced by a gap from an inner surface of the ring lug when the ring lug is in the predetermined jamming position, the jamming surface and the inner surface defining a jamming zone for engaging the tape fastener therebetween; and



the jamming cleat being generally rigidly joined to the rivet strap such that the jamming cleat is maintained generally in a predetermined fixed position with respect to the rivet strap so as to permit the ring lug to be moved into and out of the predetermined jamming position by pulling on the tape fastener.

5,852,858
NON-TOXIC FRANGIBLE BULLET

John M. Hallis, Buffalo, and Richard W. Proulx, Forest Lake, both of Minn., assignors to Federal-Hoffman Inc., Anoka, Minn.
Division of Ser. No. 510,747, Aug. 3, 1995, Pat. No. 5,679,920. This application Dec. 30, 1996, Ser. No. 774,385
Int. Cl.^{6} B21K *21/06;* **F24B** *12/34*
U.S. Cl. 29—1.22 **11 Claims**



1. In a method of manufacturing a non-toxic highly frangible training round bullet core which is relatively safe with respect to ricochets and bounce-back actions, and therefore being of use in training exercises for law-enforcement personnel as a relatively safe training round, comprising:

(a) selecting a plurality of segments of a non-toxic metal selected from a group of non-toxic metals consisting of zinc, iron, steel and copper, said segments having original physical boundaries,

(b) twisting at least some of said segments about other of said segments into inter-engaging relation, and

(c) swaging said twisted segments of non-toxic metal into a twisted mass having the shape of a bullet having a generally cylindrical rear portion and a generally truncated nose portion, with sufficient pressure to cause said segments to distort, inter-engage and cohere one to another while retaining their individuality at least to a limited extent, and to thereby cause said individual segments, upon said bullet core striking a target, to fragment along at least some of the original physical boundaries of said segments into separate, discrete and relatively small fragments which are smaller than the original size of said segments.

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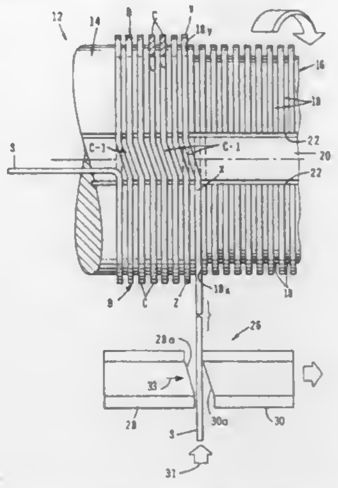
5,852,859
METHOD AND APPARATUS FOR MAKING PISTON RINGS

E. Grant Swick, 28W629 Stearns Rd., Bartlett, Ill. 60103-6528
Division of Ser. No. 577,058, Dec. 22, 1995. This application Mar. 26, 1998, Ser. No. 48,973
Int. Cl.⁶ B23B *11/00*
U.S. Cl. 29—34 R **6 Claims**



1. An apparatus for making non-circular shaped interrupted rings from an elongated metal strip comprising:

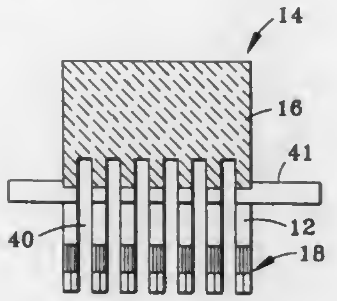
(a) a forming mandrel having a body portion which is non-circular in cross section, said body portion being provided with a plurality of circumferentially extending longitudinally spaced apart grooves, each said groove having an interruption along its circumference;

(b) coiling means for coiling the metal strip around said mandrel so that portions of the metal strip are disposed within said grooves to form a body comprising a plurality of circumferentially extending coils having a generally zero helix angle along a major portion of their circumference and a helix angle segment along a minor portion of their circumference; and

(c) cutting means for cutting each coil to remove therefrom said helix angle segment.

5,852,860
ULTRASONIC PHASED ARRAY TRANSDUCER WITH AN ULTRALOW IMPEDANCE BACKFILL AND A METHOD FOR MAKING

Peter William Lorraine, and Lowell Scott Smith, both of Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 491,208, Jun. 19, 1995, Pat. No. 5,655,538. This application Jan. 21, 1997, Ser. No. 786,812
Int. Cl.⁶ H01L *41/22;* A61B *8/00*
U.S. Cl. 29—25.35 **12 Claims**



1. A method for forming an ultrasonic phased array transducer with an ultralow impedance backing, the method comprising the steps of:

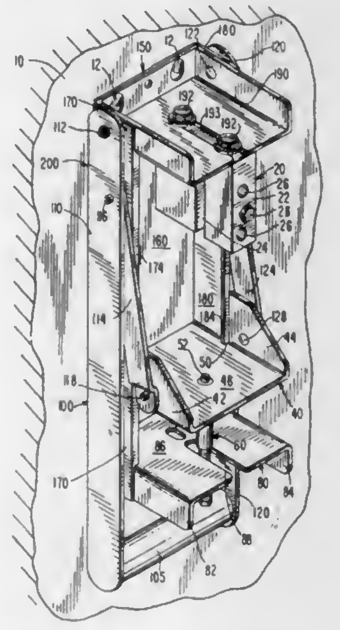
providing a low density backfill material having an ultralow acoustic impedance, wherein the backfill material is a carbon xerogel;

bonding a piezoelectric ceramic material and a plurality of matching layers to the backfill material; and

cutting through portions of the bonded plurality of matching layers, the piezoelectric ceramic material, and the backfill material to form an array of electrically and acoustically isolated individual elements.

5,852,861
SIPPER TUBE INSERTION AND REMOVAL APPARATUS

J. James Cunningham, Stafford; Dewitt C. Priddy, The Woodlands, both of Tex.; Gary B. Bunney, Joppa, Md.; Ronald W. Hardesty, Belair, Md., and William M. Marston, Conowingo, Md., assignors to Lab Products, Inc., Seaford, Del.
Filed Jul. 15, 1996, Ser. No. 683,450
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—234 **32 Claims**



1. A sipper tube insertion and removal apparatus for inserting a sipper tube into a stopper with a hole and for removing a sipper tube from a stopper with a hole, comprising:

a sipper tube insertion head for holding the sipper tube;

a stopper insertion platform for holding the stopper such that the hole of the stopper may be aligned with the sipper tube, the stopper insertion platform being disposed at a first predetermined distance apart from the sipper tube insertion head;

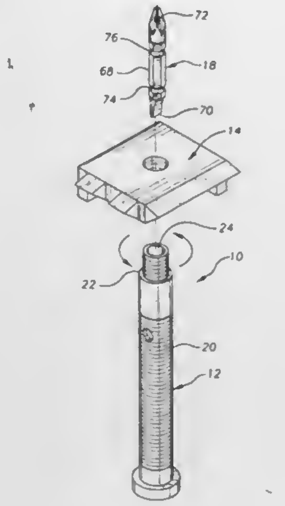
an actuator for closing the predetermined distance between the sipper tube insertion head and the stopper insertion platform so as to cause the sipper tube to be inserted into the hole of the stopper;

a sipper tube removal bit; and

a stopper removal platform for holding the stopper with the sipper tube inserted in the hole of the stopper, the stopper removal platform being disposed at a second predetermined distance apart from the sipper tube removal bit, said actuator closing the predetermined distance between the sipper tube removal bit and the stopper removal platform so as to drive the sipper tube removal bit into the hole of the stopper to thereby push the sipper tube out of the hole of the stopper.

5,852,862
HINGE AND WINDOW TOOL SYSTEM

Larry S. Clayton, 1993 Poplar Ridge, Lawrenceville, Ga. 30244
Filed Feb. 20, 1997, Ser. No. 803,074
Int. Cl.⁶ B23P *19/04*
U.S. Cl. 29—239 **18 Claims**



1. A hinge and window tool system comprising:

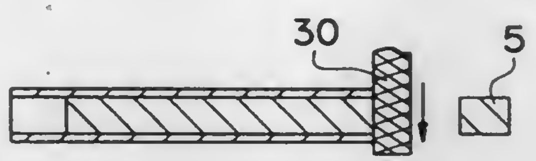
a handle having a threaded outer end and a faceted socket cavity having a spring loaded screw driver shaft retaining mechanism, said screw driver shaft retaining mechanism including a spring loaded retaining bearing mounted on a user depressible release button member;

a first combined hinge pin removal and window break head having a first attachment aperture companionately threaded to screw onto said threaded outer end of said handle, said first combined hinge pin removal and window break head including a first claw side including two first claw members spaced a first distance apart, each first claw member having a first beveled outwardly facing edge of a first edge length, a first claw anvil side positioned opposite said first claw side including a planar hammer strike surface, a first window break side having a first beveled outwardly facing break edge of a first break edge length formed along said entire length thereof, and a first window break anvil side positioned opposite said first window break side including a planar hammer strike surface; and

a two ended screw driver member having a first screw driver end and a second screw driver end formed at either end of a faceted screw driver shaft, said faceted screw driver shaft having a first circumferential locking bearing groove adjacent to said first screw driver end and a second circumferential locking bearing groove adjacent to said second screw driver end, said first and second circumferential locking bearing grooves being sized and positioned along said faceted screw driver shaft in a manner such that when said first screw driver end is positioned within said faceted socket cavity said spring loaded retaining bearing is urged into and held within said first circumferential locking bearing groove and when said second screw driver end is positioned within said faceted socket cavity said spring loaded retaining bearing is urged into and held within said second circumferential locking bearing groove, said spring loaded retaining bearing maintaining said screwdriver shaft in connection with said handle when held within said first and second circumferential locking bearing grooves until said release button of said depressible release button member is depressed by a user.

5,852,863
METHOD OF PRODUCING A TRANSVERSE FORCE BOLT AND TRANSVERSE FORCE BOLT PRODUCED BY THIS METHOD

Erich Müller, Aarburg, Switzerland, and Gottfried Breuer, Laufenburg, Germany, assignors to Pecon AG, Switzerland
Filed Mar. 27, 1997, Ser. No. 826,140
Int. Cl.⁶ B23P *17/00*
U.S. Cl. 29—417 **5 Claims**



1. A method for producing a transverse force bolt having a steel core (1) and a sheath (2) of stainless steel, comprising the steps:

dimensionally drawing-in, substantially free of play, the steel core (1) of non-stainless steel into a tube of stainless steel which forms the sheath (2) and thereby forming a rod;

cutting the rod to a desired transverse force bolt size;

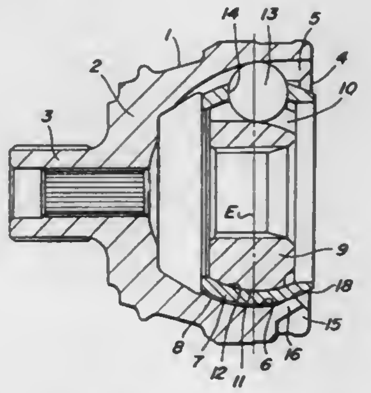
partially ejecting the core (1) from the sheath (2) and cutting off an ejected portion (5) of the core (1);

pushing the core (1) back by one-half of a length of the cut off ejected portion (5); and

closing open sheath ends (6) of the sheath (2).

5,852,864
CONSTANT VELOCITY UNIVERSAL BALL JOINT AND METHOD OF PRODUCING SUCH A JOINT

Werner Krude, Neunkirchen-Wolperath, and Peter Harz, Hennef, both of Germany, assignors to GKN Automotive AG, Lohmar, Germany
Division of Ser. No. 65,636, May 21, 1993, Pat. No. 5,451,185. This application Jul. 26, 1995, Ser. No. 506,906
Claims priority, application Germany, May 26, 1992, 42 17 322.1
Int. Cl.⁶ F16D *3/223*
U.S. Cl. 29—437 **13 Claims**



1. A method of producing a constant velocity universal ball joint comprising the steps of:

providing a bell-shaped outer joint part open at one end having longitudinally extending circumferentially distributed outer ball tracks on an inner surface of said outer joint part, said outer ball tracks, viewed from the open end, being axially undercut-free, and inner faces in said outer part positioned between said outer ball tracks, and wall region in said outer joint part which starts from the open end being axially limited and arranged between every two outer ball tracks, the circumferential width of each wall region being smaller than the circumferentially directed distance between any two outer ball tracks;

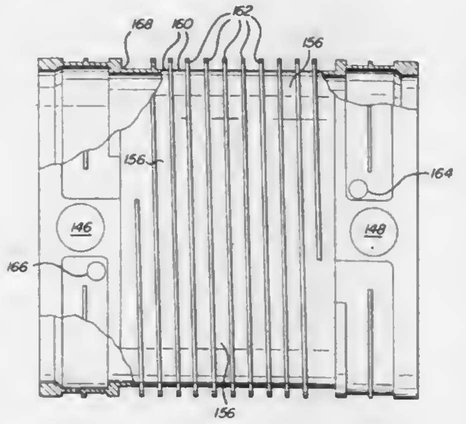
providing an inner joint part with longitudinally extending circumferentially distributed inner ball tracks;

- providing torque transmitting balls;
- providing a cage, said cage including circumferentially distributed cage windows for holding the balls in a common plane and guiding the balls onto an angle bisecting plane when the respective axes of the outer and inner joint part are articulated relative to one another;
- inserting the cage, the inner joint part and the balls into said outer joint part from the open end such that the cage is located radially between the inner joint part and the outer joint part with respective windows, outer ball tracks and inner ball tracks being radially aligned with one another, and each ball located within a respectively radially aligned window, outer track and inner track;
- deforming said wall regions radially inwardly into contact with said cage, thereby securing said outer joint part to said cage, wherein:
  - said deformed wall regions form cage guiding faces positioned between the outer ball tracks, and said cage guiding faces provide support for the cage towards the open end of the outer joint part.

5,852,865
STATOR FABRICATION PROCESS

James L. Kirtley, Jr., Brookline; Gita P. Rao, Belmont; Dariusz A. Bushko, Hopkinton, and John R. Oleksy, Maynard, all of Mass., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 2, 1996, Ser. No. 642,144
Int. Cl.^{6} H02K *15/00*
U.S. Cl. 29—596 **2 Claims**



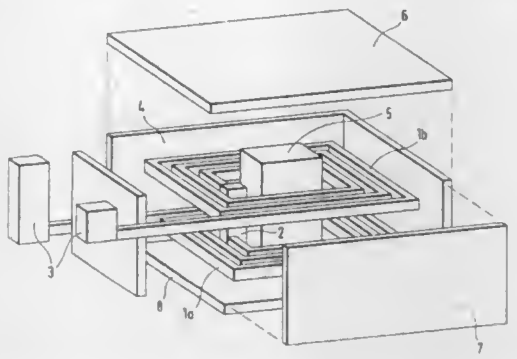
1. A method for fabricating a stator of an induction motor having a cooling jacket extending around the stator, the method comprising the steps of:

- welding a channel upper surface and a channel lower surface to an inner channel side surface to create a cooling jacket, the inner channel side surface is disposed in a helical fashion between the channel upper surface and the channel lower surface;
- coating the inner diameter of the cooling jacket with an oxide layer;
- heating the cooling jacket to expand the cooling jacket;
- sliding the cooling jacket over the stator; and
- cooling the cooling jacket to contact the cooling jacket into positive engagement with the stator such that the cooling jacket is fixedly secured thereto.

5,852,866
PROCESS FOR PRODUCING MICROCOILS AND MICROTRANSFORMERS

Klaus Kuettner, Stuttgart; Dietmar Hahn, Gerlingen; Gottfried Flik, Leonberg, and Markus Ohnmacht, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 2, 1997, Ser. No. 832,426
Claims priority, application Germany, Apr. 4, 1996, 196 13 495.1; Oct. 2, 1996, 196 40 676.5
Int. Cl.^{6} H01F *41/02*
U.S. Cl. 29—608 **15 Claims**



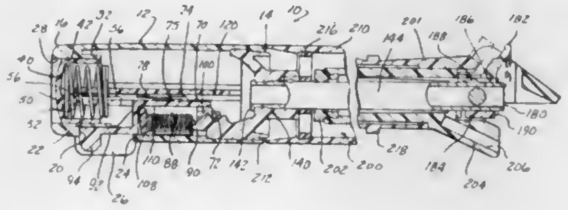
1. A method for producing microcoils having at least one coil winding, comprising the steps of:

- (a) applying a conducting primer layer to one side of an insulating substrate;
- (b) applying a structurable layer to the conducting primer layer;
- (c) structuring the structurable layer to form a mold for a coil winding;
- (d) filling the mold with a material for the coil winding;
- (e) removing the structurable layer; and
- (f) applying, via a leveling process, an insulating layer of plastic film having an adhesive layer over the coil winding.

5,852,867
METHOD OF MANUFACTURING A STEERING COLUMN STALK SWITCH APPARATUS

Daniel J. Durocher, Leonard, Mich., assignor to ITT Industries, Inc., White Plains, N.Y.

Division of Ser. No. 124,667, Sep. 21, 1993, Pat. No. 5,473,809, which is a continuation of Ser. No. 972,615, Nov. 6, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,568
Int. Cl.^{6} H01H *11/00*
U.S. Cl. 29—622 **15 Claims**



1. A method of manufacturing a steering column stalk switch apparatus for a vehicle comprising the steps of:

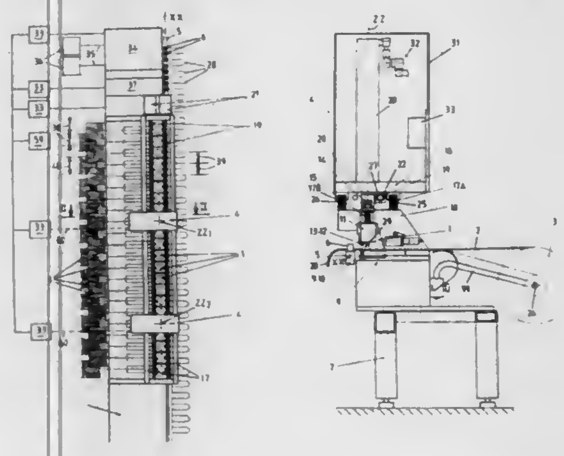
- co-axially arranging first and second housing portions such that the first and second housing portions are independently coaxially rotatable with respect to each other and co-act to form an elongated, substantially closed stalk switch housing;
- rotatable disposing a first end of an elongated shaft with respect to the first switch means;
- fixedly mounting a first switch operator on the first end of the shaft, the first switch operator rotating the first switch means between operative states for controlling one vehicle function;

- fixedly connecting the first housing portion to a second end of the shaft for simultaneous rotation of the shaft with the first housing portion;
- coaxially extending the shaft through the second housing portion;
- connecting a second operator to the second housing portion and to a second switch means such that rotation of the second housing portion causes rotation of the second operating means to operate the second switch means controlling another vehicle function;
- providing a third switch for operating a certain other vehicle function; and
- rotatably mounting the second end of the shaft to a pivotal housing such that pivotal movement of the shaft in at least one plane switches the third switch between operative states.

5,852,868
MACHINE INCLUDING A PLURALITY OF CRIMPING STATIONS FOR PREPARING ELECTRICAL HARNESSES

Louis Soriano, Aubagne, France, assignor to The Whitaker Corporation, Wilmington, Del.

PCT No. PCT/IB95/00606, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/04699, PCT Pub. Date Feb. 15, 1996
PCT Filed Aug. 3, 1995, Ser. No. 776,163
Claims priority, application France, Aug. 5, 1994, 94 09967
Int. Cl.^{6} H01R *43/04;* B23P *19/02*
U.S. Cl. 29—753 **10 Claims**

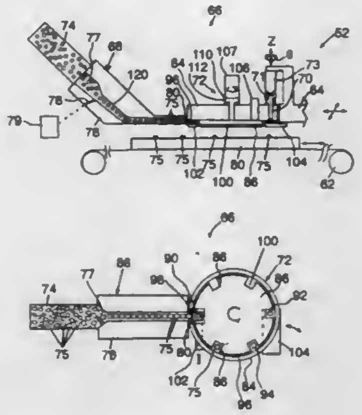


1. A machine for preparing electrical harnesses, comprising a plurality of wire end termination stations situated along a horizontal linear conveyor that displaces clamps holding lengths of wire, each of the termination stations comprising a crimping tool fed with terminals from a reel, said tool including a fixed matrix and a moving punch, said machine further comprising a press that is movable in translation relative to the crimping tool in a direction parallel to said conveyor, said crimping tool having means for holding the moving punch in a high position, said machine further comprising an actuator for moving said press in translation, said press including a moving member for transmitting crimping force to the moving punch.

5,852,869
METHOD AND APPARATUS FOR SUPPLYING AND PLACING COMPONENTS

Koen A. Gieskes, and Daniel Whitney Ackerman, both of Binghamton, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Continuation-in-part of Ser. No. 532,145, Sep. 22, 1995, Pat. No. 5,649,356. This application Mar. 31, 1997, Ser. No. 831,007
Int. Cl.^{6} H05K *3/30*
U.S. Cl. 29—834 **2 Claims**



1. An apparatus for supplying chip components and placing the components on a substrate, said apparatus being structurally coupled for translationally movable with respect to the substrate, said apparatus comprising:

- a component transfer mechanism, said transfer mechanism, including a rotatable wheel with a plurality of component holding compartments, a plurality of angularly disposed stations, and a drive mechanism for sequentially moving the compartments to the stations, said stations including at least a component receiving station and a component delivery station;
- a component feeder, said feeder having a container for storing a plurality of electrical chip components and feeding the components individually to the receiving station of the transfer mechanism;
- a vacuum spindle, said vacuum spindle disposed above said delivery station of the transfer mechanism, said vacuum spindle being vertically movable with respect to the delivery station for controlling a component at the delivery station;
- said transfer mechanism, said feeder, and said vacuum spindle being translatable for placement of components on a plurality of desired locations on the substrate; and
- wherein said component, when located at the delivery station, is only supported by the vacuum created in the vacuum spindle, said vacuum spindle controlling the placement of the component onto the substrate.

5,852,870
METHOD OF MAKING GRID ARRAY ASSEMBLY

Bruce J. Freyman, Tempe; John Briar, Phoenix, and Jack C. Maxcy, Chandler, all of Ariz., assignors to Amkor Technology, Inc., Del.

Filed Apr. 24, 1996, Ser. No. 637,877
Int. Cl.^{6} H05K *3/30*
U.S. Cl. 29—841 **12 Claims**

1. A method of making a grid array assembly including a printed circuit board containing multiple electrical circuits comprising:

- providing a series of boards including bonding pads and metallization on a first surface of each board and conductive vias in the board extending to a second opposite second surface of the board, said second surface containing an array of contact pads in contact with the vias, which boards have been tested and determined to be accepted boards;

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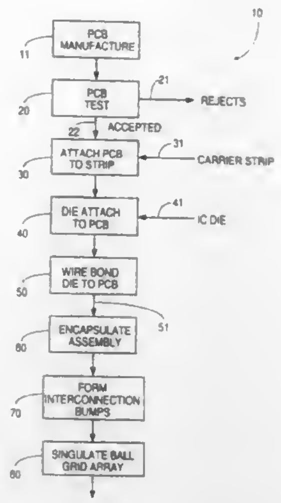


providing an elongated carrier strip having a series of aligned apertures extending longitudinally along the strip for mounting individual accepted boards, wherein the strip is a copper or steel strip having a thickness of from about 0.2 mm to about 1.0 mm;
attaching an individual accepted board in each aperture;
mounting an integrated circuit die including die conductive pads, on said first surface;
bonding wire bonds from said die conductive pads to said bonding pads;
encapsulating said die and said wire bonds against a portion of said first surface of the boards; and
removing a resultant grid array assembly, including the printed circuit board and encapsulated die from the carrier strip.

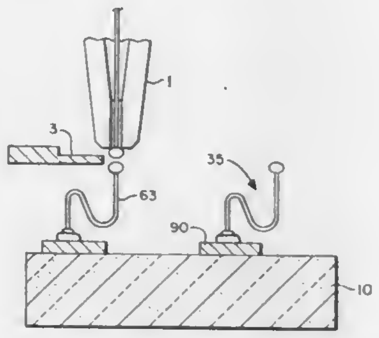
5,852,871
METHOD OF MAKING RAISED CONTACTS ON ELECTRONIC COMPONENTS

Igor Y. Khandros, Orinda, Calif., assignor to Form Factor, Inc., Livermore, Calif.

Division of Ser. No. 152,812, Nov. 16, 1993, Pat. No. 5,476,211. This application Dec. 11, 1995, Ser. No. 570,230

Int. Cl.^{6} H01R *9/06*

U.S. Cl. 29—843 **11 Claims**



1. A method for mounting a protuberant conductive contact to an electronic component, the method comprising the sequential steps of:
providing a wire having a continuous feed end,
bonding the feed end to the component,
forming, from the bonded feed end, a stem which protrudes from the component, said stem having a first stem end which is the bonded feed end,
severing the stem at a second stem end to define a skeleton,
depositing a metallic conductive material to envelop the skeleton and adjacent surface of the component;
further comprising:
prior to the severing step, bonding the second stem end to the component.

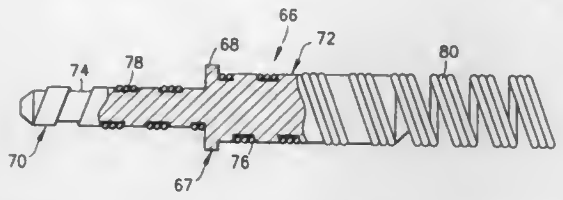
5,852,872
TECHNIQUE FOR JOINING DISSIMILAR SIZED ELECTRICAL LEADS

Jeryle L. Walter, Newhall, and Terry Sheetz, Orange, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Apr. 16, 1997, Ser. No. 843,477

Int. Cl.^{6} H01R *43/02*

U.S. Cl. 29—860 **2 Claims**



1. A method of joining first and second electrical leads having different inner diameters comprising the steps of:
(a) providing an electrically conductive transition post including a separation member, a first cylindrical mounting post having a first diameter integral with said separation member and extending away therefrom in a first direction, and a second cylindrical mounting post having a second diameter integral with said separation member axially aligned with said first mounting post and extending away therefrom in a second direction opposite said first direction;
(b) fittingly sliding a first electrical lead onto the first mounting post so that a free end thereof abuts the separation member;
(c) fittingly sliding a second electrical lead onto the second mounting post so that a free end thereof abuts the separation member;
(d) welding the first electrical lead to the first mounting post; and
(e) welding the second electrical lead to the second mounting post.

5,852,873
METHOD OF MANUFACTURE OF A ROTATIONALLY SYMMETRICAL PART

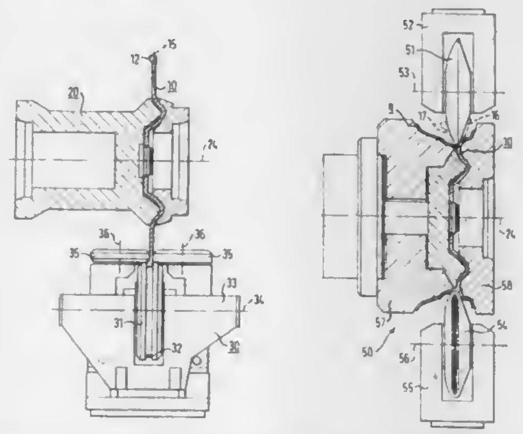
Günter Pollkötter, Beckum, Germany, assignor to Leico GmbH & Co. Werkzeugmaschinenbau, Ahlen, Germany

Filed Jan. 23, 1997, Ser. No. 787,178

Claims priority, application Germany, Jan. 23, 1996, 196 02 298.3

Int. Cl.^{6} B21K *1/32*

U.S. Cl. 29—894.324 **10 Claims**



1. Method of manufacturing of a rotationally symmetrical part in which a circular blank is clamped concentrically and rotatably about a rotational axis and a free outer circumferential area of the circular blank is upset by an upsetting roll for forming a material gathering and subsequently splitting the outer circumferential area into two legs by a splitting roll, which comprises:
supporting the outer circumferential area, during upsetting, on both sides of the circular blank by rotary support rolls, the support rolls having rotational axes which are substantially perpendicular to the rotational axis,
wherein only one outer edge of the outer circumferential area is upset to the material gathering, and maintaining a non-upset remaining outer circumferential area; and
shaping the material gathering by the upsetting roll and the support rolls.

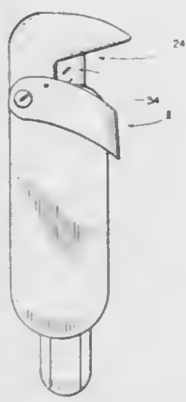
5,852,874
CARTON CUTTING DEVICE HAVING A PIVOTAL GUARD MEMBER

Henry F. Walker, 7500 Manfrod Ct., Charlotte, N.C. 28217

Filed Feb. 19, 1997, Ser. No. 802,863

Int. Cl.^{6} B26B *3/08;29/02;* **B67B** *7/00*

U.S. Cl. 30—2 **5 Claims**



1. A carton cutting device comprising:
a housing including an elongate handle portion having two ends and extending therebetween in a generally lengthwise direction, a neck portion attached to one of said ends of said handle portion, and a hook portion attached to said neck portion, said handle portion, said neck portion, and said hook portion together defining a recessed cutting space, said hook portion including a pointed end tapering generally to a point in a transverse direction generally perpendicular to said lengthwise direction of said handle portion;
a cutting blade retained within said housing and partially disposed within said cutting space for cutting;
a guard member pivotally attached to said housing for pivotable movement between a first position, wherein said guard member abuts said hook portion and covers said cutting blade to prevent accidental cutting, and a second position, wherein said guard member at least partially uncovers said cutting blade for cutting, said guard member including a surface extending across said recessed cutting space to cover said cutting blade disposed therein thereby preventing accidental cutting when said guard member is in said first position, said surface further being profiled to induce displacement of said guard member out of said first position upon engagement in the transverse direction of said surface with a carton to be cut; and
a spring disposed between said housing and said guard member for urging said guard member towards said first position.

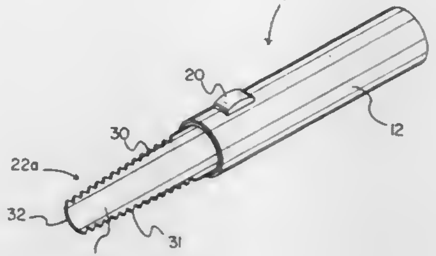
5,852,875
BATTERY POWERED CORING DEVICE

Olga H. Dolah, 65 83rd St., Brooklyn, N.Y. 11201

Filed May 13, 1997, Ser. No. 855,002

Int. Cl.^{6} A47J *25/00*

U.S. Cl. 30—113.1 **12 Claims**



1. A coring device, comprising:
a substantially cylindrical handle portion and a coring implement detachably connected to said handle portion;
a motor mounted within said handle portion and drivingly connected to said coring implement for rotating the implement;
a power supply mounted within the handle portion and connected to the motor for supplying power to said motor;
wherein said coring implement comprises an attachment end formed by a cylindrical sleeve, said cylindrical sleeve being structured to include an elongated slot extending from an end edge thereof for attachment to said handle portion,
wherein said coring implement further includes a substantially semi-cylindrical cutting portion, said cutting portion extending from the attachment end;
wherein said motor is an electric motor, and said power supply includes a battery;
switch means for controlling the supply of power to the motor, said switch means being mounted on said handle portion;
wherein said attachment slot is L-shaped;
wherein said cutting portion includes a pair of opposing side edges and a rounded tip;
wherein said side edges are tapered towards each other such that said cutting portion narrows approaching the rounded tip.

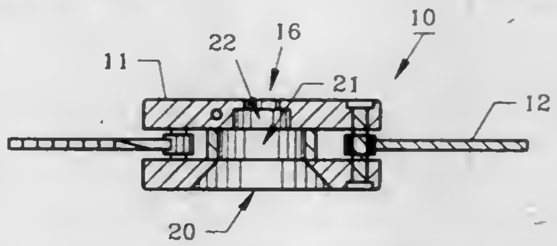
5,852,876
VEGETATION TRIMMER HEAD

Hung Te Wang, Palo Alto, Calif., assignor to Sufix USA, Inc., High Point, N.C.

Filed Apr. 9, 1997, Ser. No. 831,650

Int. Cl.^{6} A01D *34/73*

U.S. Cl. 30—276 **12 Claims**



1. A vegetation trimmer head in combination with a trimmer shaft attachment, said trimmer head comprising: a spool, said spool having a top surface and a bottom surface, said spool defining a central channel, said central channel for receiving a trimmer drive shaft, said spool defining said central channel with:
a) a conically-shaped portion, said conically-shaped portion including a wide end;
b) a cylindrically-shaped portion, and
c) a geometrically-shaped portion,
said conically-shaped portion proximate said spool bottom surface, said trimmer shaft attachment contained within said geometrically-

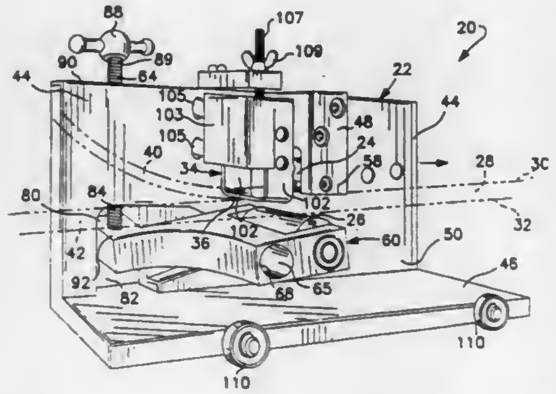
shaped portion to maintain said spool on the trimmer drive shaft said cylindrically-shaped portion wider than said geometrically-shaped portion, said conically-shaped portion allowing easy insertion of said trimmer shaft attachment therethrough from said wide end of said conically-shaped portion.

5,852,877
METHOD AND APPARATUS FOR SKIVING BELT ENDS

David A. Lotarski, Bolingbrook, and Joseph C. Vogrig, Naperville, both of Ill., assignors to Flexible Steel Lacing Company, Downers Grove, Ill.

Continuation of Ser. No. 301,696, Sep. 7, 1994, abandoned.
This application Jul. 23, 1996, Ser. No. 685,275
Int. Cl.^{6} B26D *3/06;3/28*

U.S. Cl. 30—290 **9 Claims**



1. A skiver apparatus for cutting grooves in conveyor belts, the skiver apparatus comprising:
- a traveling carriage including a body having a rearward end and a forward end, and a side wall extending between the ends of the body;
- a belt cutting blade extending away from the side wall of the carriage body for cutting a groove in a conveyor belt as the carriage body is advanced in a forward direction along the belt;
- a pair of rollers that are spaced from each other and which extend away a predetermined distance from the side wall of the carriage body to distal ends thereof spaced from the side wall, at least one of the rollers being movable towards the other roller for adjusting the space therebetween for clamping onto the belt and traveling thereacross as the rollers are rotated; and
- a belt receiving opening at the predetermined distance from the carriage body side wall between the distal ends of the rollers with the belt receiving opening generally lying in a plane that extends between the rollers and toward and away from the side wall of the carriage body and toward the forward and rearward ends of the carriage body to allow the belt to be fed along the plane toward the side wall, wherein the belt extends away from the body side wall and out from the belt receiving opening, and the rollers are clamped and advanced along said plane as the carriage travels in the forward direction.

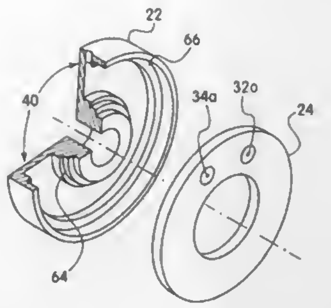
5,852,878
ELECTROLYTIC TILT SENSING DEVICE

Joseph J. Seipp, Jr., Levittown, and William R. Keller, Churchville, both of Pa., assignors to The Fredericks Company, Huntingdon Valley, Pa.

Filed Jul. 14, 1997, Ser. No. 892,075
Int. Cl.^{6} G01C *9/06*

U.S. Cl. 33—366 **75 Claims**

1. An electrolytic toroidal tilt sensing device for electrical coupling to an external measuring circuit, the external measuring circuit being responsive to the device and adapted to provide an output signal indicative of a tilting associated with the device, the device comprising:
- an electrolytic fluid;
- a housing body having a precision formed channel therein for containing the electrolytic fluid, the housing body serving as a common electrode when coupled to the measuring circuit; and
- a cover plate having at least one electrode formed thereon serving as a working electrode when coupled to the measuring circuit, the cover plate being hermetically sealed into the channel of the housing such that the cover plate and the housing form a chamber wherein the at least one electrode is at least partially immersed in the electrolytic fluid contained within the chamber;
- when coupled to the external measuring circuit, the electrolytic fluid exhibiting at least one electrical property with respect to the at least one electrode and a change therein when the device is tilted, the measuring circuit measuring such at least one electrical property and change therein through connection to the working electrode and the common electrode of the toroidal tilt device and generating the output signal in response thereto.

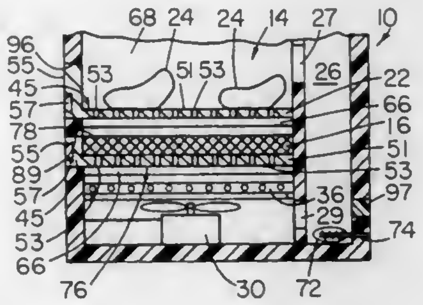


5,852,879
MOISTURE SENSITIVE ITEM DRYING APPLIANCE

Daniel R. Schumaier, Rte. 2, Elizabethton, Tenn. 37643

Continuation-in-part of Ser. No. 427,804, Apr. 26, 1995, Pat. No. 5,640,783. This application Apr. 28, 1997, Ser. No. 848,502
Int. Cl.^{6} F26B *19/00*

U.S. Cl. 34—80 **46 Claims**



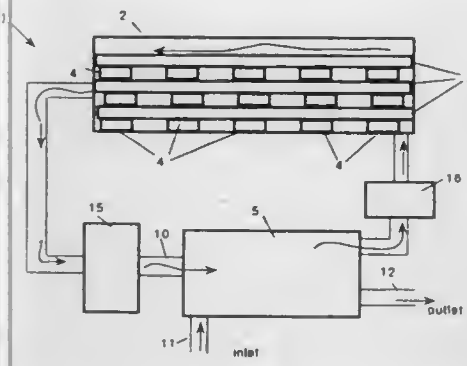
44. A desiccant package for use in a sanitizing appliance for moisture sensitive items, wherein the appliance has an electrical circuit means for controlling the operation of electrical components of the appliance, and wherein the circuit means is provided with normally open safety switch means, said package having switch closing means which is adapted to contact portions of said safety switch means to close said switch means upon operative placement of said package within said appliance.

5,852,880
METHOD OF DRYING LUMBER

Jack B. Harrison, 3450 Palmdale Dr., Wasilla, Ak. 99654

Division of Ser. No. 690,754, Aug. 1, 1996, Pat. No. 5,687,490.
This application May 7, 1997, Ser. No. 852,330
Int. Cl.^{6} F26B *13/30*

U.S. Cl. 34—92 **8 Claims**



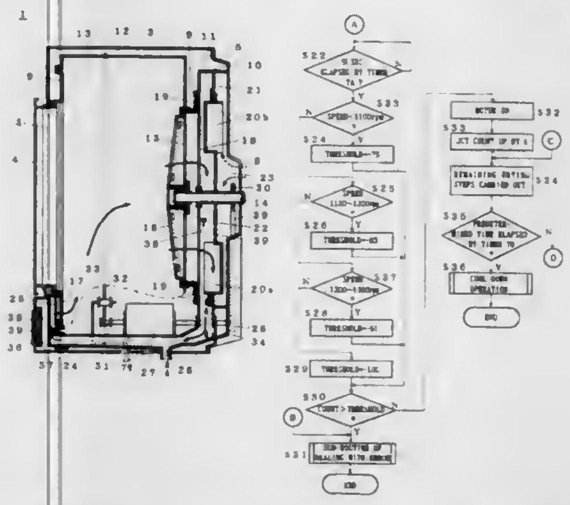
1. A method of drying wood, having a moisture content comprising the steps of:
- a) placing a plurality of lengths of frozen wood into a drying chamber, having an air pressure therein;
- b) sealing the drying chamber;
- c) reducing the air pressure within the drying chamber to a partial vacuum;
- d) extracting moist air from the drying chamber; and
- e) repeating step (d) until the moisture content of the plurality of lengths of wood reaches a desired level.

5,852,881
CLOTHES DRYER

Kouichi Kuroda, Gamo-gun; Tatsuya Hirota, Kyoto; Kiyokazu Fujikawa, Inukami-gun; Youzou Kawamura, Koka-gun; Tamotu Kawamura, Yokaichi; Takashi Fukuda, Otsu, and Hisanori Hirose, Koka-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 22, 1997, Ser. No. 898,111
Claims priority, application Japan, Jul. 31, 1996, 8-219418
Int. Cl.^{6} F26B *13/10*

U.S. Cl. 34—527 **5 Claims**



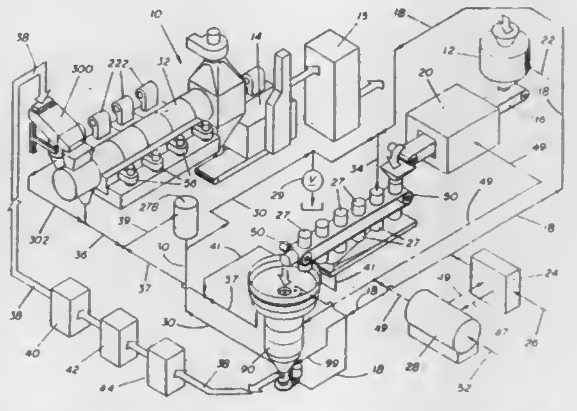
1. A clothes dryer for performing a drying operation including steps of supplying air heated by a heater into a drum containing clothes to be dried, dehumidifying the air passed through the drum by cooling the air, and supplying the dehumidified air into the drum, thus generating a circulation of the air, said drum being driven via a belt by a motor, comprising:
- a) rotation detecting means for generating a rotation signal for each preset rotation of the motor;
- b) motor controlling means for driving the motor for a first predetermined period of time and then stopping a power supply to the motor for a second predetermined period of time in an initial phase of the drying operation;
- c) rotation counting means for counting the number of rotation signals generated by the rotation detecting means during the second predetermined period of time;
- d) abnormality detecting means for detecting an abnormality by comparing the number of the rotation signals counted by the rotation counting means to a predetermined value; and
- e) operation arresting means for stopping the drying operation when an abnormality is detected by the abnormality detecting means.

5,852,882
FOOD DRYING APPARATUS

John Hugh Kendall, Sugar Land; Ranvir Biki Mohindra; Duane Stephen Rutherford, both of Houston, all of Tex.; Satoru Satake, Tokyo, Japan; Sigeharu Kanamoto, and Katsuyuki Kumamoto, both of Mihara, Japan, assignors to Riviana Foods, Inc., Houston, Tex., and Satake Corporation, Higashi-Hiroshima, Japan

Division of Ser. No. 116,064, Sep. 2, 1993, abandoned. This application Nov. 25, 1996, Ser. No. 756,210
Int. Cl.^{6} F26B *11/02*

U.S. Cl. 34—599 **34 Claims**



1. A dryer for drying a food granule slurry including water and wet food granules, comprising:
- a perforated rotating barrel having separately controllable temperature zones, wherein said food granules advance in a direction substantially parallel to a longitudinal axis of said barrel during rotation;
- a blower for blowing air past said food granules along a path that passes through perforations in said barrel, across an inner space within said barrel, and exits through perforations in said barrel; and
- a food granule retention device operatively coupled adjacent an exit of said barrel, said retention device configured to retain said food granules within said barrel until said food granules are dried to a predetermined moisture content.

5,852,883
CONCEALABLE DRYING BAR FOR CLOTHES HAMPER

Paul Ziglar, 6268 108th Ave., Burlington, Iowa 52601, and Stephen A. Fausel, 35 Park Dr., Wapili, Wyo. 80450

Filed Apr. 23, 1996, Ser. No. 566,260
Int. Cl.^{6} F26B *9/00*

U.S. Cl. 34—621 **3 Claims**

1. A laundry hamper comprising a rim and a suspension means whereby said suspension means may be rotated to a position

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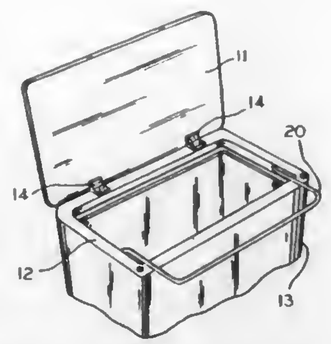
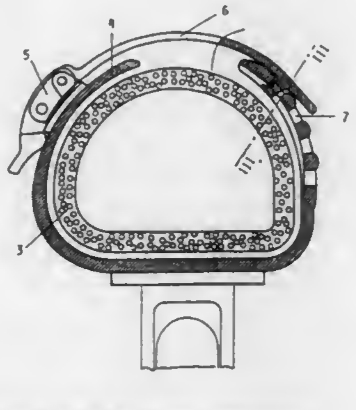


outside of the hamper rim to receive towels and clothes and said means may be rotated to a storage position inside of the hamper rim.

5,852,884
BOOT FOR SPORTING ACTIVITIES

Onorio Miotto, Mosnigo Di Moriago Della Battaglia, Italy, assignor to AM S.r.L., Della Battaglia, Italy
PCT No. PCT/EP96/00461, § 371 Date Sep. 19, 1997, § 102(e) Date Sep. 19, 1997, PCT Pub. No. WO96/31137, PCT Pub. Date Oct. 10, 1996
PCT Filed Feb. 5, 1996, Ser. No. 913,526
Claims priority, application Italy, Apr. 3, 1995, VE950011 U
Int. Cl.⁶ A43B *7/08;5/16*
U.S. Cl. 36—3 A **9 Claims**

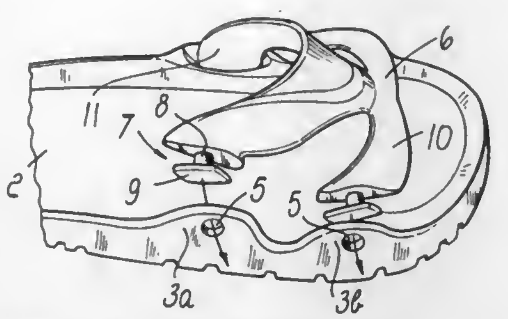


1. A boot for sporting activities, comprising
- a vamp having a first side and a second side,
- a plurality of aeration through holes provided on the first side of the vamp for aerating an interior of the boot,
- a tractive element connected to the second side of the vamp, the tractive element having an upper and lower surface,
- an appendix attached to the lower surface of the tractive element, the appendix releasably securing the strap to the aeration through holes, the appendix having a shape complimentary to a shape of the aeration through holes.

5,852,885
SANDAL TYPE FOOTWEAR

Aldo Ferniani, Padova, Italy, assignor to Exo Italia S.r.l., Padva, Italy
Continuation of Ser. No. 341,124, Nov. 18, 1994, abandoned. This application Sep. 6, 1996, Ser. No. 708,108
Claims priority, application Italy, Nov. 22, 1993, PD930134 U
Int. Cl.⁶ A43B *3/12;3/24*
U.S. Cl. 36—11.5 **7 Claims**

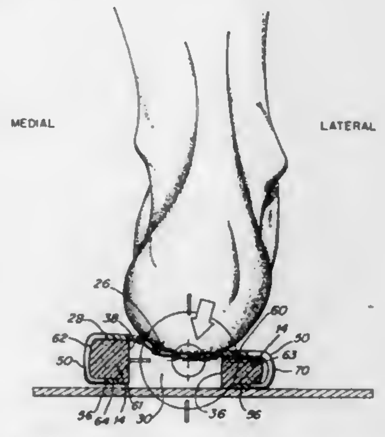
1. Footwear having simplified assembly, comprising:
- a sole having a perimetric edge;
- raised portions of said edge on each side of the sole extending upwardly from the sole;



- through holes provided on said raised portions;
- an upper mounted on said sole, said upper having a front strap portion extending at a metatarsal region of the footwear substantially horizontally between two oppositely arranged front raised portions of said raised portions, said upper further having a pair of lateral vertical wall portions each of which is connected at a respective end of said front strap portion, each of said pair of lateral vertical wall portions extending substantially perpendicularly to the extension of said front strap portion at said respective end, and each of said pair of lateral vertical wall portions being arranged in contact with a respective front raised portion of said two oppositely arranged front raised portions;
- tabs provided on said pair of lateral vertical wall portions, each tab having a stem with a first end and second end, said first ends being connected to said pair of lateral vertical wall portions such that said stems extend substantially perpendicularly to said pair of lateral vertical wall portions;
- enlarged heads of said tabs connected to said second ends of said stems, said heads being inserted through said holes such that the stems of said tabs are engaged in said holes for connecting said front strap portion between said two oppositely arranged front raised portions.

5,852,886
COMBINATION MIDSOLE STABILIZER AND ENHANCER

Neil Slepian, Durham, N.H.; Michael Kirk, Salem; Joseph Hamill, Florence, both of Mass., and Kenton Geer, Hampton, N.H., assignors to Hyde Athletics Industries, Inc., Peabody, Mass.
Continuation of Ser. No. 582,681, Jan. 4, 1996, Pat. No. 5,729,917. This application Sep. 9, 1997, Ser. No. 926,813
Int. Cl.⁶ A43B *13/18*
U.S. Cl. 36—27 **8 Claims**

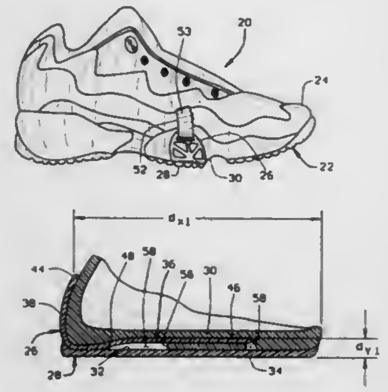


1. A shoe stabilizing system, comprising:
- a compressible midsole having an upper surface, lower surface, and a perimeter side surface;
- said midsole having a rest shape and a series of compressed shapes, said compressed shapes being defined by downward forces on regions of said midsole upper surface;

- a plurality of flexible strands which are more dimensionally stable than the midsole, said strands having first and second spaced apart portions disposed respectively against the upper and lower surfaces of said midsole, and connecting portions of said strands extending between said spaced apart portions disposed in facing alignment with said perimeter side surface of said midsole; and
- wherein said spaced apart portions are urged toward one another when said midsole is in one of said compressed shapes.

5,852,887
SHOE WITH LATERAL SUPPORT MEMBER

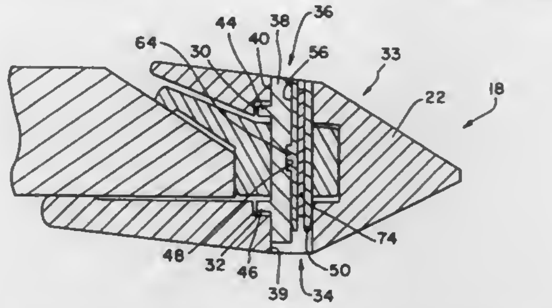
John Healy, Madbury; Craig Wojceiszak, Stratham, both of N.H., and Mary-Patricia Adamo, Wakefield, Mass., assignors to Converse Inc., North Reading, Mass.
Filed Aug. 14, 1997, Ser. No. 908,027
Int. Cl.⁶ A43B *7/14;13/12*
U.S. Cl. 36—88 **26 Claims**



1. A shoe comprising:
- a sole having an outsole and a midsole with at least a portion of the midsole overlying at least a portion of the outsole, the outsole having top and bottom surfaces;
- an upper secured to the sole; and
- a support member having a transverse portion and an upstanding portion extending up from the transverse portion, the transverse portion being positioned generally between the midsole and outsole and extending laterally relative to the midsole from a first side of the midsole toward an opposite second side of the midsole, the upstanding portion extending up from the transverse portion adjacent the first side of the midsole and overlapping a portion of the upper, the transverse portion being adapted so that an inner section of the transverse portion is moveable between an up position spaced a first vertical distance from the bottom surface of the outsole and a down position spaced a second vertical distance from the bottom surface of the outsole, the second vertical distance being shorter than the first vertical distance, the upstanding portion having a top section moveable between an out position spaced a first lateral distance from the second side of the midsole and an in position spaced a second lateral distance from the second side of the midsole, the second lateral distance being shorter than the first lateral distance, the transverse portion and the upstanding portion being configured so that movement of the inner section of the transverse portion from its up position to its down position induces movement of the top section of the upstanding portion from its out position to its in position to thereby provide lateral support to a wearer's foot, the inner section of the transverse portion being spaced laterally from the upstanding portion, the transverse Portion including a ramped section between the upstanding portion and the inner section, the ramped section inclining upwardly toward the inner section.

5,852,888
APPARATUS FOR PROTECTING A BASE OF A BUCKET OF AN EARTH WORKING MACHINE

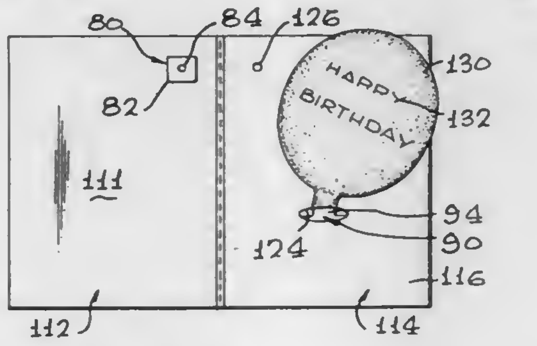
Erwin D. Cornelius, Bloomington, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Nov. 8, 1996, Ser. No. 747,097
Int. Cl.⁶ E02F *9/28*
U.S. Cl. 37—457 **18 Claims**



1. An apparatus for protecting a base edge of a bucket of an earth working machine, comprising:
- a fixed component capable of being secured to said base edge of said bucket, said fixed component having a first aperture extending therethrough;
- a protection member having a second aperture extending therethrough, wherein (1) said protection member is positioned relative to said fixed component such that said first aperture and said second aperture align to form a passageway having a first end and a second end, said passageway defining a passageway sidewall extending between said first end and said second end, (2) said protection member has a first notch defined therein, (3) said first notch is defined in said passageway sidewall, and (4) said first notch is spaced apart from both said first end and said second end of said passageway sidewall; and
- a bearing member having an outer surface extending between an upper end and a lower end thereof, said bearing member having a first tab extending from said outer surface such that a portion of said outer surface is interposed between said first tab and said upper end, wherein said bearing member is positioned within said passageway such that said first tab is positioned within said first notch and said portion of said outer surface is positioned in contact with said passageway sidewall.

5,852,889
GREETING CARD WITH SELF-INFLATING BALLOON

Robert Rinaldi, 2116 Kingston Pl., Bakersfield, Calif. 93306
Continuation-in-part of Ser. No. 298,850, Aug. 31, 1994, abandoned. This application May 14, 1996, Ser. No. 645,667
Int. Cl.⁶ G09F *1/00*
U.S. Cl. 40—124.06 **36 Claims**



1. A greeting card, comprising:
- a first panel having a front side and a back side, said first panel also having top, bottom, and side edges;

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a second panel having a front side and a back side, said second panel also having top, bottom, and side edges, one side edge of said first panel being hingedly interconnected to one side edge of said second panel such that said first panel is foldable between a first position in which said first panel lays close adjacent said second panel and a second position in which said first panel is opened away from said second panel;

a gas generating apparatus carried by said second panel, said gas generating apparatus having a charged state in which said gas generating apparatus is inactive, said gas generating apparatus also having an activated state in which said gas generating apparatus generates gas through a chemical reaction;

a triggering mechanism operatively connected to said first panel and to said gas generating apparatus, said triggering mechanism causing said gas generating apparatus to go from said charged state to said activated state when said triggering mechanism is actuated by the movement of said first panel from its first position to its second position, said triggering mechanism initially being armed for operation with said first panel being in its first position, said triggering mechanism subsequently being actuated and in response causing said gas generating apparatus to go from said charged state to said activated state when said first panel is initially moved from its first position to its second position; and

an inflatable member, said inflatable member being in fluid communication with said gas generating apparatus such that said inflatable member is inflated when said gas generating apparatus generates gas.

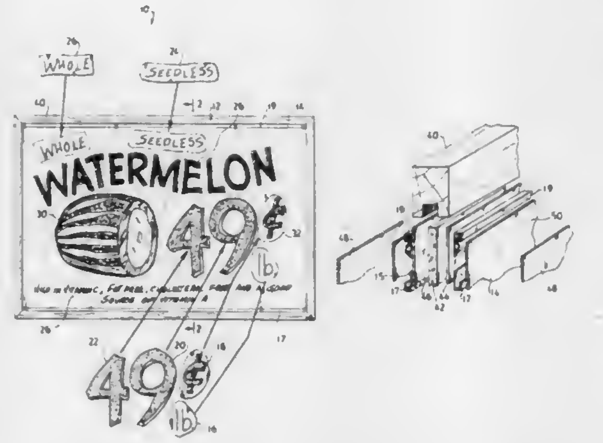
5,852,890
MAGNETIC MODIFIABLE SIGN SYSTEM

Adrian W. Pynenburg, Brantford, Canada, assignor to Storeimage Programs Inc., Brantford, Canada

Filed Sep. 12, 1996, Ser. No. 713,145

Int. Cl.^{6} G09F *7/04*

U.S. Cl. 40—621 **1 Claim**



1. A modifiable sign system comprising a base comprising a substrate comprised of a first side and a second side and a steel sheet attached to said first side of said base, a first sheet comprised of plastic material which is removably disposed over said first side of said substrate, a second sheet comprised of flexible magnetic material which is magnetically attached to said steel sheet through said first plastic sheet, a third sheet comprised of flexible magnetic material which is magnetically attached to said substrate through said first sheet, a retaining clip attached to a top edge of said base and a J-shaped channel attached to a bottom edge of said base for removably retaining top and bottom edges of said first sheet respectively, and a frame for holding said base, said steel sheet, and said retaining clip, wherein:

(a) said first sheet has a thickness of from about 10 to about 20 mils,

(b) each of said sheets has a thickness of at least 25 mils, provided that said thickness of said first sheet is less than about 70 percent of the thickness of said second sheet and said third sheet,

(c) said base comprises a hardboard material.

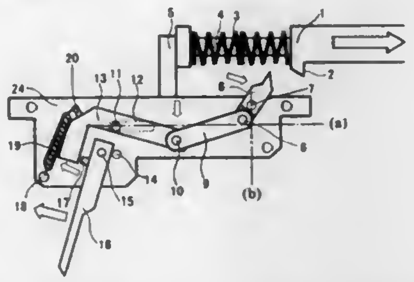
5,852,891
GUN TRIGGER ASSEMBLY

Masamichi Onishi, 14-1 Ebisu-Nisi 2 chome Naniwaku, and Hideyuki Nakatani, 14-1 Ebisu-Nisi 2 chome Naniwaku, both of Osaka, Japan

Filed Jun. 18, 1997, Ser. No. 878,010

Int. Cl.^{6} F41A *19/10;19/12;19/13*

U.S. Cl. 42—69.01 **7 Claims**



1. A gun trigger assembly freely mountable on an underside of a main body of a gun equipped with a spring-loaded retraclable firing pin and a triggering device, comprising:

a sear pivotally mounted, having an end engageable with said firing pin;

a first pivot pin fixedly mounted and extending through an aperture on said sear and serving as a fulcrum for said sear;

a first linkage having an end which shares a second pivot pin with said sear, and having an opposing end which shares a third pivot pin with a second linkage;

said second linkage indirectly connected to said sear through said first linkage and having spring means and able to interact with said triggering device;

a guide means consisting of guide openings in covers of said gun trigger assembly, said guide openings interacting with a fourth pivot pin which extends through an aperture in said second linkage;

so that during a first stage said sear moves from an initial fixed position along a vertical axis of said first and second pivot pins to a state of clockwise rotation initiated by actuation of said triggering device which results in a break in alignment of said first and second linkages along horizontal axis of said second, third, and fourth pivot pins;

and during a second stage said sear temporarily realigns with said vertical axis of said first and second pivot pins;

entering a third stage said sear is pushed counterclockwise by said firing pin, said sear eventually being restored to said fixed position of said first-stage.

5,852,892
RIFLE WITH BIPOD

Elmar Bilgeri, and Ulrich Zedrosser, both of Steyr, Austria, assignors to Steyr-Daimler-Puch AG, Austria

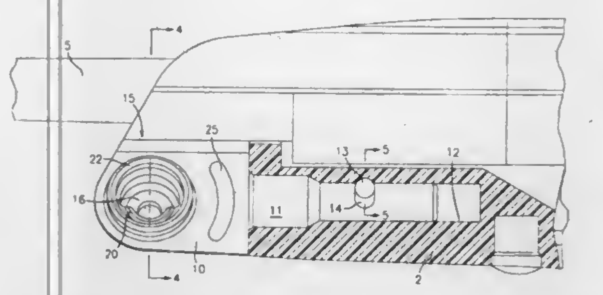
Filed Sep. 8, 1997, Ser. No. 925,225

Claims priority, application Austria, Sep. 10, 1996, 527/96

Int. Cl.^{6} F41C *27/00*

U.S. Cl. 42—94 **8 Claims**

1. A rifle comprises a stock and a fore-end portion connected together by a housing, and a barrel fitted on the housing, said fore-end portion having a bore extending parallel to said barrel, a support means rotatably mounted in said bore for supporting a bipod having first and second legs each having a connecting pin means associated therewith, said support means includes a shaft portion received in said bore and a support part, said support part being provided with a pair of upwardly inclined opposed recesses extending substantially traverse to said barrel, wherein said connecting pin means has one end secured in each recess of said support part, a circular bead provided around one of the support part recesses and the bipod leg connecting pin means and a circular groove provided around the other of the support part recesses and the bipod leg connecting pin means wherein the circular bead is received in the circular groove and wherein the circular bead, the circular groove, the connecting pin means and the recess in the support part for each leg have a common axis of symmetry.



5,852,893
GUN FOR APPRECIATION AND PRODUCTION METHOD THEREOF

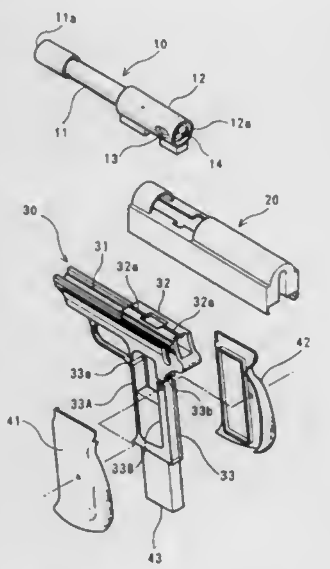
Kenji Fujimori, 3263-1, Osachi, Okaya-shi, Nagano, Japan

Filed Apr. 18, 1997, Ser. No. 843,562

Claims priority, application Japan, Apr. 26, 1996, 8-004594

Int. Cl.^{6} F41C *27/00*

U.S. Cl. 42—106 **7 Claims**



1. A gun for appreciation constructed so that functions as a real gun are deprived of by machining parts of a gun and comprising:

a barrel having a chamber for generating a propulsion force of a bullet and a bullet passing bore formed so that a bullet is caused to pass through; and

a frame equipped with a supporting section for supporting and fixing said chamber;

wherein an opening is drilled at a wall of said chamber, a metallic rod is inserted into said bullet passing bore and said chamber, and said barrel and said metallic rod are fixed at said opening.

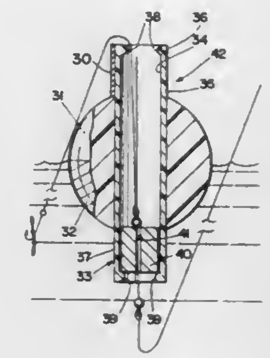
5,852,894
FLIP FLOAT

Harry E. Shannon, and Doug Shannon, both of 1303 Raymond Rd., Jackson, Miss. 38204

Continuation of Ser. No. 582,761, Jan. 4, 1996, abandoned. This application Aug. 18, 1997, Ser. No. 916,737

Int. Cl.^{6} A01K *93/02*

U.S. Cl. 43—17 **4 Claims**



1. A flip float, which will completely invert and remain inverted until reset by the fisherman when a fishing line attached to the flip float is struck by a fish, comprising a buoyant body which will float in water said body further having a first half whose exterior is of a first distinct, distinguishable color and a second half whose exterior is of a second distinct, distinguishable color;

a tube, having an inner surface, an outer surface, a first end and a second end, said tube extending through the said buoyant body with said first end lying outside of the said first half of the buoyant body and said second end being outside of said second half of said buoyant body;

a first stop rigidly affixed to the inner surface of said first end of said tube and lying beyond the first intersection of the first end of said tube with the first half of said buoyant body wherein said first stop consists of a first plurality of raised protuberances lying on the inner surface of said first end of said tube;

a second stop rigidly affixed to the inner surface of said second end of said tube and lying beyond the second intersection of the said second end of said tube with the second half of said buoyant body wherein said second stop consists of a second plurality of raised protuberances lying on the inner surface of said second end of said tube;

a weight disposed to slide within said tube and lying between said first and second stops;

and attaching means for attaching a fishing line to said weight, whereby the flip float will completely invert and remain inverted until reset by the fisherman when a fishing line attached to the flip float is struck by a fish.

5,852,895
RAISED PLANTER

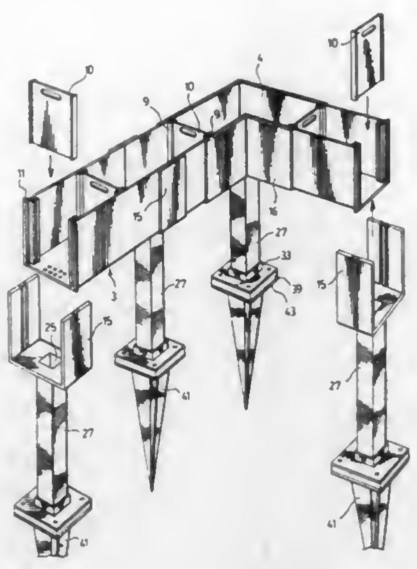
Terry Sinanan, 54-23 Kimberley Dr., Hamilton, Ontario, Canada, L8K 6N8

Filed May 8, 1997, Ser. No. 848,497

Int. Cl.^{6} A01G *9/02*

U.S. Cl. 47—33 **6 Claims**

1. A planter assembly comprising a planter box and a support structure for said planter box, said support structure comprising an elevated post, a base beneath said post and a planter box support atop said post, one of said base and said support being releasable from and enabling height adjustment trimming of said post and said one of said base and said support being refittable with said post after any such trimming thereof, said post comprising a



hollow profile of uniform inside and outside diameter over the full length of said post.

5,852,896

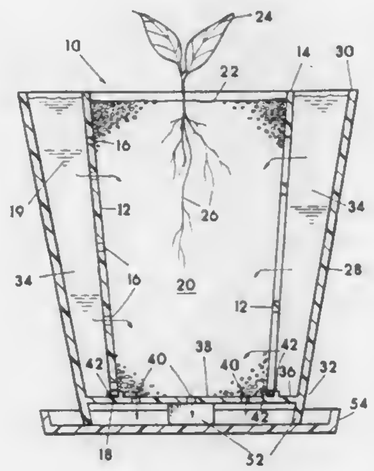
CONTAINER AND METHOD OF GROWING A PLANT

Robert J. Flasch, Jr., 6310 Co. Rd. 18, Orland, Calif. 95963

Filed Nov. 10, 1997, Ser. No. 966,685

Int. Cl.^{6} A01G *25/00*

U.S. Cl. 47—79 **9 Claims**



1. A container in which to grow a plant; said container comprising;

an annular inner wall including an upper end and defining an area in which soil can be contained with a top surface of the soil adjacent said upper end and exposed for infiltration of ambient air and for protrusion of a plant from the soil;

a plurality of holes transversely through said inner wall and of sufficient size and quantity for allowing lateral in-flow of water therethrough into soil contained by said inner wall at an in-flow rate primarily determined by percolation rate of soil contained by said inner wall;

an annular outer wall of water impervious material laterally surrounding said inner wall and in spaced relationship to said inner wall and defining a space between the inner and outer walls, an upper opening into said space allowing for water to be applied and for air to enter into said space;

a floor of water impervious material spanning between the inner and outer walls for allowing water applied into said space to fill said space;

a soil-support floor beneath said inner wall and including at least one opening therethrough for draining excess water from soil contained by said inner wall and for allowing air infiltration into the soil;

flow prevention means at said upper end of said inner wall for preventing lateral water flow from within said space onto a top surface of soil contained by said inner wall;

said space of a volume sufficient to be filled with water of sufficient volume in a single rapid filling operation to

(a) saturate soil contained by said inner wall below said flow prevention means and

(b) supply an additional excess volume of water equal to at least 5% of the sufficient volume to saturate.

5,852,897

DOOR DRIVE

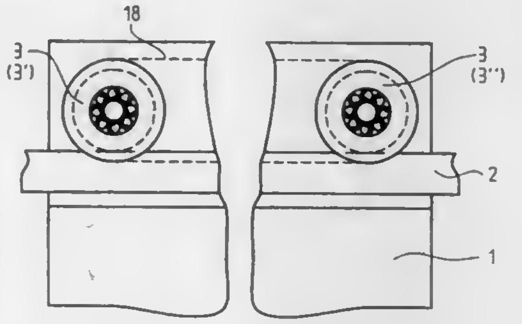
Andreas Sukale, Berlin, Germany, assignor to Inventio AG, Hergiswil NW, Switzerland

Filed Jul. 22, 1997, Ser. No. 898,185

Claims priority, application European Pat. Off., Jul. 25, 1996, 96810491

Int. Cl.^{6} E05F *11/00*

U.S. Cl. 49—358 **9 Claims**



1. A friction wheel door drive in combination with a sliding door having at least one door leaf which is moved along a path and which is suspended by means of guide rollers and guided at a guide, characterized in that at least one of the guide rollers is constructed as a motor roller which entrains the door leaf, the motor roller having an internal motor with an outside rotor comprising a roller body and an inner stator having an axle connected to one of said at least one door leaves.

5,852,898

WEATHER STRIP FOR MOTOR VEHICLE

Atsushi Hikosaka, Nagoya, and Masahiro Nozaki, Tsushima, both of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Continuation of Ser. No. 430,618, Apr. 28, 1995, abandoned. This application Mar. 14, 1997, Ser. No. 818,661

Claims priority, application Japan, Apr. 28, 1994, 6-114519; Jun. 3, 1994, 6-145367; Jan. 17, 1995, 7-022166

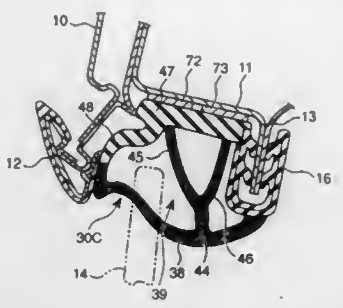
Int. Cl.^{6} E06B *7/22*

U.S. Cl. 49—498.1 **3 Claims**

1. A weather strip having a tubular configuration and adapted to be bonded by double-sided adhesive tape to a body wall which defines a door opening, comprising:

a bottom portion having an inner side end and an outer side end, said bottom portion having a generally flat board-like configuration and adapted to be bonded to said body wall with said double-sided adhesive tape;

a seal wall including inner and outer sides connected to said inner side end and said outer side end, respectively, to define a tubular portion; and



a bridge for interconnecting said bottom portion and said seal wall across said tubular portion, said bridge having a Y-shaped cross-section, and one end of said bridge being connected to said seal wall at a position inside a point where a door window pane is adapted to push on said seal wall, and two diverging ends of said bridge being connected to said outer side end and said inner side end of said bottom portion, respectively, and said one end of said bridge extending approximately perpendicular from the seal wall.

5,852,899

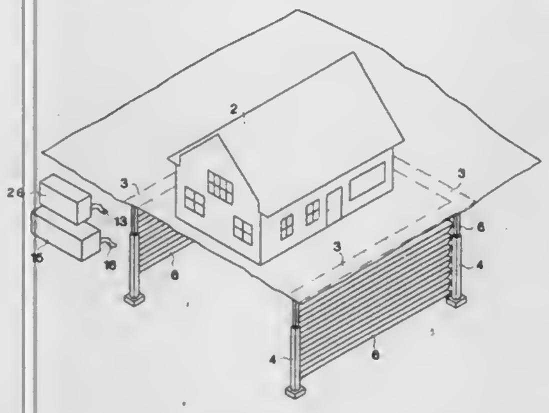
EMERGING INFLATABLE SUBMERGING PROPERTY PROTECTOR

Glenn E. Finley, 1760 Forster Ave., Memphis, Tenn. 38114

Filed Apr. 8, 1997, Ser. No. 833,390

Int. Cl.^{6} E04B *1/34*

U.S. Cl. 52—2.24 **6 Claims**



1. A protective enclosure for a structure comprising:

telescoping support members for anchoring around a perimeter of a structure to be protected,

means for raising and lowering said telescoping support members,

inflatable panel members attached to said telescoping support members,

means for inflating and deflating said panel members,

means for anchoring a bottom of said panel members,

means for securing adjacent panel members together,

whereby when said telescoping supports are raised and said panel members are inflated, said structure will be enclosed and protected.

5,852,900

ROOF GUTTER ASSEMBLY

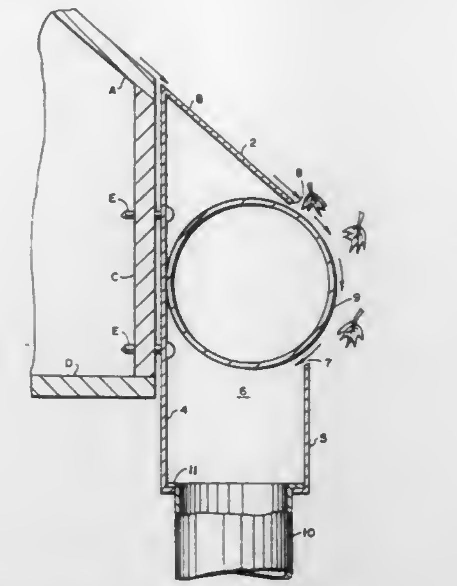
William J. Edelman, 175 Linda Ave., Hawthorne, N.Y. 10532

Continuation-in-part of Ser. No. 604,028, Feb. 20, 1996. This application Jan. 28, 1997, Ser. No. 790,159

Int. Cl.^{6} E04D *13/076*

U.S. Cl. 52—12 **3 Claims**

1. A roof gutter assembly comprising:



a longitudinally extending main body having a floor, a back wall extending upwardly from said floor, a shield extending from the top of said back wall and sloping downwardly to a distal front edge, a front wall extending upwardly from the floor to define a gutter having a gap between said front wall and the distal front edge of said shield; and

a removably mounted tubular member normally disposed substantially within the main body, said tubular member engaging with, a extending from, the distal front edge of said shield for reducing the size of said gap such that large debris is prevented from entering and substantially only water is received in said gutter.

5,852,901

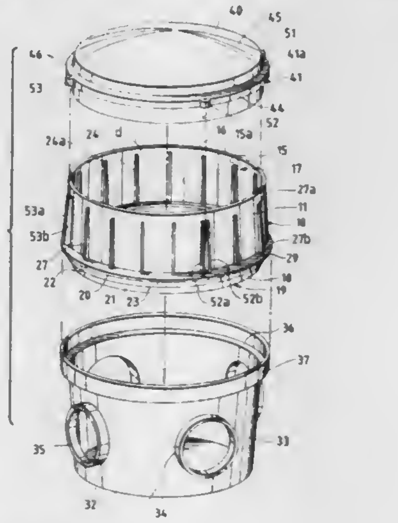
STACKAPLE RISER FOR ON-SITE WASTE AND DRAINAGE SYSTEMS

Theodore W. Meyers, Barrington, Ill., assignor to Tuf-Tite, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 365,706, Dec. 29, 1994, Pat. No. 5,617,679. This application Dec. 19, 1996, Ser. No. 769,950

Int. Cl.^{6} E02D *29/14*

U.S. Cl. 52—20 **32 Claims**



1. A stackable riser comprising:

a cylindrical side wall having outer and inner surfaces and having a first free edge portion which defines a first end opening and having a second edge portion; and a generally inverted U-shaped connecting member extending from said second edge portion of said side wall and defining an oppositely-facing second end opening, said U-shaped connecting member including a transverse intermediate portion and first and second generally perpendicular dependent legs which define a channel between said dependent legs which is shaped to receive a first free edge portion of another riser; and

a plurality of terminal ends on said inner surface, intermediate said first end opening and said second edge portion, and each of said terminal ends positioned a predetermined distance away from a tip of said first free edge portion of said cylindrical side wall.

5,852,902

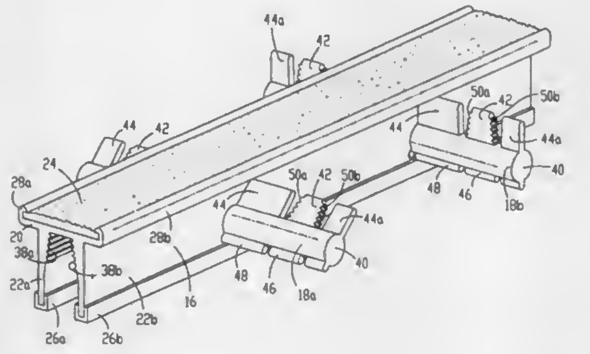
LOCKING ENTRY GRID

James J. Hopper, II, Wichita, Kans., assignor to Balco Metalines, Inc., Wichita, Kans.

Filed Jul. 1, 1997, Ser. No. 886,386

Int. Cl.⁶ E04F *17/10*

U.S. Cl. 52—177 **22 Claims**



1. An entry grid comprising:

a plurality of grid sections including respective tread-rails and support legs depending therefrom, said support legs including means defining respective locking holes therethrough configured for registration with one another and having respective central portions and radial portions and including means defining a plurality of locking teeth adjacent each of said locking holes; and

a locking bar including

a shaft configured for reception through said central portions, and

a plurality of spaced, aligned, locking elements extending from the periphery of said shaft, configured for reception through said radial portions and having means defining a plurality of element teeth configured for complementally engaging said locking teeth of said respective support legs,

said locking bar being shiftable between

a receiving position in which said bar is received through said locking holes with said locking elements aligned with said radial portions, and

a locked position in which said bar is rotated from said receiving position so that said locking elements are out of alignment with said radial portions and so that said a plurality of element teeth of said locking elements are engaged with said a plurality of locking teeth of said support legs respectively thereby locking said grid sections in a spaced, side-by-side relationship to form said entry grid.

5,852,903

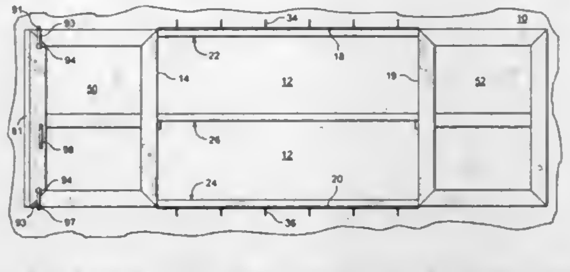
HURRICANE PROTECTION ASSEMBLY FOR WINDOWS OR DOORS

Isaac Astrizky, 15034 SW. 298 Ter., Leisure City, Fla. 33033

Filed Feb. 18, 1997, Ser. No. 802,395

Int. Cl.⁶ E06B *3/26*

U.S. Cl. 52—202 **19 Claims**



1. A protection assembly for a window unit or door unit mounted within a recess opening of a building, said protection assembly comprising:

(a) a pair of doors movably attached to an outer surface of the building and selectively movable between an opened position and a closed position,

(b) a grid-like structure attached to the building within the opening and in inwardly spaced relation to the outer surface thereof,

(c) said grid-like structure including a plurality of elongated stop members including at least a top stop member and a bottom stop member each horizontally oriented in spaced relation to one another and in spanning relation across the opening,

(d) each of said top and bottom stop members comprising two integrally connected flanges disposed in substantially perpendicular relation to one another and extending continuously along the length of each of said stop members,

(e) a lock assembly mounted on at least one of said doors and including at least one lock device having a lock element disposable behind an outermost one of said flanges of one of said top and bottom stop members when said doors are in said closed position,

(f) said closed position defined by said doors being co-planar and disposed in abutting engagement with said top and bottom stop member and in overlying, covering relation to the unit, and

(g) said open position defined by spaced, substantially co-planar relation of said pair of doors, each door disposed on an opposite side of the opening.

5,852,904

PANEL ARRANGEMENT

X. Shawn Yu, Ottawa; Bryan R. Gingrich, Holland; Robert L. Tuttle, Saugatuck, and Keith Foco, Holland, all of Mich., assignors to Haworth, Inc., Holland, Mich.

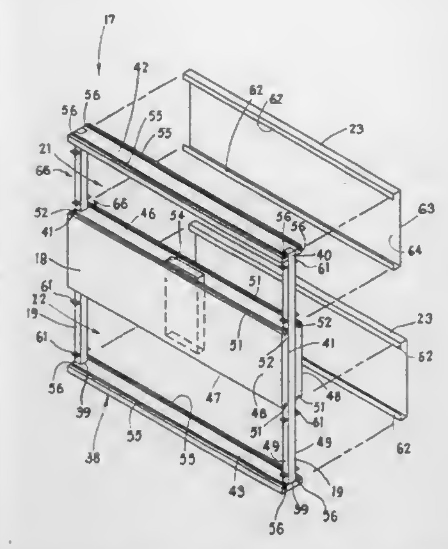
Continuation-in-part of Ser. No. 692,344, Aug. 5, 1996, abandoned. This application Oct. 24, 1996, Ser. No. 736,512

Int. Cl.⁶ E04C 2/52

U.S. Cl. 52—220.7 **47 Claims**

1. A space-dividing wall panel system comprising:

a plurality of generally rectangular upright wall panels serially-connected together so as to define a vertically enlarged wall extending upwardly from a floor, each said wall panel having a panel frame disposed in load-bearing relation with the floor;



said panel frame comprising a pair of laterally spaced vertical uprights defining opposite ends of said wall panel and horizontal first and second cross members extending laterally between said uprights, said first and second cross members being disposed in vertically spaced relation and having opposite ends rigidly connected to said uprights, each said upright having a width defined between opposite outward facing side surfaces thereof, each of said first and second cross members being horizontally enlarged so as to each have a width defined by laterally extending side surfaces that is greater than said width of said uprights, said first cross member including at least one elongate first channel extending between said opposite ends thereof, said first channel being disposed outwardly of said side surfaces of said uprights in a non-interfering relation therewith and having opposite first and second open ends which open laterally from said opposite ends of said base panel, said first channel being substantially aligned with a serially-adjacent one of said first channels of a serially-adjacent wall panel;

each serially-adjacent pair of said first channels having said first open end of one said first channel aligned in communication with said second open end of the other said first channel to define a continuous uninterrupted first track extending laterally between said serially-connected wall panels, said first track being accessible from an exterior of said base panels; and

at least one connector assembly having mounting means for mounting a workstation component thereto and connector means for connecting said connector assembly to said first track of said base panel, said connector means having a hook-like member slidably engaged with said first channel, said connector means being slidable between serially-adjacent base panels along said first track.

5,852,905

METHOD FOR MANUFACTURING A COMPOSITE GIRDER AND SO MANUFACTURED GIRDER

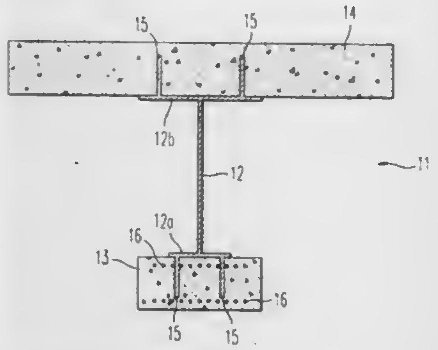
Vincenzo Collina, Forlì ; Antonio Migliacci, Milan; Gian Luca Guerrini, Milan, and Luigi Cassar, Milan, all of Italy, assignors to Italcementi S.p.A, Bergamo, and Gipieffe Architettura Studio Associato, Forli, both of Italy

Filed Mar. 5, 1997, Ser. No. 811,974

Claims priority, application Italy, Mar. 5, 1997, MI96A0426

Int. Cl.⁶ E04C *3/10;3/26;3/294*

U.S. Cl. 52—223.8 **15 Claims**



1. A composite girder comprising:

at least one steel girder having a vertical core, said at least one steel girder being preflexed or inflexed;

at least one slab of concrete associated with a longitudinal direction of said steel girder;

steel connecting elements connecting said at least one slab of concrete to said at least one steel girder;

at least one series of cables adhering to said at least one slab of concrete; and

a platband of said at least one steel girder adhering to said at least one slab of concrete,

wherein one of said at least one slab of concrete is made from high-performance concrete, and said at least one series of cables is embedded within said one of said at least one slab of concrete.

5,852,906

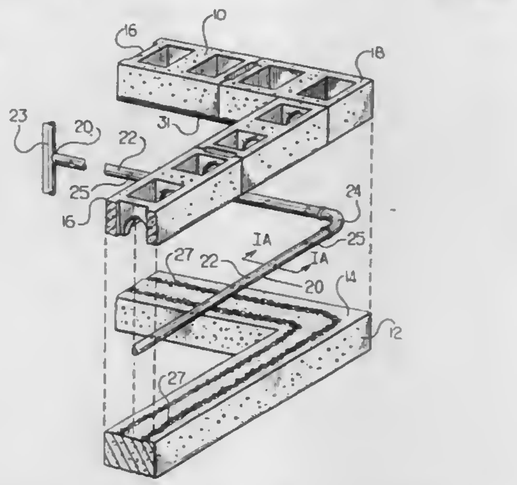
INTERNAL-WALL DRAIN SYSTEM

Eugene J. Kuban, 231 Hamtom Rd., Eighty-Four, Pa. 15330

Filed Aug. 7, 1997, Ser. No. 908,653

Int. Cl.⁶ B02D *19/00;* B02B *11/00*

U.S. Cl. 52—302.1 **9 Claims**



1. A drainage system for a structure, the system including:

(a) a substrate having an upper surface;

(b) a plurality of blocks at least partially supported on the upper surface of the substrate each having at least one internal cavity bounded by side walls and partition walls and further having at least one opening in said walls creating a pathway through the block, the blocks arranged in a course such that at least a portion of the pathway of each block opposes at least a portion of the pathway of an adjacent block thereby creating a continuous pathway through the course of blocks, each of the blocks further having a sealable surface for creating a reservoir area between the block and the upper surface of the substrate; and

(c) piping extending through the pathways in said blocks, said piping having an internal cavity and a porosity sufficient to allow the passage of water into the internal cavity of said piping via the reservoir area.

5,852,907

TIE FOR FOAM FORMS

Michael W. Tobin, Shorwood, and Joseph G. Pasma, White Bear Lake, both of Minn., assignors to AFM Corporation, Excelsior, Minn.

Filed May 23, 1994, Ser. No. 247,306

Int. Cl.⁶ E04B *2/30*

U.S. Cl. 52—714 **1 Claim**

1. A plastic form tie for interlocking parallel, spaced apart foam form panels to create a wall form for pouring concrete, the tie comprising:

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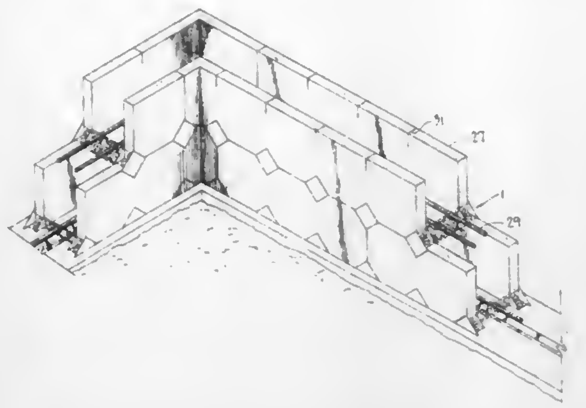


- a) an elongate, generally planar strap having a plurality of lattice work openings for flow of concrete therethrough, said strap extending in a longitudinal X axis direction and having top and bottom edges each with notches for receiving rebar, said strap having opposite end portions;
- b) each of said end portions having parallel plates including an end plate and an inside plate spaced to bracket a foam form panel, with each of said plates extending in a perpendicular Y axis direction to said strap to form a Tee end;
- c) each of said end portions having structural tension members in the form of vane shelves extending between said end and inside plates in a Z axis direction to said strap for structural engagement of said inside and end plates and for support of a foam form panel; and
- d) each of said end plates being of a larger size than said inside plates, being of a diamond shape and integrally connected to said vane shelves to resist outward forces on said inside and end plates and said wall form.

5,852,908

STRUCTURAL BEAM AND WEB

Morris Nankin, Victoria, Australia, assignor to Techtruss Holdings Pty. Ltd., Victoria, Australia

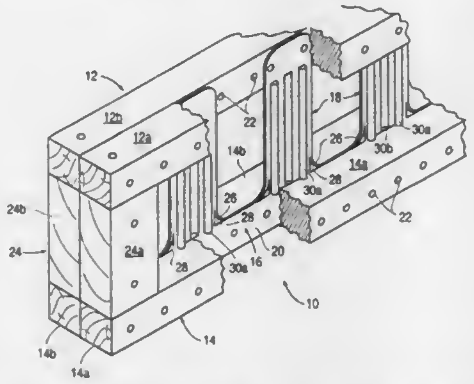
PCT No. PCT/AU95/00494, § 371 Date Feb. 11, 1997, § 102(e) Date Feb. 11, 1997, PCT Pub. No. WO96/05385, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 14, 1995, Ser. No. 776,789

Claims priority, application Australia, Aug. 12, 1994, PM 7451; Feb. 6, 1995, PN 0909

Int. Cl.^{6} E04L *3/292*

U.S. Cl. 52—729.2 **8 Claims**



1. A coilable, elongate sheet-metal web for use in the fabrication of structural I-beams which have a pair of top timber chord elements arranged one on each side of the top edge of the web and a pair of bottom timber chord elements arranged one on each side of the bottom edge of the web, the web comprising:

- (a) a plurality of panels arranged in spaced coplanar relation with one another along the length of the web, each panel having substantially flat lengthwise-extending upper and lower faces on each side thereof adapted for interposition between the pairs of top and bottom timber chord elements, each panel also having a plurality of vertical stiffening ribs formed in the portion of the panel between said upper and lower faces so that at least one rib protrudes from each side of the panel and so that the bottoms of the ribs terminate at the top of said lower faces and the tops of the ribs terminate at the bottom of said upper faces, said ribs thereby being adapted to vertically locate the top timber chord elements of the beam with respect to the bottom timber chord elements of the beam employing the web, and
- (b) a continuous, substantially flat sheet metal tension-strip extending along the bottom edge of the web joining the panels together along their lower faces, thereby forming flexible sections between the panels so that the web may be coiled.

5,852,909

LOCALIZED NOTCH REINFORCEMENT FOR WOODEN BEAMS

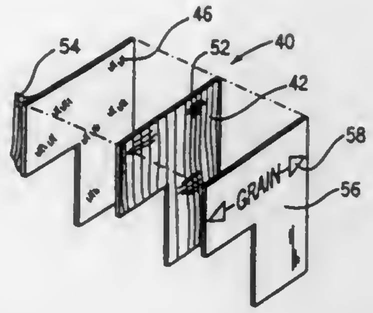
Lawrence A. Soltis, Mt. Horeb; Robert J. Ross, and Douglas R. Rammer, both of Madison, all of Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 749,604, Nov. 18, 1996, Pat. No. 5,720,143, which is a continuation-in-part of Ser. No. 576,998, Dec. 26, 1995, Pat. No. 5,575,117, which is a continuation-in-part of Ser. No. 204,114, Mar. 1, 1994, Pat. No. 5,501,054.

This application Oct. 3, 1997, Ser. No. 943,367

Int. Cl.^{6} E04C *5/07*

U.S. Cl. 52—730.7 **3 Claims**



1. A field-ready wood beam reinforcement system comprising:

a flexible fiber patch having at least some fibers running along an axis;

an adhesive applied to one side of the patch;

indicia attached to the patch indicating a desired alignment of the patch with wood grain;

wherein the flexible fiber patch may be applied to a wooden beam with the axis crossing the grain of the wooden beam.

5,852,910

RAISED PANEL DOOR

Roger Zebedee, Bordon, England, assignor to Jeld-Wen, Inc., Klamath Falls, Oreg.

Filed Oct. 31, 1996, Ser. No. 742,138

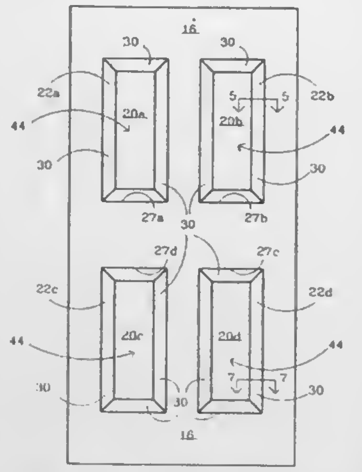
Claims priority, application United Kingdom, Jan. 11, 1995, 9522354

Int. Cl.^{6} A47B *13/08*

U.S. Cl. 52—784.1 **8 Claims**

1. A door comprising:

- (a) a pair of opposing panels attached together by spacers interdisposed between an exterior perimeter region of said panels in order to maintain said exterior perimeter region of said panels at a predetermined distance apart;



- (b) at least one of said opposing panels defines an elongate depression, the distance between said panels in said elongate depression being less than said predetermined distance;
- (c) said elongate depression defines an enclosed region of said panels within said exterior perimeter region of said panels;
- (d) an elongate weakening notch formed into said at least one of said opposing panels in said elongate depression and being suitable for breaking away and removing said enclosed region of said panels; and
- (e) an elongate strip suitable for engagement with said elongate depression, with said enclosed region of said panels removed, to secure an insert within said enclosed region.

5,852,911

TABLET DISPENSER

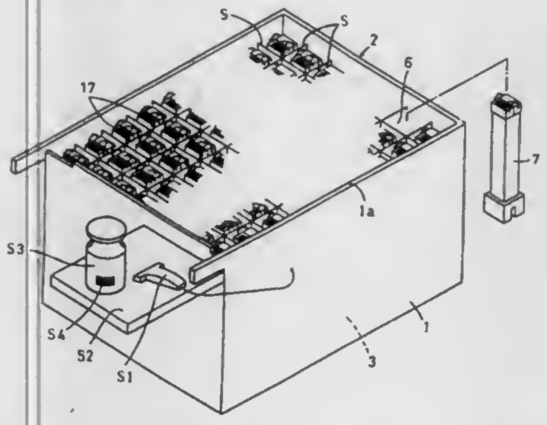
Shoji Yuyama, and Keita Yasuoka, both of Toyonaka, Japan, assignors to Kabushiki Kaisha Yuyama Seisakusho, Toyonaka, Japan

Filed Feb. 6, 1997, Ser. No. 796,816

Claims priority, application Japan, Feb. 7, 1996, 8-021307

Int. Cl.^{6} B65B *35/54*

U.S. Cl. 53—168 **2 Claims**



1. A tablet dispenser comprising:

a tablet storage unit having a plurality of tablet storage spaces in which a number of different kinds of tablets can be stored, each of said tablet storage spaces having a cover which can be manually opened;

a tablet discharge means for discharging tablets from a designated one of said tablet storage spaces;

a hopper provided under said tablet storage unit for receiving tablets discharged from said tablet storage spaces;

a tablet packing unit for receiving tablets from said hopper and packing said tablets;

a control unit;

a display means connected to said control unit; and

a data reader connected to said control unit for reading first data identifying the name and type of tablets stored in a tablet container,

wherein said control unit includes a detector means for detecting that a supply of tablets are low or are depleted in any one of said tablet storage spaces and displaying, on said display means, second data identifying the position of said detected tablet storage spaces in which the supply of tablets are low or depleted, and third data identifying the name and type of tablets to be put in any one of said table storage spaces in which a low or depleted supply of tablets has been detected, and

a comparison means for comparing said first and third data and displaying, on said display means, whether or not said first and third data coincide.

5,852,912

PACKAGING MACHINE FOR MULTI-PACKS

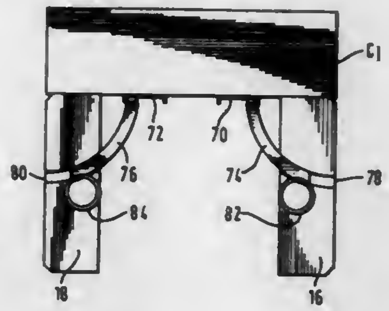
Eric Chalendar, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 17, 1997, Ser. No. 932,294

Claims priority, application United Kingdom, Mar. 30, 1995, 9506541

Int. Cl.^{6} B65B *43/24*

U.S. Cl. 53—201 **8 Claims**



1. A packaging machine for packaging articles into cartons, having a carton conveyor including a pair of like conveying assemblies, one or both of said assemblies being useable to convey cartons through said machine dependent upon the size of the cartons, said conveying assemblies being adjustable with respect to each other transversely of the machine direction, and carton supporting structure mounted so as to be retractable from an operative position between said assemblies to partially support a carton when said assemblies are disposed relatively far apart, to a retracted non-operative position when said assemblies are disposed relatively close together.

5,852,913

ORIENTATIONALLY SENSITIVE CLOSURE AND ORIENTING APPARATUS THEREFOR

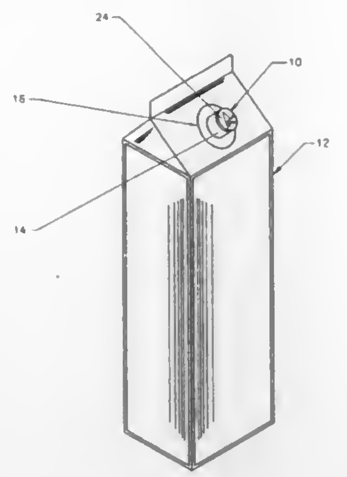
Ronald F. Tuckner, White Bear Lake, and Glen John Peterson, Eagan, both of Minn., assignors to Tetra Laval Holdings & Finance, SA, Pully, Switzerland

Filed Mar. 5, 1997, Ser. No. 812,319

Int. Cl.^{6} B65B *7/28;* **B67B** *3/28*

U.S. Cl. 53—367 **15 Claims**

1. An apparatus for orienting a closure for mounting to an associated container, the closure having a flange having a spout extending from a side thereof centrally positioned on and coaxial with the flange, and an orienting projection extending from an opposite side of the flange in non-coaxial relation to the flange and spout, the flange having a width and the spout having a smaller width than the flange width, the closure defining a trailing edge at a peripheral portion of the flange closest to the orienting projection, the apparatus comprising:



a body portion having an inlet region and an outlet region extending along a longitudinal axis thereof, the body defining longitudinally oriented first, second and third receiving channels extending from the inlet region to the discharge region, the first receiving channel having a width configured to accommodate and slidingly receive the closure spout, the second receiving channel having a width configured to accommodate and slidingly receive the closure flange, the third receiving channel having a width configured to accommodate and slidingly receive the closure orienting projection, the third receiving channel having at least two bends therein defining a portion of the channel extending generally transverse to the longitudinal axis,

wherein the closure, positioned at the inlet region and traversing through the apparatus is rotationally oriented by interaction of the orienting projection and the third channel to discharge the closure by the trailing edge last.

5,852,914

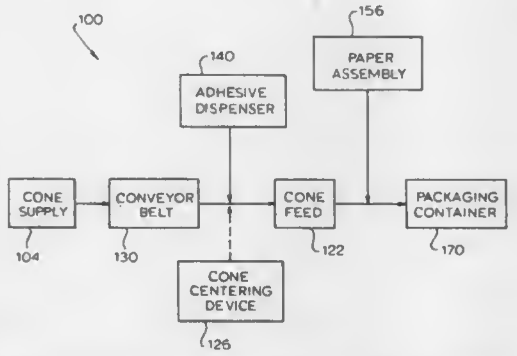
METHOD FOR PROTECTING A FOOD

Martin Mueller, 4929 E. Lake Shore Dr., Wonder Lake, Ill. 60097

Filed Sep. 29, 1997, Ser. No. 939,582

Int. Cl.^{6} B65B *11/00*

U.S. Cl. 53—397 **3 Claims**



1. A method for protecting an ice cream cone comprising:

(a) providing a plurality of ice cream cones, the plurality of ice cream cones including at least a first cone and a second cone; the first cone and the second cone each having a top portion, a bottom portion oppositely disposed from the top portion, and a side portion connecting the top portion and the bottom portion;

(b) positioning the plurality of ice cream cones on a side of the first cone and the second cone;

(c) applying an adhesive spot to a side of the first cone and the second cone;

(d) applying a sheet of paper to the adhesive spot;

(e) nesting a first cone within a second cone after the paper has been applied to the first cone and the second cone to thereby adhere the sheet of paper to the adhesive and thence to the first cone and the second cone, thereby forming a paper protected cone for each cone in the plurality of ice cream cones; and

(f) packaging the plurality of the paper protected cones.

5,852,915

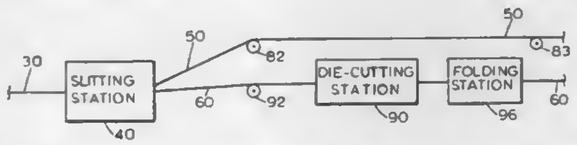
METHOD OF MAKING COMPACT DISC PRODUCT

Bruce Williams, Round Lake, and David Deschryver, Hainesville, both of Ill., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Sep. 26, 1996, Ser. No. 721,237

Int. Cl.^{6} B65B *61/02*

U.S. Cl. 53—411 **16 Claims**



1. A method of manufacturing a data disk product having a data disk with a diameter and a package which encloses said data disk, said method comprising the steps of:

(a) providing a main web of material having a length;

(b) printing a pattern of repeating images on said main web of material;

(c) slitting said main web of material in a longitudinal direction parallel to said length of said main web to provide a first web of material and a second web of material having a length;

(d) applying an adhesive to said first web of material;

(e) forming a pattern of repeating die cuts in said second web of material, each of said die cuts resulting in the formation of an opening in said second web of material;

(f) folding said second web of material in a longitudinal direction parallel to said length of said second web of material to form a folded web, said folded web having a first web portion in which said openings are formed and a second web portion folded over said first web portion at a fold in said longitudinal direction, each of said first and second web portions having a width in a direction perpendicular to said longitudinal direction, each of said widths being at least as great as the diameter of said data disk;

(g) after said step (f), automatically enclosing a data disk between a portion of said folded web and a corresponding portion of said first web and bonding said folded web and said first web to form a product web so that a portion of said data disk is disposed adjacent one of said openings in said first web portion of said folded web; and

(h) cutting said product web at a first point adjacent a first side of said data disk and at a second point adjacent a second side of said data disk to form said data disk product.

5,852,916

POT COVER FORMING APPARATUS AND METHOD

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.

Continuation of Ser. No. 402,749, Mar. 13, 1995, Pat. No. 5,617,709. This application Apr. 7, 1997, Ser. No. 826,772

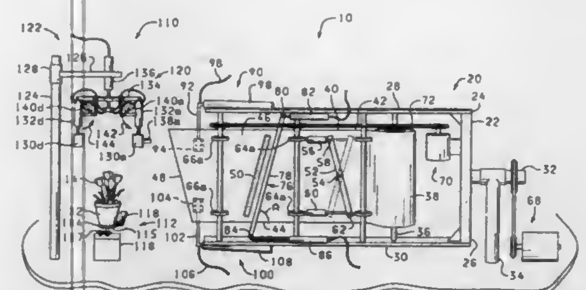
Int. Cl.^{6} B65B *11/04;25/02*

U.S. Cl. 53—465 **16 Claims**

1. A method of forming a pot cover from a sheet of material, the sheet having a leading edge portion, the method comprising the steps of:

providing a mold having an outer peripheral surface and an end portion;

automatically advancing the leading edge portion of the sheet of material toward the mold until a portion of the sheet of material is positioned adjacent the mold;



rotating the mold wherein the sheet of material is rotated through at least about one rotation such that the leading edge portion of the sheet engages another portion of the sheet and is bonded thereto via a bonding material and wherein the sheet of material circumferentially encompasses at least a portion of the outer peripheral surface of the mold forming a tubular cover and wherein a portion of the sheet extends beyond the end portion of the mold;

forming a bottom in the tubular cover by closing the portion of the sheet of material which extends beyond the end portion of the mold; and

removing the tubular cover from about the mold.

5,852,917

METHOD OF MANUFACTURING DOUBLE-CHAMBERED INFUSION BAGS BY FOLDING

Andrea Romagnoli, San Lazzaro Di Savena, Italy, assignor to I.M.A. Industria Machine Automatiche S.P.A., Bologna, Italy

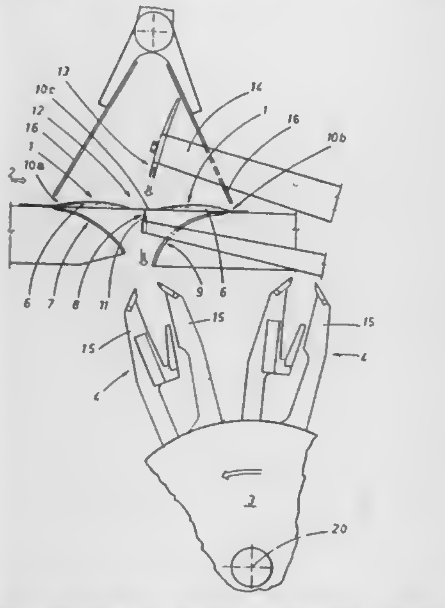
PCT No. PCT/IT96/00066, § 371 Date Dec. 4, 1996, § 102(e) Date Dec. 4, 1996, PCT Pub. No. WO96/31399, PCT Pub. Date Oct. 10, 1996

PCT Filed Apr. 2, 1996, Ser. No. 750,054

Claims priority, application Italy, Apr. 4, 1995, B095A0147

Int. Cl.^{6} B65B *51/10*

U.S. Cl. 53—479 **5 Claims**



1. A method of pleating and folding a succession of instances of an elongatedly shaped tubular blank of filter paper having two ends and containing measured and separate quantities of an infusionable substance so as to obtain from each tubular blank a filter bag having two envelopes containing the infusible substance, comprising the steps of:

conveying plurality of tubular blanks of filter paper singly and in succession along a feed direction extending substantially tangential to a rotatable wheel which is equipped with a plurality of radial grippers providing respective arms by which each filter bag is taken up, compacted and conveyed further in said feed direction;

taking up each tubular blank in succession, when that blank is in a position located above at least three bearing elements which are ordered along said feed direction, of which two are stationary, shaped in such a way as to converge toward said rotatable wheel and offered to opposite end of the respective tubular blank, while the third said bearing element is capable of movement transverse to said feed direction;

forming a pleat in an intermediate portion (**10***c*) of each tubular blank in succession, using said third bearing element in succession;

folding each tubular blank in succession double in such a way as to draw two respective envelopes thereof together, by inducing a movement that commences in the position at which the respective said tubular blank is taken up and terminates at a position in which the respective said tubular blank, guided by second two stationary bearing elements, comes to rest between said arms of a respective said gripper with said two ends thereof located close together; and

between said steps of forming and folding pinching said ends of each blank by action of respective movable pressure elements operating against said two stationary bearing elements so as to prevent the contents of the envelopes from escaping during the movement of the respective resulting bag toward said rotatable wheel.

5,852,918

METHOD AND APPARATUS FOR PROCESSING RECEIVED POSTAL ITEMS

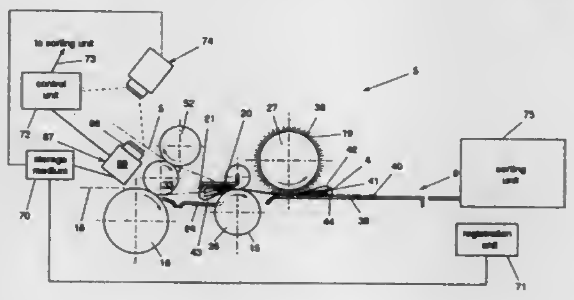
Gerhard Hidding, Heerenveen, and Bertus Karel Edens, Drachten, both of Netherlands, assignors to Hadewe B.V., Drachten, Netherlands

Filed Jun. 4, 1997, Ser. No. 868,589

Claims priority, application Netherlands, Jun. 4, 1996, 1003265

Int. Cl.^{6} B65B *43/26*

U.S. Cl. 53—492 **12 Claims**



7. A method for processing received postal items of which envelopes have at least been weakened along at least all but one of the folding edges between a front wall and a rear wall, comprising the steps of recording an image of the envelope, and inverting a front wall or a rear wall of each envelope relative to the rear wall or the front wall, respectively, of that envelope, wherein the recording of the image of each envelope occurs after the inversion of the front wall or the rear wall of the respective envelope.

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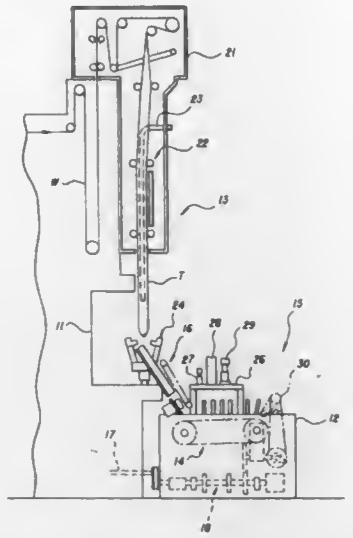
5,852,919
PACKAGING MACHINE

Hiroyuki Matsuda; Kiyomi Yoshida, and Michio Ueda, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan
Filed Jul. 14, 1997, Ser. No. 892,063
Claims priority, application Japan, Jul. 15, 1996, 8-185202
Int. Cl.^{6} B65B *9/20;61/24*
U.S. Cl. 53—551 **5 Claims**

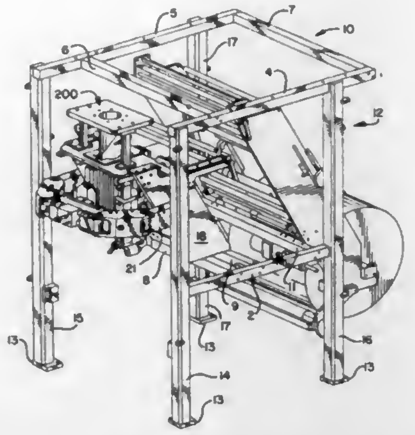


1. A packaging machine comprising an incomplete container forming device for forming a web into a tube, filling contents into the tube, thereafter transporting the tube by a length corresponding to one container at a time, sealing and cutting the tube transversely of the tube every time the tube is transported to obtain flat tubular incomplete containers, and discharging the containers as arranged in a row; a pair of container conveyors arranged at a lower level than the discharging position of the device, horizontally spaced from the discharging position by a specified distance and having respective transport paths spaced from each other by a predetermined distance; a complete container forming device for making the incomplete containers into complete rectangular parallelepipedal containers during transport on the conveyors; and a transfer device for receiving the row of incomplete containers as discharged from the incomplete container forming device, dividing the row into two rows and delivering the two rows alternately to the respective container conveyors.

5,852,920
LONGITUDINAL SEAM SEALER FOR CONTINUOUS MOTION FORM, FILL AND SEAL MACHINE

John M. Linkiewicz, Prospect Heights, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.
Continuation-in-part of Ser. No. 747,274, Nov. 13, 1996, Pat. No. 5,752,370. This application Dec. 4, 1997, Ser. No. 984,812
Int. Cl.^{6} B65B *9/08*
U.S. Cl. 53—551 **31 Claims**

1. A form, fill and seal machine, for forming a tube out of a sheet of material, said machine being of the type including a longitudinal seam sealer for continuously forming a longitudinal seam along lapped edge surfaces of the sheet of material during the movement of the sheet of material and a pair of cyclically movable jaw assemblies arranged on opposite sides of said tube that form cross seams during the end sealing operation and wherein the longitudinal seam sealer comprises:



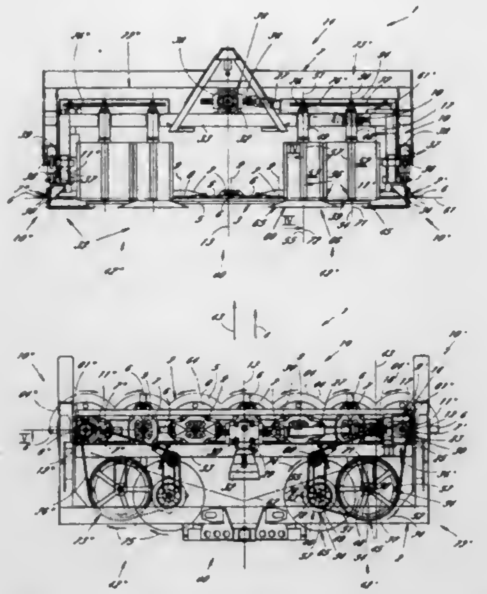
- a pair of sealer bars each of which includes a shaped confronting portion, each sealer bar including an electric heat producing element that will when energized heat said shaped confronting portions to a temperature that will cause a seam to be formed between said lapped edge surfaces of the sheet material passing there between;
- a separate mounting mechanisms for each sealer bar that permit said shaped confronting portions to move toward and away from each other;
- a stop mechanism carried by said mounting mechanism for preventing said shaped confronting portions from contacting each other and thus avoiding unacceptable drag on said sheet of material;
- a first pressure roller mounted on one of said mounting mechanisms at a location beyond the exit end of said shaped confronting portions, said first pressure roller engaging an outer surface of the lapped edge surfaces of the sheet of material along which a seam has been formed;
- a second pressure roller mounted on the other of said mounting mechanisms at a location beyond the exit end of said shaped confronting portions, said second pressure roller engaging the other outer surface of the edges of the sheet of material along which a seam has been formed, said second pressure roller being mounted for movement relative to said other mounting mechanisms such that it can move toward and away from said first pressure roller, a mechanism for applying a resilient force on said second pressure roller causing it to be biased toward said first pressure roller, such that a force is applied to the seam that has been formed in the lapped edge surfaces of the sheet of material.

5,852,921
MOWER WITH IMPROVED WINDROWING DEVICE

Horst Neuerburg, Saverne; Rene Walter, Goetzenbruck, and Michel Wolff, Mommenheim, all of France, assignors to Kuhn S.A., Saverne Cedex, France
Filed Jul. 10, 1996, Ser. No. 679,159
Claims priority, application France, Jul. 13, 1995, 95 08701
Int. Cl.^{6} A01D *34/66*
U.S. Cl. 56—6 **23 Claims**

1. A mower comprising:

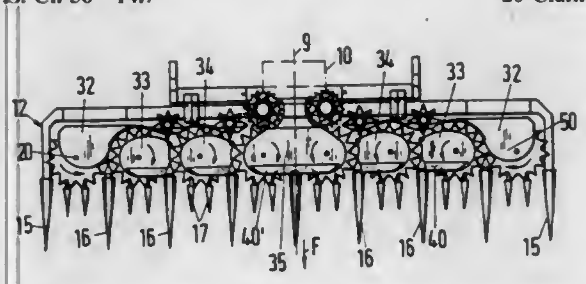
- a linking structure designed to link the mower to a motor vehicle;
- a cutting mechanism having driven cutting elements comprising cutting tools; and
- a windrowing device designed to laterally move, toward a median plane of the cutting mechanism, a product that has been cut by the cutting elements before the cut product is dropped to the ground, said windrowing device having at least one guiding element for the cut product that is located in the vicinity at least of one of the lateral ends of the cutting mechanism, and when viewing in a direction of work, behind a front of a cut of the cutting mechanism, said at least one guiding element having at least two rotors that are located crosswise to the direction of the work and said at least two rotors each having a rotational axis directed upward during operation, said at least two rotors being hung to a carrying structure linked to the cutting mechanism, said at least two rotors being driven into rotation by means of a driving mechanism;



wherein said at least two rotors are windrowing rotors that are arranged in an immediate vicinity of each other in order to obtain a good seal between the said at least two windrowing rotors and avoid cut product from lodging between said at least two windrowing rotors, said at least two windrowing rotors being solely hung to the carrying structure at their top, and a lower end of at least one of the said at least two windrowing rotors extends at least to a cutting plane defined by the cutting tools of the corresponding cutting elements.

5,852,922
MACHINE FOR CUTTING AND CHOPPING CORN AND SIMILAR STALK-LIKE HARVESTED CROPS INDEPENDENTLY OF ROWS

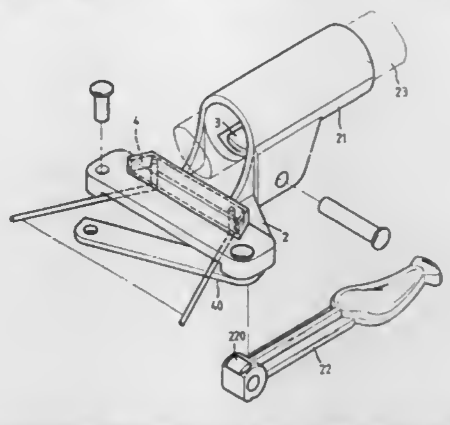
Matthias Sievers Over Behrens, Coesfeld; Richard Wuebbels, Rhede, and Leo Schulze Hockenbeck, Everswinkel, all of Germany, assignors to Maschinenfabrik Kemper GmbH & Co., KG, Stadtlohn, Germany
Filed Aug. 20, 1997, Ser. No. 914,951
Claims priority, application Germany, Aug. 22, 1996, 296-14-549.1
Int. Cl.^{6} A01D *34/04;45/00*
U.S. Cl. 56—14.7 **20 Claims**



1. A machine moveable in a forward direction for cutting and chopping stalk-like harvested crops independently of rows, comprising a frame, a plurality of drawing-in and cutting drums rotatably mounted on the frame for rotation about substantially vertical axes, said drums each having a plurality of teeth operable to engage the crop, a cover fixedly mounted on said frame above at least one of said drums, a divider fixedly mounted on said frame and extending generally forwardly relative to said at least one drum, said cover having an outer edge with a generally rearwardly directed indented arched portion juxtaposed to the divider, said arched portion exposing the underlying teeth of the drum to thereby form an opening for entry of the harvest crop between the exposed teeth underlying said arched portion to thereby provide for cutting one type of crop, and a blocking element adapted to be disposed in a blocking position overlying said arched portion to preclude exposure of the teeth underlying said arched portion to thereby provide for cutting another type of crop.

5,852,923
INTERCHANGEABLE HEAD FOR A RAKE

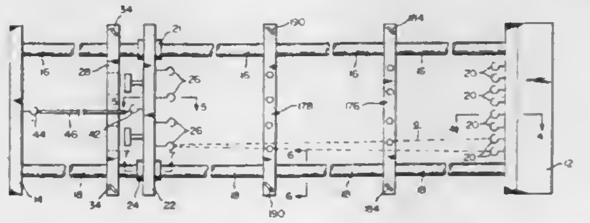
Ming-Tien Wei, P.O. Box 453, Taichung, Taiwan
Filed Dec. 6, 1996, Ser. No. 761,790
Int. Cl.^{6} A01D *7/00*
U.S. Cl. 56—400.18 **2 Claims**



1. An interchangeable head of a rake comprising a main body having a plurality of prongs attached thereto, said main body further having a neck means opposite in location to said plurality of prongs, said neck means for fastening said main body to a rake handle, said neck means having a movable press rod pivotally connected at one end to said neck means, said movable press rod being movable between a first position adjacent a bottom of said neck means and a second position angularly offset from said bottom, said movable press rod having a protruded surface at an area of the pivotal connection with said neck means, said bottom of said neck means of said main body having a movable press piece thereon; said press piece in securing contact with the handle when said movable press rod is in said first position. said press piece releasing from the securing contact when said movable press rod is in said second position, said main body having a protective slot means thereon for enclosing pointed ends of said plurality of prongs.

5,852,924
METHOD AND APPARATUS FOR MAKING A TAPERED LINE FROM THREAD AND AN IMPROVED TAPERED LINE

David Charles Mulligan, Olympia, Wash., assignor to Charles Raymond Downey, Lacey, Wash.
Filed Apr. 18, 1997, Ser. No. 844,399
Int. Cl.^{6} D01H *7/02*
U.S. Cl. 57—25 **19 Claims**



1. Apparatus for making a tapered line from thread, comprising:

- a base;
- a spin hook support on said base;
- at least one pair of adjacent spin hooks on said spin hook support, mounted for rotation about parallel, generally horizontal axes;

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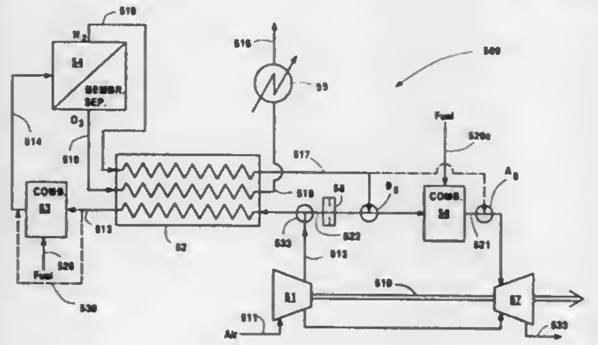
a drive mechanism connected to rotate the at least two spin hooks for simultaneous, and substantially same-direction, same-rate rotation;
an anchor hook support on said base spaced longitudinally from the spin hook support;
an anchor hook on said anchor hook support, mounted for rotation about an axis that is parallel to the axes of rotation of the two spin hooks;
said anchor hook facing the two spin hooks, and said spin hooks and said anchor hook forming the three corners of a triangle;
a releasable lock for locking the anchor hook against rotation relative to the anchor hook support, said lock having a lock position in which it engages the anchor hook and holds it against rotation, and a release position in which it allows the anchor hook to rotate freely about its axis of rotation;
at least two loop-pin supports, wherein a first loop-pin support base is connected to the base and spaced longitudinally from the spin hook support towards the anchor hook support, and a second loop-pin support is connected to said base and positioned longitudinally between the spin hook support and the first loop-pin support;
a first thread engaging loop-pin;
a second thread engaging loop-pin;
said first thread engaging loop-pin being removably mounted on the first loop-pin support, generally in line between a first of said pair of spin hooks and the anchor hook;
said second thread engaging loop-pin being removably mounted on the second loop-pin support, generally in line between the second spin hook and the anchor hook;
said anchor hook support being mounted on the base for longitudinal movement towards and away from the spin hook support; and
a spring connected to the base and the anchor hook support and positioned to in use exert a resilient force on the anchor hook support, for biasing it away from the spin hook support, said anchor hook support being movable on said base longitudinally towards the spin hook support, against the force of said spring.

5,852,925
METHOD FOR PRODUCING OXYGEN AND GENERATING POWER USING A SOLID ELECTROLYTE MEMBRANE INTEGRATED WITH A GAS TURBINE

Ravi Prasad, East Amherst; Christian Friedrich Gottzmann, Clarence, and Raymond Francis Drnevich, Clarence Center, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Division of Ser. No. 490,362, Jun. 14, 1995, abandoned. This application Sep. 18, 1997, Ser. No. 933,248
Int. Cl.⁶ F02G *3/00*
U.S. Cl. 60—39.02 **16 Claims**

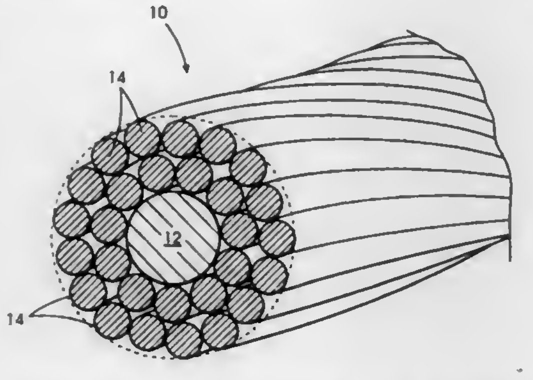


1. A method for producing oxygen and generating power by retrofitting a power generation system, said method comprising the steps of:
providing the power generation system including a first compressor, a first combustor and a gas turbine, said compressor compressing a first oxygen-containing gas stream for delivery to said first combustor, said first combustor combusting the first stream for expansion in said gas turbine;
providing a second combustor in fluid communication with at least a first separator having a solid electrolyte membrane;
directing a minor portion of the first stream to said second combustor utilizing a control valve disposed between said first compressor and said first combustor;
combusting at least the minor portion of the first stream in the second combustor to a temperature below 1100° C. to produce a combusted, heated, compressed gas stream;
contacting the combusted, heated, compressed gas stream with the solid electrolyte membrane at a temperature below about 1000° C. to produce an oxygen-depleted, compressed gas stream and product oxygen therefrom;
combining the oxygen-depleted, compressed gas stream with the first stream at least one of before, during and after combustion of the first stream by said first combustor;
controlling the pressure of the remainder of the first stream after the minor portion is removed, utilizing a pressure matching device in fluid communication between said control valve and said first combustor, said pressure matching device being disposed upstream of the combining of the oxygen-depleted compressed gas stream with the first stream to match the pressure of the controlled first stream with the pressure of the oxygen-depleted stream; and expanding the combined gas stream in the gas turbine at a temperature within the range of from about 900° to about 2000° C., thereby generating power,
wherein at least a portion of the compressed oxygen-containing gas stream bypasses the second combustor and is mixed with the combusted, compressed oxygen-containing gas stream prior to contact with the solid electrolyte membrane.

5,852,926
BALANCED STRAND CORDAGE

James R. Breedlove, Watkinsville, Ga., assignor to Wellington Leisure Products, Inc., Madison, Ga.

Filed Aug. 25, 1997, Ser. No. 918,762
Int. Cl.⁶ D02G *3/02*
U.S. Cl. 57—210 **6 Claims**

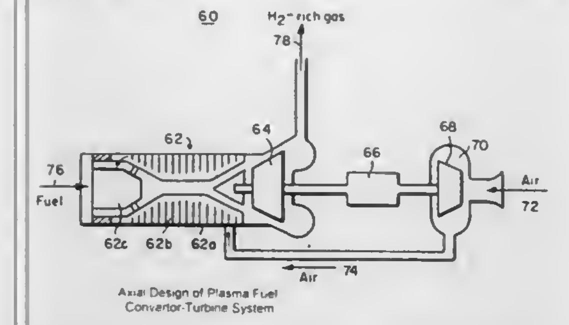


1. A balanced strand comprising a fibrous core about which load bearing fibers are twisted, wherein said fibrous core has an elongation factor of at least 10% and wherein said load bearing fibers have a strength of at least 15 g denier, and wherein said fibrous core occupies approximately up to 30% of the strand material volume and said load bearing fibers occupy substantially the remainder of the strand material volume.

5,852,927
INTEGRATED PLASMATRON-TURBINE SYSTEM FOR THE PRODUCTION AND UTILIZATION OF HYDROGEN-RICH GAS

Daniel R. Cohn, 26 Walnut Hill Rd., Chestnuthill, Mass. 02167; Alexander Rabinovich, 1000 Loring Ave., Apt. C50, Salem, Mass. 01970, and Charles H. Titus, 323 Echo Valley La., Newton Square, Pa. 19073

Filed Aug. 15, 1995, Ser. No. 515,417
Int. Cl.⁶ F01D *15/10;* F02C *3/06*
U.S. Cl. 60—39.05 **5 Claims**

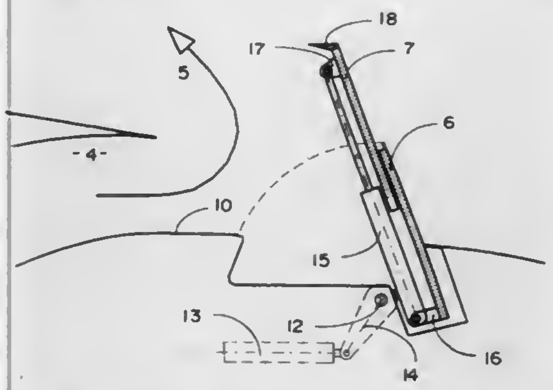


1. An integrated plasmatron-turbine system comprising:
a plasmatron configured to receive hydrocarbon fuel and reform the hydrocarbon fuel into a hydrogen-rich gas;
a turbine connected to the plasmatron and configured to receive the hydrogen-rich gas from the plasmatron, the turbine further configured to convert energy in the hydrogen-rich gas, prior to combustion to produce mechanical power; and
a generator connected to the turbine and configured to produce electricity from the mechanical power produced by the turbine.

5,852,928
THRUST REVERSER WITH EXTENDIBLE PIVOTING BAFFLE

Guy Bernard Vauchel, Le Havre, France, assignor to Societe Hispano-Suiza, Paris, France

Filed May 19, 1997, Ser. No. 859,839
Claims priority, application France, May 23, 1996, 96 06391
Int. Cl.⁶ F02K *1/60*
U.S. Cl. 60—226.2 **7 Claims**

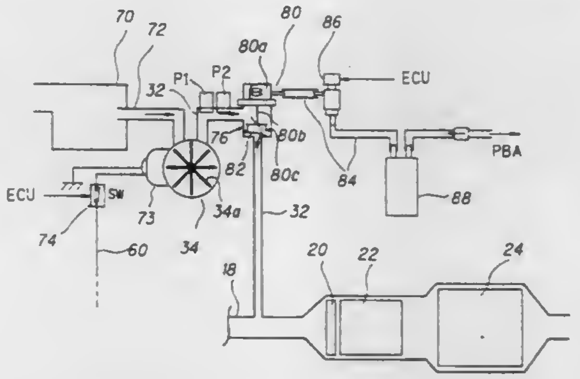


1. A thrust reverser for a turbofan jet engine having a fan cowling with an inner surface and a rear edge, and an engine cowling having an outer surface spaced from the inner surface of the fan cowling so as to form an annular gas flow duct therebetween, the engine cowling extending rearwardly of the rear edge of the fan cowling, the thrust reverser comprising:
a) a first thrust reverser baffle located rearwardly of the rear edge of the fan cowling and pivotally attached to the engine cowling so as to be movable between a forward thrust position wherein a first surface of the first thrust reverser baffle forms a portion of the outer surface of the engine cowling, and a reverse thrust position wherein a first end of the first baffle moves away from the engine cowling such that the first baffle extends into the gas flow from the gas flow duct so as to redirect at least a portion of the gas flow into a reverse thrust direction; and,
b) a second thrust reverser baffle having a second end and movable with respect to the first thrust reverser baffle between a forward thrust position wherein the second end is adjacent to the first end of the first thrust reverser baffle and a reverse thrust position wherein the second end is displaced from the first end in a direction away from the engine cowling, the second thrust reverser baffle located adjacent to and substantially parallel to the first thrust reverser baffle in both the forward and reverse thrust positions.

5,852,929
FAILURE DETECTION SYSTEM OF EXHAUST SECONDARY AIR SUPPLY SYSTEM OF INTERNAL COMBUSTION ENGINE

Hiroaki Kato; Yuichi Shimasaki; Takashi Komatsuda; Takuya Aoki; Hiroaki Muramatsu; Hajime Uto, and Toshiaki Ichitani, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 677,315
Claims priority, application Japan, Jul. 4, 1996, 7-191246
Int. Cl.⁶ F01N *3/20;3/32*
U.S. Cl. 60—274 **18 Claims**



3. A method for detecting a failure of an exhaust secondary air supply system of an internal combustion engine, having:
a catalytic converter installed in an exhaust pipe of an exhaust system of the engine for reducing pollutants from exhaust gases emitted from the engine;
a conduit connected, at one end, to the exhaust pipe at a location upstream of the catalytic converter;
an air pump connected to an opposite end of the conduit for supplying air in the conduit;
a valve provided in the conduit for closing/opening the conduit;
prescribed level setting means for setting a first prescribed level which indicate a pressure below a pressure that opens the valve and a second prescribed level which indicates a second pressure above the pressure that opens the valve; and
a plurality of pressure detectors including at least a first pressure detector which outputs a signal at the first prescribed level and a second pressure detector which outputs a signal at the second prescribed level;

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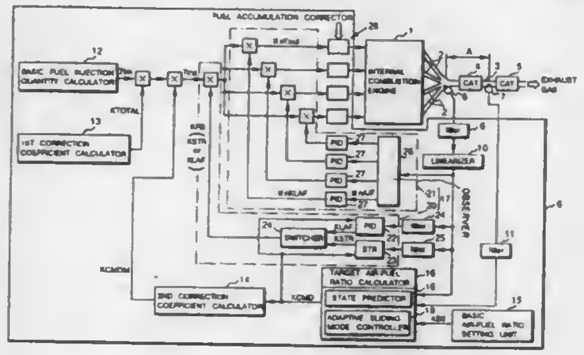
wherein the method comprises the step of:
- detecting a failure occurring at least one of the air pump and the valve based on operation of the air pump and the output of the pressure detectors.

5,852,930
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yuji Yasui; Shusuke Akazaki, and Kohei Hanada, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1997, Ser. No. 833,091
Claims priority, application Japan, Apr. 5, 1996, 8-084047
Int. Cl.^{6} F01N *3/00*
U.S. Cl. 60—276 **17 Claims**


FUEL ACCUMULATION CORRECTOR
BASIC FUEL INJECTION QUANTITY CALCULATOR
INTERNAL COMBUSTION ENGINE
CAT
CAT
EXHAUST GAS
1ST CORRECTION COEFFICIENT CALCULATOR
LINEARIZER
OBSERVER
SWITCHER
TARGET AIR-FUEL RATIO CALCULATOR
2ND CORRECTION COEFFICIENT CALCULATOR
STATE PREDICTOR
ADAPTIVE SLIDING MODE CONTROLLER
BASIC AIR-FUEL RATIO SETTING UNIT
KCMD
12
13
14
15
16
18
26
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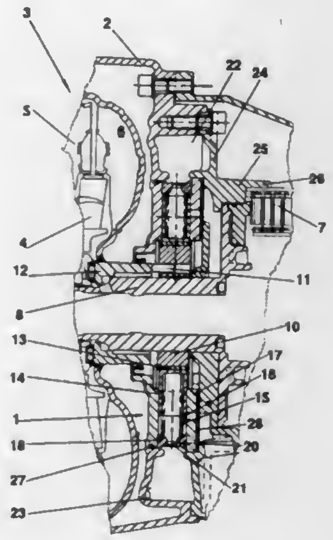
1. An air-fuel control system for use with an internal combustion engine, comprising:
- a catalytic converter disposed in an exhaust system of the internal combustion engine, for purifying an exhaust gas emitted from the internal combustion engine;
- a first exhaust gas sensor disposed in said exhaust system for detecting an air-fuel ratio of the exhaust gas upstream of said catalytic converter;
- a second exhaust gas sensor disposed in said exhaust system for detecting the concentration of a component of the exhaust gas which has passed through said catalytic converter, downstream of said catalytic converter; and
- a control unit for controlling an air-fuel ratio of the internal combustion engine based on outputs from said first exhaust gas sensor and said second exhaust gas sensor, said control unit comprising:
  - adaptive sliding mode control means for determining a correction quantity to correct the air-fuel ratio of the internal combustion engine so as to equalize the concentration of the component of the exhaust gas downstream of said catalytic converter to a predetermined appropriate value, according to an adaptive sliding mode control process based on the output from said second exhaust gas sensor; and
  - feedback control means for controlling a rate at which fuel is supplied to the internal combustion engine so as to converge the concentration of the component of the exhaust gas downstream of said catalytic converter toward said predetermined appropriate value, based on said correction quantity and the output from said first exhaust gas sensor.

5,852,931
AUTOMATIC TRANSMISSION WITH A POSITIVE-DISPLACEMENT PUMP

Michael Reichenmiller, Waldstetten; Gerald Rowe, Lindau; Franz Lacher, Meckenbeuren, and Wolf-Dieter Schmid, Lindau, all of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP95/03850, § 371 Date Apr. 7, 1997, § 102(e) Date Apr. 7, 1997, PCT Pub. No. WO96/11346, PCT Pub. Date Apr. 18, 1996
PCT Filed Sep. 29, 1995, Ser. No. 809,894
Claims priority, application Germany, Oct. 5, 1994, 44 35 593.9
Int. Cl.^{6} F16D *33/00;* F04B *1/04;* F16H *57/04*
U.S. Cl. 60—339 **20 Claims**

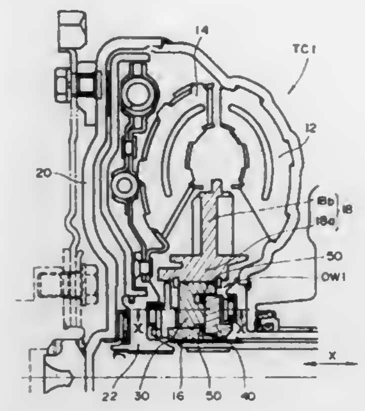


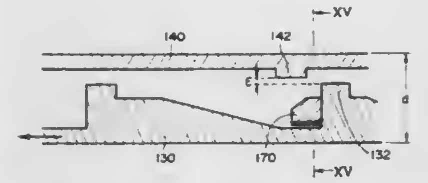
1. An infinitely variable automatic transmission for motor vehicles comprising a positive displacement pump for supplying a hydrodynamic converter provided with a converter housing, a lubricating device and from control and actuating devices of the automatic transmission, a number of control conduits,
- wherein the positive displacement pump has a collecting chamber located radially outside a number of outlet valves, which collecting chamber is an annular chamber and extends around the positive displacement pump;
- wherein the annular chamber which is used as damping chamber is arranged between a pump housing and the converter housing of the converter,
- the improvement comprising that the annular chamber is essentially arranged in a recess of the converter housing and therefore lies essentially outside of the pump housing, and that the annular chamber is limited in size in the axial direction by the converter housing and/or the pump cover.

5,852,932
ONE-WAY CLUTCH MECHANISM OF A TORQUE CONVERTER

Shogo Matsumoto, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1997, Ser. No. 857,000
Claims priority, application Japan, May 17, 1996, 8-123112
Int. Cl.^{6} F16D *33/00*
U.S. Cl. 60—345 **7 Claims**



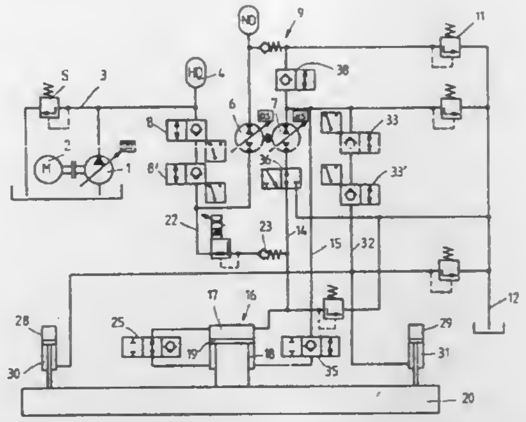


5. A one-way clutch mechanism in a torque converter having a pump impeller which generates a fluid stream, a turbine runner which is rotated by the fluid stream, a stationary shaft, a stator which is arranged between the pump impeller and the turbine runner so as to receive a turning force from the fluid stream, and one-way clutch device for connecting the stator to the stationary shaft when the stator has received the turning force of specified direction from the fluid stream, said one way clutch device comprising:
- an outer race which is assembled on an inner circumferential side of said stator so as to be unrotatable relative to said stator, and which includes a first side face perpendicular to an axis of said torque converter, said first side face being formed with first teeth;
- an inner race which is assembled on an outer circumferential side of said stationary shaft so as to be unrotatable relative to said stationary shaft, and which includes a second side face that is located in opposition to said first side face of said outer race with a predetermined distance held therebetween, said second side face being formed with second teeth;
- an intermediate member which is interposed between said first and second side faces so as to be rotatable relative to both of said side faces; and
- inclined planes which are formed on one of said first side face of said outer race and said second side face of said inner race, a height of said intermediate member being less than a height of the one of said first side face and said second side face; wherein,
  - a rotation of said outer race in one direction is prohibited in such a way that said intermediate member is slid in the other direction along said inclined planes until it comes into contact with both of said first teeth and said second teeth, said other direction being reverse to said one direction; and
  - a rotation of said outer race in said other direction is allowed in such a way that said intermediate member is slidden in said one direction along said inclined planes until it comes away from the teeth of the other of said first side face and said second side face.

5,852,933
HYDRAULIC DRIVES SYSTEM FOR A PRESS

Stefan Schmidt, Lohr am Main, Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Germany

PCT No. PCT/EP95/03604, § 371 Date Jul. 7, 1997, § 102(e) Date Jul. 7, 1997, PCT Pub. No. WO96/11796, PCT Pub. Date Apr. 25, 1996
PCT Filed Sep. 12, 1995, Ser. No. 809,915
Claims priority, application Germany, Oct. 13, 1994, 44 36 666.3
Int. Cl.^{6} B30B *15/16;* F15B *1/00;11/00*
U.S. Cl. 60—413 **12 Claims**

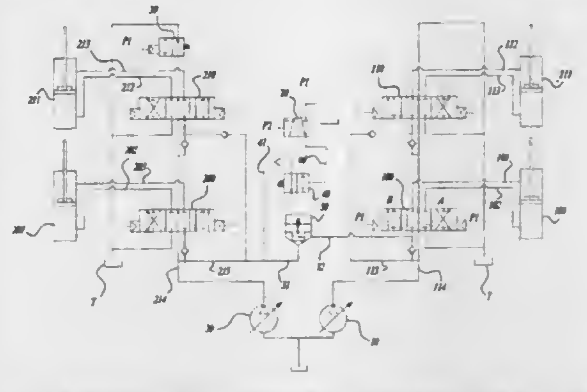


1. A hydraulic drive system for a press, comprising a hydrostatic machine operating as a pump when being driven to maintain an impressed pressure of substantially constant magnitude in a fluid system including a hydraulic accumulator, further comprising a hydraulic transformer including a first hydrostatic machine of variable capacity and operating either as the motor or as a pump which first hydrostatic machine is connected to the fluid system, and a second hydrostatic machine of variable capacity and operating as a motor or as a pump which second hydrostatic machine is mechanically connected to said first machine, and a press cylinder including a pair of cylinder chambers which are hydraulically connected to both hydraulic ports of said second hydrostatic machine, characterized in that said fluid system (**3**,**4**) is hydraulically connected to both cylinder chambers (**17**,**18**) of the press cylinder (**16**) to subject both cylinder chambers to a biasing pressure corresponding to the pressure prevailing in said fluid system of substantially constant pressure.

5,852,934
FLUID JOINING DEVICE FOR POWER CONSTRUCTION VEHICLES

Tae Seung Chung, Pusan, and Yeon Ho Kim, Changwon, both of Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Rep. of Korea

Filed Dec. 10, 1996, Ser. No. 762,968
Claims priority, application Rep. of Korea, Mar. 30, 1996, 1996-9635
Int. Cl.^{6} F16D *31/02*
U.S. Cl. 60—421 **6 Claims**



1. A fluid joining device for power construction vehicles, comprising a first main pump connected to one or more first directional control valves in parallel and supplying pressurized fluid to one or more first actuators through the first directional control valves, a second main pump connected to one or more second directional control valves in parallel and supplying pressurized fluid to one or more second actuators through the second directional control valves, a first confluent line extending from a first center bypass line of the first pump, a second confluent line extending from a parallel line of the second pump, a logic valve connecting the first and second confluent lines together and normally closing the confluent lines but selectively opening the confluent lines in

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response to a pilot pressure, a first pilot line extending from the second confluent line at a position before the logic valve and selectively applying the pilot pressure to the logic valve, and a first pilot line control valve mounted to the first pilot line and normally opening the first pilot line but selectively closing the pilot line in response to a pilot pressure thereby selectively intercepting the pilot pressure supplied to the logic valve, further comprising:

a bypass line control valve mounted to a second center bypass line of said second pump at a position where the second bypass line completely passes through the second directional control valves, said bypass line control valve normally opening the second center bypass line but selectively closing the second center bypass line in response to a pilot pressure; and

a second pilot line control valve mounted to a second pilot line and controlling said second pilot line in response to an outside signal, said second pilot line extending from the first pilot line control valve and selectively driving the first pilot line control valve.

5,852,935

CONTROL VALVE

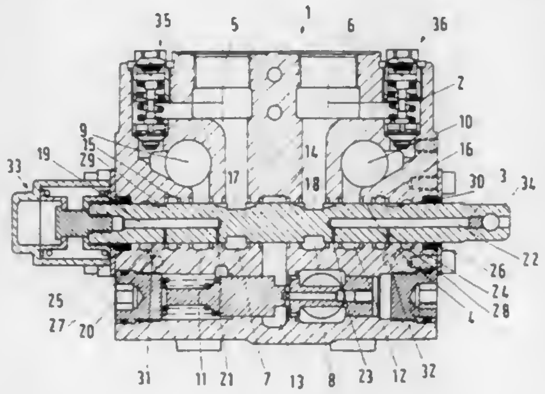
Carsten Christensen, Broager, and Carl Christian Dixen, Sydals, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Sep. 18, 1997, Ser. No. 933,439

Claims priority, application Germany, Sep. 28, 1996, 196 40 103.8

Int. Cl.^{6} F15B *13/02*

U.S. Cl. 60—452 **5 Claims**



1. Control valve with a housing having a pump connection, a tank connection device, a working connection device and a load pressure connection device, each connected with a respective opening device in a control surface and with a slide, arranged movably in the housing and co-operating with the control surface, the slide having grooves and/or channels so that it connects or separates predetermined opening devices with/from each other in dependence of their position, and including an auxiliary tank connection device, the auxiliary tank connection device being connected with an auxiliary tank opening device in the control surface, and the slide having an auxiliary tank pipe or groove, which, in its neutral position, connects the auxiliary tank opening device with a load pressure opening device.

5,852,936

PRESSURE MEDIUM ACTUATED OPERATING DEVICE

Gabor Bellak, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

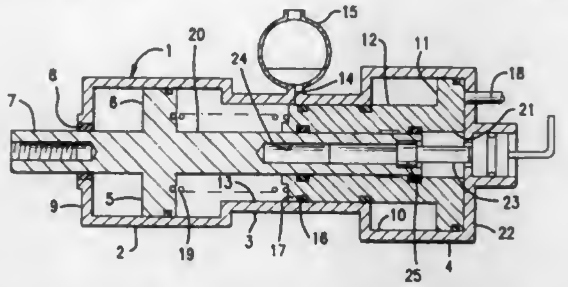
PCT No. PCT/SE95/01498, § 371 Date Jul. 10, 1997, § 102(e) Date Jul. 10, 1997, PCT Pub. No. WO96/18517, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 12, 1995, Ser. No. 849,850

Claims priority, application Sweden, Dec. 13, 1994, 9404346

Int. Cl.^{6} B60T *17/22*

U.S. Cl. 60—534 **9 Claims**



1. Pressure medium actuated control device, comprising a cylinder with a cylinder chamber, at least first and second piston elements displaceable relative to each other in the cylinder chamber, a first piston rod which is joined to the first piston element and which protrudes out of the cylinder chamber, and a pressure medium reservoir opening into a portion of the cylinder chamber located between the piston elements, the second piston element having an end portion sealing against a wall of the cylinder chamber which, in a rest position of the piston element, permits communication between the reservior and the cylinder chamber and which, after initial movement of the second piston element, breaks said communication to enclose a pressure medium volume between the piston elements, wherein the first piston element **(6)** is joined to a second piston rod **(20)**, which is totally within the cylinder chamber and directed oppositely to the first piston rod **(7)** and sealing projects into a through-bore **(21)** in the second piston element **(11)**, and wherein a position sensor **(23,25)** is arranged to sense the position of the first piston element **(6)** relative to the cylinder **(1)**, said sensor comprising a first sensor element in the form of an elongated body **(23)** which extends past the distal end of the second piston rod and parellel therewith and cooperates with a second sensor element **(25)**, one said sensor elements being fixed relative to the cylinder while the other of said sensor elements is fixed relative to the second piston rod.

5,852,937

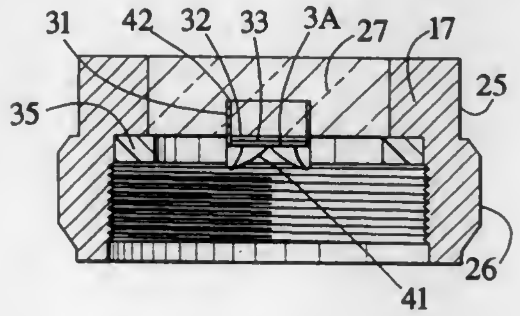
INDICATOR CAP AND METHOD OF MANUFACTURE THEREOF

Gary Westermeyer, Bluffs, and Sean M. Fink, Springfield, both of Ill., assignors to AC&R Components, Inc., Chatham, Ill.

Filed Mar. 12, 1997, Ser. No. 815,200

Int. Cl.^{6} F25B *49/02*

U.S. Cl. 62—125 **18 Claims**



1. A sight glass assembly comprising:

an in-line connector body comprising two opposing ends with a through passageway extending therebetween, the connector body further comprising a central opening disposed between the two opposing ends for attachment to an indicator cap,

the indicator cap comprising a lower sleeve portion for attachment to the central opening of the connector body and an upper sleeve portion for accommodating a sight glass,

the sight glass comprising an inward facing surface that is fixedly connected to a retaining tube that extends from the sight glass into the lower sleeve portion,

the retaining tube accommodating indicator material, the retaining tube being held in place in the lower sleeve portion by the sight glass.

5,852,938

FREEZING APPARATUS FOR LIQUID-FILLED PIPELINES

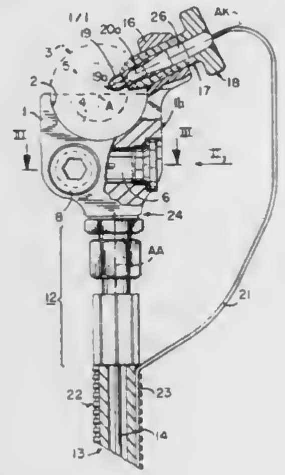
Jürgen Fuhr, Kelkheim; Rudolf Herrgen, Wermelskirchen; Michael Nolle, Kelkheim-Fischbach, and Thilo Weber, Karben, all of Germany, assignors to Rothenberger Werkzeuge AG, Frankfurt am Main, Germany

Filed Jun. 17, 1997, Ser. No. 877,594

Claims priority, application Germany, Jun. 19, 1996, 196 24 462.5; Mar. 14, 1997, 197 10 566.1

Int. Cl.^{6} F25D *3/00*

U.S. Cl. 62—129 **12 Claims**



1. Apparatus for freezing a liquid-filled pipeline using a vaporizable refrigerant conducted in a circuit, said apparatus comprising: a contact body having a partially cylindrical contact surface **(2)** adapted to engage with the pipeline **(3, 5)** and having expansion chambers **(6, 7)** connected fluidically in series for the evaporation of the refrigerant, a hose **(13)** for carrying away the evaporated refrigerant being connected to the contact body **(1)**, a capillary line **(14)** supplying the liquid refrigerant extending through the hose **(13)** and into the contact body:

(a) the hose **(13)**, with the capillary line **(14)** passing through it, being connected with a connecting portion **(24)** of the contact body **(1)** in a direction normal to a surface line of the contact surface **(2)**; and

(b) the contact body **(1)** having a projection **(16)** adjacent the contact surface **(2)**, said projection supporting a clamping spindle **(17)** adapted to attach the contact body **(1)** to the pipeline **(3, 5)**, the spindle carrying a temperature sensor **(20, 20*a*)**, which is brought by the clamping process into thermal contact with the pipeline **(3, 5)** on the side of the contact body **(1)** distal to the connecting portion **(24)**.

5,852,939

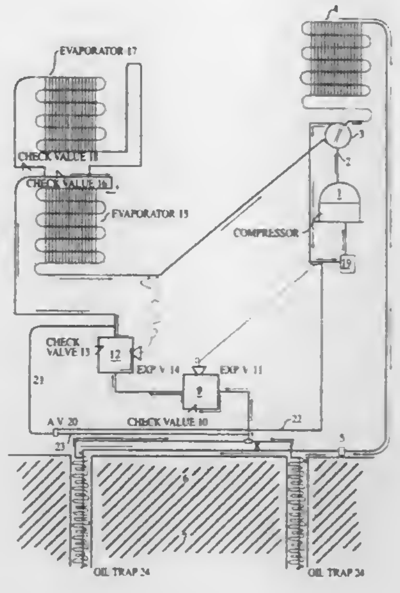
HEATING AND AIR CONDITIONING DEVICE USING GEOTHERMAL HEAT EXCHANGE

Jimmy Gazes, 803 O'Sullivan Dr., Mt. Pleasant, S.C. 29464

Filed May 2, 1997, Ser. No. 850,848

Int. Cl.^{6} F25B *13/00*

U.S. Cl. 62—260 **4 Claims**



1. A heating and air conditioning device using geothermal heat exchange, comprising:

a. a compressor means for compressing and circulating a refrigerant;

b. a first indoor heat exchange coil which receives refrigerant in the heating and cooling cycle for heat exchange between said refrigerant and inside air;

c. a second indoor heat exchange coil which receives refrigerant in the heating cycle only for heat exchange between said refrigerant and inside air;

d. at least one outside ground coil which extends generally vertically below a surface of earth, wherein said at least one outside ground coil is surrounded by said earth, and said refrigerant is transported by said compressor means into said at least one outside ground coil for heat exchange between said refrigerant and said earth surrounding said at least one outside ground coil;

e. a valve which is positioned between said first indoor heat exchange coil and said second indoor heat exchange coil, wherein said valve is closed when said refrigerant flows in the cooling cycle and is open when said refrigerant flows in the heating cycle.

5,852,940

AIR SEPARATION

Paul Higginbotham, Guildford, and John Douglas Oakey, Godalming, both of England, assignors to The BOC Group plc, Surrey, England

Filed Sep. 18, 1997, Ser. No. 932,456

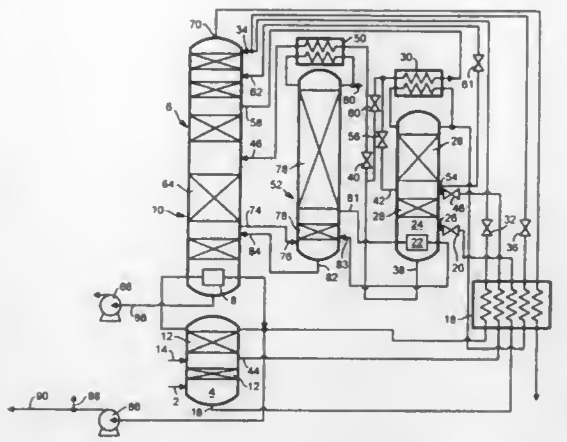
Claims priority, application United Kingdom, Sep. 20, 1996, 9619717

Int. Cl.^{6} F25J *3/00*

U.S. Cl. 62—653 **11 Claims**

1. A method of separating air, comprising:

separating in a double rectification column, comprising a higher pressure rectification column and a lower pressure rectification column, a flow of vaporous feed air into an oxygen-rich fraction and a nitrogen-rich fraction;



separating in a side rectification column a vaporous argon fraction from an argon-containing oxygen vapour stream withdrawn from a first intermediate region of the lower pressure rectification column;
taking a first oxygen-enriched liquid air stream is taken from the higher pressure rectification column;
introducing a stream of oxygen-enriched vapour into a second intermediate region of the lower pressure rectification column where the mole fraction of oxygen in the vapour phase is less than that in the first intermediate region;
introducing a stream of liquid comprising oxygen and nitrogen to an intermediate pressure rectification column operating at a pressure less than the pressure at the top of the higher pressure rectification column but greater than the pressure at the bottom of the lower pressure rectification column;
separating an oxygen-depleted vapour is separated in the intermediate pressure rectification column;
condensing said oxygen depleted vapour;
taking a second oxygen-enriched liquid air streamfrom the intermediate pressure rectification column;
forming at least part of the said oxygen-enriched vapour stream by at least partially vaporising at least one of the first and second oxygen-enriched liquid air streams;
creating a vapour flow through the intermediate pressure rectification column by operation of a reboiler heated by vapour withdrawn from at least one of the side rectification column and a section of the lower pressure rectification column extending from the first intermediate region to the second intermediate region, and where at least part of the first oxygen-enriched liquid air stream flows to the intermediate pressure rectification column the mole fraction of oxygen in the second oxygen-enriched liquid air stream is less than or equal to that in the first oxygen-enriched liquid air stream but greater than that in the said stream of liquid comprising oxygen and nitrogen.

5,852,941
METHOD OF PRODUCING A STARTING MATERIAL FOR PRODUCING BIOLOGICALLY DEGRADABLE SACKS AND BAGS

Egon Wurr, Rheine, Germany, assignor to Natura Verpackungs GmbH, Salzbergen, Germany

, PCT Pub. No. WO96/32240, PCT Pub. Date Oct. 17, 1996

PCT Filed Dec. 12, 0, Ser. No. 750,582

Claims priority, application Germany, Apr. 12, 1995, 195 13 808.2

Int. Cl.^{6} D04B *39/00*

U.S. Cl. 66—170 **8 Claims**

1. A method for producing biodegradable woven or knit webs or mesh hoses from a foil material comprising a modified starch and having a softening point between about 60° C. and about 80° C., wherein said foil material has a thickness of between about 10 µm and about 350 µm, and wherein said method comprises the following steps:
subjecting said foil material to a relative humidity between 45% and 65%;
slitting said foil material into small foil strips;
stretching said small foil strips while heating said strips to a temperature between about 30° C. to about 70° C., at a stretching ratio between about 1:3 to about 1:10, and at a relative humidity between about 45% and about 65%;
cooling said stretched small foil strips to room temperature; and
processing said cooled stretched small foil strips into a woven or knit web or mesh hose.

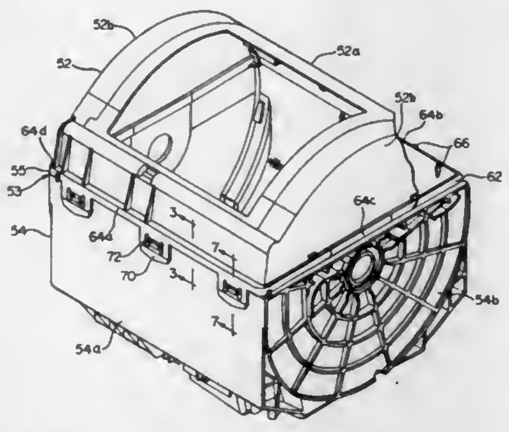
5,852,942
AUTOMATIC WASHER AND TUB THEREFOR

Brenner M. Sharp, St. Joseph, Mich., and Jean-Paul D. Merlin, Saveuse, France, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 4, 1996, Ser. No. 707,789

Int. Cl.^{6} D06F *1/10*

U.S. Cl. 68—3 R **23 Claims**



15. An automatic clothes washer comprising:
a tub defining a chamber adapted to receive a wash basket, the tub comprising an upper tub member and a lower tub member, the upper tub member having a pan-like body with a first peripheral rim, the lower tub member having a pan-like body with a second peripheral rim corresponding to the first peripheral rim;
first and second spaced circumferential walls connected by a transverse circumferential wall are formed in the first peripheral rim to define a U-shaped channel;
a circumferential flange with opposing sides corresponding to the first and second circumferential walls is formed in the second peripheral wall and the circumferential flange sized to be received in the U-shaped channel; and
at least one protrusion extending from one of the side wall and corresponding opposing side a sufficient distance to abut the other of the side wall and corresponding side to provide an interference connection between the upper tub member and the lower tub member.

5,852,943
DOOR LOCK MECHANISM FOR AN AUTOMOTIVE VEHICLE

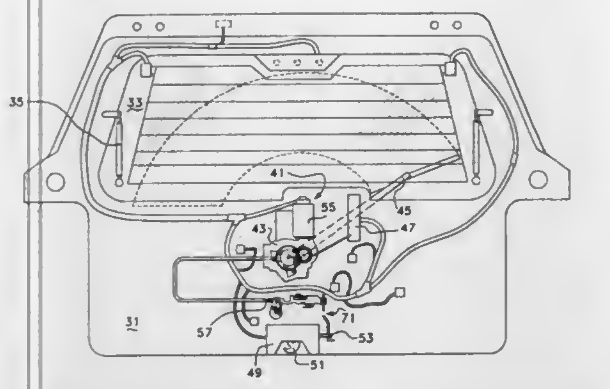
Harry F. Dutka, Taylor, and Ronald L. Merckling, Macomb Township, both of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed May 6, 1996, Ser. No. 642,765

Int. Cl.^{6} E05B *65/12*

U.S. Cl. 70—237 **9 Claims**

1. An apparatus for use in an automotive vehicle, said apparatus comprising:
a door lock control member linearly movable between a locked position and an unlocked position, said door lock control member further pivotable between a nominal latching position and an unlatching position;



a cam follower projecting from said control member;
a body rotatable about a pivot point; and
a tab extending from said body, said tab further being offset from said body;
means for pivoting said control member from said nominal latching position to said unlatching position when said body is manually rotated, said pivoting means pivoting said control member even when said control member is disposed in said locked position
a camming surface of said tab operably moving said cam follower and said control member, said camming surface being substantially perpendicular to a linear axis along which said control member slides between said locked and unlocked positions; and
a continuously closed internal edge defining and completely surrounding an elongated slot being disposed within said tab and including said camming surface.

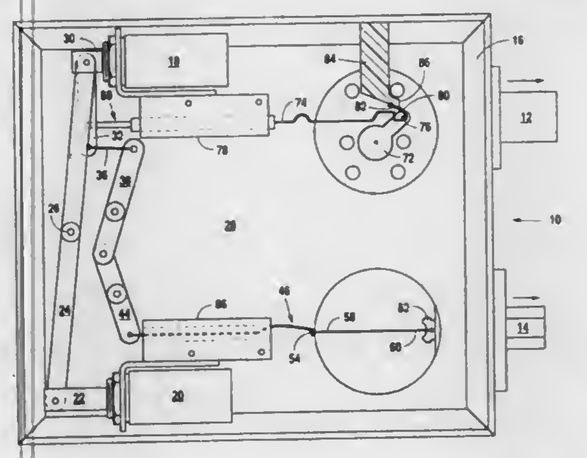
5,852,944
REMOTELY CONTROLLED DOOR LOCK

Thomas H. Collard, Jr., and Larry D. Pechacek, both of San Antonio, Tex., assignors to Stephen C. Cohen, San Antonio, Tex.

Filed Apr. 18, 1997, Ser. No. 844,030

Int. Cl.^{6} E05B *59/00*

U.S. Cl. 70—278 **5 Claims**



1. A remotely controllable locking mechanism for a combination key-operated deadbolt lock and latching lock comprising:
a housing;
a first locking solenoid mounted within said housing;
a second unlocking solenoid mounted within said housing;
a pivoting lever attached at a first end to said first locking solenoid, attached at a second end to said second unlocking solenoid, and pivotally attached at a mid-portion to said housing;
a bolting lever attached at a first end to said first locking solenoid, attached at a second end to a first end of a latch link wire, and attached at generally a mid-point to a first end of a bolt arm, said bolt arm adapted to be attached to a bolt rotation member of said deadbolt lock;
a direction changing link attached at a first end to a second end of said latch link wire and pivotally attached to said housing;
a latching lever pivotally attached to said housing and attached at a first end to a second end of said direction changing link and attached to a latch pull arm, said latch pull arm adapted to be attached to a latching member of said latching lock; and
a remote control unit for activating said first locking solenoid and said second unlocking solenoid to lock and unlock said deadbolt lock and said latching lock.

5,852,945
APPARATUS FOR FORMING ROD-LIKE COMPONENTS

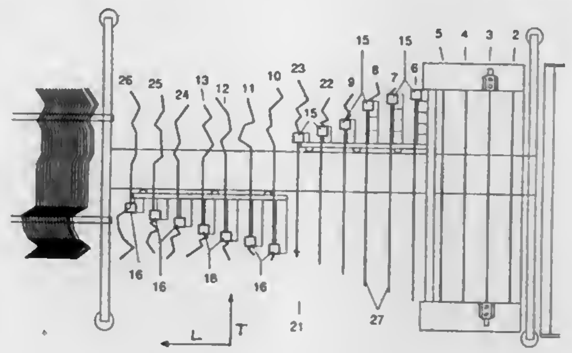
Georg Burger, Obere Wank, D-87484 Nesselwang, Germany

Filed Jul. 23, 1997, Ser. No. 899,221

Claims priority, application Germany, Jul. 25, 1996, 196 30 023.1

Int. Cl.^{6} B21D *7/022*

U.S. Cl. 72—306 **16 Claims**



1. Apparatus for forming and for bending rod-shaped components and sections of pipe comprising
clamping units that are rotatable and are positioned to move longitudinally along a length of the apparatus and to move transversely along a width of the apparatus;
at least two bending units that are located in separate processing stations on different sides of the clamping units and said bending units are rotatable;
wherein each clamping unit has two clamping jaws and each of said clamping jaws is pivoted on one side; and
wherein an adjustment unit engages each of said two clamping jaws and adjusts the position of said`clamping jaws in relation to each other.

5,852,946
METHOD AND APPARATUS FOR DETECTING FLUID LEVEL

Bruce Cowger, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 15, 1996, Ser. No. 698,719

Int. Cl.^{6} G01F *23/292;* **B41F** *31/02*

U.S. Cl. 73—293 **23 Claims**

16. A fluid level detector for providing a signal indicative of fluid level in a flexible fluid container, the fluid level detector comprising:
a first light conduit portion for providing light to fluid within the fluid container and a second light conduit portion for receiving light provided by a light source;
a base member; and
first and second paddle members linked to the first and second light conduit portions, the first and second paddle members

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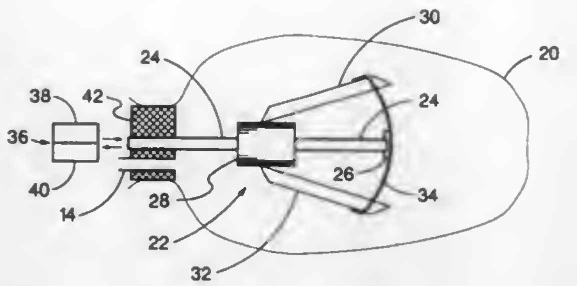


being movably attached to the base member, the first and second paddle members having a first position biased outwardly in opposition associated with a container fill condition and a second position compressed inwardly toward each other associated with a fluid container low condition wherein a light path length between the first and second light conduit portions through container fluid is a first length associated with the first position and a second length, different from the first length associated, with the second position.

5,852,947

MAIN SHAFT GEAR MECHANISM IN A TRANSMISSION FOR A VEHICLE

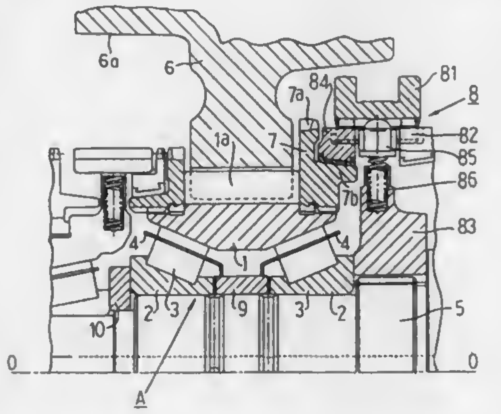
Takashi Tsujimoto, Yokaichi, and Mamoru Mizutani, Kuwana, both of Japan, assignors to NTN Corporation, Osaka-Fu, Japan

Filed Feb. 24, 1997, Ser. No. 804,040

Claims priority, application Japan, Feb. 28, 1996, 8-041796; Nov. 28, 1996, 8-317958

Int. Cl.⁶ F16D *23/06;* **F16C** *33/46;33/36*

U.S. Cl. 74—339 **10 Claims**



1. A main shaft gear mechanism in a transmission for a vehicle comprising:

a sub shaft adapted to be interlocked with an engine side input shaft for a vehicle;

a sub shaft gear attached to said sub shaft;

a main shaft adapted to be interlocked with a drive wheel side output shaft;

a main shaft gear integrally having a tooth section always meshed with said sub shaft gear and having a double row raceway surface at the inner circumference thereto;

a pair of bearing inner rings being fitted in the outer circumference of said main shaft and respectively having a raceway surface on the outer circumference thereof;

double-row tapered rollers being disposed between the double-row raceway surface of said main shaft gear and the raceway surface of said pair of bearing inner rings and being retained by a cage at an appointed interval of the circumference;

an unbalancing means for causing an assembly consisting of each row of rollers and said cage to be weight-unbalanced;

a clutch gear connected to said main shaft gear; and

a synchronization mechanism for transmitting or interrupting engine torque between said main shaft gear and said main shaft via said clutch gear.

5,852,948

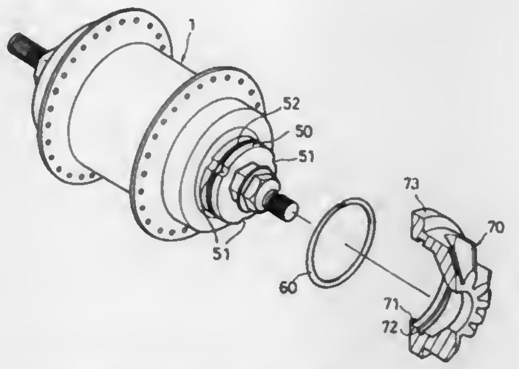
WHEEL HUB AND TRANSMISSION GEAR ARRANGEMENT OF A CHAINLESS TRANSMISSION MECHANISM FOR A BICYCLE

Chen-Ching Chang, 3/F., No. 37, Jih-Hsin St., Shu-Lin Town, Taipei County, Taiwan

Filed Feb. 20, 1997, Ser. No. 803,505

Int. Cl.⁶ F16H *1/14*

U.S. Cl. 74—417 **4 Claims**



1. A chainless transmission system comprising:

(a) a wheel hub assembly including an axle block having formed therein a circumferentially extended first annular groove;

(b) a transmission gear coaxially coupled to said axle block, said transmission gear including a toothed portion and an annular base portion, said annular base portion having formed therein a second annular groove, said annular base portion having formed thereon at least one radially directed projecting block segment for lockingly engaging said wheel hub assembly axle block; and,

(c) a split binding ring coaxially captured between said transmission gear and said axle block for the relative axial retention thereof, said split binding ring engaging said first and second annular grooves.

5,852,949

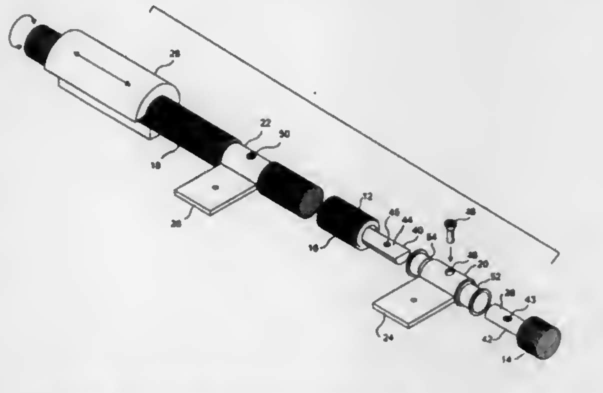
SEGMENTED SCREW TRAVERSING MECHANISM

Peter T Cartensen, Adirondack, N.Y., assignor to Thermo Fibertek Inc., Waltham, Mass.

Filed Jul. 30, 1996, Ser. No. 688,499

Int. Cl.⁶ F16H *25/24*

U.S. Cl. 74—424.8 A **6 Claims**



1. A linear traversing apparatus comprising:

a lead screw along a longitudinal axis of rotation, at least a portion of said lead screw being threaded;

said lead screw is formed of a plurality of externally threaded lead screw segments;

axial ends of said externally threaded lead screw segments include flanges which are coupled to flanges of axially adjacent externally threaded lead screw segments by means preventing axial movement therebetween;

an axial length of said flanges is chosen to maintain continuous thread pitch between adjacent lead screw segments;

said flanges being semi-cylindrical with a substantially planar face along which said longitudinal axis of rotation of said lead screw passes;

respective said planar faces of said adjacent lead screw segments being placed against each other and being rotationally maintained by a plurality of fixed support devices engaging said lead screw along a span of said lead screw, respective said planar faces allowing at least one of said lead screw segment to be separately inserted into or removed from a corresponding support device free of requiring insertion or removal of an adjacent lead screw segment from said corresponding support device;

said support devices including hollow cylindrical portions in which said flanges are inserted for rotationally maintaining respective planar faces of adjacent screw segments therein so as to provide for rigidity and a substantially tight engagement therebetween which provides for a torsional force to be conveyed between adjacent lead screw segments and;

a spanning nut with threads engaging a portion of a circumference of said lead screw, said portion of the circumference being sized to allow said spanning nut to axially traverse said threaded lead screw free of obstruction by said support devices in response to rotation of said lead screw in combination with inhibition of rotation of said spanning nut.

5,852,950

CAM DEVICE HAVING BACKLASH REVERSAL SUPPRESSION MEANS

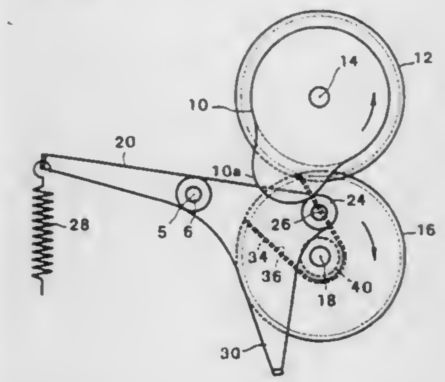
Yasushi Kuratani, Inashiki-gun, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Jun. 6, 1996, Ser. No. 656,964

Claims priority, application Japan, Jun. 13, 1995, 7-170306

Int. Cl.⁶ F16H *1/00;57/00;* **B41F** *13/00*

U.S. Cl. 74—440 **4 Claims**



1. A cam device of a stencil printer having a cylindrical printing drum and a press roller, said printing drum having a raised base portion at a part of the circumference thereof for mounting a leading edge of a stencil sheet, said cam device comprising a rotary cam adapted to be driven to rotate about a rotation axis thereof, a cam follower adapted to be shifted by said cam for selectively biasing said press roller relative to said printing drum, an elastic biasing means for applying an elastic biasing force to said cam follower, a gear train for rotationally driving said printing drum, said gear train including at least first and second mutually meshing gear wheels, said rotary cam being driven via said gear train so as to cyclically repeat a first phase of operation corresponding to a first relative rotation between said first and second gear wheels in which said cam positively drives said cam follower against said elastic biasing force applied thereto by said elastic biasing means for biasing said press roller away from said printing drum not to interfere with said raised base portion when said raised base portion traverses in front of said press roller and a second phase of operation corresponding to a second relative rotation between said first and second gear wheels in which said cam is positively driven by said cam follower under the application of said elastic biasing force, and a backlash reversal suppression means including a gear sector superposed on one of said first and second gear wheels and fixed thereto so as to maintain a predetermined angular relationship thereto, said gear sector having substantially a same gear tooth shape as a gear tooth shape of said one gear wheel to which superposed and being adapted to engage with the other of said first and second gear wheels only in said second phase of operation corresponding to said second relative rotation between said first and second gear wheels so as to suppress a backlash in the mutual meshing of said first and second gear wheels from being impulsively reversed by said biasing force of said biasing means during transition from said first phase of operation to said second phase of operation.

5,852,951

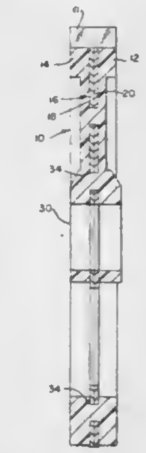
COMPOSITE GEAR AND METHOD OF MAKING SAME

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 635,298, Apr. 19, 1996, abandoned, which is a continuation-in-part of Ser. No. 317,323, Oct. 4, 1994, abandoned. This application Oct. 1, 1997, Ser. No. 941,217

Int. Cl.⁶ F16H *55/14*

U.S. Cl. 74—443 **22 Claims**



1. A composite gear, comprising:

a rigid body including at least one lamination having rigid gear teeth portions on a periphery thereof and having a plurality of apertures therein, and having first and second opposed sides;

a first layer of a thermoplastic material molded on said first side of said rigid gear teeth portions, said first layer having first compressible gear teeth portions which are adjacent said rigid gear teeth portions; and

a second layer of said thermoplastic material molded on said second side of said rigid gear teeth portions and anchored to said first layer by thermoplastic material that flowed through said apertures, said second layer having second compressible gear teeth portions which are adjacent to said rigid gear teeth portions, wherein said first compressible gear teeth portions and said second compressible gear teeth portions are molded such that they extend outwardly from said rigid gear teeth portions in circumferential and radial directions of said gear a distance selected such that overmolding of the rigid gear teeth portions is prevented.

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5,852,952

BUFFER DEVICE FOR TRANSMISSION OPERATING BOOSTER

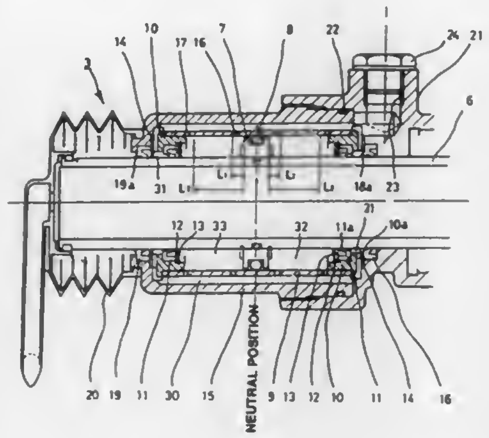
Isao Okamoto; Jun Kajinami, both of Ageo, and Kazunari Imasato, Yono, all of Japan, assignors to Nissan Diesel Motor Co., Ltd., and Sanwa Seiki Ltd., both of Saitama-ken, Japan

Filed Feb. 11, 1997, Ser. No. 798,948

Claims priority, application Japan, Mar. 29, 1996, 8-077437

Int. Cl.^{6} F16H *9/14;* F16J *15/32*

U.S. Cl. 74—473.11 **10 Claims**



1. An apparatus for operating a transmission comprising a booster for boosting the transmission operation force, and a buffer device for suppressing a rapid shift-change operation caused by a change in the load due to the damper action of a hydraulic damper mechanism, wherein said damper mechanism comprises a damper chamber and an orifice via which an operation fluid flows into and out of the damper chamber, by-passing through which the operation fluid flows into said damper chamber by-passing said orifice, and a sealing member interposed in said by-pass, said sealing member having a sealing portion to seal said by-pass under normal conditions inclusive of when the operation fluid flows out from said damper chamber and to be deformed for releasing the seal only when the operation fluid flows into said damper chamber.

5,852,953

SHIFTING DEVICE FOR A TRANSMISSION OF MOTOR VEHICLES

Metin Ersoy, Walluf, Germany, assignor to Lemförder Metallwaren AG, Stemwede-Dielingen, Germany

Filed Mar. 4, 1997, Ser. No. 810,757

Claims priority, application Germany, Mar. 8, 1996, 196 08 981.6

Int. Cl.^{6} F16H *55/10*

U.S. Cl. 74—473.12 **17 Claims**

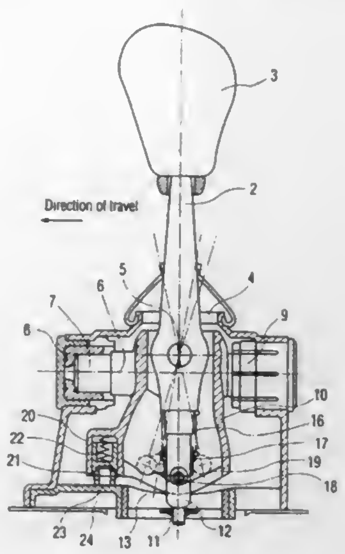
1. A shifting device for a transmission of motor vehicles, comprising:

a gearshift selector lever;

a shift lever duct with a duct opening, said selector lever being pivotable within said shift lever duct around a selector axis located deeper than said duct opening;

spring loaded locking means for providing spring forces acting at right angles to said duct opening for holding said shift lever in at least one of a plurality of shift positions, said shift positions being disposed laterally offset in relation to one another, said shift lever being manually pivotable in a shift position associated with the automatic shifting for the stepwise shifting of the gears of the transmission;

a plurality of sensors, each sensor being disposed adjacent to a shifting position; and



a control lug provided with signal surfaces, said gearshift selector lever being coupled with said control lug, said control lug being movable to locations with at least one of said signal surfaces disposed adjacent to one of said sensors, wherein at least one of said sensors transmit a signal corresponding to a shift position of said gearshift lever to a control unit of the transmission.

5,852,954

BICYCLE CRANK ARM PARTS/ASSEMBLY AND ASSEMBLY TOOLS

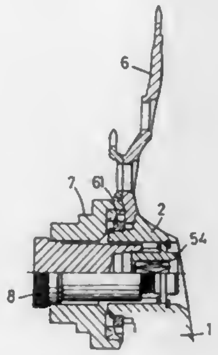
Masahiro Yamanaka, Izumisano, Japan, assignor to Shimano, Inc., Osaka, Japan

Division of Ser. No. 687,203, Jul. 25, 1996. This application Jul. 11, 1997, Ser. No. 890,690

Claims priority, application Japan, Aug. 4, 1995, 7-219835; Feb. 8, 1996, 8-046657

Int. Cl.^{6} C22B *26/00;* B25B *13/48*

U.S. Cl. 74—594.1 **4 Claims**



1. A tool for fixing a crank axle (5) to a bicycle frame (10), the crank axle (5) being of the type including an axle body having a plurality of splines (51) disposed at a first end thereof, the tool comprising:

a tool-mount member (71) shaped to be held and turned by a second tool;

wherein the tool-mount member (71) defines an opening (75) for receiving the first end of the axle body therethrough; and

an operating member (73) one-piece with the tool-mount member (71) and having a plurality of splines (74) extending radially inwardly from an inside surface thereof.

5,852,955

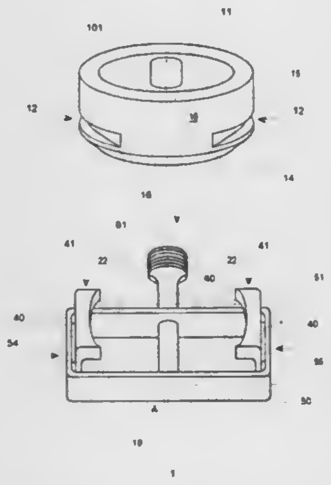
CLIPLESS BICYCLE PEDAL SYSTEM

William E. Crisick, 3593 Whitehaven Dr., Walnut Creek, Calif. 94598, and David F. Ortega, 206 Alameda de las Pulgas, Redwood City, Calif. 94062

Continuation-in-part of Ser. No. 548,457, Oct. 26, 1995, abandoned. This application Feb. 21, 1997, Ser. No. 803,760

Int. Cl.^{6} G05G *1/14*

U.S. Cl. 74—594.6 **11 Claims**



1. A clipless bicycle pedal system for releasably attaching a bicyclist's shoe to a bicycle, said clipless bicycle pedal system comprising:

a pedal body rotatably mounted on an axle, said axle being removably attached to a crank arm of a bicycle, said pedal body having a center, a leading edge and a trailing edge, and having a first and a second surface; and

a cleat comprising a cylindrical portion having a plurality of fractionally cylindrical slots of predetermined first arc length formed therein, and having mounting means for affixing said cleat to a bicycling shoe and a vertical axis coincident with the arc center of the cylindrical slots; and

a plurality of engaging mechanisms disposed on either or both of said first and second surfaces, each of said engaging mechanisms comprising a tongue and an urging means, said tongue having a fractionally cylindrical portion of predetermined second arc length, said tongue cooperating with said urging means and being adapted to resile into and be removably seated in one of said slots in said cleat under the influence of said urging means; and

wherein the tongue fractionally cylindrical portions combine and cooperate with said fractionally cylindrical slots to releasably capture said cleat on the pedal and allow said cleat to rotate about said vertical axis up to plus or minus a predetermined angle, thereby providing pedal float, and wherein said cleat will be released from the pedal when said cleat is rotated to an angle greater than said predetermined angle.

5,852,956

BICYCLE PEDAL ASSEMBLY HAVING A ROTATABLE CLEAT ENGAGING UNIT MOUNTED THEREON

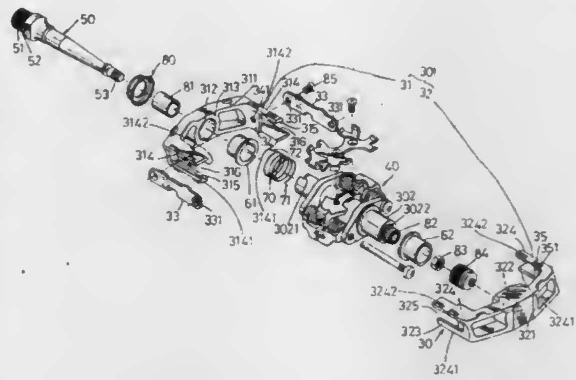
Chung-I Chen, No. 3, Kung-Chi Rd., Yu-Shih Industrial Dist., Ta-Chia Chen, Taichung Hsien, Taiwan

Filed Apr. 10, 1997, Ser. No. 837,243

Claims priority, application Taiwan, Feb. 1, 1997, 86201818

Int. Cl.^{6} G05G *1/14*

U.S. Cl. 74—594.6 **2 Claims**



1. A bicycle pedal assembly comprising:

a pedal body including a rectangular frame portion and a tubular portion with first and second ends which partition said frame portion in a transverse direction, said tubular portion having a cleat engaging unit fixed thereto;

a coil spring member interconnecting said frame portion and said first end of said tubular portion to position revertably said cleat engaging unit at a predetermined angle with respect to said frame portion of said pedal body; and

a pedal shaft extending through said coil spring member and said tubular portion so that said frame portion of said pedal body is rotatable about said pedal shaft, said pedal shaft having a first end which extends beyond said frame portion and a second end which engages rotatably said tubular portion adjacent to said second end of said tubular portion,

wherein said frame portion has first and second U-shaped members and a pair of connecting plates, each of said first and second U-shaped members having two arm portions, said arm portions of said first and second U-shaped members being connected detachably to one another by said connecting plates, and

wherein said tubular portion has a bearing mounted therein, said pedal shaft extending through said bearing in said tubular portion, each of said first and second U-shaped members having a base portion which interconnects said arms portions thereof, said base portion of said first arm having a central through hole formed therein, a first bush member fitted into said central through hole, a collar received in said first bush member and a rubber sealing ring which engages one end of said first bush member and which abuts against said base portion of said first U-shaped member, said base portion of said second U-shaped member having a central cavity formed therein and a second bush member which is fitted in said central cavity and which is sleeved onto the second end of said tubular portion, said second end of said tubular portion having a cap member connected thereto in order to close said tubular portion, said pedal shaft extending through said sealing ring and said collar in said first bush member and having a threaded portion which is formed at said second end of said pedal shaft and a nut which engages said threaded portion and which is received rotatably in said cap member.

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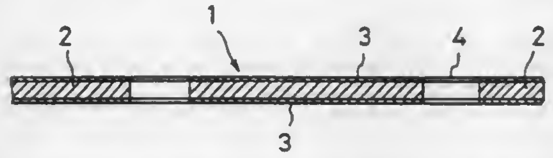
5,852,957
SEPARATE PLATE FOR A CONTROL VALVE USED IN AN AUTOMATIC TRANSMISSION AND METHOD FOR FABRICATING SAME

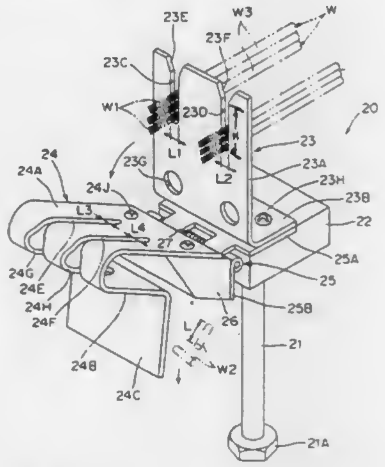
Hiroshi Saito, Nara, Japan, assignor to Nichias Corporation, Tokyo, Japan
Division of Ser. No. 574,290, Dec. 18, 1995, abandoned. This application Sep. 12, 1997, Ser. No. 928,355
Claims priority, application Japan, Mar. 23, 1995, 7-088595
Int. Cl.^{6} F16H *57/02*
U.S. Cl. 74—606 R **6 Claims**



1. A separate plate for a control valve used in an automatic transmission, comprising:
- a metal plate;
- a not yet foamed rubber layer formed on at least one surface of said metal plate; and
- a foam rubber layer formed on said not yet foamed rubber layer which is a surface layer of the separate plate, wherein said not yet foamed rubber layer is 90 μm to 300 μm thick and said foam rubber layer is 80 μm to 200 μm thick, and wherein said foam rubber layer is reinforced with one of inorganic fiber, organic fiber, and an unwoven cloth.

5,852,958
DEVICE FOR REMOVING AN END COATING PORTION

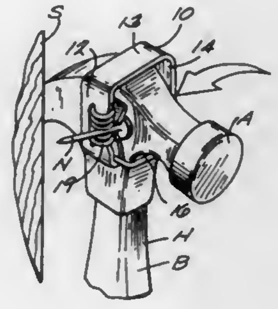
Yoshihiro Araki, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan
Filed Dec. 24, 1996, Ser. No. 773,682
Claims priority, application Japan, Dec. 28, 1995, 7-343771
Int. Cl.^{6} H02G *1/12*
U.S. Cl. 81—9.51 **8 Claims**



1. A device (**10**; **20**) for removing from an insulated wire (W) an end coating portion (W2) that had previously been cut from remaining coating portions (W3) of the insulated wire (W) and shifted longitudinally on a core (W1) of the insulated wire (W), the coating portions (W2, W3) having coating diameters (WW3), and the core (W1) having a core diameter, said device comprising:
- a support member (**21**, **22**) having opposed first and second ends;
- a fixed plate (**23**) secured to the second end of the support member (**21**, **22**) and projecting away from the first end of the support member (**21**, **22**), portions of the fixed plate (**23**) remote from said support member (**21**, **22**) being formed with at least one slit (**23**C, **23**D) defined by non-cutting edges extending toward said support member, said at least one slit (**23**C, **23**D) having a width greater than the core diameter and less than the coating diameter (WW3); and
- a movable plate (**24**) for applying a force to the end coating portion (W2) in a removal direction so as to remove the end coating portion (W2), the movable plate (**24**) being movable from a first position where said movable plate (**24**) substantially abuts said fixed plate (**23**) to a second position where said movable plate (**24**) is spaced from said fixed plate (**23**), said movable plate having at least one slit (**24**E, **24**F) formed by non-cutting edges disposed to substantially register with said at least one slit (**23**C, **23**D) in said fixed plate (**23**) when said movable plate (**24**) is in said first position, said at least one slit (**24**E, **24**F) in said movable plate (**24**) having a width (L3, L4) greater than the core diameter and less than the coating diameter (WW3), and a handle member (**24**C) extending from the movable plate (**24**), said handle member (**24**C) being actuatable for moving the movable plate (**24**) into the second position, such that portions of said movable plate (**24**) adjacent said at least one slit (**24**E, **24**F) remove said end coating portion (W2) from said core (W1).

5,852,959
NAIL STARTER FOR A HAMMER

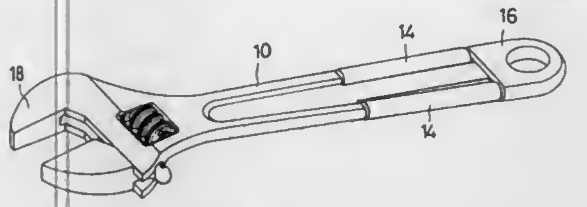
William Speare, 669 Jackson Pkwy., Williams Bay, Wis. 53191
Filed Jun. 13, 1996, Ser. No. 662,922
Int. Cl.^{6} B25D *1/04*
U.S. Cl. 81—23 **4 Claims**



1. A hammer attachment for holding a nail on the head of a hammer, the attachment comprising: a body member defining a pocket for releasably receiving a portion of the hammer; said body member including a first portion for holding a head of a nail against the head of the hammer; and a second portion disposed a spaced distance away from the first portion; said first portion including means for holding a nail outwardly of the head of the hammer along a predetermined direction including a notch formed in an edge of the first portion; and said second portion including means for holding a nail outwardly of the head of the hammer along a predetermined direction including a groove formed in an edge of the second portion, said groove disposed in generally overlapping relation with the notch, wherein the means for holding the nail further includes a spring member secured to the second portion, said spring member extending across the groove for receiving the nail between two adjacent portions of the spring member.

5,852,960
WRENCH HAVING A ROTATABLE HANDGRIP

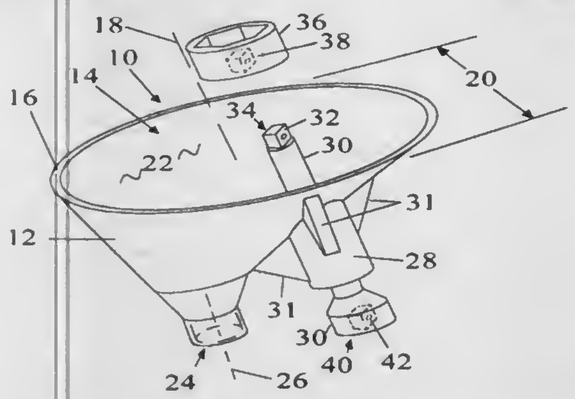
Arthur Wu, No. 41-12, Lane 548, Chong San Road, Shern Gan Hsiang, Taichung Hsien, Taiwan
Filed Apr. 21, 1997, Ser. No. 840,567
Int. Cl.^{6} B23B *13/16*
U.S. Cl. 81—177.5 **2 Claims**



1. A wrench comprising:
- a handle including a first end having a driving head and including a second end, said second end of said handle including a pair of notches,
- a pair of shafts secured in said notches of said handle, and
  - a pair of handgrips rotatably engaged on said shafts for engaging with user's hands and for allowing said handgrips to be rotated relative to said handle.

5,852,961
TOOL FOR REMOVING OIL AND HAZARDOUS FLUID

Jeff Kotowski, 15461 Shannon Way, Nevada City, Calif. 95659
Filed May 21, 1997, Ser. No. 861,129
Int. Cl.^{6} B25B *13/58*
U.S. Cl. 81—180.1 **8 Claims**

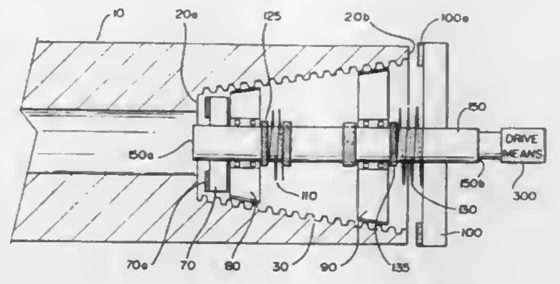


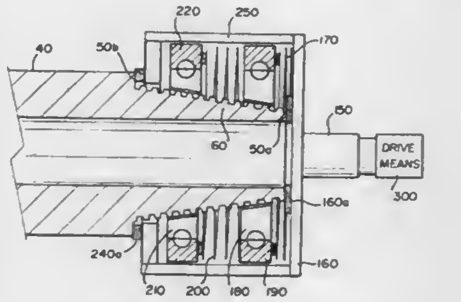
1. A tool for use in draining waste fluid from a reservoir having a drain plug comprising:
- a) a funnel having a larger opening and a wall tapering from said larger opening to a smaller opening;
- b) wrench extension means; and
- c) access means providing seal means for sealed passage of said wrench extension means through said wall, and for alignment of an axis of said wrench extension means to be oriented perpendicular to a plane defined by said larger opening, wherein said access means includes housing means attached to said wall, said housing means having a bore therethrough.

5,852,962
APPARATUS FOR RECONDITIONING THREADED TUBULAR CONNECTION SEAL SHOULDERS

Camille M. Fraering, Jr., 2408 Blue Haven Dr., New Iberia, La. 70560
Filed Apr. 29, 1997, Ser. No. 841,275
Int. Cl.^{6} B23B *3/24;5/16*
U.S. Cl. 82—128 **18 Claims**

1. An apparatus for reconditioning shouldered threaded tubular connections, comprising:





- a) a shaft having a central longitudinal axis;
- b) means for positioning said shaft along a central longitudinal axis of a tubular member while permitting axial movement of said shaft along said longitudinal axis of said tubular member, wherein said means for positioning said shaft comprises at least two bearing members, each of said at least two bearing members having an unthreaded bearing surface for disposition against a plurality of thread crests in a threaded connection;
- c) at least one plate disposed on said shaft, said plate comprising first and second faces, the center of said plate on said longitudinal axis of said shaft, said first and second faces of said plate disposed substantially perpendicular to said longitudinal axis of said shaft, one of said faces having cutting means disposed thereon; and
- d) means for rotating said shaft.

5,852,963
DRYER SECTION IN A PAPER OR BOARD MACHINE INCLUDING AN ARRANGEMENT FOR CUTTING AT LEAST ONE OF A LEADER OF A WEB

Ismo Koponen; Iimari Rintasalo; Jari Vainio, all of Rauma, and Juha Kaihovirta, Jyväskylä, all of Finland, assignors to Valmet Corporation, Helsinki, Finland
Continuation of Ser. No. 206,533, Mar. 4, 1994, Pat. No. 5,644,962, which is a continuation-in-part of Ser. No. 81,358, Jun. 22, 1993, Pat. No. 5,445,055. This application Jan. 14, 1997, Ser. No. 783,506
Claims priority, application Finland, Nov. 19, 1991, 915450
Int. Cl.^{6} B26F *3/00;* **D21F** *5/04*
U.S. Cl. 83—53 **20 Claims**

1. A dryer section in a paper or board machine including an arrangement for cutting at least one of a leader of a web and a diagonal tail portion of a web, the web having first and second opposed faces, comprising
- a plurality of cylinders, at least one of said cylinders being structured and arranged to support the web in a run along which said first face of the web is in contact with said at least one cylinder and said second face of the web is exposed,
- at least one drying wire for carrying the web through the dryer section, and
- water jet means arranged in opposed relationship to said second face of the web along said supported run of the web in which said first face of the web is in contact with said at least one cylinder and said second face of the web is exposed for directing a pressurized water jet at said second face of the

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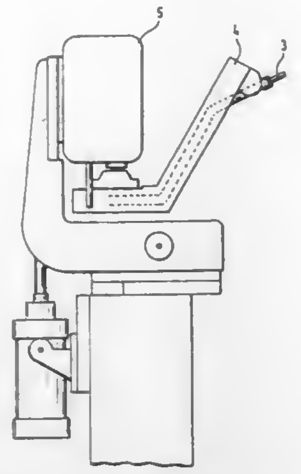


web at a location along said supported run of the web to cut the web, said water jet having a pressure from about 40 bar to about 400 bar.

5,852,964

SAFETY MECHANISM FOR RIGHT ANGLE SHEAR

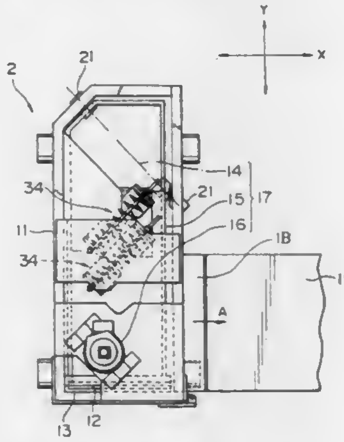
Nobuo Sahashi, Inuyama, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 30, 1997, Ser. No. 941,247

Claims priority, application Japan, Oct. 2, 1996, 8-281890

Int. Cl.^{6} B26D *5/16*

U.S. Cl. 83—530 **3 Claims**



1. A workpiece cutting apparatus comprising:
- a pair of upper and lower blades for cutting a workpiece;
- a freely rotating ram having said upper blade mounted thereon, wherein said ram has a rotation center shaft which is movable in a direction perpendicular to said rotation center shaft in order to facilitate adjustment of a clearance between said pair of upper and lower blades;
- a ram drive means, connected to said ram, for rotationally driving said ram;
- a movable blade adjustment means for moving a position of said rotation center shaft in a direction perpendicular to said rotation center shaft and adjusting a clearance between said pair of upper and lower blades; and
- at least one exertion means, mounted within said ram, for applying an exerted force in an upwardly rotating direction relative to said ram, wherein said at least one exertion means is positioned such that said at least one exertion means has a vertical component that exerts a force on said ram in a vertical direction and a horizontal component that exerts a force on said ram in a horizontal direction, and wherein said horizontal component of said at least one exertion means exerts a force on said ram in said direction perpendicular to said rotation center shaft and constantly maintains said clearance which has been adjusted by said movable blade adjustment means.

5,852,965

APPARATUS FOR PRODUCING SOYBEAN MILK AND CURD

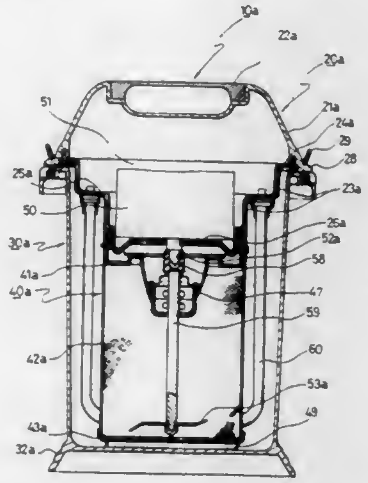
Hong-Bae Kim, 5-7 Hyunchun-dong, Duckyang-ku, Kyunggi-do, Koyang-shi, Rep. of Korea

Filed Jul. 14, 1998, Ser. No. 115,569

Claims priority, application Rep. of Korea, Jul. 22, 1997, 1997-34288

Int. Cl.^{6} A23C *3/02;* **A23L** *1/20;* **A23J** *1/00;1/14*

U.S. Cl. 99—281 **10 Claims**



1. An apparatus for producing soybean milk and curd, comprising:
- an upper body assembly including a retention cup, in which drive means adapted to drive a rotating shaft carrying a soybean milling blade at a lower end thereof, and a control unit adapted to control the drive means are contained, and a cover provided with an electrical connecting adapter electrically connected to both the drive means and the control unit;
- a cylindrical lower body having an open upper end closable by the upper body assembly, the cylindrical lower body serving to collect therein soybean milk leached from soybeans being milled;
- a dreg barrel assembly including a dreg barrel body adapted to contain soybeans, to be milled, therein, and provided with a sieve serving to allow soybean milk, which is a liquid part of the milled soybeans, to be discharged from the dreg barrel body while preventing bean-curd dregs, which are a solid part of the milled soybeans, from being discharged from the dreg barrel body, and a cap covering an upper end of the dreg barrel body; and
- heating means disposed in the lower body outside the dreg barren assembly and controlled by the control unit.

5,852,966

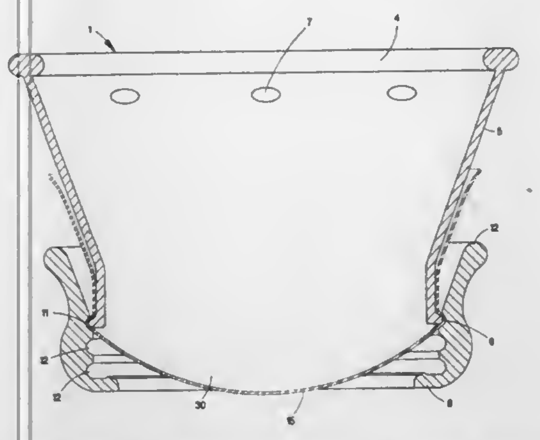
REUSABLE COFFEE BREWING FILTER

M. Keith Hursh, 3015 E. Orme, Wichita, Kans. 67211

Filed May 23, 1997, Ser. No. 862,184

Int. Cl.^{6} A47J *31/06*

U.S. Cl. 99—323 **5 Claims**



1. A coffee filter comprising:
- (a) a cylindrical coffee retaining ring having an upper end, a lower end, an outer surface, and having an inner surface;
- (b) a cylindrical sleeve having an upper end, a lower end, an outer surface, and having an inner surface, the cylindrical sleeve being sized and fitted so that it may be slidably mounted upon the cylindrical coffee retaining ring so that the inner surface of the cylindrical sleeve is in close proximity with the outer surface of the cylindrical coffee retaining ring;
- (c) a sleeve and filter retaining means, such means being fixedly attached to or being a homogeneous part of the cylindrical coffee retaining ring and of the cylindrical sleeve, such means being capable, upon such slidable mounting of the cylindrical sleeve, of fixedly attaching the cylindrical sleeve to the cylindrical coffee retaining ring, and such means being capable of retaining filter paper so that such paper underlies and spans across the lower end of the cylindrical coffee retaining ring, the sleeve and filter retaining means so fixedly attaching the cylindrical sleeve to the cylindrical coffee retaining ring; the sleeve and filter retaining means comprising an annular filter paper receiving channel and an annular filter paper compressing ridge, the interior space of such channel and the outer surface of such ridge each extending outwardly from the outer and inner surfaces of the cylindrical coffee retaining ring and cylindrical sleeve, such channel and such ridge being fitted and positioned so that upon such slidable mounting of the cylindrical sleeve upon the cylindrical coffee retaining ring, and upon positioning of filter paper between the inner surface of the cylindrical sleeve and the outer surface of the cylindrical coffee retaining ring, such ridge may extend into such channel, such ridge there compressing and fixedly attaching such paper to the coffee filter so that such paper forms a coffee filtering membrane spanning across the lower end of the cylindrical coffee retaining ring; the sleeve and filter retaining means further comprising a plurality of second annular filter paper receiving channels, each such channel opening inwardly and the interior space of each such channel extending radially outward from the inner surface of the cylindrical sleeve; and each such channel being capable of selectively and adjustably receiving and retaining the annular filter paper compressing ridge of the cylindrical coffee retaining ring.

5,852,967

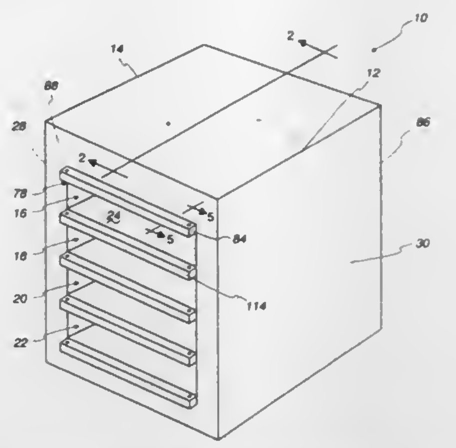
FOOD TREATMENT SYSTEM

Robert C. Fortmann, Grayslake; Jeffrey S. Erber, Ingleside, both of Ill., and Lawrence G. Banovez, Kenosha, Wis., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Feb. 3, 1997, Ser. No. 794,249

Int. Cl.^{6} A47J *39/00;39/02;47/14;* **F25B** *29/00*

U.S. Cl. 99—483 **20 Claims**



1. A food treatment system comprising:
- a frame;
- a receptacle having a peripheral wall defining a space for storage of a food item and an opening through which a food item can be introduced to the storage space,
- the frame comprising a first wall against which the receptacle bears with the receptacle in an operative position with respect to the frame,
- the frame comprising a second wall which is spaced from the first wall so as to define a food treatment space between the first and second walls,
- the second wall at least partially blocking the receptacle opening with the receptacle in the operative position,
- wherein at least one of the first and second walls is movable relative to the other of the first and second walls to vary the spacing between the first and second walls; and
- a conditioning source for changing the state of a fluid in the food treatment space.

5,852,968

FOOD PROCESSORS

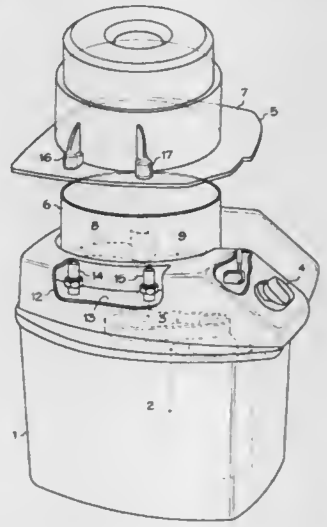
Jari Sundquist, Sollentuna, Sweden, assignor to AB Hällde Maskiner, Kista, Sweden

Filed Jun. 17, 1998, Ser. No. 98,782

Claims priority, application Sweden, Jun. 26, 1997, 9702464

Int. Cl.^{6} A23N *1/00;* **A47J** *43/046;43/07;* **B02C** *18/16*

U.S. Cl. 99—492 **4 Claims**



1. A food processor including a stand, a motor, a drive shaft, and a manually-operable speed control device for operating the motor, wherein the processor is adapted to receive an S-blade cutting device that includes a container for foodstuffs to be processed, a container lid, and at least one knife that is driven by said drive shaft and located at the bottom of the container, and wherein the processor is also adapted to receive a vegetable cutting device that includes a cutting disc which is adapted to be fastened to said drive shaft, and feed means mounted above the cutting disc for feeding foodstuffs to be cut, said food processor comprising: two mutually spaced sensors in an upper part of the stand; at least one of the sensors adapted to coact with sensor-parts placed respectively in said container lid and in said feed means; wherein one of the lid and the feed means is provided with a corresponding sensor-part adapted to co-act with solely one of the sensors in the stand and

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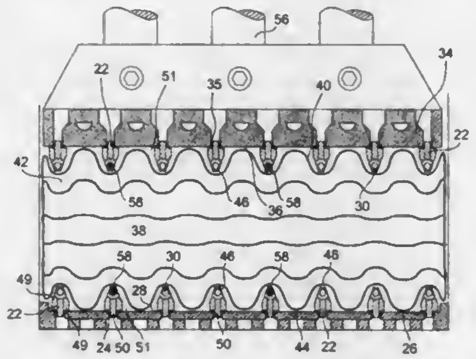
wherein the other of said lid and said feed means includes two mutually spaced corresponding sensor-parts adapted to co-act with both of the sensors in the stand; and wherein the stand sensors are connected to a control circuit that senses which of the sensors senses a corresponding sensor-part and to cause a motor regulating circuit to activate and to cause the motor regulating circuit to activate the motor in one of two different speed ranges, the speed range depending on the number of sensors that sense a corresponding sensor-part.

5,852,969
DEVICE FOR REDUCING BALE PACKAGING FORCES

William S. Anthony, Greenville, Miss., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 10, 1997, Ser. No. 890,890
Int. Cl.⁶ B65B *13/06;* B30B *15/06*

U.S. Cl. 100—34 **13 Claims**



1. A bale press for compressing a bale of compressible material having opposed outer surfaces by forcing said outer surfaces toward one another to reduce the dimensions of the bale and thereby facilitate securing of the bale with bale ties, said bale press comprising:

a base frame structure;

first and second platens, each provided with a respective generally rectangular bale compressing face having a length and a width and an area which is essentially coextensive in dimensional size with an area of a respective one of said surfaces,

said platens being carried by said base frame structure with said faces thereof disposed in substantial parallelism, in spaced apart facing relationship, and in substantial alignment to present a bale compression zone therebetween, said platens being mounted on said base frame structure for relative movement of said faces toward one another to reduce a dimension of said zone;

a plurality of elongated, wedge-shaped, bale compression members, said wedge-shaped members each having a longitudinal dimension, a lateral dimension and a thickness, said wedge-shaped members being mounted on at least one of said platens with the longitudinal dimensions thereof extending across the width of the face of the platen on which the members are respectively mounted and with the lateral dimensions thereof extending outwardly away from the face of the platen on which the members are respectively mounted and toward the compression zone, each said member thereby presenting a longitudinally extending distal compression edge spaced from the face of the respective platen, the thickness of each member at the distal edge thereof being sufficiently small to compress a cotton bale only in close proximity to a position where a single bale tie is to be placed;

wherein said at least one of said platens is provided with a series of slots which extend across the width of the face thereof, said bale compression members each having a longitudinally extending base edge which is oriented as a lateral extension of the bale compression member relative to said distal compression edge thereof, said bale compression members being mounted on said at least one of said platens with said base edges received in respective slots; and

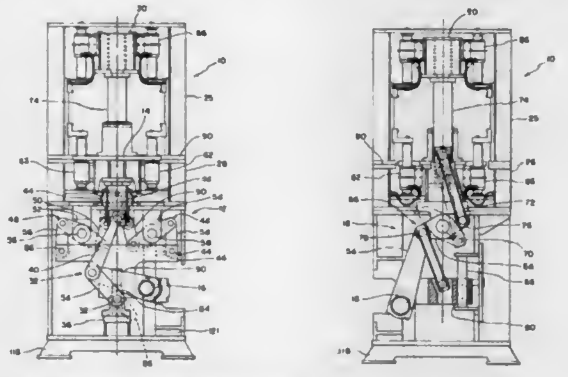
a drive mechanism that is mechanically coupled to at least one of said platens and operable to move the platens relatively toward one another.

5,852,970
UNDERDRIVE OPPOSING ACTION PRESS

John B. Bornhorst, New Bremen; Bradley A. Burns, Wapakoneta; Edward A. Daniel, Ft. Loramie; Dale A. Homan, Maria Stein; Rick Oen, Wapakoneta; Brian R. Silverstein, Shaker Heights, and Brian A. Watercutter, Minster, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Nov. 26, 1996, Ser. No. 755,809
Int. Cl.⁶ B30B *1/28;15/28*

U.S. Cl. 100—53 **13 Claims**



1. A mechanical press comprising:

two slides disposed in opposed relationship to each other, said two slides comprising an upper slide and a lower slide;

a single crankshaft to which is connected each said slide, whereby rotation of said single crankshaft causes each said slide to move toward and away from the other slide;

a drive mechanism to rotate said single crankshaft; and

a dynamic balancer connected to said upper slide to balance said press.

5,852,971
PRINTING APPARATUS FOR MEDICINE BAG

Shoji Yuyama; Reiji Kitagawa, both of Toyonaka, and Satoshi Fukagawa, Nishinomiya, all of Japan, assignors to Yuyama Mfg. Co., Ltd., Toyonaka, Japan

Filed Sep. 30, 1996, Ser. No. 724,511
Claims priority, application Japan, Sep. 28, 1995, 7-250850
Int. Cl.⁶ B41F *17/00*

U.S. Cl. 101—35 **10 Claims**

1. An apparatus for printing information on medicine bags, said apparatus comprising:

a plurality of medicine bag containers to contain different types of medicine bags;

a plurality of printers, each being operable to print information on a medicine bag;

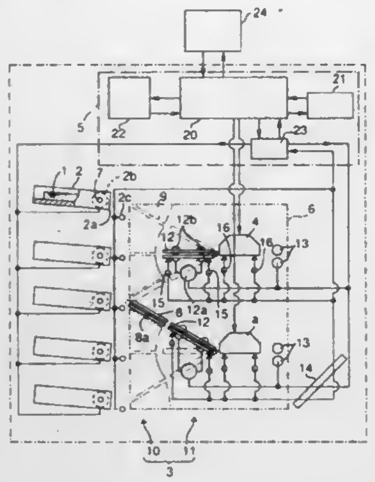
a plurality of conveyors, each said conveyor being paired with a respective said printer, and each said conveyor being operable to convey a medicine bag from an inlet thereof to an outlet thereof and then to said respective printer;

a plurality of introducing portions defining medicine bag discharge paths aligned with respective said containers;

each said conveyor being pivotable at said outlet thereof such that said inlet thereof is selectively alignable with a selected one of plural of said introducing portions;

said introducing portions including at least one switching member that is pivotable at an inlet thereof to enable an outlet thereof to be aligned selectively with said inlet of any one of said conveyors, such that a medicine bag from the said container aligned with said at least one switching member can be conveyed selectively by any one of said conveyors to the respective said printer; and

control means, operatively connected to said containers, said conveyors and said printers, for selecting a given said container, for causing one said conveyor to pivot to a position to receive a medicine bag from said given container, for causing said one conveyor to convey the medicine bag to one said printer paired with said one conveyor, and for causing said one printer to print information on the medicine bag.

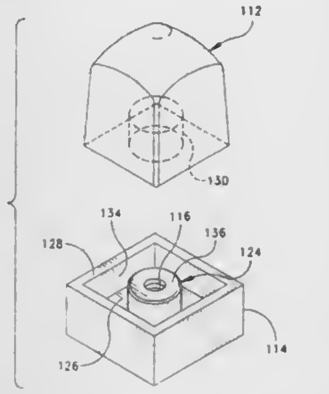


5,852,972
TRANSFER PRINTING PAD SOCKET ASSEMBLY

Marc W. Wolstenholme, 424 Austin Farm Rd., Exeter, R.I. 02822

Filed Jan. 22, 1998, Ser. No. 10,607
Int. Cl.⁶ B41F *17/00*

U.S. Cl. 101—41 **15 Claims**



10. A transfer print pad socket assembly for a printing machine, comprising:

a cup-shaped mounting socket having a floor and side wall;

at least one post disposed on said floor defining a mounting socket configuration;

a print pad member having a print surface and an opposing mounting surface; said mounting surface including at least one seat member therein capable of receiving said at least one post; said mounting surface defining a mounting surface configuration; said mounting socket configuration and said mounting surface configuration being complementary to one another; said print pad member being frictionally mated with said cup-shaped mounting socket; and

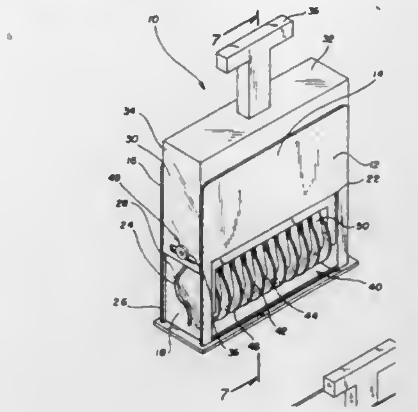
fastening means connected to said cup-shaped mounting socket for securing said cup-shaped mounting socket to a printing machine.

5,852,973
PORTABLE, MANUALLY ACTUATED MAIL BAR CODE STAMP

Ronald P. Kessler, 5261 Bordeaux, Irvine, Calif. 92714

Filed Apr. 4, 1997, Ser. No. 826,566
Int. Cl.⁶ B41J *27/02*

U.S. Cl. 101—105 **2 Claims**



1. A new and improved portable, manually actuated mail bar code stamp comprising, in combination:

a hand held housing including a lower portion having a front face, a rear face, and a pair of lower side faces coupled therebetween defining an interior space, a bottom opening, a top opening and upper side openings, the front face having a rectangular cut out formed therein at a lower extent thereof, the lower side faces each having a generally vertical serpentine slot formed therein, the front face and rear face extending beyond the side faces for defining a pair of lips and a slot extending outwardly from the side faces, the housing further having an upper portion with a top face and a pair of side faces defining a bottom opening, the top face having a T-shaped handle integrally coupled thereto at a central extent thereof, the side faces each having a horizontal slot formed at a lower extent thereof, the side faces adapted to be slidably situated within the slots of the lower portion of the housing; and

a bar code printing assembly including a first axle coupled between a bottom extent of the side faces of the lower portion of the housing and a plurality of pulleys rotatably coupled in coaxial alignment along the first axle, each pulley having a radially extending flange coupled thereto for allowing manual rotation of the pulley through the rectangular cut out of the lower portion of the housing, the printing assembly further including a second axle having ends situated through the serpentine slot of the lower portion of the housing and the horizontal slot of the upper portion of the housing and a plurality of elastomeric bands situated about an associated pulley and the second axle, the bands having a smooth interior surface and an exterior surface with different indicia formed therein, whereby upon the rotation of the flange of a pulley, the associated band is moved thereby allowing the selective positioning of one of the indicia of the band adjacent the second axle whereat the upper portion of the housing may be lowered with respect to the lower portion thereof thereby precessing the second axle about the first axle and positioning the second axle and the indicia of the bands in the bottom opening of the lower portion of the housing for allowing the indicia to be inked and stamped on an envelope;

said indicia including a plurality of linear protrusions that are spaced and parallel with respect to each other, the linear protrusions having a first length and a second length thereby representing a coded equivalent of a zip code and routing number for facilitating the delivery of mail.

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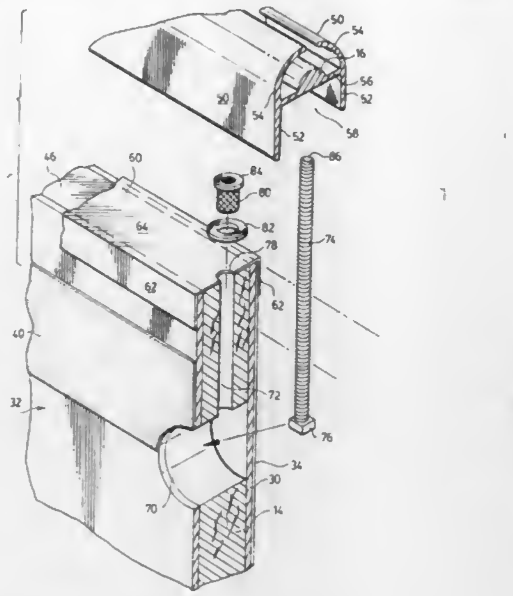
5,852,974
INTERNAL ADJUSTABLE TENSION FRAME FOR TOUCH-SENSITIVE BOARDS

Patrick Egan, Toronto; Jim Long, Bolton, and John D. Evans, Toronto, all of Canada, assignors to Egan Visual Inc., Woodbridge, Canada

Filed Aug. 29, 1997, Ser. No. 920,862

Int. Cl.^{6} B05C *17/06*

U.S. Cl. 101—127.1 **15 Claims**



1. A frame assembly comprising:
(a) a rigid inner frame having a first perimeter;
(b) a plurality of independent outer frame members positioned outwardly of the inner frame to define a second perimeter larger than the first perimeter, the second perimeter defining a plane having a front face and a rear face;
(c) a flexible sheet extending across the front face, around the outer frame members and secured in a fixed position on the rear face to define a plurality of longitudinally extending passageways adjacent the second perimeter, the outer frame members positioned in the passageways; and,
(d) a plurality of longitudinally extending members mounted on at least a portion of the inner frame, each of the longitudinally extending members moveable between a first position and a second position and drivingly connected to the outer frame members whereby movement of a longitudinally extending member between the first and second positions causes at least a portion of one of the outer frame members to move outwardly thereby tensioning at least a portion of the flexible sheet.

5,852,975
METHOD FOR MAKING LITHOGRAPHIC PLATES USING AN INK-JET PRINTER

Masamitsu Miyabe, Oume, and Takashi Ohkubo, Koshigaya, both of Japan, assignors to Kimoto Co., Ltd., Japan

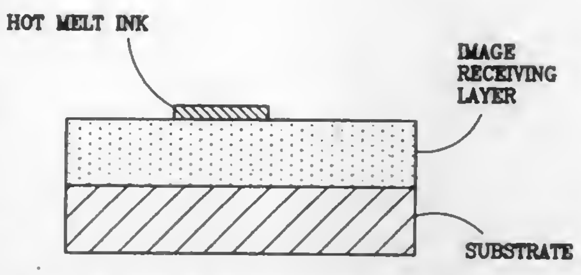
Filed Aug. 21, 1996, Ser. No. 701,166

Claims priority, application Japan, Aug. 29, 1995, 7-243736

Int. Cl.^{6} B41C *1/10*

U.S. Cl. 101—463.1 **3 Claims**

1. A method for making a lithographic plate comprising:
1) providing a lithographic plate material comprising a flexible support and an image receiving layer formed on the support and receptive of hot-melt compounds which are components of a hot-melt ink, said image receiving layer comprising a polymeric binder, a pigment which becomes hydrophilic upon contact with an etching solution and two extender pigments wherein one of said extender pigments has a particle size of from 3 to 5 μm and the other of said extender pigments has a particle size of from 7 to 10 μm;
2) recording an image on the image receiving layer with the hot-melt ink using a hot-melt ink type ink-jet printing system; and
3) etching away hydrophilic portions of the image receiving layer where no image is present by contacting the image receiving layer with the etching solution.



5,852,976
INSTALLATION AND A METHOD FOR DECORATING PROFILE STRIPS

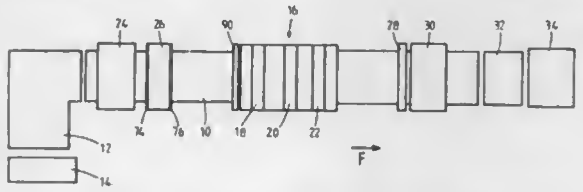
Michel Coudert, Oyonnax, France, assignor to Grosfillex S.A.R.L., Oyonnax, France

Filed Apr. 14, 1997, Ser. No. 834,173

Claims priority, application France, Apr. 15, 1996, 96 04657

Int. Cl.^{6} B41F *5/00*

U.S. Cl. 107—216 **12 Claims**



1. An installation for decorating profiled strips, the installation comprising a conveyor suitable for transporting a plurality of strips and a print station having at least one print unit suitable for applying ink to the surfaces of the strips, the installation including:
a strip-separation station adjacent to the conveyor and disposed upstream therefrom, said separation station having both means for holding a plurality of strips in respective target positions, in which the strips are spaced apart, parallel, and disposed in such a manner that their longitudinal directions are parallel to the direction of advance of the conveyor, and means for bringing said strips occupying their target positions to the conveyor; and
at least one guide station disposed upstream from the print station on the path of the strips driven by the conveyor, said guide station comprising spacer guides suitable for co-operating with the strips in the vicinity of the longitudinal edges thereof, so that said strips slide between said space guides and are constrained to occupy their target positions prior to entering the print station.

5,852,977
SELF SERVICE PRINT TERMINAL

Andrew Lynch, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

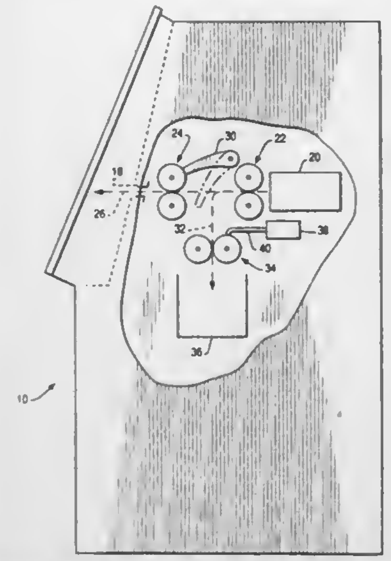
Filed Feb. 25, 1997, Ser. No. 804,648

Claims priority, application United Kingdom, Sep. 13, 1996, 9619191

Int. Cl.^{6} G07B *1/00;11/11*

U.S. Cl. 101—232 **5 Claims**

1. A self-service financial terminal for producing a valuable document to be delivered to a customer at the self-service financial terminal, the self-service financial terminal comprising:



a card reader for receiving a user identifying card from a customer to verify the identity of the customer to allow the customer to gain access to services provided by the self-service terminal;
a container for storing sheets on which information is to be printed to provide valuable documents to be delivered to customers;
a first printer mechanism for printing information onto a sheet which has been transported from the container to the first printer mechanism to produce a valuable document;
a second printer mechanism for printing an indicia of invalidity onto a valuable document which has been produced at the first printer mechanism and transported from the first printer mechanism to the second printer mechanism;
an input device for receiving inputs from the customer to provide information to be printed onto a sheet which has been transported from the container to the first printer mechanism to produce a valuable document; and
a processor for (i) controlling the first printer mechanism to print information onto a sheet which has been transported from the container to the first printer mechanism in response to inputs received from the customer via the input device requesting that a valuable document be produced and delivered to the customer, and (ii) controlling the second printer mechanism to print an indicia of invalidity onto the valuable document which has been produced at the first printer mechanism and transported from the first printer mechanism to the second printer mechanism to render the valuable document invalid in response to inputs received from the customer via the input device indicating that the valuable document has incorrect information printed thereon.

5,852,978
DEVICE FOR DISPLAYING A MOTOR VEHICLE AND METHODS FOR DISPLAYING A MOTOR VEHICLE

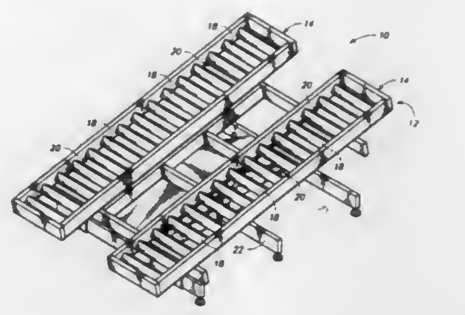
John P. Daschel, 4801 S. Coleman La., Spokane, Wash. 99223

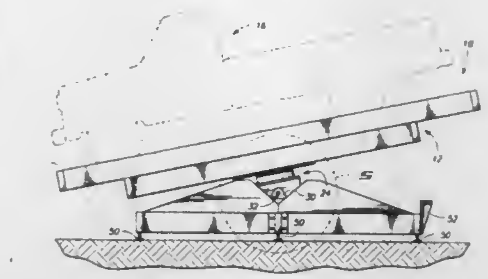
Filed May 5, 1997, Ser. No. 851,466

Int. Cl.^{6} B60S *13/00*

U.S. Cl. 104—44 **16 Claims**

1. A device for displaying a motor vehicle, comprising:
a platform sized to support a motor vehicle thereon;
a pedestal underlying and supporting the platform and any motor vehicle on the platform;
a support base underlying and supporting the pedestal, the pedestal being connected to the support base by one or more pins;
at least one power source configured to tilt the pedestal about the pins, the pins defining a tilt axis about which the pedestal tilts;
a rotatable connection between the platform and the support base, the rotatable connection defining a rotation axis of the platform relative to the support base, the rotation axis being perpendicular to the tilt axis, the at least one power source being further configured to rotate the platform with the rotatable connection and about the rotation axis; and
wherein said device is configured to hold said platform fixed at an inclined angle as the platform being rotated about said rotation axis, or to move said platform in an undulating rotating manner.





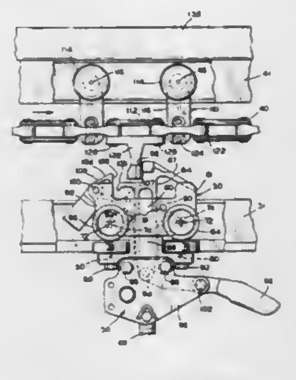
5,852,979
FREE TROLLEY FOR POWER AND FREE CONVEYORS

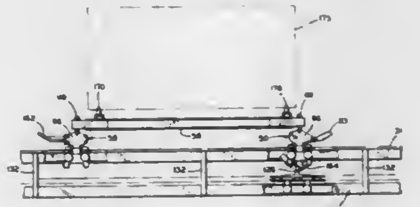
Dennis W. Desilets, West Bloomfield; Raymond L. Carlson, Munising, and Steven J. Dale, Waterford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 682,689, Jul. 30, 1996, which is a continuation-in-part of Ser. No. 418,214, Apr. 6, 1995, Pat. No. 5,606,915. This application Aug. 28, 1997, Ser. No. 919,378

Int. Cl.^{6} B61B *10/00*

U.S. Cl. 104—172.4 **9 Claims**





1. A free trolley to be supported on a free track in a power and free conveyor system, said free trolley comprising:

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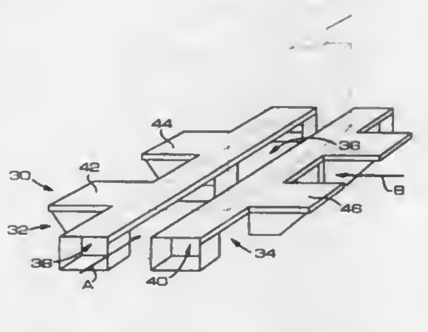
a) a trolley body with transversely spaced first upstanding projections, and second upstanding projections spaced longitudinally from said first upstanding projections at the upper end of said trolley body;
b) a moveable hold back dog rotatably secured between said first upstanding projections and engagable and disengageable with a power trolley;
c) a retractable dog having a first position engagable with a power trolley and a second position disengageable with a power trolley and engagable with said hold back dog to completely disengage said free trolley from said power trolley upon said free trolley engaging another free trolley; and
d) an actuating lever rotatably mounted at the lower end of said trolley body and rotatably connected to said retractable dog by a mounting structure, the weight of said actuating lever when used in an upright power and free conveyor system, being sufficient to create an over-counterweight condition with respect to said retractable dog.

5,852,980
FUEL DISPENSER PALLET DEVICE

Michael R. Hance, Bonham, Tex., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Filed May 13, 1997, Ser. No. 855,619
Int. Cl.^{6} B65D *19/44*
U.S. Cl. 108—55.3 17 Claims

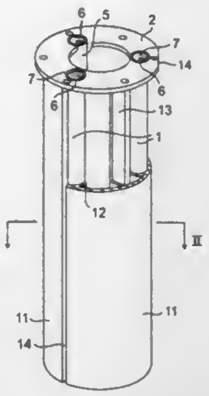


1. A pallet device for supporting a fuel dispenser and facilitating the transport thereof, said pallet device comprising:
a first runner element adapted to be attached to a bottom of said fuel dispenser apparatus and defining a first longitudinal channel having a first predetermined width and height;
a second runner element adapted to be attached to said bottom of said fuel dispenser apparatus generally in parallel with said first runner element, said second runner element defining a second longitudinal channel having a second predetermined width and height;
each of said first and second runner elements defining a pair of side ports wherein respective side ports of said first runner element are operatively aligned with respective side ports of said second runner element; and
further wherein said first and second runner elements each comprise a generally planar top portion having a longitudinal runner top with a pair of side port tops extending laterally therefrom.

5,852,981
COMPOSITE LEG ASSEMBLY FOR AN ARTICLE OF FURNITURE IN PARTICULAR A DESK OR OTHER WORK TABLE

Pieter M. Henderson, 10 Beech Road, Bedfordview, Gauteng Providence, South Africa

Filed Jun. 25, 1997, Ser. No. 882,614
Claims priority, application South Africa, Jun. 25, 1996, 95/5366
Int. Cl.^{6} A47B *3/06*
U.S. Cl. 108—158 16 Claims

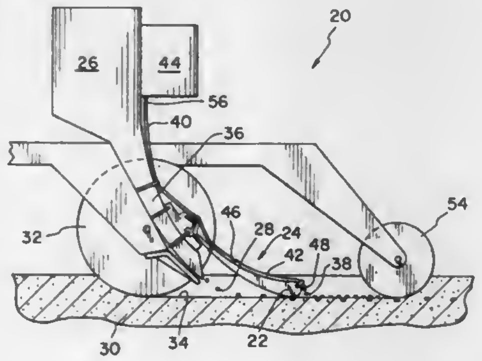


1. A composite leg assembly for an article of furniture, the leg assembly comprising at least two, spaced, operatively upwardly extending, elongate, compressive load-bearing structural members interconnected at their operatively upper ends by means of an upper terminal member and at their lower ends by means of a lower terminal member and wherein the structural members have attached thereto a non-structural tubular facade made up of one or more extruded sections and wherein the facade substantially envelopes and obscures the structural members.

5,852,982
LIQUID DISPENSER FOR SEED PLANTER

Jeffrey Peter, Hicksville, Ohio, assignor to Farmer Fabrications, Inc., Hicksville, Ohio

Continuation-in-part of Ser. No. 661,401, Jun. 7, 1996, Pat. No. 5,730,074. This application Sep. 23, 1997, Ser. No. 935,404
Int. Cl.^{6} A01C *5/06*
U.S. Cl. 111—118 22 Claims



1. A seed planter comprising:
a chute for depositing seeds in the ground, said chute being in communication with a supply of seeds,
an embedding arm disposed adjacent said chute adapted to follow seeds deposited by said chute and embed the deposited seeds into the ground, said embedding arm further having a liquid dispenser including at least one passage adapted to communicate liquid from a liquid supply to the vicinity of the embedded seeds.

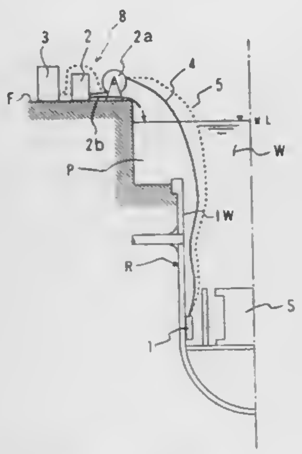
5,852,983

Patent Not Issued For This Number

5,852,984
UNDERWATER VEHICLE AND METHOD OF POSITIONING SAME

Aya Matsuyama, Yokohama; Rumi Kuramata, Kamakura; Koji Kobayashi, Yokohama; Yuuichi Miura, Funabashi; Naoya Hirose, Yokohama; Toshihiko Sasahara, Fujisawa, and Katsumi Kai, Mitaka, all of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1996, Ser. No. 772,312
Int. Cl.^{6} B63B *59/10*
U.S. Cl. 114—222 83 Claims



1. An underwater vehicle comprising:
a body having an abdomen, a back, a front portion, a rear portion, a width direction and a first opening in its abdomen;
a float provided at the front portion of the body so that the body suspends in the water with its front portion being up;
means for reducing an inner pressure of the body so as to cause the body to suctionally adhere on a wall in the water with its abdomen facing the wall;
a sealing skirt provided around a periphery of the opening formed in the abdomen of the body so that it contacts the wall in a sealing manner to maintain the body's inner pressure negative as the body adheres on the wall; and
means provided in the body for moving the body on the wall.

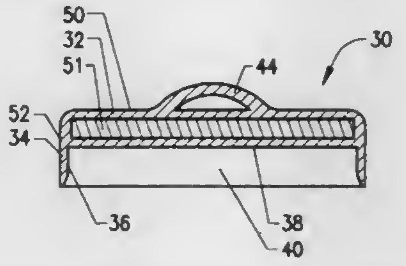
79. A method of determining a position of an underwater vehicle movable on a vertical wall of a vessel, the vessel being filled with a water, comprising the steps of:
A) determining a reference point in the vessel;
B) providing a first depth sounding meter on the reference point and providing a second depth sounding meter, a beam projector and a reflection light sensor on the vehicle respectively:
C) determining a depth of the reference point using the first depth sounding meter and that of the vehicle using the second depth sounding meter;
D) calculating a difference between the depth of the reference point and that of the vehicle;
E) determining a vertical position of the vehicle relative to the vessel based on the depth difference obtained in step D);
F) projecting a beam of light from the beam projector to a structure built in the vessel;
G) detecting an amount of beam of light reflected by the structure using the reflection light sensor;
H) determining a position and a shape of the structure;
I) determining a horizontal position of the vehicle using the amount of the reflected light detected in step G) and the position and shape of the structure obtained in step H); and
J) determining the position of the vehicle from the vertical and horizontal positions obtained in steps E) and I).

81. A method of determining a position of an underwater vehicle movable on a vertical wall of a vessel, the vessel being filled with a water and having various kinds of structures on its outer surface, comprising the steps of:
A) determining sizes, shapes and locations of the structures on the outer surface of the vessel;
B) providing an ultrasonic wave device on the vehicle for radiating an ultrasonic wave to the wall and receiving a returning wave;
C) causing the ultrasonic wave device to radiate the ultrasonic wave to the wall and to receive the returning wave while moving the vehicle on the wall;
D) analyzing the returning wave continuously to determine variations of the returning wave;
E) determining the kinds of the structures based on the variations of the returning wave;
F) determining the position of the vehicle relative to the structures based on the determined kinds of the structure acquired in step E) and the determined and sizes, shapes and locations of the structures acquired in step A); and
G) determining the position of the vehicle relative to the vessel from the position of the vehicle relative to the structures obtained in step F) and the determined and sizes, shapes and locations of the structures obtained in step A).

5,852,985
WATERCRAFT ANCHOR

John J. Fisher, 8363 Basswood Dr. Apt. 2A, Indianapolis, Ind. 46268

Filed Jul. 9, 1997, Ser. No. 890,349
Int. Cl.^{6} B63B *21/27*
U.S. Cl. 114—296 13 Claims



1. An anchor for mooring watercraft and other floating objects, comprising:
a generally cylindrical housing having a predetermined diameter to height ratio and including,
a top generally cylindrical end, having a top surface and an underside,
a cylindrical wall, having a predetermined thickness, an exterior circumferential surface, and an interior circumferential surface, said cylindrical wall transitioning from said top cylindrical end, and said interior surface transitioning from said underside of said top cylindrical end,
a concavity, defined by said interior circumferential surface and said underside of said top cylindrical end, and opening downwardly through the diametrically opposite end of said cylindrical wall,
a connecting means fixedly attached to the center of said top surface of said top cylindrical end for the attachment of a rope or cable thereto,
wherein said cylindrical housing is manufactured of material including plastics, concrete, lead, stainless steel, galvanized metal and other metals,
whereby said anchor is easily installed as the cylindrical wall readily engages in the soil at the bottom of a body of water with the urging of a users foot and the holding efficiency of said anchor is maximized by the utilization of the combination of the anchors weight, a suction effect caused by the concavity, and the affinity between the soil and the surfaces of the cylindrical wall, and

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whereby the maximized holding efficiency allows for a smaller and lighter anchor that is easy to use and transport with smaller watercraft such as a personal watercraft.

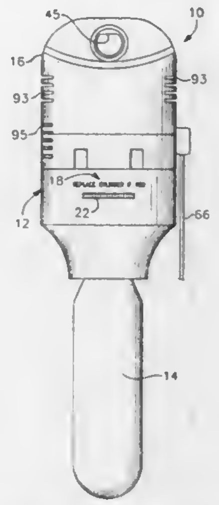
5,852,986
AUTOMATIC INFLATOR WITH STATUS INDICATORS

Glenn H. Mackal, 2586 25th Ave. North, St. Petersburg, Fla. 33713

Filed Feb. 5, 1996, Ser. No. 596,979

Int. Cl.^{6} G01L *19/12*

U.S. Cl. 116—266 **11 Claims**



1. An improvement in gas inflators, comprising:
a cartridge status indicator;
said cartridge status indicator being nonremovably mounted to a gas cartridge;
said cartridge status indicator having a first position with respect to said cartridge indicating nonuse of said cartridge;
said cartridge status indicator having a second position with respect to said cartridge indicating use of said cartridge;
said cartridge status indicator and said cartridge being in axial alignment with one another when said cartridge status indicator is in said first and second positions;
said second position of said cartridge status indicator being axially spaced apart from said first position of said cartridge status indicator by a distance sufficient to be readily visually ascertainable, said cartridge status indicator having an entrance passageway configured to receive gas from said gas cartridge, and an exit passageway configured to permit the gas to flow from the entrance passageway and out through said cartridge status indicator;
said first and second, axially spaced apart positions of said cartridge status indicator relative to said cartridge providing a first indication of the used/not used status of said cartridge, wherein the used status of the cartridge is defined by the gas being free to flow from the cartridge, and the not used status of the cartridge is defined by the gas being retained within the cartridge.

5,852,987
PET FOOD CONTAINER SHIELDING DEVICE

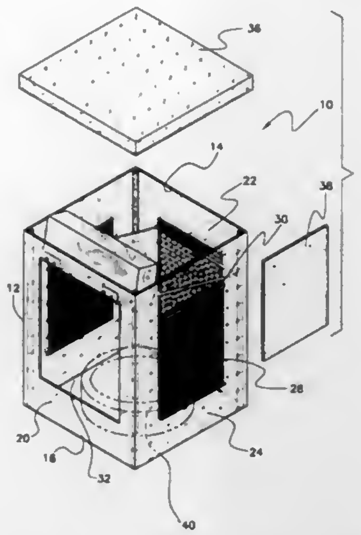
Robert E. Lamp, Jr., 7629 N. 37th Ave., Phoenix, Ariz. 85051

Filed Dec. 4, 1997, Ser. No. 985,164

Int. Cl.^{6} A01K *5/02*

U.S. Cl. 119—62 **8 Claims**

1. A new pet food container shielding device for encompassing a pet food container without inhibiting a pet from obtaining food while precluding rodents and birds from gaining access comprising, in combination:



a container having a generally rectangular configuration, the container having an open top, an open bottom and four walls, the four walls being removably coupled together at adjacent edges thereof in a piano hinge arrangement, the four walls including a front wall, a rear wall and opposed side walls, the four walls each having centrally disposed openings therethrough, the openings of the rear wall and the opposed side walls having a mesh screen secured therein, each mesh screen having brackets secured to upper and lower ends thereof;
a front door positioned within the opening in the front wall of the container and hingedly secured to an upper edge of the opening;
a counter weight secured to an upper end of the front door on an interior surface thereof, the counter weight biasing the front door to a position flush within the opening in the front wall;
a cover removably positioned on the open top of the container; and
three clear plastic covers slidably positioned between the brackets of the mesh screens on the rear wall and the opposed side walls of the container.

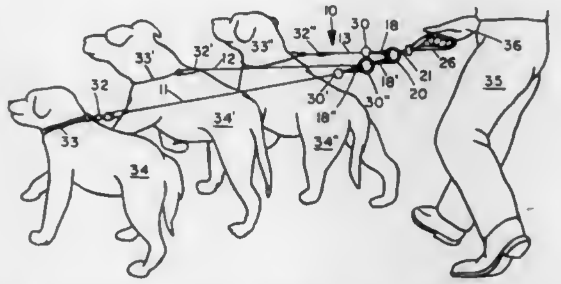
5,852,988
ANTI-TANGLE/TWIST MULTI-PET WALKING-LEASH

Panje L. Gish, 10276 Rue Chamonix, San Diego, Calif. 92131

Filed Jul. 19, 1995, Ser. No. 504,150

Int. Cl.^{6} A01K *27/00*

U.S. Cl. 119—795 **15 Claims**



2. An anti-tangle multi-pet walking leash apparatus, whereby pets coupled thereto may pursue activity heretofore causing disabling entanglement; comprising the special combination of:
a conventional loop type handle portion including a primary swivel-ring means of sufficient size as to accommodate a duplex arrangement of manually attached discrete inward snap-hooks dependent therefrom, each said inward snap-hook including a secondary swivel-ring means for optional manual attachment of up to two sub-leashes thereto, both said secondary swivel-rings including a discrete flexile leash portion oppositely bearing an outward snap-hook for attachment to a separate existing pet collar.

5,852,989
METHOD FOR CONVEYING STANDING ANIMALS

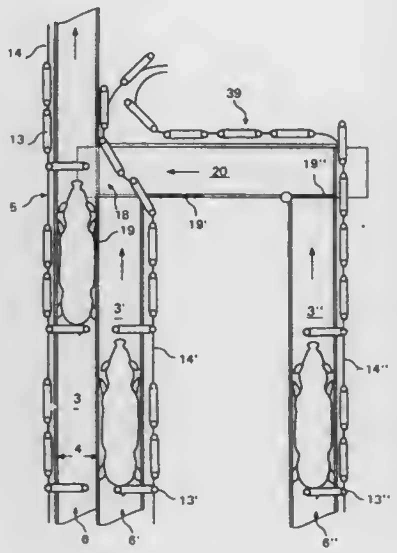
Peter Fuchs, Adlikon, Switzerland, assignor to Peter Fuchs Technology Group AG, Adlikon, Switzerland

Filed Sep. 29, 1995, Ser. No. 536,157

Claims priority, application Switzerland, Oct. 10, 1994, 03 040/94-7

Int. Cl.^{6} A01K *29/00;* B65G *69/28;11/00*

U.S. Cl. 119—843 **10 Claims**



1. A method for conveying a sequence of individual live animals comprising the steps of
providing a conveying channel having a dosing belt moving in a desired conveying direction and side walls extending along the dosing belt separated by a predetermined distance,
at a loading station, loading standing animals onto the belt in a column with the head of each animal oriented in a desired direction relative to the conveying direction and with separation between the animals,
inserting separating barriers transversely across the dosing belt separating individual animals from each other and moving the separating barriers with the dosing belt carrying the animals to maintain separation between the animals, and
conveying the animals in the channel to a destination station.

5,852,990
WASTE HEAT BOILER

Ivar Ivarsen Primdahl, Copenhagen, Denmark, assignor to Haldor Topsoe A/S, Lyngby, Denmark

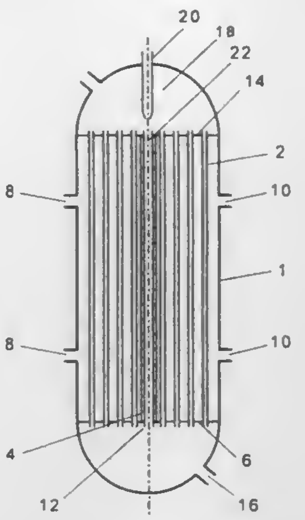
Filed Jun. 6, 1995, Ser. No. 467,544

Claims priority, application Denmark, Jun. 29, 1994, 0771/94

Int. Cl.^{6} F22D *1/00*

U.S. Cl. 122—7 R **2 Claims**

1. A waste heat boiler for cooling a hot process stream comprising a plurality of heat exchanging tubes within a cylindrical shell, each tube having an inlet end and outlet end;
an outlet chamber for withdrawing the cooled process stream, said outlet end of each of the tubes being located in the outlet chamber;
attached to the shell, means for introducing water into the shell side of the tubes;
means for introducing the hot process stream into the inlet end of the tubes and passing the process stream through the tubes



in indirect heat exchange with the water in the shellside of the tubes to produce steam and to cool the introduced process stream;
means for withdrawing produced steam, and means for withdrawing the cooled process stream,
said waste heat boiler being further equipped with an insulated by-pass tube having an outlet end in the outlet chamber for passing a hot process stream directly into the outlet chamber such that immediately upon exiting the by-pass tube, the hot process stream mixes with the cooled process stream exiting from the outlet ends of the heat exchanging tubes,
said outlet chamber being provided with an injection nozzle for control of flow of the hot process stream through the by-pass tube by injection of a fluid into the by-pass tube outlet end,
said injection nozzle being installed in the outlet chamber at the center line of the by-pass tube spaced apart from the by-pass tube outlet end and having an injection muzzle directed towards the outlet end of the by-pass tube.

5,852,991
OIL PAN ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Hideki Yamamura, Yokohama, and Noriomi Okamoto, Kanagawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 21, 1997, Ser. No. 955,457

Claims priority, application Japan, Oct. 21, 1996, 8-277639; Oct. 21, 1996, 8-277640

Int. Cl.^{6} F02F *7/00*

U.S. Cl. 123—195 C **21 Claims**

1. An oil pan assembly for an internal combustion engine, comprising:
a tank member comprising a deep bottom defining a deep interior space section for storing a lubricating oil;
a main member comprising a shallow bottom defining a shallow interior space section for collecting the oil, and an upright wall enclosing an interior space comprising the shallow interior space section and a bottomless open interior space section for leading the oil from the shallow interior space section into the deep space section, the bottomless open interior space section opening downwards into the deep interior space section; and
wherein the upright wall comprises first and second opposite side wall sections extending in a first direction and bounding the shallow interior space section and the bottomless open space section between both side wall sections, and the main member further comprises a flow regulating barrier projecting upwards from the shallow bottom and extending along the first direction between the first and second side wall sections; and

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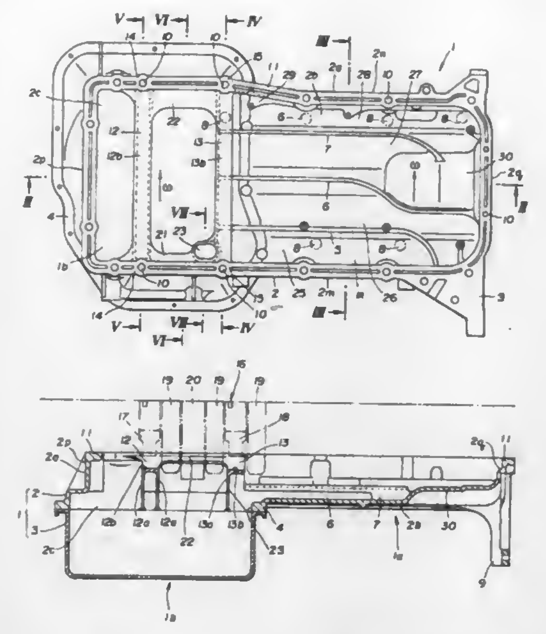


wherein the main member further comprises a transverse bridge which extends from the first side wall to the second side wall and which is connected with the flow regulating barrier.

5,852,992

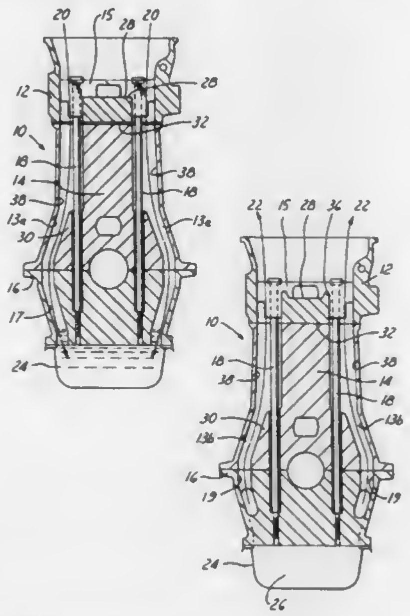
INTERNAL COMBUSTON ENGINE HAVING SEPARATED CYLINDER HEAD OIL DRAINS AND CRANKCASE VENTILATION PASSAGES

David Lee Boggs, Bloomfield Hills; Daniel James Baraszu, Plymouth, both of Mich.; David Mark Foulkes, Erfstadt, Germany, and Enio Goyannes Gomes, Ann Arbor, Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 24, 1997, Ser. No. 976,940

Int. Cl.^{6} F01M *1/00*

U.S. Cl. 123—196 R **11 Claims**



1. An internal combustion engine, comprising:
a cylinder block;
a cylinder head mounted upon the cylinder block, with said cylinder head having an upper deck for collecting oil furnished to the upper part of the engine;
a crankcase containing a supply of oil for lubricating the engine;
at least one oil drain-back passage extending from a submerged position within the crankcase and through the cylinder block and the upper deck; and
at least one crankcase vent passage extending from the crankcase at a position which is above the oil level and through the cylinder block and cylinder head, with the crankcase vent passage emerging from the cylinder head at a position which is above the upper deck.

5,852,993

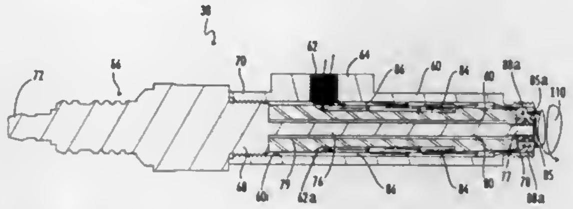
FUEL SYSTEM FOR INTERNAL COMBUSTION SYSTEM AND ADAPTER FOR USE IN SAME

Herman P. Anderson, Brentwood, Tenn., assignor to Herman P. Anderson Technologies, LLC, Brentwood, Tenn.

Filed Aug. 4, 1997, Ser. No. 905,862

Int. Cl.^{6} F02M *57/06*

U.S. Cl. 123—297 **38 Claims**



1. An adapter for use in an internal combustion power system, the adapter comprising a housing having an internal void space; a plug mounted within the internal void space of the housing, said housing and said plug combining to define an entrance area though which fuel can be introduced, and said housing and said plug combining to define an exit area through which fuel introduced to said entrance area exits, said exit area being no larger than the entrance area; a vortex means for causing fuel exiting through said exit area to have a vortex flow path; and an entrance port into the housing for accepting a fuel supply.

5,852,994

INDUCTION CONTROL SYSTEM FOR MULTI-VALVE ENGINE

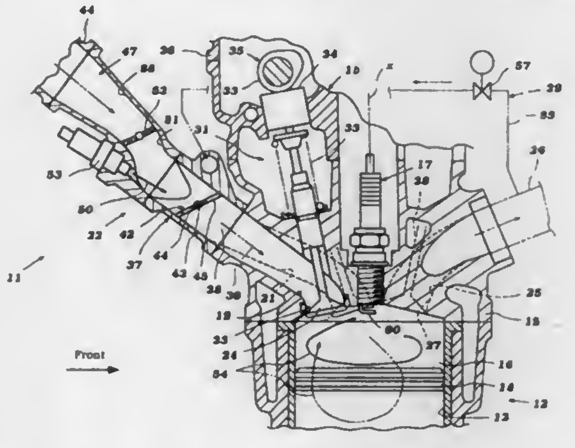
Hiroyuki Tsuzuku; Naoki Tsuchida, and Takeshi Ito, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha

Filed Feb. 15, 1996, Ser. No. 602,077

Claims priority, application Japan, Feb. 15, 1995, 7-051739

Int. Cl.^{6} F02B *31/08*

U.S. Cl. 123—308 **25 Claims**



1. A multi-valve internal combustion engine comprised of an engine body defining at least one combustion chamber, a pair of intake ports opening into said combustion chamber for delivering a

charge thereto, a pair of intake passages each serving a respective one of said intake ports, a control valve in one of said intake passages and movable from a fully open, non-flow restricting position and a closed, flow restricting and redirecting position wherein the effective flow area of said one of said intake passages is substantially restricted, an exhaust port for discharging combustion products from said combustion chamber, and means for recirculating a portion of the exhaust gases from said exhaust port to the other of said intake passages.

5,852,995

HEATING APPARATUS FOR VEHICLE

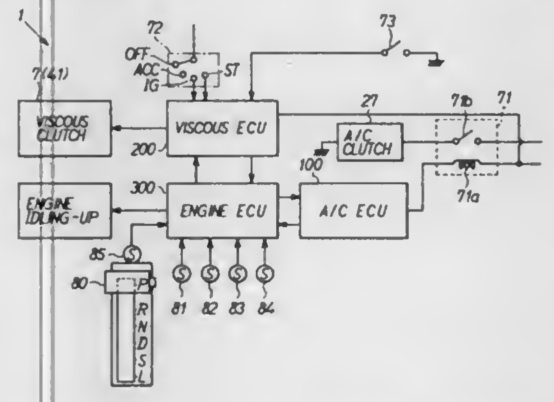
Shinji Aoki; Hajime Ito, both of Kariya, and Toshio Morikawa, Toyota, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Sep. 24, 1997, Ser. No. 936,257

Claims priority, application Japan, Oct. 1, 1996, 8-260941

Int. Cl.^{6} F02D *41/16*

U.S. Cl. 123—339.16 **12 Claims**



1. A heating apparatus for heating a passenger compartment of a vehicle having a water-cooled engine, comprising:
a heating heat exchanger for heating said passenger compartment by performing heat-exchange between cooling water having cooled said water-cooled engine and air to be blown into said passenger compartment;
a heat-generating unit using a shearing force, said heat-generating unit including a rotor which rotates when a driving force is applied thereto and a heat-generating chamber for sealing therein viscous fluid which generates heat for heating said cooling water circulating between said engine and said heating heat exchanger when a shearing force generated by a rotational force of said rotor is applied to said viscous fluid;
a clutch unit for intermitting a transmission of the driving force from said engine to said rotor;
heating instruction means for giving an instruction for heating said cooling water by said heat-generating unit; and
a heating control unit which controls said clutch unit to transmit the driving force of said engine to said rotor after increasing a rotational speed of said engine when said heating instruction means gives the instruction for heating said cooling water, said heating control unit including means for detecting a temperature of said cooling water, said rotational speed of said engine being set to a first speed when said temperature of said cooling water is lower than predetermined temperature and said rotational speed of said engine being set to a second speed when said temperature of said cooling water is higher than the predetermined temperature, said second speed being lower than said first speed.

5,852,996

THROTTLE VALVE POSITIONING CONTROL APPARATUS

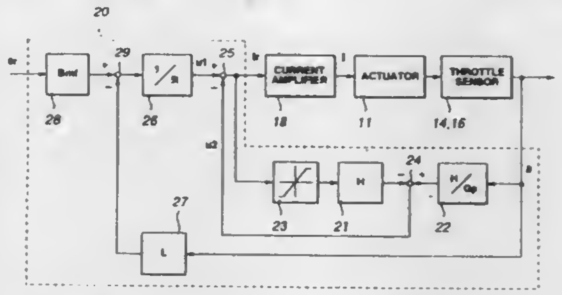
Hideo Nakamura, Machida, and Masashi Matsuyama, Kunitachi, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1996, Ser. No. 761,260

Claims priority, application Japan, Dec. 8, 1995, 7-320476

Int. Cl.^{6} F02D *41/24*

U.S. Cl. 123—399 **31 Claims**



1. The throttle valve positioning control apparatus, for controlling the positioning of a throttle valve situated to control the amount of air permitted to enter an internal combustion engine operable in a plurality of control modes, comprising:
drive means responsive to a drive signal indicating a target throttle valve position for moving the throttle valve to the target throttle valve position;
sensor means sensitive to the movement of the throttle valve for producing a sensor signal indicative of a sensed throttle valve position; and
control means connected between the sensor means and the drive means for producing the drive signal to bring the sensed throttle valve position into coincidence with the target throttle valve position, the control means including disturbance estimating means for estimating disturbances introduced onto the drive means and the sensor means based on the target and sensed throttle valve positions, and means for correcting the target throttle valve position based on the estimated disturbances, further including a low pass filter provided at an output of the disturbance estimating means for eliminating noises introduced onto the output of the disturbance estimating means.

5,852,997

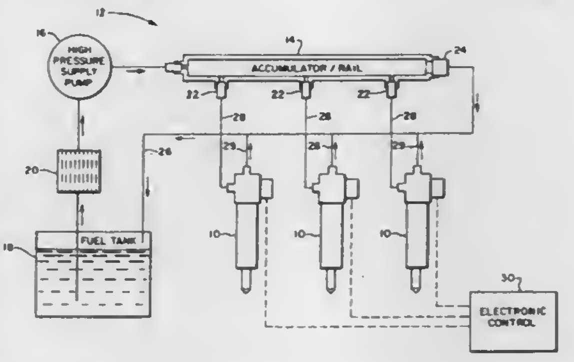
COMMON RAIL INJECTOR

Richard E. Vanderpoel, Bloomfield, Conn., assignor to Stanadyne Automotive Corp., Windsor, Conn.

Filed May 20, 1997, Ser. No. 859,158

Int. Cl.^{6} F02M *37/00*

U.S. Cl. 123—446 **23 Claims**



1. A fuel injector for a common rail injection system comprising:
an injector body having axially spaced inlet and injection portions, said injection portion defining an injection orifice, a

nozzle chamber and an interior valve seat, said inlet portion comprising a rail inlet for receiving pressurized fuel supplied to said injector;

an injector valve mounted in said body and engageable with said seat to prevent fuel communication through said injection orifice and during an injection event axially displaceable from said seat for injecting pressurized fuel through said orifice;

a control unit comprising a control chamber and a control piston axially displaceable in said control chamber;

a pump unit comprising a pump chamber and a pump piston axially displaceable in said pump chamber;

a nozzle conduit connecting said pump chamber and said nozzle chamber;

a control valve assembly comprising a control valve to provide selective fuel communication between said rail inlet and said control and pump chambers for controlling the supply of pressurized fuel in said pump chamber and said control chamber, said pump piston being displaced for the injection of pressurized fuel by opening said control valve to vent pressure from said control chamber,

so that fuel is controllably supplied to said pump chamber between injection events and the fuel in said control chamber is selectively controlled to start an injection whereby said injector valve is displaced by pressurized fuel in said nozzle chamber to inject pressurized fuel through said injection orifice.

5,852,998

FUEL-INJECTION CONTROL DEVICE FOR OUTBOARD MOTORS

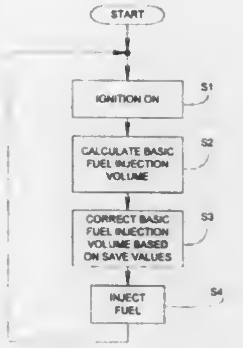
Hidehiko Yoshioka, Shizuoka-ken, Japan, assignor to Suzuki Motor Corporation, Japan

Filed Mar. 13, 1997, Ser. No. 816,656

Claims priority, application Japan, Mar. 26, 1996, 8-069766

Int. Cl.^{6} F02D *41/06*

U.S. Cl. 123—491 **32 Claims**


START
IGNITION ON
S1
CALCULATE BASIC FUEL INJECTION VOLUME
S2
CORRECT BASIC FUEL INJECTION VOLUME BASED ON SAVE VALUES
S3
INJECT FUEL
S4

1. A fuel injection control device for outboard motors with a fuel-injected engine, comprising:

a control unit;

a memory;

a detector connected to detect an operating state of said outboard motor at, or prior to, a shutdown of said motor;

said operating state is one of a throttle setting, a trim angle, and an engine boost pressure;

said control unit being programmed to store in said memory information responsive to said operating state of said outboard motor; and

said control unit being further programmed to control an initial flow of fuel to said engine, at a time of start up of said engine, responsively to said information stored in said memory.

5,852,999

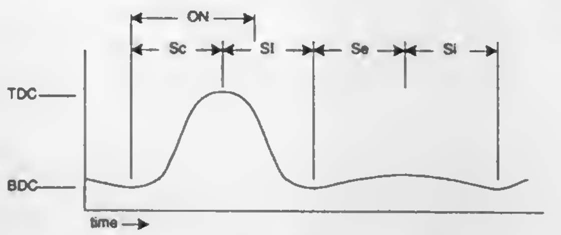
METHOD AND MEANS FOR GENERATING AND MAINTAINING SPARK IN A VARYING PRESSURE ENVIRONMENT

Anthony K. Chan, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 13, 1997, Ser. No. 799,337

Int. Cl.^{6} F02P *15/10;3/01*

U.S. Cl. 123—628 **10 Claims**



1. An internal combustion engine including a spark generating apparatus for aiding fuel ignition, said engine comprised of:

an engine block including a cylinder wall therein and a cylinder head thereon;

a piston disposed in said engine block for operating reciprocally within the cylinder wall between a top dead center position and a bottom dead center position, said piston cooperating with said cylinder wall therein and said cylinder head to define a combustion chamber in said engine having a low pressure condition at said bottom dead center position and a relatively high pressure condition at said top dead center position;

a selectively controllable alternating current generating means, said alternating current generating means having an ON condition at said low pressure condition when said piston is at said bottom dead center position prior to compression to said relatively high pressure condition, and maintaining said ON condition to said relatively high pressure condition when said piston is at said top dead center position, said selectively controllable alternating current generating means further maintaining said ON condition during an exhaust stroke from said relatively low pressure condition to said relatively high pressure condition, said alternating current generating means further having an OFF condition;

a first electrode in electrical connection with said alternating current generating means, said first electrode disposed in said combustion chamber;

a second electrode in electrical connection with said alternating current generating means, said second electrode disposed in said combustion chamber, and said second electrode spaced apart from said first electrode by a gap (G) whereby a substantially continuous spark can be established at the low pressure condition and maintained from said low pressure condition to said high pressure condition and during said high pressure condition in said combustion chamber.

5,853,000

ARCHERY BOW RISER WITH WRIST BRACE

Michael D. Torgerson, Rte. 1, Box 320, Blair, Wis. 54616, and Jeffery A. DeBoer, N5764 CTH OT, Onalaska, Wis. 54650

Filed Jan. 9, 1997, Ser. No. 781,591

Int. Cl.^{6} F41B *5/00*

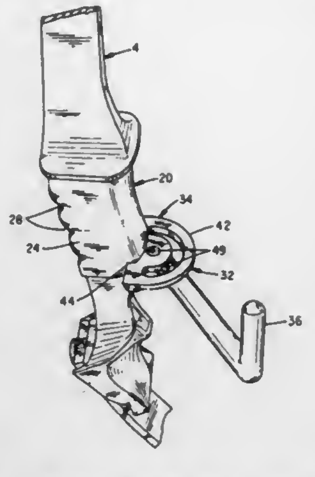
U.S. Cl. 124—88 **18 Claims**

1. A handle for an archery bow having a bow string comprising:

a) a riser shaped to provide a recessed hand grip region beneath an arrow support shelf;

b) wrist brace means comprising a bracket secured to said riser and having a brace arm which projects substantially parallel to the bow string and which arm is supported to pivot at an adjustment plate of said bracket between first and second limits defined by said adjustment plate; and

c) means for fixing said brace arm to said adjustment plate at a preferred rotation, whereby the brace arm can be adjusted to displace an archer's wrist lateral of a travel path of the bow string and control an archer's gripping of the hand grip.



5,853,001

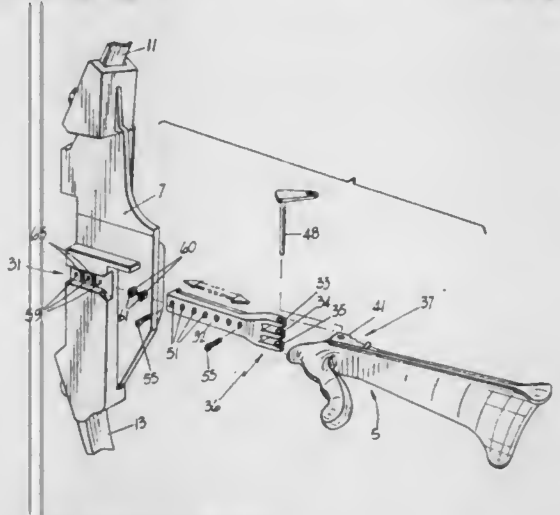
ARCHERY BOW HANDGRIP

Emil Vyprachticky, 7713 Webster Way, Arvada, Colo. 80003

Filed Apr. 22, 1997, Ser. No. 839,210

Int. Cl.^{6} F41B *5/00*

U.S. Cl. 124—88 **14 Claims**



1. In an archery bow having,

a riser,

a pair of flexible limbs attached to the riser, defining, with the riser, a bow plane, and

a handgrip laterally projecting from the bow plane, the improvement comprising,

attachment means pivotally interconnecting the handgrip and the riser, including,

a hinge joint having first and second leaves, where the first leaf is carried by the handgrip, and

a beam member carrying the second leaf of the hinge joint and having means for selectively locating the beam member fore and aft with respect to the riser.

5,853,002

PEDIATRIC NEBULIZER ENHANCER

Mary Kelly Kawasaki, 94-1045 Ohilau Pl., Waipahu, Hi. 96797

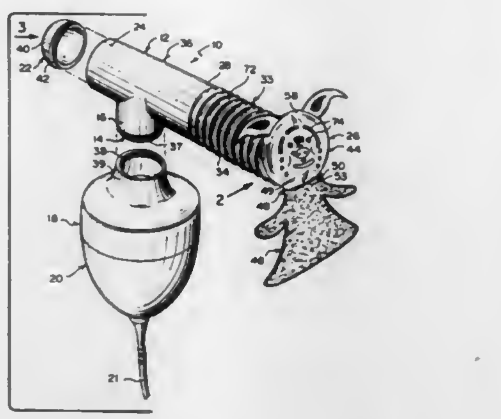
Filed Mar. 14, 1997, Ser. No. 818,296

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—200.14 **27 Claims**

1. A pediatric nebulizer enhancer comprising:

a) a T-fitting;



b) means for mounting a first end of said T-fitting to a dome cover on a dome, which holds medication and saline, that is connected to an end of a tubing from an oxygen outlet;

c) a plug to seal off a second end of said T-fitting;

d) means on a third end of said T-fitting for spraying a medicated mist directly into a face of a child, so that the child can focus onto said spraying means without any fear, by being attracted to said spraying means, wherein said spraying means is a perforated animal face;

e) a flat cloth body; and

f) means for attaching said flat cloth body to a bottom portion of said perforated animal face.

5,853,003

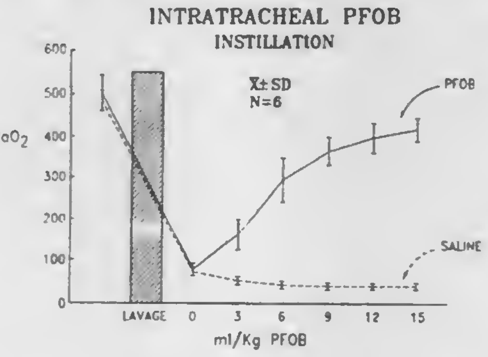
TREATMENT AND DIAGNOSIS OF RESPIRATORY DISORDERS USING FLUOROCARBON LIQUIDS

Nicholas Simon Faithfull, The Woodlands, England, and Jeffry Greg Weers, San Diego, Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Continuation of Ser. No. 600,407, Feb. 12, 1996, Pat. No. 5,655,521, which is a continuation of Ser. No. 299,884, Aug. 31, 1994, Pat. No. 5,490,498, which is a continuation of Ser. No. 695,547, May 3, 1991, abandoned. This application Aug. 7, 1997, Ser. No. 910,981

Int. Cl.^{6} A61M *15/00*

U.S. Cl. 128—203.12 **34 Claims**



1. A method for treating a patient in need of facilitated oxygen delivery through the lungs, additional lung surfactant, removal of material from inside the lung, or inflation of collapsed portions of the lung, comprising the step of introducing into the lung of the patient an effective therapeutic amount of a fluorocarbon liquid in the form of an aerosol wherein the patient is breathing a breathing gas.

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5,853,004

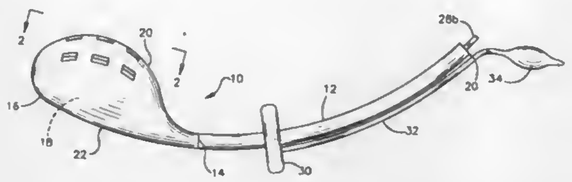
PHARYNGEAL BULB AIRWAY

Evan J. Goodman, 3725 Severn Rd., Cleveland Heights, Ohio 44118

Filed Jun. 2, 1997, Ser. No. 867,187

Int. Cl.^{6} A61M *16/00*

U.S. Cl. 128—207.15 **15 Claims**



1. A pharyngeal bulb airway adapted to be positioned in the airway of a patient, the device comprising:

a breathing tube adapted to extend out through the mouth of a patient;

a hollow bulb adapted to be inserted within the throat of the patient being connected to the breathing tube, the hollow bulb being constructed of a pliant material capable of allowing the hollow bulb to be either expanded in a normal shape or compressed into a collapsed condition; and

a flexible rod or wire extending along the breathing tube and into the bulb and being releasably attached to the bulb to either selectively retain the bulb in the collapsed condition or to allow the bulb to resume its normal shape.

5,853,005

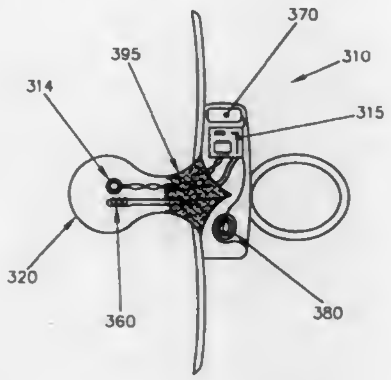
ACOUSTIC MONITORING SYSTEM

Michael V. Scanlon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 2, 1996, Ser. No. 643,139

Int. Cl.^{6} A61B *8/14;* H04R *25/00;* A61H *1/00;* B23P *19/02*

U.S. Cl. 128—662.03 **96 Claims**



1. An acoustic monitoring system comprising:

a sensor pad adapted to conform to at least a portion of the surface of a living organism, said pad defining at least one chamber containing acoustic transmission material and adapted to receive acoustic signals originating from and produced by the organism; and

acoustic transducing means coupled with said pad for monitoring and converting said acoustic signals received by said pad to electrical signals corresponding to said acoustic signals.

5,853,006

PRESERVATIVE

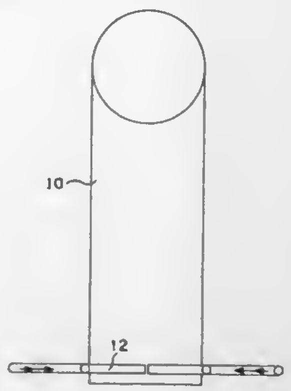
Joachim Metz, Am Bauenhaus 57, DE-40472 Dusseldorf, Germany

Filed Apr. 21, 1995, Ser. No. 426,156

Claims priority, application Germany, Apr. 21, 1994, 44 13 879.2; Feb. 17, 1995, 195 05 378.8

Int. Cl.^{6} A61F *6/04*

U.S. Cl. 128—844 **11 Claims**



1. A preservative comprising a condom and applicator means, said applicator means defining a thickened, discontinuous ring, said applicator means being formed from a substantially straight member comprised of a resilient material which has been elastically bent to assume a generally annular shape, said condom being rolled about said applicator means to form a bead which accommodates said applicator means.

5,853,007

Patent Not Issued For This Number

5,853,008

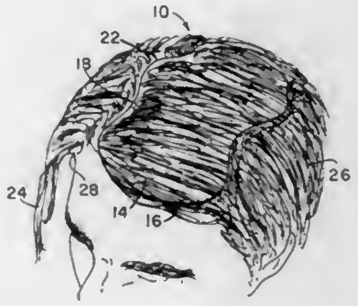
SCALP HAIR FOUNDATION TO PROVIDE ADDITIONAL HAIR

Charles W. Nelson, Lee's Summit, Mo., assignor to Apollo Products, Inc., Kansas City, Mo.

Filed Feb. 16, 1998, Ser. No. 24,202

Int. Cl.^{6} A41G *3/00;5/00*

U.S. Cl. 132—53 **7 Claims**



1. A method of covering a bald area on a person's head, the bald area presenting a boundary, the person having side hair adjacent one side of the bald area of sufficient length to span the bald area and having other hair adjacent the opposed side of the bald area, said method comprising the steps of:

(a) making a filler piece configured to the shape of the bald area and including a foundation with filler hair attached thereto and with said foundation presenting a periphery conforming substantially to the boundary of the bald area;

(b) displacing any side hair from the bald area;

(c) attaching said filler piece to the bald area by adhering said foundation thereto with said periphery abutting the bald area boundary;

(d) positioning the side hair in spanning relationship with said filler piece; and

(e) holding the side hair in said spanning relationship by commingling the side hair with the filler hair, and concealing the presence of said filler piece by visually integrating the side hair and said filler hair in order to cover the bald area.

5,853,009

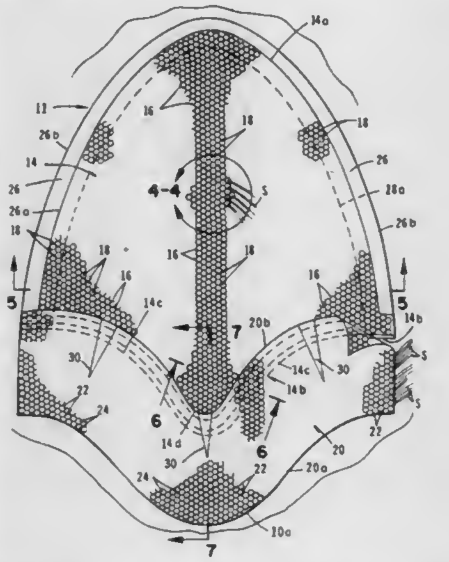
HAIR PIECE AND METHOD OF MAKING SAME

Jackie Yu, 8112 W. Third St., Los Angeles, Calif. 90048

Filed Feb. 25, 1997, Ser. No. 805,751

Int. Cl.^{6} A41G *5/00*

U.S. Cl. 132—201 **11 Claims**



1. A hairpiece for covering a portion of the user's scalp, comprising:

(a) a base having a generally parabolic-shaped rear edge and a curved front edge comprising curved side portions terminating in a generally cycloid-shaped central portion;

(b) a front piece having spaced-apart, curved front and rear edges, said rear edge being connected to said front edge of said base said front piece comprising a net-like fabric having a plurality of folds disposed proximate said rear edge thereof;

(c) connector means for connecting said base to the user's scalp, said connector means comprising a flexible connector member having first and second spaced-apart, generally parabolic-shaped edges, said first edge being connected to said rear edge of said base; and

(d) a multiplicity of strands of human hair connected to said base and to said front piece.

5,853,010

EYELASH CURLER

Jeong Joo Suh, #134-2202 Olympic Apt., Bangi-dong, Songpa-Ku, Seoul, Rep. of Korea

Filed Apr. 15, 1997, Ser. No. 843,353

Claims priority, application Rep. of Korea, Dec. 28, 1996, 67112/96

Int. Cl.^{6} A45D *2/48*

U.S. Cl. 132—217 **17 Claims**

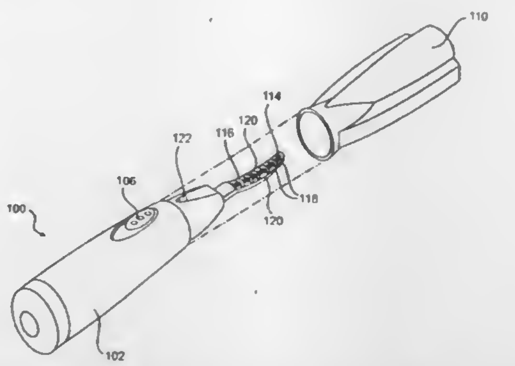
1. An eyelash curling device which comprises:

a handle portion,

a curling element having an elongated flat surface defining an eyelash support portion which extends from said handle portion, said elongated flat surface being curved along its longitudinal axis to correspond with the curvature of the eye and eyelash,

a heating means disposed in the middle portion of the elongated flat surface and dividing it into lateral surfaces disposed on opposite sides of the heating means, said heating means extending longitudinally along the length of said elongated surface in conformity with the curved elongated surface, and

a plurality of protruding means spaced along said longitudinally extending elongated surface and extending from said elongated surface.



5,853,011

PROGRESSIVE BRUSH FOR APPLYING A COSMETIC PRODUCT

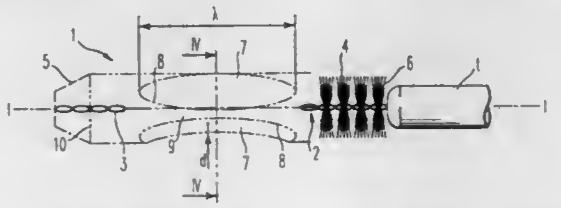
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Feb. 25, 1997, Ser. No. 805,571

Claims priority, application France, Feb. 29, 1996, 96 02562

Int. Cl.^{6} A45D *40/26*

U.S. Cl. 132—218 **22 Claims**



1. A brush for application of a cosmetic product to keratinous fibers, comprising:

an elongate core; and

bristles extending substantially radially from said core,

wherein said bristles define a part of a cylindrical envelope with a central axis, and wherein bristles within the axial limits of the cylindrical envelope form at least one concave cutback and at least one crest zone on the cylindrical envelope, the width of the at least one concave cutback varying along the length of the brush, the at least one concave cutback having a single maximum width.

5,853,012

COSMETIC APPLICATOR

Michael Burns, and Cameron Tappin, both of 407 Wethersfield Ave., Hartford, Conn. 06114

Continuation-in-part of Ser. No. 839,144, Apr. 23, 1997. This application Jun. 17, 1997, Ser. No. 877,493

Int. Cl.^{6} A45D *40/26*

U.S. Cl. 132—320 **23 Claims**

1. A cosmetic applicator comprising:

a first resilient member having a first density, a tip end, a lower end, exterior surfaces, and an interior defined by an interior surface, the first resilient member further defining an aperture

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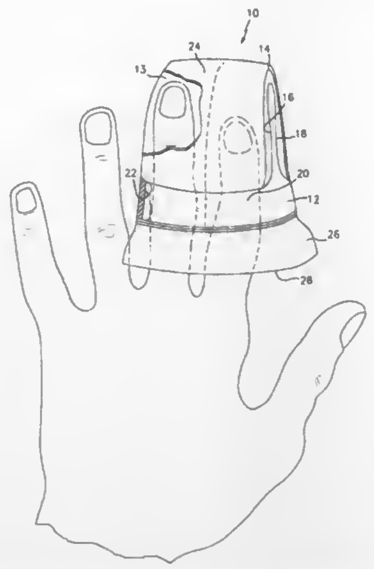


located at the lower end and in communication with the interior area, the aperture being adapted to receive at least two fingers of the user;

a second resilient member, for retaining and depositing a cosmetic material, coupled to the first resilient member and having a second density; and

a sleeve positioned in the interior area and defining an interior cavity for receiving the at least two fingers of the user.

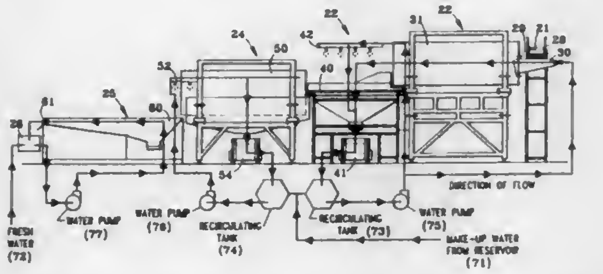
5,853,013
PRE-WASH APPARATUS FOR RECYCLING HEAVILY CONTAMINATED POLYMER TUBING

Lon D. Busick, Stuttgart, Ak., and Billy Marlow, Ruleville, Miss., assignors to Delta Plastics of the South LLC, Stuttgart, Ak.

Filed Mar. 4, 1997, Ser. No. 811,015

Int. Cl.^{6} B08B *3/00*

U.S. Cl. 134—63 **13 Claims**



1. A pre-wash apparatus for recycling heavily contaminated polymer tubing, comprising:

a wash trommel having a generally horizontal axis of rotation and a helical flighting on an inside surface thereof;

a rinse trommel having a generally horizontal axis of rotation and a helical flighting on an inside surface thereof, said rinse trommel having a perforated wall surface that allows rinse fluid and contaminants to pass therethrough;

a conveyor positioned between a discharge end of the wash trommel and an entrance end of the rinse trommel for conveying the polymer tubing from the wash trommel to the rinse trommel;

a first open mesh conveyor for conveying the polymer tubing from a loading point to an entrance end of the wash trommel; and

a trough positioned between a discharge end of the first open mesh conveyor and the entrance end of the wash trommel, said trough having a continuous flow of wash fluid flowing therethrough for conveying the polymer tubing along with the wash fluid into the entrance end of the wash trommel.

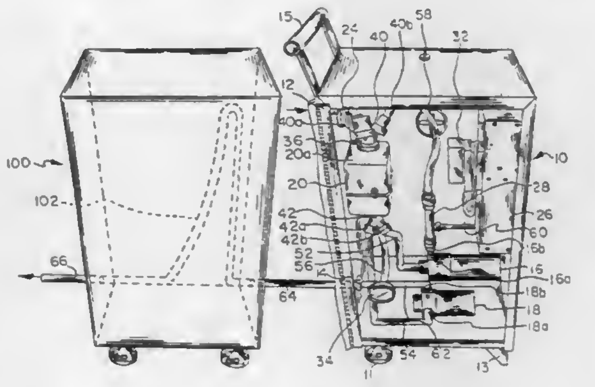
5,853,014
PC APPARATUS FOR CLEANING

Charles E. Rosenauer, Louisville, Ky., assignor to Med-O-Tech, Inc., Louisville, Ky.

Division of Ser. No. 527,836, Sep. 13, 1995, Pat. No. 5,641,456. This application Mar. 6, 1997, Ser. No. 812,274

Int. Cl.^{6} B08B *3/10*

U.S. Cl. 134—102.1 **2 Claims**



1. An apparatus for cleaning, comprising:

a water inlet;

a water outlet;

a tank for receiving water from said water inlet;

an ozone generator;

a first pump in liquid communication with said tank and with said ozone generator, for taking water from said tank, pumping the water past the ozone generator to add ozone to the water, and pumping the ozonated water back into said tank;

a second pump having an inlet side in liquid communication with said tank and an outlet side in liquid communication with said water outlet, for pumping ozonated water from the tank to the water outlet;

a Venturi tube associated with said ozone generator such that water passing through said Venturi tube creates a suction which draws ozone into the water; and

a switch which turns the second pump on and off in response to sensing a pressure drop caused by water flowing through the Venturi tube.

5,853,015
PERSONAL LIFTING DEVICES

Allan B. Evans, 821 Regan Rd., Somerset, Mass.

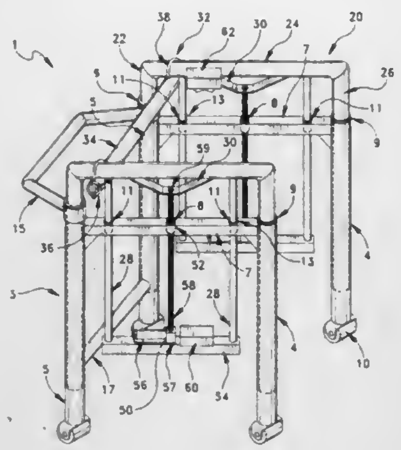
Filed Dec. 7, 1994, Ser. No. 351,588

Int. Cl.^{6} A61H *3/00*

U.S. Cl. 135—67 **8 Claims**

1. A lightweight, easily transportable lifting device for assisting a person to rise from a seated position which comprises:

- (i) a substantially U shaped base support adapted to be disposed upon a supporting surface, having a user receptive front and a spaced apart rear, said base support further comprising:
  - (a) a pair of hollow front legs secured in spaced apart relation by at least one front brace;
  - (b) a pair of hollow rear legs; and
  - (c) a pair of spaced apart horizontal supports each support having a plurality of evenly spaced vertically oriented apertures, each horizontal support mounted between one front and one rear leg;
- (ii) a pair of spaced apart substantially inverted U shaped handrails, each of said handrails further comprising:
  - (a) a front rail,
  - (b) a rear rail, and
  - (c) a top rail connected between the front rail and rear rail to form the inverted U shape, each of said front rails and said rear rails fabricated with an outside cross sectional diameter smaller than the inside cross sectional diameter of each of the front and rear legs permitting the hand rail to be slidably mounted within said front and rear legs;
- (iii) an actuator support suspended below each horizontal support, maintained at fixed distance below the top rail by a plurality of support rods;
- (iv) elevation control means connected between the handrail and actuator support and capable of providing linear motion to the hand rail between a first extended position and a second retracted position relative to the base support; and
- (v) a motor means connected to the elevation control means providing controlled operation thereof.



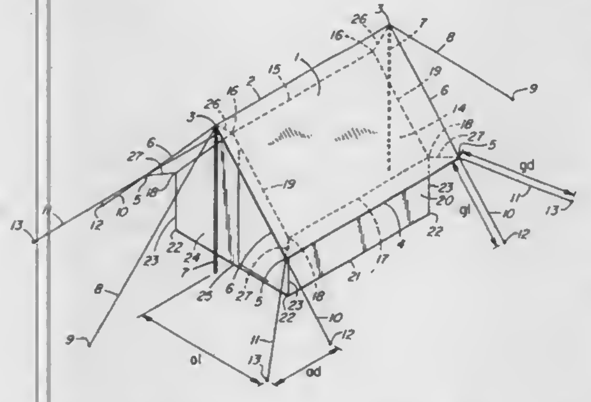
5,853,016
LIGHTWEIGHT VERTICAL WALL TENT

Michael Forest Cowan, 5196 Sonora Drive, North Vancouver, B.C., Canada, V7R 3V6

Filed Apr. 26, 1995, Ser. No. 429,150

Int. Cl.^{6} E04H *15/04*

U.S. Cl. 135—90 **1 Claim**



1. A lightweight vertical wall tent, rectangular in plan, comprising a covering waterproof fabric or reinforced polyethylene rain fly that provides the entire structural support for a fabric canopy that is suspended from and beneath the fly after the fly is erected, the fly being erected by first attaching, while the fly is spread out flat upon the ground, eight adjustable guy ropes, two fastened to each of the four corners of the fly, to eight corresponding anchors set in or on the surface of the ground, two near each corner, with, at each corner, one guy rope, termed a lateral guy rope, being attached to an anchor termed a lateral anchor, and the other guy rope, termed a diagonal guy rope, being attached to the other anchor termed a diagonal anchor, all eight guy ropes being then adjusted to preset lengths, the positions of all eight anchors and the preset lengths of all eight guy ropes being a function of, and calculated from, the dimensions of the erect fly, including its angle of slope on either side of its ridge, the height of its ridge above the ground, its width, which is the distance between its two side edges in a direction normal to those edges, and the height of its side edges above the ground, the correct position of a lateral anchor being a point where a straight line coincident with an end edge of the erect fly meets the ground surface, the correct position of a diagonal anchor being a point where a straight line within the slope plane of the erect fly, passing through a corner of the erect fly and bisecting, more or less, the right angle formed by the edges of the fly at that corner, meets the ground surface, the correct preset length of a lateral guy rope being the distance between a corner of the erect fly and its corresponding lateral anchor, and the correct preset length of a diagonal guy rope being the distance between a corner of the erect fly and its corresponding diagonal anchor, so that with all eight corner guy ropes adjusted to their correct lengths and attached to their corresponding anchors correctly positioned and set, a ridge end of the fly is raised and supported on a vertical ridge-end pole and secured with a ridge-end guy rope to a ridge-end anchor on the ground in line with the ridge and then the opposite ridge end of the fly is raised and supported on a vertical ridge-end pole and secured with a ridge-end guy rope to the opposite ridge-end anchor on the ground in line with the ridge, the two ridge-end guy ropes then being adjusted to tension the ridge across and between the tops of the ridge-end poles, and the eight corner guy ropes then being adjusted to remove any remaining slack in the fly, leaving the fly supported solely by the two ridge-end poles, with the ridge held in tension across the ridge-end poles by the ridge-end guy ropes, and the four corners of the fly held outwards in tension and each prevented from movement by the two guy ropes at each corner, the erect fly thus forming a stable, semi-rigid, roof-like structure, securely held in three dimensional space completely clear of the ground, and entirely supporting and sheltering a fabric canopy that is suspended beneath it, the erect canopy having vertical side walls and vertical end walls and a roof formed by two identical rectangular planar surfaces, each sloping at the same angle away from a common horizontal ridge, the canopy held in place by the fly so that the canopy is centered beneath the fly with the ridge of the canopy vertically below the ridge of the fly, this being accomplished by having each ridge-end of the canopy guyed to each corresponding ridge end of the fly and each upper corner of the canopy guyed to each corresponding corner of the fly after the bottom edges of the canopy have been secured with suitable anchors to the surface of the ground in a position such that the bottom edges of the side walls and end walls will form a rectangle and the bottom edges of the side walls will be symmetrical with respect to the vertical projection of the ridge of the erect fly upon the surface of the ground.

5,853,017
CLOSING DEVICE FOR CLOSING PRESSURE FLUID CONVEYING CHANNELS IN A HOUSING

Peter Volz, Darmstadt; Helmut Weisbrod, Bad Nauheim; Jochen Burgdorf, Offenbach, and Werner Volkmar, Idstein, all of Germany, assignors to ITT Manufacturing Enterprises Inc., Wilmington, Del.

PCT No. PCT/EP95/04068, § 371 Date Jul. 29, 1997, § 102(e) Date Jul. 29, 1997, PCT Pub. No. WO96/14537, PCT Pub. Date May 17, 1996

PCT Filed Oct. 17, 1995, Ser. No. 817,448

Claims priority, application Germany, Nov. 2, 1994, 44 39 059.9

Int. Cl.^{6} F16K *31/06*

U.S. Cl. 137—1 **15 Claims**

11. A Method of closing pressure fluid conveying channels in a housing by a closing member that is to be press fitted into a channel, of the closing member having an outside periphery including at least one indentation into which basic material of the housing is deformed during press fitting the closing member into the channel to provide a form lock,

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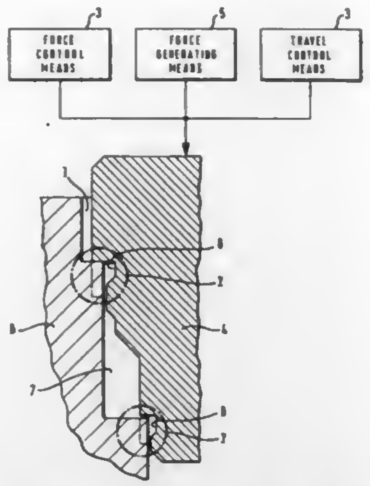


wherein the channel is configured as a stepped bore having an outside bore portion of large diameter that is remote from a pressure fluid side, the outside bore being followed by an inside bore portion of smaller diameter that is close to the pressure fluid side,

wherein the closing member has two piston portions of diameters that respectively correspond to the diameters of the inside and outside bore portions, and the indentation provided between the piston portions is undercut relative to the inside bore portion, and the basic material is press fitted by plastic deformation into the indentation to provide the form lock, the method comprising:

continuously measuring an amount of press-in force applied to the closing member using a force control arrangement;

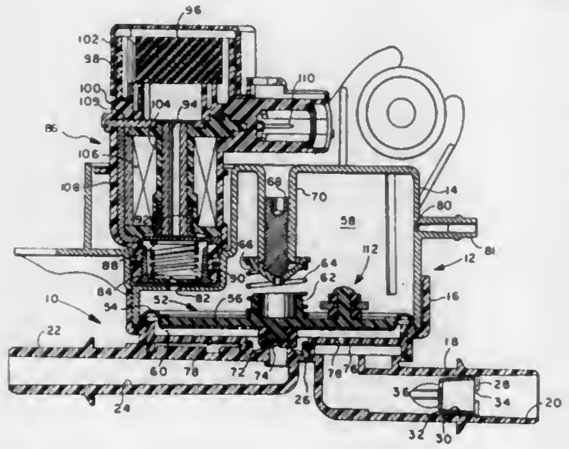
measuring a distance traveled by the closing member; and

using the force control arrangement to adjust the amount of press-in force applied to the closing member as a function of the measured distance traveled.

5,853,018
DAMPENING RESONANCE IN A FLOW REGULATOR

Daniel L. DeLand, Davison; Gerrit V. Beneker, Algonac; Barbara J. Erickson, Holly, and Charles A. Detweller, Durand, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1997, Ser. No. 808,557
Int. Cl.^{6} F16K *31/40;* **F02M** *33/02*
U.S. Cl. 137—15 **14 Claims**



10. A method of dampening resonance in a compressible fluid flow regulator comprising:

(a) providing a moveable pressure responsive member and forming a fluid pressure control chamber on one side thereof and forming a flow control pressure chamber on the side opposite said one side;

(b) connecting a fluid pressure signal source to said control chamber and controlling the pressure in said control chamber;

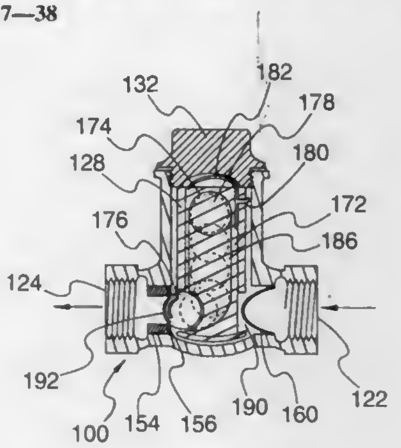
(c) connecting said flow control chamber to a source of compressible fluid to be flow regulated and porting said flow control chamber to a flow discharge line and moving an obturator connected to said pressure responsive member and valving said porting; and,

(d) resiliently attaching an inertial mass to at least a portion of said pressure responsive member and permitting limited movement of said mass with respect to said member and inertially dampening said pressure responsive member in response to pressure pulses and rarefactions experienced in said flow control chamber, independently of the position of said pressure responsive member.

5,853,019
EARTHQUAKE ACTIVATED VALVE

Charles J. Hollenbach, 10101 Main St., Richmond, Ill. 60071

Filed Jul. 8, 1997, Ser. No. 889,336
Int. Cl.^{6} F16K *17/36*
U.S. Cl. 137—38 **11 Claims**



1. A shut-off valve comprising:

a valve housing, having inlet and outlet apertures communicating with a central valve chamber;

a valve seat provided between the inlet aperture and the outlet aperture;

a magnet, located in the inlet aperture, that covers the circumference of the inlet of the valve body, having an opening to allow flow through the inlet;

a ball check, having metallic properties so that the ball check is attracted to the magnet, having a diameter relative to the size of the magnet so that the ball may provide a seal when attached to the magnet that prevents the flow of gas;

a ball sleeve, which is snugly fitted into the central valve chamber, having an inlet opening and an outlet opening that do not restrict the flow of gas;

a ball guide ramp, located on the bottom of the ball sleeve, and having a concave shape to guide the ball down to the magnet;

a ball travel cradle to support the ball check rolling down the ball guide ramp by gravity alone, yet allows the ball to be displaced from the ball travel cradle due to agitation;

a ball reset pull tab;

a level rest formed on the valve housing, which provides a means for installing the valve body so that the ball guide ramp will be positioned so that if the ball check is displaced from the ball travel cradle, gravity will cause the ball check to traverse the ramp toward the magnet;

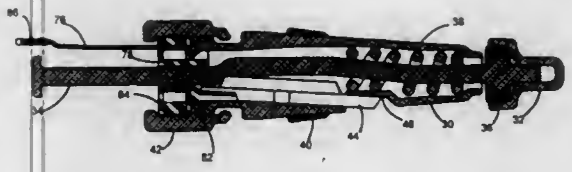
an access bonnet removably secured to the central valve chamber; and

a cover washer, located between the valve body and the access bonnet.

5,853,020
MINIATURE COMBINATION VALVE AND PRESSURE TRANSDUCER AND SYSTEM

Ronald D. Widner, 2811 Pasatiempo Glen, Escondido, Calif. 92025

Filed Jun. 23, 1995, Ser. No. 494,159
Int. Cl.^{6} B60C *23/04*
U.S. Cl. 137—227 **16 Claims**



1. An improved method of pressure measuring, wherein improvements are made in placing a miniaturized pressure measuring device into contact with a medium of pressure to be measured, and wherein said improved method comprises the steps of:

(a) providing an assembly comprising an appropriately shaped and dimensioned pressure transducer assembled into an appropriately shaped and dimensioned housing, said housing having an inner and an outer surface, said inner and outer surfaces being opposite of each other, said housing having an appropriate opening between said opposite surfaces for said shaped pressure transducer to be placed such that said pressure transducer extends at least part way through from one surface to the opposite, and said pressure transducer being substantially an integrated circuit with an improved shape,

(b) providing within said pressure transducer a means for signaling a measured pressure value to the opposite surface of said housing from the surface to which the medium of pressure to be measured is applied,

(c) providing a means of mating said assembly with an appropriately sized and shaped sealable opening of a container holding said pressure medium or with a similar opening of a tube in communication with the pressure medium, and upon mating creating a seal between said assembly, including said housing, and said sealable opening such that the pressure medium does not leak from the sealed opening,

(d) mating said assembly into said sealable opening, afterward applying pressurized medium to the mated assembly, and

(e) thereafter measuring pressure by means of said transducer and signaling at least one parameter indicative of the applied pressure.

5,853,021
PRESSURE LIMITING TIRE DEFLATOR SYSTEM

Bill Grimes, 32 River Rd., Chesapeake City, Md. 21915

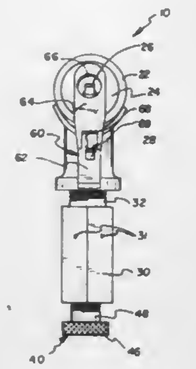
Filed May 8, 1997, Ser. No. 853,365
Int. Cl.^{6} F16K *15/20*
U.S. Cl. 137—230 **6 Claims**

6. A pressure limiting tire deflator system comprising:

a head having a face;

said face includes a cavity having a bottom surface for receiving and sealing with an end of a valve stem within a tire;

a plunger attached concentrically and orthogonally to said bottom surface for engaging a filler valve within said valve stem for allowing deflation of said tire;



an extended portion attached to said head projecting substantially parallel to a plane of said face;

an air passage projecting through said bottom surface coaxially with said plunger and projecting through said head and thereafter said air passage projecting through said extended portion opposite of said head;

an elongated neck having a first end and a second end, wherein said first end is removably attached to said extended portion opposite of said head;

an upper passage projects into said first end a finite distance coaxially with said elongated neck;

a lower passage projects into said second end a finite distance coaxially with said elongated neck, wherein said lower passage has a larger diameter than said upper passage;

a substantially conical tapering neck having a large end and a small end, wherein said conical tapering neck is positioned within said elongated neck with said large end connected coaxially with said lower passage opposite of said second end;

a substantially spherical seat positioned within said elongated neck connected to said small end of said tapering neck and connected to said upper passage opposite of said first end, said seat connecting said upper passage with said lower passage for allowing air to flow through said air passage, said upper passage and said lower passage from in said tire;

a pressure limiting means positioned in said lower passage and said tapering neck for allow the release of said air when an interior pressure of said air in said tire is above a pre-selected pressure; and

wherein said pressure limiting means comprises:

a substantially spherical seal movably positioned within said conical tapering neck for engaging and sealing said seat;

a compression spring positioned coaxial with said elongated neck and engaging said seal;

a cylindrical knob for grasping and rotating by a user;

a second threaded male end attached to said cylindrical knob, wherein said second threaded male end is positioned adjacent to said compression spring opposite of said seal;

said elongated neck includes an interiorly threaded end within said lower passage adjacent said second end for receiving said second threaded male end, whereby said user manually adjusts the compression of said compression spring by rotating said cylindrical knob to force said seal against said seat to thereby stop said air from flowing out of said tire if said interior pressure of said air is below said pre-selected pressure controlled by rotating said cylindrical knob;

a plurality of air release passages project substantially radially from within said seat to an exterior surface of said elongated neck thereby allowing said air to flow out from within said tire when said interior pressure is greater than said pre-selected pressure; and

a cylindrical nub attached to said second threaded male end and projecting into said compression spring coaxially for preventing non-longitudinal movement of said compression spring.

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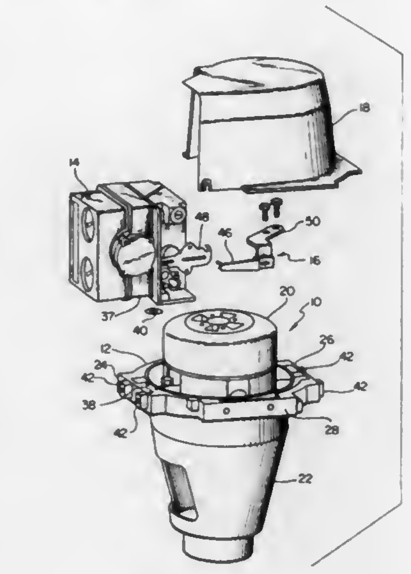
5,853,022

VALVE ACTUATOR WITH INSTRUMENT MOUNTING MANIFOLD

Philip Wayne Eggleston, Sherman, Tex.; Steven Burl Paullus, Marshalltown, Iowa; Danny Paul Nelson, Marshalltown, Iowa; Kenneth Lemoyne Rasmussen, Marshalltown, Iowa; Randy Jerold Hall, Marshalltown, Iowa, and Melvin Lew Osgood, Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.

Filed Apr. 10, 1996, Ser. No. 629,898
Int. Cl.⁶ F16K *31/122*
U.S. Cl. 137—270 9 Claims



1. In an actuator for operating a control element used to regulate the flow of fluid through a fluid control valve in response to a control valve positioning instrument, said actuator including a pair of coaxially aligned members, one movable external member of said pair externally mounted with respect to a fixed internal member of said pair and axially movable with respect to the fixed internal member, said members having adjacent ends, wherein a chamber is defined between said adjacent ends for moving said one movable external member away from said fixed internal member during operation of said actuator, means for coupling said control element to said movable external member, and wherein said chamber when subjected to fluid under pressure operates said actuator and moves said movable external member away from said fixed internal member from a first valve actuator position to a second valve actuator position, the improvement comprising:

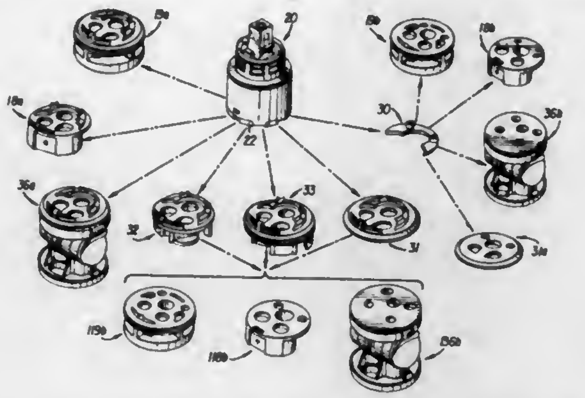
- a mounting pad transversely extending outwardly from said fixed internal member and including an instrument mounting surface portion beyond said movable external member for mounting said control valve positioning instrument;
- a fluid pressure input port in said instrument mounting surface portion for fluid communication with said control valve positioning instrument; and
- fluid passageways in said mounting pad and said fixed internal member for fluid communication of said fluid pressure input port and said chamber for coupling fluid under pressure from said control valve positioning instrument to said chamber; including a bladder mounted in said chamber, said bladder defining an interior space for receiving fluid, and means for fluidly interconnecting said fluid passageways with said interior space.

5,853,023

MULTIPURPOSE SYSTEM FOR CARTRIDGE VALVES TO MIX HOT AND COLD WATER

Alessio Orlandi, and Roberto Orlandi, both of Castiglione Delle Stiviere, Italy, assignors to Galatron SRL, Castiglione Delle Stiviere, Italy

Filed Oct. 28, 1996, Ser. No. 738,483
Claims priority, application Italy, Nov. 3, 1995, UD95A0218
Int. Cl.⁶ F16K *11/074*
U.S. Cl. 137—271 24 Claims



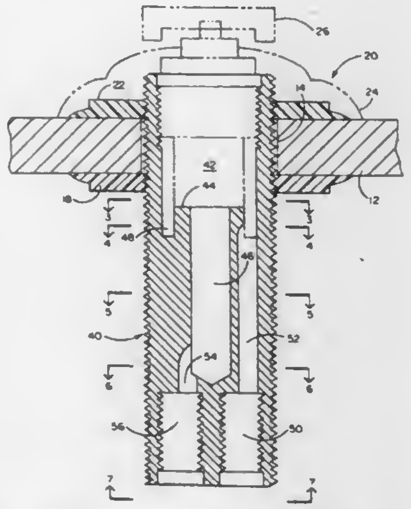
1. A multipurpose system for cartridge valves to mix hot and cold water which comprises: a cartridge body (**20**) including an element (**21**) for controlling flow of the hot and cold water, and a plurality of auxiliary elements selected from the group consisting of adapters, distributors, and elements having specialist functions, and a closure element (**22**) for attaching to the element (**21**) for controlling flow to form a completed cartridge body, the closure element having an outer surface defining at least one connecting hollow (**34**) extending circumferentially, at least one said auxiliary element including a portion for mating with the connecting hollow (**34**).

5,853,024

TOP-MOUNTABLE WIDESPREAD VALVE BODY

James W. Life, Mission Viejo, Calif., assignor to Perani, Inc., Agoura Hills, Calif.

Filed Jul. 14, 1997, Ser. No. 892,409
Int. Cl.⁶ F16K *24/02*
U.S. Cl. 137—359 8 Claims



1. A valve body for lavatory valves, comprising:
a) a substantially cylindrical barrel;
b) a water inlet and a water outlet both formed on the bottom surface of said barrel;
c) valve chamber formed in said barrel at its top end;

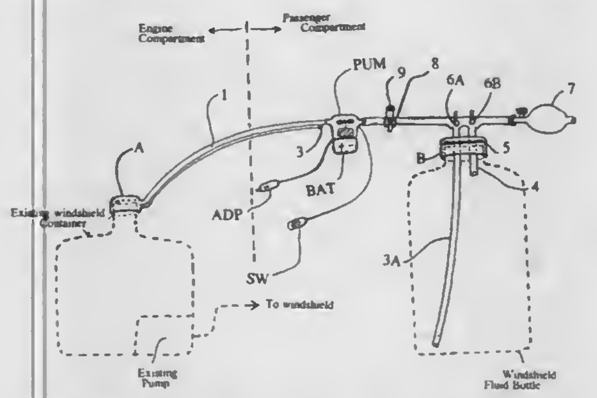
d) a first bore extending axially downwardly from said valve chamber and being in fluid communication with said water inlet;
e) an annular channel surrounding said first bore, said channel being open to said valve chamber;
f) said bore and said channel defining between them a valve seat; and
g) a second bore extending axially of said barrel from said water outlet to said channel.

5,853,025

WINDSHIELD FLUID DELIVERY SYSTEM

Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167

Filed Jan. 15, 1997, Ser. No. 783,262
Int. Cl.⁶ E03B *5/00*
U.S. Cl. 137—565 18 Claims



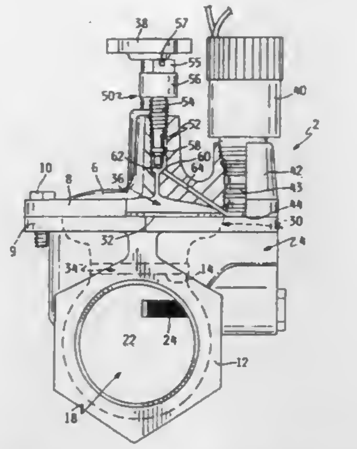
1. In an automotive vehicle with an engine compartment separated from both passenger and trunk compartments, having a windshield washer fluid reservoir holding a supply of washer fluid and a delivery system for delivery of washer fluid from the windshield washer fluid reservoir to an exterior of a windshield of said vehicle, apparatus for replenishing said windshield washer fluid reservoir comprising: a fluid delivery conduit for delivering replenishing fluid to said windshield washer fluid reservoir, said windshield washer fluid reservoir mounted in said engine compartment, a fitting removably attached to a windshield washer fluid container within one of said vehicle passenger or trunk compartments, said windshield washer fluid container holding a supply of replenishing washer fluid, and pump means operatively associated with said fluid delivery conduit and said fitting for causing fluid to be conveyed through said fitting and fluid delivery conduit to said windshield washer fluid reservoir.

5,853,026

VALVE WITH DOWNSTREAM MANUAL BLEED

Anthony M. Wlodarczyk, Redlands; James T. Wright, III, Riverside, and John L. Baker, Calimesa, all of Calif., assignors to The Toro Company, Minneapolis, Minn.

Filed Aug. 30, 1994, Ser. No. 299,020
Int. Cl.⁶ F16K *31/12*
U.S. Cl. 137—613 10 Claims



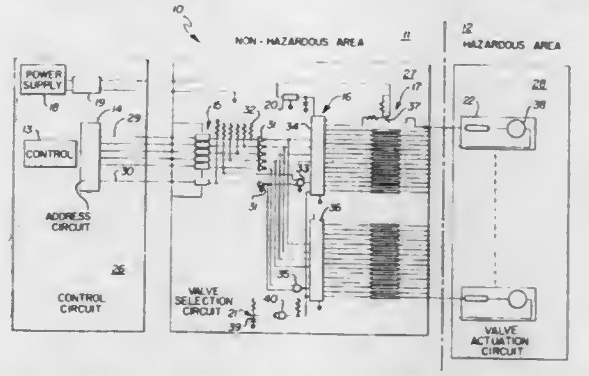
1. A valve for controlling the flow of a liquid, which comprises:
(a) a valve housing having an upper cap, the valve housing providing an inlet, an outlet, a flow path for liquid flowing from the inlet to the outlet, and a valve seat located in the flow path between the inlet and the outlet;
(b) a selectively operable valve member movably carried in the valve for sealing against the valve seat for closing water flow through the valve and which is movable away from the seat to allow water flow through the valve between the inlet and the outlet, one side of the valve member being exposed to fluid pressure upstream of the valve seat and the other side of the valve member forming a portion of a pressure chamber for receiving fluid pressure upstream of the valve seat such that the upstream fluid pressure is received on both sides of the valve member in a closed position of the valve; and
(c) an upwardly facing manually operable bleed screw assembly carried on the cap of the valve for selectively bleeding off fluid pressure from the pressure chamber to open the valve independently of the operation of any other on/off control device, wherein the bleed screw assembly controls flow in a manual bleed path provided in the valve which manual bleed path leads into the flow path downstream of the valve seat, and wherein the bleed screw assembly is rotatable carried, on the cap of the valve for rotation about a substantially vertical axis.

5,853,027

APPARATUS AND METHOD FOR OPERATING PAINT COLOR VALVES IN A PAINT SPRAYING SYSTEM

Robert J. Winkel, Royal Oak, and Mark J. Benard, Clawson, both of Mich., assignors to Fanuc Robotics North America, Inc., Auburn Hills, Mich.

Filed Feb. 20, 1997, Ser. No. 803,256
Int. Cl.⁶ G05B *11/01*
U.S. Cl. 137—624.18 9 Claims



1. An apparatus for selecting a fluid material from a plurality of fluid materials to be supplied to a material applicator that is located in a hazardous area, the apparatus comprising:

- a control circuit located in a non-hazardous area that is separated from the hazardous area that generates a coded address signal representing a selected fluid material and that generates a predetermined amount of electrical power;
- a valve selection circuit coupled with said control circuit and having at least two outputs each corresponding to a different fluid material, said valve selection circuit being located in the non-hazardous area and supplying said predetermined amount of electrical power at a corresponding one of said outputs responsive to said coded address signal;
- a valve assembly including a separate valve connected to each of said valve selection circuit outputs, said valve assembly being

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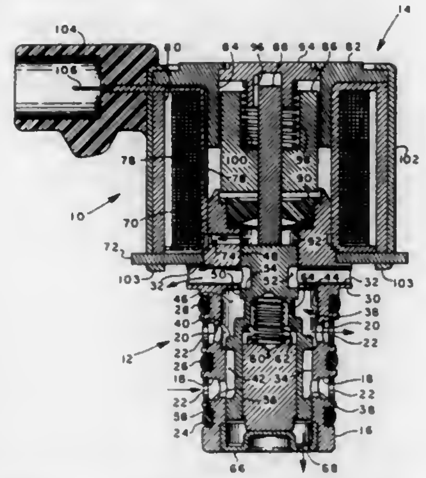
located in the hazardous area and each said valve including a material distribution passage in communication with the material applicator and a material inlet passage in communication with a separate supply of fluid material;

a power inhibitor coupled between said control circuit and said valve selection circuit to prevent inadvertent actuation of said valves; and wherein

said control circuit limits said predetermined amount of electrical power to a value sufficient to actuate only one of said valves to permit flow of fluid material from said material inlet passage to said material distribution passage.

5,853,028
VARIABLE FORCE SOLENOID OPERATED VALVE ASSEMBLY WITH DAMPENER

John A. Ness, Birmingham, and Robert A. Dayton, Attica, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 30, 1997, Ser. No. 846,402
Int. Cl.^{6} F15B *13/044*
U.S. Cl. 137—625.65 **5 Claims**



1. A variable force solenoid operated valve assembly for providing a control pressure at an outlet from an inlet supply pressure in response to an electrical signal to the solenoid comprising:

(a) a valve body having an inlet passage adapted for connection to a fluid source at supply pressure, an outlet passage supplying fluid at a control pressure adapted for communication with a system to be controlled, an exhaust passage adapted for connection to a sump, and a valving bore communicating with each of said passages in axially spaced arrangement;

(b) a spool valve moveably disposed in said valving bore and having a first annular land defining a first chamber communicating with said inlet passage, a second annular land defining a second chamber communicating with said outlet passage and a third annular land stepped from said second land defining a third chamber communicating with said exhaust passage, said spool having a blind bore formed in an end thereof with a piston moveably received therein in closely fitting arrangement including means biasing said piston outwardly of said blind bore, said spool including a port communicating said blind bore with said second chamber;

(c) a first restriction means associated with said second annular land for controllably restricting fluid communication between said first chamber and said second chamber;

(d) a second restriction means associated with said third annular land for controllably restricting fluid communication between said second chamber and said third chamber; and,

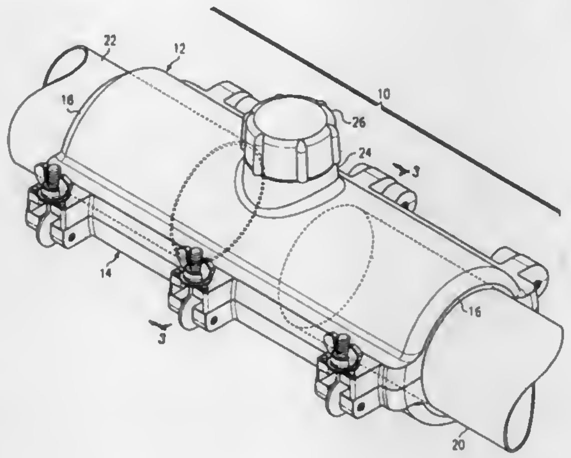
(e) a solenoid assembly including a coil, an armature and a flux collector for providing a flux loop about said coil spaced from said armature, said armature operably contacting said spool valve for effecting movement thereof in response to controlled energization of said coil, and means biasing said armature in a direction away from said flux collector; and, (f) a stop for limiting said outward movement of said piston, whereby controlled energization of said solenoid coil effects movement of said armature and movement of said spool valve in a direction to cause said first restriction to decrease fluid communication between said first and second chamber and cause said second restriction to increase communication between said second and third chambers with said piston closely fitted in said blind bore such that said piston and blind bore function as a dashpot for dampening transient movement of said spool.

5,853,029

Patent Not Issued For This Number

5,853,030
PIPE COUPLING WITH A DISINFECTANT INJECTION PORT

Larry Walding, 818 Bassett Rd., Palestine, Tex. 75801
Filed Mar. 11, 1997, Ser. No. 820,373
Int. Cl.^{6} F16L *55/16*
U.S. Cl. 138—99 **10 Claims**



1. A pipe coupling comprising:

a first coupling shell configured to matingly engage a first semi-circular section of at least one pipe;

a second coupling shell configured to matingly engage a second semi-circular section of the at least one pipe;

a hinge rotatably connecting the first and second coupling shells;

at least one fastener coupled to the first coupling shell and adapted to maintain the first and second coupling shells in engagement with the at least one pipe, thereby forming the pipe coupling;

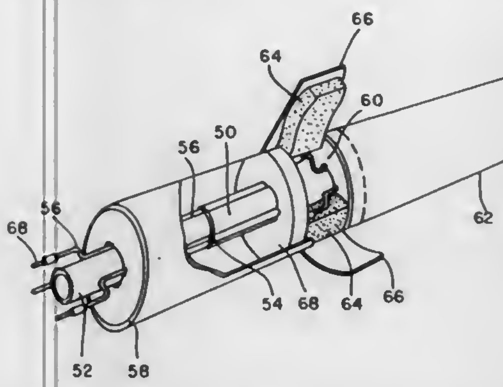
a port extending through the first coupling shell for providing fluid communication between the exterior and the interior of the pipe coupling;

a grommet disposed in the port for preventing fluid from escaping from the coupling, wherein the grommet comprises a pliable material through which an aperture is defined having an open portion and a normally-closed portion, which pliable material is adapted to radially compress and expand to permit the normally-closed portion to radially expand and open upon penetration by a needle for the injection of fluid therethrough into the coupling, and to radially contract and close upon removal of the needle; and

a cap for placement on the port for preventing fluid communication through the port.

5,853,031
INSULATING AND FIXATION SYSTEM OF STEAM TRACERS IN FLUID TRANSPORTATION PIPINGS

Murilo Pessosa de Oliveira, Av. Parque Leste, S/N Pajucara Distrito Industrial De Maracanao, Fortaleza, Ceara, Brazil
Filed Sep. 21, 1995, Ser. No. 531,450
Claims priority, application Brazil, Sep. 21, 1994, 9403801-5
Int. Cl.^{6} F16L *9/14*
U.S. Cl. 138—149 **5 Claims**



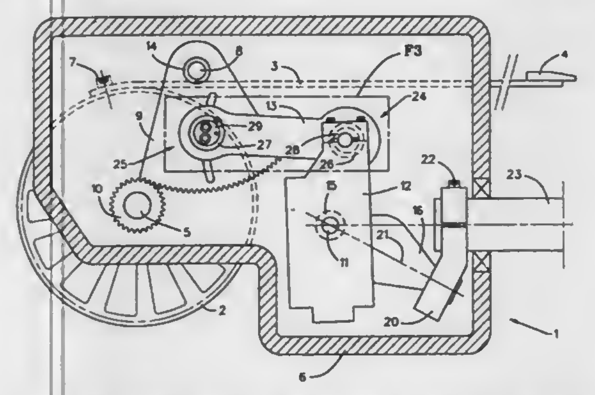
1. Insulating and fixation system of steam tracers in fluid transportation pipings, comprising:

an internal metallic piping with a larger diameter than a piping to be heated, said internal metallic piping arranged concentrically to the piping to be heated,

a plurality of piping heating extensions, said internal metallic piping endowed with internal equally distant spaced rips in the longitudinal direction for arrangement and fixation of the piping heating extensions and a thermoplastic external piping, arranged concentrically to said internal metallic piping, forming an annular space and thereby forming a double wall tubular cylinder, said annular space formed between said internal piping and the external piping being fulfilled with insulating material, said insulating material having no contact with said piping to be heated and external surroundings wherein, an interconnection of said heating extensions in section a of said double wall tubular cylinder is comprised of with outputs forming a "simple U"-shaped.

5,853,032
LOOM GRIPPER DRIVE WITH APPARATUS FOR CHANGING THE PATH OF MOTION OF THE GRIPPER BAND

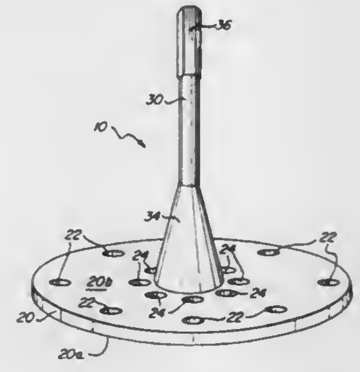
Henry Shaw, Woesten-Vleteren, and Patrick Strubbe, Gistel, both of Belgium, assignors to Picanol N.V., Ypres, Belgium
Filed Oct. 11, 1996, Ser. No. 729,150
Claims priority, application Belgium, Oct. 11, 1995, 9500840
Int. Cl.^{6} D03D *47/12*
U.S. Cl. 139—449 **12 Claims**



1. A loom gripper-drive (1) including a wheel (2) drivingly connected to a gripper band (3), said wheel (2) being drivingly connected to a movable gear segment (9) supported on a first stationary shaft (8) and connected by a coupling rod (13) to a crankarm (12) supported on a second stationary shaft (11), said coupling rod (13) being connected at respective connection points(24,25), to the gear segment (9) and to the crankarm (12) at respective distances from the first and second stationary shafts (8,11), and means (28,30) for adjusting the circumferential position of the connection point (24) of the coupling rod (13) to the crankarm (12) relative to the second stationary shaft (11).

5,853,033
WIRE UNTWISTING APPARATUS

Gregory S. Kavanagh, 693 Summit Ave., Brick, N.J. 08724
Continuation-in-part of Ser. No. 683,598, Jul. 15, 1996, abandoned. This application Jul. 15, 1997, Ser. No. 892,804
Int. Cl.^{6} B21F *21/00*
U.S. Cl. 140—123 **9 Claims**



1. A wire untwisting apparatus for untwisting a multi-wire cable, comprising:

a plate having a wire engaging face and a wire securing face, the plate having at least four wire guides extending therethrough, at least four wire securing ports extending through the plate; and

a shaft operably connected to the plate such that rotation of the shaft causes rotation of the plate.

5,853,034
DISPENSING SYSTEM AND METHOD FOR DISPENSING A CONCENTRATED PRODUCT AND CONTAINER FOR USE THEREWITH

Maitland R. Edwards, Lakeville; Dale W. Groth, Edina, and Eric R. Balz, Eagan, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Aug. 4, 1995, Ser. No. 511,398
Int. Cl.^{6} B65B *3/00*
U.S. Cl. 141—330 **19 Claims**

1. A dispensing system comprising:

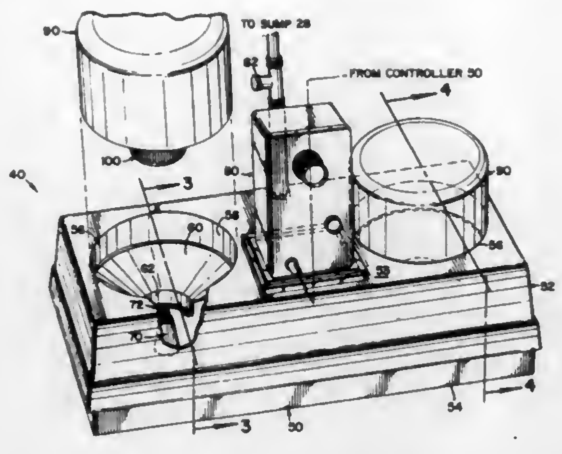
(a) a container housing a quantity of concentrated product and being sized to permit a quantity of diluent to be added to the concentrated product to form a use dilution; wherein the concentrated product is an additive for treating cooling water in a heating system or an air conditioning cooling system and

(b) a dispenser including:

  (1) a housing forming a sump for retaining a quantity of the use dilution, the housing including an opening for supporting the container;

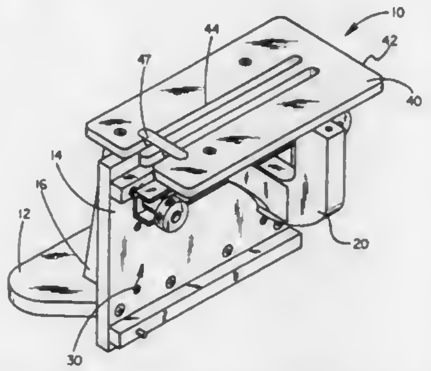
  (2) opening means for automatically forming an aperture in the container when the container is installed into the dispenser; and

  (3) dispensing means comprising a pump, in fluid communication with the housing, for dispensing the use dilution from the container to a point of use, wherein the container forms an atmospheric head to automatically maintain the



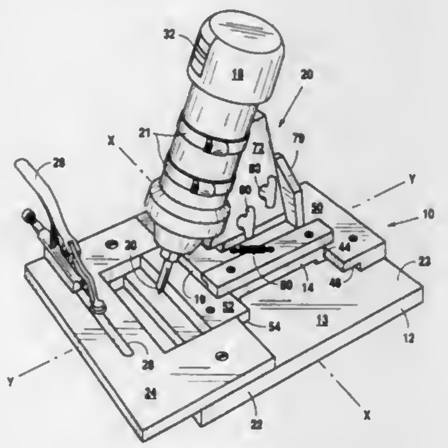
level of use dilution housed in the sump at a predetermined level so long as a quantity of use dilution is retained in the container.

5,853,035
SLOTTED DOVETAIL HOLDING FIXTURE
Monte L. Rose, 256 E. 2050 S., Bountiful, Utah 84010-5427
Filed Nov. 19, 1997, Ser. No. 974,045
Int. Cl.^{6} B27F *1/08;* B27C *5/10*
U.S. Cl. 144—144.1 **5 Claims**



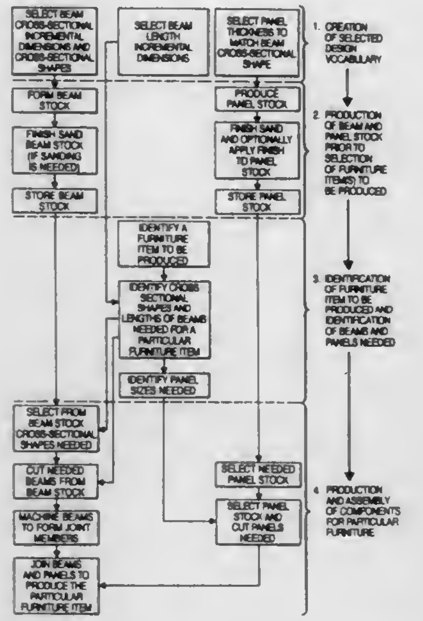
1. A slotted dovetail holding fixture comprising, in combination:
a horizontally oriented planar base with a generally oval configuration for being clamped to a recipient surface;
a vertically oriented planar central support having a rectangular configuration coupled adjacent a bottom edge thereof along a side edge of the base;
a pair of spaced triangle shaped mounting brackets each having a lower edge coupled to a top surface of the base in perpendicular relationship with the central support, a vertical side edge coupled to the central support, and a top edge formed contiguous with a top edge of the central support with a threaded bore formed therein;
a primary cantilever having a J-shaped configuration with a lower horizontal member coupled to the central support on a face opposite that of the mounting brackets and in coplanar relationship with a first one of the mounting brackets and an upper vertical member coupled to an outboard end of the lower horizontal member and extending upwardly therefrom with a top face situated at an elevation common with the top edge of the mounting brackets and a threaded bore formed therein;
a linear secondary cantilever having a lower end coupled adjacent the outboard end of the lower horizontal member of the primary cantilever and extending upwardly and outwardly therefrom in a plane residing in parallel with the central support;
a clamping assembly including an elongated rectilinear strip with a square cross-section coupled to the central support spaced a predetermined distance from the top edge thereof and extending between side edges thereof, the strip having a pair of bolts fixed to ends thereof and extending outwardly therefrom, a clamping bar with a pair of bores formed in ends thereof for slidably receiving the bolts, and a pair of knurled knobs each with a threaded bore for threadedly engaging the bolts thereby allowing the clamping of a planar piece of wood between the clamping bar and the strip with a top edge thereof spaced from and at an elevation common with the top edge of the central support; and
a pair of templates each having planar rectangular configuration with a plurality of bores formed therein for allowing the screwable coupling thereof with the threaded bores of the cantilevers and mounting brackets, the templates including a first template with a pair of linear, parallel and elongated cutouts formed therein and in communication with a side edge of the first template, the cutouts being situated above a corresponding upper edge of the piece of wood clamped by the clamping assembly for allowing the forming of a dovetail tenon in the piece of wood with a router, the templates further including a second template with an oval cutout formed therein for forming a tenon in the piece of wood with a router.

5,853,036
CONTOURED MOLDING CUTTING APPARATUS
Robert S. Welch, 2716 Savannah, El Paso, Tex. 79930
Filed Nov. 7, 1997, Ser. No. 966,905
Int. Cl.^{6} B27C *5/02;5/10*
U.S. Cl. 144—154.5 **7 Claims**



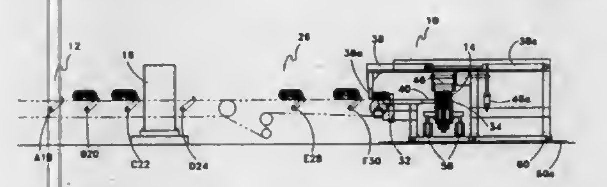
1. A work piece cutting apparatus comprising:
a base plate;
a first guide bracket disposed at a first lateral side of said plate and a second guide bracket disposed at a second, opposite lateral side of said plate;
a block longitudinally slidable between said first and second brackets across said base plate there between;
a second pair of guide brackets disposed at opposite lateral sides of said block;
a table transversely slidable between said second pair of brackets across said block there between;
an angular adjustment mounting bracket affixed transversely across a central portion of said table and adapted to receive a cutting member having a depending blade; and
a work piece holder disposed at said first lateral side of said base plate, said holder adapted to detachably secure a work piece thereto whereby movement of said cutting member longitudinally and transversely imparts angular cuts to said work piece.

5,853,037
RECTILINEAR CROSS-SECTIONAL BEAM FURNITURE, FURNITURE DESIGN AND FURNITURE PRODUCTION
Thomas F. Moser, Dingley Island Rd., Brunswick, Me. 04011
Filed Jul. 6, 1995, Ser. No. 498,956
Int. Cl.^{6} B27M *1/00;* B27B *1/00;* A47C *7/02*
U.S. Cl. 144—329 **11 Claims**


SELECT BEAM CROSS-SECTIONAL INCREMENTAL DIMENSIONS AND CROSS-SECTIONAL SHAPES
SELECT BEAM LENGTH INCREMENTAL DIMENSIONS
SELECT PANEL THICKNESS TO MATCH BEAM CROSS-SECTIONAL SHAPE
1. CREATION OF SELECTED DESIGN VOCABULARY
FORM BEAM STOCK
PRODUCE PANEL STOCK
FINISH SAND BEAM STOCK (IF SANDING IS NEEDED)
FINISH SAND AND OPTIONALLY APPLY FINISH TO PANEL STOCK
2. PRODUCTION OF BEAM AND PANEL STOCK PRIOR TO SELECTION OF FURNITURE ITEM(S) TO BE PRODUCED
STORE BEAM STOCK
STORE PANEL STOCK
IDENTIFY A FURNITURE ITEM TO BE PRODUCED
IDENTIFY CROSS SECTIONAL SHAPES AND LENGTHS OF BEAMS NEEDED FOR A PARTICULAR FURNITURE ITEM
3. IDENTIFICATION OF FURNITURE ITEM TO BE PRODUCED AND IDENTIFICATION OF BEAMS AND PANELS NEEDED
IDENTIFY PANEL SIZES NEEDED
SELECT FROM BEAM STOCK CROSS-SECTIONAL SHAPES NEEDED
CUT NEEDED BEAMS FROM BEAM STOCK
SELECT NEEDED PANEL STOCK
4. PRODUCTION AND ASSEMBLY OF COMPONENTS FOR PARTICULAR FURNITURE
MACHINE BEAMS TO FORM JOINT MEMBERS
SELECT PANEL STOCK AND CUT PANELS NEEDED
JOIN BEAMS AND PANELS TO PRODUCE THE PARTICULAR FURNITURE ITEM

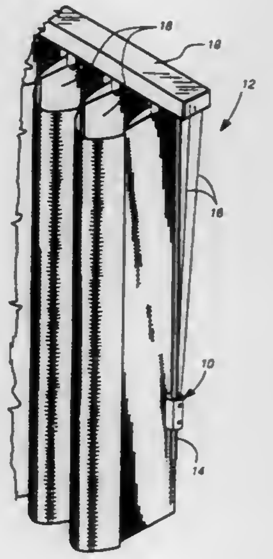
1. A method for manufacturing furniture, comprising the steps of:
(a) selecting a design vocabulary comprising a variety of graduated, substantially rectilinear cross-sectional shapes for furniture component beams,
(b) manufacturing random lengths of beam stock in the previously-selected beam cross-sectional shapes,
(c) selecting a particular furniture item to be built,
(d) determining the lengths, numbers, and types of beams required for assembly of the particular furniture item,
(e) cutting from the previously produced beam stock the lengths, types, and numbers of beams identified in the preceding step,
(f) machining the beams to enable them to be joined,
(g) assembling the beams by joining the previously machined portions of the beams to form the furniture item.

5,853,038
METHOD AND APPARATUS FOR THE VARIABLE POSITION FEEDING OF A GANG SAW
William R. Newnes, Salmon Arm, Canada, assignor to Newnes Machine Ltd., Salmon Arm, Canada
Filed Mar. 28, 1997, Ser. No. 827,264
Int. Cl.^{6} B27B *1/00;31/00*
U.S. Cl. 144—357 **20 Claims**



1. A device for feeding a workpiece into a gang saw sawblade cluster comprising
longitudinal drive means for selectively longitudinally translating a workpiece, which has been sequenced onto said longitudinal drive means, into a gang saw sawblade cluster,
selective positioning means for selectively positioning said longitudinal drive means relative to said gang saw sawblade cluster as said longitudinal drive means translates said workpiece longitudinally into said gang saw sawblade cluster,
wherein said selective positioning means includes an optimizing elevation means for selectively raising and lowering said longitudinal drive means, so as to preset an optimized feed elevation of said workpiece, relative to said gang saw sawblade cluster as said longitudinal drive means translates said workpiece longitudinally into said gang saw sawblade cluster;
and wherein said selective longitudinal translation of said workpiece by said longitudinal drive means and said selective positioning of said longitudinal drive means relative to said gang saw sawblade cluster by said selective positioning means is selectively coordinated by coordinating means, during said feeding of said workpiece into said gang saw sawblade cluster, according to an optimizing algorithm, operating on scanned data corresponding to said workpiece, for generating a unique cutting solution for said workpiece.

5,853,039
COUPLER FOR THE TILT WAND AND PULL CORD OF A COVERING ON ARCHITECTURAL OPENING
Donald E. Fraser, Owensboro, Ky.; Barbara A. Randle, Broomfield, Colo.; Brad H. Oberg, Westminster, Colo., and Jason T. Throne, Steamboat Springs, Colo., assignors to Hunter Douglas Inc., Upper Saddle Riber, N.J.
Filed Apr. 22, 1997, Ser. No. 837,811
Int. Cl.^{6} E06B *9/36*
U.S. Cl. 160—178.1 V **17 Claims**



6. A coupler for a window covering having a pull cord and a tilt wand, said coupler comprising:
a body having a longitudinal passageway formed therein for receiving said tilt wand, a first longitudinal channel formed therein for receiving a first segment of said pull cord, a second longitudinal channel formed therein for receiving a second segment of said pull cord; and
means for maintaining the position of said coupler at a predetermined location along the length of said tilt wand and for maintaining tension on said pull cord, said means including a pulley having a pulley groove adapted for receiving said pull cord and a first recess formed in said body in communication with said first and second longitudinal channels adapted to receive said pulley.

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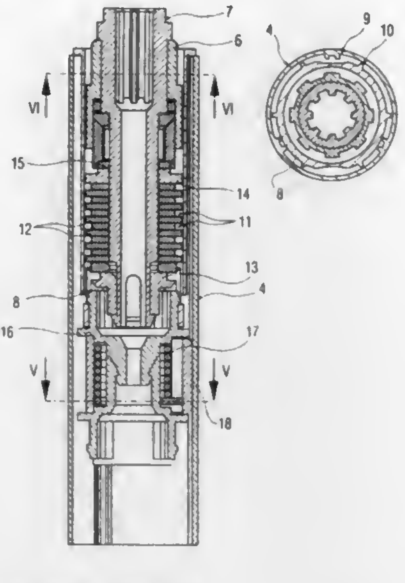
5,853,040
CASSETTE BLIND WITH BRAKE COUPLING

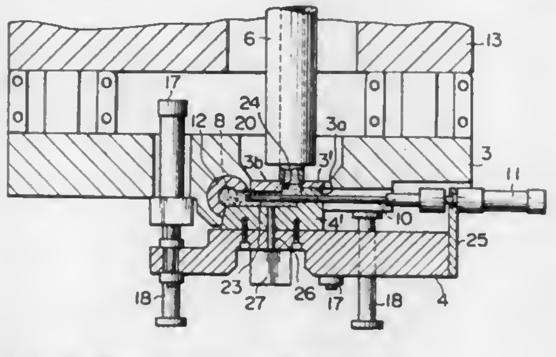
Siegfried Benthin, Bremerhaven, Germany, assignor to Benthin Aktiengesellschaft, Bremerhaven, Germany
Continuation-in-part of Ser. No. 532,416, Sep. 22, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 790,625
Int. Cl.^{6} E06B *9/56*
U.S. Cl. 160—299 **18 Claims**



1. A cassette blind comprising:
a winding shaft;
a stationary pin including pin coupling means for engaging with said winding shaft in an unwinding direction of said winding shaft;
a drive member rotatably connected to, and rotatable with respect to, said winding shaft;
drive coupling means for engaging said drive member with said winding shaft, said drive coupling means including a spring means connected to said winding shaft and connected to said drive member, said spring means biasing said winding shaft ahead of said drive member in a winding direction of said winding shaft.

5,853,041
DIE CASTING DEVICE

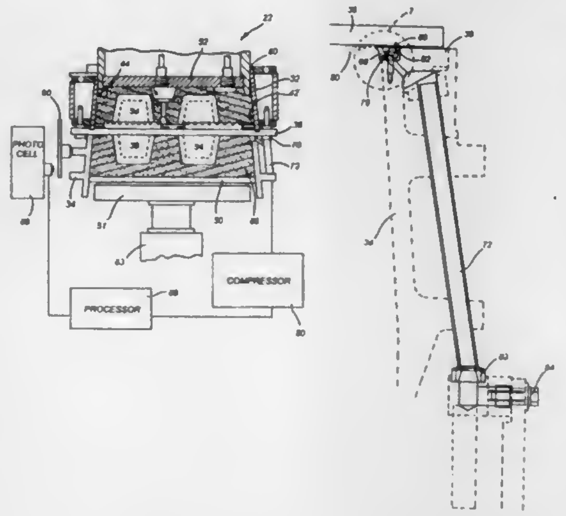
Shunzo Aoyama, Saitama-ken, Japan, assignor to Ahresty Corporation, Tokyo, Japan
Filed Jun. 24, 1996, Ser. No. 668,769
Claims priority, application Japan, Sep. 11, 1995, 7-232417
Int. Cl.^{6} B22D *17/12;17/20*
U.S. Cl. 164—312 **15 Claims**



1. In a die casting device comprising:
a cavity defined by a fixed die and a movable die;
a plunger disposed in a runner connected to said cavity in such a manner as to be movable to and from a gate of said cavity;
a molten metal inlet formed midway in the runner;
wherein molten metal supplied from said molten metal inlet in said cavity is pressurized by the advance of said plunger,
the improvement comprising:
an auxiliary die unit having a runner and a molten metal inlet connected to said cavity, which is disposed in a border of said fixed die;
wherein excessive solidified metal is produced in the vicinity of the molten metal inlet of said auxiliary die unit.

5,853,042
DRAG MOLD RELEASE MECHANISM

William A. Hunter, Naples, Fla., assignor to Hunter Automated Machinery Corporation, Schaumburg, Ill.
Filed Feb. 26, 1998, Ser. No. 30,982
Int. Cl.^{6} B22C *7/04;9/02;21/00*
U.S. Cl. 164—456 **20 Claims**

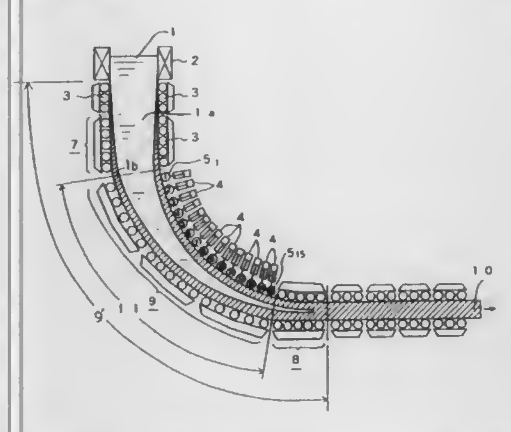


1. In a sand mold forming apparatus including a drag flask for forming a drag mold of compressed green sand having an internal cavity corresponding to a portion of a desired casting, and a matchplate attached to the drag flask and having patterns protruding therefrom for forming the internal cavity, an improved mechanism for releasing the drag mold from the drag flask and matchplate, comprising:
a plurality of air inlets within the drag flask and proximate the matchplate, the plurality of air inlets being adapted to communicate compressed air between the drag mold and the matchplate; and
means for communicating compressed air from a source of compressed air to the plurality of air inlets to thereby release the drag mold from the drag flask.

19. A method of releasing a drag mold from a drag flask and matchplate attached thereto, comprising the steps of:
providing a plurality of air injection inlets in the drag flask between the drag flask and the matchplate; and
injecting compressed air through the air inlets to force compressed air between the drag mold and the matchplate to release the sand mold from the matchplate to allow gravity to pull the sand mold from the drag flask.

5,853,043
METHOD AND APPARATUS FOR CONTINUOUS CASTING OF A THIN SLAB

Isamu Takeuchi, Nishinomiya; Akihiro Yamanaka, Osaka; Kazuo Okamura, Nishinomiya; Hiroyasu Simizu, Kobe; Takasi Kanazawa; Seiji Kumakura, both of Kashima; Masakazu Koide, Narashino; Toshihiko Murakami, and Tadao Watanabe, both of Kashima, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
PCT No. PCT/JP95/01504, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO96/04086, PCT Pub. Date Feb. 15, 1996
PCT Filed Jul. 27, 1995, Ser. No. 591,536
Claims priority, application Japan, Jul. 29, 1994, 6-178448; Jul. 12, 1995, 7-175885
Int. Cl.^{6} B22D *11/12;* **B21B** *1/46*
U.S. Cl. 164—476 **7 Claims**



1. A method of continuous production of a thin slab with reduced strain from a slab drawn from a continuous casting mold with a liquid core, the slab having a liquid phase plus a solid phase after being drawn from the mold, the method comprises the steps of:
rolling the slab having a liquid core between a plurality of pairs of reduction rollers, thereby reducing the thickness of the slab with each pair of reduction rollers;
rolling the slab having a liquid core with the plurality of pairs of reduction rollers at a location between a point directly below the mold from which the slab is continuously drawn, and a point of complete solidification of said slab;
reducing the thickness of the slab having a liquid core with the plurality of pairs of reduction rollers such that the following relationship is satisfied:

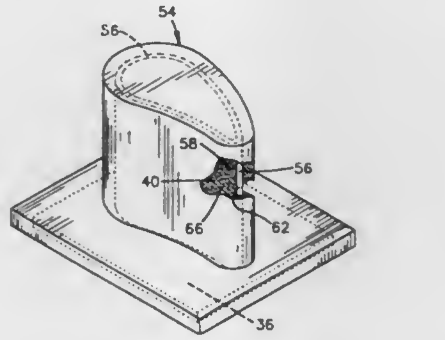
$$P_1 \geqq P_2 \geqq P_3 \geqq - - - \geqq P_k$$

wherein "P" is the amount of reduction(mm) effected by each pair of reduction rollers, and "k" is the number allotted to each pair of the plurality of pairs of reduction rollers, thereby controlling the amount of reduction in thickness such that the amount of reduction effected by an upstream pair of reduction rollers is greater than or equal to the amount of reduction effected by a pair of downstream reduction rollers, or controlling the amount of reduction such that the amount of reduction effected by all of the pairs of reduction rollers are all equal to each other.

6. An apparatus for the continuous production of a thin slab from a slab drawn from a continuous casting mold with a liquid core, the slab having a liquid phase plus a solid phase after being drawn from the mold, the apparatus comprising:
a curved segment;
at least one reduction roller block provided in the curved segment for reducing the thickness of the slab having a liquid core;
an upper roller segment frame for raising and lowering upper reduction rollers;
a plurality of upper reduction rollers provided beneath the upper roller segment frame;
a moving device for moving the upper roller segment frame up and down;
a fixed upper frame of a gate shape for accommodating the moving device;
upstream and downstream guide shafts which are fixed to the upper roller segment frame;
an upper limit stopper for the upstream guide shaft, a lower limit stopper for the upstream guide shaft, a casting direction guide for the upstream guide shaft, each being fixed to the fixed upper frame;
an upper limit stopper for the downstream guide shaft, a lower rotation limit stopper which controls the rotation of a downstream guide shaft, each being fixed to the fixed upper frame;
a lower roller segment frame including a plurality of lower reduction rollers and provided beneath the fixed upper frame of the gate shape; and
the upper roller segment frame is connected with the fixed upper frame so that the upper roller segment frame can move in the direction of a normal line that connects the center of the curved segment and the center of the upper roller segment frame simultaneously with movement of the upstream guide shaft and the casting direction guide, and the upper segment frame can rotate about the center of the upstream guide shaft between the upper limit stopper of the downstream guide shaft and the lower rotation limit stopper of the downstream guide shaft, thereby preventing misalignment.

5,853,044
METHOD OF CASTING AN ARTICLE

Harold L. Wheaton, Bowerston, and Lawrence D. Graham, Chagrin Falls, both of Ohio, assignors to PCC Airfoils, Inc., Cleveland, Ohio
Filed Apr. 24, 1996, Ser. No. 636,926
Int. Cl.^{6} B22C *7/02;9/04*
U.S. Cl. 164—516 **16 Claims**



1. A method of casting a metal article having a cavity formed therein and an outer side, said method comprising the steps of providing an article pattern which has a cavity with a configuration which corresponds to the configuration of the cavity in the metal article and an outer side which has a configuration which corresponds to the configuration of the outer side of the metal article, at least partially filling the cavity in the article pattern with ceramic core material, at least partially enclosing the outer side of the article pattern with ceramic mold material, removing the article pattern to leave an article mold cavity which is partially defined by the ceramic core material and is partially defined by the ceramic mold material, at least partially filling the article mold cavity with molten metal, and solidifying the molten metal in the article mold cavity to form the metal article with the cavity in the metal article at least partially shaped by engagement of the molten metal with the ceramic core material and with the outer side of the metal article at least partially shaped by engagement of the molten metal with the ceramic mold material.

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5,853,045

ACCUMULATOR-EXCHANGER DEVICE

Jean Patry, 9, rue Saint-Paul, 75004 Paris, and Claude Reboul, 86, rue Michel-Ange, F-75016 Paris, both of France

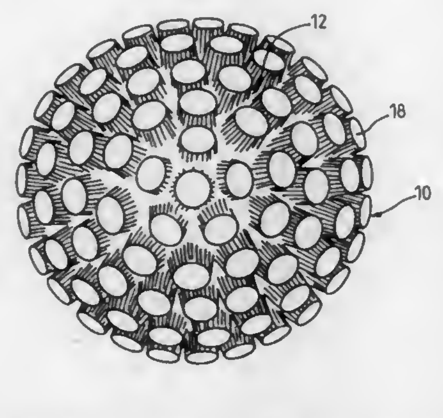
PCT No. PCT/FR96/00444, § 371 Date Sep. 29, 1997, § 102(e) Date Sep. 29, 1997, PCT Pub. No. WO96/30710, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 25, 1996, Ser. No. 930,007

Claims priority, application France, Mar. 31, 1995, 95 03849

Int. Cl.^{6} F28D *17/00*

U.S. Cl. 165—10 **16 Claims**



1. An accumulator-exchanger of a filling-body type, rigid spherical shells of which, partially filled with a heat and/or cold storage agent having a high liquid-solid transformation latent heat, and with a compressible material for absorbing the variations in the volume of the storage agent during its phase change, and comprising: raised features for increasing an exchange surface area thereof and all having an axis of symmetry passing through the center of symmetry of their base and through the center of the filling body, said bases of the raised features being all equal and identical and said raised features being uniformly distributed over the entire surface of the shell.

5,853,046

HEAT EXCHANGER SEAL APPARATUS

Amanda L. Williams, Adrian, and Bipin D. Parekh, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 21, 1997, Ser. No. 787,507

Int. Cl.^{6} F28F *9/00*

U.S. Cl. 165—76 **8 Claims**

1. A sealing apparatus for a heat exchanger used in an automotive vehicle, said sealing apparatus comprising:

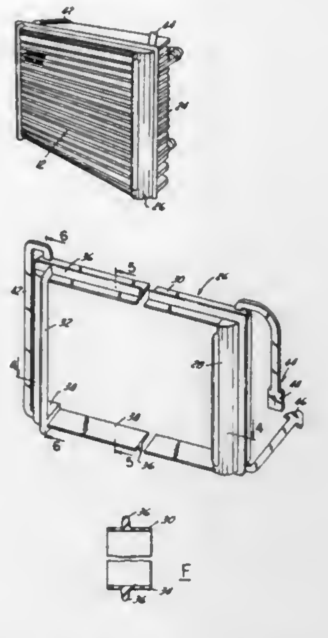
a heat exchanger having a plurality of interleaved fluid conducting tubes and fins forming a generally rectangular core, said core defining a pair of generally orthogonally opposed sides;

a housing having an open end and a plurality of walls defining a volume for receiving the heat exchanger therein;

a closed loop of rigid material, said loop defining four substantially orthogonal edges, each edge being in contact with a respective side of said core of said heat exchanger;

a sealing member of soft material attached to an outer face of at least one edge of said closed loop not in contact with said heat exchanger, said sealing member being in contact with said housing walls; and

a plurality of locating pins integrally formed with and extending from an inner face of at least one edge of said closed loop in contact with said heat exchanger, said locating pins being disposed at predetermined locations on said closed loop, and engaged in said fins of said core to positively locate said closed loop in a correct position relative to said heat exchanger.



5,853,047

HEAT EXCHANGER FOR AIR CONDITIONER

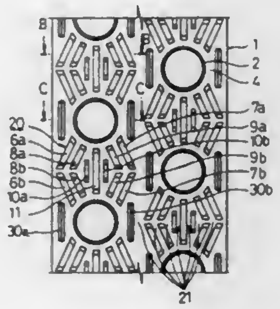
Young-Saeng Kim, Inchun, DPR of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 12, 1997, Ser. No. 912,988

Claims priority, application DPR of Korea, Oct. 31, 1996, 96-50686

Int. Cl.^{6} F28D *1/04;* **F28F** *1/32*

U.S. Cl. 165—151 **2 Claims**



1. A heat exchanger for an air conditioner having a plurality of parallel heat exchanging tubes passing through flat fins perpendicular thereto, the tubes including pairs of vertically spaced tubes, the flat fins being arranged in parallel to each other at predetermined intervals to enable air to flow between adjacent fins in a direction perpendicular to axes of the tubes, and each heat exchanging tube adapted to conduct fluid, the heat exchanger comprising:

a plurality of louvers formed in each fin between each pair of vertically spaced tubes, each plurality of louvers including:

a pair of first and second vertically spaced louvers defining upstream-most louvers of the plurality of louvers with reference to a direction of air flow,

second and third vertically spaced louvers defining downstream-most louvers of the plurality of louvers with reference,

fifth and sixth vertically spaced louvers disposed immediately downstream of the first and second louvers,

seventh and eighth vertically spaced louvers disposed immediately upstream of the second and third louvers,

ninth and tenth louvers extending vertically, the ninth louver disposed immediately downstream of the fifth and sixth louvers, the tenth louver disposed immediately upstream of the seventh and eighth louvers, and

an eleventh louver extending vertically and situated between the ninth and tenth louvers, the eleventh louver being longer than either of the ninth and tenth louvers, and extending upwardly and downwardly past the ninth and tenth louvers,

the first and second louvers converging toward one another in a direction opposite the direction of air flow,

the third and fourth louvers converging toward one another in the direction of air flow,

the fifth and sixth louvers converging toward one another in a direction opposite the direction of air flow,

the seventh and eighth louvers converging toward one another in the direction of air flow,

the first, second, third, fourth, ninth and tenth louvers projecting from a first side of the fin,

the fifth, sixth, seventh, eighth, and eleventh louvers projecting from a second side of the fin disposed opposite the first side,

each of the first, third, fifth, and seventh louvers having a pair of parallel side edges extending generally radially with respect to an upper one of the respective pair of tubes,

each of the second, fourth, sixth and eighth louvers having a pair of parallel side edges extending generally radially with respect to a lower one of the respective pair of tubes; and

first and second beads formed, respectively, upstream and downstream of each of the heat exchanging tubes, thereby enlarging an effective surface area of the flat fins, and reinforcing the flat fins.

5,853,048

CONTROL OF FINE PARTICULATE FLOWBACK IN SUBTERRANEAN WELLS

Jim D. Weaver; James R. Stanford; Philip D. Nguyen, all of Duncan; Bobby K. Bowles, Comanche; Steven F. Wilson, Duncan; Brahmadeo Dewprashad, Lawton, and Mark A. Parker, Duncan, all of Okla., assignors to Halliburton Energy Services, Inc.

Division of Ser. No. 858,312, May 19, 1997, Pat. No. 5,775,425, which is a continuation-in-part of Ser. No. 725,368, Oct. 3, 1996, Pat. No. 5,787,986, which is a continuation-in-part of Ser. No. 510,399, Aug. 2, 1995, Pat. No. 5,582,249, which is a continuation-in-part of Ser. No. 412,668, Mar. 29, 1995, Pat. No. 5,501,274. This application Apr. 21, 1998, Ser. No. 63,839

Int. Cl.^{6} E21B *41/02;43/267*

U.S. Cl. 166—279 **15 Claims**

7. A method of treating a subterranean formation to control corrosion of ferrous metals in contact therewith by aqueous fluids in said formation comprising the steps of:

introducing a solution of an effective amount of a tackifying compound comprising a polyamide and a diluent into a subterranean formation to contact particulates present in said subterranean formation;

depositing at least a portion of said tackifying compound upon at least a portion of said particulates in said subterranean formation; and

flowing aqueous fluid from said subterranean formation whereby a portion of the deposited tackifying compound is caused to be displaced from said particulates and to subsequently contact at least a portion of a ferrous metal surface in contact with said formation and thereby protect at least a portion of said surface from corrosion caused by aqueous fluids in contact therewith.

5,853,049

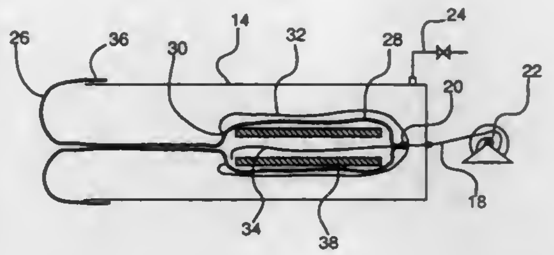
HORIZONTAL DRILLING METHOD AND APPARATUS

Carl E. Keller, P.O. Box 9827, Santa Fe, N. Mex. 87504

Filed Feb. 26, 1997, Ser. No. 807,028

Int. Cl.^{6} E21B *19/16*

U.S. Cl. 166—380 **10 Claims**



8. A method for installing a casing in a borehole, comprising the steps of:

inverting said casing within a liner assembly;

pressurizing said liner assembly to grip said casing therein;

everting said liner assembly with said casing through said borehole; and

inverting said liner assembly from within said borehole and from about said casing.

5,853,050

COMPOSITION AND METHOD FOR GENERATING A FOAM BARRIER AND METHODS OF USE THEREOF

Paul A. Kittle, Concordville, Pa., assignor to Rusmar Incorporated, West Chester, Pa.

Filed May 7, 1997, Ser. No. 852,333

Int. Cl.^{6} A62C *3/00;* **A62D** *1/04;* **B01J** *13/00;* **B05D** *5/00*

U.S. Cl. 169—47 **42 Claims**

42. A method of extinguishing a mine fire which comprises the steps of:

(a) diluting an aqueous concentrate at a ratio of between 3 to 10 parts by weight water to 1 part by weight concentrate, said concentrate comprising:

about 2% to about 8%, by weight, hydrolyzed keratin protein;

about 1% to about 7.5%, by weight, hydroxyalkylated starch consisting of at least about 90% amylopectin;

about 1% to about 4%, by weight, ferrous ion;

about 1% to about 10%, by weight, of a dispersant;

a pH adjuster, sufficient to adjust the pH to between about 6.5 to about 7, and water, thereby obtaining a foamable solution;

(b) generating a biodegradable foam from the foamable solution of (a); and

(c) injecting the foam into a mine at the site of a mine fire, thereby excluding air and extinguishing the fire.

5,853,051

ADJUSTABLE TOP LINK ASSEMBLY

Brian C. Buchanan, Clayton, N.C.; John M. Dickerson, East Peoria, Ill.; James E. Johnston, Apex, N.C., and Francis G. Snekhaus, Bartonville, Ill., assignors to Caterpillar, Inc., Peoria, Ill.

Filed Mar. 27, 1997, Ser. No. 824,946

Int. Cl.^{6} E02F *3/76*

U.S. Cl. 172—824 **8 Claims**

1. An adjustable top link assembly for connecting a blade assembly to a frame, comprising:

a first adjustment plate adapted to be movably connected by a first joint assembly to the blade assembly, the first adjustment plate having a head portion with a defined bore therethrough and a planar end portion extending a predetermined distance

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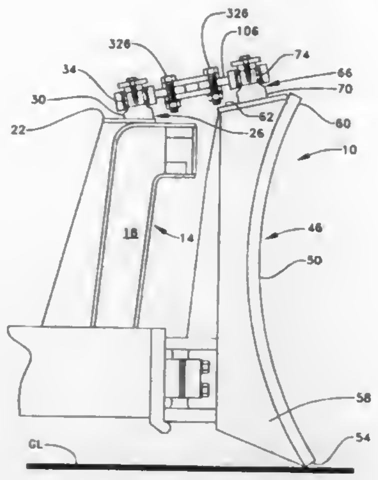


- from the head portion with an adjustment slot having a predetermined length defined therethrough;
- a second adjustment plate adapted to be movably connected by a second joint assembly to the frame, the second adjustment plate having a head portion with a defined bore therethrough and a planar end portion extending a predetermined distance from the head portion with an adjustment slot having a predetermined length defined therethrough, the planar end portion of the second adjustment plate positioned adjacent the planar end portion of the first adjustment plate and being substantially co-planar therewith; and
- a spacing mechanism adjacent the first and second adjustment plates with a pair of defined openings therethrough, each one of the pair of openings substantially coaxially aligned with a respective one of the adjustment slots on the first and second adjustment plates; and
- a threaded fastener extending through each of the adjustment slots on the planar end portions of the first and the second adjustment plates and respective openings on the spacing mechanism and being operatively associated with a nut to secure the top link assembly in a plurality of positions extending along the predetermined length of the adjustment slots.

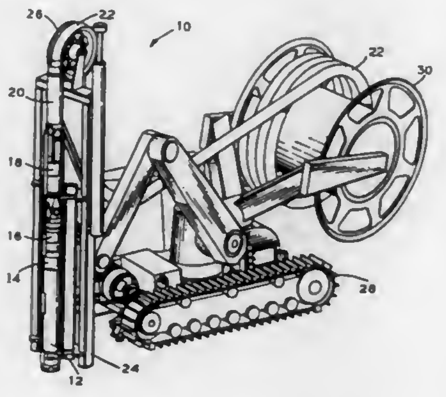
5,853,052
HYDRAULIC DRIVE FOR ROTATION OF A ROCK DRILL

Gregory R. Baiden, and Donald D. Young, both of Ontario, Canada, assignors to Inco Limited, Canada

Filed Sep. 10, 1996, Ser. No. 707,958

Int. Cl.^{6} E21B *3/00*

U.S. Cl. 173—15 **16 Claims**



1. A hydraulic drive unit for rotating a rock drill from within a drill hole comprising:

- a hydraulic motor, said hydraulic motor having a fixed rear trailing end and a rotatable front drilling end, said hydraulic motor having a hydraulic inlet for receiving hydraulic fluid and a hydraulic outlet for discharging hydraulic fluid,
- a drive shaft disposed within said hydraulic motor, said drive shaft having a rear trailing end connected to said rotating front drilling end of said hydraulic motor and a front drill connecting end opposite said rear trailing end,
- a fluid transfer conduit within said drive shaft, said fluid transfer conduit bypassing through said hydraulic motor for the independent supply of a drill fluid to power the rock drill by receiving the drill fluid and transferring the drill fluid toward the rock drill, and
- a front connector means attached to said front drill connecting end of said drive shaft for connecting to the rock drill.

5,853,053
STABILIZATION DEVICES FOR DRILL MOTORS

David Andrew Gilchrist, Aberdeenshire, and Andrew McPherson Downie, Dunfermline, both of United Kingdom, assignors to Neyrfor-Weir Limited, Scotland, United Kingdom

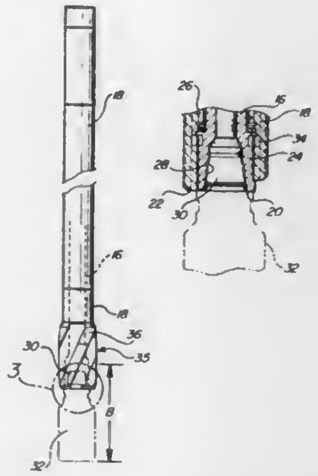
PCT No. PCT/GB95/00622, § 371 Date Sep. 19, 1996, § 102(e) Date Sep. 19, 1996, PCT Pub. No. WO95/25872, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 21, 1995, Ser. No. 716,386

Claims priority, application United Kingdom, Mar. 22, 1994, 9405666

Int. Cl.^{6} E21B *17/10;17/16*

U.S. Cl. 175—101 **11 Claims**



1. In a drill motor assembly of the kind adapted for use in a bore, a stabilisation device comprising a tubular motor body portion adapted for rotational movement on a selective basis to provide a steering capability, a motor shaft passing through said tubular motor body portion, a tool bit attachment means being provided within a lower end portion of the motor shaft, wherein the lower end portion of the motor shaft has an external diameter less than an internal diameter of a lower end portion of the motor body portion so as to be received or at least substantially received therewithin.

5,853,054
2-STAGE UNDERREAMER

Bruce McGarian, Aberdeen, and Richard Alvin Armell, Angus, both of Great Britain, assignors to Smith International, Inc., Houston, Tex.

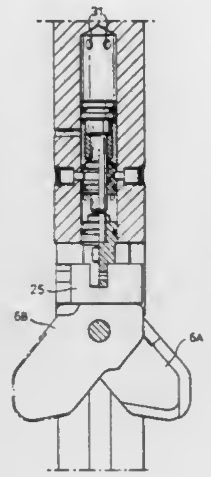
PCT No. PCT/GB95/02540, § 371 Date Jul. 22, 1997, § 102(e) Date Jul. 22, 1997, PCT Pub. No. WO96/13648, PCT Pub. Date May 9, 1996

PCT Filed Oct. 31, 1995, Ser. No. 836,534

Claims priority, application United Kingdom, Oct. 31, 1994, 9422022; Mar. 17, 1995, 9505430

Int. Cl.^{6} E21B *7/28*

U.S. Cl. 175—267 **15 Claims**



1. A 2-stage underreamer comprising an upper pair of reaming blades arranged in a slot or pocket in a body and a lower pair of reaming blades arranged in a slot or pocket in the body, the body being unitary and the blades being hingedly mounted on the body and moveable by power means from a retracted storage position to an extended use position wherein at least one pair of blades is moveable from the retracted storage position to the extended use position by power means comprising a hydraulically actuated piston incorporating a first piston portion having a circular face on which hydraulic fluid acts to generate a force and a second piston portion which is annular and upon which hydraulic fluid acts to create a force reinforcing that produced by the hydraulic fluid acting on the first piston portion.

5,853,055
ROCK BIT WITH AN EXTENDED CENTER JET

Michael A. Siracki, The Woodlands; Per I. Nese, Houston; Alan W. Lockstedt, Tomball; Dennis Cisneros, Kingwood, all of Tex.; Michael S. Oliver, Lafayette, La., and Gary R. Portwood, Kingwood, Tex., assignors to Smith International, Inc., Houston, Tex.

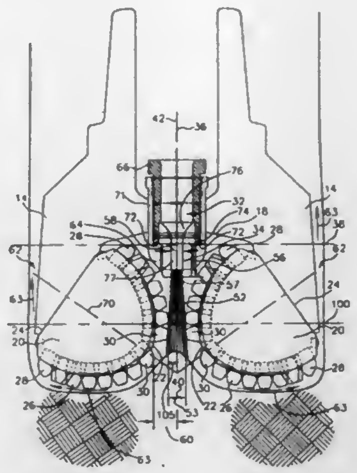
Filed Jun. 27, 1996, Ser. No. 671,517

Int. Cl.^{6} F21B *10/18*

U.S. Cl. 175—340 **62 Claims**

33. A rotary cone bit for drilling bore holes in earth formations comprising:

- a bit body having a threaded pin end and a dome end;
- three legs extending from the dome end of the body;
- three cutter cones each having an apex opposite a mouth, wherein each cone is rotatably mounted through its mouth to each leg, wherein each cone is radially oriented about a bit body central axis wherein the apex of each cone is closer to the central axis than the cone mouth;
- cutting elements extending from the cone outer surface comprising,
  - at least one gage row proximate to the mouth, and
  - at least one nose row proximate to the apex, the cutting elements being spaced away from the centerline of the bit body a sufficient distance to leave a cylindrical open space between the cutting elements; and
- a center jet having a converging nozzle having an exit orifice, wherein the nozzle is aligned to produce a flow having a flow axis substantially parallel to the bit central axis, wherein the nozzle exit is located below a highest horizontal plane intersected by a cutting element, and wherein cutting elements from at least two adjacent cones intermesh with each other.



5,853,056
METHOD OF AND APPARATUS FOR HORIZONTAL WELL DRILLING

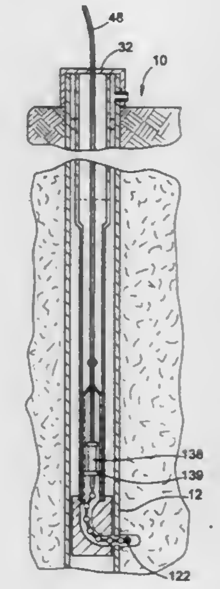
Carl W. Landers, 141 S. Union St., Madisonville, Ky. 42431

PCT No. PCT/US94/10892, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/09963, PCT Pub. Date Apr. 13, 1995

Continuation-in-part of Ser. No. 131,526, Oct. 1, 1993, Pat. No. 5,413,184. This PCT application Sep. 26, 1994, Ser. No. 624,438

Int. Cl.^{6} E21B *07/08*

U.S. Cl. 175—424 **14 Claims**



1. An apparatus for drilling horizontally into the earth's strata from an opening in the well casing comprising:

- a high pressure fluid nozzle blaster;
- a flexible conduit having said nozzle blaster on the end thereof;
- means to transfer fluid at high pressure to said flexible conduit;

means to position said nozzle blaster in said opening, said means to position including an elbow providing an inlet and outlet with a passageway therebetween for the nozzle blaster and the flexible conduit;

guide tracks aligned with the inlet to the passageway, said guide tracks guiding the nozzle blaster and the flexible conduit down the well casing thereby moving the nozzle blaster out the outlet into cutting engagement with the well casing;

said elbow passageway being configured to guide said nozzle blaster and said flexible conduit as the flexible conduit is fed through the inlet and outlet so that said nozzle blaster can cut a lateral passageway; and

means to feed said flexible conduit through said opening.

5,853,057

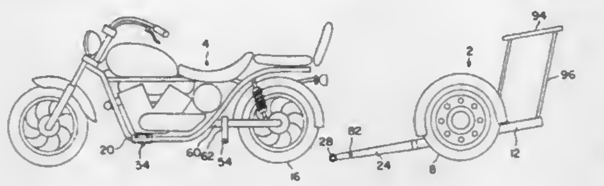
AUXILIARY WHEEL CONVERSION ASSEMBLY FOR A MOTORCYCLE

Raymond Mullins, 23632 Rte. 113, Wilmington, Ill. 60481

Filed Feb. 10, 1997, Ser. No. 798,582

Int. Cl.^{6} B62K *27/12*

U.S. Cl. 180—16 **5 Claims**



1. An auxiliary wheel conversion assembly for a motorcycle in combination with a motorcycle, comprising an auxiliary wheel conversion assembly having a pair of spaced apart wheels, a receiving space between said pair of spaced apart wheels, a motorcycle having a rear drive wheel, said rear drive wheel being receivable in said receiving space and movable out thereof, releasable connection means operable between a connected position and a disconnected position to connect said auxiliary wheel conversion assembly to said motorcycle when in said connected position and to disconnect said auxiliary wheel conversion assembly from said motorcycle when in said disconnected position, said releasable connection means being operable to said connected position when said rear drive wheel of said motorcycle has been received in said receiving space, wherein said auxiliary wheel conversion assembly includes a frame, said frame includes a first longitudinally extending side member along one side of said receiving space, a second longitudinally extending side member along the opposite side of said receiving space, wherein said first and second longitudinally extending side members of said frame each include inwardly converging portions as they extend forwardly, including a first inwardly converging diagonal leg portion extending forwardly of said first longitudinally extending side member beginning at a first side member location, and a second inwardly converging diagonal leg portion extending forwardly of said second longitudinally extending side member beginning at a second side member location, wherein said first side member location of said first longitudinally extending side member and said second side member location of said second longitudinally extending side member are forward of said rear drive wheel of said motorcycle when said auxiliary wheel conversion assembly is connected to said motorcycle with said rear drive wheel received in said receiving space of said auxiliary wheel conversion assembly, wherein said first and second inwardly converging diagonal leg portions extend forwardly to each terminate at respective first and second forwardly facing ends, a first cooperative connection member at said first forwardly facing end of said first diagonal leg portion, and a second cooperative connection member at said second forwardly facing end of said second diagonal leg portion, and corresponding cooperative connection means on said motorcycle for releasable connection of said first and second cooperative connection members thereto, said first and second cooperative connection members and said corresponding cooperative connection means on said motorcycle being comprised in said releasable connection means, wherein said motorcycle includes a main frame having a forward lower portion, said corresponding cooperative connection means on said motorcycle comprises a laterally extending connection member secured to said forward lower portion said main frame of said motorcycle, said laterally extending connection member including a first laterally extending interconnection member extending outwardly therefrom on one side, a second laterally extending interconnection member extending outwardly therefrom on the other side thereof, said first cooperative connection member of said first diagonal leg portion of said conversion assembly frame being releasably connectable to said first interconnection member of said laterally extending connection member secured to said frame of said motorcycle, said second cooperative connection member of said second diagonal leg portion of said conversion assembly frame being releasably connectable to said second interconnection member of said laterally extending connection member secured to said frame of said motorcycle, wherein said first and second cooperative connection members at said forwardly facing ends of said first and second diagonal leg portions of said conversion assembly frame each comprise a laterally extending sleeve member, and said first and second laterally extending interconnection members of said laterally extending connection member secured to said frame of said motorcycle each comprise a laterally extending insert member receivable in and releasably connectable to respective ones of said sleeve members.

5,853,058

ELECTRIC POWER UNIT AND POWER TRANSMITTING UNIT FOR ELECTRIC VEHICLES

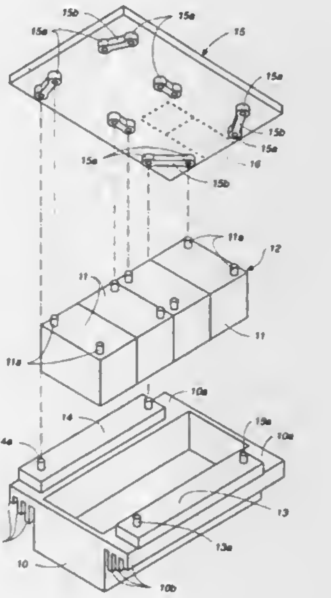
Ken-ichi Endo; Issei Yamakoshi, both of Suwa; Masao Ono, and Tamotsu Fukazawa, both of Yokohama, all of Japan, assignors to Seiko Epson Corporation, and Tokyo R&D Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 524,681, Sep. 7, 1995, Pat. No. 5,765,671. This application Mar. 24, 1997, Ser. No. 823,431

Claims priority, application Japan, Sep. 7, 1994, 6-213523

Int. Cl.^{6} B60R *16/04*

U.S. Cl. 180—65.1 **4 Claims**



1. An electric power unit for an electric vehicle, including a motor, a motor driving circuit and a charger, wherein said motor driving circuit and said charger each have a plurality of terminals, said electric power unit comprising:

a plurality of storage cells each having respective terminals;

a case for housing said storage cells, said case being made of a high thermal conductivity material, wherein said motor driving circuit and said charger are both mounted on said case; and

a plate substrate for covering said storage cells, and comprising a plurality of sockets for electrically connecting respective terminals of said storage cells, said motor driving circuit and said charger, whereby said terminals of said storage cells, said motor driving circuit and said charger are electrically connected to each other through said plurality of sockets of said plate substrate without a connecting cable.

5,853,059

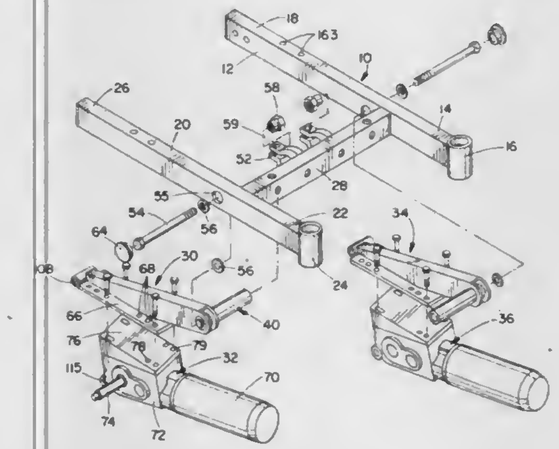
POWERED WHEELCHAIR WITH ADJUSTABLE CENTER OF GRAVITY AND INDEPENDENT SUSPENSION

Gerold G. Goertzen, Brunswick; Neal J. Curran, Lakewood, and James H. Molnar, Bedford, all of Ohio, assignors to Invacare Corporation, Elyria, Ohio

Continuation of Ser. No. 228,584, Apr. 15, 1994, Pat. No. 5,575,348. This application Aug. 7, 1996, Ser. No. 694,484

Int. Cl.^{6} B60K *1/02;* **A61G** *5/04*

U.S. Cl. 180—65.6 **23 Claims**



1. A powered wheelchair comprising:

a frame having first and second longitudinal sides connected by a bridge;

a seat module carried by said frame;

a first power drive assembly disposed on said frame first longitudinal side, said first power drive assembly comprising:

a first arm secured to said frame,

a first motor mounted to said first arm, wherein a longitudinal axis of said first motor is approximately parallel to a longitudinal axis of said first arm, and

a first wheel operably connected to said first motor;

a second power drive assembly disposed on said frame second longitudinal side, said second power drive assembly comprising:

a second arm secured to said frame,

a second motor mounted to said second arm, wherein a longitudinal axis of said second motor is approximately parallel to a longitudinal axis of said second arm, and

a second wheel operably connected to said second motor;

a first resiliently biased suspension secured to a rear portion of said frame first longitudinal side, rearward of said first motor, and secured to said first power drive assembly at a location rearwardly of said first motor;

a second resiliently biased suspension secured to a rear portion of said frame second longitudinal side, rearward of said second motor, and secured to said second power drive assembly at a location rearwardly of said second motor; and,

a power supply mounted on said frame for powering said first and second motors.

5,853,060

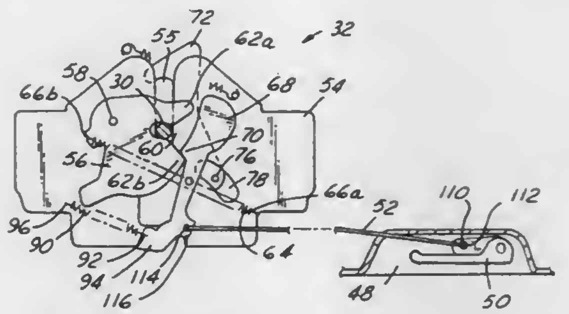
AUTOMOTIVE VEHICLE HOOD LATCH RELEASE SYSTEM

Yi Jen Chao, 2758 Bay Dr., West Bloomfield, Mich. 48324; James Lee Salmon, P.O. Box 629, Dearborn Heights, Mich. 48217, and Patti M. Warren, 21860 Cloverlawn, Oak Park, Mich. 48237

Filed Oct. 4, 1996, Ser. No. 726,003

Int. Cl.^{6} B62D *25/12;* **B60R** *25/04;* **E05C** *3/16*

U.S. Cl. 180—69.2 **8 Claims**



1. A hood latch release system for an automotive vehicle having a hood covering an underhood area in a front portion of the vehicle and a vehicle body defining a passenger compartment therein, the system comprising:

a striker mounted on an underside of the hood;

a latch mounting plate mounted in the underhood area;

a primary latch mounted to the latch mounting plate and movable to a latch position in which the striker is retained by the primary latch and biased to an unlatch position in which the striker is unlatched therefrom;

a secondary latch mounted to the latch mounting plate and having a lock position in which the striker is obstructed from movement out of the latch mounting plate and an unlock position in which movement of the striker from the mounting plate is not obstructed by the secondary latch;

a release lever pivotably mounted to the latch mounting plate for movement between a primary latch hold position maintaining the primary latch in the latch position, a primary latch release position releasing the primary latch to move to the unlatch position, and a secondary latch release position in which the secondary latch is moved to the unlock position;

a release handle adapted to be, located in a depression in a surface of the passenger compartment coverable by the driver's door when in a closed position, the release handle movable between a first position substantially contained in the depression so that the release lever is maintained in the primary latch position, a second position in which the release handle projects from the depression and the release lever is moved to the secondary latch position, and a third position in which the release handle projects from the depression and the release lever is moved to the secondary latch release position; and

a cable having a first end connected to the release lever and a second end connected to the release handle.

5,853,061

SNOWMOBILE

Kazuhiro Yamamoto, and Takao Kouchi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki, Tokyo, Japan

Filed Feb. 14, 1997, Ser. No. 799,221

Claims priority, application Japan, Feb. 16, 1996, 8-053759

Int. Cl.^{6} B62M *27/02*

U.S. Cl. 180—190 **22 Claims**

1. A snowmobile comprising:

a body including a front portion and a rear portion;

a steering ski including side surfaces, said steering ski being suspended from said front portion of the body; and

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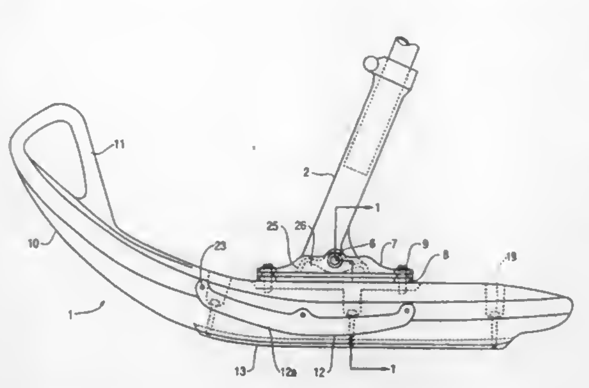


an engine driven caterpillar unit suspended from said rear portion of the body;

wherein the side surfaces of the steering ski are provided with side edges having a continuously curved lower surface.

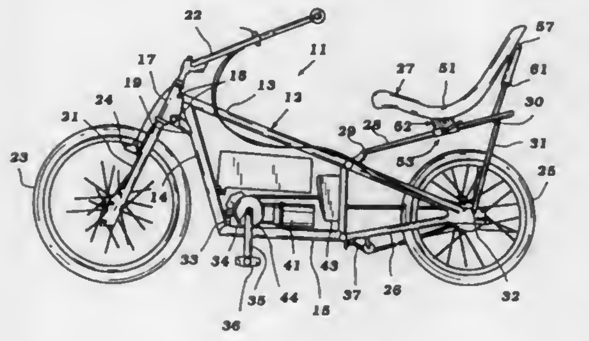
5,853,062
RECUMBENT ELECTRICALLY POWER-ASSISTED BICYCLE

Roger Hulett, San Juan Capistrano, Calif., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 13, 1995, Ser. No. 557,956

Int. Cl.^{6} B62K *11/06*

U.S. Cl. 180—206 **11 Claims**



1. A recumbent bicycle comprised of a frame assembly comprised of a head pipe, a main tube connected to said head pipe and extending rearwardly therefrom, and a down tube affixed relative to said head pipe and having a first portion extending generally vertically downwardly therefrom and a second portion beginning at the lower portion of said first portion and extending in a horizontal direction rearwardly and spaced beneath said main tube, a front wheel dirigibly supported for rotation about a front wheel axis by said head pipe of said frame assembly and immediately forwardly of said down tube first portion, a rear wheel rotatably journaled for rotation about a rear wheel axis at the rear of said frame assembly, a manually-operated pedal crank mechanism journaled by the frame assembly at a point contiguous to the juncture of said down tube first and second portions and to the rear of said front wheel axis, a seat for a rider disposed at the rear of said frame assembly so that the buttocks of a seated rider lies over said rear wheel axis and to the rear of the front edge of said rear wheel, said seat being oriented relative to said pedal crank mechanism so that the rider is seated in a recumbent fashion, and an electric motor, a battery power source for supplying electrical power to said electric motor and transmission for driving said rear wheel by said electric motor each of which is disposed at forward portions of said frame assembly forwardly of said rear wheel and behind said front wheel and in the area bounded by said main tube and said down tube for applying a substantial portion of their weight on said front wheel for balancing the weight placed on the rear wheel by the rearward seating position of the rider.

5,853,063
ENGINE MOUNT FOR MOTOR VEHICLES

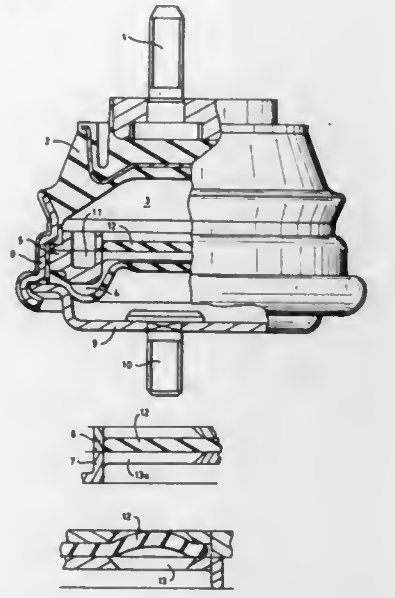
Frank Meyerink, Lohne, and Andreas Vossel, Osnabrück, both of Germany, assignors to Lemförder Metallwaren AG, Lemförde, Germany

Filed Jul. 26, 1996, Ser. No. 690,340

Claims priority, application Germany, Jul. 27, 1995, 195 27 563.2

Int. Cl.^{6} F16F *9/34*

U.S. Cl. 180—300 **19 Claims**



1. An engine mount with hydraulic damping for motor vehicles, the mount comprising:
- a housing with partially elastically deformable walls, said housing defining first and second chambers;
- a damping fluid positioned in said first and second chambers;
- a valve plate positioned in said housing and forming a common wall of said first and second chambers, said valve plate including a cage and an elastic uncoupling membrane positioned inside said cage, said cage defining a plurality of fixed membrane openings, said cage contacting said uncoupling membrane in an area completely around said fixed membrane openings without axial clearance, said fixed membrane openings having an axial cross section tapering down in a direction away from said uncoupling membrane due to oblique limiting surfaces, said cage defining a passage opening having an edge continued radially to an outside edge of said uncoupling membrane for movement of said edge of said membrane into said passage opening and forming a channel between said first and second chambers during abruptly occurring differences in pressure between said first and second chambers.

5,853,064
STEERING SYSTEM FOR A MOTOR VEHICLE

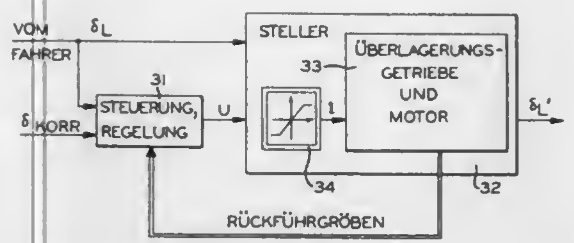
Matthias Hackl, Vaihingen, and Wolfgang Kraemer, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 24, 1996, Ser. No. 772,508

Claims priority, application Germany, Jan. 19, 1996, 196 01 825

Int. Cl.^{6} B62D *6/06*

U.S. Cl. 180—422 **20 Claims**



1. Steering system for a motor vehicle, comprising: a steering wheel; a steered wheel; an actuator motor; and an actuator having a plurality of inputs and an output, said steering wheel operatively connected to one of said actuator inputs, said actuator motor operatively connected to another of said actuator inputs, said steered wheel operatively connected to said actuator output, said steered wheel having movement responsive to a steering wheel movement and actuator motor movements, said actuator motor movement responsive to a manipulated variable signal, said manipulated variable signal responsive in part to said steering movement, said manipulated variable limited in magnitude said manipulated variable signal including a superimposed signal, said superimposed signal comprising a difference signal passed through an integrating stage, said difference signal comprising a difference of said manipulated variable signal and a restricted manipulated variable signal.

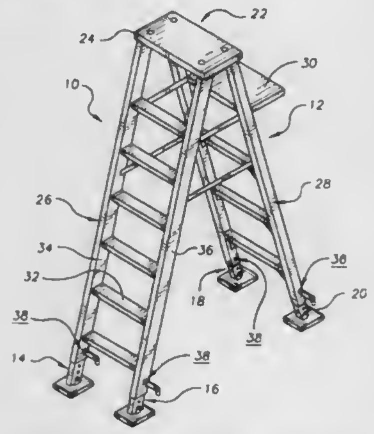
5,853,065
ADJUSTABLE LEG LADDER ASSEMBLY

Emory R. Hutson, and Barbara J. Hutson, both of 7530 Lake Haven Dr., W., Wilmer, Ala. 36587

Filed Oct. 1, 1997, Ser. No. 942,056

Int. Cl.^{6} E06C *7/00*

U.S. Cl. 182—18 **7 Claims**



1. An adjustable leg ladder assembly comprising:
- a collapsible A-frame ladder structure including a top plate, a forward ladder step support including a number of ladder rungs positioned between two forward support legs, and a rear A-frame support including two rear support legs;
- left and right forward leg adjustment inserts each slidably positionable into and lockable with respect to one of said forward support legs of said forward ladder step support, each left and right forward leg adjustment insert including a number of locking pin holes, a detachable locking pin, and a pivoting foot pad;
- left and fight rear leg adjustment inserts each slidably positionable into and lockable with respect to one of said rear support legs of said rear A-frame support, each left and right rear leg adjustment insert including a number of locking pin holes, a detachable locking pin, and a pivoting foot pad; and
- a weight sensing unit including a sensor output conditioning circuit, four weight sensors and four output displays;
- each of said pivoting foot pads having one of said four weight sensors installed into an underside surface thereof;
- said sensor output conditioning circuit being in electrical connection with a sensor output from each of said four weight sensors and in electrical connection with a display input of each of said four output displays;
- said conditioning circuit providing four separate drive signals, one to each of said four output displays;
- each of said four output displays displaying a weight value that corresponds with a weight supported by a corresponding one of said four pivoting foot pads;
- each said underside surface of each said pivoting foot pad having a resilient, ridged, anti-skid surface provided thereon, each anti-skid surface having a sensor opening through which one of said four weigh sensors of said weigh sensing unit is installed.

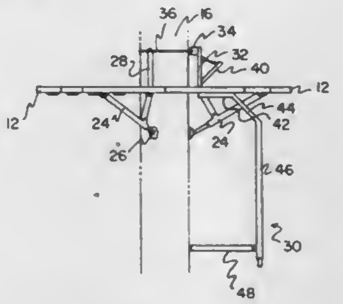
5,853,066
CONVERTIBLE TREE STAND

Barry E. Gohn, 122 Old Commons Rd., Windsor, Pa. 17366

Filed Mar. 19, 1998, Ser. No. 44,413

Int. Cl.^{6} A01M *31/02*

U.S. Cl. 182—20 **5 Claims**



1. A new convertible tree stand for converting a tree stand into a game carrier comprising, in combination:
- a platform portion having a generally circular configuration, the platform portion having an aperture through a central portion thereof for receiving a tree therein, the platform portion being comprised of a pair of separable sections, the separable sections being coupled together by opposed male and female hinges;
- a plurality of angular supports pivotally secured to an underside of the platform portion, the lower ends of the angular supports including telescopic portions extending outwardly therefrom for engaging the tree;
- a plurality of strap members extending upwardly from the platform portion, the strap members to be coupled with respect to the tree;
- a ladder portion extending upwardly through the platform portion for coupling with the tree, the ladder portion including an upper vertical portion having a pair of cleats disposed on an interior surface thereof for engaging the tree, the pair of cleats having a rope member for extending around the tree and coupling with upper ends of the plurality of strap members, the upper vertical portion having a seat portion pivotally coupled to a front surface thereof, a lower end of the upper vertical portion having an upper horizontal portion extending outwardly therefrom, a free end of the horizontal portion having an angular portion extending downwardly therefrom to a position below the platform portion, a free end of the angular portion having an upper ladder segment coupled thereto, a lower end of the upper ladder segment having a lower ladder segment pivotally coupled thereto; and
- a pair of wheels coupleable to the ladder portion.

5,853,067
CLIMBING APPARATUS

Hurse Adrian Cutler, P.O. Box 24, Bungalow Carins, QLD 4870, Australia

Filed Apr. 25, 1996, Ser. No. 638,016

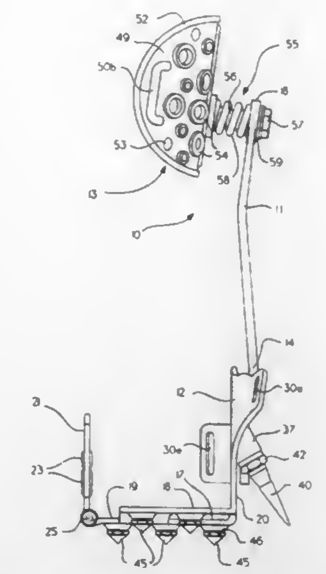
Claims priority, application Australia, May 15, 1995, 2956

Int. Cl.^{6} A63B *27/00*

U.S. Cl. 182—221 **28 Claims**

1. A climbing apparatus, comprising:

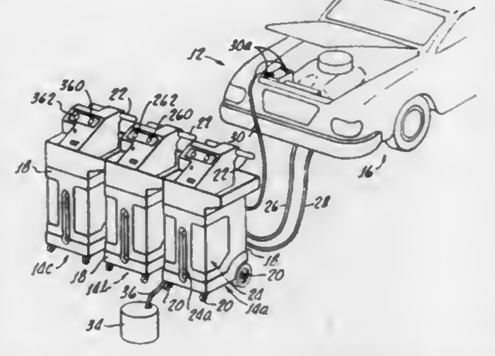
a. an elongated shank having a first end and a second end;



b. a stirrup having a sole portion and a medial portion extending upward and away from the sole portion, the stirrup being rotatably attached to said shank at the first end thereof such that said stirrup is rotatable about an axis generally normal to said shank and rotates in a plane parallel to a plane through a longitudinal axis of said shank, said stirrup sized and configured to be engageable with the footwear of a user;
c. a plurality of tips attached to a lower surface of said sole portion;
d. a leg support attached to said shank at the second end thereof and tiltable relative to said shank; and
e. at least one spike attached to said medial portion of said stirrup such that a centerline through the at least one spike will not be parallel to a centerline through any one of said plurality of tips and rotating the stirrup will move the at least one spike relative to the elongated shank.

5,853,068
APPARATUS FOR EXCHANGE OF AUTOMOTIVE FLUIDS

Patrick Lewis Dixon, Gilbert, Ariz.; Todd Michael Rounds, Orlando, Fla.; Michael Joseph Camacho, Cucamonga, Calif., and Rene' Dean Wiebe, Glendora, Calif., assignors to Wynn Oil Company, Azusa, Calif.
Filed Mar. 21, 1997, Ser. No. 821,786
Int. Cl.^{6} F16C *3/14;* F16N *33/00*
U.S. Cl. 184—1.5 **16 Claims**

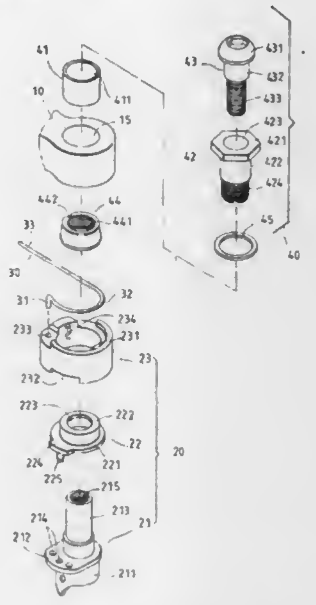


1. A fail-safe automotive fluid service machine for exchanging old automatic transmission fluid from an automatic transmission and replacing this old automatic transmission fluid with new automatic transmission fluid, which automatic transmission includes an internal pump moving automatic transmission fluid through an external cooler circulation loop, said machine comprising:

a conduit for conducting automatic transmission fluid from said external cooler circulation loop, a three-way valve in a first position communicating automatic transmission fluid received via said first conduit from said external cooler circulation loop to a second conduit, which second conduit returns automatic transmission fluid to said external cooler circulation loop, said three-way valve in a second position thereof communicating automatic transmission fluid from said external cooler circulation loop to waste;
a yieldably-biased back-driveable actuator which when actuated moves said three-way valve from said first to said second position thereof and which when deactivated returns said three-way valve to said first position by self-bias;
a cabinet, said cabinet having a unitary chambered base portion with a lower wall, side walls, and a top wall all integral with one another and cooperatively defining a reservoir cavity within said base portion, said reservoir cavity holding a supply of new automatic transmission fluid; said top wall upwardly defining a machinery deck; a sensor for indicating when said reservoir cavity holds an adequate supply of new automatic transmission fluid; a pump secured to said machinery deck and having a suction tube communicating with a lower extent of said reservoir cavity to withdraw liquid therefrom; said pump supplying said new automatic transmission fluid pressurized via said second conduit to said external cooler circulation loop;
a control system interconnecting said sensor and said actuator to allow actuation of said actuator to place said three-way valve in said second position only while said sensor indicates an adequate supply of new automatic transmission fluid, said control system deactivating said actuator in the event of an inadequate supply of new automatic transmission fluid to allow said three-way valve to be returned to said first position by said self-bias of said actuator; and
a cap portion of said cabinet covering said machinery deck and providing environmental protection to said pump.

5,853,069
MECHANISM FOR MICROADJUSTING BICYCLE BRAKE TENSION

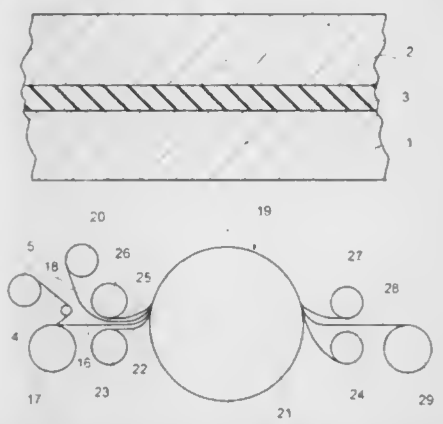
Mike Lee, and Thomas Lone, both of Chang Hua Hsien, Taiwan, assignors to Falcon Industrial Co., Ltd., Taichung Hsien, Taiwan
Filed Apr. 1, 1997, Ser. No. 825,316
Int. Cl.^{6} B32G *1/06*
U.S. Cl. 188—24.19 **7 Claims**



1. A mechanism for adjusting tension of two brake arms of a bicycle brake system, said mechanism comprising:
a fastening member adapted to be fastened pivotally at one end thereof with one of two brake arms of the bicycle brake such that said fastening member is adapted to be fastened at another end thereof with a bicycle frame;
a resilient member having a deformable arcuate section and fastened at one end thereof with said fastening member and at another end thereof with the brake arm; and
an adjusting member composed of an adjustment shaft and a tapered block movably fastened with said adjustment shaft such that said tapered block can be actuated by said adjustment shaft to move linearly so as to force said arcuate section of said resilient member to deform.

5,853,070
VIBRATION AND SOUND DAMPING SPACERS FOR VEHICLE BRAKES AND A METHOD OF MAKING A WEB FOR MANUFACTURING SUCH SPACERS

Percy Josefsson, Ljungbyholm, Sweden, assignor to Rubore Materials Sweden AB, Kalmar, Sweden
Continuation of Ser. No. 244,839, Jun. 9, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,869
Claims priority, application Sweden, Dec. 27, 1991, 9103843
Int. Cl.^{6} F16D *65/78;35/38*
U.S. Cl. 188—73.37 **3 Claims**

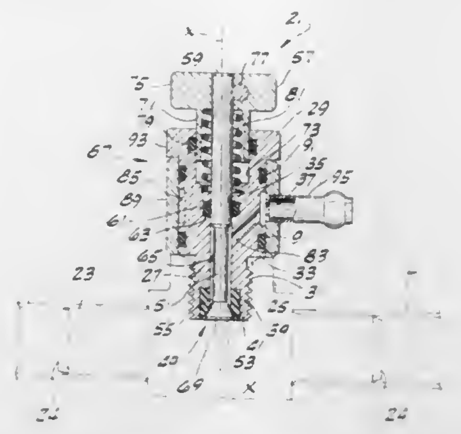


1. A method of producing a material web for the manufacture of vehicle brake vibration-and-sound damping inserts comprising two metal strips and a damping layer enclosed there between, wherein said damping layer is thinner than each of said metal strips and is comprised of a rubber layer which has been vulcanized to the two metal strips, said method comprising providing a rubber sheet on a carrier, applying said rubber sheet and said carrier to one side of a first metal strip, coating one side of a second metal strip with a vulcanizable adhesive, stripping off the carrier from the rubber sheet on the first metal strip, and passing said first metal strip with its applied rubber sheet facing the adhesive coated side of said second metal strip through a band vulcanizing machine so as to vulcanize the rubber sheet to the two metal strips.

5,853,071
BLEED VALVE FOR BLEEDING FLUID FROM A HYDRAULIC CIRCUIT

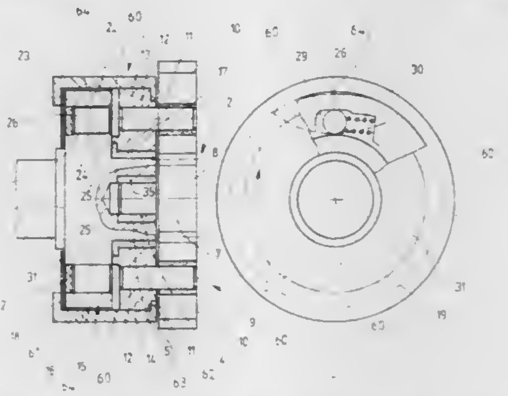
Norman F. Robinson, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Jul. 10, 1997, Ser. No. 890,982
Int. Cl.^{6} B60T *11/26;* F16K *1/00*
U.S. Cl. 188—352 **15 Claims**

1. A bleed valve for bleeding fluid from a hydraulic circuit, the valve comprising:
a valve body having a valve passage therethrough adapted for fluid communication with the hydraulic circuit;
a valve seat on the valve body;
a sealing assembly comprising a valve stem disposed in the valve passage and a valve closure connected to the valve stem adapted for sealing engagement with the valve seat, the sealing assembly being moveable along a longitudinal axis of the valve passage between a closed sealing position in which the valve closure sealingly engages the valve seat to block fluid flow through the valve passage and an open position in which the valve closure is spaced from the valve seat to permit fluid flow through the valve passage; and
a valve fitting on the valve body having an outlet port for exhausting fluid from the valve passage, the valve fitting being moveable relative to the valve body for selectively positioning the outlet port with respect to the valve body, the outlet port being in fluid communication with the valve passage regardless of its relative position with respect to the valve body;
the valve seat having a frusto-conical surface tapering from a wider end to a narrower end, the valve seat surface defining a taper angle of the valve seat relative to the longitudinal axis of the valve passage, the valve closure having a frusto-conical shape to define a taper angle of the valve closure relative to the longitudinal axis of the valve passage, the valve closure taper angle being substantially less than the valve seat taper angle so that in the closed position of the sealing assembly the valve closure engages the valve seat generally only at the narrower end of the valve seat surface.



5,853,072
FREE-RUNNING DEVICE FOR STARTING MECHANISM OF INTERNAL COMBUSTION ENGINE

Siegfried Schustek, Ditzingen, and Manfred Ackermann, Oppenweiler, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 24, 1997, Ser. No. 804,941
Claims priority, application Germany, Apr. 26, 1996, 196 16 666.7
Int. Cl.^{6} F02N *15/02*
U.S. Cl. 192—42 **9 Claims**



1. A free-running device for starting mechanisms of internal combustion engines, comprising a cup-shaped driver having a cup edge and a cup bottom; clamping members through which said cup edge is cooperatable with a hub associated with the internal combustion engine; a ring wall which surrounds said cup edge and is

connected with said cup bottom, said cup edge at least in the region of said clamping members having partial gaps so that no mechanical connection is provided between said cup edge and said cup bottom as well as between said cup edge and said surrounding ring wall.

5,853,073

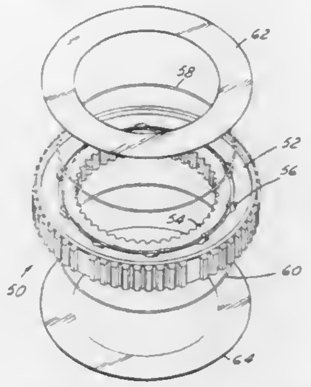
RATCHET ONE-WAY CLUTCH ASSEMBLY

Daniel P. Costin, Naperville, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Sep. 3, 1996, Ser. No. 707,104

Int. Cl.^{6} F16D *41/069*

U.S. Cl. 192—46 **20 Claims**



10. A one-way ratchet clutch assembly comprising:
an outer race member with a plurality of pockets;
an inner race member with a plurality of notches;
a plurality of pawl members positioned in said pockets; and
spring means biasing said pawl members towards engagement with said notches;
said spring means comprising a pair of garter spring members positioned between said inner and outer race members, said spring members being in contact with each of said pawl members.

5,853,074

VISCOUS FLUID COUPLING

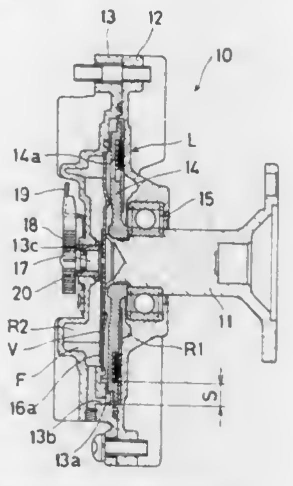
Hideaki Takahashi; Ryuji Nakamura, both of Okazaki, and Seiya Tanaka, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Mar. 31, 1997, Ser. No. 829,236

Claims priority, application Japan, Mar. 29, 1996, 8-076512

Int. Cl.^{6} F16D *35/02*

U.S. Cl. 192—58.682 **2 Claims**



1. A viscous fluid coupling comprising:
an input member having a rotatable shaft and a rotor secured to said shaft;
an output member rotatably disposed on said shaft and having a first chamber in which said rotor is disposed therein and a second chamber communicatively connected to said first chamber through a passage means;
torque transmitting means for transmitting rotational torque from said input member to said output member through viscous fluid and formed between an inner wall of said first chamber and an opposing surface of said rotor;
a pumping mechanism pumping out viscous fluid from said first chamber into said second chamber in accordance with the relative rotation between said input member and said output member; and
valve means for opening and closing said passage means according to an atmospheric temperature;
wherein said transmitting means is located in the diametrical direction and formed such that an inner peripheral border portion of the viscous fluid forms in the diametrical direction around outer portions of said torque transmitting means when the shaft is rotated under the closing condition of the valve means.

5,853,075

CLUTCH MODULE HAVING IMPROVED MEANS FOR FASTENING IT

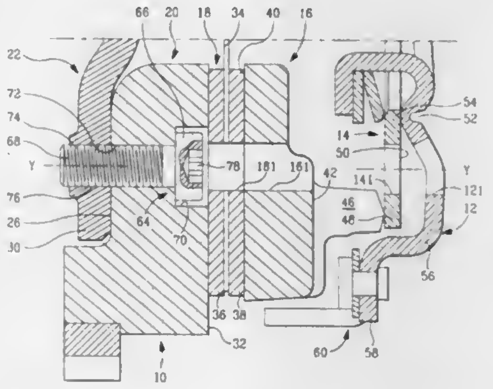
Jean-Pierre Giroire, St. Germain-En-Laye, France, assignor to Valeo, Paris, France

Filed Oct. 24, 1996, Ser. No. 740,054

Claims priority, application France, Oct. 24, 1995, 95 12522

Int. Cl.^{6} F16D *13/68*

U.S. Cl. 192—70.16 **9 Claims**



1. A clutch module (**10**) for a motor vehicle, of the type comprising an assembly of adjacent components of generally annular form coaxial with each other, among which are arranged, in succession, a cover plate (**12**), a diaphragm (**14**), a pressure plate (**16**) coupled in rotation to the cover plate by fastening means (**60**) for enabling the pressure plate (**16**) to be displaced axially with respect to the cover plate (**12**), a friction disc (**18**) for coupling the clutch module in rotation to a driven shaft, and a reaction plate (**20**) fixed to the cover plate (**12**) by fastening means arranged at the outer periphery of the module, of the type in which the friction disc (**18**) includes at least one peripheral annular friction liner (**36**, **38**), which is interposed between radial friction surfaces (**40**, **32**), in facing relationship with each other, of the pressure plate (**16**) and reaction plate (**20**), wherein the diaphragm (**14**) bears against the cover plate (**12**, **52**) and the pressure plate (**16**, **40**) in order to bias the latter axially in the direction corresponding to gripping of the friction liner, and of the type in which the reaction plate (**20**) is so configured as to be mounted on a support plate (**22**) which is fixed in rotation to a driving shaft, by means of a set of fastening members (**64**) which are disposed radially inwardly with respect to the means fastening the reaction plate (**20**) on the cover plate (**12**), wherein each fastening member (**64**) comprises a head (**66**) which is received in a complementary housing (**70**) formed in the friction surface (**32**) of the reaction plate (**20**), with a threaded shank portion (**74**) of the fastening member projecting axially beyond the reaction plate (**20**, **28**), in order to enable the module (**10**) to be secured by screw fastening on the support plate (**22**), and each of the cover plate (**12**), the diaphragm (**14**), the pressure plate (**16**) and the friction liners (**36**, **38**) has at least one hole (**121**, **141**, **161**, **181**) to enable access to be gained to the head (**66**) of a fastening member (**64**) with the aid of a tool when the said holes are aligned axially (Y—Y) with the head (**66**).

5,853,076

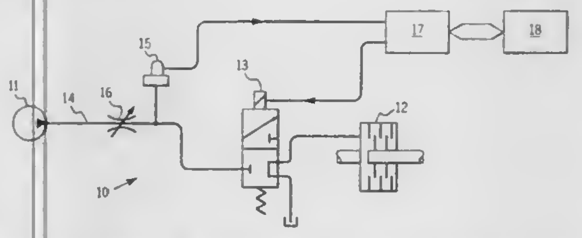
METHOD AND APPARATUS FOR CALIBRATING CLUTCH FILL RATES

Kevin D. McKee, Naperville; Craig R. Eike, DeKalb, and Guy T. Stoever, Naperville, all of Ill., assignors to Case Corporation, Racine, Wis.

Filed Jun. 27, 1996, Ser. No. 671,409

Int. Cl.^{6} F16D *19/00*

U.S. Cl. 192—87.14 **20 Claims**



19. The apparatus of calibrating a fill time of a fluid clutch filled with fluid from a fluid supply, the fill time extending from a first time at which the clutch is empty to a second time at which the clutch is filled, the apparatus comprising:
flow control means adapted to be coupled to the clutch to control the flow of fluid to the clutch;
fluid conveying means coupled to the flow control means and adapted to be coupled to the fluid supply to convey the fluid from the fluid supply to the flow control means;
signal means coupled to the conduit for generating a first fluid pressure signal indicative of the second time; and
processor means operatively coupled to the flow control means to transmit a flow signal upon the flow of fluid to the clutch, and operatively coupled to the signal means to receive the first fluid pressure signal and to generate a value indicative of the fill time therefrom.

5,853,077

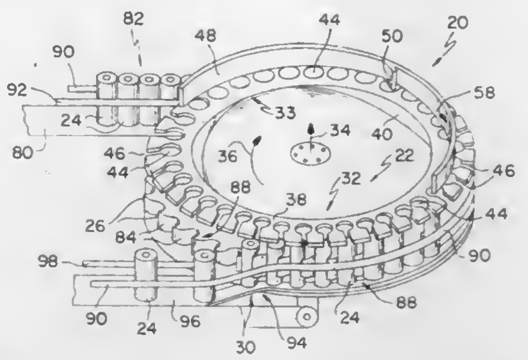
ARTICLE HANDLING DEVICE, COMBINATION AND METHODS

Werner H. Schmitt, Falls Church, Va., assignor to Hoppmann Corporation, Chantilly, Va.

Continuation-in-part of Ser. No. 363,019, Dec. 23, 1994, Pat. No. 5,564,551. This application Oct. 15, 1996, Ser. No. 730,579

Int. Cl.^{6} B65G *47/24*

U.S. Cl. 198—383 **32 Claims**



1. An article handling device comprising a puck having a longitudinal axis and means for orienting an article in the puck, the means for orienting the article comprising a centrally disposed opening defined by the puck, the centrally disposed opening extending from a first end to a second end of the puck and being generally aligned with the longitudinal axis of the puck, the opening being larger at the first end of the puck than at the second end of the puck, the centrally disposed opening tapering from the first end of the puck to an interior position within the puck to thereby form a tapering guide, the centrally disposed opening having a same size and a generally cylindrical shape from the interior position to the second end of the puck, articles supplied to the first end of the puck fall into the centrally disposed opening while being guided by the tapering guide when the puck is vertically oriented with the first end above the second end, articles fed into the puck conforming to the puck when the articles are properly oriented whereby if an article is inverted in the puck, the article fails to properly seat in the puck such that the puck will qualify an article.

5,853,078

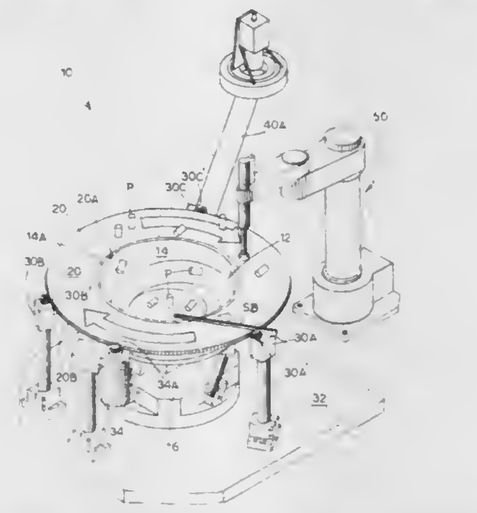
VIBRATING FEEDER BOWL WITH ANNULAR ROTATING DISK FEEDER

Thomas R. Kneubuhler, Charlotte, N.C., assignor to Menziken Automation, Inc., Charlotte, N.C.

Filed Feb. 13, 1998, Ser. No. 23,293

Int. Cl.^{6} B65G *27/02*

U.S. Cl. 985—391 **30 Claims**



1. In a vibratory part-feeding device of the type comprising a feeder bowl in which a generally helical track is formed that extends around the inner periphery of the bowl and which has a terminal portion at the upper edge of the bowl, feeder bowl vibrator means for vibrating the bowl to move parts onto the track and upwardly along the track to the terminal portion thereof wherein at least a portion of the parts are oriented in a correct predetermined position, the improvement comprising:
(a) a rotatably movable annular feeder ring surrounding the upper edge portion of the feeder bowl and having a substantially flat part-supporting surface that is generally in line with the terminal portion of the helical track;
(b) means supporting the annular feeder ring for rotation about the feeder bowl;
(c) annular feeder ring drive means for intermittently rotating the annular ring about the feeder bowl by being selectively started and stopped;
(d) robot means for removing selected parts from the annular feeder ring and depositing them at a predetermined new location;
(e) circuit means comprising a camera positioned above a portion of the annular feeder ring and acting to detect parts on the ring and signal the drive means to stop rotation of the annular

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ring and then signal the robot to effect removal of correctly positioned parts from the annular feeder ring and to deposit them at a predetermined new location while the annular ring is stationary, and to then signal the drive means to continue rotation of the annular ring so as to rotate a new parts-carrying portion of the annular ring into the camera's field of view; and

(f) means for returning improperly positioned parts rejected by the robot means and remaining on the annular ring to the feeder bowl for recycling.

5,853,079

CHIP FEED APPARATUS AND CHIP FEED CASING THEREFOR

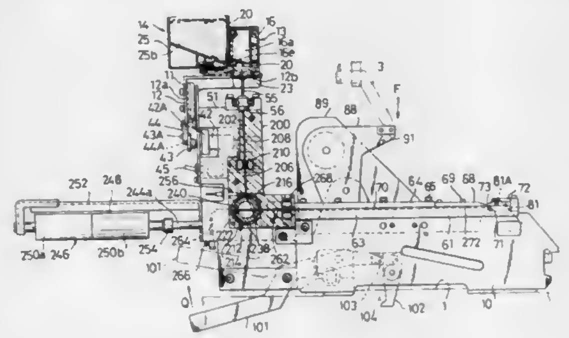
Tsuyoshi Ito; Tetsuro Ito, and Masayoshi Kobayashi, all of Akita, Japan, assignors to TDK Corporation, Japan

Filed Feb. 9, 1996, Ser. No. 599,048

Claims priority, application Japan, Nov. 24, 1994, 6-312383; Mar. 30, 1995, 7-095842

Int. Cl.^{6} B65G *47/14*

U.S. Cl. 198—395 **23 Claims**



1. A chip feed apparatus comprising:

a chip feed casing provided therein with a chip receiving space for receiving chips therein and having a chip outlet formed on a vertical side surface thereof so as to be open at a lowermost end of said chip receiving space or below said lowermost end;

a hopper provided therein with a chip storage space and having a chip inlet formed on a vertical side surface thereof in a lower portion thereof so as to communicate with said chip storage space;

said hopper being formed at a bottom thereof with a hole communicating with said chip storage space;

a chip separating member inserted into said hole of said hopper and formed with a passage of a sectional configuration which permits one chip to pass through said passage; and

an alignment chute provided with a chip feed path of which one end is connected to said passage of said chip separating member and the other end is defined at a chip pick-up position;

said hopper and said chip feed casing being connected at said vertical side surfaces, to keen said chip outlet and said chip inlet aligned with each other, while enabling vertical movement of said hopper relative to said chip separating member, whereby a height of chips stored in said chip storage space due to feeding of chips from said chip receiving space to said chip storage space is regulated by a lower one of an upper edge of said chip outlet and an upper edge of said chip inlet.

5,853,080

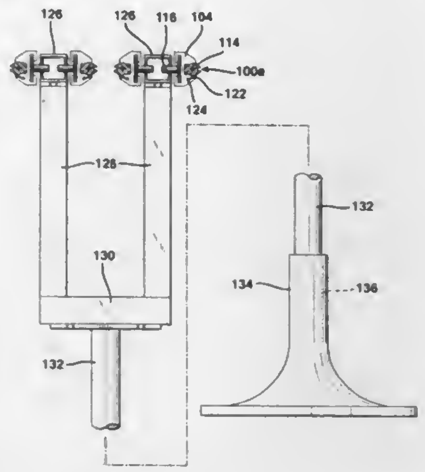
CONVEYOR BELT APPARATUS FOR BOTTLES

John R. Patois, Wayne, N.J., and Jack D. Warren, Oshkosh, Wis., assignors to J&J Container Handling Systems, Inc., Little Falls, N.J.

Continuation-in-part of Ser. No. 365,558, Dec. 28, 1994, Pat. No. 5,553,698. This application Sep. 9, 1996, Ser. No. 707,887

Int. Cl.^{6} B65G *15/14*

U.S. Cl. 198—626.1 **8 Claims**



1. A conveying means, comprising:

a pair of endless belts formed from a resilient material, each one of the pair of endless belts comprising:
  an external surface, and
  a groove formed therein, the groove having opposed sides, the opposed sides of the groove are resiliently urged apart,
  the pair of endless belts is supported to form a pair of continuous paths with parallel adjacent portions for forming a conveying path;
  support means disposed above and below each of the endless belts forming the pair adjacent the parallel portions of the pair of parallel paths, the support means coacting with the endless belts to urge and allow movement of the opposed sides of the grooves toward and away from each other to move the opposed sides of the grooves to grip and release an item therebetween; and
  means for introducing an air stream in the conveying path to impact objects in the conveying path and support the objects off the endless belts.

5,853,081

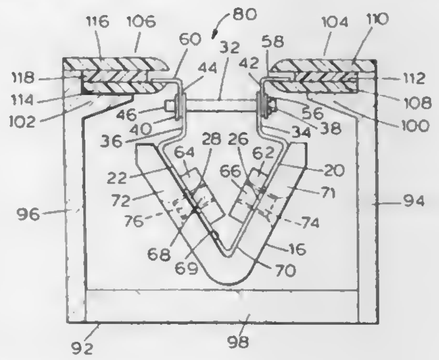
GATHERING CHAIN FOR HIGH SPEED BINDERY LINES AND PUSHER MEMBER THEREFOR

Ronald W. Hastie, Elk Grove Village, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Jul. 12, 1996, Ser. No. 678,818

Int. Cl.^{6} B65G *49/00*

U.S. Cl. 198—644 **29 Claims**



1. A gathering chain, comprising:

a plurality of segments joined to one another and extending in a travel direction wherein each segment has a width transverse to the travel direction and includes a top surface; and

a pusher member disposed atop one of the segments in contact with the top surface and having a portion extending to a uniform thickness above the top surface over the entire width of such segment and adapted to engage signatures deposited on the gathering chain.

5,853,082

CONVEYING TOBACCO

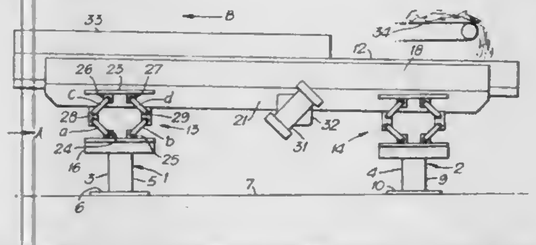
Peter James Buckley, Elston, Great Britain; Barbara Carol Klammer, Hong Kong, Hong Kong, and Ian Ernest Tatham, Purley, Great Britain, assignors to British-American Tobacco Company Limited, Middlesex, England

Filed May 21, 1996, Ser. No. 651,993

Claims priority, application United Kingdom, May 24, 1995, 9511677.8

Int. Cl.^{6} B65G *27/32*

U.S. Cl. 198—752 **9 Claims**



1. A method of conveying particulate tobacco, wherein particulate tobacco is conveyed by a conveyor comprising support means, a conveyor tray, which tray is resiliently mounted of said support means, and vibration motor means, which motor means is mounted with said tray, and said tray is oscillated at a frequency of about 400 cycles per minute or more and at a projected angle to the horizontal of at least about 25 degrees under action of said motor means, and wherein if said tray is disposed horizontally the index of performance is at least 40×10^3 kg tobacco/kW-hr and if said tray is inclined to the horizontal the index of performance is at least 30×10^3 kg tobacco/kW-hr.

5,853,083

CONTACT MATERIAL FOR A VACUUM CIRCUIT BREAKER AND A METHOD FOR MANUFACTURING THE SAME

Masayuki Furusawa; Hisaji Shinohara; Nobuyuki Odaka; Katsuhiko Taguchi; Yukio Osawa; Kazuro Shibata, and Shoichi Ote, all of Saitama, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 23, 1996, Ser. No. 702,034

Claims priority, application Japan, Dec. 28, 1995, 7-354332

Int. Cl.^{6} H01H *1/02*

U.S. Cl. 200—264 **14 Claims**

1. A contact material for a vacuum circuit breaker, comprising an alloy containing copper and spherical chrome particles disposed in the copper, said alloy being prepared by sintering chrome particles having an average grain diameter of less than 100 µm and powdery copper at a temperature of at least 1,100° C. to melt the chrome particles into molten copper, and cooling a mixture containing said chrome and copper so that chrome once dissolved in copper precipitates in copper as finely grained particles, which are distributed uniformly.

5,853,084

PLUNGER MECHANISM

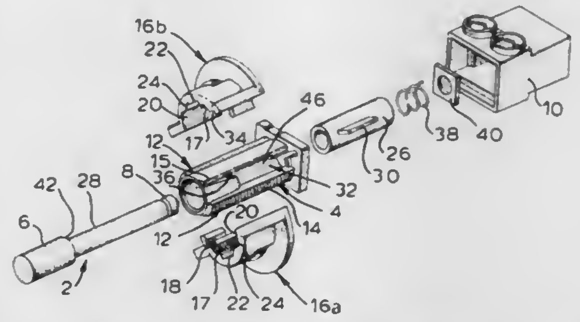
Richard John Carter, and Roger Louis Hambidge, both of Cheltenham, England, assignors to Delta Schoeller Limited, England

Filed Apr. 22, 1997, Ser. No. 844,792

Claims priority, application United Kingdom, Apr. 22, 1996, 9608282

Int. Cl.^{6} H01H *13/70*

U.S. Cl. 200—345 **4 Claims**



1. A plunger mechanism, comprising; a plunger; a generally cylindrical body having an axis, the plunger being slidable in the body between an extended position and a retracted position; and a bush for receiving the body for relative rotation about the axis, the body and the bush co-operating for allowing the body to slide in an axial direction when the body is in one rotational position relative to the bush and to be locked against sliding in an axial direction when the body is in another rotational position relative to the bush; a stop member slidable in the body and biassed in one direction, said stop member being formed with a lug projecting through a slot in the body and into a slot in the bush, the plunger engaging the stop member to slide the stop member in the body against the bias, the slots in the body and in the bush each having a relatively narrow section in both of which the lug locates when the stop member is in a first position in the direction in which the plunger is biassed, so maintaining the body in said one rotational position relative to the bush and preventing relative rotation of the body relative to the bush, one of the slots in the body and the bush having a relatively wide section in which the lug locates when the stop member is in a second position in a direction against the bias, so allowing relative rotation of the body relative to the bush, from said one position to said other rotational position.

5,853,085

DISPOSABLE APPARATUS FOR CONTAINING AND CLEANING CONTACT LENSES

Mark Luttrell, 161 N. Rose Rd., Memphis, Tenn. 38119

Filed Nov. 4, 1997, Ser. No. 964,255

Int. Cl.^{6} A45C *11/04*

U.S. Cl. 206—5.1 **19 Claims**

1. A disposable contact lens containing and cleaning apparatus comprising:

(a) a flexible hermetically sealable envelope having an open end for containing one or more contact lenses;

(b) divider connected to said envelope for dividing said envelope into one or more lens containing compartments and one or more fluid containing compartments;

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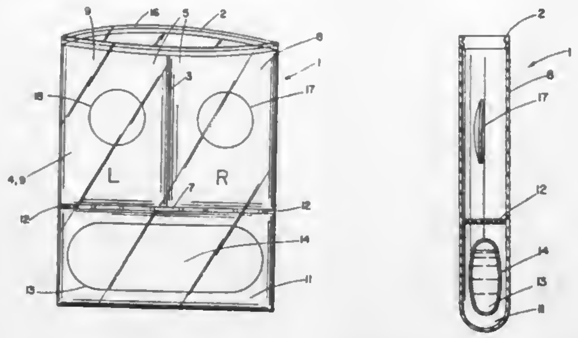


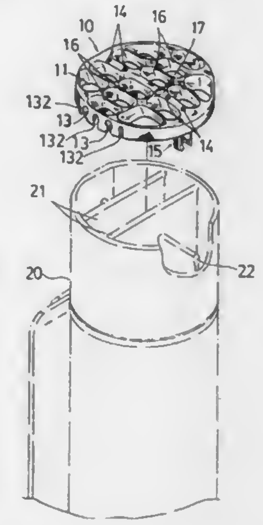
(c) one or more ports formed by said divider for facilitating communication between each of said one or more fluid containing compartments and a selected one or more of said lens containing compartments; and

(d) one or more flexible balloons enclosed within selected ones of said fluid containing compartments for containing a selected lens care solution such that manual pressure exerted on said flexible envelope proximate selected ones of said one or more balloons will burst said one or more balloons and facilitate a selected dispersal of said lens care solution into selected ones of said lens containing compartments.

5,853,086
PARTITIONING BRACKET ASSEMBLY FOR A GOLF CLUB BAG

Chen-Te Chang, No. 6, Lane 49, Jen-I St., Wu-Jih Hsiang, Taichung Hsien, Taiwan

Filed Jul. 29, 1997, Ser. No. 902,261
Int. Cl.⁶ A63B *55/00*
U.S. Cl. 206—315.6 **6 Claims**



1. A partitioning bracket assembly for a golf club bag in which a plurality of partitioning plates disposed at the top of the golf club bag are provided with a partitioning bracket unit for receiving the golf clubs therein, said partitioning plates being configured by two transverse plate units and a longitudinal traverse plate unit which is disposed at a lower position, the assembly comprising:

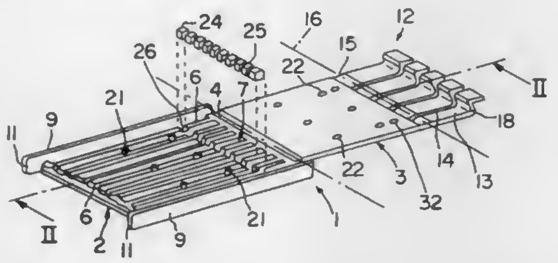
said partitioning bracket unit is configured in a circular disk shape, said partitioning bracket unit being provided with a plurality of openings therein and each of said openings being provided with a circular shape at an upper and a lower portion thereof and the inner periphery thereof, each of said openings for receiving one golf club therein;

said partitioning bracket unit being further provided with a pair of retaining grooves respectively at the periphery and which are opposite to each other, an elongate groove between said two adjacent retaining grooves and at each side of said retaining grooves, wherein when said retaining grooves are engaged with said two partitioning plate units of said golf club bag, said elongate grooves are expanded to facilitate the engagement between said retaining grooves and said partitioning plates, said partitioning bracket unit being further provided with a pair of holes which are aligned with each other, said holes being further extended downward to form a pair of tubular posts, each of said tubular post being provided with a clip for attachment to the lower longitudinal partitioning plate unit.

5,853,087
PACKING RECEPTACLE, PARTICULARLY FOR SEWING MACHINE NEEDLES

Siegmund Sos; Artur Hoch, both of Albstadt, and Susanne Merkle, Bitz, all of Germany, assignors to Groz Beckert KG, Albstadt, Germany

Filed Nov. 13, 1997, Ser. No. 969,674
Claims priority, application Germany, Nov. 13, 1996, 196 46 845.0
Int. Cl.⁶ B65D *85/24*
U.S. Cl. 206—380 **15 Claims**



1. A packing receptacle for elongated articles, comprising

(a) a receiving part including article holding means for individually positioning the articles therein;

(b) a lid part having a first position in which the lid part is arranged on, and defines an article-receiving space with, said receiving part and a second position in which said lid part is removed from said receiving part; said article-receiving space having a removal opening through which the articles may be removed from the packing receptacle;

(c) a hinge interconnecting said receiving part with said lid part for allowing a pivotal movement of said lid part about a hinge axis of said hinge from said second position into said first position;

(d) anchoring means for securing said lid part to said receiving part when said lid part is in said first position; and

(e) closure means articulated to one of said parts for movement into a closed position blocking said removal opening and into an open position unblocking said removal opening.

5,853,088
CARTON

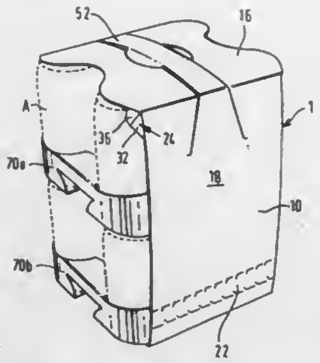
Alain Saulas; Jean-Yves Daniel, and Jean-Michel Auclair, all of Chateuroux, France, assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 2, 1997, Ser. No. 849,601
Claims priority, application United Kingdom, Dec. 2, 1994, 9424358; Jul. 26, 1995, 9515358
Int. Cl.⁶ B65D *75/00*
U.S. Cl. 206—427 **12 Claims**

1. A carton for packaging a plurality of primary containers arranged in at least three lateral rows, a centre of said rows having fewer containers than adjacent ones of said rows comprising:

a support panel (**72**) upon which said containers are to be placed;

a top panel (**16**);



first and second side walls (**14**, **17**) connected to said top panel (**16**);

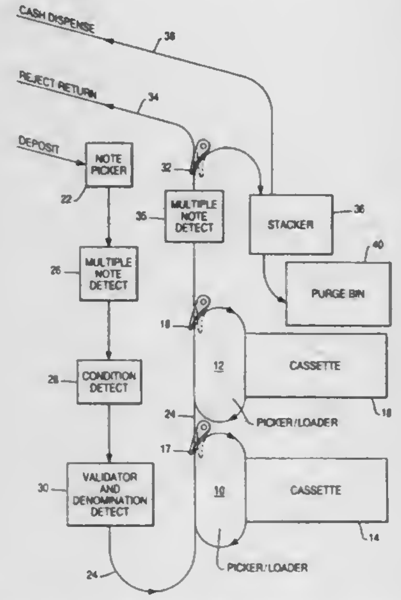
means (**24**) for retaining said support panel (**72**) in a position with respect to said side panels (**14**, **18**);

means (**94**) between said support panel (**72**) and at least one of said side walls (**14**, **18**) and extending inwardly of said package for retaining said centre row of said containers (A) in an inwardly offset condition with respect to said adjacent rows of said containers.

5,853,089
APPARATUS FOR DETECTING MULTIPLE SUPERPOSED SHEETS

Douglas L. Milne, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed May 20, 1996, Ser. No. 650,395
Claims priority, application United Kingdom, Dec. 16, 1995, 9525767
Int. Cl.⁶ B07C *5/08;* B65H *7/12*
U.S. Cl. 209—534 **18 Claims**



1. An apparatus for detecting the passage of superposed sheets along a feed path, said apparatus comprising:

first and second cooperating rollers, said first roller having a fixed axis of rotation;

means for feeding sheets along said feed path between said rollers;

means for mounting said second roller so that its axis is movable relative to that of said first roller and so that it is biased towards said first roller to enable said second roller to be displaced away from said first roller in response to a single or multiple sheet passing between said first and second rollers;

voltage generating means associated with said second roller and arranged to produce an output voltage which varies linearly with movement of the axis of said second roller towards or away from the axis of said first roller;

analog-to-digital converter means to which said output voltage is applied;

pulse generating means for generating timing pulses in timed relationship with the revolution of said rollers;

first sensor means for sensing the presence of an item comprising a single or multiple sheet as it passes a point in said feed path; and

data processing means connected to the outputs of said converter means, said pulse generating means and said first sensor means, said data processing means being arranged to perform the following steps:

(a) sampling the value of said output voltage, as represented by the output of said converter means, a predetermined number of times for one complete revolution, or for an integral number of complete revolutions, of one of said rollers when no sheet is passing between said rollers;

(b) storing a first digital value representative of the sum of the values of said output voltage sampled in step (a);

(c) sampling the value of said output voltage, as represented by the output of said converter means, said predetermined number of times for one complete revolution, or for an integral number of complete revolutions, of said one of said rollers when said item is passing between said rollers;

(d) storing a second digital value representative of the sum of the values of said output voltage sampled in step (c);

(e) subtracting said first digital value from said second digital value to produce a third digital value;

(f) counting the number of pulses generated by said pulse generating means while said first sensor means is sensing the presence of said item and thereby generating a fourth digital value representative of the dimension of said item corresponding to its direction of feed along said feed path;

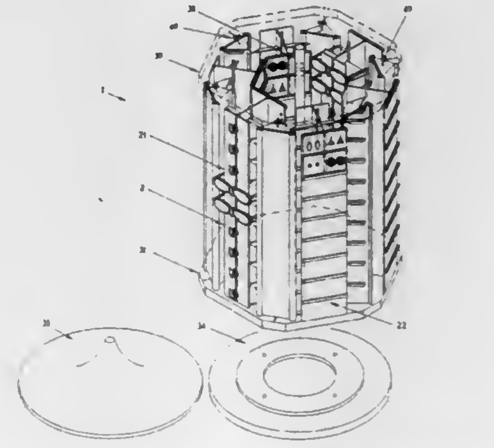
(g) dividing said third digital value by said fourth digital value to provide a fifth digital value representative of the mean thickness of said item; and

(h) making a determination as to whether or not to reject said item on the basis of said fifth digital value.

5,853,090
CONVERTIBLE RETAIL PRODUCT DISPLAY COLUMNS AND SYSTEMS

Emory N. Brozak, Jr., Strongsville, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Filed Jul. 30, 1996, Ser. No. 688,408
Int. Cl.⁶ A47F *7/00*
U.S. Cl. 211—13.1 **18 Claims**



1. A convertible retail product display column comprising:

a first panel having a structure having nosebridge supports for supporting eyeglasses, and wings which extend from a side of the first panel opposite the nosebridge supports

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wherein said wings are angled upward from below the corresponding nosebridge support to a point below the elevation of the corresponding nosebridge support;

a second panel having a structure having a plurality of flanges which extend outward from a face of the second panel for supporting product display cards, and

an intermediate member connecting the first panel to the second panel.

5,853,091

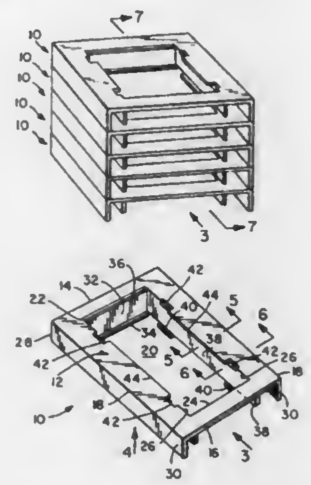
DISPLAY FRAME/INTERLOCKING STORAGE RACK COMPONENT

Carl D. Luenser, 12757 Mozart St., Blue Island, Ill. 60406-1920

Filed Apr. 2, 1997, Ser. No. 825,906

Int. Cl.⁶ A47F *7/00;* B66C *23/42*

U.S. Cl. 211—40 **21 Claims**



1. A display frame/interlocking storage rack component adaptable to receive and display a box and being stackable, comprising:

a) a top with a back, a front disposed in front of said back of said top, a pair of longitudinal sides extending forwardly from said back of said top to said front of said top, and a throughopening extending vertically and concentrically therethrough for viewing a decorative top of the box when the box is positioned in said display frame/interlocking storage rack component; said throughopening in said top being defined by a back, a front, and a pair of longitudinal sides extending forwardly from said back of said throughopening in said top to said front of said throughopening in said top;

b) a back wall having a height and extending downwardly from said back of said top;

c) a pair of side walls, each of which extending downwardly from a respective longitudinal side of said pair of longitudinal sides of said top along its entire length, and being joined at one end thereof to said back wall, and forming at a terminal end thereof together with said front of said top an open front for insertion and removal of the box from said display frame/interlocking storage rack component and for viewing a decorative front of the box positioned in said display frame/interlocking storage rack component;

d) a pair of side guide rails, each of which extending downwardly from a respective longitudinal side of said pair of longitudinal sides of said throughopening in said top; each side guide rail of said pair of said guide rails terminating below said pair of side walls in a pair of side guide rail supporting platforms extending inwardly therefrom and supporting the box positioned in said display frame/interlocking storage rack component; said top further including two pair of side notches, each pair of which opening continuously into both a respective longitudinal side of said pair of longitudinal sides of said throughopening in said top and in a respective side guide rail of said pair of guide rails; each pair of side notches of said two pair of side notches being disposed in vertical alignment with said pair of side guide rail supporting platforms of said respective side guide rail of said pair of side guide rails; each pair of side notches of said two pair of side notches receiving said pair of side guide rail supporting platforms of a respective side guide rail of said pair of side guide rails of a next stacked display frame/interlocking storage rack component; and

e) a pair of overhangs, each of which extending inwardly from a respective longitudinal side of said pair of longitudinal sides of said throughopening in said top, and being disposed between a respective pair of side notches of said two pair of side notches; each overhang of said pair of overhangs filling in space between, and being coplanar with, said side guide rail supporting platforms of said respective side guide rail of said pair of side guide rails of said next stacked display, frame/interlocking storage rack component, and further supporting the box positioned in said next stacked said display frame/interlocking storage rack component.

5,853,092

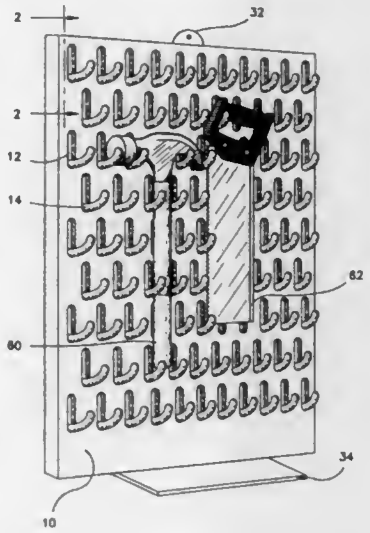
SELF-ADAPTING TOOL RACK

Gregory L. Goodman, 303 E. 37th St., Apt. 6B, New York, N.Y. 10016, and Jeffrey O. Milman, 315 W. 70th St., Apt. 5F, New York, N.Y. 10023

Filed Aug. 28, 1997, Ser. No. 919,846

Int. Cl.⁶ A47F *5/00*

U.S. Cl. 211—70.6 **20 Claims**



1. A self-adapting rack for holding tools comprising a plurality of individually retractable hooks made of a rigid material and of a sufficient size to engage a tool, said hooks arrayed in a vertically disposed grid-like pattern on a support member and able to protrude from the periphery of said support member so as to permit a tool to be placed thereupon and held by the force of gravity, and a force means for continuously urging said hooks to protrude from said support member unless individually or in combination acted upon by an opposing force equal to or greater than that of a tool being manually pressed against one or more of said hooks, whereby said hooks may be selectively caused to retract according to the shape and size of a tool and will be caused to once again protrude from said support member when no longer engaged by said tool.

5,853,093

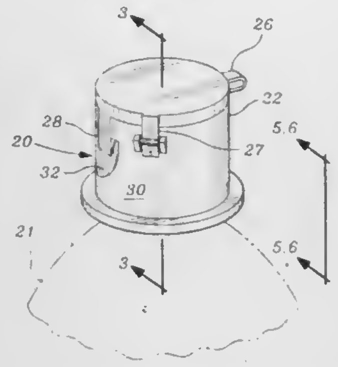
RECLOSABLE, TWO-PART CAP ASSEMBLY FOR SODA BOTTLES

Eliezer Neiger, 1235 59th St., Brooklyn, N.Y. 11219

Filed May 22, 1997, Ser. No. 861,981

Int. Cl.⁶ B65D *51/04*

U.S. Cl. 215—237 **7 Claims**



1. A bottle cap, for attaching on a soda bottle having a bottle interior and providing selective access to said bottle interior, the bottle having a top, said top having an opening, comprising:

a main portion, said main portion having an attachment device for attaching over said top and forming a tight seal thereon, the main portion having a central bore in communication with the opening and the bottle interior, the main portion has an upper surface, said upper surface having an upper groove, said upper groove larger in diameter than the central bore and concentric therewith;

a lid, said lid attached to the main portion with a hinge, said lid having a plug which fits within the central bore, said lid has a ring, said ring equal in diameter to the upper groove, larger in diameter than the plug and concentric therewith;

a latch mechanism for securing the lid to the main portion at a point opposite the hinge;

a sealing mechanism between said lid and said main portion for providing a fluid and gaseous seal therebetween, the sealing has at least two circular grooves, concentric and vertically arranged along the central bore of the main portion, the plug has curved protuberances which match the grooves, the protuberances fit within the grooves to form a tight seal between the main portion and lid; and

an opening preventer, having a protection seal, said preventer sealing the lid to the main portion until the protection seal is broken, the protection seal easily breakable with force exerted by a human hand upon the lid, but having sufficient strength to withstand internal pressure from the bottle interior, said protection seal further having:

- a transverse bar, said bar extending horizontally and tangentially to the outer circumference, said bar spaced a small distance from the outer circumference;
- a tab attached to the lid, the tab extending between the transverse bar and outer circumference, the tab having a tab hook located on the tab opposite the lid, the tab hook preventing the lid from motion relative to the main portion until the protection seal is broken.

5,853,094

STOPPER ASSEMBLY FOR A CONTAINER FOR AQUEOUS INFUSION AND A METHOD OF MAKING THEREOF

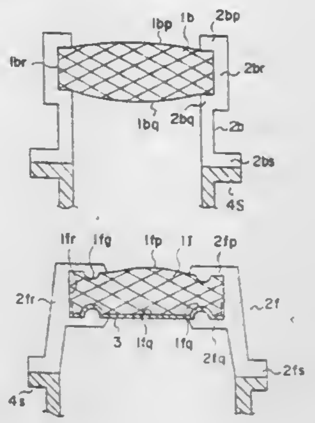
Nobuyuki Tanaka, Kawasaki; Toshio Norimoto, Tokyo; Katushi Shirakawa, Kawasaki, and Isao Ōtake, Kanagawa-ken, all of Japan, assignors to Showa Denko K. K., Tokyo, Japan

Filed May 9, 1996, Ser. No. 647,245

Claims priority, application Japan, May 25, 1995, 7-126753

Int. Cl.⁶ B65D *41/20*

U.S. Cl. 215—247 **15 Claims**



1. A stopper assembly in a container, comprising:

a cylindrical shaped stopper having a side face, a top face, and a bottom face, and constructed of an elastically deformable material; and

a stopper supporter that supports said cylindrical shaped stopper by contacting said cylindrical shaped stopper on said side face, and at least a part of an outer peripheral portion of both of said top and bottom faces;

wherein said stopper supporter imparts a compressive stress deforming said cylindrical shaped stopper such that said side face is contracted and said top and bottom faces are expanded outward.

5,853,095

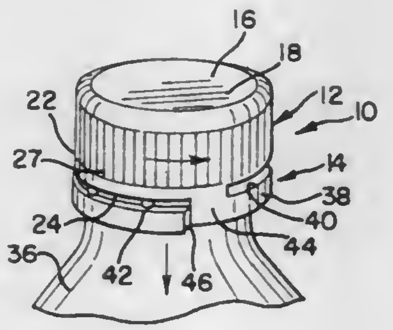
TAMPER EVIDENT SPLITTING CLOSURE

F. Paul Marshall, Orland Park, and Douglas G. Begley, Palatine, both of Ill., assignors to White Cap, Inc., Downers Grove, Ill.

Continuation of Ser. No. 217,224, Mar. 24, 1994, abandoned, which is a continuation of Ser. No. 993,085, Dec. 18, 1992, abandoned. This application May 10, 1996, Ser. No. 644,716

Int. Cl.⁶ B65D *41/34*

U.S. Cl. 215—252 **12 Claims**



1. A tamper evident closure for sealing a container having a threaded neck portion and an outwardly extending annular flange adjacent to and below the threaded neck portion, said tamper evident closure comprising:

a cap assembly having a top wall and an annular skirt, said skirt depending from said top wall so that said skirt and said top wall are substantially coaxial, said skirt having an inner and outer surface and an integral thread disposed on the inner surface of said skirt for cooperation with the threaded neck portion of the container enabling said top wall and said skirt to be secured to and removed from said container by relative rotation therebetween;

a tamper hand assembly including an annular member having a top edge and a bottom edge, said annular member connected along its top edge to said annular skirt by a plurality of frangible bridges disposed about a first circumferential portion of said annular member and at least one infrangible bridge disposed about a second circumferential portion of said annular member, said annular member having a vertically weakened section between said first and second circumferential portions of said annular member, and a series of connected engagement tabs disposed exclusively about said first circumferential portion of said annular member on only one side of the section of said annular member immediately adjacent said vertically weakened section.

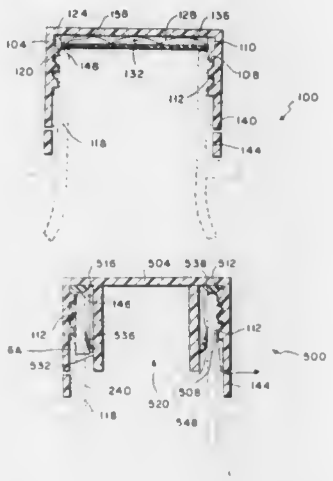
5,853,096
PRESSURE EQUALIZING AND FOAM ELIMINATING CAP

Maya H. Bartur, and Meir Bartur, both of 11601 Terryhill Pl., Los Angeles, Calif. 90049

Filed Nov. 25, 1996, Ser. No. 756,113

Int. Cl.^{6} B65D *53/00*

U.S. Cl. 215—261 **21 Claims**



1. A pressure equalizing and foam eliminating cap for a container for gas/liquid mixtures having a mouth comprising:

a. cap means for being mated to and detached from said mouth;

b. advancing means, incorporated in said cap means, for allowing said cap means to be repatedly opened from a fully closed position to a gas venting position to a fully open position and closed from said filly open position to said gas venting position to said fully closed position;

c. seal means mounted inside said cap means for sealing said cap means to said mouth when said cap means is in said fully closed position; and

d. pressure release means, incorporated in said cap means, for allowing gas at pressures greater than ambient and not liquid to vent from said container when said cap means is in said gas venting position;

whereby said container can be in one of the three following conditions: a) completely sealed so that no gas or liquid can escape, when said cap is in said fully closed position; b) slightly opened so that excess gas only and not liquid can be vented from said container, when said cap is in said gas venting position; and c) fully opened so that liquid can be poured from said container.

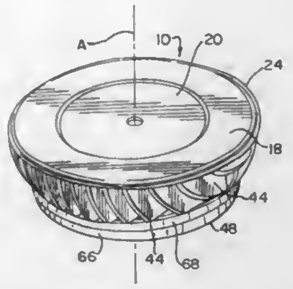
5,853,097
RIBBED CONTAINER CLOSURE

Len Ekkert, Lemont, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed Jul. 10, 1997, Ser. No. 891,309

Int. Cl.^{6} B65D *41/00*

U.S. Cl. 215—295 **15 Claims**



1. A closure for use with an associated container, the container having a finish with an external securing member formed thereon, the closure comprising:

a closure cap having an enlarged top wall portion defining an outermost edge and an annular skirt portion depending from said top wall portion inwardly of said outermost edge, said skirt portion having an outer wall and an inner wall having an internal securing member engageable with the container external securing member, said closure cap including a plurality of parallel tapered ribs, at least some of said ribs extending between said top wall portion and said skirt outer wall, each said rib defining an outer edge, wherein said ribs taper so as to define a region adjacent to a juncture of each said rib and said closure cap having a cross-sectional area that is greater than a respective cross-sectional area at said outer edge thereof.

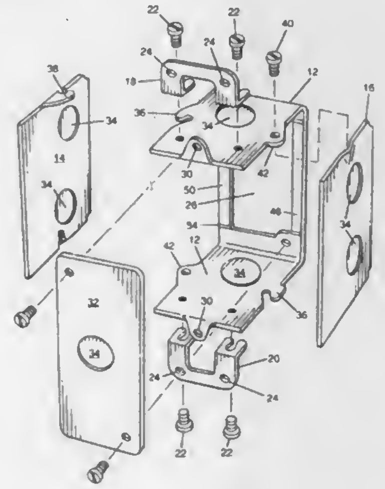
5,853,098
REPOSITIONING BACKPLATE FOR AN ELECTRICAL OUTLET BOX

Rodger D. Elder, 3680 E. 63rd St., Cleveland, Ohio 44105

Filed Mar. 28, 1997, Ser. No. 829,504

Int. Cl.^{6} H02G *3/12*

U.S. Cl. 220—3.7 **12 Claims**



1. An electrical outlet box for use in existing buildings, wherein the building walls provide only limited access to electrical power cables in a stud space of the walls, where the box is inserted longitudinally into a conformably cut wallboard cavity with minimum clearance in the space, the electrical outlet box enabling work with said cables outside the space by securing a strain cable relief connector to a removable box component and reinstallation thereof in the box while preventing destruction to the wallboard surrounding the cavity, said electrical outlet box comprising a U-shaped frame with top, rear and bottom sections, identical left and right sidewall plates, each having interlocking tabs that project at essentially right angles from the plates for securing each sidewall plate to the frame, the rear section formed by a pair of elongate side members interconnecting said top and bottom sections and defining a rear opening through which electrical power cables can be drawn, each side member pair scored to facilitate removal of a side member by a twisting motion, an at least one hole through each side member to receive an at least one threaded fastener, and a repositioning backplate removably secured to the rear section to provide an enlarged cable port through which the cable can be passed upon temporary removal thereof, and an at least one fastener hole in the backplate corresponding to the at least one fastener hole of each side member to receive the at least one threaded fastener for re-securing the backplate to said rear section, whereby cable can be attached to the backplate and further electrical work completed remote from the box and the backplate remounted over the cable port and reinstalled in the box upon completion of the work.

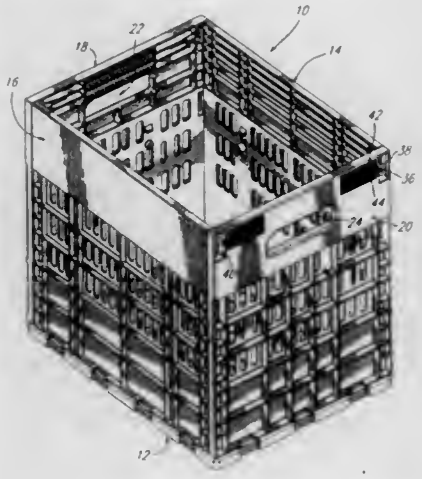
5,853,099
FIVE-PIECE OPEN CONTAINER WITH LOCKING ARRANGEMENT

Claude Lessard, Sainte-Foy, Canada, assignor to IPL Inc., St-Damien-de-Bellechasse, Canada

Filed Apr. 22, 1997, Ser. No. 837,893

Int. Cl.^{6} B65D *6/18*

U.S. Cl. 220—7 **8 Claims**



1. A five-piece open container for carrying items comprising: a rectangular bottom piece formed of plastics material, said bottom piece having opposite edges; and four side pieces formed of plastics material, each side piece having a lower edge hingedly connected to a corresponding edge of said bottom piece whereby the four side pieces may be pivotally moved between two positions including an erected position and a non-erected position; each said side pieces having, in the upper part thereof and adjacent a lateral edge thereof, cooperating means for interengaging said side pieces in said erected position, and finger actuatable means integral with two of said side pieces securing said side pieces in an erected inter-engagement; said finger actuatable means consisting of an elongated part formed in said one of said side or end piece; and elongated part having one end facing a projecting part of said inter-engaging means; said finger actuatable means being flexible outwardly outside the plane of said one of said side or end piece so as to be moved out of a securing position and to enable disengagement of said side pieces from one another.

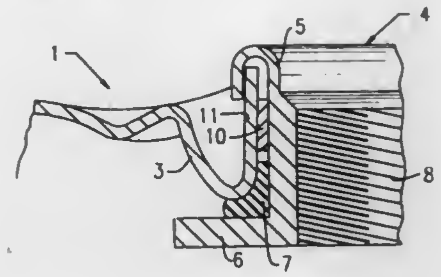
5,853,100
DRUM WITH DRUM CLOSURE AND METHOD

Herman P. Kars, Amstelveen, Netherlands, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Continuation of Ser. No. 244,574, Jul. 24, 1995. This application Jul. 21, 1997, Ser. No. 897,792

Int. Cl.^{6} B65D *41/04*

U.S. Cl. 220—254 **3 Claims**



1. In a drum having a drum closure provided in a wall thereof, said drum wall having an opening surrounded by a raised embossment terminating in an upstanding cylindrical collar, a radiused juncture portion joining said embossment and said collar, said drum closure comprising an internally threaded unitary cylindrical insert surrounded by said collar and having a lowermost first flange underlying said embossment, said insert having an uppermost exteriorly coextending second flange formed radially outwardly over said collar, a first sealing ring interposed said drum wall embossment and said insert first flange, a second sealing ring interposed said insert and said collar fitted directly beside said first sealing ring and said cylindrical insert and said drum collar remaining substantially parallel and spaced from each other by said second sealing ring throughout their respective lengths whereby effective sealing is maintained between said insert and said drum wall under a severe top impact condition sufficient to cause axial separation between said drum wall embossment and said insert first flange such that said second sealing ring remains under sealing compression while said radiused juncture portion only remains in nonsealing contact with said first sealing ring.

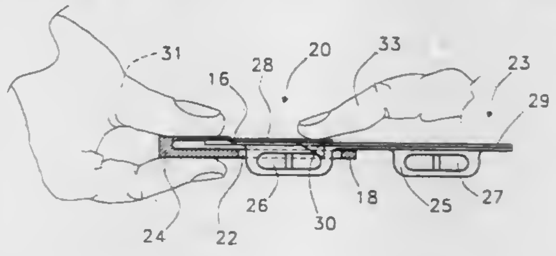
5,853,101
BLISTER PACK OPENER

Jack Weinstein, Lakehurst, N.J., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Continuation-in-part of Ser. No. 6,528, Jan. 21, 1993, Pat. No. 5,356,010. This application Apr. 19, 1993, Ser. No. 47,994

Int. Cl.^{6} B65D *17/52*

U.S. Cl. 220—284 **10 Claims**



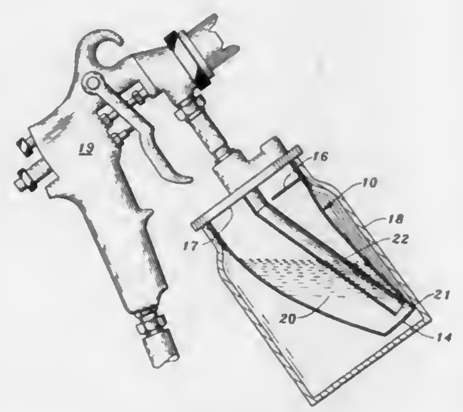
1. A soft pack opener, which comprises:

a puncturing mechanism, a base segment and a top segment, at least a portion of said top segment and said base segment being hingedly connected to one another, said base segment having an orifice located therein which is of a respective size to receive a corresponding dosage unit section of a soft pack and said top segment having said puncture mechanism located thereon, said puncture mechanism having a puncture mechanism protrusion being of a predetermined size and shape selected so as to nest within said orifice of said bottom segment, the puncture mechanism protrusion having a predetermined height, the predetermined height relating to the dimensions of the soft pack backing and a dosage unit, the predetermined height selected so as to puncture the soft pack backing and so as to retain space between the puncture mechanism protrusion and the dosage unit when said dosage unit section is placed within said orifice of said bottom segment while said top segment is hingedly pushed downwardly.

5,853,102

INSERT FOR SPRAY GUN PAINT CUPS

Guy R. Jarrett, 1905 Winning Ave., Modesto, Calif. 95350
Filed Jan. 27, 1997, Ser. No. 789,651
Int. Cl.^{6} B65D *25/00*
U.S. Cl. 220—410 **3 Claims**



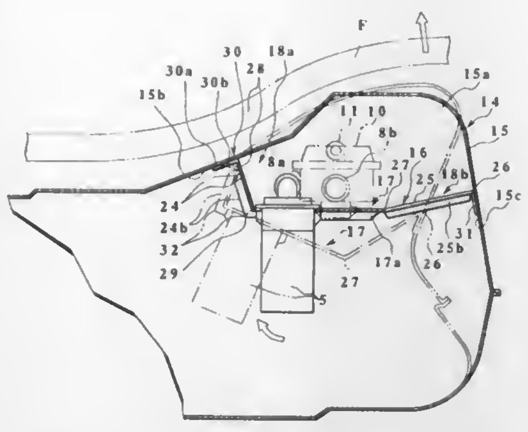
1. An oblique frustro-conical hollow insert for placement within a paint cup of a siphon spray gun to restrict and reduce an internal area surrounding an intake hole of a vacuum tube of said spray gun so that the insert itself, and not the paint cup may be filled with a small volume of paint for spray painting a small surface area, said insert having an open top and a closed bottom, said open top being larger than said closed bottom, and said open top and said closed bottom each having a centerline, said center lines being offset each from the other.

5,853,103

FUEL TANK STRUCTURE

Shuichiro Yamazaki, Kanagawa-ken, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa-ken, Japan
Filed Sep. 19, 1997, Ser. No. 934,051
Claims priority, application Japan, Sep. 20, 1996, 8-249710
Int. Cl.^{6} B65D *90/00*
U.S. Cl. 220—562 **20 Claims**

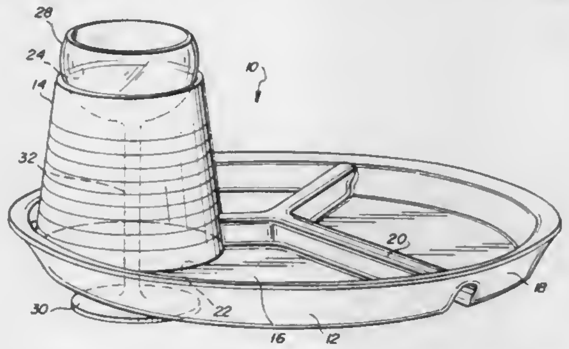
1. A fuel tank structure comprising:
a tank body;
a flow control valve;
a bracket which includes:
  a connecting portion connected to an inside of said tank body,
  a valve mounting portion to which said flow control valve is mounted, and
  an impact absorbing portion which is disposed between said connecting portion and said valve mounting portion and is deformed by itself so as to absorb the impact when said tank body is deformed by an impact.



5,853,104

COMBINATION FOOD PLATE AND BEVERAGE-HOLDING ARTICLE

Kris M. Rathjen, 7031 Elizabeth Dr., McLean, Va. 22101
Filed Apr. 9, 1997, Ser. No. 833,501
Int. Cl.^{6} A47G *19/00*
U.S. Cl. 220—574 **23 Claims**



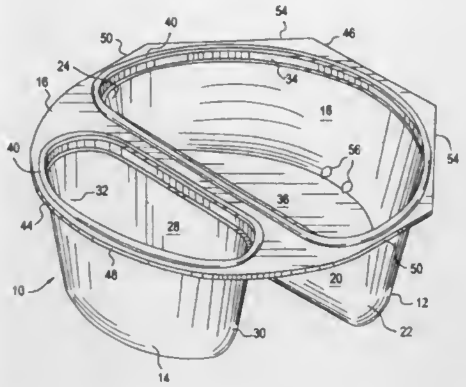
1. A combination food plate and beverage-holding article comprising:
a plate body for supporting food and having a generally upstanding lip substantially about the margin of the body;
a beverage container support formed integrally with and upstanding from said body, said support including a generally truncated cone-shaped member having a wall portion adjacent said plate body larger in diameter than a diameter of an upper end portion of said member whereby a beverage container is at least in part receivable within said member through said upper end portion thereof;
said member being located off-center relative to said plate body and extending above the lip of the plate; and
a support base carried by said article and movable between a non-supporting position for a beverage container received within said member and a beverage container support position within said member.

5,853,105

CONTAINER WITH STABILIZING BEADS

Linda Carol Roman, Chicago, Ill., and Daniel Brian Kurtz, Sandusky, Ohio, assignors to Kraft Foods, Inc., Northfield, Ill.
Filed Oct. 9, 1997, Ser. No. 948,009
Int. Cl.^{6} A47J *27/00;19/00;* A65D *1/34;21/032*
U.S. Cl. 220—575 **11 Claims**

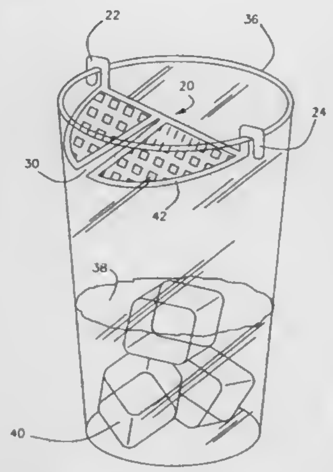
1. A food product container comprising at least one compartment comprising a bottom wall, at least one curved side wall extending upward therefrom, a flange extending outward about the upper end of said at least one side wall, and a removable top cover having display indicia thereon, said flange having a flat stabilizing edge portion thereon, said container being capable of being stably supported on a flat supporting surface in a first, generally horizontal position with said bottom wall resting generally horizontally on the flat supporting surface, said container further being capable of being stably supported in a second, inclined display position with said stabilizing edge portion and a bottom edge portion of said side wall resting on the flat supporting surface;
said container further comprising a pair of stabilizing beads spaced from one another along the bottom edge of said side wall, each said bead having sufficiently small size to leave a large, smooth, continuously curved label area on said side wall uninterrupted by said stabilizing beads, said stabilizing beads projecting laterally a sufficient distance from said bottom edge of said side wall to enable both of said beads to contact the supporting surface simultaneously when said container is in its inclined position, without said bottom edge of said side wall between the beads interfering with the stability of the container.



5,853,106

BEVERAGE ICE RETAINING APPARATUS

Mose A. Galluzzo, 4151 Tullock Woods Trail, Rockford, Ill. 61101
Filed Dec. 18, 1997, Ser. No. 993,761
Int. Cl.^{6} A47G *19/22*
U.S. Cl. 220—731 **14 Claims**

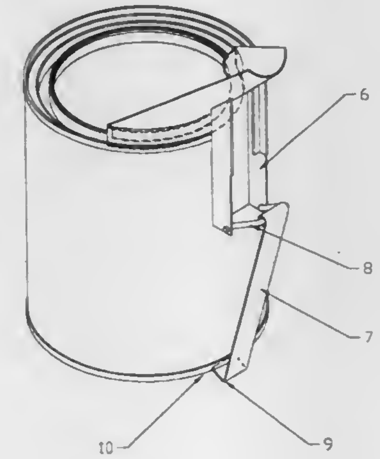


1. An ice retaining apparatus for use in a drinking vessel containing a beverage and objects which are not intended to be consumed during the drinking of the beverage, the drinking vessel being generally cylindrical with a given diameter, a closed bottom, a curved inner surface, and a lip at the top from which a user drinks, the apparatus comprising:
a unitary structure defining a generally semi-circular surface having a continuous circumference and including first and second retaining clips integrally formed along said circumference and shaped to accommodate the lip of the drinking vessel along an entire length of said circumference; and
wherein said generally semi-circular surface comprises first and second retaining surfaces flexibly joined at a point on said continuous circumference forming a slot extending therefrom to a diameter of said generally semi-circular surface, said first and second retaining surfaces positionable in a non-overlapping relationship with one another to allow said continuous circumference to generally conform to the curved inner surface of the drinking vessel, said slot widening or narrowing in response thereto; and
wherein said first and second retaining surfaces define a plurality of orifices therein.

5,853,107

LATCH ON PAINT CAN POUR SPOUT

John F Giwojna, N14952 Wilderness Ave., Thorp, Wis. 54771-7414
Filed May 20, 1997, Ser. No. 859,442
Int. Cl.^{6} B65D *25/00*
U.S. Cl. 220—733 **1 Claim**



1. A latch on paint can pour spout comprising:
a pour spout, having an upper and a lower surface, oriented to extend outwardly from the upper edge of a paint can, said pour spout becoming narrower in the direction extending away from the paint can;
a ridge groove seal member attached to the lower surface of said pour spout, said ridge groove seal fitting in saddle fashion over a portion of an inner ridge at the top of the can which was formally occupied by a paint can lid;
a synthetic seal member forming a seal between said ridge groove seal member and said inner ridge at the top of the can;
an over center hinged latch device comprised of a brace member attached to the lower surface of said pour spout at one end thereof and having an aperture at an opposite end thereof, a latch arm member having a hook at one end thereof, for engaging an edge of a lower end of the paint can, and having an aperture at an opposite end thereof, and a link member pivotally connected to said apertures for attaching said brace member and said latch arm member;
wherein said over center hinged latch device secures the paint can pour spout to a paint can when attached thereto in a closed position.

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5,853,108
PARTS FEED APPARATUS AND PARTS FEED METHOD

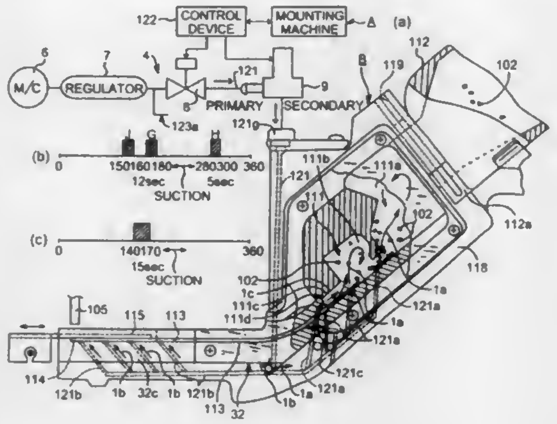
Takashi Ando, Koufu; Yoshihisa Tachiyama, Yamanashi-ken; Yoshimi Ohara, Yamanashi-ken; Tsukasa Tanihara, Yamanashi-ken; Akio Yamagami, Koufu; Kazuyuki Nakano, Yamanashi-ken, and Shigeki Imafuku, Nirasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 16, 1996, Ser. No. 698,736

Claims priority, application Japan, Aug. 21, 1995, 7-212088; Nov. 6, 1995, 7-286967

Int. Cl.⁶ B23Q *7/12*

U.S. Cl. 221—163 20 Claims



1. A parts feed apparatus comprising:

an agitating chamber for agitating parts by air;

a parts feed route connected to the agitating chamber for receiving agitated parts in a specific direction, arranging them in neat order, and sending them up to a specific parts feed position by air; and

an air supply means for supplying air to the agitating chamber and parts feed route;

wherein

a bottom of the parts feed position opened upward at the leading end of the parts feed route is formed higher than the bottom of the parts feed route at its downstream side.

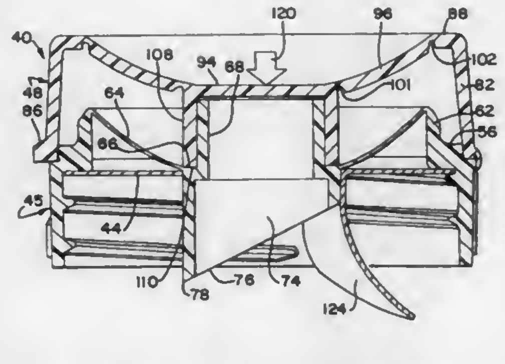
5,853,109
DISPENSING STRUCTURE WITH DISPLACEABLE PENETRATOR AND BISTABLE COVER ACTUATOR

John Elliott, Burlington, Wis., assignor to APTARGROUP, Inc., Crystal Lake, Ill.

Filed Apr. 29, 1998, Ser. No. 69,480

Int. Cl.⁶ B67B *7/00*

U.S. Cl. 222—83 20 Claims



1. A dispensing structure for a container that has an opening to the container interior which can be initially closed by a membrane occluding said opening, said dispensing structure comprising:

a body for extending around said container opening over said membrane, said body including

(a) a peripheral wall,

(b) a flexible panel that (i) is connected with said peripheral wall, (ii) extends around a dispensing aperture, (iii) is normally biased to an outwardly displaced configuration as viewed from outside said body, and (iv) accommodates movement of said panel to an inwardly displaced configuration, and

(c) a penetrator extending inwardly from said panel for penetrating said membrane when said panel is in said inwardly displaced configuration; and

a cover for accommodating movement between (1) a closed position over said body, and (2) an open position away from said closed position, said cover including

(a) a peripheral frame mounted on said body, and

(b) a convex top that (i) is connected with said frame, (ii) is normally biased to an outwardly convex configuration as viewed from outside said cover, and (iii) accommodates flexure of said top to a self-maintained, inverted, inwardly concave configuration for moving said body panel to said inwardly displaced configuration wherein said penetrator penetrates said membrane.

5,853,110

Patent Not Issued For This Number

5,853,111
TWO-COMPARTMENT DISPENSER WITH AN INTEGRATED SEALING DOSE REGULATOR AND A PROCESS FOR DISPENSING LIQUIDS

Bernhard Bongers, Duesseldorf; Andreas Flohr, Kaarst; Stefan Meurer, Neuss, and Volker Weiss, Langenfeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

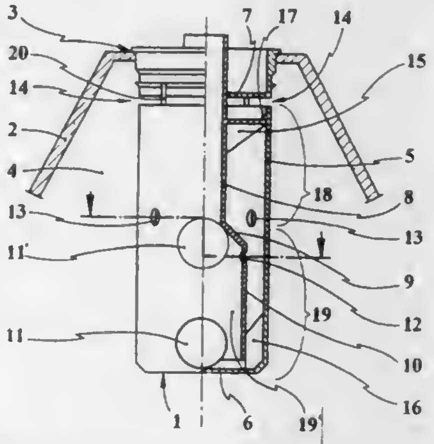
PCT No. PCT/EP95/01041, § 371 Date Oct. 30, 1996, § 102(e) Date Oct. 30, 1996, PCT Pub. No. WO95/27187, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 21, 1995, Ser. No. 718,559

Claims priority, application Germany, Mar. 30, 1994, 44 11 021.9

Int. Cl.⁶ B65D *37/00;* G01F *11/26;11/28*

U.S. Cl. 222—212 13 Claims



1. A tubular two-compartment dispenser for liquids is designed to fit tightly in an opening of a container, and which comprises an outer cylindrical wall with a continuous base and a cover with a pouring channel, the arrangement being such that at least a first opening is present in the wall in the vicinity of the cover, and at least a second opening is present on a peripheral line between the first opening and the base, and an inner cylindrical wall providing a tubular body is arranged in an outer cylindrical space defined by the outer cylindrical wall and by the base and the cover and, at one end, is tightly connected to the pouring channel and, at its other end, remains at a distance from the base and has at least a third opening, a freely movable body of circular cross-section being provided in said tubular body, its diameter being greater than that of the pouring channel and smaller than that of said tubular body, a portion of said tubular body being in the form of a funnel with a narrowed opening connected to said pouring channel, the funnel portion providing a valve seat for said freely movable body, wherein in the inverted position, the third opening is arranged vertically above the second opening by a distance which is greater than the rise in the liquid level in the dispenser resulting from an equilibrium between the pressure of the liquid column in the container and the pressure of the compressed air volume above the second opening in the dispenser.

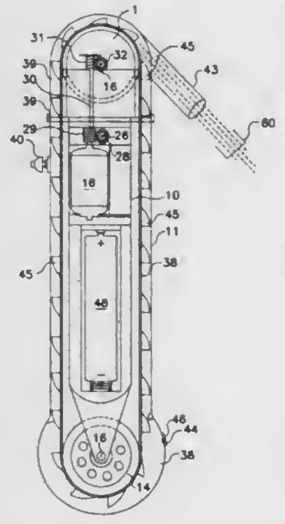
5,853,112
CANDY HOLDER AND CANDY FEEDING DEVICE

Thomas J. Coleman, 19170 Paddock Pl., Abingdon, Va. 24211; William K. Schlotter, IV, 117 Wateredge La., Fredericksburg, Va. 22406; Princess Ann Coleman, 19170 Paddock Pl., Abingdon, Va. 24211, and Ann M. Schlotter, 117 Wateredge La., Fredericksburg, Va. 22406

Filed Feb. 28, 1997, Ser. No. 807,801

Int. Cl.⁶ B65B *1/00*

U.S. Cl. 222—371 6 Claims



1. A motorized product dispensing device which comprises:

a support housing having a linear axis,

said support housing including a first wheel supported on and rotatable with a first axle, a second wheel supported on a second axle for rotation on said second axle, said first and second axles being supported in said support housing and axially spaced from each other,

a gearing system for rotating said first wheel,

a motor for driving said gearing system,

a power source for energizing the motor,

said gearing system, said motor, and said power source being supported by said support housing,

at least one switch in an electrical line from said power source to said motor for controlling electrical energy to operate said motor,

a belt that encircles said first and second wheels for rotation with said wheels,

said belt including means extending therefrom for lifting a product as said belt is rotated by said first and second wheels which are driven by said motor and gearing system,

an outer enclosure which surrounds and encloses said support housing, said wheels, said belt, said gearing system, said motor, and said power source,

said outer enclosure extends axially along the support housing and includes a reservoir for containing a product to be lifted axially by said belt, and a dispensing spout at one end of said outer enclosure for dispensing products lifted from said reservoir.

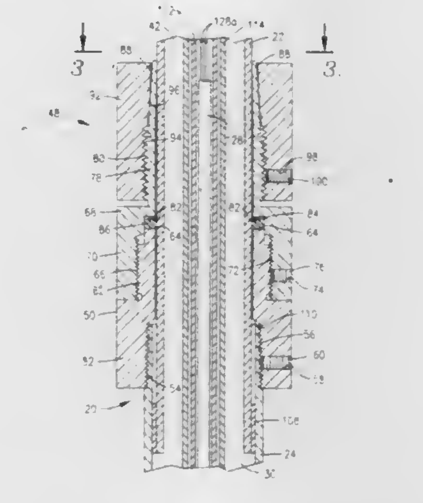
5,853,113
TELESCOPING COLUMN PIPE ASSEMBLY FOR FUEL DISPENSING PUMPING SYSTEMS

Dorsey D. Small, Port Byron, Ill.; Martin J. Traver, Wheatland, Iowa; Edgar E. Dunning, III, Moline, Ill.; G. Todd Clark, Maquoketa, Iowa, and Bruce W. Kellums, Edgington, Ill., assignors to Marley Pump, Overland Park, Kans.

Filed Oct. 21, 1996, Ser. No. 735,202

Int. Cl.⁶ B67D *5/50*

U.S. Cl. 222—379 15 Claims



1. An apparatus adjustably connecting a submersible electric pump to a distribution head which receives flammable fuel pumped by the pump, said apparatus comprising:

first and second pipes connected to telescopically extend and retract, said first pipe being connected with the distribution head and said second pipe being connected with the pump to establish a flow path for the fuel through the pipes from the pump to the discharge head;

first and second electrical conduits connected telescopically and extending inside of said first and second pipes, said first conduit being connected with the distribution head and said second conduit being connected with the pump;

electrical wiring extending in said first and second electrical conduits from the distribution head to the pump to supply electrical power for operation of the pump;

means for sealing said first and second conduits together to isolate said wiring from the fuel in said flow path, said sealing means allowing the conduits to extend and retract telescopically;

a fitting connected to one of said pipes and having a plurality of flexible fingers overlapping an other of said pipes;

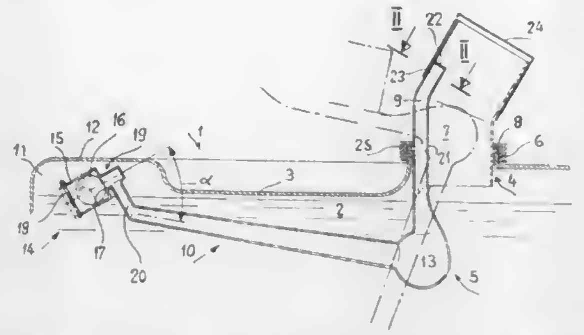
releasable means for pressing said fingers against said other pipe into gripping engagement therewith to lock said pipes together;

an adapter bushing secured to said one pipe and including a sleeve extending around said other pipe; and

a threaded base portion of said fitting having a threaded connection with said sleeve of the adapter bushing, said fitting including a sleeve portion which projects from said base portion and carries said fingers thereon.

5,853,114
DEVICE FOR VENTILATING A CONTAINER FOR LIQUIDS

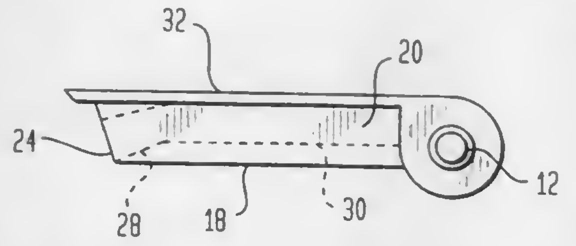
Carlo Giovanoli, Hauptstrasse, CH-7457 Bivo, Switzerland
PCT No. PCT/CH96/00291, § 371 Date Jun. 30, 1997, § 102(e) Date Jun. 30, 1997, PCT Pub. No. WO97/08068, PCT Pub. Date Mar. 6, 1997
PCT Filed Aug. 22, 1996, Ser. No. 817,780
Claims priority, application Switzerland, Aug. 22, 1995, 2391/95-5
Int. Cl.^{6} B65D *1/20;25/38;47/06;* **B67D** *3/00*
U.S. Cl. 222—479 **15 Claims**



1. A device for ventilating a liquid container having an upper wall and a filling and emptying opening with an outlet region, comprising a removable ventilation device projecting into the container, the removable ventilation device comprising a first line portion in communication with surroundings and a second line portion adjoining the first line portion, wherein the first and second line portions extend at an angle relative to each other in the outlet region of the filling and emptying opening, and wherein the second line portion extends into a container region located farther away from the filling and emptying opening and located underneath the upper wall of the containers further comprising a liquid-operated shut-off valve mounted at an end of the second line portion projecting into the container region.

5,853,115
DISPENSING CLOSURE

James Lynn Turbett, Stamford, Conn., and Mark John Iaia, Valley Cottage, N.Y., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Dec. 18, 1996, Ser. No. 773,807
Int. Cl.^{6} B67D *3/00*
U.S. Cl. 222—531 **9 Claims**



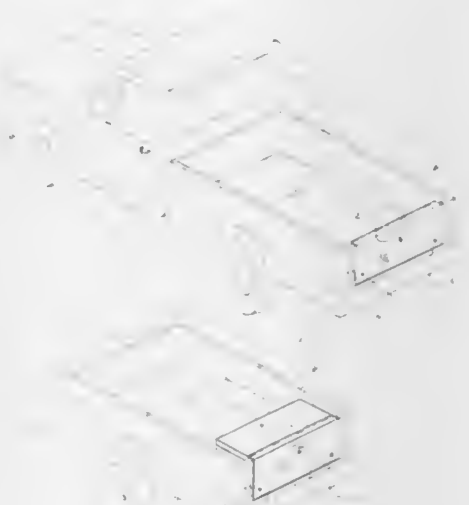
1. A dispensing closure for a container comprising:

a cap including a means adapted to secure the cap to the container, a passageway within the cap communicating with product inside the container, a cavity traversing at least one outer surface of the cap; and

a spout rotatably lodged within at least a portion of the cavity, the spout including an elongate nozzle internally traversed by a channel having an inlet and an outlet opening at opposite ends thereof, the channel including a first and second portion, the first portion being adjacent to the outlet opening and oriented at an angle to the second portion, the inlet opening capable of communicating with the cap passageway, a trunnion/bearing means formed on opposite sides of the nozzle engageable with a complementary trunnion/bearing means within the cavity for permitting rotation of the spout, and at least one wing flanking and inwardly flexible toward the nozzle with an outer surface fitted with one of the trunnion/bearing means.

5,853,116
STORAGE UNIT FOR TRUCKS

Harry L. Schreiner, P.O. Box 27546, Denver, Colo. 80227
Filed Mar. 27, 1997, Ser. No. 827,382
Int. Cl.^{6} B60R *9/00*
U.S. Cl. 224—404 **12 Claims**



1. A collapsible storage device for mounting on the bed of a truck, the bed of the truck having a floor and having means for accepting a tailgate, the collapsible storage device comprising:

a frame adapted for mounting in a substantially vertical orientation to the bed of the truck, the frame having a lower portion, an upper portion and sides, the lower portion being adapted for placement near the floor of the bed of the truck, the upper portion and sides being formed from elongate members having ends, the ends of the elongate members being connected to one another in order to support the upper portion at a distance from the lower portion to define an opening therethrough to allow access to the storage device;

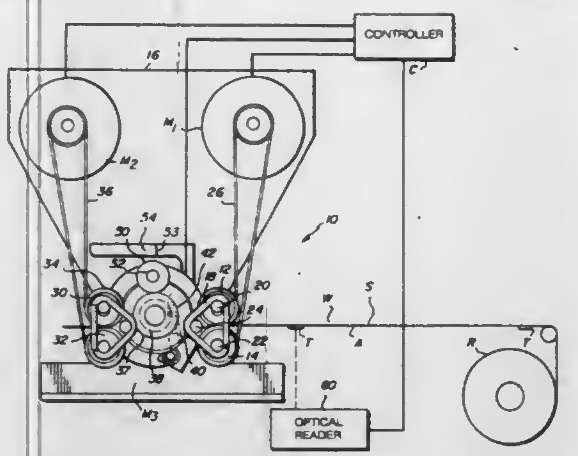
a first panel having a first edge and a second edge, the first edge being hingedly attachable to the upper portion of the frame;

a door panel, the door panel being hingedly attached to said frame in a generally parallel arrangement relative to said first edge of said first panel;

and a second panel, said second panel being mountable in a first position where the second panel lies against said frame when the storage device is collapsed, and a second position where the second panel is spaced from and held in a substantially parallel fashion to said frame to form a storage area with said frame, said second panel is supported between the second edge of said first panel and the bed of the truck; when said second panel is against said first position said first panel swings over said second panel, holding said second panel in the substantially parallel fashion against said frame, and when said second panel is in the second position said first panel forms a top closure for the storage area and said door panel forms a side closure for the storage area thereby allowing dual access to the storage area by opening either said first panel or said door panel.

5,853,117
SEPARATOR FOR LINERLESS LABELS

John E. Traise, Melbourne, Fla., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Oct. 31, 1995, Ser. No. 550,622
Int. Cl.^{6} B26F *3/00*
U.S. Cl. 225—4 **13 Claims**



1. In a separator having a pair of infeed rolls with a nip therebetween, a pair of outfeed rolls with a nip therebetween and located downstream of the pair of infeed rolls in a direction of travel of a web through the nips of said pairs of infeed and outfeed rolls, and a separating member downstream of said pair of infeed rolls and upstream of said pair of outfeed rolls, method of separating linerless labels forming said web wherein the web has a first surface that will not readily adhere to adhesive on a second surface thereof, comprising the steps of:

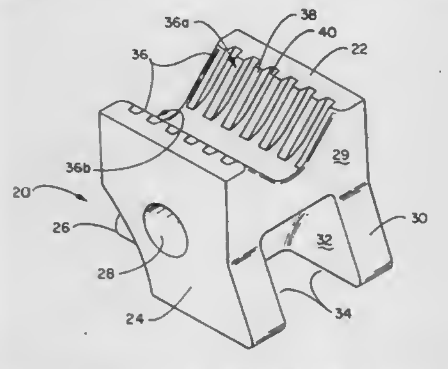
(a) advancing a leading portion of the web of linerless labels with the first surface not readily adherent to adhesive and said second surface having adhesive thereon on opposite sides of the web, through the nips of the infeed and outfeed pairs of rolls in a first downstream direction and past the separating member with the second surface having adhesive thereon facing away from the separating member as the web moves in the first downstream direction;

(b) sensing timing marks on the web disposed along one of said surfaces thereof; and

(c) sequentially separating the web into linerless labels by moving the separating member to engage the web in response to periodically sensing the timing marks.

5,853,118
GRIPPER BLOCK FOR COILED TUBING INJECTORS

Vladimir A. Avakov, Duncan, Okla., assignor to Halliburton Energy Services, Inc., Duncan, Okla.
Filed Feb. 22, 1996, Ser. No. 605,606
Int. Cl.^{6} B65H *20/00*
U.S. Cl. 226—173 **9 Claims**



1. A gripper block for use in connection with a device having at least one gripper chain for moving a rod, pipe, coiled tubing, cable, or like elongated object, the gripper block comprising:

a) a block body having a longitudinal axis and a single generally centrally located lateral axis having a bore coincident thereto, a first end having a tongue, a second end having a recessed region for accommodating a tongue of an adjacent gripper block;

b) a laterally oriented means of attaching the block body onto a chain coincident to the single generally centrally located lateral axis of the block body;

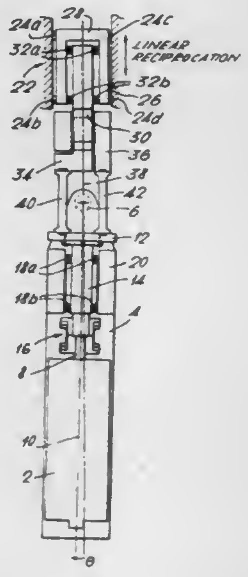
c) a gripping region means for engaging the tubing and transmitting injection and extraction forces upon the elongated object;

d) the gripping region having a pair of opposing surfaces being carried on the block body, the surfaces extending perpendicularly from the longitudinal axis of the block body and generally diverging with respect to the longitudinal axis of the block body; and

e) the opposing surfaces of the gripping region having ridges defined by alternating crests and roots.

5,853,119
FRICTION WELDING APPARATUS

John G Searle, Cannock, Great Britain, assignor to Rolls-Royce PLC, London, England
Filed Dec. 13, 1996, Ser. No. 766,759
Claims priority, application United Kingdom, Dec. 20, 1995, 9526038
Int. Cl.^{6} B23K *20/12*
U.S. Cl. 228—112.1 **19 Claims**



1. A method of operating a linear friction welding machine comprising rotating an input shaft about a first axis, mounting an output shaft for rotation about a second axis and for reciprocation in the direction of the second axis, drivingly connecting the output shaft to a welding ram constrained for linear reciprocal movement in the direction of the second axis, coupling the input shaft to the output shaft so that rotation of the input shaft rotates the output shaft, and arranging that the first and second axes are relatively angularly movable out of co-axial alignment so that when misaligned the input shaft has reciprocal linear component of movement in the direction of the second axis which drives the output shaft and welding ram reciprocally in the direction of the second axis.

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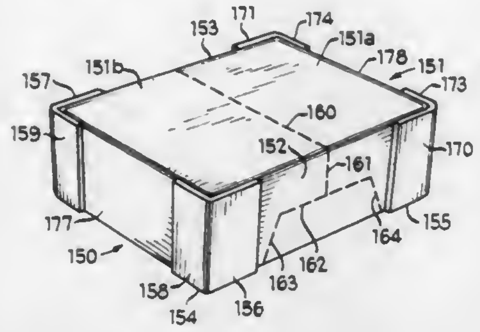
5,853,120
TRAY APPARATUS WITH REINFORCED CORNER STRUCTURE

Michael B. McLeod, Romeoville; Russell A. Leavitt, Woodridge, and Elizabeth G. Wilson, Wheaton, all of Ill., assignors to Stone Container Corporation, Chicago, Ill.

Filed Jul. 31, 1996, Ser. No. 690,074

Int. Cl.^{6} B65D *5/4805*

U.S. Cl. 229—120.09 **2 Claims**



2. A container tray apparatus for the facilitated containment of articles, having at least one bottom wall member having at least a first side edge region and at least a first end edge region, at least a first side wall member operably connected to the at least first side edge region of the at least one bottom wall member, and at least a first end wall member operably connected to the at least first end edge region of the at least one bottom wall member, the at least first side wall member and the at least first end wall member being operably arrangeable with respect to one another so as to define at least a first corner region of the container tray apparatus, the at least first side wall member and the at least first end wall member further being operably arrangeable relative to the at least one bottom wall member, upon articulation, so as to further at least partially define an article containment region, the improvement in said container tray apparatus comprising:

at least one top wall member, operably positionable, upon said articulation, in substantially spaced, parallel, overlying relation to at least a portion of the at least one bottom wall member, the at least one top wall member, when positioned in said substantially spaced, parallel, overlying relation to the at least a portion of the at least one bottom wall member, being substantially maintained in said overlying position over the at least first corner region by the at least first side wall member and the at least first end wall member; and

corner support means, operably emanating from and articulable to said at least first top wall member, for providing vertical loading support for the container tray apparatus, toward providing resistance to undesired collapsing of said at least first corner region of the container tray apparatus upon the stacking of articles on top of the container tray apparatus,

said corner support means including at least one corner support member operably emanating from the at least one top member, a first portion of said corner support member, upon articulation, being operably positionable in substantially parallel, at least partially overlying relation to the outer surface of the at least first side wall member, a second portion of said corner support member, upon articulation, being operably positionable in substantially parallel, at least partially overlying relation to the outer surface of the at least first end wall member, and affixable thereto, for providing support for the at least first corner region, wherein each of the first and second portions of the at least one corner support member are operably configured for stabilized support of vertical loads exerted upon the container tray apparatus, upon stacking of further container tray apparatuses upon said container tray apparatus; and

means for enabling conversion of the container tray apparatus into a containment and display apparatus,

the means for enabling conversion of the container tray apparatus into a containment and display apparatus further comprising a first plurality of perforations disposed in the at least first side wall member, for enabling removal of a portion thereof; and

at least a second perforation extending across the at least one bottom wall member, operably configured so that upon removal of said portion of the at least first side wall, said container apparatus may be folded along said second perforation to form at least two article folding and displaying regions.

5,853,121
INSULATED CHEST

Lelia H. Francisco, Stockbridge, Ga., assignor to Laminating Technologies, Inc., Atlanta, Ga.

Filed Aug. 5, 1997, Ser. No. 906,709

Int. Cl.^{6} B65D *5/24*

U.S. Cl. 229—188 **17 Claims**

9. A unitary blank for foldably constructing a container, said blank comprising:

(a) a bottom with sides and ends;

(b) first and second end walls foldably connected to opposite ends of said bottom;

(c) first and second side walls foldably connected to opposite sides of said bottom;

(d) a corner portion forming a continuous web between, and foldably connected to, each adjacent side wall and end wall, wherein a diagonal score line extends generally centrally along each said corner portion, dividing said corner portion into two generally equal triangular panels, with one each adjacent the side wall;

(e) slots provided in proximity to the top edge of each said first and second end wall wherein said slots are generally rectangular, having a width that is slightly greater than twice the thickness of the said blank, and having a length slightly greater than the length of said middle tab; and

(f) a tab foldably connected to the top edge of each said corner portion, wherein said tab foldably connected to the triangular panel adjacent the side wall with said tab having foldable end tabs and a middle tab;

(g) first and second end flaps foldably connected to the top of each said first and second end wall, respectively;

(h) first and second top sections foldably connected to the top edge of each said first and second side wall, respectively;

(i) securing flaps foldably connected to the opposite ends of each said first and second top section;

(j) flap, tabs foldably connected to the top edge of each said securing flap;

(k) a slot provided in each said end flap generally perpendicular to the line of folding between each said end flap and said end wall, wherein said slot is generally rectangular, having a width that is slightly greater than twice the thickness of said blank, and having a length slightly greater than the length of said flap tabs; and

(l) first and second handle portions foldably connected to the top edge of each said first and second top section, respectively.

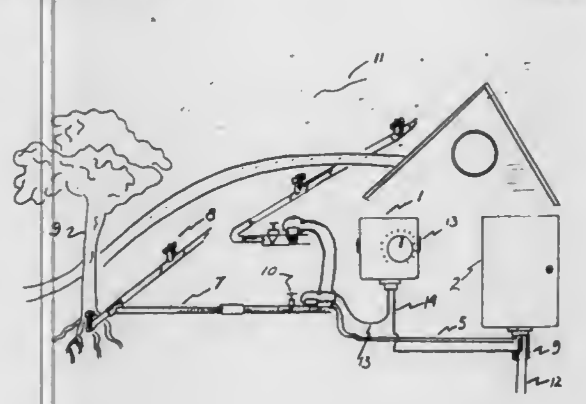
5,853,122
RELATIVE HUMIDITY SENSITIVE IRRIGATION VALVE CONTROL

Alphonse E. Caprio, 7608 William Moyers Ave. NE., Albuquerque, N. Mex. 87122

Continuation-in-part of Ser. No. 745,461, Nov. 12, 1996, abandoned. This application Oct. 31, 1997, Ser. No. 962,555

Int. Cl.^{6} G05D *27/00*

U.S. Cl. 236—44 C **7 Claims**



1. A differential relative humidity and temperature responsive device for controlling exterior water sprinklers, which comprise solenoids connected to sprinkler heads, said device comprising:

Means for setting a humidity threshold at a humidity value based on the approximate average of the highest humidity measurements taken periodically during a selected time period;

Means for setting a temperature threshold at a temperature value;

An electrical load;

Means for controlling energy to said load including an electrical controller connected at its output to said electrical load;

Means for sensing ambient temperature and providing a temperature value;

Means for sensing ambient humidity and providing a humidity value; and

Comparator means connected at the input to said controller for receiving the output of said humidity and temperature threshold setting means and comparing the humidity and temperature values with the output values of said temperature and humidity sensing means so as to open or close said energy controlling means to said load;

Whereby when the ambient humidity exceeds the pre-set threshold humidity value or the ambient temperature is less than the pre-set threshold temperature value, no energy is passed by the controller to said load; and

Wherein said electrical load comprises at least one solenoid in cooperative arrangement with at least one of the exterior water sprinklers so as to open or close water flow to the sprinkler heads.

5,853,123
SIGNAL TRANSMISSION/RECEPTION DEVICE OF AIR CONDITIONER

Takashi Okano; Kouji Uchida; Kouji Kamafusa; Hisatoshi Kawakami; Masaharu Sogabe, and Osamu Tanaka, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

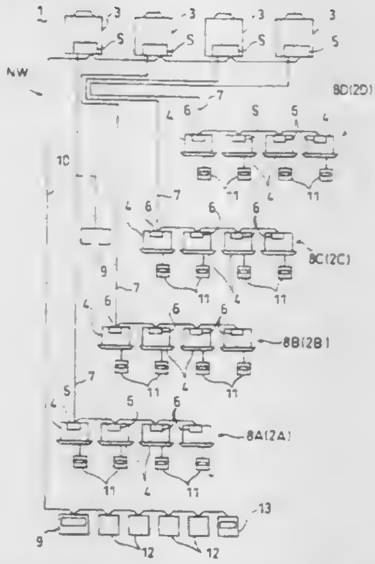
PCT No. PCT/JP95/02141, § 371 Date Apr. 9, 1997, § 102(e) Date Apr. 9, 1997, PCT Pub. No. WO96/12917, PCT Pub. Date May 2, 1998

PCT Filed Oct. 18, 1995, Ser. No. 809,732

Claims priority, application Japan, Oct. 19, 1994, 6-253138; Dec. 15, 1994, 6-311424

Int. Cl.^{6} F24F *11/02*

U.S. Cl. 236—51 **6 Claims**



1. A signal transmission/reception device of an air conditioner, comprising:

a plurality of control groups (**8**A, **8**B, . . .) in each of which a thermal-source-side control unit (**5**) for controlling a thermal-source-side unit (**3**) and a user-side control unit (**6**) for controlling a user-side unit (**4**) are connected to each other through a group communication path (**7**) so as to be capable of signal transmission and reception therebetween;

a centralized communication path (**10**) to which the thermal-source-side control units (**5**, **5**, . . .) are connected so that the thermal-source-side control units (**5**, **5**, . . .) are connected to each other to implement signal transmission and reception through the centralized communication path (**10**), and the respective group communication paths (**7**) are connected at the respective thermal-source-side control units (**5**, **5**, . . .) to the centralized communication path (**10**), thereby forming a single signal transmission/reception network (NW);

a centralized control unit (**9**) to which the signal transmission/reception network (nw) is connected, the centralized control unit (**9**) being operative for subjecting the thermal-source-side units (**3**, **3**, . . .) and the user-side units (**4**, **4**, . . .) to centralized control;

communication path interrupting means (**28**) being operative for bringing conduction and interruption between each of the group communication paths (**7**) and the centralized communication path (**10**);

at least a DC superposition circuit (**25**) which is connected to each of the group communication paths (**7**) so as to obtain either of conduction and interruption between the DC superposition circuit (**25**) and the group communication path (**7**), the DC superposition circuit (**25**) being operative for applying to the group communication paths (**7**) and the centralized communication path (**10**), a DC voltage which is used to discriminate each polarity of the group communication paths (**7**) and the centralized communication path (**10**); and

a plurality of polarity discriminating circuits (**22**) which are respectively provided in the thermal-source-side control units

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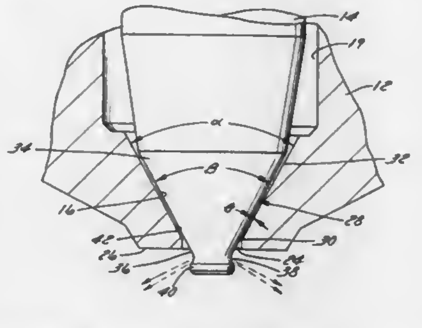
(5), the user-side control units (6) and the centralized control unit (9), the polarity discriminating circuits being operative for discriminating each polarity of the group communication paths (7) and the centralized communication path (10) so that signals of the same polarity are respectively transmitted from the thermal-source-side control unit (5), the user-side control unit and the centralized control unit (9).

5,853,124
BOTTOM SEATED PINTLE NOZZLE

Niels John Beck, Bonita; William P. Johnson, Valley Center; Kresimir Gebert, San Diego, and Hol Ching Wong, Carlsbad, all of Calif., assignors to Servojet Products International, San Diego, Calif.

Filed May 5, 1997, Ser. No. 851,476
Int. Cl.^{6} F02M *3/08*

U.S. Cl. 239—5 **15 Claims**



7. A bottom seated pintle nozzle comprising:
(A) a nozzle body in which is located a valve seat; and
(B) a nozzle needle including a needle tip which is selectively 1) seatable on said valve seat at a needle seat and 2) liftable with respect to said valve seat to permit fluid flow past said needle seat and out of said nozzle body, wherein at least a portion of said needle tip has a frusto-conically-shaped peripheral surface that increases continuously in diameter from a lower end thereof to an upper end thereof at an included angle β, said angle being between 0.5° and 2.0° less than an included angle α of said valve seat so that said needle seat is located at a bottom end of said valve seat, wherein
  a seat orifice flow area 1) is formed between said nozzle needle and said needle seat, 2) is normal to a direction of fluid flow past said needle seat, and 3) increases rapidly with needle lift from a value of zero when said nozzle needle assumes its seated position to a maximum value when said nozzle needle assumes a full-lift position, and wherein
  said seat orifice flow area is the smallest flow area through said pintle nozzle at all phases of needle lift so that fluid flow downstream of said seat orifice flow area is always unthrottled.

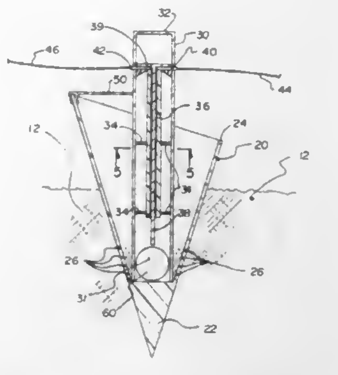
5,853,125
RAINFALL DETECTING AUTOMATIC SPRINKLER CONTROL SYSTEM

Steve Murray, 11539 Carlise Pl., Rancho Cucamonga, Calif. 91730

Filed Jun. 26, 1997, Ser. No. 883,587
Int. Cl.^{6} B05B *12/08*

U.S. Cl. 239—63 **5 Claims**

1. A Rainfall Detecting Automatic Sprinkler Control System comprising:
a hollow conical member having a pointed end and an enlarged open end, wherein said pointed end is for engaging within ground near an automatic sprinkler system and wherein said enlarged open end is for capturing precipitation;



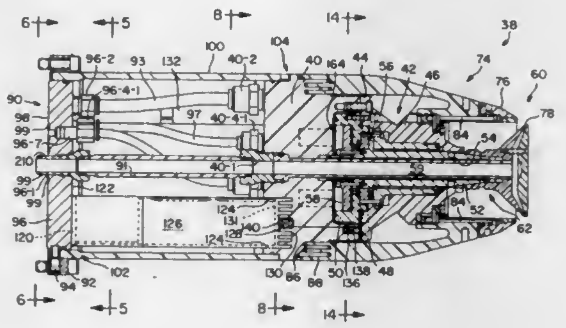
an elongated tube having a bottom end and a top end secured coaxially within said hollow conical member, wherein said top end is enclosed by an enclosing member;
at least one slot projecting within said elongated tube adjacent said bottom end for allowing collected precipitation within said hollow conical member to flow into said elongated tube;
an inner tube secured coaxially within said elongated tube by a plurality of traverse members;
an insulated rod having a first end and a second end slidably projecting within said inner tube;
a switching means connected to said second end of said insulated rod and said switching means electrically connected to said automatic sprinkler system for turning off said automatic sprinkler system upon the elevation of said insulated rod within said inner tube; and
a float member slidably positioned within said bottom end of said elongated tube and engaging said first end of said insulated rod for elevating said insulated rod when a water level within said elongated tube rises from said collected precipitation.

5,853,126
QUICK DISCONNECT FOR POWDER COATING APPARATUS

Kevin L. Alexander, Brownsburg, Ind., assignor to Illinois Tool Works, Inc., Glenview, Ill.

Filed Feb. 5, 1997, Ser. No. 795,066
Int. Cl.^{6} B05B *5/00;3/10*

U.S. Cl. 239—223 **9 Claims**



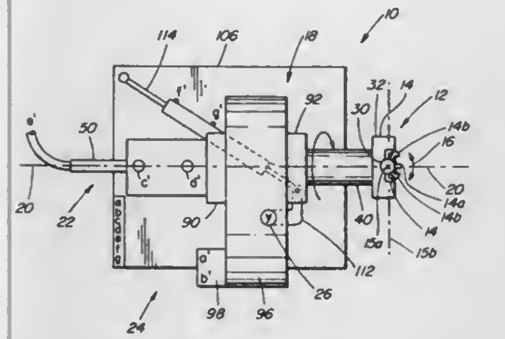
1. A coating dispensing head including a rotary dispensing device for dispensing a fluidized pulverulent coating material, a compressed gas driven turbine rotator for rotating the rotary dispensing device, the head including a first connection for supplying the fluidized pulverulent coating material to the dispensing device and a second connection for supplying compressed gas to the rotator, the first connection including first and second passageways terminating at first and second generally flat surfaces, respectively, the second connection including third and fourth passageways terminating at the first and second surfaces, respectively, and connectors for holding the first and second surfaces against each other with the first and second passageways aligned and the third and fourth passageways aligned so that the fluidized pulverulent material supplied to one of the first and second passageways flows into the other of the first and second passageways and thence to the dispenser and so that compressed gas supplied to one of the third and fourth passageways flows into the other of the third and fourth passageways and thence to the rotator.

5,853,127
HIGH PRESSURE WASHING DEVICE

Tony Heembrock, 2430 Delzotto Avenue, Gloucester, Ontario, Canada, K1T 3V7

Filed May 30, 1997, Ser. No. 866,096
Int. Cl.^{6} B05B *3/02*

U.S. Cl. 239—227 **16 Claims**



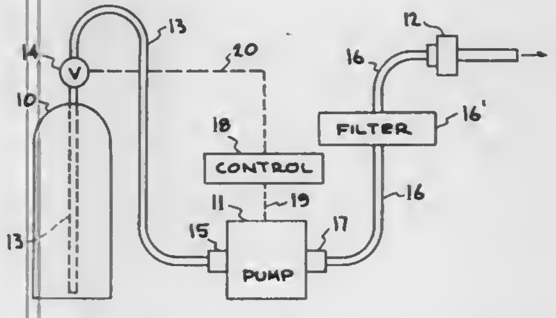
1. A high pressure washing system comprising:
a plurality of outwardly projecting fluid delivery nozzles on a delivery head, the delivery head having a longitudinal axis generally perpendicular to the fluid delivery nozzles;
longitudinal axis rotation means for rotating the fluid delivery nozzles about the longitudinal axis with a reciprocating motion;
second axis rotation means operatively connected to the delivery head, the second axis rotation means for rotating the delivery head about a second axis, the second axis generally perpendicular to the longitudinal axis of the delivery head;
means for delivering high pressure fluid to the fluid delivery nozzles through the second axis rotation means and the delivery head.

5,853,128
SOLID/GAS CARBON DIOXIDE SPRAY CLEANING SYSTEM

Howard S. Bowen, 1475 Sterling Ave., Carpinteria, Calif. 93013; Richard M. Lee, 817-4th St. #304, Santa Monica, Calif. 90403, and John H. Bowen, 9844 Darin Dr., Sandy, Utah 84070

Filed Mar. 8, 1997, Ser. No. 812,531
Int. Cl.^{6} A62C *11/00*

U.S. Cl. 239—329 **21 Claims**



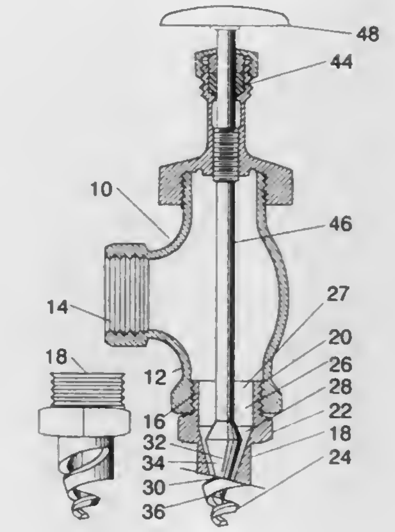
11. An apparatus for solid/gas carbon dioxide spray cleaning, comprising:
a container containing liquid carbon dioxide,
a pump operatively connected to said container, and
a nozzle assembly having one or multiple orifices operatively connected to said pump,
said pump being constructed to draw liquid carbon dioxide from said container and deliver the liquid carbon dioxide to said nozzle assembly at a pressure sufficient to cause adiabatic expansion thus forming solids in a gaseous spray stream.

5,853,129
SPRAY NOZZLE

Albert W. Spitz, 437 N. Sterling Rd., Elkins Park, Pa. 19027

Filed Mar. 25, 1997, Ser. No. 823,475
Int. Cl.^{6} B05B *1/26*

U.S. Cl. 239—456 **12 Claims**



1. A spray valve for spraying a spray liquid comprising:
a valve body having an inlet and an outlet for the spray liquid:
  a valve stem mounted within the valve body for longitudinal movement toward and away from said outlet; and
  a spray nozzle at the outlet of the valve body, said spray nozzle including a helical spray vane with an inner surface tapering inward away from the outlet; and
  a tapered plug carried by said valve stem movable into and out of said helical spray vane as said valve stem is moved longitudinally to control the flow of the spray of the liquid.

5,853,130
PROXIMITY SENSING SHOWER SYSTEM

Robert S. Ellsworth, 11320 Random Hills Rd., Suite 105, Fairfax, Va. 22030

Filed Jul. 16, 1996, Ser. No. 680,800
Int. Cl.^{6} A01G *27/00;* **B05B** *1/14*

U.S. Cl. 239—548 **19 Claims**

1. A system for dispersing a fluid from a fluid source toward a body, said system comprising:
a showerhead dispersing the fluid, said showerhead including a plurality of nozzles, said plurality of nozzles are separated into a plurality of nozzle sets each containing at least one of said plurality of nozzles;
valves infinitely variably regulating flow of the fluid to each of said plurality of nozzle sets, said valves being interposed between the fluid source and said showerhead, said valves including a separate valve for each of said plurality of nozzle sets;
a plurality of fluid conduits establishing fluid communication between said valves and said showerhead, each one of said

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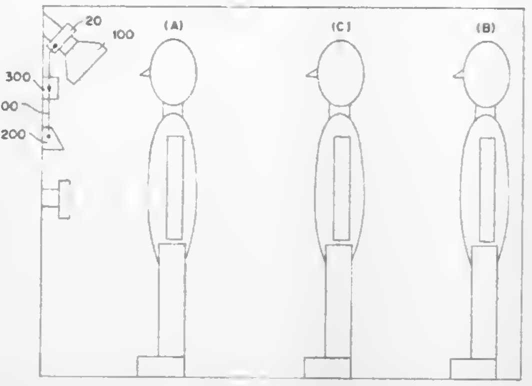
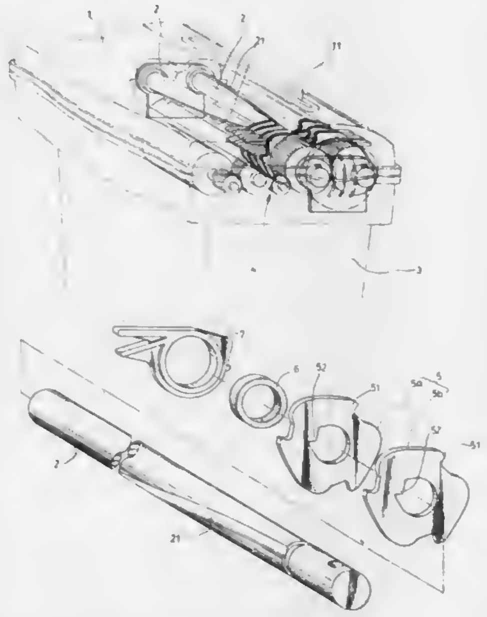


plurality of fluid conduits establishing fluid communication between a different one of said separate valves and a corresponding nozzle set;
a position detector determining the position of the body with respect to said showerhead; and
a controller individually adjusting each of said separate infinitely variable valves to automatically establish an appropriate fluid flow from each of said plurality of nozzle sets for each position of the body with respect to said showerhead as determined by said position detector.

5,853,131
DESKTOP PAPER SHREDDER

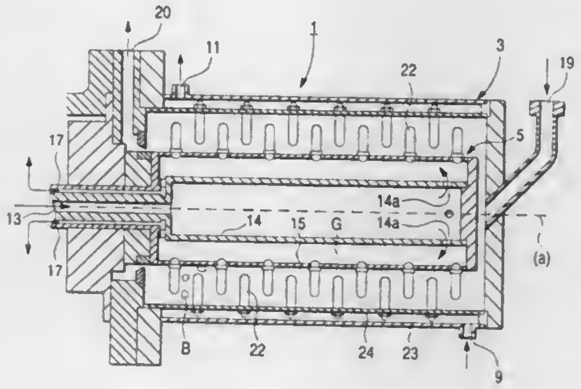
Li-Feng Cheng, No. 75, Hsiou-Shui, Hsiou-Shui Li, Hou-Lung Chen, Miao-Li Hsien, Taiwan
Filed Nov. 10, 1997, Ser. No. 966,528
Int. Cl.^{6} B02C *4/08*
U.S. Cl. 241—100 **9 Claims**



1. A desktop paper shredder comprising:
a housing having an opening passing therethrough and a configuring tab within said housing,
a pair of shafts mounted within said housing and aligned with said opening, said pair of shafts rotatable in opposite directions and each of said shafts having a spiral groove,
a driving device connected to said pair of shafts,
a first plurality of shredding blades fixed onto and rotatable with one of said pair of shafts, each of said first plurality of blades having a plurality of knives, a central opening, and a projecting tab extending from said central opening into said spiral groove of said shaft,
a second plurality of shredding blades fixed onto and rotatable with the other of said pair of shafts, each of said second plurality of blades having a plurality of knives, a central opening, and a projecting tab extending from said central opening into said spiral groove of said shaft, said second plurality of shredding blades being interleaved with said first plurality of shredding blades,
a plurality of spacing collars mounted on said shafts and separating two shredding blades, said spacing collars arranged on said shafts to provide the interleaving of said first plurality of shredding blades on one of said pair of shafts with said second plurality of shredding blades on the other of said pair of shafts, and
a plurality of paper trash stoppers attached to said configuring tab, each of said paper trash stoppers fitting around a respective one of said plurality of spacing collars,
whereby said plurality of paper trash stoppers prevent shredded paper from wrapping around said shafts and ejecting through said opening.

5,853,132
DISPERSING MACHINE

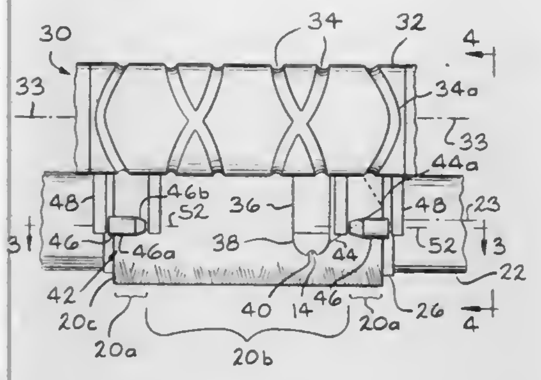
Norimasa Tsuji, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 6, 1997, Ser. No. 812,842
Claims priority, application Japan, Mar. 6, 1996, 8-048953; Mar. 7, 1996, 8-050550
Int. Cl.^{6} B02C *17/16*
U.S. Cl. 241—172 **11 Claims**



1. A dispersing machine comprising a fixed vessel, an agitator shaft rotating at a high speed in said fixed vessel, agitating pins provided to project on at least one of an outer circumferential surface of said agitator shaft and an inner circumferential surface of said fixed vessel, and balls loaded in said fixed vessel in advance, whereby materials supplied into said fixed vessel so as to be treated are dispersed and mixed by agitation by means of said balls and said agitating pins, wherein
each of said agitating pins includes:
a stud bolt planted in at least one of the outer circumferential surface of said agitator shaft and the inner circumferential surface of said fixed vessel; and
a pin body which is made of a sintered hard alloy, shaped into a capitate cylinder, and disposed so as to cover said stud bolt, said pin body being fixed to said stud bolt by soldering.

5,853,133
APPARATUS FOR PRODUCING SQUARE EDGED FORMING PACKAGES FROM A CONTINUOUS FIBER FORMING PROCESS

Roy E. Smith, Columbus, Ohio, assignor to Owens Corning Fiberglas Technology, Inc., Summit, Ill.
Filed Jul. 16, 1996, Ser. No. 680,083
Int. Cl.^{6} B65H *54/00;55/04*
U.S. Cl. 242—18 R **18 Claims**

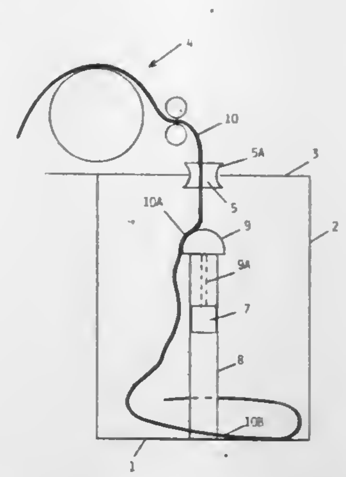


1. A roller bail assembly for contacting a rotating cylindrical package of wound strand having first and second ends, an axis of rotation, and a radially outer surface with first and second edge portions and a central portion therebetween, where the roller bail assembly holds the strand in place at the edge portions as the strand is laid on the surface in courses, the roller bail assembly comprising:
a first roller having an axis of rotation generally parallel to the axis of the package, the first roller having an edge end contacting the first edge portion of the package surface and not contacting the central portion of the package surface, and the first roller having an inner end not contacting the package surface; and
a second roller having an axis of rotation generally parallel to the axis of the package, the second roller having an edge end contacting the second edge portion of the package surface and not contacting the central portion of the package surface, and the second roller having an inner end not contacting the package surface.

5,853,134
APPARATUS FOR STORING ROPES OR THE LIKE

Harald Kleppestø, Bryne; Øyvind Olsbu, Arendal; Erling Huse, Harøy, and Erling Myklebust, Myklebust, all of Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway
PCT No. PCT/NO95/00135, § 371 Date Apr. 15, 1997, § 102(e) Date Apr. 15, 1997, PCT Pub. No. WO96/06770, PCT Pub. Date Mar. 7, 1996
PCT Filed Aug. 2, 1995, Ser. No. 793,106
Claims priority, application Norway, Aug. 26, 1994, 943155
Int. Cl.^{6} B21C *47/00*
U.S. Cl. 242—360 **19 Claims**

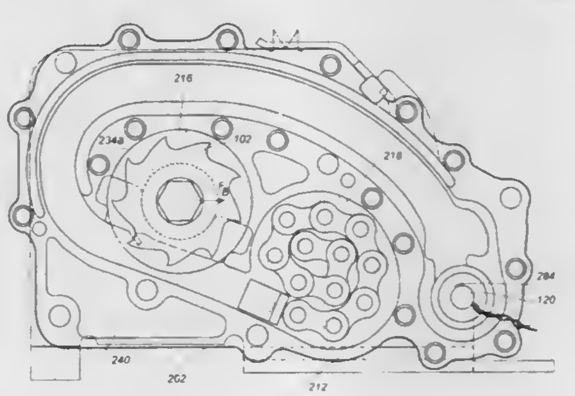
1. Assembly for storing of a line in a coil, comprising:
a storage room with a bottom as walls as well as a central, upper opening for guiding the line while it is led in or out of the storage room,
a central, round pole extending from the bottom, through the storage room towards the central opening, and
a guiding head being provided on top of the pole and shaped with such lateral dimensions in relation to the axis of the pole, that the horizontal extension of the head is larger than that of the central opening, the head being adapted to rotate,



wherein the line, upon introduction into the storage room through the central opening and hitting the head, will be deflected by the head to form a coil being built up from the bottom of the storage room.

5,853,135
CHAIN LINK RACK PRETENSIONER

Niels Dybro, Clinton Township; Roseanna Zia, Troy; H. John Miller, III, Macomb Township, and Jason Raines, Harrison Township, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Feb. 21, 1997, Ser. No. 803,969
Int. Cl.^{6} B60R *22/46*
U.S. Cl. 242—374 **17 Claims**



1. An apparatus (**20**, **100**) comprising:
driven means (**102**) comprising a length of joined links (**134**) operatively linked to a spool of a retractor (**20**) to rotate the spool (**24**) in a direction of retraction to cause a seat belt (**31**) wound thereabout to retract to eliminate belt slack about an occupant;
an arcuate tube (**300**);
drive means (**130**), movable within the tube, having a front end (**134***a*) initially maintained out of engagement with the driven means and pushed into engagement with the driven means to cause same to rotate;
first means (**120**) for pushing the drive means into engagement with the driven means thereby causing the driven means to rotate; and
catch means for retaining all of the drive means after it has exited the exit end of the tube.

5,853,136
WIRE RECEIVING DEVICE

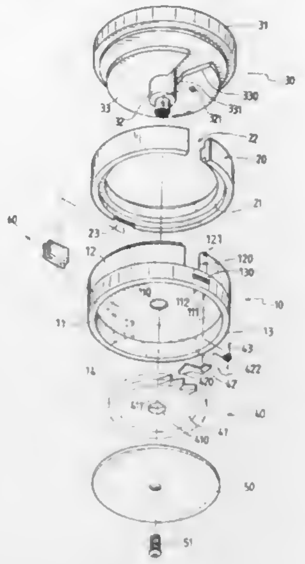
Cheng-Ting Lai, No. 3, Alley 3, Lane 320, Perng-Yi Road, Taiping, Taichung, Taiwan

Filed Dec. 12, 1997, Ser. No. 989,685

Claims priority, application Taiwan, Dec. 17, 1996, 85219503

Int. Cl.^{6} B65H *75/38*

U.S. Cl. 242—388.1 **3 Claims**



1. A wire receiving device comprising:

a main body having a board with a first peripheral wall extending upwardly from a periphery defining said board and a second peripheral wall extending downwardly from said periphery defining said board, said first peripheral wall having a cut-away defined therein and a recess defined in an outer periphery thereof, said board having a central hole defined therethrough:

a C-shaped ring rotatably mounted to said first peripheral wall and having a second recess defined in a lower peripheral edge thereof and an opening defined therethrough:

a top cap rotatably mounted to said ring and having a top board and a shaft which extends downwardly from an underside of said top board, a disk extending radially and outwardly from said shaft and having a notch defined therein:

a bottom disposed to an underside of said board by extending a bolt through said bottom, said central hole and threadedly engaged with said shaft, and

a block movably received in said recess and said second recess so that when said block is shifted into said recess completely, said ring is rotatable corresponding to said main body, and when said block is received both in said recess and said second recess, said ring is limited from rotating corresponding to said main body.

5,853,137
CHEESE-PRODUCING TEXTILE MACHINE

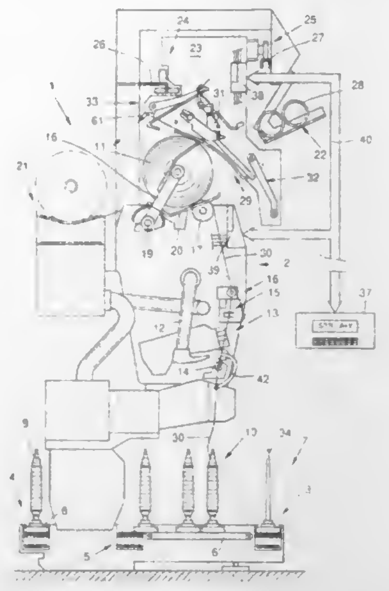
Paul Straaten, Kerken; Ulrich Fechter, Mönchengladbach; Dieter Spinnen, Mönchengladbach; Jürgen Enger, Mönchengladbach, and Hermann-Josef Vest, Mönchengladbach, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Dec. 4, 1997, Ser. No. 985,020

Claims priority, application Germany, Dec. 7, 1996, 196 50 932.7

Int. Cl.^{6} B65H *54/26*

U.S. Cl. 242—473.6 **7 Claims**



1. A cheese-producing textile machine comprising a plurality of winding stations, each winding station having a winding station computer and an openable creel device for winding a cheese, the creel device having elements for holding and manipulating the cheese, a unit for servicing the winding stations, the servicing unit having a control computer and manipulating devices for removing a cheese from the creel device and for inserting an empty tube into the creel device of a respective winding station, and means for transmitting control signals between the winding station computers and the service unit computer, the service unit computer having means for issuing a control command to one of the winding station computers for the actuation of at least one of the cheese holding and manipulating elements thereof after opening of the creel device to assist in discharge of a finished cheese for replacement with an empty tube.

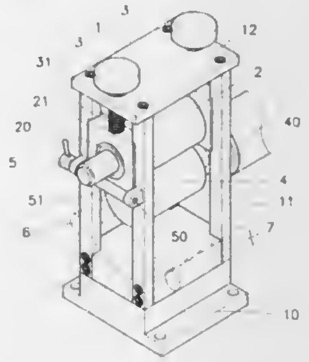
5,853,138
PLASTIC FILM PROCESSING APPARATUS

Chi-Ping Chang, No. 13, Lane 82, Ren Ai St., Sanchung, Taipei Hsien, Taiwan

Filed Dec. 16, 1996, Ser. No. 768,070

Int. Cl.^{6} B65H *35/00*

U.S. Cl. 242—525.4 **6 Claims**



1. An article processing apparatus for forming a plurality of perforations in a plastic article processed thereby comprising:

(a) a machine base assembly:

(b) a pair of substantially opposed lifting blocks coupled to said machine base assembly to be longitudinally displaceable relative thereto, each said lifting block having a central axle bearing portion;

(c) an impression cylinder coupled to said axle said lifting blocks to extend axially therebetween, said impression cylinder having a pair of axially extended round pin portions on opposing ends thereof, said round pin portions respectively engaging said axle bearing portions of said lifting blocks, said impression cylinder having a substantially smooth sidewall portion:

(d) a pair of adjusting screw means coupled to said machine base assembly and threadedly engaging said lifting blocks, respectively, for the longitudinal displacement thereof relative to said machine base assembly; and,

(e) a transfer cylinder rotatably coupled to said machine base assembly, said transfer cylinder being disposed substantially adjacent said impression cylinder, said transfer cylinder including a perforating sidewall portion having formed thereon a plurality of grain projections adapted to perforate said plastic article upon engagement thereof against said sidewall portion of said impression cylinder.

5,853,139
PRESSURE ROLLER SYSTEM FOR A WINDING MACHINE

Reinhard Hehner, Haan; Georg Müller, Neuss, and Hans-Friedrich Peters, Ratingen, all of Germany, assignors to Jagenberg Papiertechnik GmbH, Neuss, Germany

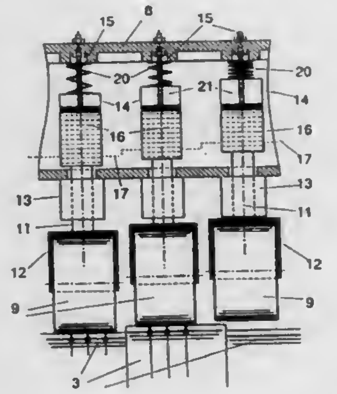
PCT No. PCT/EP97/01379, § 371 Date Nov. 24, 1997, § 102(e) Date Nov. 24, 1997, PCT Pub. No. WO97/39971, PCT Pub. Date Oct. 30, 1997

PCT Filed Mar. 19, 1997, Ser. No. 973,186

Claims priority, application Germany, Apr. 19, 1996, 196 15 539.8; Dec. 11, 1996, 196 51 483.5

Int. Cl.^{6} B65H *18/20; 18/26*

U.S. Cl. 242—530.1 **16 Claims**



1. In a winding machine having:

a pair of horizontal and rotating support rollers defining an upwardly open rolling cradle holding a plurality of winding rolls all extending along a common axis;

means for feeding respective webs to the winding rolls, whereby the webs are wound up on the rotating winding rolls;

a horizontal and vertically displaceable traverse extending a full working width of the machine above and parallel to the winding rolls;

a row of coaxial roller segments downwardly engaging the winding rolls underneath the traverse;

respective roller mounts carrying the roller segments on the traverse for vertical movement independently of one another; and

means for urging the roller segments downward against the winding rolls, the improvement comprising

means including respective elements braced between the traverse and the roller segments for urging the segments downward with a force that decreases as vertical spacing from the traverse increases and increases as vertical spacing from the traverse decreases.

5,853,140
RE-REELING MACHINE FOR ROLLS OF BAND-SHAPED MATERIAL, WITH CONTROL OF THE INTRODUCTION OF THE WINDING CORE

Guglielmo Biagiotti, Lucca, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

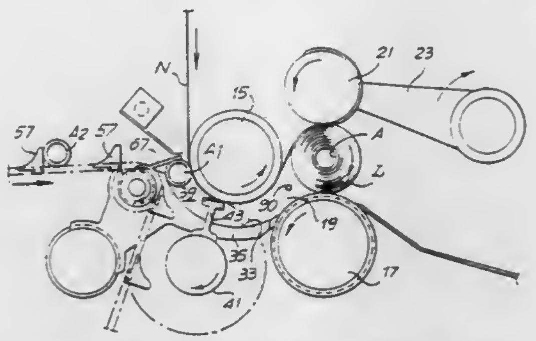
PCT No. PCT/IT96/00068, § 371 Date Oct. 8, 1997, § 102(e) Date Oct. 8, 1997, PCT Pub. No. WO96/32350, PCT Pub. Date Oct. 17, 1996

PCT Filed Apr. 10, 1996, Ser. No. 930,770

Claims priority, application Italy, Apr. 14, 1995, FI9500069

Int. Cl.^{6} B65H *18/16*

U.S. Cl. 242—534 **18 Claims**



1. Peripheral re-reeling machine for producing rolls of wound band-shaped material, comprising:

a first winding roller around which a band-shaped material to be wound is guided;

a second winding roller, there being defined between said first and said second winding roller a throat into which winding cores are introduced in succession;

feeder apparatus for introducing the winding cores into said throat;

and control apparatus for bringing about, at completion of winding of each roll, variation in at least one aspect of winding for controlling advance of a new core through said throat,

wherein a sensor is associated with said throat, said sensor detecting passage of a core at a predetermined point and emitting a signal upon the passage of said core, with cyclical functional variation of the at least one aspect of winding occurring based on said signal.

5,853,141
METHOD AND APPARATUS FOR AUTOMATICALLY EXCHANGING FOIL ROLLS, PARTICULARLY IN THE MANUFACTURE OF FOLDING BOXES WITH FOIL WINDOWS

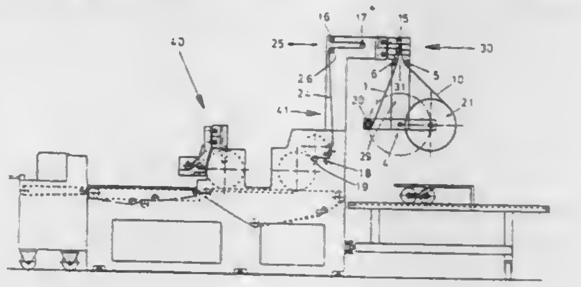
Wolfgang Heiber, Überhaan 16, and Julius Schröder-Frerkes, Trills 110, both of 40699 Erkrath, Germany

Filed Dec. 12, 1996, Ser. No. 766,232

Claims priority, application Germany, Feb. 28, 1996, 196 07 495.9

Int. Cl.^{6} B65H *19/18*

U.S. Cl. 242—552 **7 Claims**



1. A method of manufacturing folding boxes or folding box blanks with foil windows, wherein foils pulled from supply rolls

are glued over openings in the folding boxes or folding box blanks, the method comprising guiding a foil pulled from a supply roll by means of a tension roller through a work gap defined in a first plant component, the work gap having an adjustable gap width, forming the foil into a loop and subsequently guiding the foil from the loop over a short distance to a transverse cutter of a second plant component, temporarily holding an end portion of a first foil web which is about to run out, subsequently pressing in the work gap the end portion of the first foil web against a beginning of a second foil web already present in the work gap and connecting the end portion of the first foil web to the beginning of the second foil web, subsequently severing the first foil web at a location underneath the work gap, releasing the second foil web, wherein during temporarily holding the foil web the foil is continuously supplied from the loop to the transverse cutter of the second plant component, further comprising turning by 180° a turnstile supporting the supply rolls so as to exchange positions of the supply rolls of the first and second foil webs, replacing an empty supply roll by a new supply roll, inserting a free end of the new supply roll into a lower portion of the work gap and holding the free end of the supply roll together with an adhesive foil within the work gap by means of suction air.

5,853,142

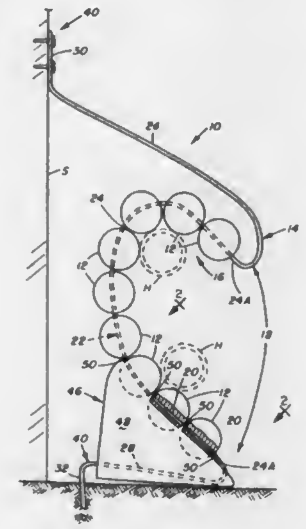
HOSE GUIDE DEVICE

John V. Anderson, 3620 Terry Lake Rd., Fort Collins, Colo. 80524

Filed Oct. 3, 1997, Ser. No. 943,800

Int. Cl.^{6} B65H *57/14*

U.S. Cl. 242—615.2 15 Claims



1. A hose guide device, comprising:

(a) a plurality of rotatable elements;

(b) a holder defining a passageway having an arcuate inverted hook shaped profile and an side opening to said passageway extending downwardly from an upper portion of said holder through which a hose can enter said passageway as the hose is pulled past said device; and

(c) means for mounting said rotatable elements on said holder so as to dispose said rotatable elements in a generally single file arcuate arrangement conforming in configuration to said arcuate inverted hook shaped profile of said passageway of said holder such that the hose upon entering said passageway through said side opening thereof will slidably contact said rotatable elements and be retained within said passageway of said holder below said upper portion thereof due to said arcuate inverted hook shaped profile of said passageway and said single file arcuate arrangement of said rotatable elements, said means for mounting said rotatable elements on said holder being central openings defined through said rotatable elements;

(d) said holder being an elongated rod member having a main portion disposed through said central openings of said rotatable elements so as to thereby slidably receive and mount said rotatable elements thereover, said main portion of said rod member defining said arcuate inverted hook shaped profile of said passageway and having a pair of opposite ends, said rod member further having opposite upper and lower end portions respectively connected to said opposite ends of said main portion and being bent and respectively turned back over and under said opposite ends of said main portion, said opposite upper and lower end portions of said rod member terminate in respective upwardly and downwardly projecting ends to provide means for mounting said holder to said external support structure.

5,853,143

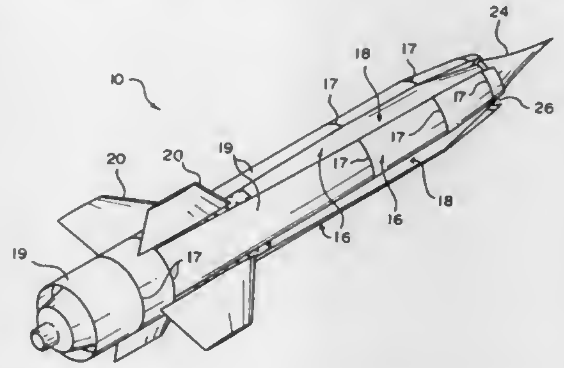
AIRBREATHING PROPULSION ASSISTED FLIGHT VEHICLE

Marty K. Bradley, Downey; Kevin G. Bowcutt, Irvine; Harry Shortland, Torrance, and Philip S. Dunlap, Rancho Palos Verdes, all of Calif., assignors to Boeing North American, Inc., Seal Beach, Calif.

Filed Dec. 23, 1996, Ser. No. 771,499

Int. Cl.^{6} F42B *10/32;7/10*

U.S. Cl. 244—3.21 34 Claims



1. An airbreathing propulsion assisted flight vehicle, comprising:

a) an elongated central body having a central axis defined therein and a circumference;

b) a plurality of elongated portions positioned about said central body and extending substantially the length of said central body;

c) a plurality of airbreathing engines axisymetrically positioned about said central axis around the circumference of said central body and between and adjacent to respective elongated portions, said engines sharing a common forebody for externally compressing airflow, each engine comprising:

  i) an inlet downstream said forebody for the capture of air flow;

  ii) an isolator duct downstream said inlet to reduce the velocity of said air flow;

  iii) a combustor downstream said isolator duct;

  iv) nozzle means downstream said combustor for expanding combustion products; and

  v) means for injecting fuel into said combustor, wherein the fuel air mixture is burned in said combustor and expanded in said nozzle means for providing thrust; and

d) control means positioned about said central body for providing control of said flight vehicle, wherein each engine's flowpath cross-sectional area dimensions at specific positions along the length of each engine are present to define the adjacent elongated portion cross-sectional area dimensions at commensurate positions along the length.

5,853,144

HELICOPTER AND METHOD FOR REDUCING VIBRATION OF A HELICOPTER FUSELAGE

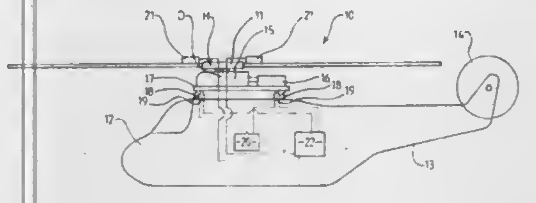
Alan Henry Vincent, Somerset, United Kingdom, assignor to GKN Westland Helicopters Limited, Somerset, England

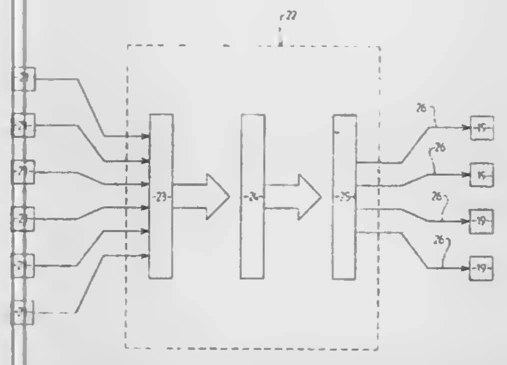
Filed Nov. 18, 1996, Ser. No. 751,622

Claims priority, application United Kingdom, Nov. 18, 1995, 9523651

Int. Cl.^{6} B64C *27/57*

U.S. Cl. 244—17.13 18 Claims





1. A helicopter comprising a structure including a fuselage one of supporting and supported by a rotating system, parts of the structure being capable of relative motion at an exciting frequency, there being a plurality of actuators connected between the relatively movable parts of the structure, means continuously to oscillate the actuators at a frequency substantially corresponding to the exciting frequency, and a plurality of sensors attached to the rotating system at selected locations, the sensors being adapted to generate signals representative of dynamic changes at the respective selected locations during rotation, processing means adapted to process the signals from the sensors and to provide output signals for controlling the phase and magnitude of applied forces generated by the actuators and for varying the phase and magnitude characteristics of the applied forces so as to compensate for changes in the dynamic characteristic of the rotating system whereby the overall level of vibration in the fuselage is reduced.

5,853,145

ROTOR HEAD FOR ROTARY WING AIRCRAFT

Jay W. Carter, Jr., Burkburnett, Tex., assignor to Cartercopters, LLC, Wichita Falls, Tex.

Filed Jan. 8, 1998, Ser. No. 4,405

Int. Cl.^{6} B64C *27/52*

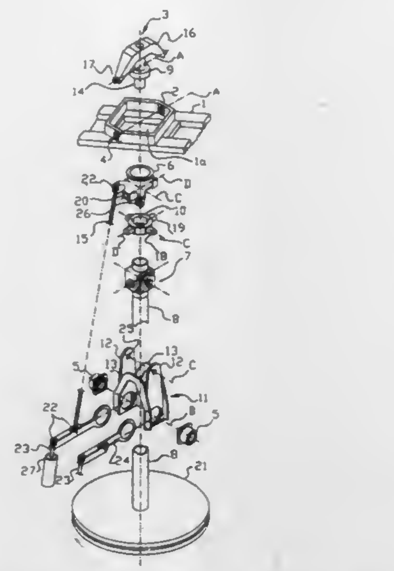
U.S. Cl. 244—17.25 15 Claims

1. A flexible beam rotor assembly for an aircraft, comprising:

a rotor spar having an axis of rotation and a hole through which the axis of rotation passes;

a spindle which protrudes through the hole in the rotor spar and is rotatable on the axis of rotation, the spindle having a teetering connection to the rotor spar, the teetering connection having a teetering axis above the rotor spar at the rotor axis of rotation; and

a spindle housing which is adapted to be nonrotatably mounted to an aircraft, the spindle being rotatably mounted in the spindle housing, the spindle housing adapted to be tiltable in response to pilot control on a left-right spindle pivot axis and a fore-aft spindle pivot axis, the left-right spindle pivot axis and the fore-aft spindle pivot axis being located above the rotor spar at the axis of rotation and below the teetering axis.



5,853,146

Patent Not Issued For This Number

5,853,147

BALLOON BASKET

Andreas Reinhard, Zollikon, Switzerland, assignor to Prospective Concepts A.G., Zollikon, Switzerland

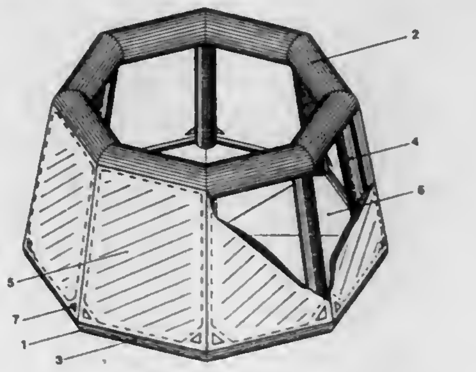
PCT No. PCT/CH96/00380, § 371 Date Sep. 15, 1997, § 102(e) Date Sep. 15, 1997, PCT Pub. No. WO97/18126, PCT Pub. Date May 22, 1997

PCT Filed Oct. 28, 1996, Ser. No. 875,557

Claims priority, application Switzerland, Nov. 15, 1995, 3237/95

Int. Cl.^{6} B64B *1/40*

U.S. Cl. 244—31 13 Claims



1. A basket for hot air balloons, characterised in that

it comprises pneumatic elements, which can be inflated with compressed air, namely an upper ring (**2**), a lower ring (**3**), a plurality of struts (**4**), which essentially extend vertically from the lower ring (**3**) to the upper ring (**2**), a number of side wall elements (**5**), corresponding to the number of struts (**4**) and a floor (**6**),

the two rings (**2**, **3**) and the struts (**4**) comprise tube-like hollow bodies, whose walls are manufactured from reinforced elastomer,

the side wall elements (**5**) and the floor (**6**) are double walled and comprise distance fabrics, whose two matrices are joined

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by threads and simultaneously provide the reinforcement for the sealing elastomer,

the side wall elements (**5**) and the floor (**6**) have an airtight edging of similarly reinforced elastomer, whereby the side wall elements (**5**) and the floor (**6**) are airtight pneumatic elements,

each of the pneumatic elements quoted (**2**, **3**, **4**, **5**, **6**) has at least one valve, which serves for the inflation with compressed air and similarly for deflation,

the side wall elements (**5**) are joined to the upper ring (**2**), to the side in each case to a strut (**4**) and below to the lower ring (**3**).

5,853,148

THRUST REVERSER WITH ADJUSTABLE SECTION NOZZLE FOR AIRCRAFT JET ENGINE

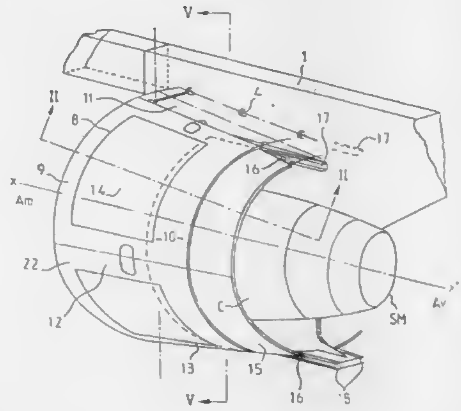
Robert R. Standish, Gazeran, and Bernard Laboure, Velizy Villacoubly, both of France, assignors to Societe de Construction des Avions Hurel-Dubois, Meudon La Foret, France

Filed Dec. 17, 1996, Ser. No. 767,620

Claims priority, application France, Dec. 19, 1995, 95 15030

Int. Cl.^{6} F02K *1/60*

U.S. Cl. 244—110 B **8 Claims**



1. Thrust reverser for a bypass aircraft jet engine, mounted in an outer cowling surrounding an engine structure and having the same longitudinal axis thereas, said cowling defining with the engine structure an annular duct through which a stream of gas pushed by a fan can flow from an upstream region towards a downstream region of the cowling, said reverser consisting of pivoting doors arranged in openings made in said cowling and defined, upstream and downstream, by upstream and downstream annular fixed parts of the cowling and, laterally, by longitudinal beams integral with the cowling, said doors being articulated, in a fixed structure consisting of the fixed parts of the cowling, about pivots so that they can be moved, under the action of a command to pivot, between a stowed position in which the doors close off the openings in the cowling, and a deployed position in which the doors block the flow of the stream of gas flowing in the annular duct in order to deflect it outwards to create reverse thrust, wherein a translating annular nozzle, capable of sliding longitudinally, parallel to the axis of the engine, between an upstream position and a downstream position, is housed inside the downstream annular fixed part of the cowling, an upstream end of the nozzle having an immobilizing means which, when the nozzle is in the upstream position, can immobilize the pivoting doors in the stowed position, thus preventing any inadvertent deployment of the doors and which, when the nozzle is in the downstream position, ceases to immobilize the doors, thus allowing them to be pivoted from their stowed position to their deployed position.

5,853,149

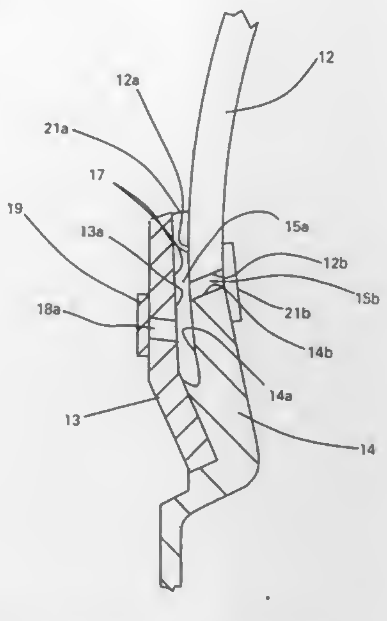
STRESS-FREE DOME MOUNT MISSILE DESIGN

Peter H. Vo, and John F. Binnie, Jr., both of Tucson, Ariz., assignors to Raytheon Company, Los Angeles, Calif.

Filed Apr. 8, 1996, Ser. No. 637,193

Int. Cl.^{6} B64C *1/14;* B64D *47/08*

U.S. Cl. 244—121 **13 Claims**



1. An improved missile assembly comprising:

a body;

a nose portion disposed at a forward end of the body;

a dome mounting arrangement coupled to the nose portion that comprises:

a turret having an outer wall and an end surface, said turret being secured to the nose portion of the body of the missile;

a sapphire dome having an outer wall and an end surface; said end surface of said dome being in confronting relationship with said end surface of said turret;

a retainer ring having a first end portion attached to said turret and a second, opposite end portion spaced from said turret and extending beyond said turret, said retainer ring having an inner wall extending between said first and opposite end portions, whereby said inner wall of said retainer ring, said outer wall of said turret and said outer wall of said dome form an annular gap between said retainer ring and said turret and between said retainer ring and said sapphire dome when positioned adjacent said turret; and

sealing material disposed within and filling said annular gap for joining said sapphire dome to said retainer ring.

5,853,150

AIRCRAFT LOADING AND UNLOADING SYSTEM

Gary W. Kuchenbrod, Pesotum, Ill., assignor to Flight-X Products Corporation, Savoy, Ill.

Filed Jun. 3, 1996, Ser. No. 657,320

Int. Cl.^{6} B64D *9/00*

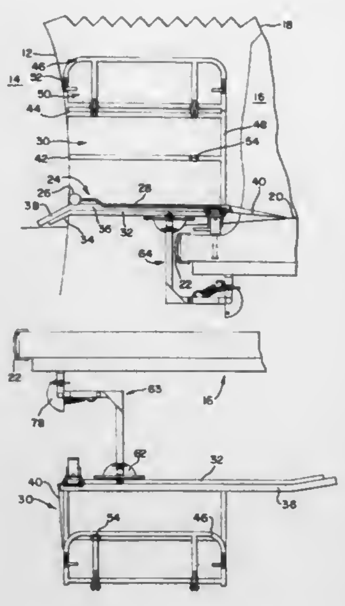
U.S. Cl. 244—137.2 **11 Claims**

1. A system for providing entry into an aircraft from a building provided with a boarding bridge engageable at one end thereof with said building and moveable at the other end thereof into proximity with an entrance into said aircraft, comprising:

a. a platform attached to said other end of said boarding bridge;

b. said platform being adapted to engage said entrance into said aircraft; and

c. said platform being pivotally mounted on said boarding bridge for movement between an extended position for engaging said entrance of said aircraft and a storage position below said other end of said boarding bridge.



5,853,151

BRAKING SHIELD FOR A SPACECRAFT, AND A SATELLITE FITTED THEREWITH

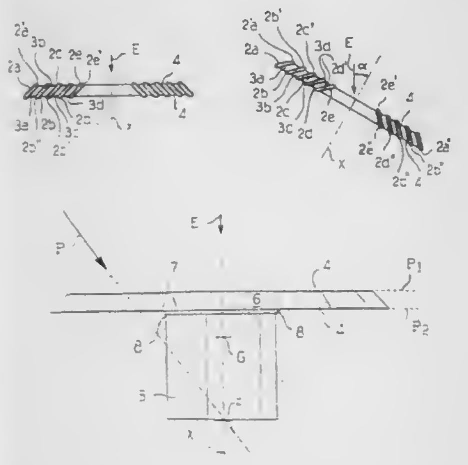
Thibery Cussac, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

PCT No. PCT/FR95/01687, § 371 Date Aug. 27, 1997, § 102(e) Date Aug. 27, 1997, PCT Pub. No. WO96/19382, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 18, 1995, Ser. No. 849,903

Int. Cl.^{6} B64G *1/58*

U.S. Cl. 244—158 A **8 Claims**



1. A braking and heat protection shield (1) for a spacecraft (5), the shield being situated at the front of the spacecraft to oppose a flow of gas striking the spacecraft, and being characterized in that it comprises a succession of coaxial walls (2*a*, . . . , 2*e*) having axial symmetry about the longitudinal axis (X) of the spacecraft, the dimensions and the organization of said walls being selected so that, in front view and at zero incidence, the shield presents a solid surface and said walls leave between them annular openings (3*a*, . . . , 3*d*) of through section offered to the flow that increases with the increasing angle of incidence of the spacecraft, so as to create an aerodynamic force couple tending to return the spacecraft to a position of lesser incidence.

5,853,152

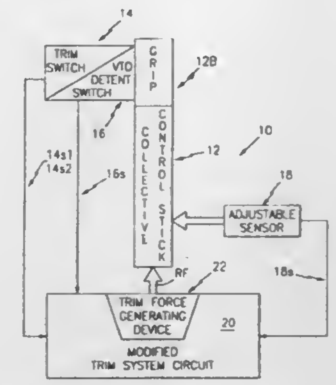
COLLECTIVE DETENT SYSTEM FOR VERTICAL TAKEOFF FLIGHT OPERATIONS

Charles W. Evans, Norfolk, Conn.; Jeffrey L. Cole, Stuart, and Jefferson H. Slayden, Royal Palm Beach, both of Fla., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Apr. 29, 1997, Ser. No. 841,096

Int. Cl.^{6} B64C *13/14*

U.S. Cl. 244—221 **8 Claims**



1. A collective detent system for a flight control system of a helicopter for use during a vertical takeoff flight profile, comprising:

a collective control stick that is pivotable through a range of operating positions from a full-down collective position to a full-up collective position, one of said operating positions of said range being defined as a vertical takeoff operating position for the vertical takeoff flight profile of the helicopter;

a vertical takeoff detent switch that is operative to generate a detent signal when activated;

a sensor that is operative to detect pivotal movement of said collective control stick into said vertical takeoff operating position and to generate a stick-position signal in response to detecting said collective control stick in said vertical takeoff operating position; and

a restraint force generating device that is automatically energized in response to said detent signal and said stick-position signal to exert a restraint force on said collective control stick; and wherein

said vertical takeoff detent switch is activated prior to initiating the vertical takeoff flight profile in the helicopter to generate said detent signal;

said sensor generates said stick-position signal when said collective control stick is pivoted into said vertical takeoff operating position;

said restraint force generating device, in response to said detent signal and said stick-position signal, exerts said restraint force on said collective control stick to detain said collective control stick in said vertical takeoff operating position and to impede movement of said collective control stick out of said vertical takeoff operating position during the vertical takeoff flight profile of the helicopter.

5,853,153

CAMERA FLOAT DEVICE

Robert L. Condrey, 7905 Brockwood Way, Citrus Heights, Calif. 95621

Filed Apr. 8, 1997, Ser. No. 841,931

Int. Cl.^{6} A47F *5/00*

U.S. Cl. 248—125.2 **9 Claims**

1. A device for floating a camera upon a camera boom, the device comprising:

a) a first frame member and a second frame member, said first frame member rotatable in relation to said second frame member, said second frame member having means for coupling to a camera boom for allowing said device to float in a

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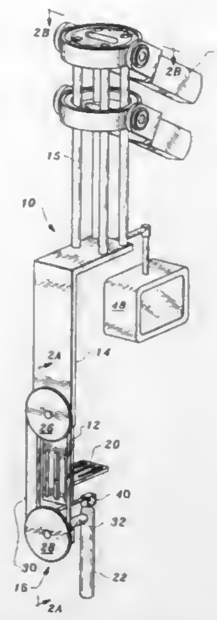
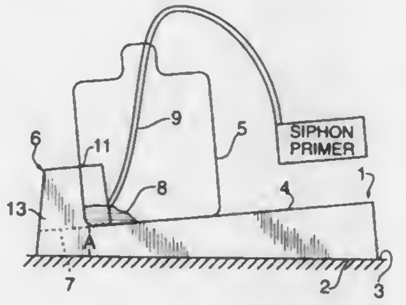


three dimensional plane, said first frame member coupled to a platform means for mounting a camera, said platform means for allowing a camera to rotate simultaneously with said first frame member; and

b) rotation means for rotating said first frame member in relation to said second frame member, said rotation means coupled at a first location to said first frame member, said rotation means coupled at a second location to a handle means, said handle means for applying hand pressure to said rotation means to cause said first frame member to rotate in a swinging arc, wherein said handle means cause said device to rotate in a panning motion, said handle means for additionally causes said device to float in a three dimensional plane upon a camera boom.

5,853,154
CONTAINER TIPPER
Richard E. Ashley, 14 Orange Rd., West Milford, N.J. 07480
Continuation of Ser. No. 448,885, May 24, 1995, abandoned.
This application Feb. 10, 1997, Ser. No. 798,494
Int. Cl.⁶ A47G *23/02*
U.S. Cl. 248—148 **9 Claims**



1. A device to tip a container containing a liquid to enable substantially complete emptying of said liquid from said container by a siphon comprising:

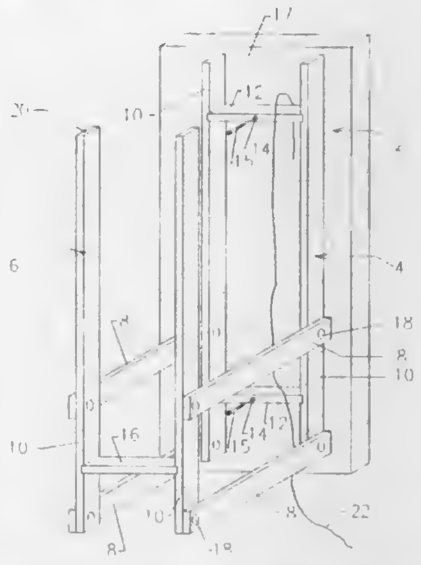
a container to be tipped having a top, a bottom and a sidewall extending between said top and said bottom, said container containing a liquid to be substantially completely emptied by a siphon inserted into an opening in said top of said container;

a bottom surface to support said device;

an inclined top surface disposed at a predetermined angle with respect to said bottom surface upon which all of said bottom of said container is supported to support said container in a substantially upright, but tipped condition; and

at least one member disposed adjacent a low point of and substantially perpendicular to said inclined top surface engaging and cradling said sidewall of said container to prevent said container from sliding off said inclined top surface.

5,853,155
EXPANDABLE HOLDER FOR CARDBOARD AND A METHOD OF OPERATION THEREOF
Gerald R. Sullivan, 425 Clairbrook Crescent, and Daniel R. Thompson, 418 Clairbrook Crescent, both of Waterloo, Canada, N2L 5V6
Filed May 5, 1997, Ser. No. 851,511
Int. Cl.⁶ A47G *23/02*
U.S. Cl. 248—150 **16 Claims**



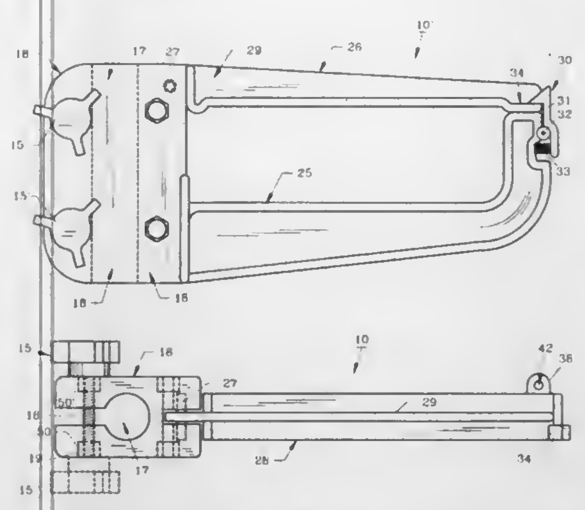
1. An expandable holder and vertical wall for supporting objects such as cardboard, newspapers and the like on said vertical wall, said holder comprising a front support and a rear support, said rear support being affixed to said vertical wall, said supports each having two sides, said supports being interconnected by arms extending between said supports, said arms being pivotally connected to said supports, there being an upper arm and a lower arm on each side of said supports, said supports extending upward substantially beyond said arms when said holder is in an upright position, said holder having a closed position in which said supports are in contact with one another and an open position in which said supports are separated from one another with at least one object adapted to be located between said supports, said at least one object adapted to rest on said upper arms, said holder being continuously expandable to a fully open position as additional objects are placed between said supports.

5,853,156
RAIL CLAMP
Anthony D. Moore, Winston-Salem, and William C. Overman, Reidsville, both of N.C., assignors to CAMCO Manufacturing, Inc., Greensboro, N.C.
Filed May 10, 1996, Ser. No. 644,109
Int. Cl.⁶ E06C *7/14*
U.S. Cl. 248—210 **3 Claims**

2. A vertical rail clamp for attachment to a ladder rail comprising:

a body flexible section, said body section defining a vertical passage, said vertical passage for receiving a ladder rail, said body section formed of semi-rigid plastic,

a pair of means for reducing said vertical passage, each of said passage reducing means affixed to said body section,



a lower jaw, said lower jaw affixed to said body section and further comprising a first lock tab,

an upper jaw, said upper jaw further comprising a longitudinal rib and a second lock tab, said upper jaw pivotally joined to said body section whercby said upper jaw will pivot into contact with said lower jaw for holding articles therewithin, said second lock tab coincidental to said first lock tab when said upper jaw contacts said lower jaw, and

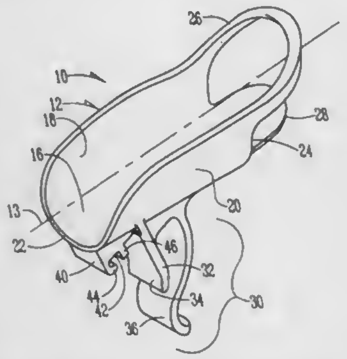
a jaw latch assembly, said jaw latch assembly affixed to said lower jaw and comprising

an axle, said axle attached to said lower jaw,

a latch, said latch attached to said axle, and

a spring, said spring connected to said lower jaw to bias said latch assembly.

5,853,157
APPARATUS AND METHOD FOR HOLDING A TOOL ON A CONTAINER LIP OR EDGE
Jerry L. O'Donnell, Waterloo, Iowa, assignor to DOC's Product, L. C., Waterloo, Iowa
Filed Oct. 25, 1996, Ser. No. 736,958
Int. Cl.⁶ A47G *96/06*
U.S. Cl. 248—213.2 **30 Claims**



1. An apparatus for attachment to a container such as a paint can, pail, or paint tray having a lip or edge, to selectably hold a tool such as a paint brush having a handle with a length and width grippable by one hand of a user and a working end comprising:

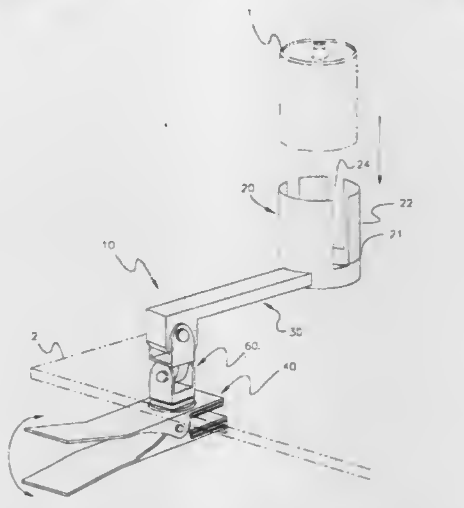
a tool handle cradle having a front end, back end, bottom and opposite upwardly extending sidewalls, and a substantially open front end, back end, and top all aligned along a

longitudinal axis whereby said opened front end permits said paint brush to extend outwardly therefrom in cantilever fashion, the cradle having a generally consistent width from substantially open front end to substantially open back end;

a handle retainer unitary with the cradle and positioned at a back end of the cradle, the handle retainer forming a substantially closed loop extending up and over the top of the cradle at or near the back end of the cradle and defining a handle-receiving opening;

a container connection positioned on the bottom of the cradle.

5,853,158
BEVERAGE CONTAINER HOLDER
Christopher T. Riggle, 1208 Robbins St., Philadelphia, Pa. 19111
Filed Oct. 22, 1997, Ser. No. 954,776
Int. Cl.⁶ A47K *1/08*
U.S. Cl. 248—311.2 **10 Claims**



1. A beverage container holder for mounting to a structure, comprising:

a receptacle member for holding a beverage container;

an arm member having a first end and a second end, said first end being coupled to said receptacle member;

a clamping assembly for detachable attachment to a structure;

a connection means for connecting said arm member to said clamping assembly, said connection means including a first pivot means, a second pivot means, and a rotation means;

said first pivot means for pivoting said receptacle member in a first plane;

said second pivot means for pivoting said receptacle member in a second plane transverse to said first plane;

said rotation means for rotating said receptacle member in a third plane perpendicular to both said first plane and said second plane,

wherein said clamping assembly includes: a first clamping arm having a first clamping end, a first lever end, a first outer surface, and a first inner surface; a second clamping arm having a second clamping end, a second lever end, a second outer surface, and a second inner surface, said second clamping arm being pivotally coupled to said first clamping arm, said second inner surface facing said first inner surface; and a biasing means for biasing said first clamping end and said second clamping end towards each other,

a first clamp pad and a second clamp pad, said first clamp pad having a first mounting surface and a first gripping surface, said first clamp pad being positioned towards said first clamping arm first clamping end, said first clamp pad first mounting surface being pivotally mounted to said first clamping arm first inner surface, said first clamp pad gripping surface comprising a non-skid material,

said second clamp pad having and second mounting surface, a second gripping surface, a distal end, and a proximal end, said second clamp pad being positioned towards said second clamping arm second clamping end, said second clamp pad distal end being positioned towards said second clamping arm second clamping end, said second clamp pad proximal end being positioned towards said second clamping arm second

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lever end, said second clamp pad second mounting surface being pivotally mounted to said second clamping arm second inner surface, said second clamp pad gripping surface comprising a non-skid material; and

a structure abutment flange being extended substantially perpendicular from said second clamp pad second mounting surface, said structure abutment flange being positioned at said second clamp pad distal end, said structure abutment flange being for abutting a structure when said clamping assembly is attached to a structure.

5,853,159

DEVICE FOR FIXING AND SUPPORTING THE FAN MOTOR IN FORCED-AIR CIRCULATION REFRIGERATORS

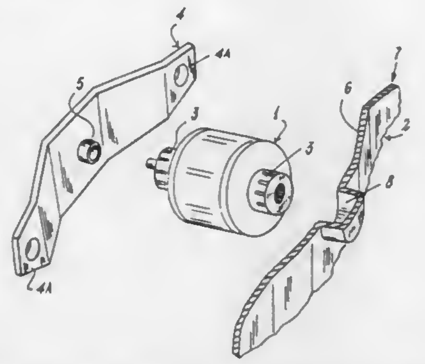
Cesare Gorini, Biandronno, Italy, and Eddie Teoh, Kuala Lumpur, Malaysia, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1997, Ser. No. 839,281

Claims priority, application Italy, Apr. 18, 1996, M196U0303

Int. Cl.⁶ F16M *3/00*

U.S. Cl. 248—674 **4 Claims**



1. A mounting arrangement for a fan motor having opposite ends and a first damper element extending from one end of the fan motor and a second damper element extending from the opposite end of the fan motor, said motor of the type found in a forced-air circulation refrigerator having a liner forming an inner wall of the refrigerator, the mounting arrangement comprising:

a bracket having a seat for the first damper element, and

a cavity adapted to be formed in the liner for defining a seat for the second damper element,

wherein the bracket is adapted to be attached to the liner of the refrigerator substantially enclosing and capturing the fan motor between the bracket and the liner.

5,853,160

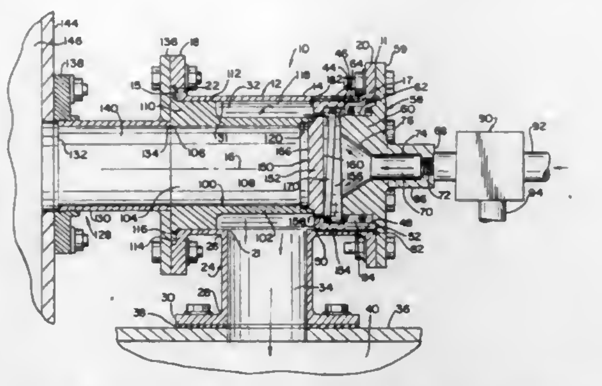
AERATOR VALVE ASSEMBLY

Jason R. Hurdis, and James R. Burkhart, both of Princeton, Ill., assignors to Martin Engineering Company, Neponset, Ill.

Filed Dec. 23, 1997, Ser. No. 996,862

Int. Cl.⁶ F16K *31/40;* **B67B** *7/24*

U.S. Cl. 251—30.02 **20 Claims**



1. A valve assembly adapted to provide selective fluid communication between a supply of gas and a pressure vessel and adapted to provide selective fluid communication between the pressure vessel and a bulk material handling structure, said valve assembly comprising:

a valve housing including a valve body and a piston seat, said valve body including a first end, a second end, a port adapted to provide fluid communication with the pressure vessel, and an interior wall forming a chamber, said chamber being in fluid communication with said port, said second end of said valve body including a fluid passage adapted to provide fluid communication between the supply of gas and said chamber of said valve body, said piston seat having a first end removably engaged to said valve body and a second end having an outlet port adapted to provide fluid communication between said chamber of said valve body and the bulk material handling structure;

a piston located within said chamber of said valve body between said second end of said valve body and said piston seat, said piston being selectively slidable within said chamber between an extended position, wherein said piston sealingly engages said piston seat and thereby seals said outlet port closed, and a retracted position wherein said piston is spaced apart from said piston seat thereby opening said outlet port; and

a biasing member extending between said second end of said valve body and said piston, said biasing member resiliently biasing said piston from said retracted position to said extended position;

whereby said piston seat is selectively removable from said valve body for inspection, repair and replacement.

5,853,161

SOLENOID VALVE FOR CONTROLLING PRESSURE MEDIUMS

Eugen Drummer, Steyr, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

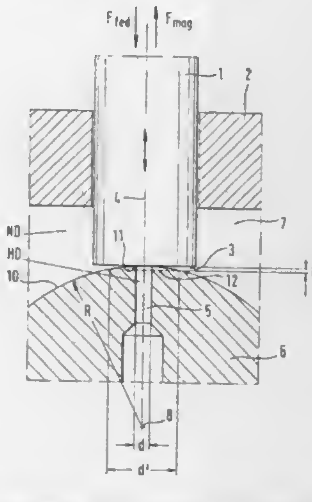
PCT No. PCT/DE96/00566, § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO97/08480, PCT Pub. Date Mar. 6, 1996

PCT Filed Apr. 1, 1996, Ser. No. 809,649

Claims priority, application Germany, Aug. 26, 1995, 195 31 394.1

Int. Cl.⁶ F16K *31/06*

U.S. Cl. 251—129.01 **2 Claims**



1. A solenoid valve for controlling pressure mediums, which comprises a valve member (1) which is actuated along a longitudinal axis by an electromagnet and, said valve member includes a flat end face (3) as a sealing face, said flat end face cooperates with a valve seat (12) to which a pressure conduit (5) feeds, said pressure conduit is disposed coaxial to the longitudinal axis (4) of the valve member (1), the pressure conduit (5) emerges at a seat element (6), said seat element (6) includes a surface oriented toward the valve member which is formed as part of a spherical cap with an imaginary spherical center point (8) which is disposed on the longitudinal axis of the pressure conduit (5), said pressure conduit includes an outlet coaxial to the axis (4) of the valve member and constitutes a portion of the valve seat (12) at the outflow of the pressure conduit.

5,853,162

ELECTROMAGNETIC CONTROL VALVE RESPONSIVE TO POSITIVE AND NEGATIVE PRESSURES

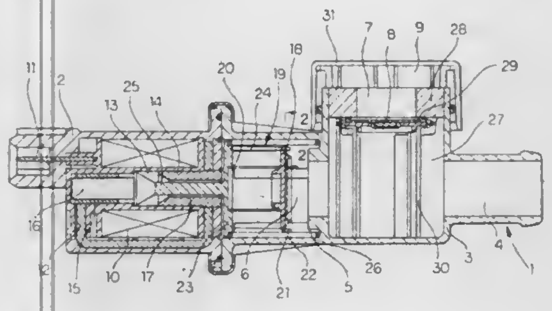
Janusz Zurke, Wuppertal, Germany, assignor to Pierburg Aktiegesellschaft, Neuss, Germany

Filed May 6, 1997, Ser. No. 852,267

Claims priority, application Germany, May 11, 1996, 196 19 196.3

Int. Cl.⁶ F16K *31/02*

U.S. Cl. 251—129.19 **9 Claims**



1. An electromagnetic control valve comprising a coil housing, a valve housing having a connector for inlet therein of a medium whose pressure which is to be controlled, said valve housing having a chamber connected to ambient atmosphere and a valve means controlling communication between said chamber and the medium introduced into said valve housing for opening when the medium exceeds a predetermined positive pressure, a by-pass channel connected to ambient atmosphere, and a suction valve controlling communication between said by-pass channel and the medium introduced into said valve housing when the medium is at a negative pressure which exceeds a predetermined negative pressure, said valve means comprising a valve plate facing a valve seat in said valve housing for selectively opening and closing an opening in said valve seat to respectively connect and disconnect the medium introduced into the valve housing from said chamber, a basket slidably supporting said valve plate, and a spring between said basket and said valve plate to urge the valve plate against a stop means provided on said basket, an electromagnet in said coil housing including an armature acting on said basket to displace the basket when said electromagnet is energized to apply said valve plate against said valve seat and cause said valve plate to be lifted off said stop means, said valve plate then being subject on one side thereof to which for positive pressures said medium tends to displace said valve plate off said seat and on the other side of said spring urging said valve plate against said seat whereby when said medium has a positive pressure above said predetermined value of positive pressure said valve plate will be forced off said seat to relieve said positive pressure, and when said medium has a negative pressure below said predetermined value of negative pressure said suction valve will open and the pressure will increase.

5,853,163

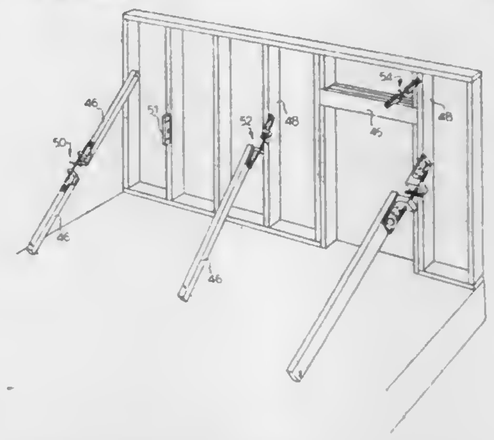
POST PLUMBING DEVICE

Brian Chagnot, 1300 McCabe Ave., P.O. Box 588, Coraopolis, Pa. 15108

Continuation-in-part of Ser. No. 572,083, Dec. 14, 1995, Pat. No. 5,622,354. This application Mar. 31, 1997, Ser. No. 832,604

Int. Cl.⁶ B66F *11/00*

U.S. Cl. 254—100 **9 Claims**



1. A post plumbing device comprising:

a. a first bracket comprised of
  i. a base having a top, a bottom and sides extending between the bottom and the top;
  ii. a side flange extending from one side away from and substantially perpendicular to the bottom;
  iii. a top flange attached to the top and having a threaded bore passing through the top flange, along an axis substantially parallel to the base; and
  iv. a plurality of holes in at least one of the base and the side flange to receive nails or screws;
b. a second bracket comprised of
  i. a base having a top, a bottom and sides extending between the bottom and the top;
  ii. a top flange attached to the top and having a threaded bore passing through the top flange along an axis substantially parallel to the base; and
  iii. a plurality of holes in the base to receive nails or screws; and
c. a threaded rod connected to the threaded bore of each bracket.

5,853,164

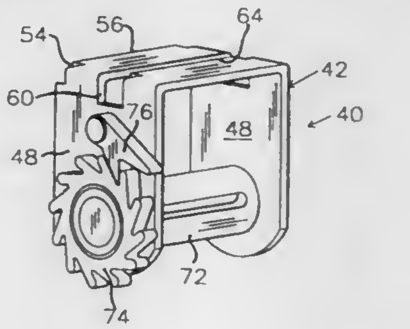
TRACK SUPPORTED WINCH AND METHOD OF MAKING THE SAME

George T. Hunt, Deatsville, Ala., assignor to Kinedyne Corporation, North Branch, N.J.

Continuation of Ser. No. 618,252, Mar. 18, 1996, abandoned. This application Nov. 12, 1997, Ser. No. 967,932

Int. Cl.⁶ B21F *9/00*

U.S. Cl. 254—213 **2 Claims**



1. The method of forming a winch adapted to be supported on a track having a longitudinal axis, a base, and a pair of spaced

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longitudinally extending track hooks depending from the base in common direction each track hook having a flange spaced from the base wherein the winch is slidably mounted on the track hook flanges, the method comprising the steps of:

(a) forming a flat elongated plate blank having a longitudinal axis, first and second spaced lateral sides, end regions and a central region, a pair of spaced notches defined in said blank first lateral side each defined by end edges transverse to said blank longitudinal axis wherein said first lateral side defines a first track hook engaging lip intermediate said notches, an elongated slot defined in said blank central region substantially parallel to said longitudinal axis and spaced between said lateral sides, said slot including a central portion of reduced width and end region openings of greater width than said slot central portion, said end region openings each being defined by end edges transverse to said blank longitudinal axis, said slot openings including recesses extending away from said first lateral side wherein a second lip is defined on said central region by said slot intermediate said slot openings extending toward said first lip, said slot openings being spaced from each other a distance equal to the spacing of said notches wherein pairs of said notches and slot openings and their respective end edges are laterally aligned,

(b) bending said blank end regions in a common direction with respect to said central region along bend lines through laterally aligned pairs of notches and openings intermediate the end edges thereof whereby said bent end regions define spaced winch supporting walls and said central region defines a winch base interconnecting said walls, portions of each of said laterally aligned pairs of notches and openings being located on each of said walls and said winch base to provide access to their associated lips in the direction of said blank longitudinal axis wherein said lips are adapted to be received upon the track hook flanges between the flanges and the track base to slidably interconnect said winch base and walls to the track, and

(c) mounting a rotatable windlass upon said walls.

5,853,165

CHAIN HOIST WITH A CLUTCH ADJUSTABLE BY MEANS OF THE BRAKE

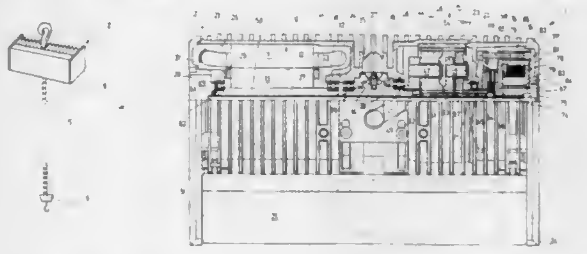
Ismo Kuivamaki, Vantaas, Finland, assignor to R. Stahl Fordertechnik GmbH, Kunzelsau, Germany, and KCI Konecranes International PLC, Hyvinkaa, Finland

Filed Feb. 27, 1996, Ser. No. 607,889

Claims priority, application Germany, Mar. 2, 1995, 195 07 191.3

Int. Cl.^{6} B66D *1/14*

U.S. Cl. 254—366 **18 Claims**



17. A chain hoist comprising:

a drive motor;

a gear which is coupled to the drive motor and which has at least one input shaft and one output shaft, wherein the gear is connected to a load-lifting device and, together with the drive motor and the load-lifting device, forms a drive line for lifting loads;

a brake device which acts on the drive line and which has at least one rotationally fixed brake member and at least one rotatable brake member which revolves with the drive line;

a releasable brake preloading device which biases the rotatable brake member into frictional engagement with the rotationally fixed brake member, said brake device disengaging to terminate a braking action against the biasing force of said brake preloading device;

a slipping clutch which divides the drive line into two sections and which has at least one driven clutch member and at least one driving clutch member;

a clutch preloading device which imposes a preloading force on the driven clutch member that biases the driven clutch member into engagement with the driving clutch member, said slipping clutch being arranged to automatically release against the force of said clutch preloading device when a release torque is imposed on said clutch that overcomes all preloading forces imposed on said clutch members;

wherein the brake preloading device is arranged in such a way that, in the non-released state thereof in which said brake preloading device imposes an engaging force on the brake device, the brake preloading device exerts an additional preloading force on the driven clutch member, and wherein the additional preloading force 1) supplements the preloading force imposed on the driven clutch member by the clutch preloading device and 2) increases the release torque which must be imposed on the slipping clutch to release the slipping clutch.

5,853,166

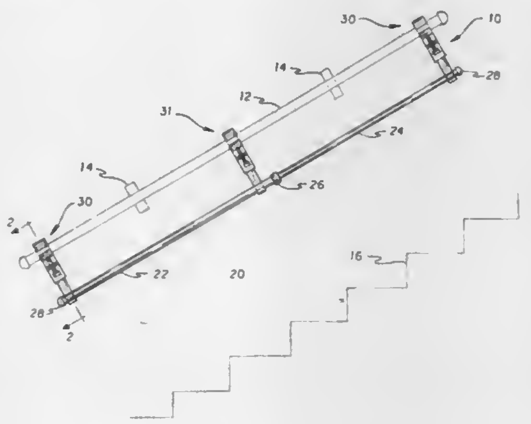
HANDRAIL ASSEMBLY FOR CHILDREN

Kim J. Koza, 2507 Wigwam Rd., Aliquippa, Pa. 15001

Filed Aug. 5, 1997, Ser. No. 906,425

Int. Cl.^{6} E04F *11/18*

U.S. Cl. 256—59 **13 Claims**



1. A handrail assembly comprising:

a telescoping handrail including a hollow first rod having a first end and a second end, and a second rod having a first end and a second end, said first end of said second rod being telescopically received within said second end of said first rod;

means for removably attaching said first end of said first rod to an existing handrail including a clamp member having a first jaw member, a second jaw member movably mounted to said clamp member opposite said first jaw member, and an arm member having a first end attached to said clamp member, said arm member having a second end attached to said first end of said first rod;

means for removably attaching said second end of said second rod to the existing handrail;

means for supporting said second end of said first rod removably attached to the existing handrail; and

means for adjusting the distance from said telescoping handrail to the existing handrail.

5,853,167

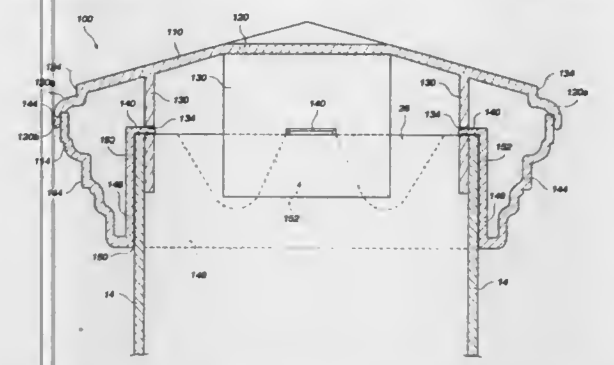
DECORATIVE COVER FOR POSTS

Ron West, Provo, Utah, and John Forbis, York, Nebr., assignors to Kroy Building Products, Inc., York, Nebr.

Filed Feb. 19, 1997, Ser. No. 808,980

Int. Cl.^{6} E04H *17/14*

U.S. Cl. 256—66 **18 Claims**



1. A decorative cover configured for covering an upper end of a post, the decorative cover comprising:

collar means for placement on the upper end of a post, said collar means including:

an outer wall configured to circumscribe the upper end of the post when the collar means is placed thereon, the outerwall having a lower edge;

a plurality of partially spaced apart, resilient legs connected to the lower edge of the outer wall and projecting upwardly to terminate interior of the outer wall; and

inwardly projecting catch tabs formed adjacent the termination of the legs configured for resting on the upper end of the post when the collar means is disposed thereon; and

cap means for placement on the collar means to cover the upper end of the post, said collar means including an upper wall extending outwardly sufficiently to cover the upper end of the post, and a plurality of flanges, each extending downwardly to a position inward of the legs.

5,853,168

BAR CLAMP FOR SINGLE-HAND OPERATION

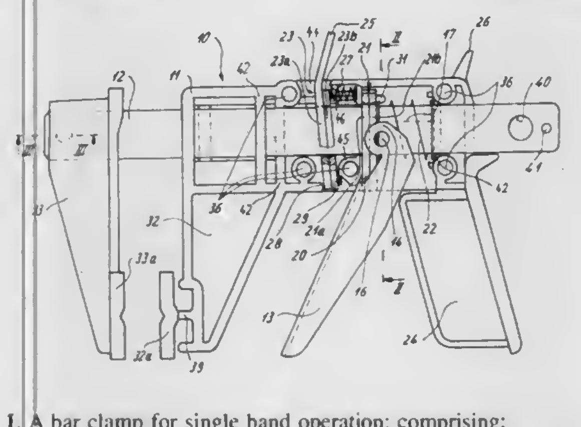
Johannes Drake, Am Richterbusch 18, 33106 Paderborn, Germany

Filed Feb. 25, 1997, Ser. No. 805,448

Claims priority, application Germany, Mar. 1, 1996, 296 03 811 U

Int. Cl.^{6} B25B *5/02*

U.S. Cl. 269—6 **19 Claims**



1. A bar clamp for single hand operation; comprising:

a housing including of a first housing portion and a second housing portion connectable to the first housing portion:

a slide bar traversing the housing;

a first jaw;

a second jaw connected to one end of the slide bar for movement in a direction toward the first jaw;

advancing means for moving the slide bar and thereby bring the second jaw toward the first jaw, said advancing means including a spring-loaded driving key placed on the slide bar, a spring-loaded locking key normally engaging the slide bar to prevent motion of the second jaw away from the first jaw and actuatable to disengage from the slide bar to allow advancement of the second jaw away from the first jaw, and a trigger handle acting upon the driving key for moving the driving key into engagement with the slide bar, said trigger handle having one end pivotably mounted inside the housing and formed with two lateral mounting plates of arched outer configuration, wherein at least the driving key and the locking key are received within the housing; and

bearing means for supporting the mounting plates of the trigger handle, said bearing means including a first support member formed on an inside wall of the first housing portion and surrounding a first one of the mounting plates, and a second support member formed on an inside wall of the second housing portion for receiving a second one of the mounting plates.

5,853,169

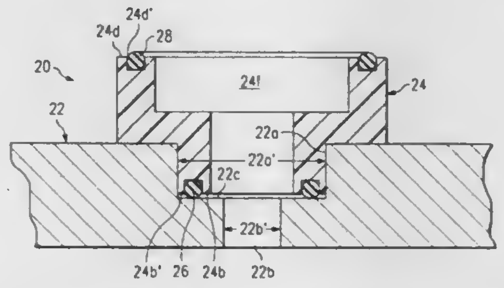
VACUUM POD SUPPORT SYSTEM

John F. Hern, Jasper, and Kevin T. Smith, Lamar, both of Mo., assignors to O'Sullivan Industries, Lamar, Mo.

Continuation of Ser. No. 547,621, Oct. 24, 1995, abandoned. This application May 8, 1997, Ser. No. 855,743

Int. Cl.^{6} B23B *31/30*

U.S. Cl. 269—21 **17 Claims**



1. A system for supporting a workpiece on a work table, said table having a shouldered opening defined therein for communication with a vacuum source, said system comprising a pod having:

a first cylindrical wall having a first outside diameter, sized to seat in said opening, and first and second opposed ends;

a second cylindrical wall having a second outside diameter unequal to said first outside diameter, said second wall further having first and second ends, and a groove formed in the second end of said second wall for receiving a seal;

an intermediate portion extending radially from said second end of said first wall to said first end of said second wall, so that a passageway extends through the pod from said first end of said first wall to said second end of said second wall for providing fluid communication therethrough; said second wall and said intermediate portion being seated entirely on a surface of said work table; and

a seal seated in said groove for supporting said workpiece so that a vacuum communicated from said vacuum source to said opening creates a suction force which secures said workpiece on said pod.

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5,853,170
APPARATUS FOR THE TRANSFER OF FLAT WORKPIECES FROM A FIRST CONVEYOR TO A DOWNSTREAM SECOND CONVEYOR

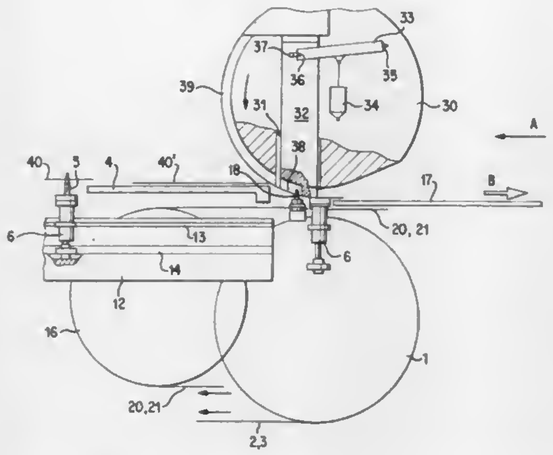
Fritz Achelpohl, Lienen; Richard Feldkämper; Andreas Kampschulte, both of Lengerich, and Uwe Köhn, Osnabrück, all of Germany, assignors to Windmöller & Hölscher, Lengerich/Westf., Germany

Filed Jan. 18, 1996, Ser. No. 588,356

Claims priority, application Germany, Jan. 25, 1995, 195 02 256.4; Mar. 21, 1995, 195 10 243.6

Int. Cl.⁶ B65H *29/68*

U.S. Cl. 271—69 **12 Claims**



1. An apparatus for transferring flat workpieces comprising:

a first conveyor having two pulling members circulating parallel to each other over guide wheels and which carry pairs of supporting elements with retractable pins;

a second conveyor having two pulling members also circulating parallel to each other over guide wheels and which also carry Pairs of supporting elements with pins;

at least one table plate defining a conveyance path;

guides extending parallel to the at least one table plate which receive attachments to the supporting elements and pins of the first conveyor, said guides displacing the attachments towards each other as they run past the guides to cause the pins to project above the conveyance path to perforate and convey the workpieces;

a plunger arranged in a transfer zone between said first conveyor and said second conveyor; and

a support in which said plunger is mounted so as to be raised and lowered to impale the workpieces on the pins of the second conveyor as the workpieces are transferred through the transfer zone from the first conveyor.

5,853,171
MEDIA LEVEL INDICATOR

Thomas J Halpenny, 2826 NW. 189th St., Ridgefield, Wash. 98642

Filed Jan. 16, 1997, Ser. No. 783,811

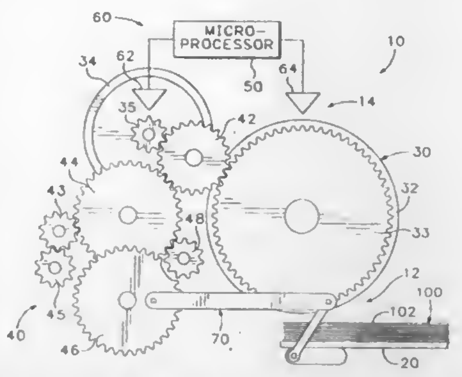
Int. Cl.⁶ B65H *1/08*

U.S. Cl. 271—126 **18 Claims**

1. An apparatus that determines an amount of media in an input stack, comprising:

a sheet processing device which receives media sheets through an input port, the sheet processing device including a feed mechanism configured to selectively move the input stack between a predetermined first position wherein a selected sheet of the input stack is spaced from the input port and an operation-specific second position wherein the selected sheet is positioned for passage into the input port; and

an odometer mechanism configured to survey the feed mechanism to quantify movement of the selected sheet during a feed operation, such quantified movement being indicative of an amount of media in the input stack.



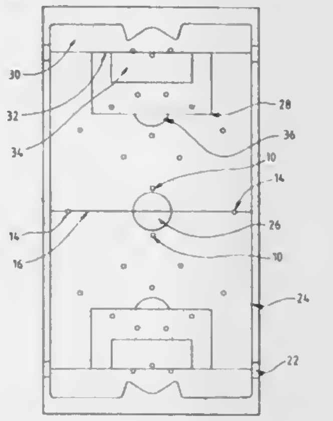
5,853,172
SOCCER BOARD GAME APPARATUS AND METHOD

Cengiz Yetken, 706 N. Lombard Ave., Oak Park, Ill. 60302

Continuation of Ser. No. 491,471, Jun. 16, 1995, abandoned. This application Oct. 22, 1997, Ser. No. 955,689

Int. Cl.⁶ A63F *7/06*

U.S. Cl. 273—108.5 **2 Claims**



1. A method of playing a game comprising the steps of

providing a planar game board having vertical sidewalls defining a playing area therein, a pair of opposing end lines and corresponding goal areas, corner kick zones positioned outside of said playing area and corresponding to each corner formed by said vertical sidewalls, and stationary defensive posts;

providing a game disk;

placing said game disk in one of said corner kick zones; and

propelling said game disk into said playing area.

5,853,173
NIGHT AT THE RACES BOARD GAME

Michael J. Murphy, 9 Columbia Ave., Stratford, N.J. 08084

Filed Oct. 14, 1997, Ser. No. 950,055

Int. Cl.⁶ A63F *3/00*

U.S. Cl. 273—246 **4 Claims**

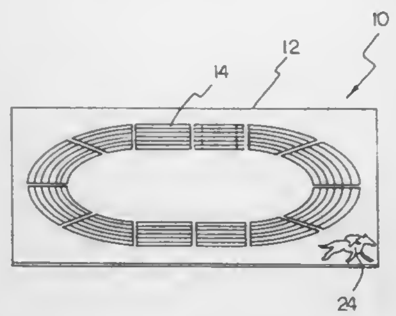
1. A night at the races board game for simulating horse racing in a board game format comprising, in combination:

a playing board having a generally rectagtilar configuration, the playing board having a plurality of slots formed therein in an oval configuration, the plurality of slots forming six lanes, the plurality of slot separated into twelve lengths with each of the twelve lengths comprising six lanes, one of the twelve lengths signifying a starting point and a finishing point and being so indicated by indicia thereto, the playing board having a racing horse inscribed on a corner thereof;

six playing pieces, each of the six playing pieces resembling a race horse, each of the six playing pieces designated by a number between one and six on a central portion thereof, each of the six playing pieces having a flat lower portion adapted for positioning within the slots of the playing board;

playing money to be distributed among players;

a plurality of action cards, each of the action cards detailing a move made by the six playing pieces around the playing board.



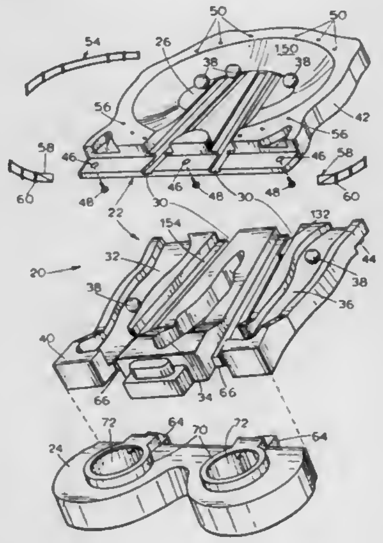
5,853,174
GAME AND TWO-WAY RATCHETING MECHANISM

Gerald A. McDonald, and Ronald G. Magers, both of Gloucester, Mass., assignors to M Design, Essex, Mass.

Filed Jun. 24, 1997, Ser. No. 881,532

Int. Cl.⁶ A63F *7/00*

U.S. Cl. 273—447 **19 Claims**



1. A game comprising:

a frame;

a bowl formed in said frame;

a pair of tracks formed in said frame, each of said tracks extending into said bowl;

a first receptacle associated with one of said tracks;

a second receptacle associated with another of said tracks;

at least three spherical game pieces adapted to be disposed within said bowl and movable along said tracks;

a pair of movable members, each of said movable members being adapted to move along a respective one of said tracks;

a pair of ratcheting mechanisms, each of said ratcheting mechanisms being operatively coupled to a respective one of said movable members, said ratcheting mechanisms being adapted to cause said movable members to be moved along said tracks in a first direction, to automatically change from said first direction to a second direction along said tracks, and then to automatically change back to said first direction along said tracks;

a pair of actuators, each of said actuators being operatively coupled to a respective one of said ratcheting mechanisms so that actuation of said actuators causes said ratcheting mechanisms to move said movable members along said tracks,

so that repeated actuation of one of said actuators is adapted to cause one of said movable members to enter said bowl to engage one of said spherical game pieces in said bowl, to push said one spherical game piece along one of said tracks and out of said bowl until said one spherical game piece is deposited in one of said receptacles, and to automatically change direction so that said one movable member reenters said bowl to engage another of said spherical game pieces.

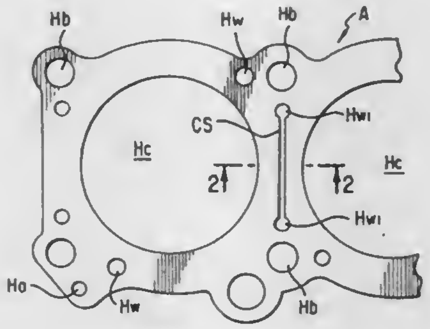
5,853,175
CYLINDER HEAD GASKET WITH FLUID FLOW PATH

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1996, Ser. No. 723,551

Int. Cl.⁶ F16J *15/12*

U.S. Cl. 277—235 B **12 Claims**



1. A cylinder head gasket for an internal combustion engine having a cooling fluid circulation passage therein, comprising:

a first metal plate extending substantially throughout an entire area of the engine to be sealed for constituting the cylinder head gasket, said first metal plate having at least two cylinder bores, at least one intermediate portion between the at least two cylinder bores situated adjacent to each other, and at least two fluid holes located in the at least one intermediate portion, and

a cooling fluid path formed in the at least one intermediate portion in the first metal plate and laterally extending between the at least two fluid holes, said cooling fluid path being adapted to communicate with a circulation passage in the engine so that a cooling fluid flowing through the circulation passage enters into the cooling fluid path in the first metal plate and cools the engine.

5,853,176
VACUUM CHAMBER AND METHOD OF MANUFACTURING THE VACUUM CHAMBER

Kenji Kiriyama, Yamanashi-ken, Japan, assignor to Tokyo Electron Limited, Japan

Filed Jan. 30, 1997, Ser. No. 791,285

Claims priority, application Japan, Feb. 6, 1996, 8-044287

Int. Cl.⁶ B65D *53/00*

U.S. Cl. 277—312 **11 Claims**

1. A vacuum chamber comprising:

a plurality of plates arranged to be joined together by using bolts to form an internal space;

a sealing member continuously disposed along joint lines on the inside portion of said vacuum chamber facing the internal space in order to seal joint portions among said plates; and

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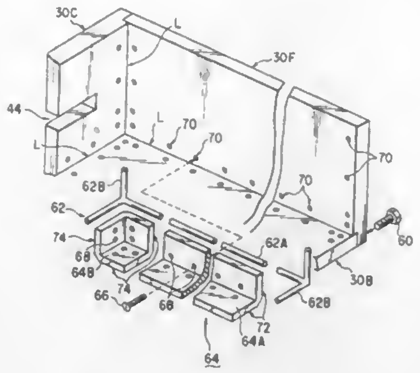


pressing members secured to said plates by bolts so as to hermetically press said sealing member against the joint portions among said plates wherein said sealing member has a plurality of first sealing portions, each of which is formed into a straight shape and which are disposed alone the joint lines of two plates for sealing the joint portion between the two plates, and a plurality of second sealing portions disposed alone joint lines of three plates for sealing the joint portions of the three plates, each of said second sealing portions has legs extending into three directions for sealing three-directional joint lines of corner portions of said vacuum chamber in which three plates are joined.

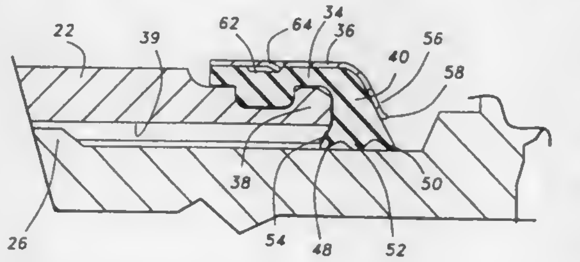
5,853,177
DRIVE TRANSMISSION SEALING DEVICE

Ronald N. Brissette, Lake Orion, and Kevin Baldwin, Rochester Hills, both of Mich., assignors to Meritor Heavy Vehicle Systems, LLC, Troy, Mich.

Filed May 28, 1996, Ser. No. 672,395

Int. Cl.^{6} F16J *15/32;* **F16D** *3/06*

U.S. Cl. 277—559 **15 Claims**



1. A drive transmission, comprising:

a slip yoke having an inner peripheral longitudinal bore extending through a central portion of said yoke, a space being defined on an outer peripheral surface on said yoke near one end of said bore;

a shaft slidably received in said bore for axial movement relative to said yoke;

a seal on said yoke and adjacent said one end of said bore, said seal having a mounting portion received within said space on said yoke and a sealing portion for sealingly engaging a portion of said shaft, said sealing portion sealingly engaging a portion of said shaft; and

a substantially rigid cover received over said mounting portion of said seal, said shaft extending through said seal and said cover, said cover is snapped over said seal.

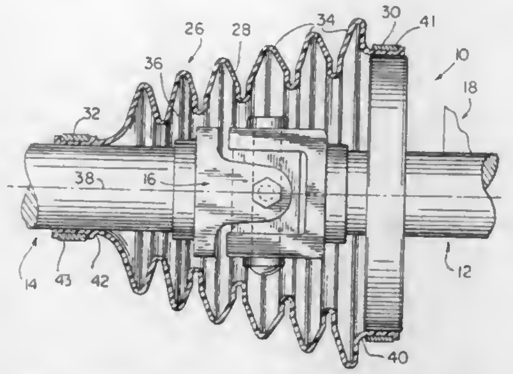
5,853,178
BELLOWED SEAL

Neal E. Wydra, Glen Ellyn, and David W. Geick, Jr., North Aurora, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Division of Ser. No. 649,152, May 17, 1996. This application Nov. 7, 1996, Ser. No. 745,065

Int. Cl.^{6} F16J *9/08*

U.S. Cl. 277—636 **21 Claims**



1. A seal mounted about a mechanism having pivotly and elongated interconnected rotatable components enveloped by the seal such that upon rotation of said components said seal is submitted to constantly changing flexural forces, said seal comprising:

a one-piece hollow and elongated body having first and second generally cylindrical open ends, said open ends permitting said elongated members to extend axially from opposite ends of said seal, said body further including an elongated center portion having a convoluted shape including a series of thin walled bellow-like configurations arranged end-to-end for enveloping said pivotly interconnected rotatable components in a protected environment while allowing for movement of said first and second ends in response to flexural movements of said rotatably interconnected components, and wherein said elongated body is constructed from a grade of thermoplastic elastomer having about a 7 melt flow rate value at about 220° C. and under 2160 g load and about a 500% elongation at break as to improve the flexibility, strength, and impact resistance of the seal during use.

5,853,179
ROLLER SKATE ATTACHMENT

Malcolm Chapman, 8 Angotts Mead, Stevenage SG1 2NJ, United Kingdom

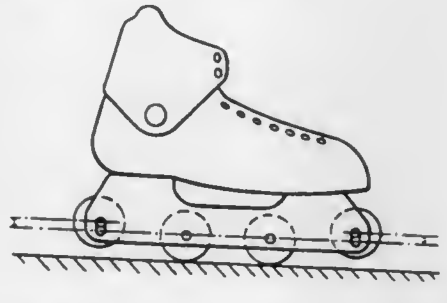
PCT No. PCT/GN96/00130, § 371 Date Jul. 22, 1997, § 102(e) Date Jul. 22, 1997, PCT Pub. No. WO96/22818, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 23, 1996, Ser. No. 875,244

Claims priority, application United Kingdom, Jan. 23, 1995, 9501273

Int. Cl.^{6} A63C *17/06*

U.S. Cl. 280—11.22 **5 Claims**



1. A roller skate attachment for securing to a boot comprising:

a single row of aligned wheels for travelling on the ground, including a front wheel and a rear wheel;

a rigid carrier which is adapted to be secured to a boot;

a chassis for supporting the row of wheels, said chassis being formed of a resilient material in order to be resiliently deformable in a plane of rotation of the wheels; and

a securing means for securing the carrier to the chassis at front and rear fixing points located between an axis of a front wheel and an axis of a rear wheel such that a distance between the axis of the front wheel and the axis of the rear wheel is at least 1.5 times a distance between the front fixing point and the rear fixing point, and such that at least one of a front portion of the chassis ahead of the front fixing point and a rear portion of the chassis behind the rear fixing point is flexible due to the resilient material of the chassis from a level position to a rocking position in response to forces between a user's foot and the ground.

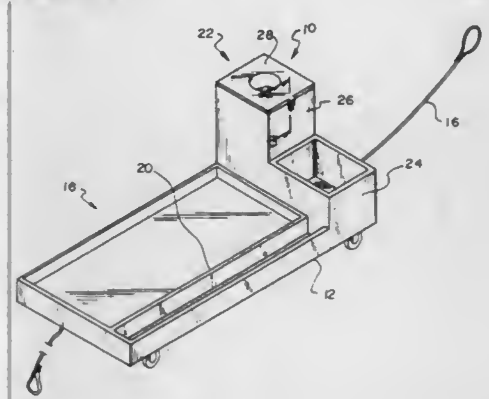
5,853,180
TOOL BOX CADDY

Lionel C. Taylor, 19744 Alonda Dr., Carson, Calif. 90746

Filed Feb. 5, 1998, Ser. No. 18,988

Int. Cl.^{6} B25H *5/00*

U.S. Cl. 280—32.6 **9 Claims**



1. A tool transport assembly comprising, in combination:

a horizontally oriented base having a planar rectangular configuration with a top face, a bottom face and a periphery formed therebetween defined by a pair of parallel elongated edges and a pair of parallel short edges formed therebetween, the bottom face further including a swivel wheel mounted to each of the corners thereof for transporting purposes, wherein a rope is connected to the bottom face of the base adjacent to one of the short edges and terminating in a loop for totting purposes;

a first side portion including a peripheral lip coupled thereto and extending upwardly therefrom a first predetermined height and an intermediate lip integrally coupled to the top face of the base and extending upwardly therefrom the first predetermined height, the intermediate lip being situated in parallel relationship with and adjacent to a portion of the peripheral lip mounted along one of the elongated edges of the base, wherein the lips define a first shallow compartment with an open top and a first width and a second shallow compartment with an open top and a second width less than ¼ the first width;

a second side portion having a pair of square side walls each having a square horizontal cross section and situated in side-by-side relationship between the elongated edges and contiguous with one of the short edges of the base, the square side walls each defining an open top and a separate compartment, the square side walls including a short side wall and a tall side wall with a height at least twice that of the short side wall and at least four times the first predetermined height, wherein a length of the second side portion is less than ¼ that of the first side portion; and

a square lid having a first side edge hingably coupled to an upper peripheral edge of the open top of the tall side wall for pivoting between an opened and a closed orientation, the square lid having a cylindrical recess formed therein for containing a beverage or the like therein.

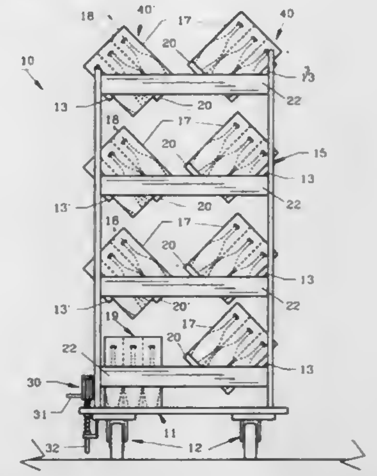
5,853,181
CART AND METHOD

Peter T. Booras, Julian, N.C., assignor to American Wholesale Beverage Company, Inc., Greensboro, N.C.

Continuation of Ser. No. 370,404, Jan. 9, 1995, Pat. No. 5,647,600. This application Mar. 21, 1997, Ser. No. 823,326

Int. Cl.^{6} B62B *11/00*

U.S. Cl. 280—47.35 **16 Claims**



1. A cart for case goods comprising: a frame, a plurality of casters, said casters attached to said frame, a first column of shelves, a second column of shelves, said first and said second column of shelves positioned on said frame, said first column of shelves staggered vertically relative to said second column of shelves, said first column of shelves spaced horizontally from said second column of shelves, said shelves positioned on a bias to said frame to maintain said case goods thereon.

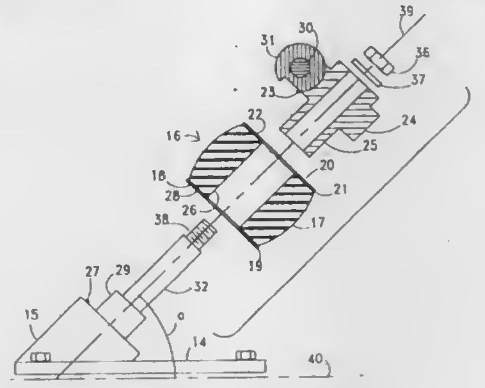
5,853,182
TRUCK ASSEMBLY FOR SKATEBOARDS

Louis J. Finkle, 3300 E. 59th St., Long Beach, Calif. 90805

Filed Feb. 12, 1997, Ser. No. 800,091

Int. Cl.^{6} B62M *1/00*

U.S. Cl. 280—87.042 **6 Claims**



1. A truck assembly for skateboards comprising:

a base having means for attachment to an underside of a skateboard, said means for attachment including a horizontal attachment plane parallel to an underside of a skateboard, said base having a vertical, longitudinal, central axial plane extending through a center of said base which vertical, longi-

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tudinal, central axial plane will be aligned with a central axis of a skateboard when mounted to a skateboard;

an axle assembly support shaft supported by said base, said axle assembly support shaft having a support shaft central axis positioned at an angle of between 30 degrees and 75 degrees with respect to said horizontal attachment plane and within said vertical, longitudinal, central axial plane;

a bumper base end support member affixed to said base and surrounding said axle assembly support shaft in a fixed, non-turning manner with respect to said base;

a bumper base end passageway support stub surrounding said axle assembly support shaft;

a bumper assembly having a base surface, an elastomeric bumper body extending away from said base surface to an axle surface, said base surface abutting said bumper base end support member in a non-turning manner, a central passageway through said elastomeric bumper body;

a bumper axle end passageway support stub surrounding said axle assembly support shaft and surrounded by said central passageway of said elastomeric bumper body and said axle surface;

a bumper axle end support member surrounding said axle assembly support shaft and movable through an arc with respect to said axle assembly support shaft and positioned against said axle surface of said bumper assembly in a non-turning manner with respect to said axle surface;

means for holding said bumper axle end support member on an outer end of said axle assembly support shaft which permits said bumper axle end support member to be moved through an arc with respect to said support shaft; and

a wheel axle held in a fixed manner with respect to said bumper axle end support member, said wheel axle having a right end and a left end whereby when said truck assembly is affixed to a skateboard and when one side of the skateboard is depressed, the wheel axis will move through an arc about the support shaft central axis and wheels affixed to the axis will be turned away from a vertical, longitudinal, central axis of the skateboard thereby causing the skateboard to turn.

5,853,183

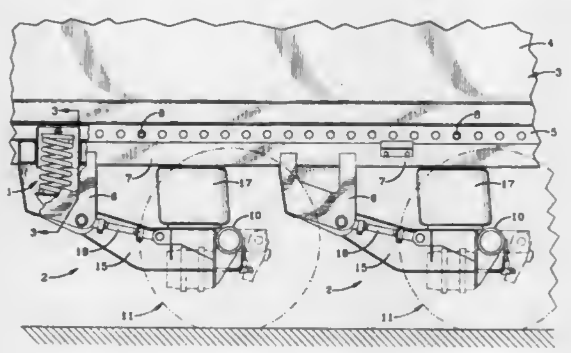
LIFT MECHANISM FOR VEHICLE SUSPENSIONS

Ervin K. VanDenberg, Massillon, Ohio, assignor to Suspensions Incorporated, Canal Fulton, Ohio

Division of Ser. No. 759,307, Dec. 2, 1996. This application Nov. 28, 1997, Ser. No. 979,622

Int. Cl.^{6} B60G *11/26*

U.S. Cl. 280—124.179 5 Claims



1. A suspension system for use on a vehicle having a frame, comprising:

at least one coil spring having a length;

a spring frame for housing the coil spring;

a rod extending over the coil spring; and

movement means for moving the rod against the spring to compress the spring.

5,853,184

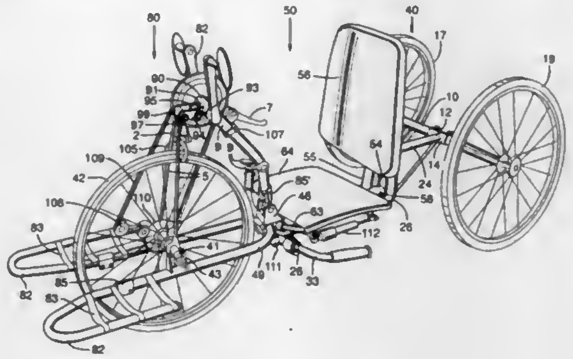
HANDCYCLES

Michael S. Lofgren, 20589 SW. Elkhorn Ct., Tualatin, Oreg. 97062, and Brian C. Stewart, 17915 S. Strowbridge Rd., Estacada, Oreg. 97045

Filed Feb. 23, 1996, Ser. No. 604,798

Int. Cl.^{6} B62M *1/14*

U.S. Cl. 280—242.1 13 Claims



1. A hand pedaled device comprising:

a frame;

a wheel mounted on the frame;

a hand crank mounted on the frame;

a drive member connecting the wheel and hand crank whereby manual rotation of the hand crank rotates the wheel;

said hand crank mounted to the frame by a pair of arm segments each having opposed first and second ends, each first end of the pair of arm segments connected to the hand crank and each second end connected to the frame at spaced apart points of connection and each of said arm segments defining a length between said hand crank and said points of connection for the pair of arm segments;

and

releasable locking means for releasably locking the arm segments at a specified distance between said points of connection whereby with the locking means released, the crank arm position relative to the frame can be selectively adjusted to any horizontal or vertical position within a range of movement as permitted by the pair of arm segments.

5,853,185

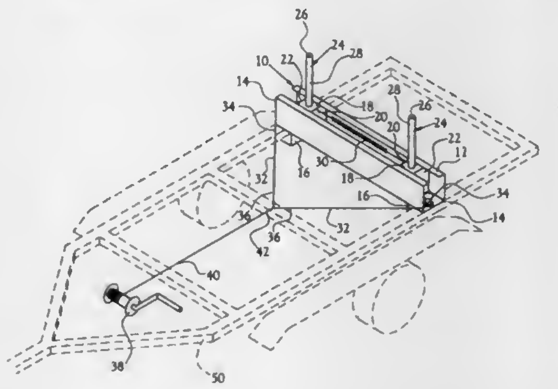
PONTOON BOAT LOADER

Rosa A. Marshburn, 1550 Millstone Beach Rd., Dandridge, Tenn. 37725, and Ernest L. Marshburn, Dandridge, Tenn., assignors to Rosa A. Marshburn, Dandridge, Tenn.

Filed Jul. 9, 1997, Ser. No. 890,498

Int. Cl.^{6} B60P *3/10*

U.S. Cl. 280—414.1 6 Claims



1. A pontoon boat loader attachable to a pontoon boat trailer for assisting in loading a pontoon boat onto the pontoon boat trailer, said pontoon boat including a pair of parallel spaced apart pontoons, said pontoon boat loader comprising:

an attachment device for attaching said pontoon boat loader to the pontoon boat trailer;

a pair of guide posts disposed in a vertical orientation;

a pair of slide mounts, one each of said pair of guide posts being carried by one each of said pair of slide mounts;

a guide channel configured to receive said pair of slide mounts, said guide channel being configured to limit movement of said pair of slide mounts to axial movement with respect to said guide channel;

a biasing device for biasing each of said pair of slide mounts toward one another; and

an engagement device secured to each of said pair of slide mounts, said engagement device being provided for pulling each of said slide mounts away from each other such that said guide posts are moved apart to engage an interior side of the pontoon boat pontoons.

5,853,186

TRAILER COUPLING

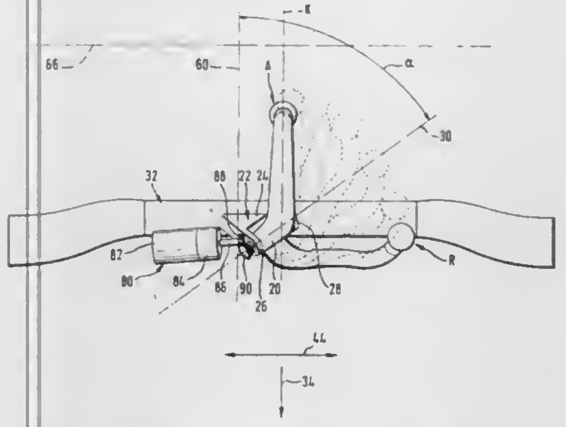
Wolfgang Gentner, Ditzingen; Emmerich Kleb, Markgroeningen; Joerg Riehle, Stuttgart, and Hans Riehle, Ludwigsburg, all of Germany, assignors to Oris Fahrzeugteile Hans Riehle GmbH, Moeglingen, Germany

Filed Mar. 31, 1997, Ser. No. 829,681

Claims priority, application Germany, Apr. 1, 1996, 196 12 959.1

Int. Cl.^{6} B60D *1/54*

U.S. Cl. 280—491.3 52 Claims



1. A trailer coupling for a motor vehicle, comprising:

a coupling ball;

a ball neck, one end region thereof being angled and bearing the coupling ball, and the other end region thereof being connected to a bearing element; and

a pivot bearing adapted to be mounted stationary with respect to the vehicle and pivotally mounting the bearing element; wherein:

said pivot bearing has a pivot axis that is adapted to be aligned at an angle to a vertical longitudinal plane parallel to the longitudinal direction of the vehicle;

said ball neck is pivotable with the coupling ball about the pivot axis from an operative position, in which the ball neck is adapted to extend essentially in the vertical longitudinal plane, into a rest position, in which the ball neck is adapted to extend approximately transversely to the vertical longitudinal plane, and vice versa;

a projection of a central axis of the coupling ball onto the vertical longitudinal plane undergoes a rotation of at least 80° during pivoting of the ball neck about the pivot axis from the operative position into the rest position; and

a lowest point of the ball neck or the coupling ball in the rest position is at least the level above a road surface of a lowest point of the ball neck in the operative position.

5,853,187

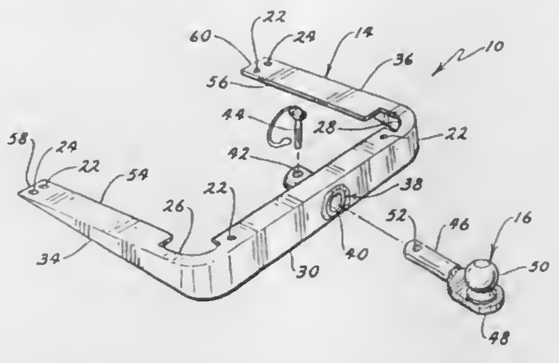
SNOWMOBILE HITCH

James P. Maier, 2712 Mayhew Lake Rd. NE., Sauk Rapids, Minn. 56379

Filed Nov. 22, 1996, Ser. No. 755,482

Int. Cl.^{6} B60D *1/52*

U.S. Cl. 280—495 11 Claims



1. A snowmobile hitch comprising:

a U-shaped mounting bracket formed from one piece in unitary construction defined by a closed end having a rear edge and a rearward facing surface and by two mounting arms having side edges, with the closed end extending between the two mounting arms forming a substantially vertical U-shaped outer wall with the arms, each of said mounting arms and said closed end having a top surface projecting inwardly and projecting substantially horizontally from said U-shaped outer wall and wherein the top surface and the U-shaped outer wall form a substantially inverted L-shaped structure on all three sides of the mounting bracket and whereby the top surface overhangs a hollowed-out interior on all three sides of the mounting bracket and wherein the mounting bracket has only one substantially vertical wall and wherein the only substantially vertical wall of the mounting bracket is the U-shaped outer wall and wherein the substantially inverted L-shaped structure allows the mounting bracket to be mounted substantially flush with the sides and rear of the snowmobile; and,

means for receiving a ball mount comprising an opening extending through the rearward facing surface of the closed end and a hollow stock receiver attached to the opening, wherein said opening and hollow stock receiver form a passage through the closed end, projecting forwardly therefrom substantially parallel to said arms; and,

a ball mount having a ball mount shaft which removably and snugly engages said ball mount receiving means and hitching means attached to said ball mount.

5,853,188

STRAPLESS BOOT BINDING FOR SNOWBOARDS

Richard P. Alden, Morrison, Colo., assignor to Ride, Inc., Preston, Wash.

Continuation-in-part of Ser. No. 780,414, Jan. 7, 1997, which is a continuation of Ser. No. 397,670, Mar. 2, 1995, Pat. No. 5,660,410, which is a continuation-in-part of Ser. No. 352,368, Dec. 9, 1994, abandoned. This application Sep. 17, 1997, Ser. No. 932,266

Int. Cl.^{6} A63C *9/18*

U.S. Cl. 280—627 12 Claims

1. A snowboard binding system for receiving a boot in secured positions relative to a surface of a snowboard, the boot having a front portion, a rear portion, and a structural member on the rear portion, said system comprising:

front and rear members for engaging the boot;

means on said front member for engaging the front portion of the boot; and

means on said rear member for holding the rear portion of the boot, said means for holding comprising:

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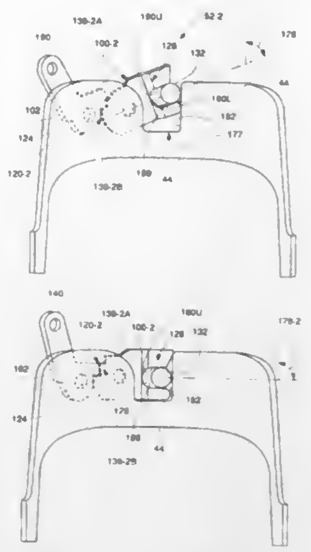
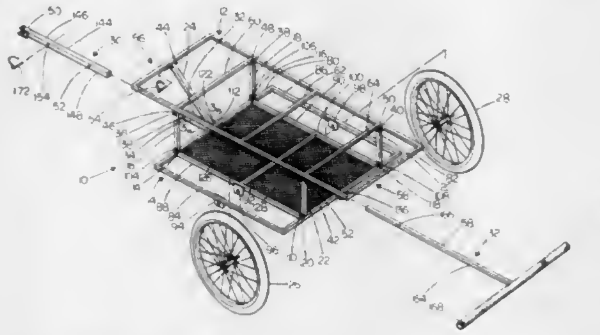


a receiving member for releasably engaging the structural member, said receiving member being movably mounted on said rear member for movement between a disengaged position, a first locked position, and a second locked position; and

a locking member movably mounted on said rear member, said locking member separately engaging said receiving member in each of the first and second locked positions to lock the boot in said binding system and disengaging said receiving member for movement of said receiving member to the disengaged position to release the boot from said binding system;

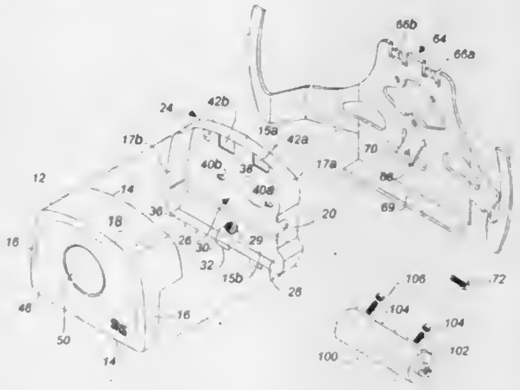
wherein said means for holding releasably engages the structural member to hold the boot in the secured positions.

5,853,189
CART
Curt Swartzlander, 25060 Benning Rd., Centralia, Ill. 62801
Filed Mar. 27, 1996, Ser. No. 623,333
Int. Cl.^{6} B62B *1/04*
U.S. Cl. 280—652 8 Claims



1. A collapsible cart, comprising:
an upper deck;
a lower deck;
a plurality of spacing members of equal length, each of said plurality of spacing members having a first end pivotally connected to said upper deck and a second end pivotally connected to said lower deck;
a removable pin;
a brace member having a first end, a second end, and a length greater than the length of said plurality of spacing members, said brace member being removably connected by said removable pin to said upper deck and pivotally connected to said lower deck, wherein said upper deck may rotate about said plurality of spacing members when said removable pin is removed, and wherein said upper deck does not rotate about said plurality of spacing members when said removable pin removably connects said brace member to said upper deck.

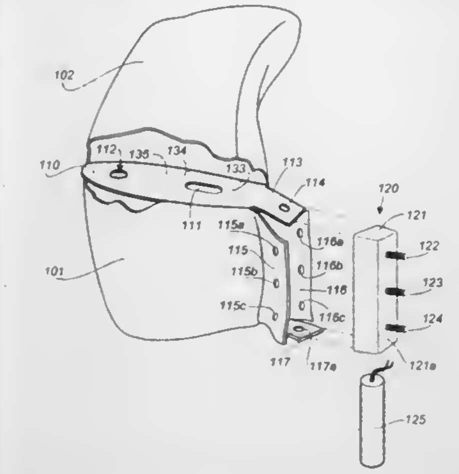
5,853,190
FASTENERLESS DRIVER AIR BAG COVER AND EASY TO ASSEMBLE AIR BAG MODULE ASSEMBLY
Robert B. Rion, Livonia; Gregory N. Goestenkors, Waterford, and David B. Figlioli, Clinton Township, Macomb County, all of Mich., assignors to Breed Automotive Technology, Inc., Lakeland, Fla.
Filed May 28, 1997, Ser. No. 864,978
Int. Cl.^{6} B60R *21/20*
U.S. Cl. 280—728.2 18 Claims



1. An air bag module (**10**) comprising:
a housing (**24**) having first and second cover fastening features (**46***a*, **32**) and at least one mounting feature (**42***a*) which matingly engages at least one cooperating feature (**66***a*) on a steering wheel frame (**64**) for slidingly mounting the housing to the steering wheel frame (**64**);
the cover (**12**) having an inwardly extending outer perimeter forming a side wall (**14**, **16**) to form a cavity (**26**) in cooperation with the housing for placement of an air bag and inflator therein, the cover (**12**) having first and second housing engagement members (**60**, **56***a*, **57***a*, **59***a*) configured to operatively engage the first and second cover fastening features (**46***a*, **32**) of the housing (**24**) to secure the cover and housing to each other.

5,853,191
VEHICLE RESTRAINT SYSTEM WITH INFLATION CONTROL
Michael J. Lachat, Shelby Township, Mich., assignor to Allied-Signal Inc., Morristown, N.J.
Filed Feb. 6, 1997, Ser. No. 796,259
Int. Cl.^{6} B60R *21/22*
U.S. Cl. 280—730.2 13 Claims

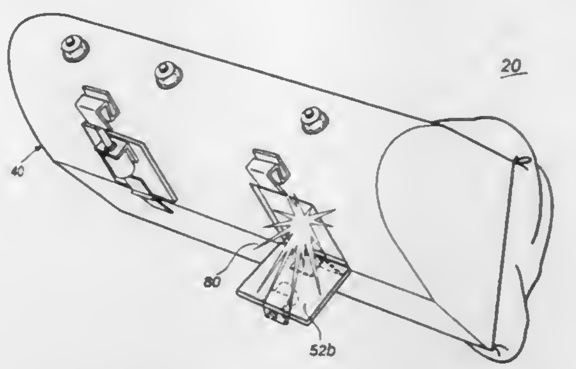
1. A side impact restraint system for protecting an occupant of a vehicle comprising:
an inflatable cushion (**100**) expandable from a compact pre-inflated condition to an inflated condition, the cushion including a first chamber (**101***a*) and a second chamber (**102***a*) and separator means (**110**) for separating the cushion into the first and second chambers and for controlling the flow of inflation gas therebetween;
an inflator support member (**120**) receivable within the cushion, the inflator support member including mounting means for mounting the support member to a mounting member of the vehicle;
an inflator (**125**) for providing inflation gas directly to at least the first chamber of the cushion, the inflator mounted to the inflator support member;



the separator means including a separator panel and a safety flap attached to the separator panel, wherein portions of the separator panel and the safety flap are movable relative to one another as the cushion inflates to create a variable aperture (**104**);
the separator panel includes a first portion secured to the cushion thus dividing the cushion into the first and second chambers, the separator panel additionally includes a first aperture (**111**) and a first end (**113**) secured to the inflator support member;
the safety flap (**130**) includes a second aperture (**131**) which is initially maintained registered to the first aperture, a first end portion of the safety flap on one side of the second aperture being formed into an expansion pleat or loop (**136**), an end of the expansion pleat remote from the second aperture is secured to the separator panel by a permanent connection, the safety flap is also secured to the separator panel by at least one breakable connection which is broken as the cushion inflates, an opposite end of the safety panel being secured to the inflator support member without any significant slack therein; wherein the separator panel, between the location of the breakable connection and its first end, which is secured to the inflator support member, is formed with slack therein; wherein
upon inflation of the cushion, the separator panel is tensioned causing the breakable connection to break thereby permitting the expansion pleat to expand permitting portions of the safety flap adjacent the second aperture to move relative to the first aperture obscuring portions of the first aperture (**111**) thereby creating the variable aperture (**104**).

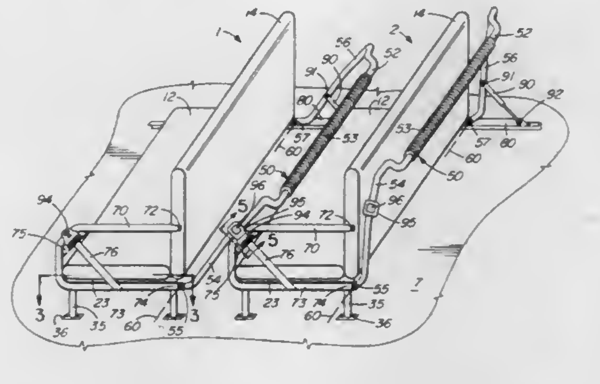
5,853,192
VARIABLE VENTED HOUSING
Jeffrey Sikorski, Sterling Heights; Jason Raines, Harrison Township; Lynette Norgan-Curtiss, Novi; Matthew Owen, Harper Woods, and Gerald Keller, Shelby Township, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Oct. 10, 1996, Ser. No. 728,588
Int. Cl.^{6} B60R *21/30*
U.S. Cl. 280—739 10 Claims

1. A system (**20**) for controlling the effective rate at which an air bag (**24**) is filled comprising:
a housing (**22**) operatively communicated with the air bag such that as the air bag is pressurized by inflation gas such gas enters the housing, the housing (**22**) including:
variable vent means (**54**, **50**, **52**) for defining an opening through which a quantity of inflation gas is controllably diverted from the air bag to thereby reduce its rate of inflation from that rate which is achieved when the vent means is closed; including at least one opening within a wall (**40**) of the housing (**22**), a door (**52***a*,*b*; **100***a*,*b*) the motion of which is controlled by an actuator (**60**, **60'**, **60"**) and which when moved from the opening permits inflation gas to exit therefrom;



wherein the actuator is attached to and movable with the door, wherein a movable element (**66**) of the actuator is operatively connected to a securing means (**70**) for preventing the door from opening and wherein when the movable element is moved from the securing means the door is movable to an open position in which inflation gas is free to flow through the opening.

5,853,193
PASSENGER SAFETY RESTRAINT APPARATUS
John Marshall, 25044 Marshall Avenue, Maple Ridge, British Columbia, Canada, V2X 1S6
Filed Jul. 21, 1997, Ser. No. 897,635
Int. Cl.^{6} B60R *21/02*
U.S. Cl. 280—748 12 Claims



1. Apparatus for restraining the movement of a passenger seated on a vehicle seat, said apparatus comprising:
(a) a restraint member comprising a horizontally extending safety bar supported by opposed side arms; said side arms extending from opposed ends of said safety bar to respective distal ends of said side arms, said distal ends being pivotally mounted to associated pivots permitting said restraint member to rotate about a pivot axis between a first angle of rotation where said safety bar is held by said side arms upwardly and away from the lap of said passenger and a second angle of rotation where said safety bar extends across the lap of said passenger;
(b) a latch for releasably latching said restraint member at said second angle of rotation, said latch comprising male and female latch portions, a first one of said portions being attached in a fixed position to said restraint member, a second one of said portions being fixedly positioned to releasably latch with the first one of said portions as said restraint member rotates into said second angle of rotation; and,
(c) fluid resistance means connected to said restraint member for retarding rotational movement of said restraint member about said axis.

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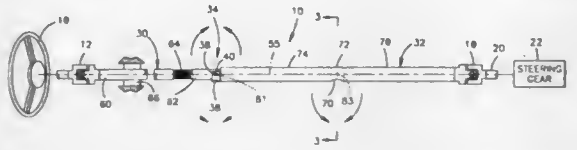
5,853,194
COLLAPSIBLE STEERING SHAFT ASSEMBLY

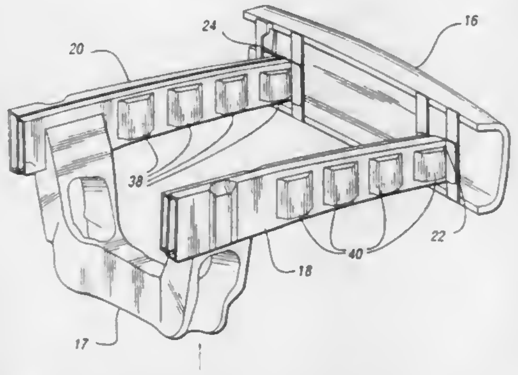
Frederick L. Baker; Phillip S. Peterson; Timothy M. Lowney, all of Lafayette, and Richard J. Eckhart, Buck Creek, all of Ind., assignors to TRW Inc., Lyndhurst, Ohio
Filed May 12, 1997, Ser. No. 854,857
Int. Cl.^{6} B62D *1/11*
U.S. Cl. 280—777 **9 Claims**



1. Apparatus comprising:
first and second steering shafts; and
a torque transmitting hinge joint pivotally connecting said first shaft directly with said second shaft and blocking pivotal movement between said first and second shafts in first directions relative to each other when said first and second shafts are in first positions;
said second shaft including a pair of relatively pivotal shaft sections which are interconnected by a bendable joint, said bendable joint comprising a stress riser which is inelastically deformable under stress induced by a predetermined vehicle crash force so as to initiate inelastic bending of said second shaft at said bendable joint.

5,853,195
FRONT RAIL ASSEMBLY FOR A VEHICLE

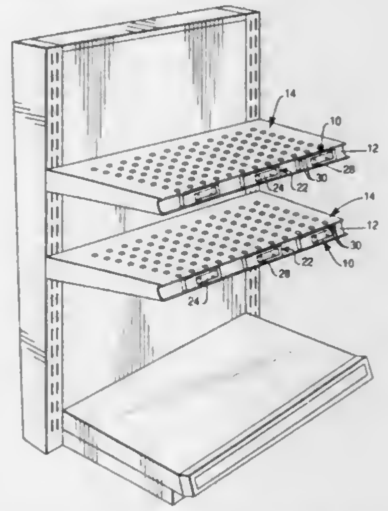
Jialiang Le, Troy, and Lawrence B. Hewitt, Ann Arbor, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Jan. 16, 1997, Ser. No. 784,889
Int. Cl.^{6} B62D *21/15*
U.S. Cl. 280—784 **5 Claims**



1. A front rail assembly for a vehicle having a body-on-frame configuration, the front rail assembly comprising:
first and second front rails extending longitudinally with respect to the vehicle, said rails each comprising a front end, and said rails further comprising inner and outer rail members having substantially C-shaped cross-sections which are welded together to form said front rails, each front rail having a neutral axis;
first and second plates secured, respectively, within said first and second rails between the respective inner and outer rail members along the respective neutral axis and substantially spanning the length of said first and second rails to form respective double-box cross-sections for improved energy absorption characteristics; and
wherein said inner and outer rail members each comprise a plurality of convolutions formed thereon and spaced along the length thereof to encourage sequential deformation during frontal impact, and said plates are welded to the rails at a plurality of attachment locations positioned between said convolutions in a manner not to inhibit said sequential deformation.

5,853,196
ELECTRONIC SHELF LABELS FOR MOUNTING IN C CHANNELS OF RETAIL SHELVES AND METHOD FOR MOUNTING

Stephen A. Wilkus, Lincroft; James G. Evans, Colts Neck, both of N.J., and Jeffry S. Rollins, Lawrenceville, Ga., assignors to NCR Corporation, Dayton, Ohio
Filed Jun. 24, 1996, Ser. No. 669,115
Int. Cl.^{6} B42D *15/00*
U.S. Cl. 283—81 **7 Claims**

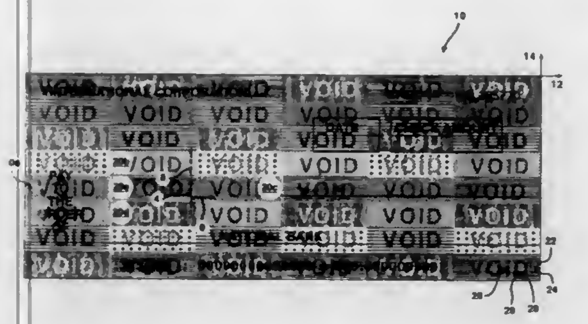


1. A method of mounting an electronic shelf label in a C channel of a shelf, comprising the steps of:
providing an electronic shelf label having a housing having a height dimension substantially the same as the dimension of the C channel opening and a depth dimension at the top and bottom of the label less than the depth dimension of the C channel, wherein the step of providing an electronic shelf label further comprises the steps of:
molding a housing having a height dimension at least slightly larger than or equal to the largest opening dimension of any standard shelf C channel;
determining the dimension of the shelf C channel opening for installation;
removing any excess portion of the housing so that the height dimension of the housing is substantially the same as the dimension of the shelf C channel opening; and
applying light pressure to the face of the label to force the label to fit securely into the C channel, without any additional hardware fixtures.

5,853,197
SECURITY DOCUMENT

William H Mowry, Jr., and A Dale Lakes, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio
Filed Mar. 5, 1996, Ser. No. 611,378
Int. Cl.^{6} B42D *15/00*
U.S. Cl. 283—91 **21 Claims**

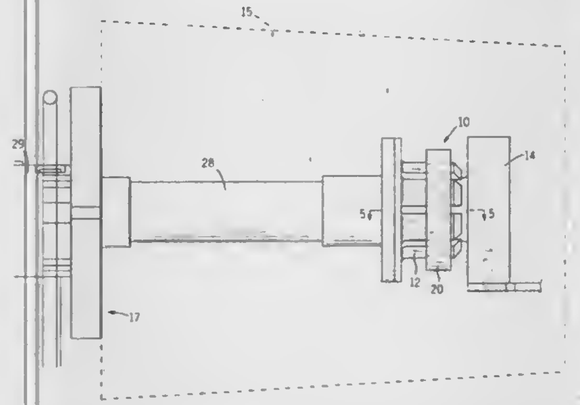
1. A security document comprising:
a substrate having a top surface for carrying printed indicia;
said top surface defining a plurality of areas; said areas being organized in an ordered array; each of said areas containing:
a) background printed matter printed on said top surface, said background printed matter made up of a pattern of background elements; and



b) a security term printed on said top surface of said substrate, said security term composed of a pattern of security term elements; wherein, said background elements, or said security term elements, or both, within one of said areas, differ in element shape from background elements and security term elements within another of said areas; and further, wherein, within each of said areas, either said background elements or said security term elements are not readily duplicated by a color copier while the remaining elements in said area are readily duplicated by a color copier, whereby, upon copying of said security document, a visually perceptible security term is produced.

5,853,198
THERMAL ATTACHMENT DEVICE

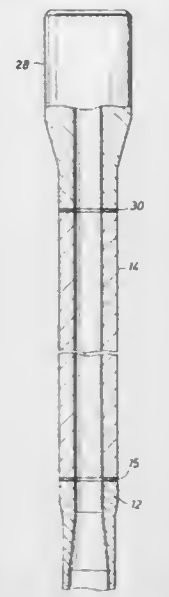
Donald E. Richied, Maple Park, and Anne M. Stecher, Marengo, both of Ill., assignors to Illinois Superconductor Corporation, Mt. Prospect, Ill.
Filed May 7, 1997, Ser. No. 852,313
Int. Cl.^{6} F16L *53/00*
U.S. Cl. 285—41 **20 Claims**



1. A mechanical coupling device for selectively connecting and disconnecting an apparatus to a cryogenic cooling source, comprising:
a cryogenic thermal bridge element coolable by the cryogenic cooling source and comprised of a flexible structure having a first coefficient of thermal expansion, said cryogenic thermal bridge element disposed apart from said apparatus until cooled by the cryogenic cooling source; and
a thermal stress element disposed circumferentially about and in thermal contact with said cryogenic thermal bridge element and said thermal stress element having a second coefficient of thermal expansion larger than said first coefficient of thermal expansion, thereby enabling said thermal element to cause hoop stresses and preferential flexing of said cryogenic thermal bridge element into thermal contact with the apparatus when the cryogenic cooling source establishes cooling of said cryogenic thermal bridge element.

5,853,199
FATIGUE RESISTANT DRILL PIPE

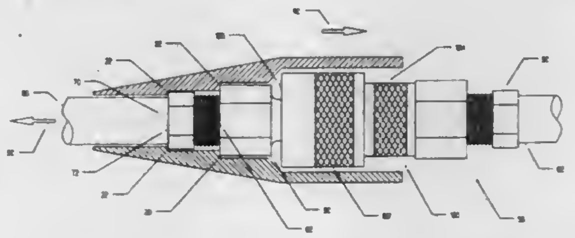
Gerald E. Wilson, Montgomery, Tex., assignor to Grant Prideco, Inc., Houston, Tex.
Filed Sep. 18, 1995, Ser. No. 529,517
Int. Cl.^{6} F16L *15/00*; F16C *29/00*; C21D *1/18*
U.S. Cl. 285—45 **4 Claims**



1. In a fatigue resistant joint of drill pipe for use in a well bore having upper and lower tool joints, a main steel tubular portion extending upwardly from the lower tool joint and terminating near the upper tool joint, the improvement comprising a thick wall rotary slip engaging elongated steel protector tube connected to and extending downwardly from the upper tool joint and secured to the upper end of the main portion of the drill pipe; the protector tube having a greater wall thickness than the main portion of the drill pipe, the protector tube being made of a Martensite steel having a small, close knit, grain size to reduce the penetration of the slip teeth that engaae the protector tube when the loint is supported in the rotary table by slips.

5,853,200
HOSE COUPLING BOOT

Gary A. Zieres, Allen, Tex. 75013, assignor to Gary A. Zieres, Allen, Tex.
Filed Apr. 15, 1996, Ser. No. 632,263
Int. Cl.^{6} F16L *11/12*
U.S. Cl. 285—45 **2 Claims**



1. A snag avoidance device for pneumatic hose couplings, said pneumatic hose couplings including a male coupling nipple connected to an outer coupling socket, said snag avoidance device defining an annular body, said annular body defining a first end and a second end and wherein said first end defines an externally tapered snag deflecting portion and said second end defines a cylindrical portion terminating in a blunt end, said second end of said annular body including an annular recess extending from said blunt end toward said first end having an internal diameter sufficient to freely receive said outer coupling socket therein, said first

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end including at least one annular recess extending therethrough and communicating with said annular recess of said second end and of smaller diameter than said recess of said second end and separated therefrom by an interface shoulder, said interface shoulder having a diameter less than the diameter of said male coupling nipple and engagable therewith for preventing removal of said snag avoidance device in the direction of said outer coupling socket.

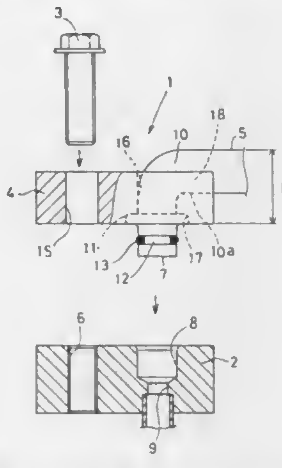
5,853,201
COOLANT PIPE CONNECTING COUPLING

Ryouiti Izumi, Okazaki; Kenji Ogura, Kariya; Soujiro Tsuchiya, Nagoya; Yoshitaka Kuroda, Anjo, all of Japan, and Keiiti Isogai, Bangkok, Thailand, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 17, 1996, Ser. No. 587,945

Int. Cl.^{6} F16L *37/00*

U.S. Cl. 285—179 **12 Claims**



1. A coolant pipe connecting coupling comprising:

a fixing block defining a receiving hole, said fixing block also defining a bending receiving portion and a ring receiving portion;

a connecting object securable to said fixing block by a fixing tool, said connecting object defining an inside passage through which fluid can flow; and

a coolant pipe supported by said fixing block, said coolant pipe having an L-shaped bending portion and a ring seal portion protruding from a periphery of an end of said coolant pipe, said coolant pipe being connected to said inside passage when said fixing block is fixed to said connecting object,

wherein an inside bending portion of said bending portion of said coolant pipe is disposed in said bending receiving portion such that said inside bending portion is lower than a top surface of said fixing block,

said ring seal portion of said coolant pipe is disposed in said ring receiving portion, and

said fixing block is fixed between said inside bending portion and said upper surface of said ring seal portion such that the inside bending portion engages the receiving portion of the fixing block.

5,853,202
HOSE END FITTING ASSEMBLY

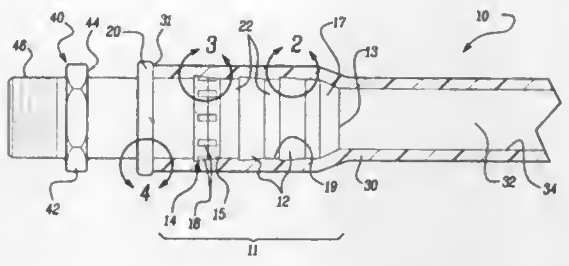
Trent Kuang Chun Li, Troy, and Norman S. Martucci, Clarkston, both of Mich., assignors to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Jun. 17, 1997, Ser. No. 877,116

Int. Cl.^{6} F16L *33/00;33/20*

U.S. Cl. 285—256 **12 Claims**

1. An end fitting (**10**) for connecting a hose to an external device, said end fitting (**10**) comprising:



a stem (**11**) adapted to be inserted into an inner channel of a hose and defining a longitudinal axis, said stem comprising an axial bore (**13**) adapted to convey a fluid therethrough;

said stem (**11**) having a plurality of circumferential barbs (**12**) extending radially outwardly from said stem (**11**), each of said barbs (**12**) having a plurality of lands (**12*a*, 12*b***) at an outer surface thereof, one of said lands (**12*a***) being disposed at a acute angle with respect to the axis of the bore (**13**) of said stem (**11**), and a second one of said lands (**12*b***) being adjacent to said first land (**12*a***) and being disposed at a smaller acute angle with respect to the axis of the bore (**13**) of said stem (**11**);

said stem (**11**) including at least one additional barb (**15**,**15'**) having rotation resisting means provided therein to resist rotational movement between said stem (**11**) and a hose into which said stem (**11**) is disposed.

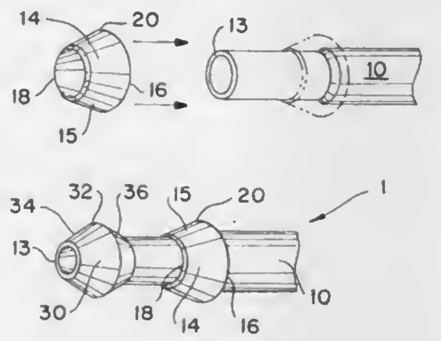
5,853,203
BARBED TUBULAR CONNECTORS

Robert M. Crandall, Capac, Mich., assignor to Epic Technical Group, Inc., Auburn Hills, Mich.

Filed Mar. 13, 1996, Ser. No. 614,600

Int. Cl.^{6} F16L *33/00*

U.S. Cl. 285—259 **18 Claims**



1. A connector for joining flexible tubular members comprising:

a tubular body having an outer diameter, a free end, an end member, and at least one circumferential recess, wherein a portion of the end member has a greater diameter than that of the tubular body and a first tapered surface extending from the free end of the connector to the greater diameter portion of the end member to assist in engaging a flexible tubular member and for retaining the flexible tubular member in engagement with the connector; and

at least one barb member positioned and retained at least partially in the recess, the barb member comprising first and second ends with the second end positioned in the recess and having an outer diameter which is substantially the same as the outer diameter of the tubular body to provide a relatively smooth transition therebetween, and with the first end having an outer diameter which is greater than that of the second end and a rigid edge for engaging the flexible tubular member and for resisting pull-off of the tubular member from the connector.

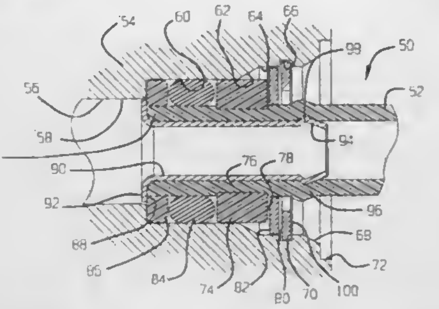
5,853,204
MEANS OF COUPLING NON-THREADED CONNECTIONS

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

Filed Jul. 17, 1995, Ser. No. 503,454

Int. Cl.^{6} F16L *35/00;37/12*

U.S. Cl. 285—305 **32 Claims**



1. In combination a connector and a conduit for communicating a fluid media, the connector comprising:

a female portion having a throughbore, said throughbore having an inner diameter, the female portion defining a port;

a male portion releasably attachable to said female portion, said male portion having an end and an outer diameter such that said male portion is fittable within said inner diameter of said female portion, the male portion defining the conduit;

a sealing cavity formed between said female and male portions;

sealing means fitted to said male portion, said sealing means having a pair of sides, said sealing means further including a pilot area formed on each of said sides of said sealing means, said pilot areas including an outside pilot, said outside pilot being fittable into said sealing cavity between said female and male portions thereby preventing movement of said sealing means and the expulsion of said sealing means from said connector and for reducing axial movement between said female and male portions and to transfer forces that tend to separate said male portion from said female portion, a bushing fixed to said male portion, said bushing including a bearing surface for enabling rotation of said male portion with said female portion contacting said female through bore, and an annular retainer including two separate annular members both entirely positioned within said female portion, and at least one of said annular members seating on said male portion spaced from said bushing and said retainer for providing a non-threaded connection for holding said male and female portions in a sealed relationship.

5,853,205
APPARATUS HAVING BODY, COVER, AND LOCKING MECHANISM

Hideki Enomoto, and Kenichi Egawa, both of Tokyo, Japan, assignors to OkiData Corporation, Tokyo, Japan

Filed Feb. 20, 1997, Ser. No. 804,161

Claims priority, application Japan, Feb. 29, 1996, 8-042508

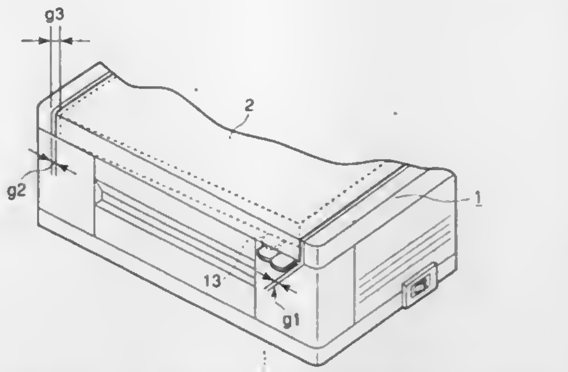
Int. Cl.^{6} E05C *19/06*

U.S. Cl. 292—87 **16 Claims**

1. An apparatus having a body and a cover fittable to the body, the body and the cover each having front and rear portions respectively adjacent each other when the cover is fitted to the body, the body and the cover each also having first and second opposing side portions respectively adjacent each other when the cover is fitted to the body, the apparatus further having a locking mechanism for releasably locking the cover to the body when the cover is fitted to the body, the locking mechanism comprising:

a first projection formed on the cover adjacent the first side portion thereof, the first projection projecting outwardly from the cover;

a first engagement portion formed on one of the body and the cover at the first side portion thereof adjacent the first projection when the cover is fitted to the body, the first engagement portion engaging the other of the body and the cover to releasably lock the cover to the body at the first side portion thereof when the cover is fitted to the body;



a second, opposing engagement portion formed on one of the body and the cover at the second side portion thereof, the second engagement portion engaging the other of the body and the cover to releasably lock the cover to the body at the second side portion thereof when the cover is fitted to the body;

the cover being marginally displaceable relative to the body in opposing first and second directions toward the second and first side portions of the body, respectively;

the cover being moved in a closing direction to fit the cover to the body and engage the first and second engagement portions;

the first projection being urged in an opening direction to disengage the first engagement portion and unlock the cover from the body at the first side portion;

the first projection thereafter being moved further in the opening direction to cause a gap between the cover and the body at the second side portion to increase in a direction substantially perpendicular to the opening direction, and subsequently to disengage the second engagement portion and unlock the cover from the body at the second side portion.

5,853,206
POWER-ACTUATED MOTOR-VEHICLE DOOR LATCH

Frank Kleefeldt, Heiligenhaus; Peter Bartel, Hattingen; Horst Brackmann, and Theodor Menke, both of Velbert, all of Germany, assignors to Kiekert Aktiengesellschaft, Heiligenhaus, Germany

Division of Ser. No. 520,534, Aug. 28, 1995, Pat. No. 5,667,263. This application Dec. 20, 1996, Ser. No. 771,800

Claims priority, application Germany, Sep. 1, 1994, 44 31 147.8; European Pat. Off., Mar. 4, 1995, 95103123

Int. Cl.^{6} E05C *3/06*

U.S. Cl. 292—201 **1 Claim**

1. A motor-vehicle door latch comprising:

a housing;

a locking mechanism in the housing having an inside locking lever displaceable between a locked position in which the latch is in a locked condition and an unlocked position in which the latch is in an unlocked condition;

a generally cylindrical output element rotatable about and centered on an axis and formed with a radially outwardly open spiral main groove having a pair of ends and with an axially extending transverse connecting groove extending between the ends;

a pin mounted directly on the locking lever and riding directly in the spiral groove;

means including a reversible electric motor for rotating the output element so that the pin travels between the ends of the spiral groove for displacing the locking lever into the locked position when the pin engages one of the groove ends and for displacing the locking lever into the unlocked position when the pin engages the other of the groove ends; and

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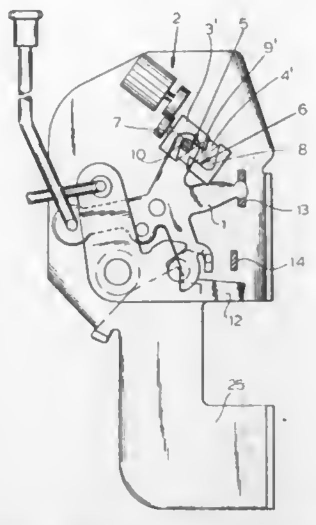
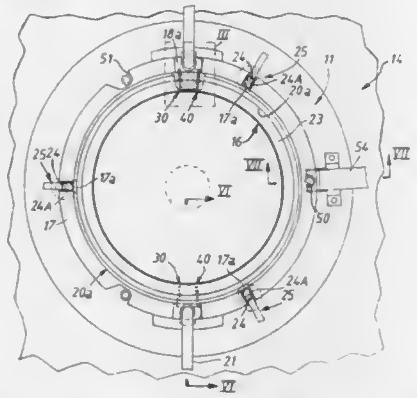


means including a manually actuatable locking element connected directly to the inside locking lever for displacing same between its positions with movement of the pin along the connecting groove between the spiral groove ends.

5,853,207
DEVICE FOR JOINING AND SEALING TOGETHER TWO ENCLOSURES ISOLATED FROM AN EXTERNAL ENVIRONMENT

Bernard Saint Martin, Montrouge, and Christiane Prioult née Lipp, Lourdes, both of France, assignors to I D C - Isolateur Denominateur Commun, Lourdes, France
Filed Jun. 15, 1995, Ser. No. 490,412
Claims priority, application France, Jun. 17, 1994, 94 07430
Int. Cl.^{6} B65D *45/30*
U.S. Cl. 292—256.6 **22 Claims**



1. A device or joining and sealing together two enclosures whose interiors are isolated from an external environment, one of the two enclosures being a single use enclosure that is not reused, the device comprising:

two flanges, each of said flanges being adapted to be attached to an opening of a respective one of the enclosures;

two doors, one for each of the two enclosures, each said door being in a respective one of said annular flanges and adapted to close and hermetically seal the opening to its respective enclosure's interior when mounted on it respective enclosure, each said door having an outside face for contact with the external environment;

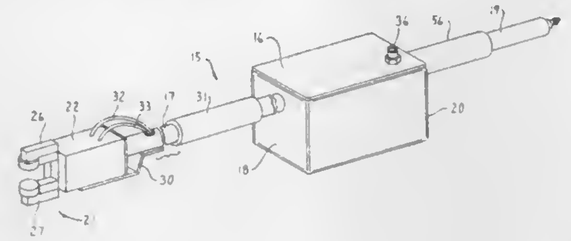
said doors having cooperating joining means for hermetically sealing said outside faces to each other so that said outside faces are not exposed to the interiors of the enclosures when either of said doors is opened;

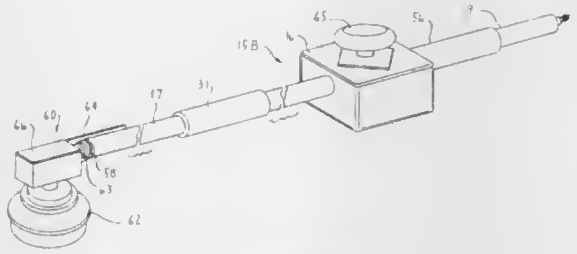
locking means for irreversibly locking closed said door of the single use enclosure; and

first actuator means for being mounted on the other of the enclosures and for actuating said locking means.

5,853,208
MANUAL MANIPULATOR

Stephen L. Moskalik, Plainwell, Mich., assignor to TDA Buddy, Inc., Kalamazoo, Mich.
Filed Jun. 4, 1996, Ser. No. 687,093
Int. Cl.^{6} B25J *1/04; 13/02*
U.S. Cl. 294—19.1 **8 Claims**





1. A manual manipulator, comprising:

an elongate hollow pole of finite length thereby defining opposite first and second ends, said pole having a first grip means thereon for facilitating a manual carrying of said pole by at least one hand of an operator;

a housing means on said pole and adjacent said first grip means;

a first passageway means for providing communication between a remote pressurized gas supply and an interior of said housing means;

a pneumatically operable tool connected to said pole adjacent said second end and undergoing a tool function in response to a supply of pressurized gas thereto;

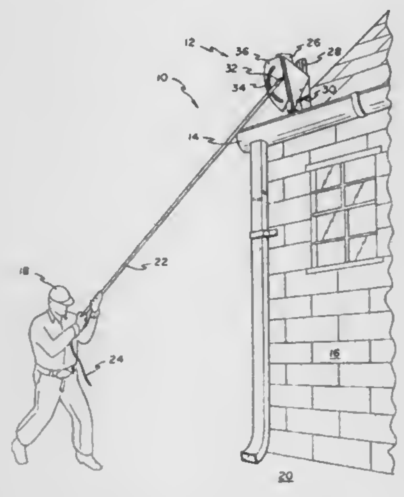
a second passageway means for providing communication between an interior of said housing means and said tool;

a pneumatically operated control means disposed in said interior of said housing means for regulating a flow of pressurized gas from said first passageway means to said second passageway means and thence to said tool, said control means including a selectively manually operable switch for selectively activating and deactivating the supply of pressurized gas to said tool, said control means being configured for operation in response to a first manual activation of said switch to activate said flow of pressurized gas and maintain said flow of pressurized gas after said first manual activation is completed so that said flow of pressurized gas can be maintained when the hand of the operator is disengaged from said switch to enable the operator to continuously maintain stability of said manual manipulator, said control means being additionally configured for operation in response to a second manual activation of said switch to deactivate said flow of pressurized gas and to maintain said flow of pressurized gas deactivated after said second manual activation is completed, said switch being provided on at least one of said pole and said housing means and positionally adjacent said first grip means so that said switch can be activated by the operator without the hand of the operator becoming disengaged from said first grip means to thereby enable the operator to continuously maintain stability of said manual manipulator; and

wherein said pole includes separate, elongate and axially aligned first and second elongate pole sections, said first pole section having said first end at one end and connected to said housing means at an other end thereof, said second pole section having said second end at one end and connected to said housing means at an other end thereof, said first pole section having said first grip means thereon, and said first passageway means extending therethrough, said second pole section having a second grip means thereon for facilitating a manual carrying of said pole by an other hand of the operator and said second passageway means extending therethrough, said housing means being located intermediate said first and second grip means such that said first grip means is spaced apart from said second grip means and one hand of the operator is engaged with said first grip means and another hand of the operator is engaged with said second grip means such that as said manual manipulator is moved in a horizontal plane the stability of said manual manipulator is maintained.

5,853,209
ANGLE ADJUSTABLE RAIN GUTTER CLEANING APPARATUS

Shaun H. McDermott, 563 Beck Rd., Loretto, Pa. 15940
Filed Apr. 8, 1998, Ser. No. 56,664
Int. Cl.^{6} E04D *13/076*
U.S. Cl. 294—19.1 **7 Claims**



1. A rain gutter cleaner apparatus comprising:

a telescoping elongated tubular pole having a top end and a bottom end;

a cleaning element attached to said top end of said pole including:

(1) a fixed U-channel jaw, a movable U-channel jaw and a U-shaped triangular bracket, said movable U-channel jaw pivoting in said U-shaped triangular bracket;

(2) said movable jaw having a spring connecting said movable jaw to a portion of said bracket;

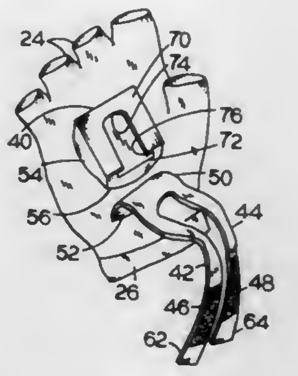
(3) a cable connected to a portion of the movable jaw opposite to said spring; and

(4) a plate with an arcuate groove attached to said fixed U-channel jaw to cover the open channel partially, said plate accepting said top end of said pole, there further being a pivoting means confined in said arcuate groove and a fastener means attached to said pole, whereby the angle of inclination between said pole and said cleaning element can be varied, and wherein said cable extends from said cleaning element through said telescoping elongated tubular pole and out said bottom end of said pole;

whereby a user can pile any debris and clean the gutters and valleys by picking up the debris with closed jaws to pick up the piled debris by manipulating said cable.

5,853,210
PEN AND INSTRUMENT HOLDER FOR PHYSICALLY IMPAIRED HANDS

Gale Robinson, 1455 Uthoff, Fenton, Mo. 63026
Filed May 2, 1996, Ser. No. 641,640
Int. Cl.^{6} B25B *29/00;* **A41D** *19/00*
U.S. Cl. 294—25 **18 Claims**



1. An article of manufacture for assisting a person with a physically impaired hand, comprising:

(a) a glove component having a palm portion, a portion which wraps around a wrist, and sleeve portions which wrap around at least two fingers, whereby the glove component fits securely upon the hand while in use;

(b) a mounting attachment which is permanently affixed to the palm portion of the glove component, comprising a coupling device having a receptacle which comprises (i) a first open end which allows entry of an accommodating actuator base into the receptacle; (ii) an opposed closed end which serves as a securing seat to hold the actuator base in an immovable manner in the receptacle during use of an actuator device; and (iii) at least one rail component to guide the actuator base into a seated position in the receptacle, wherein the coupling device also comprises means for reversibly securing the actuator base in an immovable seated position in the receptacle during use of the actuator device by a person wearing the glove component; and,

(c) an actuator device having a base and an actuator component, wherein the base is designed (i) to enter the receptacle of the mounting attachment, (ii) to remain in an immovable seated position in said receptacle while the actuator device is being used by a person having a physically impaired hand, and (iii) to be disengaged and removed from the receptacle by the person having the physically impaired hand, after completion of a desired task.

5,853,211
UNIVERSAL GRIPPER

Edwin G. Sawdon, St. Clair; Dean J. Kruger, Jeddo, and Steven J. Sprotberry, Marysville, all of Mich., assignors to BTM Corporation, Marysville, Mich.
Filed Jan. 10, 1997, Ser. No. 781,638
Int. Cl.^{6} B25J *15/04*
U.S. Cl. 294—116 **33 Claims**

1. A gripper comprising:

a body;

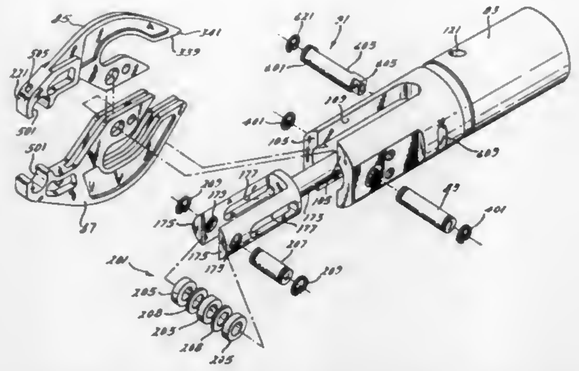
an actuator mounted to said body;

a first arm movably coupled to said body, said first arm operably moving in response to movement of said actuator;

a camming surface located on one of said body and said first arm;

a member operably riding along said camming surface;

said member being moved to a blocking position abutting against a portion of said first arm when said first arm is in a gripping position so as to prevent movement of said first arm away from said gripping position until said actuator moves said member; and

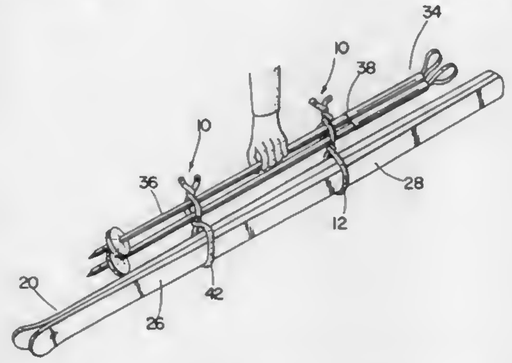


an indentation located in said camming surface, said member being located at said indentation for encouraging said first arm to remain in said gripping position even when moving pressure applied to said actuator is lost.

5,853,212

SNOW SKI WRAP

Dianne C. Daniel, 2515 Sonnington Dr., Dublin, Ohio 43016
Filed Jun. 27, 1996, Ser. No. 671,490
Int. Cl.^{6} A63C *11/02*
U.S. Cl. 294—147 **8 Claims**



1. A snow ski wrap for securing and transporting a pair of skis and ski poles, comprising:

an elongate piece of first material having flexible qualities;

a flexible strip of second material enclosed within said elongate piece of first material;

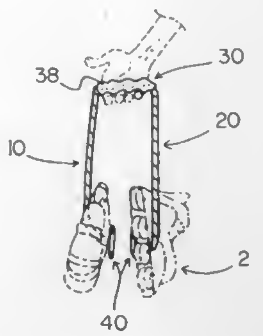
wherein said elongate piece of first material is capable of being wrapped around a pair of skis and ski poles for securing said skis and ski poles for transport; and

wherein said flexible strip of second material can be easily bent and wherein said flexible strip of second material has a degree of rigidity which allows said snow ski wrap to retain its form when bent or straightened.

5,853,213

IN-LINE SKATE CARRIER

Tyler C. Simpson, 555 Del Oro, Ojai, Calif. 93023
Filed Sep. 30, 1997, Ser. No. 941,137
Int. Cl.^{6} A45F *5/10*
U.S. Cl. 294—158 **13 Claims**



1. An apparatus for carrying a pair of in-line skates each including a boot and a wheel assembly depending therefrom and having an opening amongst said boot and said wheel assembly, said apparatus comprising:

a cord having a first end and a second end;

a handle assembly coupled to and positioned intermediate said first end and said second end of said cord; and

a pair of discs perpendicularly secured to said first end and said second end of said cord, each of said pair of discs being insertable through said opening provided amongst said boot and said wheel assembly of one of said pair of in-line skates, whereby each of said pair of discs retain and support one of said pair of in-line skates on said cord;

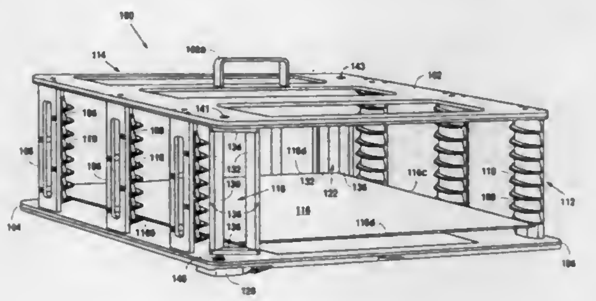
wherein said handle assembly includes an elongated substantially rigid member having a top edge and a bottom edge; and

wherein a first segment of said cord is secured to and extends from a first side of said rigid member and wherein a second segment of said cord is secured to and extends from a second side of said rigid member.

5,853,214

ALIGNER FOR A SUBSTRATE CARRIER

Daniel A. Babbs, and Richard E. Schultz, both of Austin, Tex., assignors to Progressive System Technologies, Inc., Austin, Tex.
Filed Nov. 27, 1995, Ser. No. 563,134
Int. Cl.^{6} B65D *85/30*
U.S. Cl. 294—161 **50 Claims**



1. A substrate aligner for a substrate carrier, the carrier including a housing for receiving and supporting a plurality of substrates in a spaced relationship relative to each other, said substrate aligner comprising:

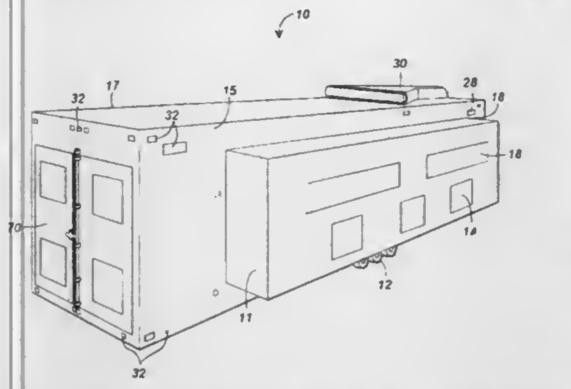
an engagement assembly for mounting to the housing for engaging, moving and maintaining the plurality of substrates into a substantially linearly and rotationally aligned position when said engagement assembly is moved to a closed position and for being disengaged from the plurality of substrates when in an open position for allowing insertion and extraction of the plurality of substrates; and

an actuator assembly for mounting to the housing and operatively coupled to move said engagement assembly between said open and closed positions.

5,853,215

MOBILE SPRAYBOOTH WORKSTATION

Robert S. Lowery, 8247 Forest Lake Dr., Conway, S.C. 29526
Continuation-in-part of Ser. No. 714,503, Sep. 16, 1996, which is a continuation of Ser. No. 337,038, Mar. 22, 1995, abandoned. This application Jul. 31, 1997, Ser. No. 903,859
Int. Cl.^{6} B60P *3/07*
U.S. Cl. 296—24.1 **13 Claims**



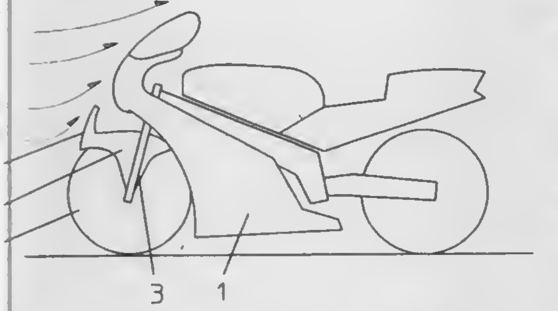
1. A mobile paint spraybooth workstation for conducting automobile spray painting and curing operations, said workstation comprising:

- a. a trailer comprising a main body section comprising front and rear ends, a floor, ceiling, and first, second, third and fourth side walls, said main body section defining a single substantially enclosed room for performing both painting and curing operations in which the first and second side walls are extendible to increase the volume of the room while keeping the room substantially enclosed and the third side wall includes least one door;
- b. a control box mounted on the outside of the trailer;
- c. a high pressure, low volume turbine mounted in the control box and in communication with the inside of the room;
- d. a fresh air pump mounted in the control box and in communication with the inside of the room;
- e. a cross-draft ventilation system further comprising a filtering system;
- f. a plurality of infrared curing lights mounted inside the room; and
- g. a safety lockout system in communication with the turbine and the curing lights.

5,853,216

AIR SHIELD

James A. Barg, 2292 Ochard Crest Bldg. 18, Utica, Mich. 48317
Filed Mar. 5, 1996, Ser. No. 611,200
Int. Cl.^{6} B62J *15/00;* **B62D** *35/00*
U.S. Cl. 296—78.1 **1 Claim**



1. An aerodynamic deflector for placement upon a motorcycle front fender, the motorcycle having front forks separated by a first lateral distance and a fairing partially enclosing the motorcycle, said motorcycle defining an area in frontal view bounded by said front fender, said front forks, and an upper surface of a fairing opening containing the front forks, the shield comprising:

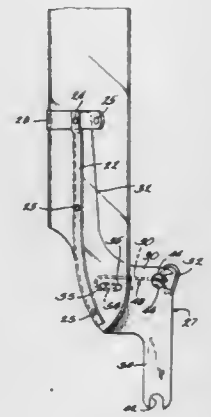
a lower palette shaped to conform to an upper surface of said front fender;

a shield portion upstanding from the palette and having an upper edge, and side edges being spaced apart substantially said first lateral distance, and when the palette is installed upon the front fender the upper edge extending to a height substantially equal to a height of said upper surface of the fairing opening, wherein the deflector when installed acts to reduce both aerodynamic drag and lift.

5,853,217

QUICK DETACHABLE MOTORCYCLE WINDSHIELD

Jeffrey L. Armstrong, Fredonia, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.
Continuation of Ser. No. 365,283, Dec. 28, 1994, Pat. No. 5,658,035. This application May 19, 1997, Ser. No. 858,588
Int. Cl.^{6} B62J *17/04*
U.S. Cl. 296—78.1 **16 Claims**



1. A detachable motorcycle windshield assembly adapted to be mounted onto a motorcycle, said windshield assembly comprising:

a windshield;

a first socket attached to said windshield, said first socket opening substantially downward relative to an orientation of said assembly on the motorcycle; and

a second socket attached to said windshield, said second socket opening substantially rearward relative to an orientation of said assembly on the motorcycle.

5,853,218

SAFETY ARM REST

Robert Cox, Akron, Ohio, assignor to Robert L. Cox, Akron, Ohio
Filed Aug. 28, 1997, Ser. No. 924,452
Int. Cl.^{6} B60J *9/00*
U.S. Cl. 296—153 **19 Claims**

2. An arm rest for use with a motor vehicle, said motor vehicle having a door, said door having a first panel, a second panel, a molding on top of said first panel, a window located in between said first and second panels, locking means for locking said door comprising a lock, said lock having a post and a knob, and means for raising and lowering said window, said arm rest comprising:

a base having a top, a bottom, and an edge, said base having a notch for receiving said post of said lock, said base having knob covering means for covering said knob of said lock, said knob being disposed between said top of said base and said knob covering means; and,

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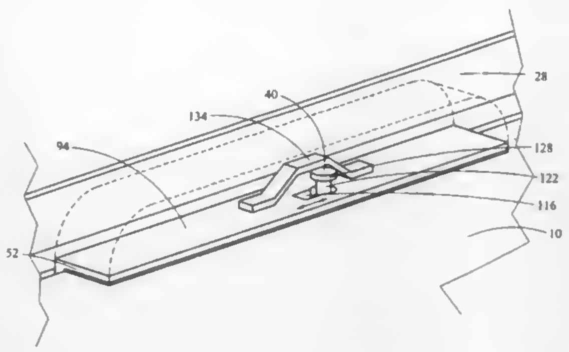


a leg extending transversely from said edge of said base and being disposed between said window and said first panel of said door.

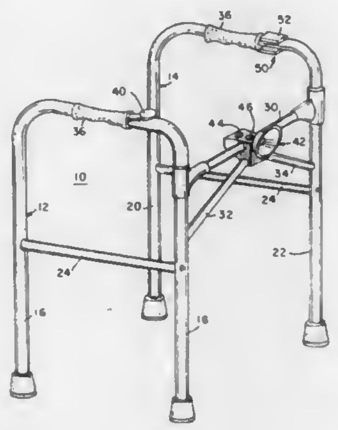
5,853,219
SAFETY WALKER ASSEMBLY

Kathleen M. Santuccio, 5 Corliss Ave., Gloucester, Mass. 01930

Filed May 6, 1997, Ser. No. 851,746

Int. Cl.^{6} A47D *13/04*

U.S. Cl. 297—5 **3 Claims**



1. A vertically oriented safety walker assembly to assist handicapped people in walking, said safety walker assembly comprising:
   a pair of side frames spaced at a certain distance apart, each having an inverted U shape with a front vertical leg, a rear vertical leg and a connecting portion, a horizontal bar connecting said front legs of said side frames to form a lightweight three-sided structure;
   a strut arrangement secured between said front vertical legs to provide rigidity to said walker assembly;
   a handlebar grip member arranged on each of said side frames; and
   an automatically actuatable alert device comprising a battery powered lamp assembly and an audible alarm attached to said horizontal bar, said device also including a tilt actuatable switch to send a signal to said alarm when said walker assembly is tipped from the vertical position to an angled position with respect to a horizontal floor surface, said device is arranged to actuate when said safety walker assembly no longer supports a user.

5,853,220
ARMREST FOR A MOTOR VEHICLE SEAT HAVING A STORAGE COMPARTMENT FOR AN ACCESSORY

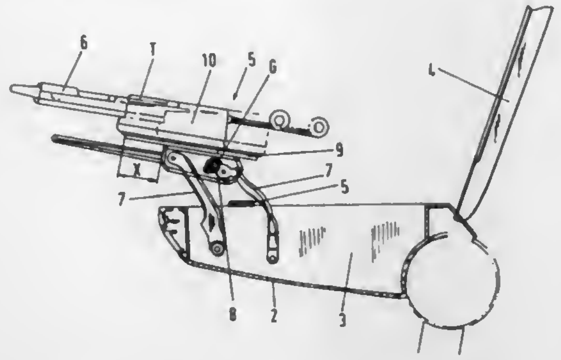
Reiner Gulich, Wolfsburg; Bert Junige, Hillerse; Georg Eisner, Isenbüttel, and Horst Schicht, Gifhorn, all of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed Nov. 14, 1997, Ser. No. 970,276

Claims priority, application Germany, Nov. 14, 1996, 196 46 989.9

Int. Cl.^{6} A47C *7/62*

U.S. Cl. 297—188.16 **13 Claims**



1. An armrest for a motor-vehicle seat comprising:
an armrest body having a storage compartment;
a cover providing an arm support which is articulated on the armrest body
a receptacle in the storage compartment for holding an accessory,
a mechanism for moving the receptacle;
a plurality of links pivotally connected to a base region of the storage compartment and to the receptacle so that, when the cover is open, the receptacle can be pivoted by the links between a storage position in the vicinity of the base region and an operating position above the armrest body;
the links being arranged so that the operating position and the storage position of the receptacle are in essentially parallel planes; and
an extension arm by which the accessory can be moved into a predetermined use position.

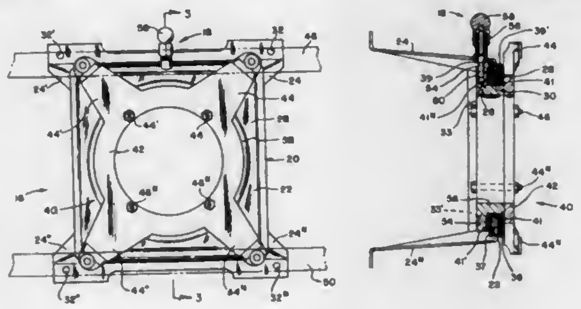
5,853,221
SWIVEL APPARATUS FOR SECURING A SEAT IN A VEHICLE

David Charles Thoman, 51614 Highland Shores Dr., Granger, Ind. 46530, and Michael Lawrence Harmon, 1628 Hoover Ave., South Bend, Ind. 46615

Filed Feb. 13, 1998, Ser. No. 23,311

Int. Cl.^{6} F16M *13/00*

U.S. Cl. 297—344.24 **9 Claims**



1. A swivel apparatus for a seat in a vehicle comprising:
a support assembly having a base member with a plurality of legs said base member having a horizontal lower side and a parallel horizontal upper side with a central opening that extends from said lower side to said upper side;

a collar having a flange that extends through said central opening;
first bearing means located between said collar and said lower side of said base member;
second bearing means aligned on said upper side of said base by said flange;
a mounting member having an annular ring with a plurality of radial arms extending therefrom, said annular ring being connected to said seat and positioned atop of said second bearing means; and
fastener means vertically extending through said flange and mounting member for joining said mounting member with said collar to form a unitary structure, said seat responding to any inertia force directed along a plane perpendicular to said base by directing an overturning moment into said mounting member, said unitary structure efficiently distributes said overturning moment into said support assembly while substantially maintaining said mounting member in a horizontal plane.

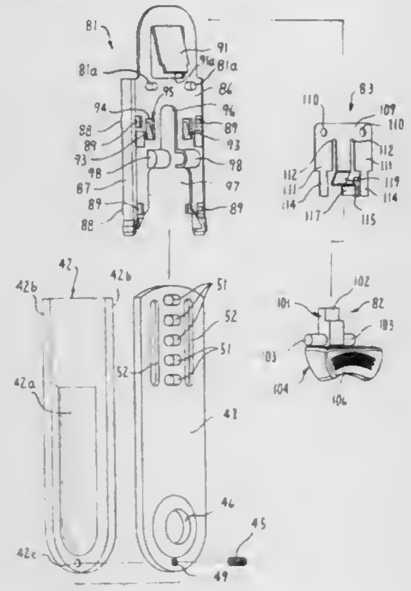
5,853,222
HEIGHT-ADJUSTABLE CHAIR BACK

Richard N. Roslund, Jr., Jenison, and Larry A. Wilkerson, Comstock, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 6, 1997, Ser. No. 870,953

Int. Cl.^{6} B60N *2/02*

U.S. Cl. 297—353 **20 Claims**



1. A chair comprising:
a seat assembly mounted on a base:
   a vertically elongate upright which is connected to a rear section of said seat assembly and extends upwardly from said rear section;
   a back assembly having an upwardly extending frame which includes a pocket therein which opens downwardly toward said upright; and
   a height-adjustment assembly which is slidably received in said pocket of said back assembly, said height-adjustment assembly including a housing adapted to be slidably connected to said upright, and engagement means connected to said housing for releasably engaging said height-adjustment assembly with said upright to support said back assembly at a selected height relative to said seat assembly, said height-adjustment assembly including securing means connected to said housing for removably securing said height-adjustment assembly in said pocket in response to sliding of said height-adjustment assembly therein, said securing means defining a connection between said height-adjustment assembly and said back assembly which is free of separate independent fasteners.

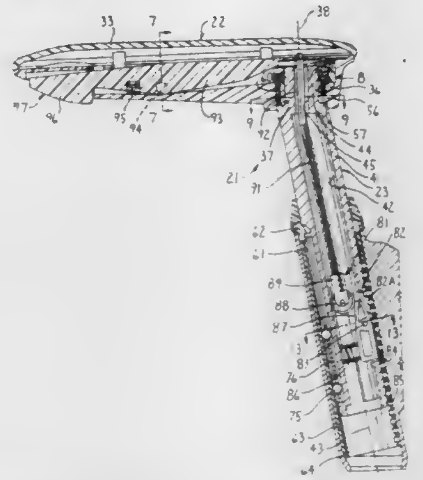
5,853,223
HEIGHT-ADJUSTABLE CHAIR ARM ASSEMBLY

Robert T. Ritt, Holand Township, Ottawa County; Steve J. Nemeth, Jr., Park Township, Ottawa County, and Richard N. Roslund, Jr., Georgetown Township, Ottawa County, all of Mich., assignors to Haworth, Inc., Holland, Mich.

Division of Ser. No. 486,613, Jun. 7, 1995, Pat. No. 5,647,638. This application May 15, 1997, Ser. No. 857,032

Int. Cl.^{6} A47C *7/54*

U.S. Cl. 297—411.36 **24 Claims**



1. In a chair having a seat assembly, a back projecting upwardly from and adjacent a rear edge of the seat assembly, and a height-adjustable arm assembly mounted on and disposed adjacent one side of said seat assembly and projecting upwardly in cantilevered relation therefrom, the improvement wherein said arm assembly comprises:
   an arm attachment bracket fixed to said seat assembly and including a vertically elongate support tube disposed adjacent said one side of said seat assembly, said support tube defining therein a lengthwise and vertically elongate guide bore which is open at the upper end thereof;
   a vertically elongate support column lengthwise movably supported within said bore and projecting upwardly therefrom and terminating at an upper end part which is disposed at an elevation spaced upwardly above said seat assembly;
   a horizontally elongate armrest mounted on the upper end part of said support column and projecting horizontally therefrom so as to terminate at a free end, said armrest having a hub part which is horizontally rotatable supported on the upper end part of said support column for permitting said armrest to be horizontally swingably displaced about a substantially vertical axis relative to said support column;
   a releasable latch arrangement coacting between the support column and the support tube for permitting the support column to be stationarily fixedly positioned relative to the support tube at any one of a plurality of selectable height positions, said latch arrangement including a latch member movably supported on and carried by said support column and being movable between a release position and a latching position, said latch member when in said latching position being engaged with one of a series of latching stops which are formed in lengthwise-spaced relation along said support tube; and
   a latch-activating mechanism extending from said armrest through said support column for displacing said latch member into a released position, said latch-activating mechanism including an activating lever extending lengthwise of and pivotally supported on said armrest and terminating in a manually-engageable button part disposed on an underside of

said armrest adjacent the free end thereof, and an activating rod extending interiorly and lengthwise of said support column and having a lower end cooperating with said latch member and an upper end cooperating with said activating lever, the upper end part of said column comprises a tube portion which is rotatably supported within said hub part, said activating rod having an upper end part which projects coaxially upwardly through said tube portion and is engaged by a rearward end of said activating lever.

5,853,224

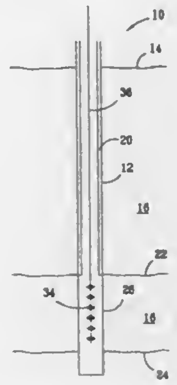
METHOD FOR COMPLETING A WELL IN A COAL FORMATION

Walter C Riese, Katy, Tex., assignor to Vastar Resources, Inc., Houston, Tex.

Filed Jan. 22, 1997, Ser. No. 787,458

Int. Cl.⁶ F21B *43/263;* F21C *37/14*

U.S. Cl. 299—13 **14 Claims**



1. A method for completing a cavitated well penetrating a subterranean coal formation, the method consisting essentially of:

a) positioning a perforating gun in an uncased portion of a well penetrating the coal formation;

b) perforating the coal formation; and,

c) forming a cavity in the coal formation by producing fluids and particulate coal from the coal formation through the well.

5,853,225

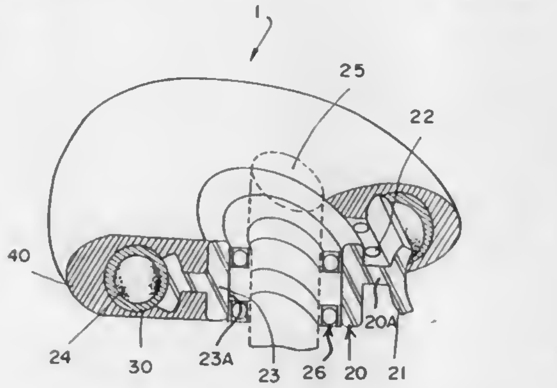
ROLLER SKATE WHEEL ASSEMBLY

Ing Chung Huang, No. 15 Reh-Her 1st Street, Kaohsiung City, Taiwan

Filed May 5, 1995, Ser. No. 435,953

Int. Cl.⁶ B60B *5/02*

U.S. Cl. 301—5.3 **20 Claims**



1. A skate wheel assembly comprising:

a) an annular-shaped bearing frame including a tire rim having a substantially continuous circumferential support surface for supporting a tire tube thereon, a bearing seat defining a central passage therethrough for receiving a bearing and wheel shaft assembly, and a bridge portion connecting the tire rim and bearing seat;

b) an inflatable tire tube mounted on the circumferential support surface of the tire rim; and

c) a cover layer molded around at least portions of the tire tube, the tire rim, the bridge portion and the bearing seat for securing the tire tube to the circumferential support surface of the tire rim and forming an integrated wheel assembly with the bearing frame.

5,853,226

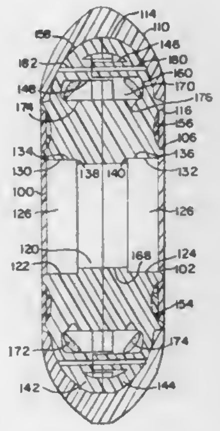
HIGH PERFORMANCE IN-LINE ROLLER SKATE WHEELS WITH PERMEABLE CORES

Charles J. Lee, 11404 Prescott La., Westchester, Ill. 60154

Filed Jun. 11, 1996, Ser. No. 661,602

Int. Cl.⁶ B60B *5/02*

U.S. Cl. 301—5.3 **14 Claims**



1. An in-line roller skate, comprising:

a set of permeable wheels, each of said permeable wheels comprising

a gas permeable core having a hub with at least one bearing seat, spokes extending radially outwardly of said hub, an outer portion having a tire-engaging surface secured to said spokes and at least one opening for passage of gases during molding of said core to substantially prevent air bubbles in said core;

a bearing securely seated on said bearing seat of said hub;

a tire securely mounted on said core and positioned against said tire engaging surface of said outer portion of said gas permeable core; and

wherein said gas permeable core comprises complementary core sections and at least one pin connecting said core sections, and said pin comprising a hollow pin defining a tunnel providing said opening.

5,853,227

STRUCTURE FACILITATING LUBRICATION OF WHEEL BEARINGS

John W. Schmidt, III, 26 Cypress Dr., Palm Harbor, Fla. 34684

Filed Oct. 30, 1996, Ser. No. 770,893

Int. Cl.⁶ F16C *33/10*

U.S. Cl. 301—5.7 **14 Claims**

1. A wheel and axle assembly incorporating a cleaning and lubricating passageway comprising in combination,

(a) a wheel having a central bore,

(b) an axle bolt means for carrying said wheel with said bolt means having an outer end,

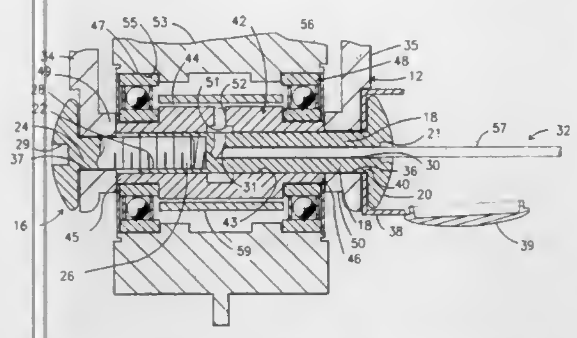
(c) said wheel carrying internally a pair of spaced shielded bearings with the inner race of said bearings non-rotatably mounted on said bolt means and the outer race of said bearings non-rotatably mounted in said central bore of said wheel,

(d) said wheel being carried by said bearing means for rotation relative to said axle bolt means,

(e) said bolt means including spacer means non rotatably mounted thereon intermediate said pair of spaced bearings for maintaining the space therebetween,

(f) a cleaning and lubricating fluid passageway extending inwardly from said outer end of said bolt means and radially outwardly through said spacer means to the space between said bearings, and

(g) shroud means spaced from said central bore of said wheel and surrounding the periphery of said spacer means for directing fluid from said passageway in a direction axially outwardly into said bearing races.



5,853,228

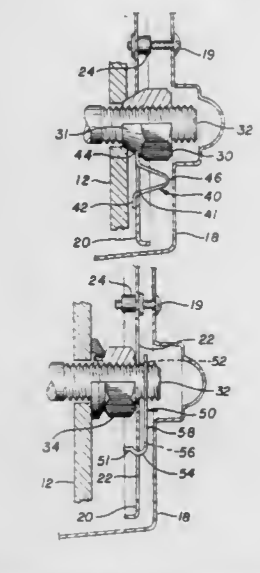
WHEEL COVER RETAINER DEVICE

Tony Patti, 13920 Mt. McClellan Blvd. #B, Stead, and Charles S. Lowther, 9494 Spearbead Way, Reno, both of Nev. 89506

Filed Apr. 18, 1997, Ser. No. 844,403

Int. Cl.⁶ B60B *7/14*

U.S. Cl. 301—37.37 **20 Claims**



1. A lock for securing a wheel cover retainer ring to a wheel, the retainer ring having at least one hole defined by an edge for receiving a lug nut, the anti-rotation lock comprising:

(A) a spring portion with a first and second end for producing an outward force,

(B) an edge surface on said first end of said spring portion for abutting the edge of the hole, and

(C) a nut surface on said second end of said spring portion for abutting the lug nut,

whereby the lock may be inserted between the lug nut and the edge to lock the retainer ring on the wheel.

5,853,229

METHOD AND APPARATUS FOR CONTROLLING THE BRAKE SYSTEM OF MOTOR VEHICLES WITH ELECTRIC DRIVE

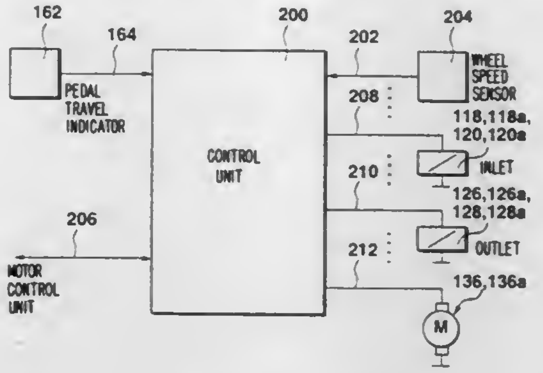
Karl-Heinz Willmann, Freiberg; Juergen Breitenbacher, Winterbach; Andreas Kellner, Moeglingen, and Ludwig Dreilich, Eberdingen-Hochdorf, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 9, 1996, Ser. No. 762,194

Claims priority, application Germany, Feb. 6, 1996, 196 04 134.1

Int. Cl.⁶ B60T *13/74*

U.S. Cl. 303—3 **15 Claims**



1. Method for controlling a brake system of a vehicle having wheels including drive wheels driven by an electric drive motor, said brake system comprising a brake pedal which undergoes pedal travel in response to a driver's braking command, means for effecting regenerative braking by said electric drive motor, and a hydraulic friction brake system comprising wheel cylinder means at each wheel, components for implementing at least one ABS function, a control device for determining degree of demand of the driver for braking, and valve arrangements for controlling the hydraulic friction brake system, said method comprising:

effecting brake torque by regenerative braking by said motor when the demand of the driver for braking is in a first range of demand for braking and

controlling said friction brake system when the demand of the driver for braking is in the first range of demand for braking, so that pressure created by the pedal travel caused by depression of the brake pedal by the driver produces substantially no braking effect compared with the brake torque produced by the regenerative braking at said drive wheels, said valve arrangements being controlled so that hydraulic pressure medium which flows into the wheel cylinder means as a result of depression of the brake pedal flows out of the cylinders.

5,853,230

METHOD AND APPARATUS FOR CONTROLLING THE BRAKE SYSTEM OF A VEHICLE

Jochen Wagner, and Helmut Wiss, both of Moeglingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 18, 1997, Ser. No. 844,066

Claims priority, application Germany, Apr. 20, 1996, 196 15 805.2

Int. Cl.⁶ B60T *8/34;8/66*

U.S. Cl. 303—113.4 **11 Claims**

1. A method for controlling a brake system of a vehicle, said system comprising a brake pedal actuated by a driver, said method comprising

determining a magnitude representing pedal actuation by the driver,

determining based at least on the magnitude of pedal actuation whether of the brake system,

the brake system is to be controlled according to a control phase or a regulation phase,

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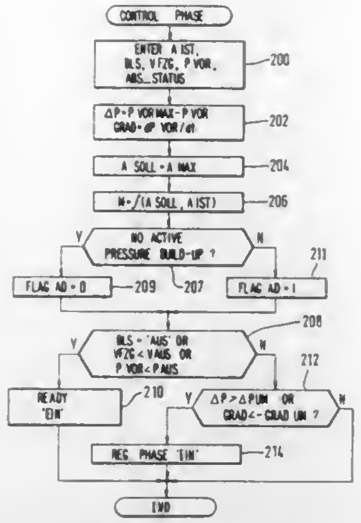

CONTROL PHASE
ENTER A IST, BLS, VFZG, P VOR, ABS_STATUS
200
ΔP=P VOR MAX-P VOR GRAD=dP VOR/dt
202
A SOLL=A MAX
204
M=/(A SOLL, A IST)
206
Y
NO ACTIVE PRESSURE BUILD-UP ?
N
211
FLAG AD=0
209
207
FLAG AD=1
208
Y
BLS='AUS' OR VFZG<VAUS OR P VOR<P AUS
N
212
READY 'EIN'
210
Y
ΔP>ΔPUM OR GRAD<-GRAD UM ?
N
REG. PHASE 'EIN'
214
END

determining a nominal value for vehicle deceleration, said nominal value being determined according to a predetermined value when the brake system is to be controlled according to said control phase,

said nominal value for vehicle deceleration being based on the magnitude of pedal actuation when the brake system is to be controlled according to said regulation phase,

determining actual vehicle deceleration, and

controlling said brake system so that the actual vehicle deceleration tends toward said nominal vehicle deceleration.

5,853,231
PRESSURE CONTROL DEVICE

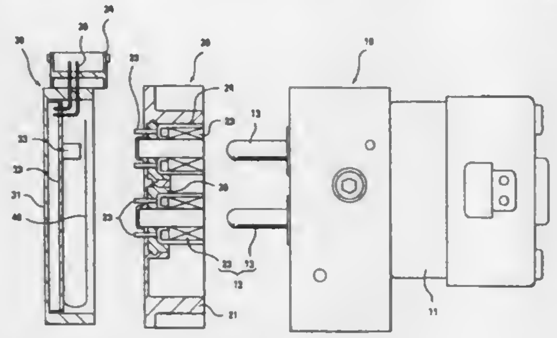
Moritaka Iwamura; Toshihiro Hamada, and Hiromitsu Ogino, all of Hamakita, Japan, assignors to Nisshinbo Industries Inc., Tokyo, Japan

Continuation of Ser. No. 511,808, Aug. 7, 1995, abandoned. This application Aug. 4, 1997, Ser. No. 905,569

Claims priority, application Japan, Aug. 9, 1994, 6-208135

Int. Cl.⁶ B60T *8/36*

U.S. Cl. 303—119.2 **2 Claims**



1. A pressure control device comprising:

a hydraulic unit having a plurality of pressure control valves;

a coil unit having a coil body, and a plurality of coils installed in said coil body, each coil being associated with one of said pressure control valves for operating said valve;

an electronic controlling unit having an electronic controlling unit body, an electronic controlling board mounted in said electronic controlling unit body and having a controlling circuit thereon for controlling said coils to operate said valves, said controlling circuit being electrically connected to said coils, and a connector electrically mounted on said body and connected to said controlling circuit;

each of said hydraulic unit, said coil unit, and said electronic controlling unit being separately formed, said coils being attached to an outside of the pressure control valves;

means for physically, supportingly and electrically connecting said electronic controlling unit and said coil unit; and

a flexible conductive sheet electrically connecting between said electronic controlling unit and said coil unit.

5,853,232

Patent Not Issued For This Number

5,853,233
CRAWLER TRACK ASSEMBLY

Robert John Turner, 13 Cullen Street, Warwick, Australia

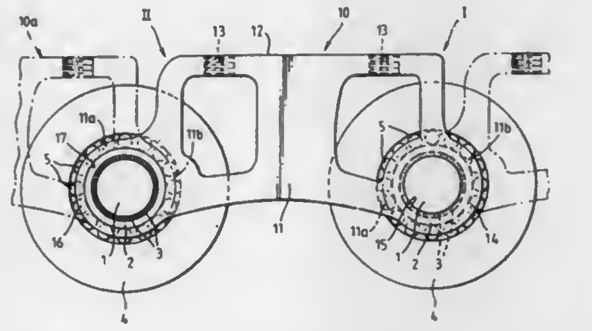
PCT No. PCT/AU89/00106, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO89/08577, PCT Pub. Date Sep. 21, 1989

PCT Filed Mar. 17, 1989, Ser. No. 439,371

Claims priority, application Australia, Mar. 18, 1988, PI7317

Int. Cl.⁶ B62D *55/18*

U.S. Cl. 305—123 **9 Claims**



1. A crawler track mechanism for tracked vehicles of a type that include a drive sprocket and an idler sprocket, said crawler track mechanism comprising a plurality of track links and a plurality of bush assemblies, said track links pivotally connected at respective ends to form a continuous track, each said track link comprising a pair of spaced side members joined along their lower edges by a transverse base, said side members including at opposed ends thereof, aligned apertures to receivably locate a respective said bush assembly, each said bush assembly comprising a cylindrical pin having rotatably journalled thereon a first sleeve member and a substantially cylindrical second sleeve member rotatably journalled on said first sleeve member, each said track link being pivotally interconnected to an adjacent track link by a respective said bush assembly, and each said track link comprising first and second releasably engageable body members which clampingly engage respective said bush assemblies in said aligned apertures, whereby disengagement between said first and second body members of adjacent track links permits removal of the bush assembly pivotally interconnecting said adjacent track links.

5,853,234

Patent Not Issued For This Number

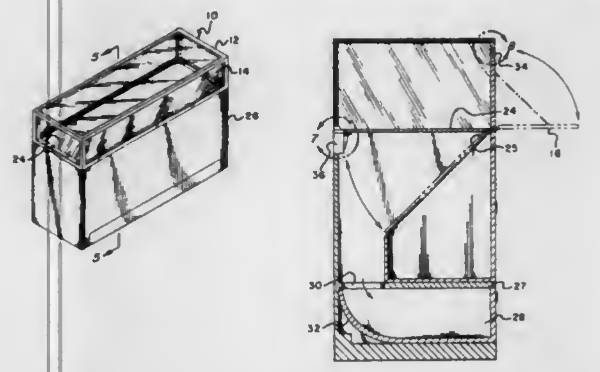
5,853,235
BURGLAR-PROOF JEWELRY CASE

Harry W. Barnes, 1640 Dyre St., Philadelphia, Pa. 19124

Filed May 30, 1997, Ser. No. 862,947

Int. Cl.⁶ A47F *3/00*

U.S. Cl. 312—117 **11 Claims**



1. A burglar-proof jewelry case comprising:

a showcase having first and second spaced apart shelves therein, on which shelves jewelry may be placed for display, said shelves being arranged vertically with respect to each other, said first shelf completely overlying said second shelf;

said shelves being mounted for pivotal movement between an operative substantially horizontal position and an inoperative position wherein said shelves extend at least partially downwardly so that jewelry can slide off of said shelves;

electrically operated latch means for maintaining said shelves in said operative position, said latch means being capable of being electrically operated so as to release said shelves thereby allowing said shelves to move into said inoperative position;

said showcase further including a bottom wall having an opening formed through a portion thereof;

a secure chamber located within said showcase beneath said bottom wall, said secure chamber communicating with said opening in said bottom wall and having a curved wall beneath said opening whereby when said latch means is activated, said shelves fall by gravity from said operative position to said inoperative position allowing jewelry thereon to fall off of said shelves, through said opening wherein the jewelry is guided by said curved wall into an inaccessible portion of said secure chamber.

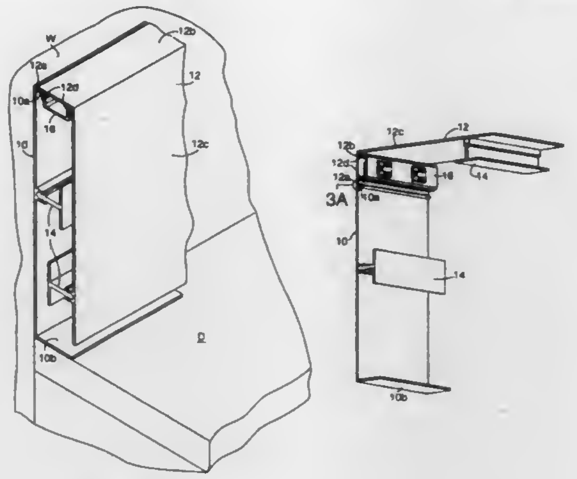
5,853,236
DESKTOP RACEWAY

Wilfred R. Rogers, Bristol, and Salvatore A. Cancellieri, Plainville, both of Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Oct. 1, 1996, Ser. No. 724,351

Int. Cl.⁶ A47B *81/00*

U.S. Cl. 312—223.6 **14 Claims**



1. A Desktop Raceway comprising:

a horizontally extending back plate having upper and lower marginal edges;

a cover for said back plate, said cover being generally L-shaped in vertical section with integrally formed top and front panels; said cover top panel including depending ribs,

a channel shaped component having an elongated U-shape configuration with upstanding legs secured to said ribs and cooperating with said cover top panel to define a wireway therebetween,

said top panel having a marginal edge pivotably connected to said upper marginal edge of said back plate and being movable between closed and open positions;

said front panel having a lower marginal edge cooperable with said lower marginal edge of said back plate to define at least one slot; said back plate and cover defining a rear marginal edge of said back plate and said upper marginal edge of said cover defining integrally formed pivotal elements, one of said elements comprising a longitudinally extending cylindrical shape, the other of said elements defining a rear marginal edge socket

whereby said cover in its closed position cooperates with said back plate to define a cavity therebetween, and said slot being open into said cavity for accommodating cabling associated with equipment provided on the desktop.

5,853,237
BASE FOR LATERAL FILE

Mark A. Powell, West Oliver, and Thomas J. Osterman, Grand Haven, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jan. 31, 1997, Ser. No. 794,265

Int. Cl.⁶ A47B *47/00*

U.S. Cl. 312—257.1 **23 Claims**

1. In a lateral file cabinet including a hollow box-like enclosure having a hollow interior which is open on a front thereof, said enclosure being defined by a horizontally enlarged bottom wall, first and second laterally spaced apart side walls extending upwardly from said bottom wall, a horizontally enlarged top wall extending horizontally between said side walls, and a vertically enlarged back wall connected to said first and second side walls and said top and bottom walls, said file cabinet including at least one drawer slidably received within said enclosure above said bottom wall and slide means for connecting said drawer to said

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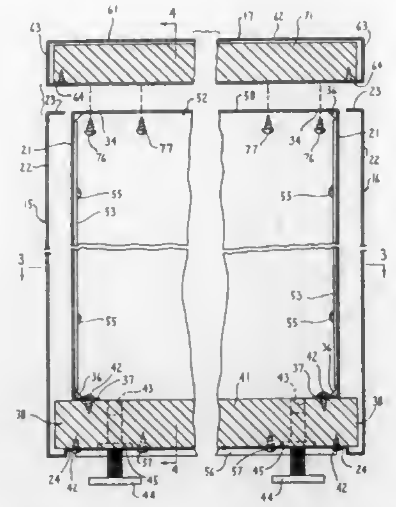
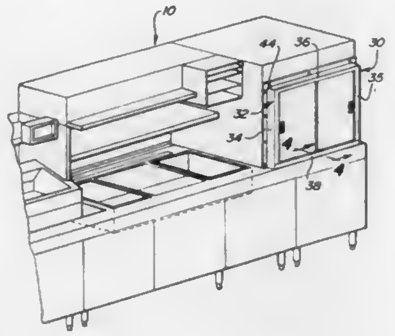
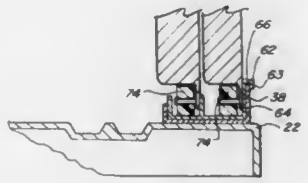


enclosure such that said drawer is horizontally slidable into and out of said hollow interior between respective closed and open positions, comprising the improvement wherein said side walls each include a horizontally elongate channel proximate said bottom wall, said channels opening inwardly in opposing relation to one another, said bottom wall including a horizontally enlarged base panel having opposite side edge regions fixedly seated within said channels of said side walls respectively, said side walls being formed of sheet metal, and said base panel being formed of a relatively thick non-metal material having a density of about 25 pounds per cubic foot or more so as to counterbalance said drawer when in said open position.

5,853,238
RETROFIT CABINET DOOR ASSEMBLY
Michael G. Cullen, Sterling Heights, and Thomas P. Cullen, Fraser, both of Mich., assignors to Elite Corporate Concepts, Warren, Mich.
Filed May 30, 1997, Ser. No. 865,690
Int. Cl.^{6} A47B *88/00;* E05D *15/06*
U.S. Cl. 312—304 **19 Claims**





1. A retrofit cabinet door assembly for a steam cabinet comprising:

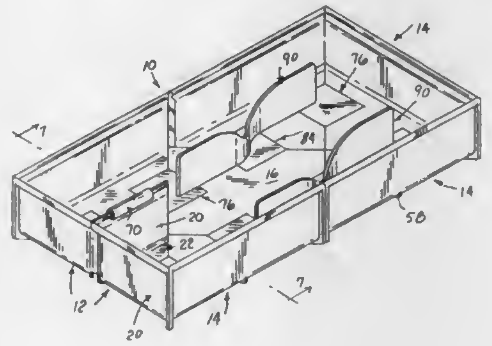
a door frame including a flange extending about at least a portion of a periphery of said door frame, said flange having a plurality of apertures therein for mounting of said door frame to the steam cabinet;

a removable one-piece door track supported within said door frame, said door track being planar and extending longitudinally, said door track including an integral lip thereon, said lip including a downwardly extending edge that cooperates with said lip to form a U-shaped channel, said U-shaped channel fixedly securing said door track to said door frame;

a removable door bumper positioned within and secured to said door frame; and

a removable door positioned within said door frame and engaging said door track for movement within said door frame along said door track.

5,853,239
DRAWER ORGANIZER
Douglas M. Laib, Orlando, and Samuel E. Hodges, Leesburg, both of Fla., assignors to Dart Industries Inc., Orlando, Fla.
Filed Jul. 23, 1997, Ser. No. 898,933
Int. Cl.^{6} A47B *88/00*
U.S. Cl. 312—348.2 **20 Claims**



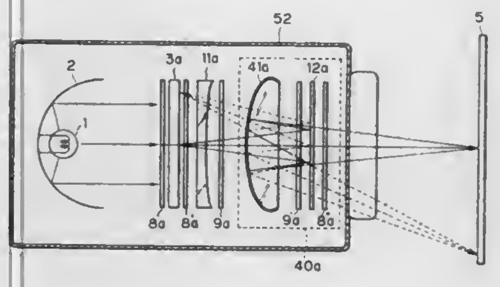
1. A drawer organizer, comprising:

multiple components for selective assembly, each of said components including a base panel having at least one opening therein and at least three edges, at least one of said edges being an abutment edge, said abutment edge of each of said components, upon assembly of said components into said drawer organizer, being immediately adjacent said abutment edge of an adjacent one of said components, and a portion, but less than all, of said components further including a wall extending upward from one of said at least three edges other than said abutment edge, each of said walls having an inner face with a groove defined therein, said components being assemblable with said walls of adjacent ones of said portion of said components in parallel adjacent engagement;

a plurality of connector plates for releasably securing said adjacent ones of said components, each of said connector plates having a mounting position in an overlying relationship to said base panels of said adjacent ones of said components, each of said connector plates including a plurality of projections extending therefrom, said projections being located to be received and releasably secured within said openings in said base panels of said adjacent ones of said components when said connector plates are in said mounting position; and

at least one mounting clip for releasably securing said walls of said adjacent ones of said portion of said components, each said at least one mounting clip selectively extending over said walls of said adjacent ones of said portion of said components with free ends of said at least one mounting clip received within said grooves.

5,853,240
PROJECTOR USING A SMALL-SIZE OPTICAL SYSTEM
Seiichi Tanaka, and Atsushi Yamanaka, both of Chiba, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 19, 1996, Ser. No. 770,052
Claims priority, application Japan, Dec. 22, 1995, 7-335447
Int. Cl.^{6} G03B *21/14*
U.S. Cl. 353—20 **5 Claims**



1. A small-size liquid-crystal projector comprising:

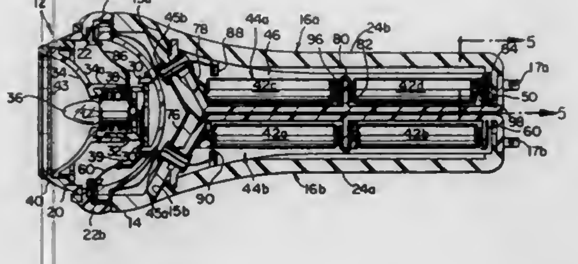
a liquid-crystal display;

a back-light for illuminating the liquid-crystal display;

a projecting optical device including a refracting element having a half-mirror coat on a curved surface thereof, a circularly polarized light selecting semitransparent mirror and a quarter-wave plate interposed between the liquid-crystal display and the circularly polarized light selecting semitransparent mirror, which components are disposed in turn from the liquid-crystal display side; and

optical correcting means for optically correcting distortion of a projectable image.

5,853,241
CONVERTIBLE FLASHLIGHT
Raymond Sharrah, Collegeville; Charles Craft, Lansdale; John DiNenna, Bridgeport, all of Pa., and Ludwin M. Mora, Columbus, Ohio, assignors to Streamlight, Inc., Norristown, Pa.
Filed Aug. 8, 1996, Ser. No. 693,484
Int. Cl.^{6} F21L *7/00*
U.S. Cl. 362—105 **19 Claims**

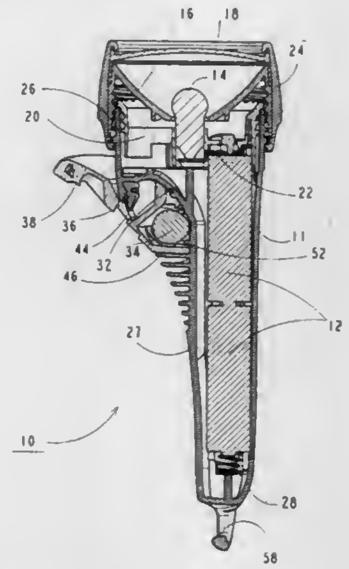


1. A flashlight, comprising

a head portion having an interior containing a lamp, the head portion having a pair of angled rear surfaces relative to a longitudinal axis of the flashlight; and

a pair of arms adapted to form a handle for the flashlight in a first configuration, each arm having a forward surface mounted to different ones of the angled surfaces of the head portion by pivotal mountings, the arms extending rearwardly and in parallel from the head in the first configuration, the arms being axially rotatable on the pivotal mountings to a second configuration wherein the arms diverge outwardly from the head portion.

5,853,242
PORTABLE TORCH WITH A CLIP-ON SUPPORT PLATE
Boris Bouffay, Grenoble, and Paul Petzl, Barraux, both of France, assignors to Zedel, Crolles, France
Filed Oct. 28, 1997, Ser. No. 959,526
Claims priority, application France, Nov. 5, 1996, 96 13699
Int. Cl.^{6} F21L *11/00*
U.S. Cl. 362—191 **6 Claims**



1. An electric torch light comprising:

an elongate case containing a current source to supply a bulb, said case comprising a base, and a bottom,

a reflector and screen assembly securedly affixed to a rotating ring screwed onto a threaded end of the case opposite the base,

and fixing means arranged on the bottom of the case to enable the torch light to be used as a head-mounted lamp, wherein:

the fixing means comprise a fixing plate designed to cooperate by clipping with locking means provided in a blind orifice of the case and arranged to constitute positive locking of the fixing plate in the active position, moving said locking means from the active position to the inactive position requiring a manual unlocking operation to uncouple the case from the plate,

and the locking means comprise a pair of securing buttons located on the two opposite sides of the orifice and designed in said active position to block two latching studs securedly affixed to the fixing plate.

5,853,243
HIGH MOLECULAR WEIGHT ELASTOMER PROCESSING SYSTEM FOR CHEWING GUM
James A. Duggan, Machesney Park, Ill.; Bharat K. Jani, East Brunswick, N.J.; Tony R. Puri, Sparta, N.J.; Susan B. Filardo, Tuxedo, N.Y., and Arthur W. Upmann, Rockton, Ill., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Oct. 3, 1996, Ser. No. 725,406
Int. Cl.^{6} B29B *7/60*
U.S. Cl. 366—76.9 **32 Claims**

1. An apparatus for melting and processing a high molecular weight elastomeric material, such apparatus comprising:

a housing;

a conveyance section attached to and operatively associated with said housing for conveying melted elastomeric material from said housing;

a storage section attached to and operatively associated with said conveyance section for storing melted elastomeric material received from said conveyance section;

a plurality of heated plate members positioned in said housing for melting said elastomeric material;

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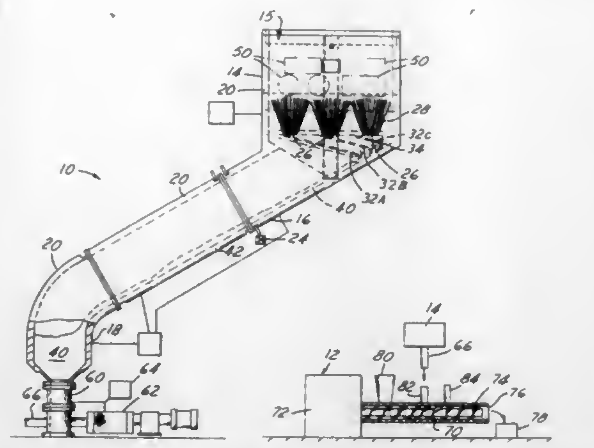


said plurality of heated plate members being arranged in at least one fan-shape grouping; and

at least one diverter member positioned in said housing immediately adjacent said heated plate members for directing melted elastomeric material from said heated plate members into said conveyance section.

5,853,244

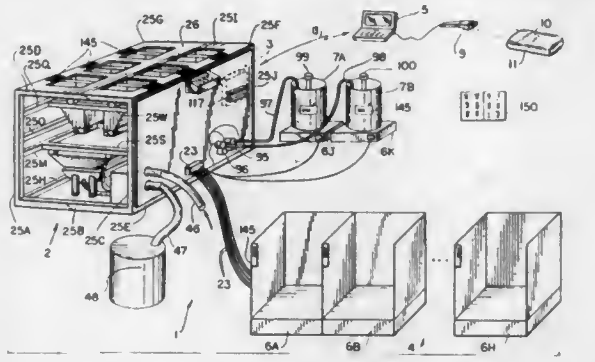
INTELLIGENT SYSTEM AND PROCESS FOR AUTOMATED MONITORING OF MICROINGREDIENT INVENTORY USED IN THE MANUFACTURE OF MEDICATED FEED RATIONS

Charles Henry Hoff, Ault, Colo., and Bernard John Bergen, Encinitas, Calif., assignors to Lextron, Inc., Greeley, Colo.

Continuation of Ser. No. 203,017, Feb. 28, 1994, Pat. No. 5,487,603. This application Jan. 23, 1996, Ser. No. 590,356

Int. Cl.^{6} B01F *15/04*

U.S. Cl. 366—141 **28 Claims**



26. A system of filling a programmable microingredient dispensing and mixing machine with microingredients stored in the microingredient inventory of an animal feedlot, said system comprising:

a microingredient dispensing and mixing machine installed in said animal feedlot, said microingredient dispensing and mixing machine including

an information processing means for creating and managing an inventory record file relating to the inventory of microingredients for dispensing in said machine,

a plurality of storage scales, each said storage scale having

a storage surface supporting one or more microingredient packages, each containing a preassigned assigned type and particular quantity of microingredient,

first weight measuring means for measuring the weight of said one or more packages of said preassigned type of microingredient supported by said storage surface, and producing a first weight information for recording in said inventory record file, said first weight information being representative of the measured weight of said one or more packages of said preassigned type of microingredient,

a weigh hopper, disposed within said housing, and for temporarily storing an amount of microingredient dispensed into said weigh hopper from one of said dispensing bins, said weigh hopper including means for discharging said measured amount of microingredient under the control of said programmed control means,

second weight measuring means, disposed in said housing, for measuring said amount of microingredient stored in said weigh hopper and producing a second weight information for recording in said inventory record file, said second weight information being representative of the weight of said measured amount of microingredient stored in said weigh hopper,

a plurality of dispensing means, each said dispensing means including

means for storing a supply of a preassigned type of microingredient, and

means for dispensing a specified amount of said preassigned type of microingredient into said weigh hopper for measurement under the control of said programmed control means,

third weight measuring means for independently measuring the weight of microingredient stored in each one of said dispensing means under the control of said programmed control means, and producing third weight information for recording in said inventory record file, said third weight information being representative of the measured weight of the microingredients stored in each one of said dispensing means, and

a mixing tank for containing one or more types of microingredient discharged from said weigh hopper under the control of said programmed control means, said mixing tank including

means for mixing said discharged microingredients with a specified amount of consumptive fluid carrier to form a slurry mixture, and

means for transporting said slurry mixture to a storage tank for subsequent usage under the control of said programmed control means;

wherein said information storage and processing system includes means for creating an inventory record file for recording information regarding the particular type of microingredient preassigned for storage upon each one of said storage scales, the weight of microingredient stored upon each said storage scale, and the weight of microingredient stored in each said dispensing means;

means for measuring the weight of microingredient upon each said storage scale, producing first weight measurement information representative of the weight of the microingredient upon each said storage scale, and recording the produced first weight measurement information in said inventory record file;

means for measuring the weight of microingredient in each said dispensing means, producing second weight measurement information representative of the weight of the microingredient in each said dispensing means, and recording the produced second weight measurement information in said inventory record file;

means for removing one or more said microingredient packages from one or more of said storage scales, and emptying the microingredient contents of said one or more microingredient packages into one or more of said preassigned dispensing means;

means for measuring the weight of microingredient upon each said storage scale, producing third weight measurement information representative of the weight of the microingredient stored upon each said storage scale, and recording the produced third weight measurement information in said inventory record file;

means for measuring the weight of microingredient in each said dispensing means, producing fourth weight measurement information representative of the weight of the microingredient stored in each said dispensing means, and recording the produced fourth weight measurement information in said inventory record file; and

means for analyzing the first, second, third and fourth weight measurement information recorded in said inventory record file, in order to detect any discrepancies between the amount of microingredient removed from said one or more storage scales and the amount of microingredient emptied into said one or more dispensing means, and producing information indicative of any such discrepancies for recordation in said inventory record file.

5,853,245

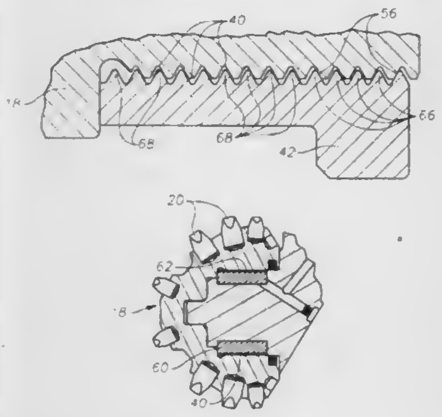
ROCK BIT CUTTER RETAINER WITH DIFFERENTIALLY PITCHED THREADS

Randall R. Price, Houston, Tex., assignor to Camco International Inc., Houston, Tex.

Filed Oct. 1, 1997, Ser. No. 942,128

Int. Cl.^{6} E21B *10/22*

U.S. Cl. 384—96 **14 Claims**



1. A rolling cutter drill bit comprising:

a bit body,

at least one bearing spindle on said bit body,

a rolling cutter rotatably mounted on said bearing spindle,

a first set of screw threads formed in one of said cutter or said bearing spindle,

a portion of said first set of screw threads having a first thread pitch,

a bearing mounted between said cutter and said bearing spindle, said bearing comprising a split threaded ring having a second set of screw threads, a portion of said second set of screw threads having a second thread pitch,

said split threaded ring is in screw threaded engagement with one of said cutter or said bearing spindle,

wherein said first thread pitch is different from said second thread pitch.

5,853,246

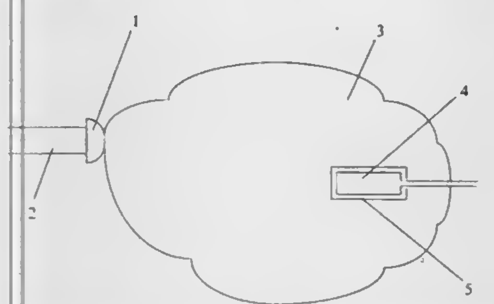
WET-BULB THERMOMETER

Val Lowder, 294 E. 50 North, Smithfield, Utah 84335

Filed Feb. 6, 1995, Ser. No. 384,968

Int. Cl.^{6} G01K *13/00;13/02*

U.S. Cl. 374—109 **3 Claims**



1. A process for determining the wet-bulb temperature of relatively still air, which comprises:

passing pressurized water through a nozzle to produce a mist of water in the air the wet-bulb temperature of which is to be determined;

placing a temperature sensor, with respect to said nozzle, in such a position as to assure that said temperature sensor will be within the mist of water produced by the nozzle; and

measuring the temperature of the air within the mist of water with the temperature sensor, said measured temperature corresponding to the wet-bulb temperature of the air.

2. A wet-bulb thermometer, which comprises:

a nozzle for connection to a source of pressurized water so that when such pressurized water is conducted to said nozzle, said nozzle will produce a continuous, unconfined mist of water in the air the wet-bulb temperature of which is to be determined; and

a temperature sensor to measure air temperature during the production of the mist, said temperature sensor having been placed, with respect to said nozzle, in such a position as to assure that said temperature sensor will be within the mist of water produced by the nozzle so that the air around the temperature sensor will be air that is completely saturated with water vapor and that the temperature measured by the sensor will, therefore, be the wet-bulb temperature of such air and said temperature sensor being capable of accumulating water only in a film on the surface of said temperature sensor so that heat will not be conducted to such water from external sources, wherein the temperature sensor is entirely located somewhat below the nozzle to account for the effect of gravity upon the mist of water.

5,853,247

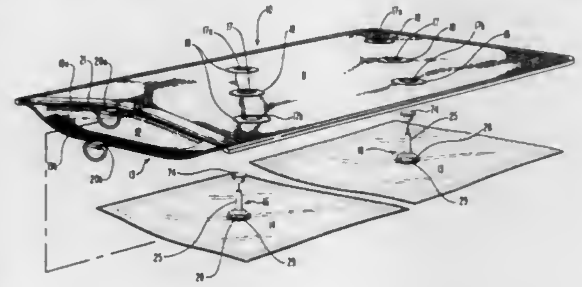
SAMPLE BAG CONTAINER

John Bruce Shroyer, 306 Aerie Ct., Manhasset, N.Y. 11030

Filed May 27, 1997, Ser. No. 864,023

Int. Cl.^{6} B65D *33/24*

U.S. Cl. 383—95 **11 Claims**



1. A sample bag container comprising, a pair of like shaped flat sections of material that are connected together at common edges along at least one side and include coupling means for releasably connecting the other common edges of the sections of material together so as to close said sections of material, forming an inner pocket between said sections of material having dimensions containing a conventional fluid sample bag; and at least one hole formed through one of said sections of material receiving a fluid sample bag port or valve fitted therethrough that includes a neck that connects to a transfer line to pass a gaseous material therethrough and is configured as a one way valve to include internal sealing means for closure against an unwanted back flow of said gaseous material.

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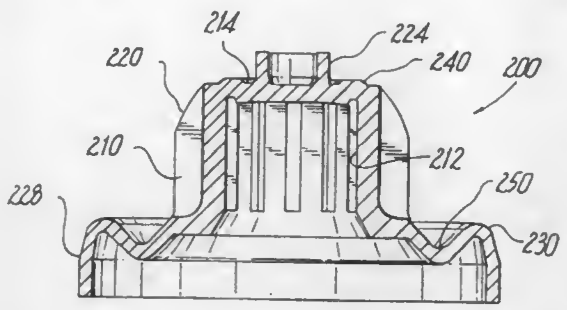
5,853,248
RADIAL THRUST BEARING

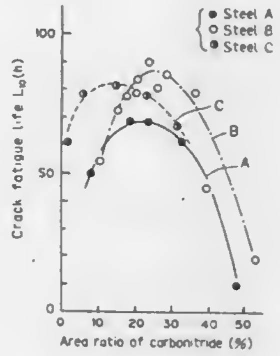
Frank Dalessandro, 291 Park St., New Canaan, Conn. 06840
Continuation of Ser. No. 532,074, Sep. 22, 1995, abandoned. This application Jun. 6, 1997, Ser. No. 870,975
Int. Cl.^{6} F16C *17/10*
U.S. Cl. 384—192 **27 Claims**



1. A monolithically formed bearing for use with a rotatable shaft positioned within a supporting structure, the bearing comprising a bearing body having a first end and a second open end dimensioned to receive the rotatable shaft and having an internal bore extending partially therethrough and defining a cylindrical bearing surface for receiving and supporting the rotatable shaft, an external bearing surface positioned adjacent the first end of the bearing body and having a radially inwardly tapered leading edge for engaging a complementary first abutment surface defined within an interior cavity of the supporting structure, and an annular thrust collar projecting from the first end of the bearing body beyond the leading edge of the external bearing surface for engaging a corresponding second abutment surface defined within the interior cavity of the supporting structure.

5,853,249
ROLLING CONTACT BEARING

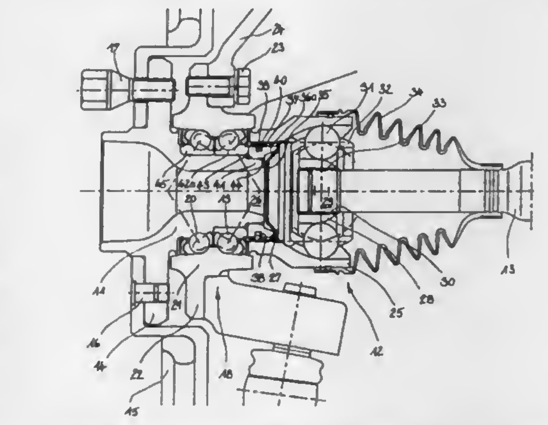
Kikuo Maeda, Mie-prefecture, and Katsunori Ito, Aichi-prefecture, both of Japan, assignors to NTN Corporation, Osaka, Japan
Filed Apr. 3, 1996, Ser. No. 627,943
Claims priority, application Japan, May 12, 1995, 7-138472
Int. Cl.^{6} F16F *33/32;33/62*
U.S. Cl. 384—492 **7 Claims**



1. A rolling contact bearing comprising:
- a bearing ring composed of an inner ring and an outer ring;
- rolling elements rotatably interposed between the inner and outer rings; and
- a peripheral snap ring groove provided on the outer periphery of the outer ring,
- said rolling contact bearing being characterized in that said groove comprises a mill scale portion substantially remaining unremoved and a carbonitrided layer beneath the mill scale portion, that said carbonitrided layer contains a precipitated carbonitride of an area ratio in a range of 10 to 30%, and that said area ratio is a maximum among area ratios of carbonitride determined in a plurality of microscopically visual fields observed in the layer within a depth of about 50 μm beneath the mill scale portion.

5,853,250
WHEEL HUB/JOINT UNIT WITH INTERMEDIATE RING

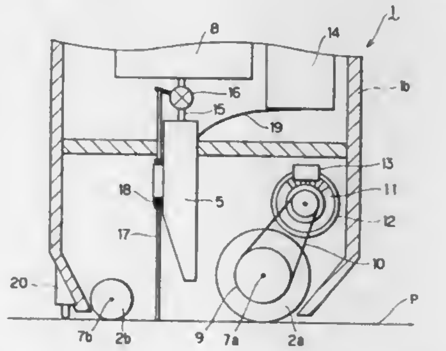
Werner Krude, Neunkirchen-Seelscheid, and Herbert Frielingsdorf, Lohmar, both of Germany, assignors to GKN Automotive AG, Lohmar, Germany
Filed Jan. 22, 1997, Ser. No. 787,366
Claims priority, application Germany, Jan. 24, 1996, 196 02 413.7
Int. Cl.^{6} F16C *19/36;* **F16D** *3/22*
U.S. Cl. 384—544 **14 Claims**



1. A wheel hub/constant velocity joint unit having a double-row bearing assembly arranged on a wheel hub and comprising at least one separate inner bearing ring pointing towards a constant velocity joint, characterized in
- that said outer joint part of said constant velocity joint comprises a central inner aperture which points towards said wheel hub and includes inner teeth, an annular member produced separately from the wheel hub and including outer teeth non-rotatingly inserted into said inner aperture, with removable axial connecting means between said outer joint part and said annular member, and said annular member non-removably connected to said wheel hub.

5,853,251
MANUAL PRINTING DEVICE

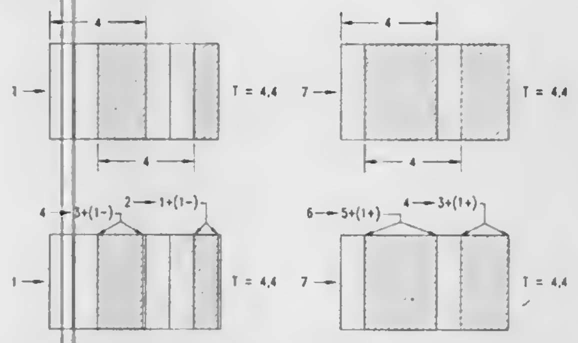
Koji Imai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Apr. 10, 1997, Ser. No. 829,118
Claims priority, application Japan, Apr. 11, 1996, 8-115368; Apr. 19, 1996, 8-122286
Int. Cl.^{6} B41J *3/36*
U.S. Cl. 400—88 **20 Claims**



1. A manual printing device manually scanned across a recording medium to record images in ink on the recording medium, the device comprising:
- a recording unit for recording images in ink on the print medium;
- an ink supply unit including an ink tank filled with ink and an ink tube for supplying ink from the ink tank to the recording unit;
- an ink tube valve disposed along the ink tube and for controlling supply of ink from the ink tank to the recording unit; and
- an ink tube valve drive unit opening the tube valve in response to the recording unit being brought into confrontation with the recording medium and closing the ink tube valve when no recording medium is in confrontation with the recording unit.

5,853,252
METHOD AND APPARATUS FOR U.P.C./EAN SYMBOLOGY AMBIGUOUS CHARACTER COMPENSATION BY LOCALIZED THERMAL ENERGY DOT ADJUSTMENT

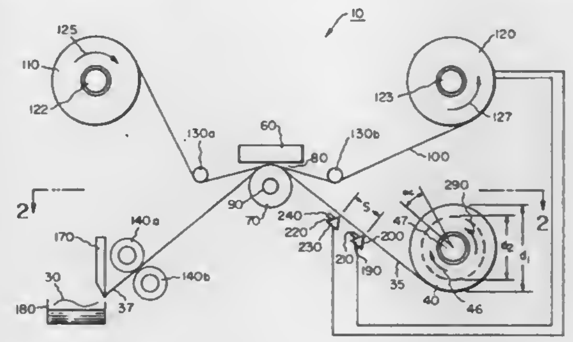
George Wright, IV, New Canaan, Conn., and H. Sprague Ackley, Seattle, Wash., assignors to Intermec Corporation, Everett, Wash.
Continuation of Ser. No. 640,577, Apr. 24, 1996, Pat. No. 5,676,473. This application May 20, 1997, Ser. No. 859,004
Int. Cl.^{6} B41J *5/00*
U.S. Cl. 400—103 **34 Claims**



1. A method of printing a symbol in a pre-defined symbology character set, the symbol being formed from a group of characters, each character being represented by a plurality of dark regions and light regions, each of the dark regions having a respective standard width, wherein selected pairs of the characters have an ambiguous decode upon edge-to-edge decoding and others of the characters have an unambiguous decode upon edge-to-edge decoding, and wherein the ambiguous decoding can be resolved by evaluating a cumulative width of the dark regions, the method comprising the steps of:
- representing the symbol with a plurality of rows of dots, each row forming a portion of each of a plurality of the characters; and
- for each row, printing a plurality of portions of the dark regions by:
  - narrowing at least one of the dark regions of a first one of the characters having the ambiguous decode by reducing the size of a dot at an edge of the dark region;
  - maintaining unchanged the dark regions of one of the characters having the unambiguous decode; and
  - printing the narrowed and the unchanged dark regions wherein the narrowed and the uncharged dark regions are in the symbol.

5,853,253
PRINTER AND METHOD ADAPTED TO PRECISELY POSITION A DYE RECEIVER PORTION

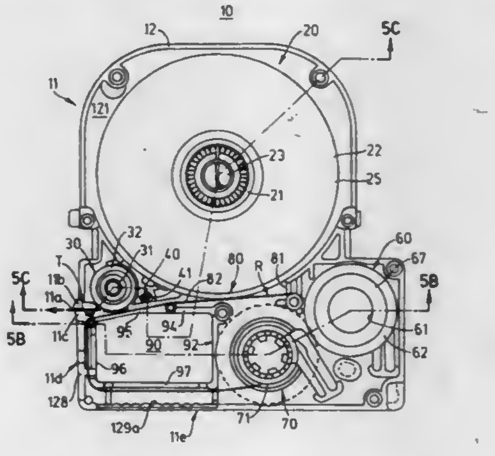
Young No, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 15, 1997, Ser. No. 950,646
Int. Cl.^{6} B41J *2/325;* **B65H** *23/185*
U.S. Cl. 400—120.02 **8 Claims**



1. A printer, comprising:
- (a) a print head for successively printing a plurality of images on a dye receiver unwinding from a dye receiver roll, each image having a constant predetermined length;
- (b) a rotator engaging the dye receiver roll for rotating the dye receiver roll by a plurality of incremental steps, so that the dye receiver is unwound from the dye receiver roll; and
- (c) a computer connected to said dye receiver roll for computing the incremental steps by which to rotate the dye receiver roll as a function of change of diameter of the dye receiver roll as each image of constant predetermined length is successively printed.

5,853,254
TAPE CARTRIDGE FOR USE IN A TAPE PRINTER

Daisuke Inakoshi, and Hideo Sodeyama, both of Nagano, Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan
Continuation-in-part of Ser. No. 357,126, Dec. 15, 1994, Pat. No. 5,597,247. This application Oct. 16, 1996, Ser. No. 731,559
Int. Cl.^{6} B41J *35/28*
U.S. Cl. 400—207 **14 Claims**



1. A tape cartridge for use in a tape printer, said tape cartridge comprising:
- a casing constituted by an upper casing part and a lower casing part;

- a tape supplying section positioned inside said casing;
- means defining a tape path for transferring a tape fed from said tape supplying section through a printing position;
- an ink ribbon supplying section positioned inside said casing;
- an ink ribbon recovery section positioned inside said casing;
- means defining an ink ribbon path extending from said ink ribbon supplying section and through the printing position to said ink ribbon recovery section, wherein said ink ribbon supplying section comprises an ink ribbon roll and a core shaft for said roll, said core shaft having two axial ends, each of said lower and upper casing parts has a respective bearing portion for rotatably supporting a respective end of said core shaft, and a dry lubricant interposed between each said core shaft end and a respective bearing portion to create a low coefficient of friction between said core shaft ends and said bearing portions, wherein said dry lubricant is constituted by a solid lubricant mixed into a molding material forming one of said core shaft ends and bearing portions.

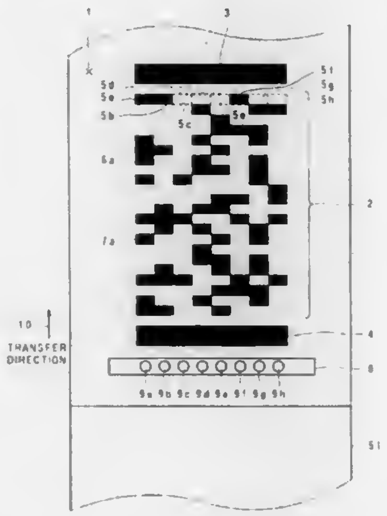
5,853,255
THERMAL PRINTER AND INK RIBBON USED THEREWITH
Hiroyuki Soshi, and Mitsuhiro Hamashima, both of Tokyo-to, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo-to, Japan

Filed Jan. 21, 1997, Ser. No. 785,995

Claims priority, application Japan, Jan. 19, 1996, 8-024811; Apr. 25, 1996, 8-127672

Int. Cl.^{6} B41J *35/16*

U.S. Cl. 400—237 **12 Claims**



1. An ink ribbon for use in a sublimation transfer type thermal printer, comprising:
- an ink ribbon body portion which is coated with color ink; and
- an ink ribbon head portion on which gradation correction data is recorded, said gradation correction data being recorded in a form of a matrix of discontinuous markings comprising a plurality of columns arranged in a transfer direction of the ink ribbon, said plurality of columns comprising a plurality of columns of gradation correction data sub-marks and a column-of parity sub-marks for a parity check of the sub-marks in rows of the matrix.

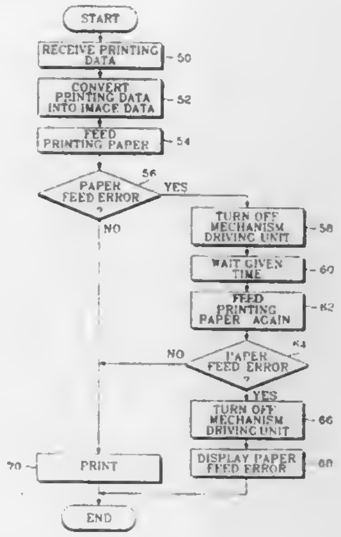
5,853,256
TECHNIQUE FOR COMPENSATING FOR A PAPER FEED ERROR IN A PRINTER
Kee-Taek Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 21, 1997, Ser. No. 845,101

Claims priority, application Rep. of Korea, Apr. 19, 1996, 1996-11959

Int. Cl.^{6} B41J *13/00*

U.S. Cl. 400—624 **6 Claims**



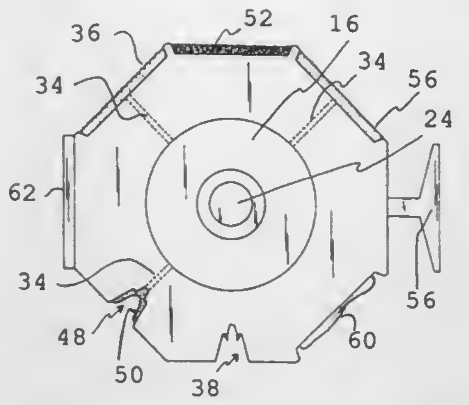
1. A method of compensating for a paper feed error of a printer, comprising steps of:
- (a) driving a pickup roller, picking up printing paper stacked in a paper cassette, and then, feeding said picked up printing paper to an image forming unit;
- (b) after picking up the printing paper in step (a), checking whether or not the printing paper has been fed to said image forming unit; and
- (c) when it has been determined in step (b) that the printing paper has not been fed and a paper feed error has been generated, again driving said pickup roller, so as to attempt to pick up the printing paper stacked in said paper cassette again.
- step (c) comprising the steps of:
  - turning off a mechanism driving unit for driving said pickup roller;
  - after turning off said mechanism driving unit, waiting until said pickup roller completely stops its driving operation; and
  - turning on said mechanism driving unit again after said waiting state, so as to attempt to pick up the printing paper stacked in said paper cassette by said pickup roller.

5,853,257
WIPER BLADE CONDITIONING SYSTEM
Gary Dubroy, 6397 Frederica Street, Niagara Falls, Ontario, Canada, L2G 1C5

Filed Apr. 25, 1997, Ser. No. 840,992

Int. Cl.^{6} A47L *1/08*

U.S. Cl. 401—17 **1 Claim**



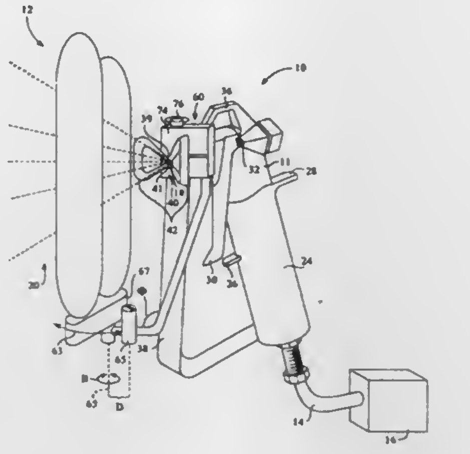
1. A wiper blade conditioning system for cleaning and conditioning used wiper blades and providing means to clean a windshield, in combination:
- a hand-held member comprised of an octagonally shaped exterior portion and a cylindrical shaped interior portion, the exterior portion having an opening therethrough extending from a top end through a bottom end thereof, the opening receiving the interior portion therein, the exterior portion including eight side panels, the interior portion having an open upper end and an open lower end, the open upper end removably coupling with a dispensing spray, the open lower end having an end cap removably coupled therewith, the interior portion having a hollow interior adapted to hold cleaning fluid therein, three branched dispensing tubes extending outwardly from the interior portion, each of the branched dispensing tubes having an inner member extending in fluid contact within the hollow interior, an elongated vertical member coupled within the inner member, the vertical member having a plurality of outer members extending outwardly therefrom, the outer members of each of the branched dispensing tubes extending outwardly of a different one of the eight side panels of the exterior portion, the three branched dispensing tubes thus being in fluid communication with three, of the side panels;
- a first side panel of the exterior portion of the hand-held member having a lubricant buffing pad removably coupled thereto, the first side panel receiving the plurality of outer members of one of the branched dispensing tubes therethrough for fluid communication with the lubricant buffing pad;
- a second side panel of the exterior portion of the hand-held member having a blade conditioning chamber formed therein, the blade conditioning chamber including a pair of opposed brackets, the brackets having springs biasing the brackets towards each other, the blade conditioning chamber further including an abrasive strip disposed between the pair of brackets, each of the brackets having at least one guide roller disposed on an interior space thereof;
- a third side panel of the exterior portion of the hand-held member having a blade cleaning chamber formed therein, the third side panel receiving the plurality of outer members of one of the branched dispensing tubes therethrough for fluid communication with the blade cleaning chamber, the blade cleaning chamber including a recess extending within the third side panel, the recess having a sponge material disposed on the interior walls thereof;
- a fourth side panel of the exterior portion of the hand-held member having a scouring pad removably coupled thereto;
- a fifth side panel of the exterior portion of the hand-held member having a sponge pad removably coupled thereto, the fifth side panel receiving the plurality of outer members of one of the branched dispensing tubes therethrough for fluid communication with the sponge pad;
- a sixth side panel of the exterior portion of the hand-held member having an ice scraper pivotally coupled thereto;
- a seventh side panel of the exterior portion of the hand-held member having a tissue dispenser coupled thereto, the tissue dispenser holding tissue paper therein; and
- an eighth side panel of the exterior portion of the hand-held member having a magnetic strip disposed thereon.

5,853,258
SEGMENTED EXTENSION WAND FOR FLUID SPRAY APPLICATOR
Byron J. Woodruff, Santa Clara, Calif., assignor to Paint Trix Inc., Sunnyvale, Calif.

Filed May 12, 1997, Ser. No. 854,552

Int. Cl.^{6} B43M *11/02*

U.S. Cl. 401—219 **18 Claims**



1. A fluid applicator comprising,
- a manifold body, including a fluid inlet and a fluid outlet and means for selectively placing said inlet and outlet in flow communication;
- means, in fluid communication with said inlet, for remotely storing a fluid, with respect to said inlet, and transporting said fluid to said inlet under pressure;
- a nozzle in fluid communication with said outlet, defining a flow path over which said fluid travels; and
- an elongated wand, extending along a longitudinal axis, between said nozzle and said outlet to remotely dispose said nozzle with respect to said manifold body, said wand including a plurality of coupled together segments and a rigid outer shielding having opposed termini and a flexible fluid passage disposed therebetween, whereby said flexible fluid passage is completely encased by said rigid outer shielding, and
- a pair of couplers, each of which is rigidly attached to said outer shielding at one of said opposed termini, with said flexible fluid passage disposed between, a portion of said pair of couplers being tapered such that the portion of the couplers are spaced-apart from said outer shielding.

5,853,259
BINDER LABELING ASSEMBLY
George E. Murray, Jr., 706 Charles City Dr., Arlington, Tex. 76018

Filed Dec. 2, 1997, Ser. No. 982,795

Int. Cl.^{6} B42F *21/06*

U.S. Cl. 402—3 **6 Claims**

1. A binder labeling assembly for use with a binder having sheets retained by binder posts and a back cover, for facilitating instant identification of the report binder, comprising:
- a) a front cover having an internal central opening forming a cutout window, said cutout window corresponding in shape and size to the portion of a cover paper which is to remain visible;
- b) a rear edge cover label comprising a two-ply label holder made of a transparent material and a printable label insert for mounting within the two-ply label holder; and
- c) a rear edge tab label having a tag holder portion and an anchoring portion, said tag holder portion having a pocket for

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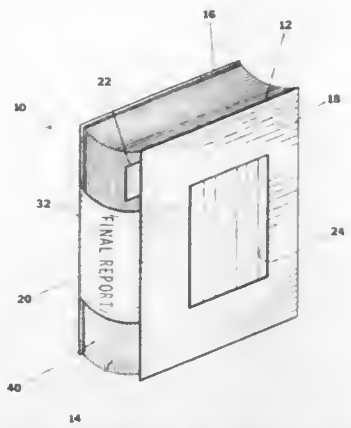


receiving a small paper tab, said anchoring portion having a hole for the passage of the binder post.

5,853,260
ROTATION CENTER TYPE JOINT AND ASSEMBLIES USING IT

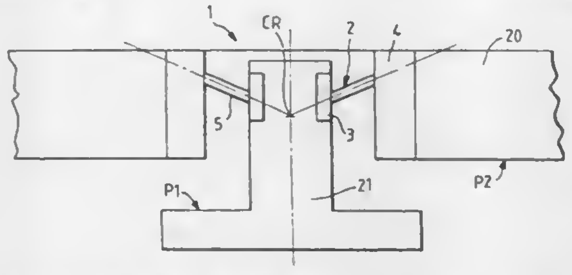
Laurent Curbillon, Cannes la Bocca, and Jean-Marc Pellissier, Mandelieu, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 12, 1996, Ser. No. 713,280

Claims priority, application France, Sep. 12, 1995, 95 10650

Int. Cl.^{6} G02B *5/132*

U.S. Cl. 403—291 **8 Claims**



1. In combination, a satellite reflector on a mechanical linking device with release means with a rotation center type joint disposed between said mechanical linking device and said reflector, said rotation center type joint having a fixed rotation center and comprising a one-piece body having an axis and comprising an inner part, an outer part and a plurality of elastically deformable transverse arms inclined relative to said axis and linking said inner part and said outer part and converging towards said fixed rotation center, said transverse arms being elastically deformable beams, the ends of which are rigidly connected to said inner part and said outer part respectively and the neutral fibers of said elastically deformable beams converging towards said fixed rotation center located on said axis, said inner part and said outer part being respectively fixed to said mechanical linking device and to said reflector.

5,853,261
LOCK FOR AN ADJUSTING SCREW OF A CAR LIGHT OPTICAL BLOCK

Alain Keruzore, São Paulo, Brazil, assignor to Cibie Do Brasil Ltda., Sao Paulo, Brazil

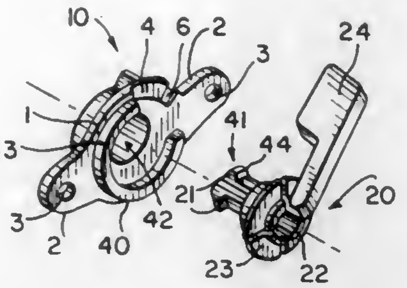
Filed Jun. 17, 1997, Ser. No. 877,234

Claims priority, application Brazil, Jul. 23, 1996, 9603140-9

Int. Cl.^{6} B60Q *1/06*

U.S. Cl. 403—350 **11 Claims**

1. A lock assembly for securing an adjusting screw engaging with a frame of a car to a car light optical block to lock the optical block to the frame of the car, comprising:



a female member adapted to be connected to the optical block and having at least one aperture formed therein and a tubular base having a top face and a bottom face;

a male member having a first portion and a second portion, said first portion being insertable in said aperture of said female member and comprising first locking means for locking said male member to said female member, and said second portion comprising receiving means for receiving an end of the adjusting screw, and

second locking means for locking the adjusting screw in said receiving means, said second locking means comprising a radial lever fixed to said second portion of said male member, said radial lever being movable engageable with said tubular base, and wherein said tubular base further comprises

an annular edge having a ramped portion, a depressed portion and at least one stop and wherein said radial lever of said male member is movable between a first unlocked position in which said radial lever rests on said ramped portion and a second locked position in which said radial lever rests in said depressed portion and

an annular ridge extending substantially around said annular edge.

5,853,262
PROCESS AND APPARATUS FOR DE-ICING ROADWAYS AND RE-USING COLLECTED MELTING SOLUTION

Elfriede Vogel, Buch am Erlbach, Germany, assignor to BTS Beratung und Technik fuer die Strasse GmbH, Buch am Erlbach, Germany

PCT No. PCT/EP95/01534, § 371 Date Oct. 23, 1996, § 102(e) Date Oct. 23, 1996, PCT Pub. No. WO95/29296, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 24, 1995, Ser. No. 727,576

Claims priority, application Germany, Apr. 26, 1994, 44 14 520.9

Int. Cl.^{6} E01C *11/24*

U.S. Cl. 404—71 **9 Claims**

9. A process for de-icing roadway surfaces onto which pollutants such as oil and chemicals may have been deposited comprising the steps of:

applying to the roadway surface a solution of melting agent mixed with water in an amount sufficient to lower the freezing point of water so that a run-off mixture containing water, pollutants and at least some of the melting agent is produced;

collecting at least part of the resulting run-off mixture;

testing the collected run-off mixture to determine the concentration of melting agent and of pollutants therein;

separating the run-off mixture into a first more heavily polluted portion and a second relatively unpolluted portion;

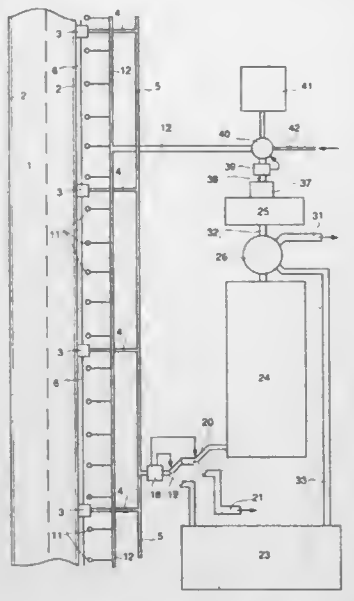
diverting the first more heavily polluted portion into a pollutant collector tank;

separating the second relatively unpolluted portion into a third portion having a low melting agent concentration and into a fourth portion having a higher melting agent concentration;

diverting the third portion into a drainage receptacle;

diverting the fourth portion into a melt water collector tank;

increasing the concentration of melting agent in the fourth portion through filtration to produce a concentrated fourth portion;



mixing additional melting agent and additional water, as required, with the concentrated fourth portion to produce a solution of melting agent having a desired concentration level of melting agent; and

dispersing the solution resulting from said mixing step on the roadway surface thereby re-using at least some of the melting agent first applied to the roadway surface during said applying step.

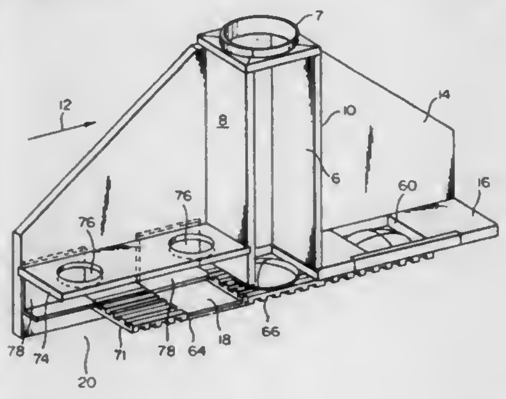
5,853,263
SYSTEM FOR INSTALLING RAISED ROAD MARKERS

John L. Green, Sedro Woolley, Wash., assignor to Accrued, Inc., Olympia, Wash.

Filed Aug. 15, 1996, Ser. No. 698,427

Int. Cl.^{6} E01C *23/18*

U.S. Cl. 404—94 **22 Claims**



3. Apparatus for installing raised road markers on a roadway, comprising an installation head mountable on a vehicle in a position to be moved along and adjacent to the roadway; said head including an at least substantially horizontal floor with an upper surface and a loading station located on said upper surface, a setting station spaced from the loading station along the floor, a slide having a vertical thickness substantially equal to the height of the markers, an actuator operatively connected to the slide to move the slide back and forth along said upper surface, walls defining an at least substantially vertical loading chamber above said loading station, said head having an opening for receiving markers into the loading chamber, said walls including first and second opposite portions, each of which is spaced above the floor a distance sufficient to allow a single marker to move out of the loading station along the floor and under said portion but insufficient to allow more than one marker to move under said portion at the same time, and said slide having an abutment surface for pushing a marker out of the loading station and into the setting station when the slide is moved along the floor, a ram having a retracted position above the setting station and being extendible toward the setting station to force a marker in the setting station down onto the roadway, and at said setting station, horizontal support portions that support the marker in said setting station until said ram forces the marker down onto the roadway.

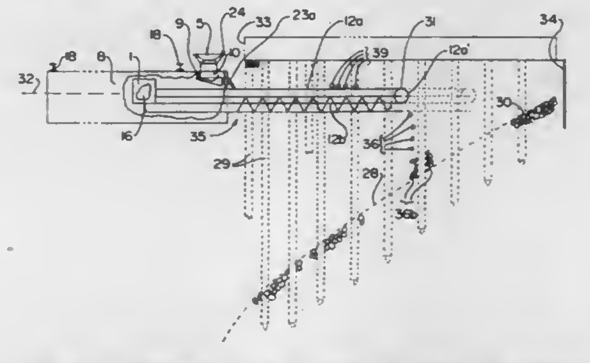
5,853,264
BRIDGE, DOCK AND PIER SHORING-UP BULK-DELIVERY FLOATING CONVEYOR UNIT

Ronald Treveloni, 16 Brook Bridge Rd., Basking Ridge, N.J. 07920

Filed Oct. 16, 1996, Ser. No. 730,998

Int. Cl.^{6} E02B *3/12*

U.S. Cl. 405—17 **29 Claims**



1. An aggregate delivery and depositing apparatus for shoring-up upright underwater support structures of alternately bridges, docks, pier supporting bulkheads and narrowly spaced-apart upright sea bottom-embodied pilings extending upwardly from the sea-bottom to be shored up by aggregate to be deposited thereon, comprising in combination:

at least one first independently self-floating aggregate conveyor means; and

a barge adapted to feed the aggregate to the self-floating aggregate conveyor means which is adapted to extend between the narrowly spaced-apart upright sea bottom-embodied pilings and adapted to transport the aggregate from a position substantially at water-level, downwardly toward an ultimate destination for deposit therefrom onto the underwater sea bottom juxtaposed said pilings;

the at least one first independently self-floating aggregate conveyor means further comprising:

a) opposite front and rear ends with an axially-extending length therebetween and a first predetermined width along said axially-extending length thereof; and

b) a revolvable conveyor means including an upper portion movable and conveyable along said axially-extending length, said aggregate transportable on said upper portion, said length and width predetermined such that the self-floating aggregate conveyor means is floatably insertable between said narrowly spaced-apart pilings.

5,853,265
EDGE ADAPTER FOR ATHLETIC PLAYING SURFACE AND ASSOCIATED METHOD

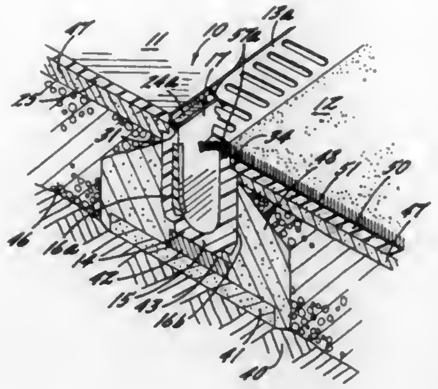
Charles E. Gunter, Statesville, N.C., assignor to ABT, Inc., Troutman, N.C.

Division of Ser. No. 568,254, Dec. 6, 1995, Pat. No. 5,647,692. This application May 16, 1997, Ser. No. 857,357

Int. Cl.^{6} E02B *5/00*

U.S. Cl. 405—118 **11 Claims**

1. A drainable athletic playing field comprising:



- a drainage channel capable of receiving runoff from the athletic playing field;
- an edge adapter cooperably engaged to an upper portion of said drainage channel and having an upstanding portion, said upstanding portion being formed of a resilient and elastically deformable material, and
- a surface layer formed of a moldable liquid material applied adjacent to said upstanding portion of said edge adapter such that said upstanding portion acts as a dam and restrains the moldable material to thereby define an edge of the athletic playing field once the moldable material cures, said resulting surface layer being elastically deformable such that both said upstanding portion of said edge adapter and the athletic playing surface can at least partially elastically deform in response to loading forces applied thereto.

5,853,266
FLUIDISING APPARATUS

David John Parkinson, and James Edward Delves, both of Bristol, United Kingdom, assignors to Merpro Tortek Limited, Angus, United Kingdom

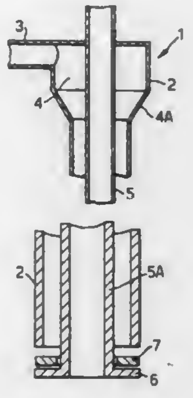
PCT No. PCT/GB95/01636, § 371 Date Jan. 17, 1997, § 102(e) Date Jan. 17, 1997, PCT Pub. No. WO96/05128, PCT Pub. Date Feb. 22, 1996

PCT Filed Jul. 12, 1995, Ser. No. 750,913

Claims priority, application United Kingdom, Aug. 11, 1994, 9416244

Int. Cl.⁶ B65G *53/42*

U.S. Cl. 406—143 8 Claims



1. A fluidising unit (1) comprising a supply duct (2) which is arranged to be fed with liquid under pressure, and a discharge duct (5A, 5B) within the supply duct, the end of the supply duct (2) of the fluidising unit (1) being closable when the fluidising unit is not in use.

5,853,267
CUTTING INSERT

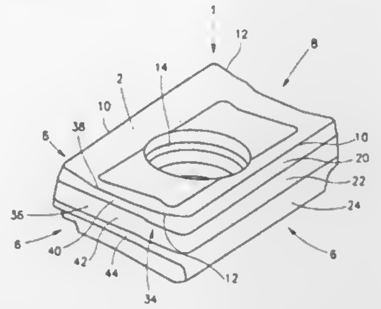
Amir Satran, Kfar Vradim, and Yuri Men, Haifa, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel

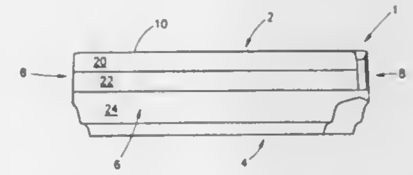
Filed Jul. 25, 1997, Ser. No. 900,331

Claims priority, application Israel, Aug. 22, 1996, 119114; May 9, 1997, 120814

Int. Cl.⁶ B23C *5/20*

U.S. Cl. 407—113 10 Claims





1. A chip cutting insert having an upper chip surface, a lower base surface, at least three side surfaces and at least two cutting edges formed at an intersection of said upper surface with two insert side surfaces, each cutting edge having leading and trailing ends, the side surface associated with each cutting edge comprising an upper primary relief section inclined to the insert base surface at a first interior angle, and a lower secondary relief section inclined to the insert base surface at a second interior angle, said second interior angle being acute and being different from the first interior angle at least along a part of the cutting edge.

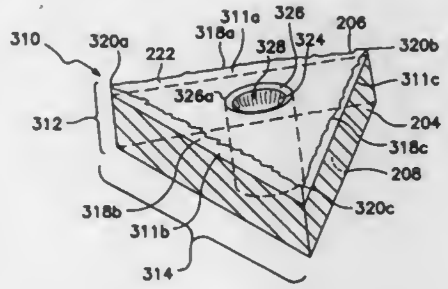
5,853,268
METHOD OF MANUFACTURING DIAMOND-COATED CUTTING TOOL INSERTS AND PRODUCTS RESULTING THEREFROM

Matthew A. Simpson, Sudbury, Mass., assignor to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.

Division of Ser. No. 424,925, Apr. 18, 1995, Pat. No. 5,643,523. This application May 22, 1997, Ser. No. 861,844

Int. Cl.⁶ B23B *27/22*

U.S. Cl. 407—119 7 Claims



1. An as-manufactured diamond-coated insert for a tool, comprising:

- a polygonal substrate having a first, rake face entirely coated by a surface layer of CVD diamond of a first thickness, and having at least two flank faces adjoining the rake face which are not diamond-coated beyond said surface layer of diamond.

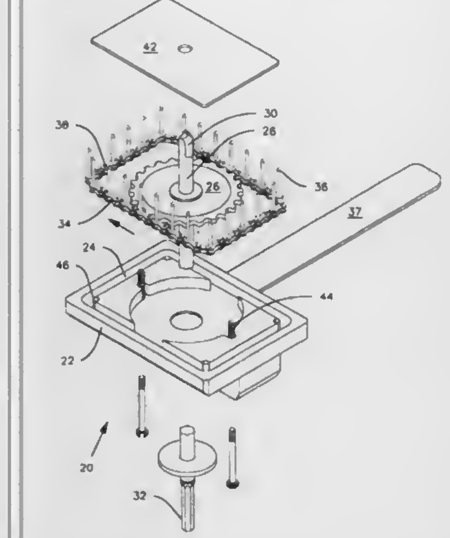
5,853,269
WALLBOARD ELECTRICAL BOX CUTTER HAVING A CUTTING CHAIN

Ralph C. Young, 2119 Payton Cir., Colorado Springs, Colo. 80915

Filed Jul. 30, 1997, Ser. No. 902,856

Int. Cl.⁶ B23B *51/08*

U.S. Cl. 408—1 R 15 Claims



1. A chain driven cutter for cutting a predetermined shaped comprising:

- a housing having a chain track outlining the predetermined shape;
- a sprocket positioned centrally within the housing;
- a shaft positioned to and secured to the sprocket having a cutting end projecting forwardly through the housing, and a drive end projecting rearwardly;
- a loop of chain positioned within the track and on the sprocket so that it may be driven thereby, said chain carrying cutting teeth adapted to cut in a direction towards the front of the housing;
- so that when the shaft is turned its cutting end may be used to cut a guide hole in a wallboard and its teeth carried by the chain thereafter cut the predetermined shape corresponding to the chain track.

5,853,270
DRILL JIG

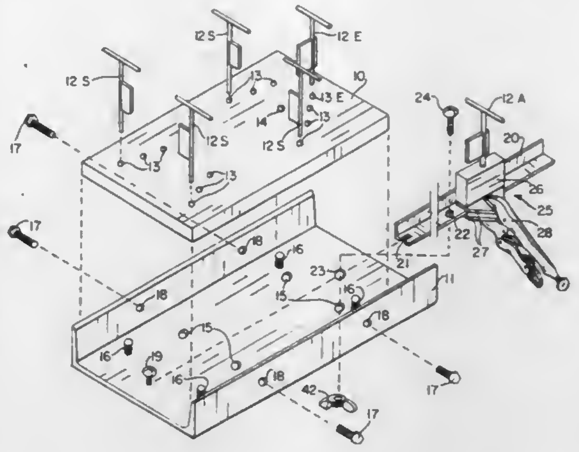
Brent C. Salley, and Harry N. Windle, both of Gainesville, Fla., assignors to Precision Glass and Storefront, Inc., Gainesville, Fla.

Filed Aug. 2, 1996, Ser. No. 691,581

Int. Cl.⁶ B23B *39/00*

U.S. Cl. 408—87 15 Claims

1. A drill jig assembly for positioning a workpiece on a bed of a drill press for drilling holes in the workpiece; said assembly including a holder channel attachable to the bed; a jig plate disposed within said channel adapted to be clamped to said channel to provide a horizontal planar upper surface, said jig plate having a plurality of spaced vertical holes through said upper surface, a plurality of guide pins insertable into selected holes in said jig plate to position the workpiece to permit drilling a hole therethrough, said guide pins being upright and transverse of the workpiece, and an adjustable stop subassembly attachable to said holder channel to provide longitudinal positioning of the workpiece for drilling other holes in the workpiece anywhere along its length greater than one half the length of said planar upper surface.



5,853,271
ROTATING SHAFT TOOL

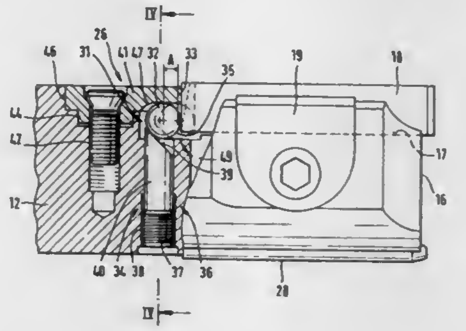
Gerhard Schanz, Burladingen, Germany, assignor to August Back GmbH & Co., Germany

Filed Nov. 27, 1996, Ser. No. 753,639

Claims priority, application Germany, Nov. 29, 1995, 195 44 556.2

Int. Cl.⁶ B23B *51/00*

U.S. Cl. 408—146 22 Claims



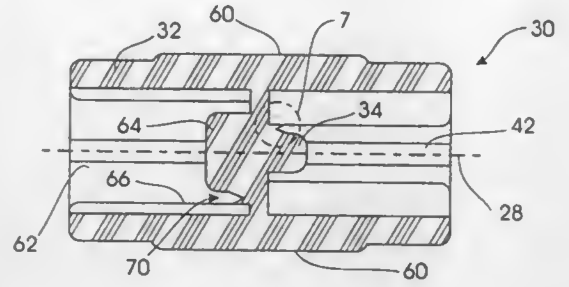
1. A rotating shaft tool, comprising:

- a body (**12**) having a guide slot (**17**) in which at least one elongated cutting blade (**18**) can be arranged,
- an axial adjustment device (**26**, **27**) arranged at the mouth of said guide slot (**17**) by means of which said cutting blade (**18**) can be adjusted axially in said guide slot (**17**),
- wherein said axial adjustment device (**26**, **27**) comprises:
  - at least a first force exerting element (**32**) with at least one rounded contact surface (**35**) positioned towards an end face (**33**) of said cutting blade (**18**) for moving said cutting blade (**18**) in an axial direction, and
  - at least one second force exerting element (**36**) for adjusting said first force exerting element (**32**), which second force exerting element (**36**) deviates from the direction of movement of said first force exerting element (**32**),
  - in which said first force exerting element (**32**) is guided axially with respect to said guide slot (**17**).

5,853,272
PLASTIC PIPE END FORMING TOOL

Donald W. Wartluft, Broken Arrow, and David E. Bentley, Wagoner, both of Okla., assignors to Continental Industries, Inc., Tulsa, Okla.

Filed May 16, 1997, Ser. No. 857,692
Int. Cl.⁶ B23B *51/00*
U.S. Cl. 408—199 **11 Claims**

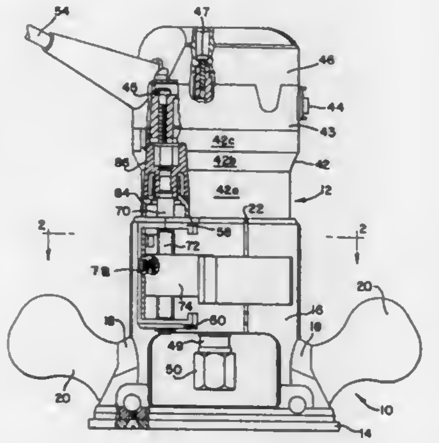


1. A plastic pipe end forming tool which comprises:
- an elongated body having a cavity constituting a cylindrical channel; and
- a pair of opposed stationary protrusions extending into said channel to form a V-shaped space to receive said pipe end and to allow rotation of said pipe in said channel and thereby form inside and outside bevels on said pipe end, without removing material from said pipe end.

5,853,273
FIXED-BASE ROUTER WITH V-BLOCK MOUNTING

John R. Coffey, New Bern, N.C., assignor to S-B Power Tool Company, Chicago, Ill.

Filed Nov. 4, 1997, Ser. No. 963,917
Int. Cl.⁶ B23C *1/20*
U.S. Cl. 409—182 **14 Claims**

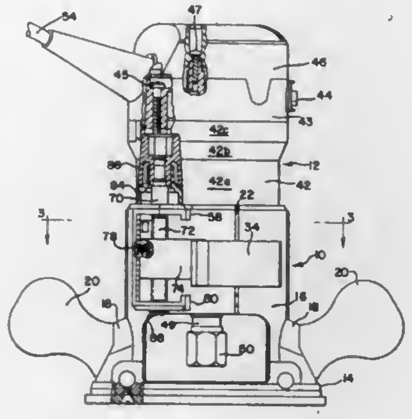


1. A fixed-base router comprising:
- (a) a base assembly including a first annular base member mounting a second vertically disposed base member, said second base member including two, horizontally spaced, vertically extending support ribs and at least one clamping surface substantially equally spaced from each of said support ribs; and
- (b) a motor housing having a vertically disposed, cylindrical exterior surface, said motor housing being mounted by said base assembly with said support ribs and said clamping surface in engagement with said exterior surface, said support ribs and said clamping surface establishing the only areas of supporting engagement between the base assembly and said motor housing.

5,853,274
VERTICAL ADJUSTMENT MECHANISM FOR FIXED-BASE ROUTER

John R. Coffey; Lawrence M. Cotton, both of New Bern; Miles Shorey, IV, Oriental, all of N.C., and Carl Christan Carlson, Vernon Hills, Ill., assignors to S-B Power Tool Company, Chicago, Ill.

Filed Nov. 4, 1997, Ser. No. 963,918
Int. Cl.⁶ B23C *1/20*
U.S. Cl. 409—182 **11 Claims**



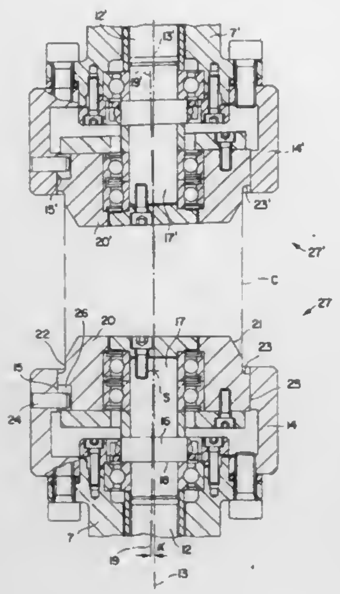
1. A router comprising:
- (a) a base assembly including an annular base member supporting an upright cylindrical base member;
- (b) a cylindrical motor housing telescopingly and slidably received within said cylindrical base member, said motor housing having a plurality of vertically aligned, spaced first formations;
- (c) a vertical adjustment mechanism supported by said base assembly, said adjustment mechanism including a lever and an adjustment means for moving the lever vertically with respect to the base assembly, said lever having a second formation and being mounted for movement back and forth between (i) a first position wherein said second formation is in engagement with a selected one of said first formations to prevent vertical sliding movement of the motor housing relative to the lever and (ii) a second position wherein said second formation is disengaged from said first formations thereby permitting vertical sliding movement of said motor housing relative to said lever.

5,853,275
APPARATUS FOR FLANGING CAN BODIES

Norbert Lentz, Essen; Karl-Heinz Witt, Recklinghausen, and Steffen Rötz, Essen, all of Germany, assignors to Krupp Kunststofftechnik Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Jul. 8, 1997, Ser. No. 889,496
Claims priority, application Germany, Jul. 18, 1996, 196 28 995.5
Int. Cl.⁶ B21D *19/02*
U.S. Cl. 413—73 **5 Claims**

1. An apparatus for flanging an edge of a can body, comprising
- (a) a flanging tool including
  - (1) an inner tool part having an outer circumferential flanging face adapted to engage an inner surface of a circumferential edge zone of the can body;
  - (2) an outer tool part surrounding said inner tool part and having an inner circumferential abutment face surrounding the flanging face for abutting a periphery of the can body edge during flanging of the can body edge by said flanging face;
  - (3) an axially hollow spindle having a first axis; said outer tool part being affixed to the spindle;

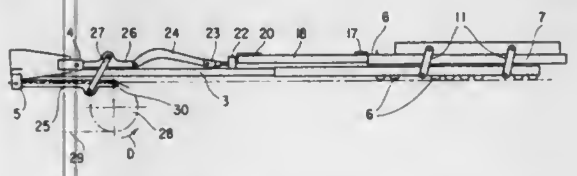


  - (4) first securing means for preventing rotation of said spindle about said first axis;
  - (5) a shaft received in said spindle and having a second axis coinciding with said first axis; said shaft being supported for rotation about said second axis;
  - (6) a shaft stub affixed to and extending from said shaft; said inner tool part being rotatably mounted on said shaft stub; said shaft stub having a central, third axis disposed at an inclination to said second axis; said second and third axes intersecting in a point of intersection situated substantially at an axial position corresponding to an axial position of said flanging face of said inner tool part; and
  - (7) second securing means for preventing a rotation of said inner tool part and said outer tool part relative to one another;
- (b) first drive means for rotating said shaft about said second axis;
- (c) a counter tool being axially aligned with said second axis and being spaced from said flanging tool; said flanging tool and said counter tool jointly holding a can body at opposite ends thereof; and
- (d) second drive means for axially urging said flanging tool and said counter tool toward one another for effecting flanging of the can body at said flanging face of said inner tool part.

5,853,276
LOADING CARRIAGE

Hermann S. Buch, Merowingerstrasse 17, D-86199 Augsburg, Germany

PCT No. PCT/EP95/00979, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO95/25055, PCT Pub. Date Sep. 21, 1995
PCT Filed Mar. 16, 1995, Ser. No. 716,210
Claims priority, application Germany, Mar. 17, 1994, 44 09 110.9
Int. Cl.⁶ B66F *9/00*
U.S. Cl. 414—255 **4 Claims**

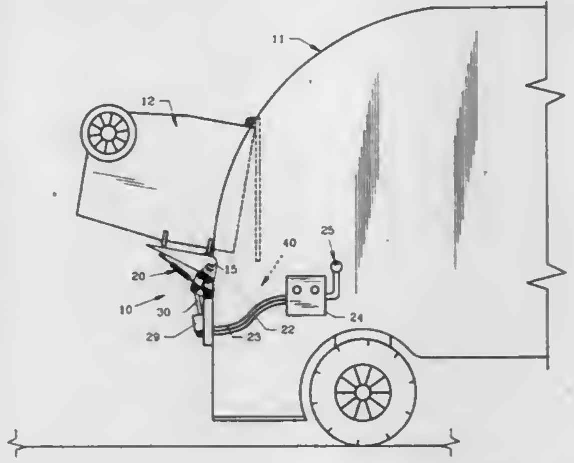


1. A loading carriage for the transport of an object in a partially raised position, comprising:
- a traveling frame having a front portion and a rear portion, said traveling frame including at least a pair of longitudinal braces and a pair of cross braces, said pair of longitudinal braces having an underside;
- a plurality of wheels mounted to the underside of said traveling frame;
- a lifting frame movably mounted above said traveling frame, said lifting frame having a front and rear portion and including a pair of inner longitudinal braces connected at the rear portion by a cross brace, a pair of outer longitudinal braces, and a cross brace connecting said pair of inner and outer longitudinal braces at the front portion;
- at least two pairs of substantially parallel connecting rods, each pair of connecting rods pivotally connected between one of said longitudinal braces of said traveling frame and one of said longitudinal braces of said lifting frame;
- a pair of gripping members pivotally attached to said lifting frame, said gripping members being movable between an open position and a closed position; and
- a single actuation device for moving said pair of gripping members between the open position and the closed position and raising and lowering said lifting frame.

5,853,277
GARBAGE CAN DUMP MECHANISM

Jeffrey M. Everhart, 2074 Welcome-Bethesda Rd., Welcome, N.C. 27374

Filed Feb. 24, 1997, Ser. No. 804,567
Int. Cl.⁶ B66F *3/02*
U.S. Cl. 414—408 **2 Claims**



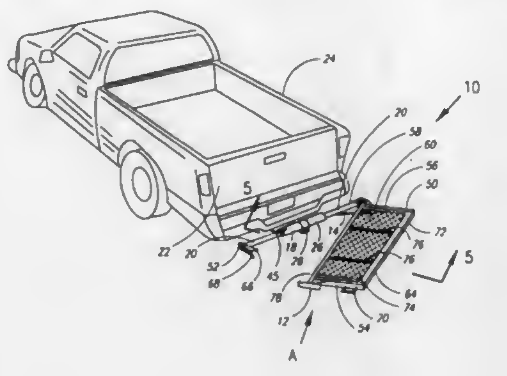
1. In a garbage can hydraulic dump mechanism as affixed to the rear of a garbage truck, the dump mechanism having a pivotable can support with a fixed catch and a movable catch, the improved dump mechanism comprising:
- a) a hydraulic assembly, said assembly comprising a hydraulic cylinder and a piston rod;
- b) a handle, said handle positioned on said hydraulic assembly, said handle selectively extending said piston rod;
- c) a trio of parallel elongated cylindrical rollers, said trio of rollers rigidly fixed relative to one another and having opposite ends, with
  - i) one of said trio of rollers joined to said can support;
  - ii) a second of said trio of rollers joined to said hydraulic assembly; and
  - iii) a third of said trio of rollers joined to said movable catch;
- d) a resilient member, said resilient member affixed to said third roller to bias the movement of said movable catch; and
- e) a pair of L-shaped brackets, said pair of brackets affixed at said opposite ends of said trio of parallel rollers for stabilizing the same;

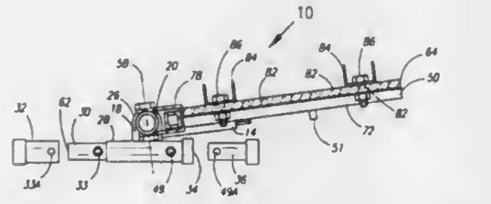
whereby the extension of said hydraulic assembly pivots said can support to dump a garbage can while said movable catch is urged away from said fixed catch to secure the garbage can against the can support.

5,853,278
CARGO CARRIER

Charles G. Frantz, 1710 N. Airport Rd., Weatherford, Okla. 73096

Filed Nov. 25, 1997, Ser. No. 978,434
Int. Cl.⁶ B60R *9/06*
U.S. Cl. 414—462 **19 Claims**





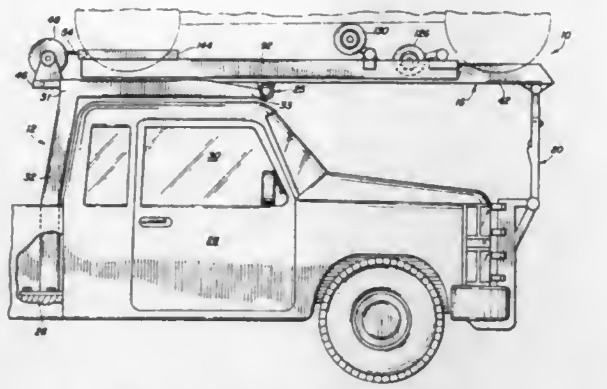
1. A cargo carrier removably securable to a rear end of a vehicle comprising:
a T-bar comprised of a carrier adapter secured approximately perpendicularly to a hollow tube, one end of said carrier adapter removably securing to a female adapter provided on a rear end of a vehicle, said hollow tube being approximately parallel to the ground when said T-bar is secured to said vehicle,
a torque bar extending through said hollow tube with first and second ends of said torque bar extending beyond first and second ends respectively of said hollow tube, said ends of said torque bar slightly flexible upward and downward in a vertical plane and also flexible torsionally,
a first end of a platform releasably latching to said first end of said torque bar, an opposite second end of said platform being pivotably secured to said second end of said torque bar by means of a double slanted axis.

5,853,279
OVERCAB CARRIER DEVICE

Harlan Neugebauer, 4831 West Vogel Ave., Glendale, Ariz. 85302

Filed Nov. 28, 1997, Ser. No. 979,487
Int. Cl.⁶ B60P *1/43*
U.S. Cl. 414—462 **18 Claims**

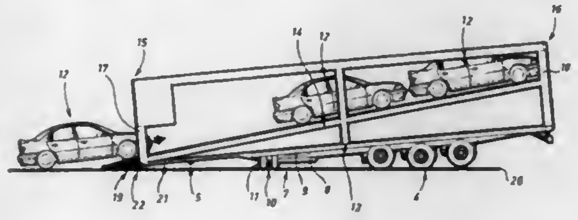
1. A balance point carriage device suitable for use with a vehicle, the balance point carriage device comprising, in combination:
a support frame mounted to a frame of the vehicle,
a rail assembly mounted to the support frame at a pivot, a detachable rail assembly having telescoping rail, the detachable rail assembly mating with the rail assembly,
a carriage slidably mounted on the rail assembly and detachable rail assembly,
means for sliding the carriage along the rail assembly and the detachable rail assembly, and
a foldable frame assembly mounted to the frame of the vehicle, one end of the rail assembly being detachably secured to the foldable frame assembly, the rail assembly having a hauling position parallel to the ground when secured to the foldable frame assembly, the pivot being positioned at a balance point of the combination of the fixed rail assembly and the carriage in the hauling position, the rail assembly rotating about the pivot to a loading position tilted to the ground in the direction of the foldable frame assembly when detached from the foldable frame assembly, the detachable rail assembly attaching to the rail assembly when in the loading position, the detachable rail assembly contacting the ground.

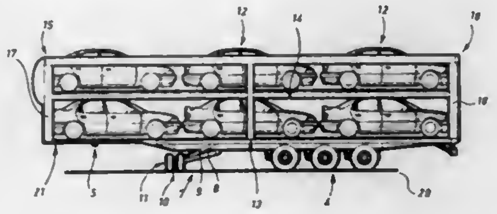


5,853,280
SEMITRAILER FOR VEHICLE TRANSPORATION WITH REMOVABLE UPPER PLATFORM

Robert Lohr, Hangenbieten, France, assignor to Lohr Industrie, Hangenbieten, France

Filed Sep. 14, 1995, Ser. No. 528,089
Claims priority, application France, Sep. 23, 1994, 94-11552
Int. Cl.⁶ B60P *1/28*
U.S. Cl. 414—482 **19 Claims**



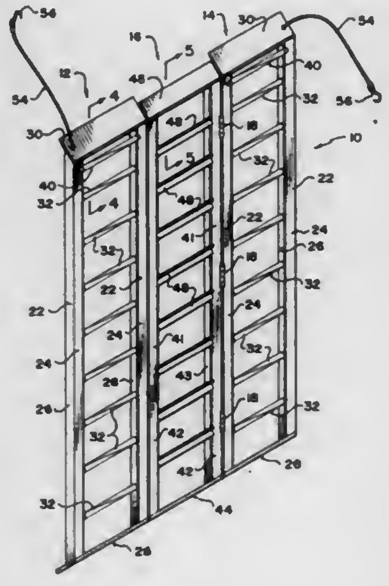


1. A method of transporting vehicles with a semitrailer in which said semitrailer comprises a chassis having a front end and a rear end, said chassis supporting a fixed lower platform and an upper platform which is movable from a loading position to a travel position and vice versa via an upper platform lifting and lowering device supported by poles of said chassis; a lowering and lifting mechanism being located proximate but spaced from said front end of said chassis, on an under surface thereof, for facilitating both raising and lowering said front end of said chassis and lateral motion of said front end of said chassis; and at least one wheel and axle set being supported between said lowering and lifting mechanism and said rear end of said chassis, on an undersurface thereof, for facilitating transportation of said semitrailer;
said method comprising the steps:
inclining said semitrailer, via said lowering and lifting mechanism, until said front end of said chassis is located adjacent the ground;
inclining said upper platform, via said upper platform lifting and lowering device, into said loading position located adjacent said lower platform;
loading said upper platform with vehicles;
raising said upper platform loaded with vehicles, via said upper platform lifting and lowering device, to said travel position;
loading said lower platform with vehicles; and
raising said semitrailer loaded with vehicles to a travel position via said lowering and lifting mechanism.

5,853,281
LOADING RAMP FOR RECREATIONAL VEHICLES

Mervin Blair Farmer, Box 1070, Stonewall, Manitoba, Canada, R0C 0Z0

Filed Dec. 16, 1996, Ser. No. 767,273
Int. Cl.⁶ B65G *67/02*
U.S. Cl. 414—537 **7 Claims**

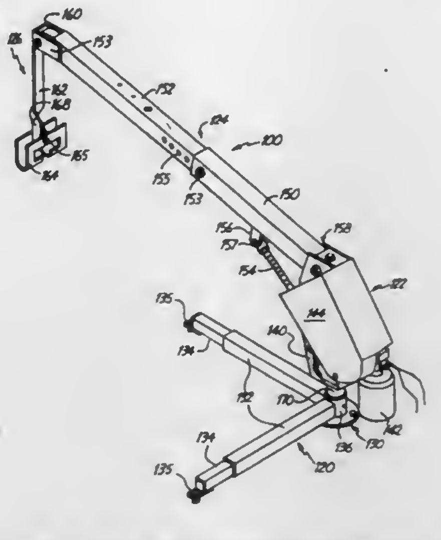


1. A ramp for loading and unloading snowmobiles comprising:
two longitudinally extending, laterally spaced apart ski supporting sections, each comprising;
two spaced apart rails;
a plurality of support members comprising a cylindrical member extending laterally between the rails and spaced longitudinally apart therealong, each said cylindrical member being non-rotatably fixed to the rails;
and a plurality of removable and reengaaeable roller elements one being arranged around each one of said plurality of support members for rolling engagement with a snowmobile ski; each said roller element comprising a removable and reengageable cylindrical sheath arranged to surround the fixed cylindrical member in direct contact with the cylindrical member for sliding rotation about the cylindrical member such that the cylindrical member remains fixed and the sheath rotates relative thereto, said cylindrical sheath having a helical slit extending longitudinally therealong allowing ready removal and reengagement of the sheath on the support member;
and a track supporting section between the ski supporting sections, the track supporting section comprising means for tractional engagement with a snowmobile track.

5,853,282
SCOOTER LIFT

Ronald F. Bechler, and Kary D. Conaway, both of George, Iowa, assignors to Ranger All Season Corporation, George, Iowa

Filed Jul. 31, 1997, Ser. No. 904,202
Int. Cl.⁶ B60P *1/00*
U.S. Cl. 414—543 **16 Claims**



1. A scooter lift for lifting a scooter into a storage area of a transport vehicle, the scooter lift comprising:
a base assembly for mounting on a surface of the storage area of the transport vehicle;
a frame mounted on the base assembly for rotation about a substantially vertical axis;
a boom mounted to the frame for rotation about a substantially horizontal axis between a lowered position and a raised position;
a cable having a first end connected to a spool shaft and a second end for attachment to the scooter, the cable being guided by the boom to selectively raise or lower the scooter upon rotation of the spool shaft,
an engagement member attached to the boom and moveable between a lower rest position and an upper position and between the upper position and a lock position, the boom being in its raised position to enable movement of the scooter into and out of the storage area when the engagement member is in its lock position and being in its lowered position to permit storage of the scooter lift in the storage area when the engagement member is in its lower rest position; and
a slot in the frame engaging the engagement member, the slot having a vertical main portion defining the lower rest position and the upper position of the engagement member and having a slot recess extending from the upper position and defining the lock position of the engagement member.

5,853,283
VEHICLE LIFTING AND TOWING METHOD AND APPARATUS

Robert Kirby Grant, Mullins, S.C., assignor to East End Motors, Inc., Cle Elum, Wash.

Filed Feb. 26, 1996, Ser. No. 607,083
Int. Cl.⁶ B60P *3/12*
U.S. Cl. 414—563 **20 Claims**

13. A lifting apparatus comprising:
an L-shaped member having a riser leg and a boom leg,
the riser leg including a base end and an upper end,
the boom leg including a front end and a free end, and
the front end of the boom leg attached to the base end of the riser leg;
a base pivot bearing at the base end of the riser leg,

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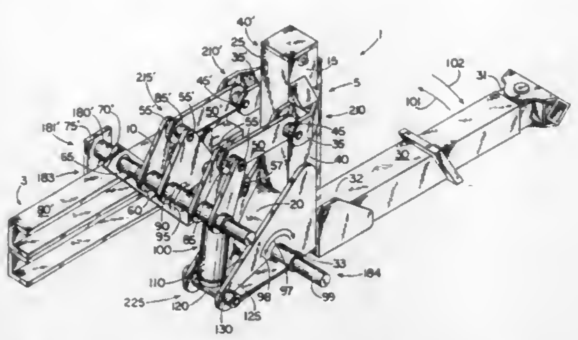


the base pivot tiltably mounted to a frame member of a towing vehicle;

a riser pivot bracket at the upper end of the riser leg;

a lever arm extended from the base end of the riser leg, substantially parallel to the boom leg;

an anchor pivot bracket attached to the lever arm;

a linkage arm having a riser pivot bearing and a crank pivot bearing,

the linkage arm hingeably connected at the riser pivot bearing to the riser pivot bracket;

a camming crank hingeably mounted to the frame of a towing vehicle, the camming crank having

a forward direction of rotation,

a rearward direction of rotation,

a crank pivot bracket,

an actuator pivot bracket,

an upper frame pivot bearing,

the upper frame pivot bearing hingeably mounted to the frame member of a towing vehicle,

the crank pivot bracket hingeably connected to the crank pivot bearing of the linkage arm; and

an extending and retracting actuator, for rotating the camming crank to selectably rotate the camming crank,

in the forward direction of rotation, about the upper frame pivot bearing, to pull the linkage arm,

so that the linkage arm pulls the riser leg, and tilts the L-shaped member, to raise the free end of the boom leg, or

in a rearward direction of rotation, about the upper frame pivot bearing, to push the linkage arm,

the linkage arm to push the riser leg and tilt the L-shaped member, to lower the free end of the boom leg,

the extending and retracting actuator having an actuator pivot bearing and an anchor pivot bearing, the actuator pivot bearing connected to the actuator pivot bracket of the camming crank and the anchor pivot bearing connected to the anchor pivot bracket.

5,853,284

NOTCHED WAFER ALIGNING APPARATUS

Ryo Ohzeki, Saitama, and Tadayasu Ohsawa, Tokyo, both of Japan, assignors to Kaijo Corporation, Japan

Filed Sep. 10, 1997, Ser. No. 926,607

Claims priority, application Japan, Sep. 24, 1996, 8-271328

Int. Cl.^{6} B65G *47/24*

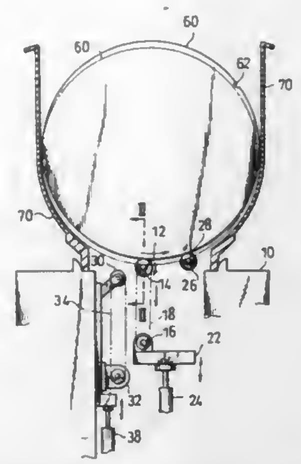
U.S. Cl. 414—757 33 Claims

1. A notched wafer aligning apparatus for aligning a plurality of notched wafers arranged in juxtaposition to each other in a cassette with each other, comprising:

a plurality of notch detection rollers rotatably arranged so as to be rotationally driven while being respectively abutted against peripheral edges of the notched wafers to orientate notches of the wafers in the same direction;

said notch detection rollers being rotatably mounted on a rotation drive shaft in juxtaposition to each other while being arranged in correspondence to the notched wafers and at a position deviated by a predetermined distance from a vertical center line of the notched wafers;

said notch detection rollers being individually rotated on said rotation drive shaft by frictional force between said notch detection rollers and said rotation drive shaft to move the notched wafers in the cassette, to thereby orientate the notched wafers in the same direction.



5,853,285

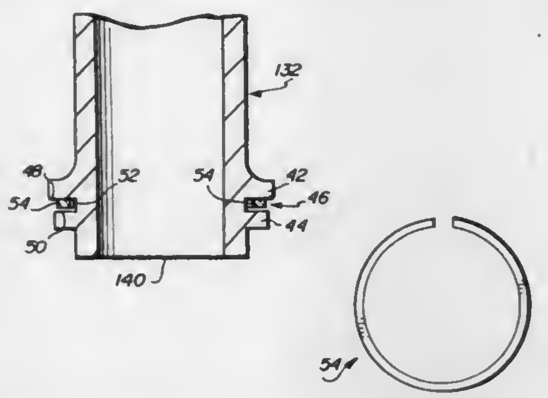
COOLING AIR TUBE VIBRATION DAMPER

Frederick Martin Miller, Cincinnati; Roger Clayton Walker, Middletown; Christopher Charles Glynn, Hamilton, and Martin C. Hemsworth, Cincinnati, all of Ohio, assignors to General Electric Co., Schenectady, N.Y.

Filed Jun. 11, 1997, Ser. No. 872,840

Int. Cl.^{6} F01D *5/08;5/10*

U.S. Cl. 416—96 R 11 Claims



1. In a compressor rotor assembly including a plurality of rotor disks affixed to a rotor body, and wherein at least one radially directed cooling tube is supported from one end within a rotor shaft, with an opposite free end extending toward a longitudinal axis of the rotor, the improvement comprising a ring member loosely secured to said tube at said free end.

5,853,286

MOVABLE FAN VANE WITH A SAFETY PROFILE

Pierre Xavier Bussonnet, Sucy en Brie; Jacques Marie Pierre Stenneler, le Chatelet en Brie, and Jean Marc Surdi, Rubelles, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Jan. 10, 1997, Ser. No. 781,838

Claims priority, application France, Jan. 23, 1996, 96 00707

Int. Cl.^{6} F01D *5/30*

U.S. Cl. 416—193 A 1 Claim

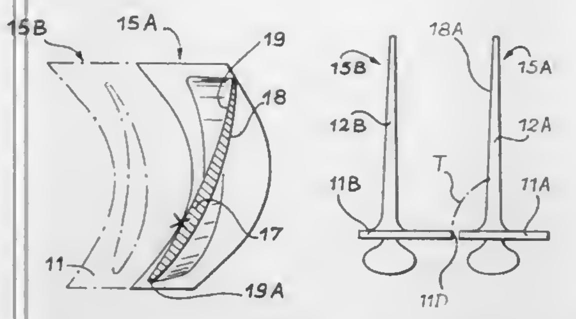
1. A vane for a fan comprising:

a platform having opposite outer and inner surfaces, and opposite upper and lower surfaces, the upper surface having a camber shape, the lower surface having a concave shape corresponding to the camber shape of the upper surface;

a root fixed to the inner surface of said platform and adapted to be fixed to a hub of the fan; and

a blade fixed to the outer surface of said platform at a position shifted toward the lower surface from a center line between the upper and lower surfaces, wherein a thickness of said blade increases toward said platform; and

wherein said blade has opposite leading and trailing edges at which the upper and lower surfaces merge, and said platform and said blade are formed such that when a vane is detached, the detached vane strikes another vane between the leading edge and the trailing edge.



5,853,287

SCROLL COMPRESSOR HAVING A THRUST PLATE

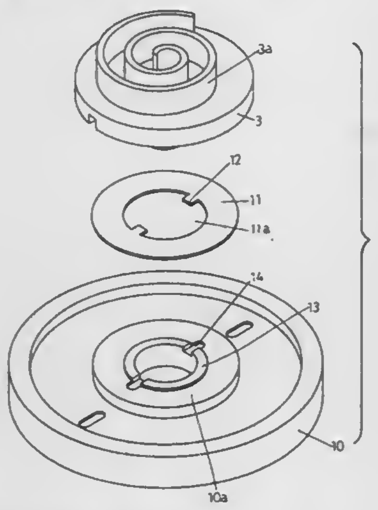
Noboru Iida, Kusatsushi; Hiroyuki Fukuhara, Otsushi, and Shigeru Muramatsu, Kusatsushi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 20, 1997, Ser. No. 803,270

Claims priority, application Japan, Feb. 20, 1996, 8-031804

Int. Cl.^{6} F04C *18/04*

U.S. Cl. 418—55.1 6 Claims



1. A scroll compressor comprising:

a fixed scroll member having a fixed scroll vane;

an orbiting scroll member having an orbiting scroll vane interengaging with the fixed scroll vane for forming a plurality of compression spaces;

a crankshaft for providing a driving force to orbit the orbiting scroll member;

a bearing for supporting a main axis of the crankshaft; and

a circular thrust plate having a circular hole disposed between the orbiting scroll member and the bearing for receiving a force axially exerted thereon from the orbiting scroll member, wherein a protrusion is formed in the same plane as the thrust plate and is extended within the circular hole of the thrust plate toward an inside position in a radial direction, and the bearing includes a thrust plate holder having a circular boss of a smaller outside diameter than the circular hole in the thrust plate and a coupler for mating with said protrusion for preventing rotation of the circular thrust plate, the thrust plate is thereby coupled to the bearing such as to be able to in an axial direction.

5,853,288

SCROLL COMPRESSOR HAVING A COUNTERBORING PART COMMUNICATING WITH AN INTERMEDIATE PRESSURE CHAMBER

Shuji Motegi; Toshiyuki Nakamura; Fumiaki Sano; Masayuki Kakuda; Kiyoharu Ikeda; Yoshihide Ogawa; Eiji Watanabe, all of Kanagawa, and Shinji Nakashima, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

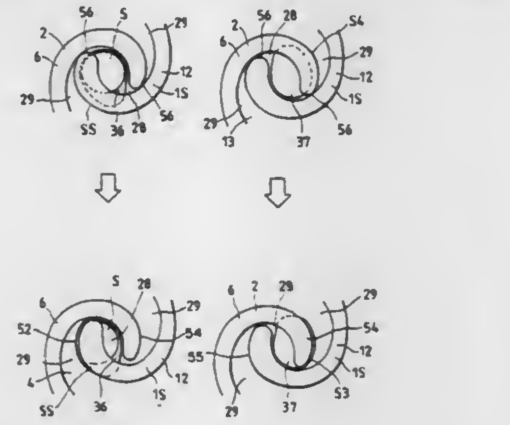
Continuation of Ser. No. 670,224, Jun. 21, 1996, which is a division of Ser. No. 536,161, Sep. 29, 1995, Pat. No. 5,674,061.

This application May 16, 1997, Ser. No. 857,855

Claims priority, application Japan, Mar. 22, 1995, 7-062660; Jun. 26, 1995, 7-159494

Int. Cl.^{6} F04C *18/04*

U.S. Cl. 418—55.2 2 Claims



1. A scroll compressor comprising:

a fixed scroll disposed in a sealed vessel and provided with a plate-like spiral tooth on a base plate having a discharge port for a high-pressure refrigerant gas at a center;

an orbiting scroll disposed in said sealed vessel and having a base plate provided with a plate-like spiral tooth engaging said plate-like spiral tooth of said fixed scroll for forming a compression space consisting of a high pressure chamber, an intermediate pressure chamber, and a low pressure chamber; and

a counterboring part made in at least one of said base plates of said fixed and orbiting scrolls and having a cutaway part corresponding to a center of said plate-like spiral tooth of said base plate, and a portion of said counterboring part being formed into a shape of an involute curve, said involute curve substantially corresponding to a radially outer face of said plate like spiral tooth of the other of said base plates when the spiral tooth of the other of said base plates is at a position where said counterboring part begins to communicate with said intermediate pressure chamber, such that a communicating part of said counterboring part with said intermediate pressure chamber is formed over a wide range of said outer face.

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5,853,289

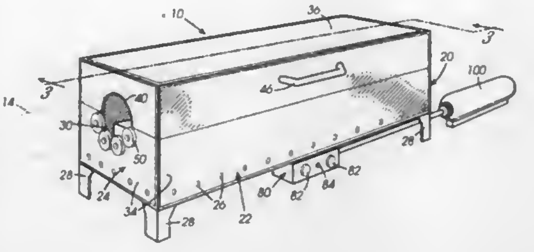
GAS-SUPPLIED PIPE HEATER

Herman R. Todd, 4929 Woodview La., Myrtle Beach, S.C. 29575, and Larry D. Dickerson, 2960 Hickory Hill Cir., Conway, S.C. 29526

Filed Aug. 6, 1997, Ser. No. 907,344

Int. Cl.^{6} F24J *3/00*

U.S. Cl. 432—225 **17 Claims**



1. A heater for softening polyvinyl chloride (PVC) pipe to facilitate bending said pipe, said heater comprising:
  a body having means formed therein for inserting a length of PVC pipe;
  roller means carried by said body for facilitating rotation of said PVC pipe;
  a burner assembly positioned within said body so that when said PVC pipe is inserted within said body and said burner assembly is ignited, flames from combustion of fuel by said burner assembly heat said pipe; and
  baffle means for distributing heat from said burner assembly, said baffle means positioned within said body and adjacent to said burner assembly so that when said PVC pipe is inserted in said body, said baffle means is located between said burner assembly and said PVC pipe.

5,853,290

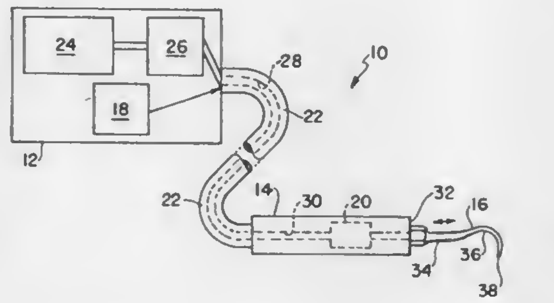
ULTRASONIC TOOTH CLEANER

Ronald H. Winston, 256 Griffen Ave., New York, N.Y. 10583

Continuation-in-part of Ser. No. 563,293, Nov. 28, 1995, Pat. No. 5,772,434. This application Nov. 27, 1996, Ser. No. 758,037

Int. Cl.^{6} A61C *1/07*

U.S. Cl. 433—86 **13 Claims**



1. An ultrasonic cleaner for removing deposits from a dorsal surface of a tongue, comprising:
  a handle having an ultrasonic driver;
  a cleaner tip coupled to and being oscillated by said ultrasonic driver, said tip having a distal end and being shaped such that said distal end is generally perpendicular to said handle, said tip being formed of a polymer material capable of transmitting constant ultrasonic vibrations from said driver;
  a dispersive head connected to said cleaner tip, said head extending in a plane generally perpendicular to said cleaner tip and being oscillated by said ultrasonic driver.

5,853,291

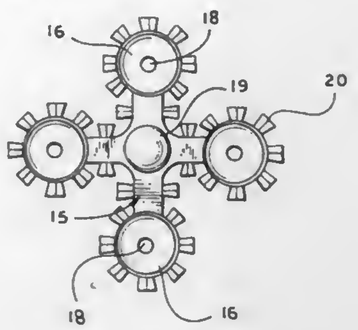
SUBPERIOSTEAL BONE ANCHOR

John DeVincenzo, 1312 Garden St., and Steven Prins, 826 Alyssum Ct., both of San Luis Obispo, Calif. 93401

Filed Oct. 10, 1997, Ser. No. 948,731

Int. Cl.^{6} A61C *8/00*

U.S. Cl. 433—176 **11 Claims**



1. A subperiosteal bone anchor for use in conjunction with orthodontic appliances, said bone anchor comprising two or more leaves, narrow arms connecting said leaves, said anchor being adapted to rest directly on bone, said leaves being moldable to the contours of bone on which said anchor is to be placed, the edges of said arms and said leaves including a plurality of scallops therearound.

5,853,292

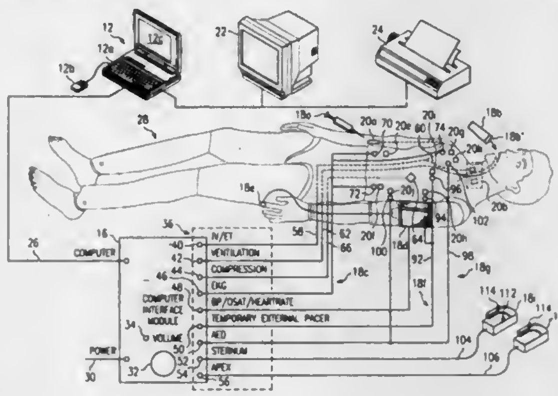
COMPUTERIZED EDUCATION SYSTEM FOR TEACHING PATIENT CARE

John S. Eggert, Miami; Michael S. Eggert, Gainsville, and Phillip Vallejo, Miami, all of Fla., assignors to Gaumard Scientific Company, Inc., Miami, Fla.

Filed May 8, 1996, Ser. No. 643,435

Int. Cl.^{6} G09B *23/28*

U.S. Cl. 434—262 **17 Claims**



1. An interactive, computerized education system for teaching patient care, comprising:
  a computer program, for execution on a computer, that displays a selection of modules to assist a user in learning patient care protocols, the modules being selectable by the user for providing different interactive training sessions involving the protocols;
  a physiological simulator for receiving simulated patient care activity responsive to the sessions; and
  a plurality of different virtual instruments for use with the simulator in performing the patient care activity, the virtual instruments cooperating with corresponding sensors that interface with the computer program for providing feedback to the program regarding the activity during the sessions, such that in providing the feedback, the sensors complete an electrical circuit that confirms proper use of the virtual instruments on the simulator; and

  an interface module for interfacing the sensors with the computer program, the module comprising lines each coupled with one of the sensors and a processor coupled with the sensor lines for receiving signals from the sensors and converting the signals to inputs for the computer program.

5,853,293

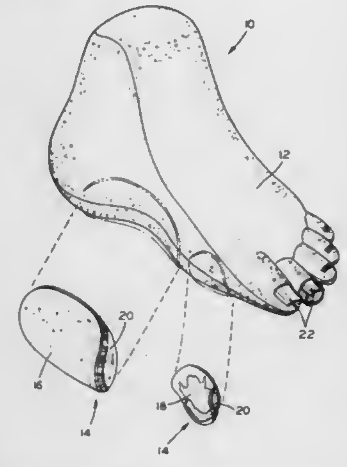
MEDICAL TEACHING AID

Alice H. Weber, Toledo, Ohio, and Katherine L. Miller, Cambridge City, Ind., assignors to Legacy Products, Inc., Toledo, Ohio

Filed Apr. 7, 1997, Ser. No. 834,572

Int. Cl.^{6} G09B *23/28*

U.S. Cl. 434—262 **17 Claims**



1. A medical teaching aid, comprising:
  a main body portion formed in the shape of a human foot;
  a fabric conforming to the main body portion, said fabric having an inner surface enclosing and adjacent to the main body potion and an outer surface opposite said inner surface; and
  selected facsimiles of foot conditions selectively and reasonably received by and retained on the outer surface of the fabric.

5,853,294

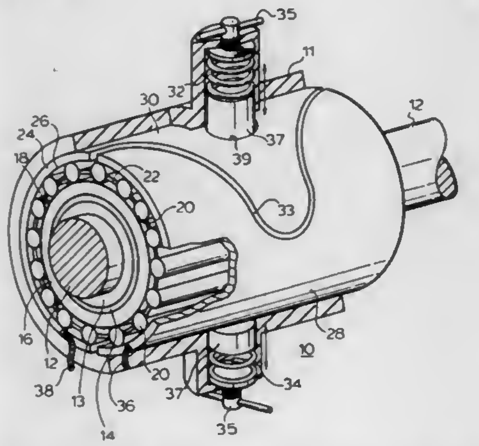
ANTI-FRICTION ROTATING CONTACT ASSEMBLY

Robert Henry Rehder, 14 Middleton Drive, Peterborough, Canada, K9J 4Z2

Filed Dec. 18, 1996, Ser. No. 768,649

Int. Cl.^{6} H01R *39/00*

U.S. Cl. 439—17 **14 Claims**



1. A rotating contact assembly in the form of an anti-friction type bearing wherein a plurality of rolling elements are housed between a pair of races,
  each rolling element having a continuous cylindrical outer surface,
  conductive means attached to said races for conducting current to and from said races,
  adjustable biasing means for applying a variable pressure to said contact assembly to vary the pressure exerted on said rolling elements by said races.

5,853,295

ANGLE CONNECTOR BETWEEN A COAXIAL STRUCTURE AND A PLANAR STRUCTURE

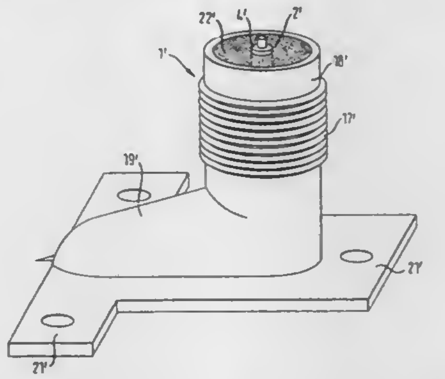
Bernd Rosenberger, Tittmoning, Germany, assignor to Rosenberger Hochfrequenztechnik GmbH & Co., Tittmoning, Germany

Filed Oct. 31, 1996, Ser. No. 740,673

Claims priority, application Germany, Oct. 31, 1995, 195 40 614.1

Int. Cl.^{6} H01R *9/09*

U.S. Cl. 439—63 **17 Claims**



1. An angle connector for electrically connecting a planar structure to a coaxial structure, comprising a planar-side terminal on the side of the planar structure where said planar-side terminal can be brought into contact with at least one planar conducting track, a coax-side terminal at the side of the coaxial structure, the coax-side terminal being configured at a given angle to the planar-side terminal and connectable to a coaxial line, the planar-side terminal being designed as a planar waveguide which is connected within an outer periphery of the angle connector to the coax-side terminal, the planar-side terminal being mounted perpendicularly to the coax-side terminal and extending within the outer periphery of a housing of said connector.

5,853,296

COMPONENT FOR ELECTRONIC ENCLOSURE

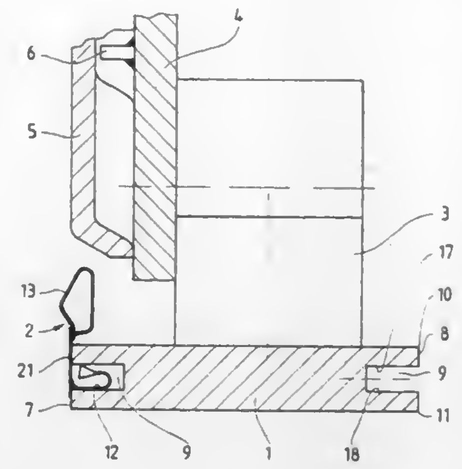
Hans-Ulrich Gunther, Pfinztal; Michael Joist, Gaggenau, and Klaus Pfeifer, Karlsruhe, all of Germany, assignors to Schroff GmbH, Straubenhard, Germany

Filed Nov. 29, 1996, Ser. No. 757,665

Int. Cl.^{6} H01R *4/66*

U.S. Cl. 439—92 **13 Claims**

1. A prefabricated component for electronic enclosures with a metal plate, and at least one electric contact producing spring element, which is located on the border area of the plate, characterized by the following features:
  the plate (**1**) includes narrow sides (**7**,**8**,) and a groove (**9**) on at least one of its narrow sides (**7**,**8**), wherein the groove (**9**) extends parallel to the edges (**10**,**11**) of the narrow sides (**7**,**8**),
  the spring element (**2**) includes a leaf clip (**12**) and a leaf spring (**13**),
  wherein the leaf clip (**12**) and the leaf spring (**13**) are at right angles to one another,
  the leaf clip (**12**) engages and is retained in the groove (**9**),



wherein the leaf spring (**13**) has a level base piece (**21**) and at least one contact piece (**22**) bent back on itself, wherein the base piece (**21**) stands parallel to the narrow side (**7**,**8**) and the contact piece (**22**) extends over the plate.

5,853,297

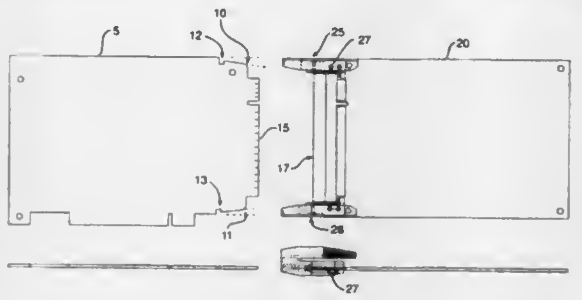
SYSTEM AND METHOD FOR CO-PLANAR AND NEARLY CO-PLANAR PRINTED CIRCUIT BOARD EXTENSION DOCKING SYSTEM

Harland Timothy Moulton, Winter Park, and Stephen H. Goldman, Maitland, both of Fla., assignors to Distributed Processing Technology Corporation, Maitland, Fla.

Filed Jun. 19, 1996, Ser. No. 666,076

Int. Cl.⁶ H01R ***13/62***

U.S. Cl. 439—327 **30 Claims**



1. A method for establishing a co-planar or nearly co-planar electrical connection and a mechanical connection between a first and a second printed circuit board (PCB), comprising:

attaching spring latches on opposite side edges of the end of the second PCB, the second PCB having edge electrical connectors;

shaping a first and second side of the mating end of the first PCB;

creating engagement notches on the first and second side edges of the mating end of the first PCB; and

sliding the spring latches of the second PCB, together with the second PCB onto the mating end of the first PCB sufficient to engage the spring latches with the engagement notches of the first PCB.

5,853,298

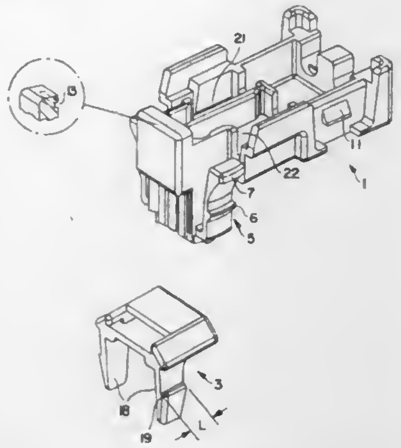
INITIATOR CONNECTOR FOR AIRBAG SYSTEMS

Franz Pacher, Eckental, Germany, assignor to Framatome Connectors Interlock, Inc., Westland, Mich.

Filed Mar. 20, 1997, Ser. No. 821,721

Int. Cl.⁶ H01R ***13/627***

U.S. Cl. 439—352 **6 Claims**



1. A plug adapted to mate with a socket of an electrical connector assembly, said plug comprising:

(a) a plug housing (**1**) having a nose portion (**4**) with pivotable, upwardly extending lateral locking arms (**5**) adapted to lock said plug to a socket;

(b) a removable cover (**2**) for said housing;

(c) latching means (**10–13**) located on said housing and said cover for latching said cover to said housing;

(d) a secondary locking clip (**3**) having secondary locking arms (**18**) adapted to be inserted downwardly into insertion grooves (**15**) in said cover (**2**) and to slide along an upper surface of said cover in longitudinally extending sliding grooves (**14**) in said cover, from a rear unlocking position to a front locking position;

(e) said secondary locking arms (**18**) extending through said cover, said secondary locking arms each having an outwardly extending projection which, in said front locking position of said secondary locking clip (**3**), engages an interior surface of a said lateral locking arm (**5**) and forces said lateral locking arm outwardly to prevent disconnection of said plug from a said socket.

5,853,299

LAMP SOCKET UNIT

Jeng-Shyong Wu, No. 14, Alley 1, Lane 326, Shyr-Piin Road, Hsin-Chu City, Taiwan

Filed Sep. 26, 1996, Ser. No. 721,246

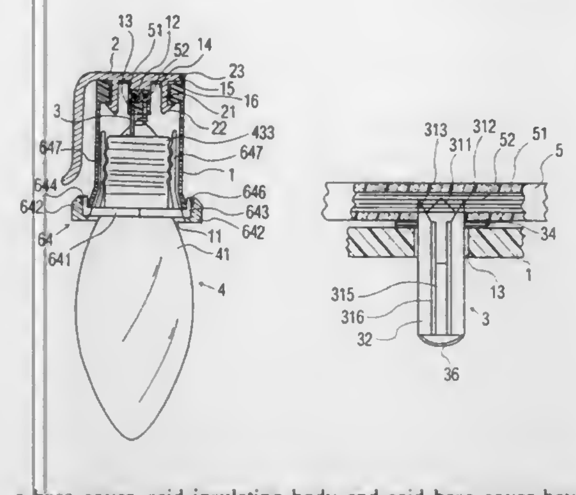
Int. Cl.⁶ H01R ***4/24***

U.S. Cl. 439—419 **20 Claims**

1. A lamp socket unit comprising:

an insulating body defining a lamp opening for receiving a lamp bulb, said insulating body also defining a wire slot, said insulating body also defining an electrical contact hole;

electrical contact positioned in said electrical contact hole, said electrical contact having a plurality of taper portions extending into said wire slot, said electrical contact having a contact portion extending into said lamp opening and electrically connectable with the lamp bulb, said electrical contact being formed from a folded rectangular metal sheet, a cross section of said electrical contact and said folded rectangular sheet being one of oval or rectangular shape for strengthening of said electrical contact, said metal sheet forms a joint on a longitudinal side of said electrical contact, said joint of said electrical contact including a flange, wherein said flange is bent around an axis parallel to the longitudinal axis of said contact portion;



a base cover, said insulating body and said base cover having base connection means for connecting said base cover and said insulating body together, and for causing said taper portions to pierce an insulated wire in said wire slot.

5,853,300

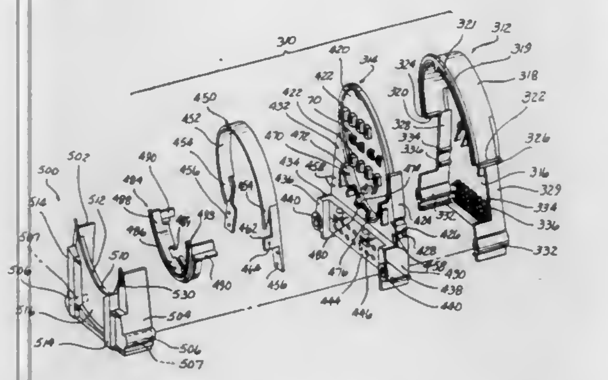
WATTHOUR SOCKET ADAPTER WITH IMPROVED ELECTRICAL CONNECTIONS

Darrell Robinson, Highland Township; Robert O. Learmont, Walled Lake; Karl R. Loehr, Novi; Allen V. Pruehs, Howell, and Keith C. Dropiewski, Walled Lake, all of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Continuation-in-part of Ser. No. 521,009, Aug. 30, 1995, Pat. No. 5,577,933, which is a continuation of Ser. No. 215,915, Mar. 22, 1994, abandoned, and Ser. No. 521,008, Aug. 10, 1995, Pat. No. 5,571,031. This application Jun. 3, 1996, Ser. No. 656,774

Int. Cl.⁶ H02B ***1/00***

U.S. Cl. 439—517 **43 Claims**



1. A watthour meter socket adapter electrically receiving blade terminals of a watthour meter, the socket adapter comprising:

a housing including a meter receiving portion and a terminal portion;

a plurality of jaw contacts mounted in the meter receiving portion;

at least one jaw contact including:

a base;

a plurality of jaws extending from the base adapted for receiving a blade terminal of a watt hour meter;

first discrete means, carried on the base, for connecting a first primary electrical conductor to the base;

second discrete means, coupled to the base and engagable with a fastener, for electrically connecting a second electrical conductor to the jaw contact;

third discrete means coupled to the base, for connecting a third electrical conductor to the at least one jaw contact;

a plurality of terminals in the terminal portion, and

the first primary electrical conductor connected between the means for connecting the first primary electrical conductor to the at least one jaw contact and one terminal in the terminal portion of the housing.

5,853,301

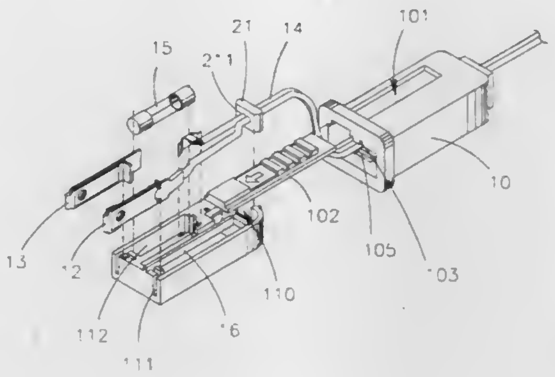
POLARITY FUSE PLUG

Lien-Sheng Wang, 8F-2, No. 8, Alley 10, Lane 658, Section 2, Chung Hsing Rd., Chutung, Hsinchu Hsien, Taiwan

Filed Sep. 19, 1996, Ser. No. 715,804

Int. Cl.⁶ H01R ***13/68***

U.S. Cl. 439—622 **6 Claims**



1. A polarity fuse plug, comprising:

an inner plug defining therein a fuse slot for receiving a fuse, a first conductor slot in communication with the fuse slot, a concave shaped slot in communication with but separated from the fuse slot, and a second conductor slot separated from the first conductor slot and the fuse slot;

an outer shell encasing the inner plug, the outer shell having an openable fuse cover for exposing the fuse slot to receive a fuse;

a first conductor positioned in the first conductor slot;

a second conductor positioned in the second conductor slot; and

a concave shaped butterfly plate having a first portion for contacting a lead of an input wire, and a second portion for contacting a fuse received within the fuse slot, the second portion having two end sections and a center section therebetween, the two end-sections being positioned within the concave shaped slot such that, when the fuse cover in the outer shell is opened, only the center section of the concave shaped butterfly plate is exposed and is adapted to resiliently engage the fuse.

5,853,302

DEVICE FOR THE CONNECTION OF ELECTRICAL CONDUCTORS TO A CONTROL UNIT, PREFERABLY FOR AN IRRIGATION CONTROL APPARATUS

Gianfranco Roman, Pasiano, and Claudio Pasut, Pordenone, both of Italy, assignors to Claber S.p.A., Veneto, Italy

Filed Apr. 9, 1997, Ser. No. 833,497

Claims priority, application Italy, Apr. 12, 1996, MI96A0703

Int. Cl.⁶ H01R ***23/70***

U.S. Cl. 439—629 **9 Claims**

7. A device for connection of electrical wire conductors to a control unit comprising:

a casing of electrically isolating material;

a terminal board including first and second sets of separate metallic terminals lying in discrete rows thereof, respectively,

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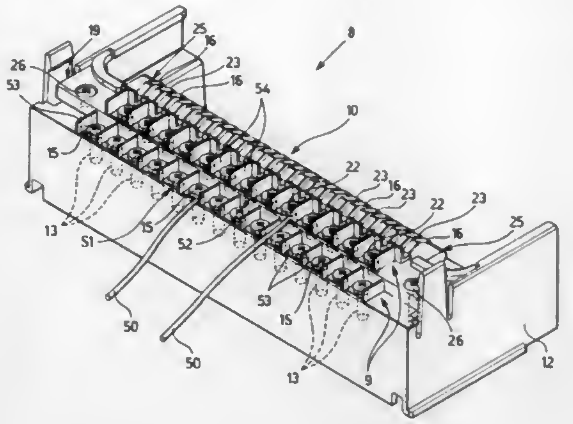


the terminals of each discrete set being separated from one another and the terminals in each row being separated from one another by said electrical insulating material, the row of said first set of terminals lying at an elevation along said terminal board below said row of said second set of terminals;

an electrical connector including a corresponding plurality of separate electrical contacts which are mechanically and electrically connected to respective terminals of the terminal board and are mechanically and electrically connectable to respective electrical contacts on the control unit; and

an elongated projection carrying said contacts, the contacts connected to said first and second sets of terminals being turned about an edge of said projection common to said contacts and alternating with one another for connection to the respective electrical contacts on the control unit.

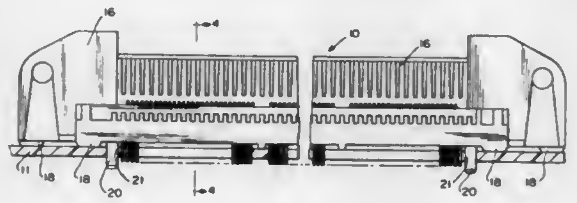
5,853,303
IMPEDANCE AND INDUCTANCE CONTROL IN ELECTRICAL CONNECTORS AND INCLUDING REDUCED CROSSTALK

David L. Brunker, Naperville; Frank A. Harwath, Downers Grove, and Dennis K. Scheer, Willowbrook, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 659,035, Jun. 3, 1996, abandoned, which is a continuation of Ser. No. 336,713, Nov. 9, 1994, Pat. No. 5,522,737, which is a continuation of Ser. No. 102,867, Aug. 6, 1993, abandoned, which is a division of Ser. No. 900,209, Jun. 17, 1992, Pat. No. 5,259,768, which is a continuation-in-part of Ser. No. 856,593, Mar. 24, 1992, abandoned. This application Nov. 28, 1997, Ser. No. 984,184

Int. Cl.⁶ H01R *23/70*

U.S. Cl. 439—637 14 Claims



1. In an edge connector for a printed circuit board having a mating edge and a plurality of contact pads adjacent the edge, the printed circuit board being at least part of an electrical circuit having a given impedance, the connector including an elongated dielectric housing having a board-receiving slot for receiving the mating edge of the printed circuit board, a plurality of terminals mounted on the housing, the terminals having body portions located in the housing and spring contact portions extending into the slot for contacting respective ones of the contact pads on the printed circuit board, the body portions including mechanically functional sections for mounting the terminals in the housing, wherein the improvement comprises:

said body portions including mechanically non-functional sections of a given area which effect a given capacitance, the mechanically non-functional sections being selectively trimmable to vary the terminal area to provide a given capacitance, and, therefore, an impedance to match said given impedance of the electrical circuit.

5,853,304
TERMINAL BLOCK TYPE CONNECTION MODULE

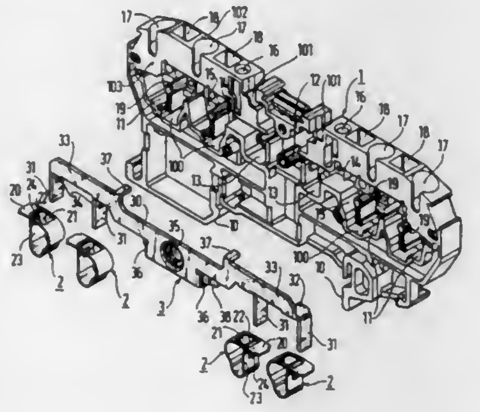
Daniel Landreau, Champagne Au Mont D'Or, and Etienne Briguet, Rillieux la Pape, both of France, assignors to Entrelec S.A., Villeurbanne, France

Filed Mar. 28, 1996, Ser. No. 623,120

Claims priority, application France, Mar. 29, 1995, 95 03707

Int. Cl.⁶ H01R *9/26*

U.S. Cl. 439—721 12 Claims



1. A connection facility for conductive wires, the connection facility including at least one electrically conductive rigid link strip (3) and at least one wire-connection part (2);

said wire-connection part formed by a spring blade having a first end (20) and a second end (23);

said first end having a perforation (21) therein for receiving a wire to be connected between a wire-abutment edge (22) of the perforation and said second end;

said second end of the spring blade being looped back on itself so that when no wire is received in said perforation the second end is resiliently pressed against the wire-abutment edge and penetrates said perforation;

said electrically conductive rigid link strip including at least one link element (30) that is planar and edged by at least one support element (31) having a distal end; wherein

said at least one support element is engaged with said wire-connection part by initially inserting said at least one support element through said perforation of said first end of said wire-connection part and during subsequent further insertion said distal end of said at least one support element is slid past said wire-connection part so as to press against a loop formed by said second end of said wire-connection part looped back on itself to provide support for said wire-connection part.

5,853,305
CONNECTION CLIP TO A BUSBAR FOR A DRAW-IN MULTIPOLE CIRCUIT BREAKER OR SYSTEM

Antoine Bedrossian, Meylan; Philippe Langlois, Saint - Lattier; Pascal Lepretre, Les Marches; Robert Morel, Herbeys; Pascale Rodriguez, Golles, and Gilbert Velletaz, StPierre d'Albigny, all of France, assignors to Schneider Electric S.A., France

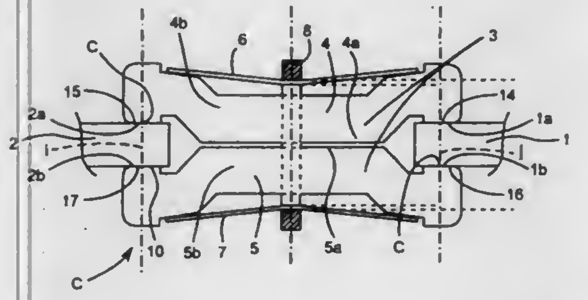
PCT No. PCT/FR95/01582, § 371 Date May 30, 1997, § 102(e) Date May 30, 1997, PCT Pub. No. WO96/18199, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 1, 1992, Ser. No. 849,188

Claims priority, application France, Dec. 6, 1994, 94/14883

Int. Cl.⁶ H01R *9/24*

U.S. Cl. 439—787 7 Claims



1. A connection clip for electrical connection between a contact terminal strip of a circuit breaker and a busbar, the connection clip comprising:

a plurality of opposed pairs of independent contact fingers forming a bridge; each opposed pair of contact fringes having contact ends made of a conductive material and having a space therebetween; and

means for elastically urging the opposed pairs of independent contact fingers toward each other so that the contact ends of each opposed pair of independent contact fingers electrically connects to one of said terminal strip and a busbar that is drawn into the space between an opposed pair of the independent contact fingers; wherein

a friction-reducing coating containing graphite is disposed on the contact ends to facilitate draw-in of one of said terminal strip and busbar; and

a plurality of sides of the independent contact fingers are graphite-coated to reduce friction between lateral surfaces of the independent contact fingers.

5,853,306
OPERATION OF MARINE ENGINES

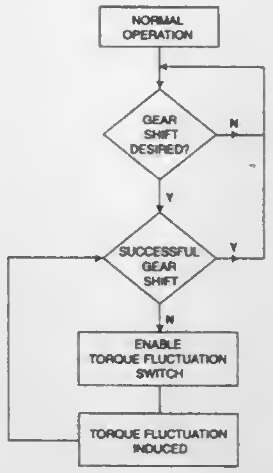
David Richard Worth, Shenton Park; Thomas Schnepple, Wembly, and Stephen Reinhard Maiss, Woodvale, all of Australia, assignors to Orbital Engine Company (Australia) Pty Limited, Balcatta, W.A., Australia

Filed Dec. 16, 1996, Ser. No. 767,500

Claims priority, application Australia, Dec. 15, 1995, PN 7169

Int. Cl.⁶ B63H *21/21*

U.S. Cl. 440—1 31 Claims



1. A method of operation of an internal combustion engine comprising sensing an operator demand for a gear-shift and, in response to the sensing of said operator demand, varying the engine torque profile while maintaining a mean engine output torque to thereby enable said gear-shift to be effected.

5,853,307
TRIM SENSOR FOR OUTBOARD DRIVE

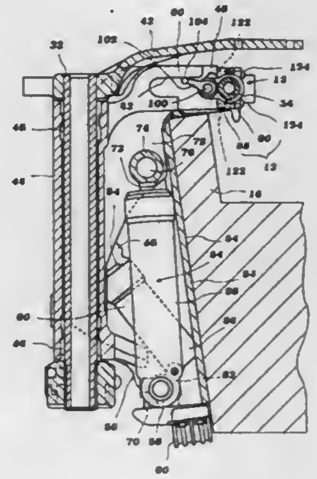
Noriyuki Natsume, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 31, 1996, Ser. No. 690,551

Claims priority, application Japan, Jul. 31, 1995, 7-195542

Int. Cl.⁶ B63H *20/10*

U.S. Cl. 440—2 20 Claims



1. A tilt and trim apparatus for moving an outboard drive of a watercraft between a raised position and a lowered position, the tilt and trim apparatus comprising a first member attachable to a watercraft and a second member attachable to the outboard drive, the first and second members being interconnected with the second member being rotatable relative to the first member, said second member also supporting the outboard drive such that the outboard drive is rotatable with the second member relative to the first member, and a sensor operating between the first and second members to determine the angular position of the second member and the outboard drive relative to the first member, the sensor being arranged between the first and second members with an exterior portion and positioned to be exposed on the front side of the apparatus with the outboard drive in the lowered position, the sensor including a follower arm and a spring arranged to bias the follower arm to maintain contact with one of the first and second members.

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5,853,308

ENGINE AND EXHAUST SYSTEM FOR WATERCRAFT

Masayoshi Nanami; Ryoichi Nakase, and Tetsuya Mashiko, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

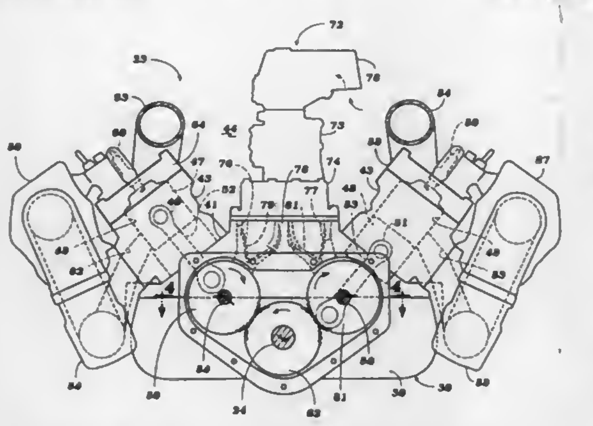
Continuation of Ser. No. 318,055, Oct. 4, 1994, abandoned.

This application Sep. 27, 1996, Ser. No. 723,163

Claims priority, application Japan, Oct. 4, 1993, 5-247947; Oct. 19, 1993, 5-261186

Int. Cl.⁶ B63H ***21/32***

U.S. Cl. 440—89 **26 Claims**



1. A watercraft comprised of a hull defining an engine compartment, a two-cycle, crankcase compression internal combustion engine contained within said engine compartment and for a watercraft having a crankcase chamber journaling an output shaft, a pair of cylinder blocks extending at a V-angle to each other and affixed to said crankcase chamber, each cylinder block having at least one cylinder bore containing a piston for driving said output shaft, said cylinder bores having axes lying a plane that extends transversely to said output shaft, an induction system for said engine disposed substantially completely in a valley defined between said cylinder blocks for delivering at least an air charge to said crankcase chamber for transfer to combustion chambers formed above said pistons, and a pair of exhaust manifolds each affixed to a respective one of said cylinder blocks on the side thereof facing away from said valley.

5,853,309

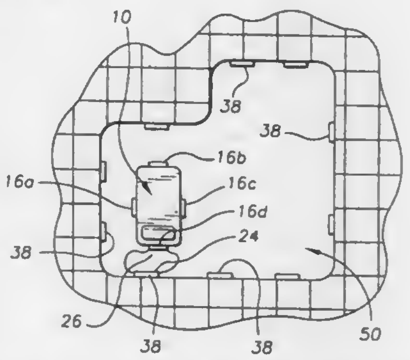
SWIMMING POOL FLOAT WITH ANCHORING SYSTEM

Sabrina P. Biggs, 8809 S. Point Pkwy. E. #1006, Phoenix, Ariz. 85044

Filed Sep. 9, 1997, Ser. No. 926,130

Int. Cl.⁶ B63B ***35/58***

U.S. Cl. 441—40 **9 Claims**



1. A swimming pool float with anchoring system comprising:

a flotation device;

at least one float anchoring assembly secured to said flotation device;

at least two pool anchoring assemblies securable to said cantilever side edge of a swimming pool, and

a flexible anchoring line including a first securing mechanism securable to a float anchoring assembly and a second securing mechanism securable to one of said pool anchoring assemblies in a manner to anchor said flotation device to said cantilever side edge of said swimming pool;

said float anchoring assembly including a section of hook and pile fastener material and a flexible cover member that folds over said section of hook and pile fastener material when nothing is secured to said section of hook and pile fastener material.

5,853,310

METHOD OF MANUFACTURING ELECTRON-EMITTING DEVICE, ELECTRON SOURCE AND IMAGE-FORMING APPARATUS

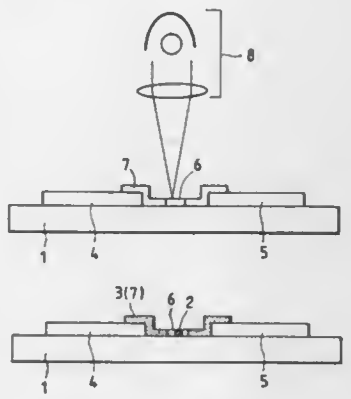
Michiyo Nishimura, Sagamihara; Ichiro Nomura, Atsugi; Yoshikazu Banno, Machida; Takeo Tsukamoto, Atsugi; Hirokatsu Miyata, Hadano, and Kazuhiro Takada, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1995, Ser. No. 563,768

Claims priority, application Japan, Nov. 29, 1994, 6-317796; Nov. 21, 1995, 7-325279

Int. Cl.⁶ H01J ***9/02;1/30***

U.S. Cl. 445—1.24 **26 Claims**



7. A method of manufacturing an electron-emitting device comprising the steps of:

providing a pair of electrodes and an electroconductive thin film arranged between the electrodes; and

forming an electron-emitting region in the electroconductive thin film by performing the steps of:

partially modifying the composition of the electroconductive thin film with a chemical change to make a region of the electroconductive thin film have a higher resistivity than a resistivity in other regions; and

causing an electric current to run through said electroconductive thin film to form the electron-emitting region in the region having the higher resistivity.

5,853,311

MULTI-LAYERED FLYING DISK

Mark Bartholomew, 2820 Bardswood, Tallahassee, Fla. 32304

Filed Mar. 22, 1996, Ser. No. 620,402

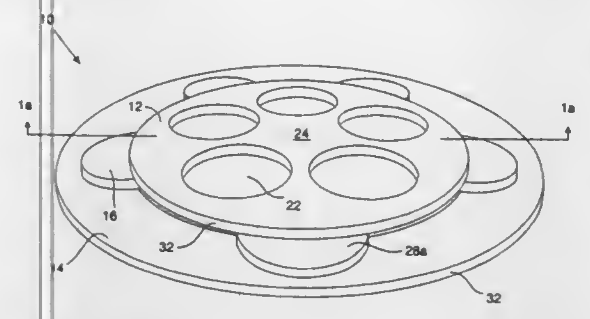
Int. Cl.⁶ A63B ***65/10***

U.S. Cl. 446—48 **13 Claims**

1. A flyer comprising:

a generally circular and generally planar disk having a plurality of spaced apart apertures each aperture having a first diameter, wherein said apertures enable air to form a vortex when the flyer is thrown;

a generally circular and generally planar ring having an opening; and a plurality of tabs, each having a top connected to the disk, a bottom connected to the ring an arcuate outer periphery and a second diameter that is generally equal to the first diameter.



5,853,312

MODEL AIRPLANE FOR SCIENTIFIC EDUCATION AND COMPETITION

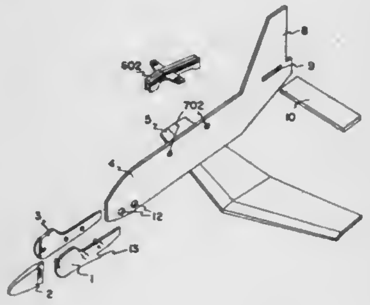
Danny H. Y. Li, West, Hong Kong, assignor to Lyon Aviation Engineering Equipment Co., Ltd., Hong Kong, Hong Kong

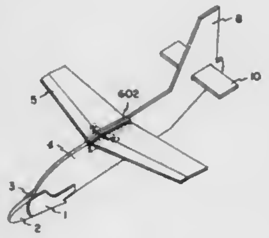
Filed Feb. 6, 1996, Ser. No. 597,276

Claims priority, application China, Sep. 15, 1995, 95 2 21641.8

Int. Cl.⁶ A63H ***27/18***

U.S. Cl. 446—61 **3 Claims**





1. A model airplane, comprising:

a body having a nose portion and a tail portion, said nose portion being fitted with a detachable buffer and a hook, the tail portion having a vertical tail piece;

a wing section;

a horizontal tail piece fitted to said tail portion;

an adapter for holding said wing section to said body, said adapter being formed to raise the wing section at an elevation angle in the range 0°–20° with respect to a horizontal plane that is perpendicular to the body, and wherein said adapter comprises a left portion and a right portion, said left portion having tenons to go through holes in a central portion of said body and to fit into corresponding mortises in said right portion, said left portion and said right portion each having a slot for receiving said wing section, and the adapter having right and left sides elevated at an angle in the range of 0°–20° with respect to a horizontal plane that is perpendicular to the body.

5,853,313

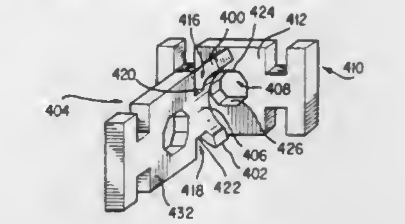
CONSTRUCTIONAL TOY WITH DEFORMABLE JOINTS

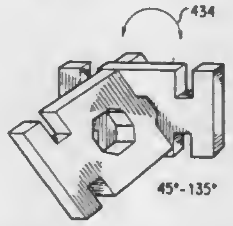
Yu Zheng, Covina, Calif., assignor to Patent Category Corp., Monrovia, Calif.

Filed Apr. 16, 1996, Ser. No. 632,678

Int. Cl.⁶ A63H ***33/08***

U.S. Cl. 446—106 **14 Claims**





1. An object assembled by interconnecting a plurality of pieces, the plurality of pieces including a first piece and a second piece, each of the first and second pieces including:

a section comprising opposing first and second notches and a tongue defining a neck between the first and second notches, the tongue having a width and opposing first and second flaps, and the neck having a width; and

an aperture having a dimension which is smaller than the width of the tongue and a widest dimension of about half of the width of the tongue, and a dimension which is the same as or smaller than the width of the neck;

wherein the opposing flaps of the tongue of the sections of the first piece must be bent to insert the tongue of the first piece through the aperture of the second piece to effectuate a connection of the section of the first piece at the location of the aperture of the second piece, with the neck of the section of the first piece held inside the aperture of the second piece.

5,853,314

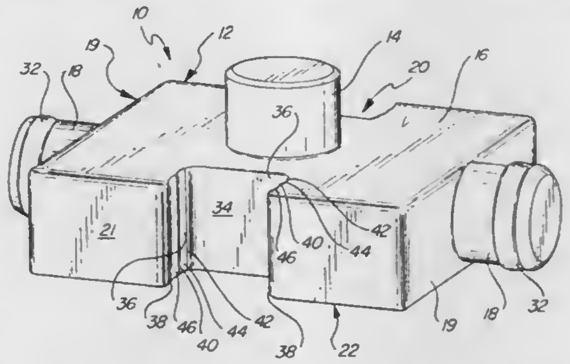
TOY BUILDING BLOCK

Sunil K. Bora, 31950 Concord Dr. #19A, Madison Heights, Mich. 48071

Filed Feb. 18, 1997, Ser. No. 802,537

Int. Cl.⁶ A63H ***33/08***

U.S. Cl. 446—120 **12 Claims**



1. A toy building block comprising a body having parallel top and bottom faces and first and second substantially planar lateral faces orthogonal to the top and bottom faces, a lateral male feature projecting from the first lateral face and a lateral female feature recessed into the second lateral face, the lateral male and female features matingly engageable with female and male lateral features

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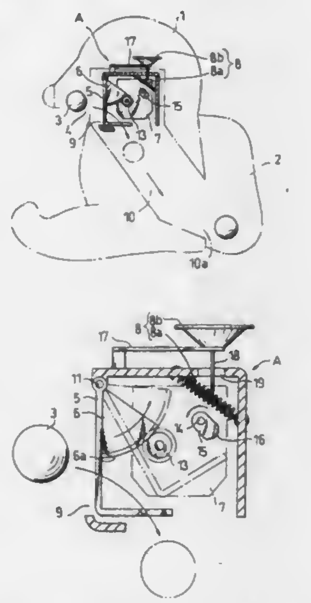
of other of said blocks to achieve interlocking connection of the block with said similar blocks, the block further characterized in that:

a top male feature projects from the top face and a bottom female feature is disposed on the bottom face, the bottom female feature being matingly engageable with top male features of other of said blocks, and the lateral male and female features have respective first and second interlocking means configured to engage with one another in a first mating position and in an alternative second mating position, the first mating position establishing a first connection between the blocks wherein the lateral male feature is inserted substantially fully into the lateral female feature such that adjacent faces of the connected blocks are parallel and proximate one another to inhibit swivelling movement of the connected blocks relative to one another in a plane orthogonal to the top and bottom faces, and the second mating position establishing a second connection between the blocks wherein the lateral male feature is inserted less than fully into the lateral female feature such that the adjacent faces of the connected blocks are separated from one another by a distance sufficient to permit said swivelling movement.

5,853,315
SOUND GENERATING TOY

Ryouichi Satoh, Matsudo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
PCT No. PCT/JP97/00004, § 371 Date Sep. 8, 1997, § 102(e) Date Sep. 8, 1997, PCT Pub. No. WO97/25120, PCT Pub. Date Jul. 17, 1997
PCT Filed Jan. 6, 1997, Ser. No. 913,131
Claims priority, application Japan, Jan. 8, 1996, 8-018116
Int. Cl.^{6} A63H *3/28;3/24*
U.S. Cl. 446—301 **20 Claims**

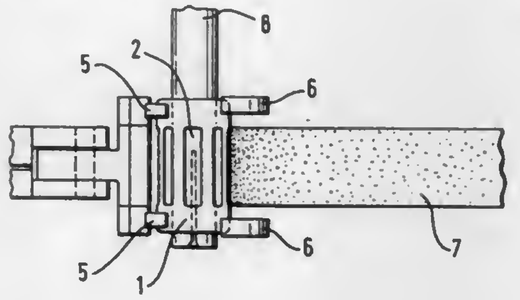


1. A sound generating toy including a toy body provided with a head (1) and a mouth (4) arranged in said head, wherein sound is generated when a toy food is put in said mouth, the sound generating toy comprises:
- a door member (5) arranged in said head so as to be moved when a toy food (3) made in imitation of food is put in said mouth;
- a spiral spring unit (7) including a spiral spring, an input shaft and an output shaft (14) and arranged in said head;
- a wind-up mechanism (6) arranged in said head and actuated in association with said door member to wind up said spiral spring of said spiral spring unit; and
- a sound generating means (8) arranged in said head for generating sound, wherein

said output shaft of said spiral spring unit is mounted thereon with an eccentric rotation member (15), so that rotation of said output shaft causes said eccentric rotation member to engage with said sound generating means to permit said sound generating means to mechanically and cyclically generate a sound.

5,853,316
METHOD OF AND APPARATUS FOR GRINDING CONTROL EDGES OF A CONTROL BUSH

Ludwig Kern, Erlangen; Andre Kuckuk, Herzogenaurach, and Paul Katona, Weisendorf, all of Germany, assignors to INA Wälzlager Schaeffler oHG, Herzogenaurach, Germany
Continuation of Ser. No. 541,787, Oct. 10, 1995, abandoned. This application Jun. 12, 1997, Ser. No. 874,052
Claims priority, application Germany, Oct. 19, 1994, 44 37 302.3
Int. Cl.^{6} B24B *5/00*
U.S. Cl. 451—11 **7 Claims**

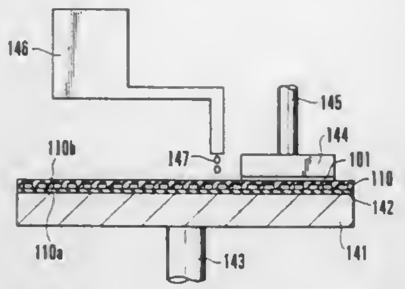


1. A method of positioning a control bush of a rotary slide valve for hydraulic steering of motor vehicles for subsequent centerless grinding of control edges of the control bush, comprising the steps of:
- providing a control bush having a predetermined outside diameter and formed with a plurality of circumferentially spaced grooves bound by edges to be ground for formation of control edges of the control bush;
- placing a mandrel interiorly in the control bush in a form-fitting manner for adjusting an angular position of the control bush;
- determining a reference point of the angular position of each individual groove of the control bush by a measuring system;
- computing from the determined reference points of all grooves an optimum reference point for the angular position of the control edges; and
- positioning the grooves of the control bush for formation of the control edges through subsequent grinding commensurate with the computed optimum reference point in accordance with a given angular pitch of the control edges.

5,853,317
POLISHING PAD AND POLISHING APPARATUS HAVING THE SAME

Yoshiaki Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 25, 1997, Ser. No. 881,983
Claims priority, application Japan, Jun. 27, 1996, 8-167761
Int. Cl.^{6} B24B *29/00*
U.S. Cl. 451—288 **8 Claims**

6. A polishing apparatus comprising:
- a rotatable platen;
- a polishing pad made of a flexible material and adhered on said platen, said polishing pad having a first major surface which is brought into contact with a polishing target member, a second major surface which is disposed toward said polishing pad, and a large number of holes serving as slurry reservoirs;

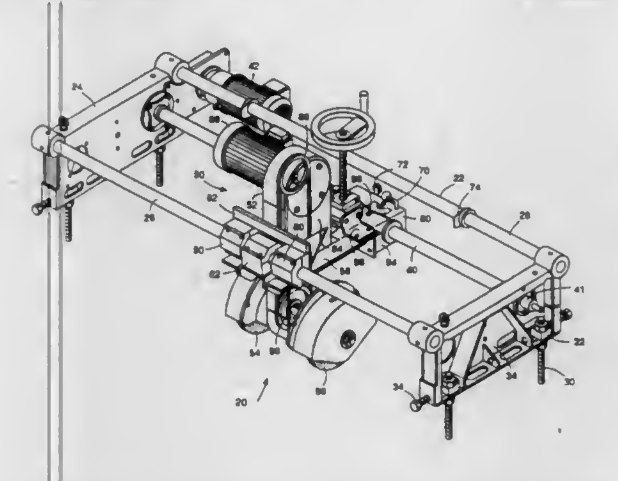


- a wafer carrier which supports the polishing target member while rotating to urge the polishing target member against said polishing pad which is rotating; and
- a slurry supply unit for feeding a slurry to a polishing target surface of the polishing target member during polishing;

wherein the holes having a larger opening area on said second major surface than that on said first major surface and wherein there is a one to one correspondence between the holes in the first and second major surfaces.

5,853,318
ROLL SURFACE GRINDER

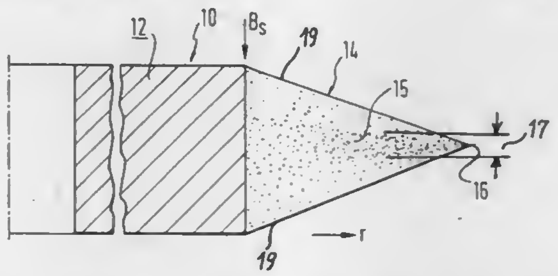
Kelsey C. Thom, Litchfield, N.H., and Heath L. Hartwig, Waterloo, Iowa, assignors to Consolidated Process Machinery, Inc., Merrimack, N.H.
Filed Oct. 31, 1997, Ser. No. 962,276
Int. Cl.^{6} B24B *19/18*
U.S. Cl. 451—425 **6 Claims**



1. Apparatus for grinding a roll of a flaking mill, the roll having a longitudinal axis of rotation, comprising:
- a grinding wheel carriage assembly including a swing arm carrying at least one grinding wheel;
- support structure for carrying said carriage assembly and mountable on the flaking mill for engaging said grinding wheel against the roll, said structure including a pair of longitudinally spaced structural members extending generally parallel to the axis of rotation of the roll;
- a shaft carried by said support structure and extending generally parallel to said pair of structural members;
- a motor for rotating said shaft;
- said carriage assembly being mounted on said shaft and one of said structural members for traversing movement along said shaft and one member between opposite ends of the roll;
- a rolling ring drive coupled to said rotating shaft for driving said carriage assembly along said shaft and said one member between opposite ends of the roll; and
- an adjusting mechanism for pivoting said swing arm relative to said carriage assembly to adjust the depth of grinding;
- said swing arm being mounted for adjustable pivotal movement about said one member.

5,853,319
GRINDING TOOL

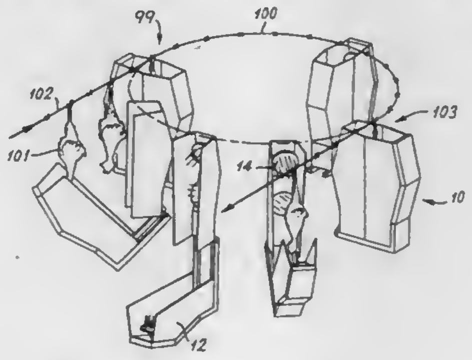
Hans-Robert Meyer, Hollern-Twielenfleth, Germany, assignor to Ernst Winter & Sohn Diamantwerkzeuge GmbH & Co., Norderstedt, Germany
Filed Sep. 12, 1996, Ser. No. 713,020
Claims priority, application Germany, Sep. 13, 1995, 195 33 836.7
Int. Cl.^{6} B24B *33/04*
U.S. Cl. 451—548 **11 Claims**



1. A grinding tool for the grinding of profiles on workpieces comprising a basic body symmetrical with respect to an axis of rotation of the grinding tool, the basic body having a circular periphery, and an annular grinding layer deposited on the periphery of the basic body, the grinding layer being composed of a mixture of components comprising grinding grains and bonding agent, the components of the grinding layer being present in variable volume percent concentrations within axial layers, the axial layers having different radial dimensions, wherein the concentrations of components within the axial layers are effective to equalize wear rates among the axial layers when the grinding layer is subjected to variable axial grinding loads during profile grinding.

5,853,320
PLUCKING APPARATUS FOR POULTRY

Christopher Michael Wathes, Royston; David Bernard Tinker, Ampthill, and Colin Gibson, Clifton, all of England, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB94/02585, § 371 Date May 10, 1996, § 102(e) Date May 10, 1996, PCT Pub. No. WO95/14387, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 25, 1994, Ser. No. 646,285
Claims priority, application United Kingdom, Nov. 26, 1993, 9324342; Jun. 16, 1994, 9412089
Int. Cl.^{6} A22C *21/02*
U.S. Cl. 452—88 **18 Claims**

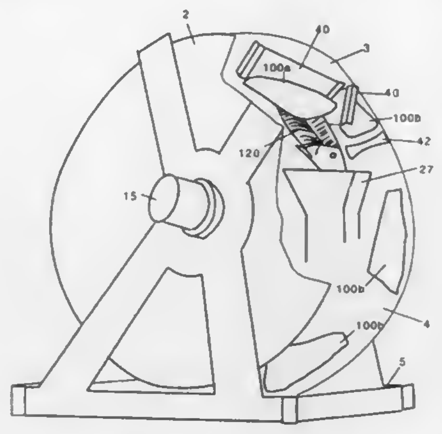


1. Poultry processing equipment including:
- a shackle line,
- a plurality of individual plucking units operatively positioned adjacent said shackle line, one for each of a number of carcasses to be plucked at any one time,
- each of said plurality of plucking units having plucking heads,
- shielding means for said plucking units whereby the plucking heads of each said unit are shielded from the plucking heads of the neighboring units during plucking, and

means for cleaning each of the plucking units between successive plucking operations by that unit.

5,853,321
FISH PROCESSING MACHINE HAVING REFRIGERATED WHEELS

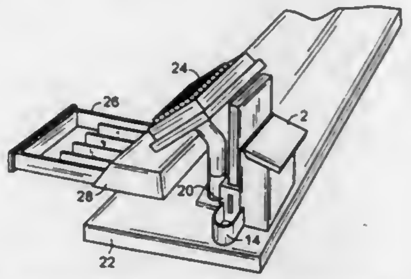
Leonard P. Miller, 40535 Waterman Rd., Homer, Ak. 99603
Filed Oct. 1, 1997, Ser. No. 943,042
Int. Cl.^{6} A22C *25/16*
U.S. Cl. 452—161 **20 Claims**



1. A fish processing device for removing fillets from a fish having a top, a bottom, and a carcass, comprising:
- a) a frame;
- b) a pair of rotating wheels, each wheel having a frost susceptible rim, rotatably attached to said frame, said pair of rotating wheels being articulated so that the pair of wheels is spaced close together at one point of rotation, and are spaced farther apart at a later point of rotation;
- c) means for refrigerating said frost susceptible rim of each wheel;
- d) a means for introducing a fish into said pair of wheels, whereby said fish becomes attached to said pair of wheels by frost adhesion;
- e) a means for cutting a pair of side fillets from said fish; such that as said pair of fillets are cut from said fish, said pair of fillets are adhered to said pair of wheels and are removed from the fish; and
- f) a means for rotating said pair of rotating wheels.

5,853,322
COIN DISPENSER CHECK WRITING SURFACE WITH OPTIONAL CONTROL PANEL

Michael F. Jones, Mt. Vernon, N.H., and Paul O. Stump, Topsfield, Mass., assignors to Telequip Corporation, Hollis, N.H.
Filed Nov. 7, 1996, Ser. No. 745,030
Int. Cl.^{6} G07D *1/00*
U.S. Cl. 453—63 **9 Claims**



1. A coin dispenser writing surface comprising, in combination:

a coin dispensing means;

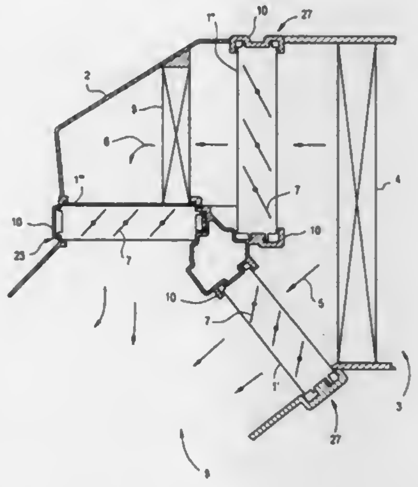
a flat surface integrally attached to said coin dispensing means, said flat surface being accessible to a user of said coin dispensing means in a manner that allows use of said flat surface for writing, said flat surface further being positioned so as not to interfere with other functions of said coin dispensing means;

at least one control or serviceable component for said coin dispensing means; and

a control panel means for holding said at least one control of said coin dispensing means, said control panel means being located beneath said flat surface.

5,853,323
HEATING OR AIR CONDITIONING UNIT

Oliver Beck, Sindelfingen-Hinterweil; Ralf Berndt; Walter Denk, both of Ditzingen; Hans Juergen Drobner, Leonberg; Manfred Fuchs, Stuttgart; Gabriele Herbold, Marbach; Ingo Putz, Stuttgart; Reinhold Schork, Eberbach; Thomas Spranger, Stuttgart, and Walter Ullrich, Moeglingen, all of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany
Filed Oct. 24, 1997, Ser. No. 957,775
Claims priority, application Germany, Oct. 24, 1996, 196 44 159.5
Int. Cl.^{6} B60H *1/00*
U.S. Cl. 454—156 **17 Claims**



1. A unit for conditioning air in a motor vehicle, comprising:

a housing with at least one receptacle;

at least one of a heater and an evaporator supported in the housing;

an inlet opening for receiving air;

an outlet opening for discharging conditioned air;

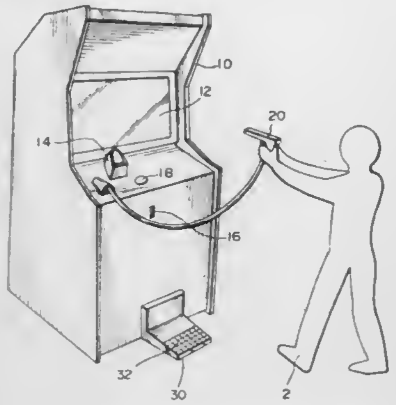
at least one duct arranged between the inlet and outlet openings;

at least one air control element for regulating air flow through the at least one duct, the at least one air control element including an installation frame supporting a plurality of louvers; and

the installation frame comprising at least one frame side having a profile for positive-locking engagement with respect to the housing receptacle.

5,853,324
SHOOTING GAME MACHINE AND METHOD OF COMPUTING THE SAME

Hirofumi Kami; Masayuki Kikuchi, and Shigeki Tohyama, all of Tokyo, Japan, assignors to Namco Ltd., Tokyo, Japan
Filed Sep. 5, 1996, Ser. No. 706,570
Claims priority, application Japan, Sep. 7, 1995, 7-256791
Int. Cl.^{6} A63F *9/22*
U.S. Cl. 463—2 **16 Claims**



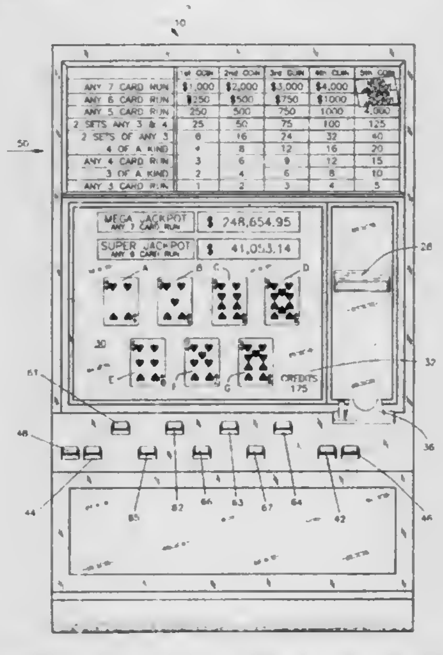
1. A shooting game machine for shooting at a target displayed on a display, comprising:

selecting means used by a player for selecting a defense mode; and

computing means for causing a virtual player in a game space to avoid danger when said defense mode is selected so that said virtual player cannot be damaged by the enemy.

5,853,325
METHOD OF PLAYING AN ELECTRONIC RUMMY GAME APPARATUS

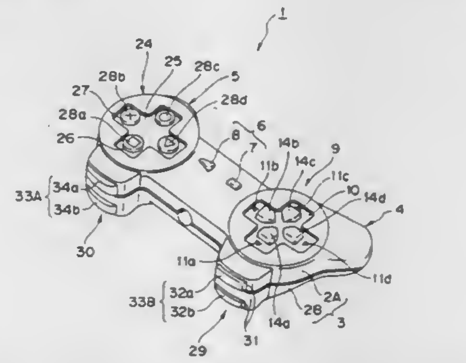
Thomas P. Kadlic, 4505 W. Hacienda Ave. Suite, #G, Las Vegas, Nev. 89118
Continuation-in-part of Ser. No. 336,271, Nov. 8, 1994, Pat. No. 5,601,488. This application Feb. 3, 1997, Ser. No. 794,291
Int. Cl.^{6} A63F *1/00*
U.S. Cl. 463—13 **27 Claims**



15. A method of playing a card game that only uses the player's hand to determine winning and losing outcomes comprising:
- a) dealing at least six cards from a standard deck of playing cards including designating at least one of the cards of the standard deck of playing cards as a wild card;
- b) a player selecting which of the cards the player wishes to hold and which of the cards the player wishes to discard;
- c) dealing replacement cards for those cards that the player has discarded;
- d) determining whether the resulting cards form a three card run;
- e) providing the player an award if a three card run results.

5,853,326
CONTROLLER UNIT FOR ELECTRONIC DEVICES

Teiyu Goto, Saitama, and Hiroki Ogata, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 682,271, Jul. 17, 1996, Pat. No. 5,716,274, which is a continuation of Ser. No. 436,728, May 8, 1995, Pat. No. 5,551,693. This application May 28, 1997, Ser. No. 864,556
Claims priority, application Japan, May 9, 1994, 6-094988; Oct. 3, 1994, 6-238898
Int. Cl.^{6} A63F *9/22*
U.S. Cl. 463—37 **26 Claims**



1. A game machine including controller unit for controlling electronic devices, said controller unit comprising:

a housing;

a plurality of control sections mounted to said housing to be manipulated by finger of a user; and

a pair of handles diverging from each other in a direction from said housing toward the user, said diverging handles being molded as one unit body with said housing, said diverging handles to be contacted with and supported by palms of both hands of the user, said housing, said handles and control sections sized and arranged to allow manipulation of the control section by the user's fingers while the housing is supported by the user's palms.

5,853,327
COMPUTERIZED GAME BOARD

Pinhas Gilboa, Haifa, Israel, assignor to Super Dimension, Inc., Wilmington, Del.
Filed Feb. 21, 1996, Ser. No. 603,627
Int. Cl.^{6} A63F *9/22;* G06F *15/44*
U.S. Cl. 463—39 **37 Claims**

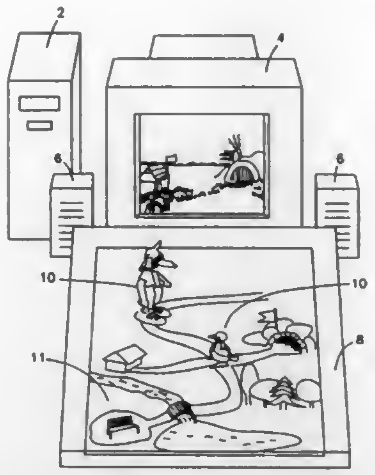
1. An electronic game board system comprising:

a game board surface;

an excitation signal generator which generates an electromagnetic query signal;

a plurality of playing pieces positioned on the game board surface, each said piece including a transponder which receives the query signal and, in response thereto, generates an identifying answer signal; and

a plurality of sensors which, upon receipt of the answer signal, generate a plurality of sensor signals responsive to the loca-



tion of at least one playing piece for automatically and non-discretely sensing location of the playing pieces.

5,853,328
POWER TRANSMISSION DEVICE AND CONSTANT VELOCITY UNIVERSAL JOINT THEREFOR

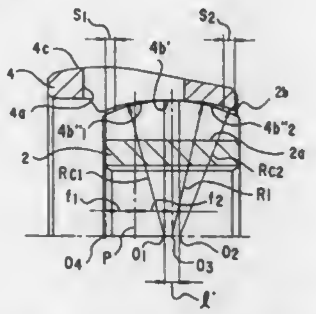
Masazumi Kobayashi; Takeshi Kohara; Haruo Nagatani, and Yoshikazu Fukumura, all of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Feb. 13, 1997, Ser. No. 799,193

Claims priority, application Japan, Feb. 14, 1996, 8-026471; Mar. 26, 1996, 8-070535

Int. Cl.^{6} F16D *3/226*

U.S. Cl. 464—145 **31 Claims**



1. A constant velocity universal joint for coupling together two rotary axes in a drive system for an automobile, comprising:

an outer member adapted to connect with one of the rotary axes, said outer member having a cylindrical hole with a plurality of axially extending guide grooves formed in a cylindrical inner surface thereof,

an inner member adapted to connect with the other of the rotary axes, said inner member having an outer surface which is at least partly spherical, with the same number of axially extending guide grooves as the guide grooves of said outer member formed in the outer surface,

a plurality of balls for transmission of torque, each of said balls being received in a ball track defined by a pair of opposing guide grooves of said outer and inner members, and

a cage having ball pockets for receiving the respective balls, said cage having partial spherical inner and outer surfaces of which centers of curvature are offset axially of the joint by the same distance on the opposite sides of the ball center line and the partial spherical surfaces of the cage are respectively guided by contact with the partial spherical outer surface of said inner member and the cylindrical hole of said outer member, a pocket clearance is axially defined between said ball and the ball pocket of said cage allowing for smooth rolling of said ball, and the inner surface of said cage is comprised of a cylindrical surface portion, the inner partial spherical surfaces being connected to opposite sides of said cylindrical surface portion, said cylindrical surface portion has a sufficient length measured axially of a central portion of the cage to allow for relative movement of the inner member with respect to the cage thereby bringing a portion of the outer surface of the inner member into engagement with one of the partial spherical surfaces of the cage, to absorb an amount of movement of an engine produced during starting acceleration of the automobile.

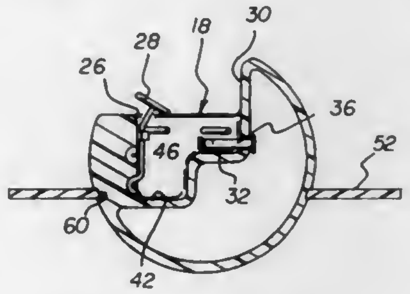
5,853,329
WHIRL AROUND TOY

Darinelle V. Worlds, and Maurice Worlds, both of 120 Creek Dr., Leesburg, Ga. 31763

Filed Jun. 27, 1997, Ser. No. 884,217

Int. Cl.^{6} A63G *1/20*

U.S. Cl. 472—25 **4 Claims**



1. A new and improved whirl around toy for recreational use by a child when seated within comprising in combination:

a general spherical member having a hollow body with an upper end, the upper end having an opening defining a recessed portion that projects inward therefrom, the spherical member having a lower end and a plurality of notches therearound, the notches being spaced from the lower end and about the circumference of the spherical member, the recessed portion having a front wall with a steering mechanism attached thereto, the recessed portion having a back wall with an outwardly extending ledge, the recessed portion having a floor, the outwardly extending ledge being capable of receiving a child in a seated position; and

a ring having an inner circular edge and an outer circular edge, the inner circular edge having at least four protrusions projecting outwardly therefrom, each protrusion being proportionately spaced one from another along the inner edge, each protrusion being snap fit coupled with one of the respective notches of the spherical member for positioning the ring around the spherical member, each of the four protrusions when positioned within the notches of the spherical member will secure the ring therearound, the ring being capable of restricting the rolling movement of the spherical member, whereby the child being seated on the ledge within the spherical hollow body being capable of rocking the spherical body with the ring restricting the tilt of the spherical body.

5,853,330
SENSORY SIMULATOR AND EDITOR

Brad Engstrand, 2658 N. Dayton, Chicago, Ill. 60614

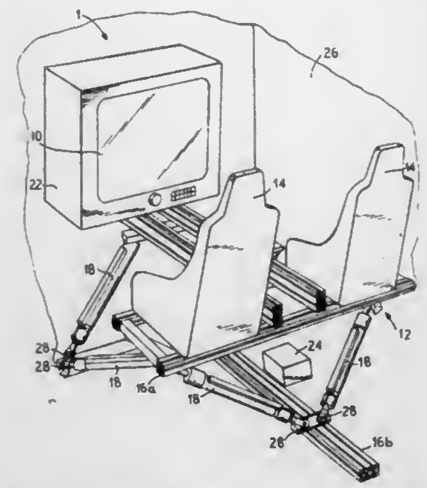
Continuation-in-part of Ser. No. 469,193, Jun. 6, 1995, Pat. No. 5,564,985, which is a division of Ser. No. 253,094, Jun. 2, 1994, Pat. No. 5,496,220. This application Mar. 22, 1996, Ser. No. 620,472

Int. Cl.^{6} A63G *31/16*

U.S. Cl. 472—60 **8 Claims**

1. A system for recording and playing back motion recorded on a medium, the system comprising:

a bracket with at least one seat mounted on the bracket;



a plurality of pneumatic cylinders mounted on a level base and extending to the bracket;

a plurality of variously sized supply valves and release valves associated with each of the plurality of pneumatic cylinders; and

a controller selectively controlling supply and release of air to the plurality of variously sized supply valves and variously sized release valves to vary movement of the plurality of pneumatic cylinders, the controller responsive to a signal on the recording wherein the signal is indicative of a desired position of the at least one seat and further corresponds to the recorded motion on the screen.

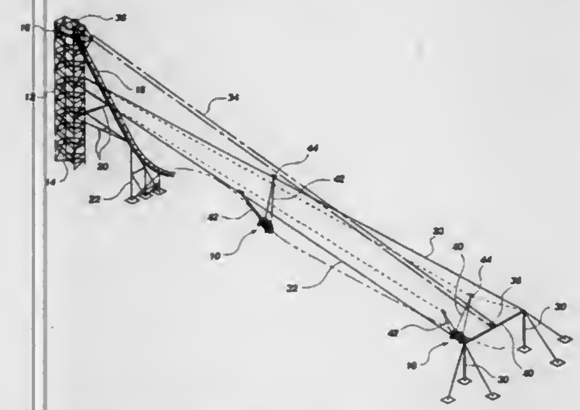
5,853,331
AMUSEMENT RIDE

Masami Ishikawa, Handa, Japan, and Barton L. Merrell, Provo, Utah, assignors to Bungee Japan, Inc., Chita-gun, Japan

Filed May 6, 1998, Ser. No. 73,475

Int. Cl.^{6} A63G *21/20*

U.S. Cl. 472—88 **14 Claims**



1. An amusement ride comprising:

a pair of guy wires, each guy wire having a first end a second end;

first support means for supporting the first end of each guy wire;

second support means for supporting the second end of each guy wire, the second support means being lower in elevation than the first support means;

a track having a first generally downwardly inclined section connected at one end to the first support means, and the opposite being end free, the track directed generally towards the second support means;

a wheeled vehicle adapted to carry a rider and descend the track and be launched airborne by and from the track at a location adjacent the track free end; and

a pair of safety wires, each safety wire connected to the vehicle at first ends thereof, and connected to respective guy wires at second ends thereof in a manner to freely move along respective guy wires.

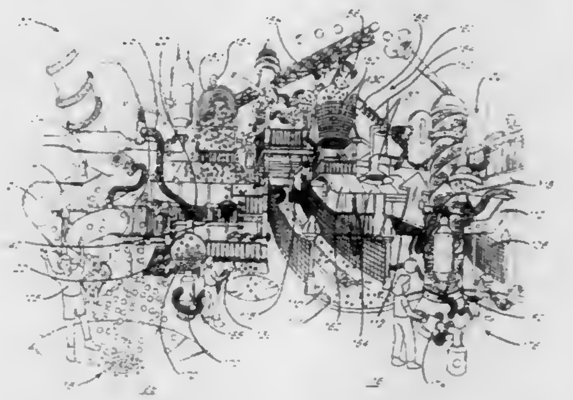
5,853,332
PARTICIPATORY PLAY STRUCTURE HAVING DISCRETE PLAY ARTICLES

Rick A. Briggs, 64 Maple Grove, Springfield, Ill. 62707

Filed Mar. 21, 1996, Ser. No. 621,173

Int. Cl.^{6} A63G *21/00*

U.S. Cl. 472—128 **56 Claims**



1. An interactive play system for amusing or entertaining one or more play participants comprising:

a support frame adapted to safely support the play participants;

play media comprising discrete play articles;

a plurality of interactive play elements mounted in, on, or around the support frame adapted to allow play participants to activate said play elements to create a desired effect using the play media; and

play participant operated means mounted in, on, or around the support frame for circulating or transporting the play media to the interactive play elements.

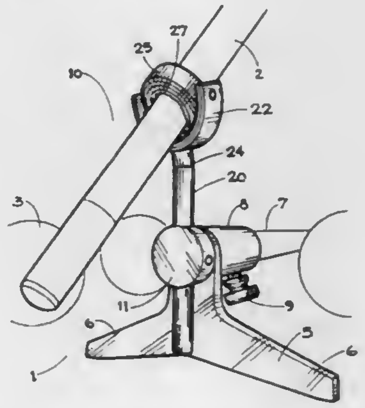
5,853,333
GIMBALED CUE BRIDGE

Thomas D. Patterson, 23 Via Verona Cir., Chico, Calif. 95926

Filed Aug. 28, 1997, Ser. No. 919,908

Int. Cl.^{6} A63D *15/00*

U.S. Cl. 473—42 **14 Claims**



1. A gimbaled cue bridge for adjustably supporting a billiard and/or pool cue having striking and hand-holding opposite ends thereon, comprising:

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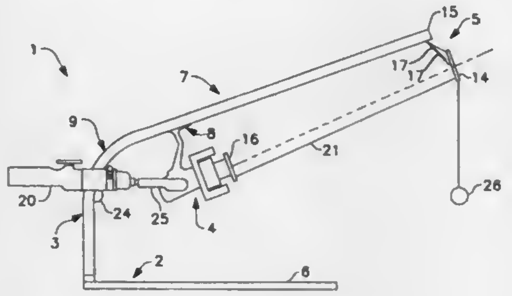
base means for supporting the gimbaled cue bridge on a playing surface;
first angular gimbal means attached to said base means whereby said striking end of said billiard and/or pool cue is supported by and is angularly directed by said first angular gimbal means;
elongated shaft means, said shaft means having a first end connected to said base means and a second end attached to said first angular gimbal means;
means for adjusting the axial length of said elongated shaft means so that positional displacement between said base means and said first angular gimbal means is adjustably controlled;
means for rotating said first angular gimbal means about the longitudinal axis of said elongated shaft means; and
means for rotating said elongated shaft means about an axis which is normal to the longitudinal axis of said elongated shaft means and is approximately parallel to said playing surface.

5,853,334
PRACTICE DRIVING DEVICE FOR GOLFERS

Thomas E. Winebrenner, 6580 E. McGuire Rd., Churubusco, Ind. 46723
Filed May 15, 1997, Ser. No. 857,763
Int. Cl.^{6} A63B *69/36*
U.S. Cl. 473—142 **15 Claims**

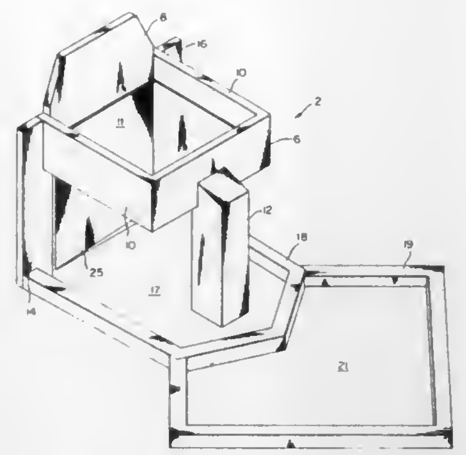


1. A golf practice apparatus which comprises:
a base;
an elongated support arm coupled to the base and having a free end;
a tether guide means including an eyelet coupled to the elongated support arm adjacent the free end; and
a reel attached to the elongated support arm near the base and remote from the free end the reel including a spool,
the spool having a central axis which is aligned with a center of the eyelet of the guide means.

5,853,335
PITCHING AND CHIPPING GOLF GAME AND TRAINING DEVICE

Harry Lee Self, 226-130th Pl. NE., Bellevue, Wash. 98004
Filed Apr. 24, 1997, Ser. No. 845,501
Int. Cl.^{6} A63B *69/36*
U.S. Cl. 473—196 **15 Claims**

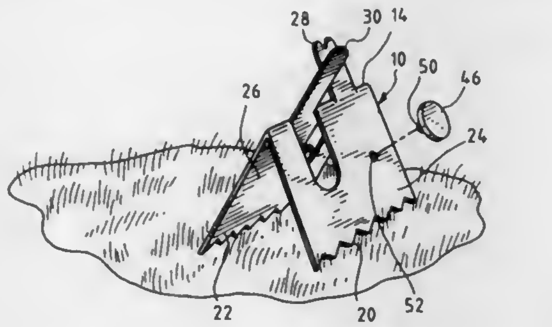
1. A golf game and training device for developing pitching and chipping skills comprising:
a) a target base having a topside and underside, a forward edge, a rear edge, a left side edge, and right side edge, wherein the intersection of said rear edge and said left side edge define a left rear corner and the intersection of said rear edge and said right side edge define a right rear corner and from which extends upward a front target wall, a back target wall, and side target walls so as to form a recessed upper target area and thereby define an interior upper target area;



b) a front target leg depending from the center of the forward edge of said target base;
c) a left target leg depending from the left rear corner of said target base;
d) a right target leg depending from the right rear corner of said target base; and
e) a skirt target extending forward from the lower side of said left target leg and connecting to the lower side of said right target leg and thereby partially enclosing a lower target area therebetween.

5,853,336
GOLFING AID

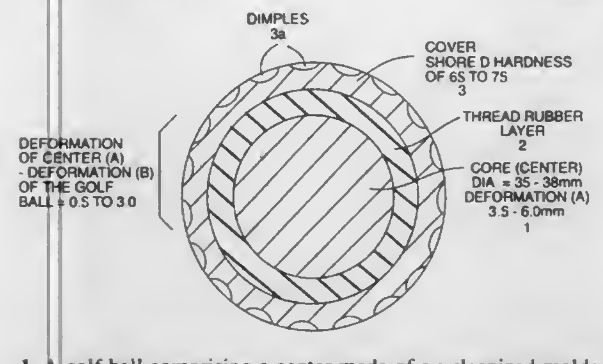
John W. Hufgard, 381 Hickory Hill, Chagrin Falls, Ohio 44022
Filed Mar. 27, 1997, Ser. No. 828,792
Int. Cl.^{6} A63B *55/10;57/00*
U.S. Cl. 473—282 **19 Claims**



1. A golf club handle support and a golf club lying on the ground and having a handle resting on said support in a raised position above the ground, which handle support comprises:
a stiff sheet defining a central foldline to define a sidewall on each side of the foldline and sidewall edges generally parallel to and remote from said foldline, to permit said sheets to assume substantially an inverted V-shape in cross section, said parallel sidewall edges engaging the ground, and said golf club handle resting on the sidewalls at or adjacent said foldline, in which said stiff sheet defines at least one portion surrounded by a closed-loop line of tearing weakness to provide a removable ball marker.

5,853,337
GOLF BALL

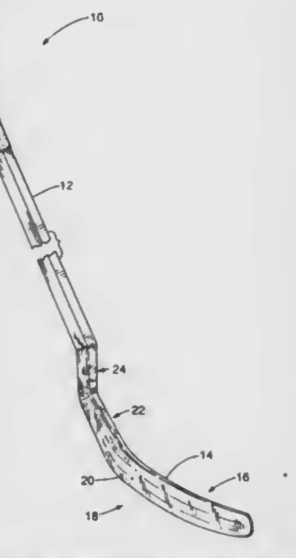
Keiji Moriyama, and Akira Kato, both of Shirakawa, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyoto-Ken, Japan
Filed Apr. 3, 1997, Ser. No. 833,071
Claims priority, application Japan, Apr. 3, 1996, 108522
Int. Cl.^{6} A63B *37/06;37/12*
U.S. Cl. 473—365 **3 Claims**



1. A golf ball comprising a center made of a vulcanized molded article of a rubber composition, a thread rubber layer formed on the center and a cover formed on the thread rubber layer, wherein
the center has a diameter of from 35 to 38 mm and a deformation amount, formed by applying a load to the center within the range from an initial load of 10 Kg to a final load of 130 Kg, of from 3.5 to 6 mm, and
when the deformation amount of the center is defined as deformation amount (A) and the deformation amount of the golf ball, formed by applying a load to the golf ball within the range from an initial load of 10 Kg to a final load of 130 Kg, is defined as deformation amount (B), the deformation amounts (A) and (B) meet the following equation:
Deformation amount (A)–deformation amount (B)=0.5 to 3 mm.

5,853,338
HOCKEY STICK HAVING AN OFFSET SHAFT AND BLADE TRANSITIONAL CONNECTION

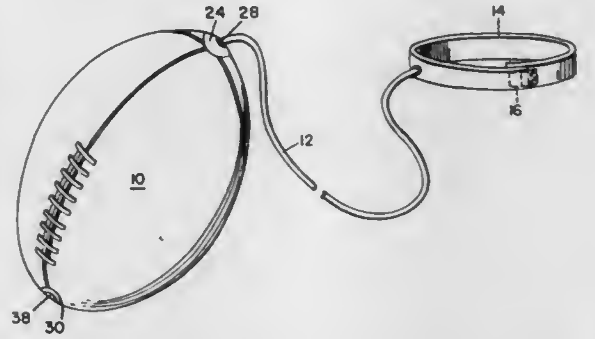
Gene Paul Ubriaco, Millersville, Md., assignor to International Marketing Management, LLC, Oak Park, Ill.
Filed May 22, 1997, Ser. No. 861,987
Int. Cl.^{6} A63B *59/14*
U.S. Cl. 473—562 **9 Claims**



1. In a hockey stick with an elongated rectangular cross-section handle shaft, the handle shaft having sides and a longitudinal center line axis parallel to planes ot the sides of the handle shaft, a blade at one end of the handle shaft, the blade being at an obtuse angle with respect to the handle shaft, and the blade having a heel end, a toe end, and front and rear face planes with the handle shaft being joined to the blade by a transition section having a cross-section with top, bottom, front and rear sides, the front and rear sides in side lanes of the transition section tapering between the heel end of the blade and the handle shaft and the cross-section of the transition section blending into the joining of the heel end of the blade, the improvement comprising an offsets a first bend which begins approximately where the transition section meets the offset, wherein the offset is angular to a plane parallel to the front face plane of the blade.

5,853,339
FOOTBALL PRACTICE AID

Louis Scerbo, Nutley, N.J., assignor to Wing-It Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 660,208, Jun. 3, 1996, abandoned. This application Jul. 7, 1997, Ser. No. 888,580
Int. Cl.^{6} A63B *43/02*
U.S. Cl. 473—576 **1 Claim**



1. In a ball apparatus for players in the practice of throwing and receiving a ball, the thrown ball having a capacity for being returned to a player in an opposite direction comprising:
a thermoplastic ball of ellipsoidal configuration defining a first nose and a second nose at respective ends of the ball and having an end-to-end hollow chamber extending through the ball along its longitudinal axis,
a first end cap having an apertured nose portion snugly covering the first nose and enclosing the chamber at said first end of the ball and having an integral central inwardly-projecting tubular portion received in the chamber and communicating with the aperture of the nose portion,
a second end cap having a nose portion snugly covering the second nose and enclosing the chamber at a second end of the ball and having an integral central inwardly-projecting tubular portion received in the chamber,
an end-to-end tubing seated in the chamber and communicating with the first and second end caps,
an elongated elasticized tether loosely extending through the aperture in the first end cap and the tubing and into the tubular portion of the second end cap,
swivel means seated within the tubular portion of the second end cap for anchoring one end of the tether in said ball while spiralling of the ball about said tether in its trajectory when thrown, and
attachment means secured to another end of the tether for connecting with a player's wrist.

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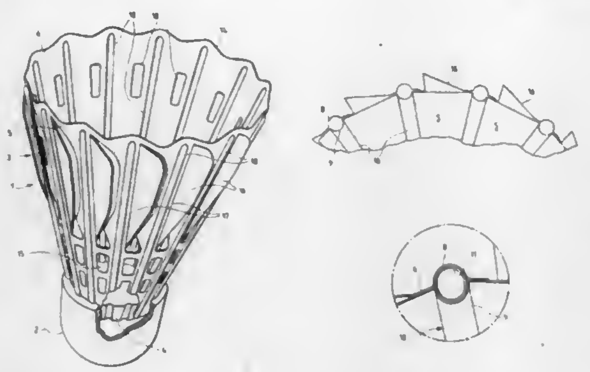
5,853,340
SHUTTLECOCKS

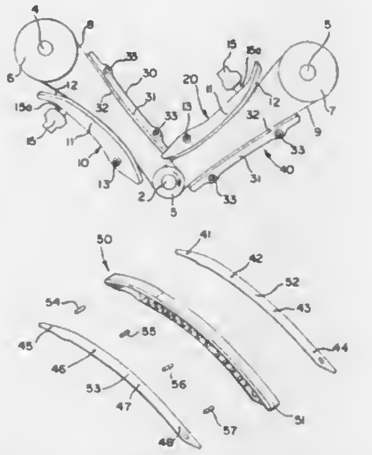
Gordon Willis, 16 Folly Avenue, St. Albans, Hertfordshire AL3 5QD, United Kingdom
PCT No. PCT/GB96/00711, § 371 Date Oct. 1, 1997, § 102(e) Date Oct. 1, 1997, PCT Pub. No. WO96/31260, PCT Pub. Date Oct. 10, 1996
PCT Filed Mar. 26, 1996, Ser. No. 930,287
Claims priority, application United Kingdom, Apr. 3, 1995, 9506833
Int. Cl.^{6} A63B *67/18*
U.S. Cl. 473—579 9 Claims



1. A shuttlecock (**1**) comprising a nose (**2**) and a frusto-conical skirt (**3**) fixed thereto, said skirt being formed of an inner layer (**5**) and an outer layer (**6**) generally lying against one another; wherein one of said layers (**6**) is formed with a plurality of spaced elongate channels (**8**) which are open towards the other of said layers (**5**) and form hollow stiffening columns (**10**) with the other of said layers; and wherein elongate stiffening members (**11**) are located within said hollow stiffening columns.

5,853,341
LAMINATED CHAIN TENSIONER ARMS OR GUIDES

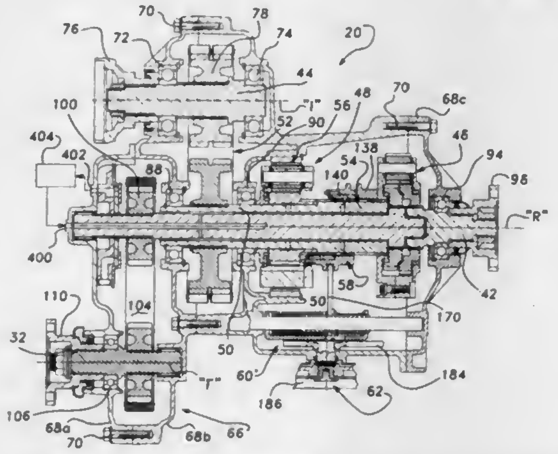
Mark M. Wigsten, Lansing, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Mar. 26, 1997, Ser. No. 823,715
Int. Cl.^{6} F16H *7/08*
U.S. Cl. 474—140 13 Claims



1. A chain tensioning member, comprising:
- a guide portion having a top surface and a bottom portion extending below said top surface, said guide portion having a plastic face along said top surface that contacts a chain, said top surface being formed of a continuous piece that extends from a first end to a second end in the longitudinal direction of travel of the chain, said top surface having a center portion dividing said guide portion into a first side and a second side in the transverse direction;
- a plurality of separate plate members extending in the longitudinal direction from said first end to said second end of said guide portion, at least one of said plate members being located directly beneath said top surface on said first side of said bottom portion of said guide portion, at least another of said plate members being located directly beneath said top surface on said second side of said bottom portion of said guide portion, said plate members being formed of steel;
- a plurality of connecting members for connecting said plate members to the bottom portion of said guide portion.

5,853,342
OFFSET TRANSFER CASE

Larry A. Pritchard, Sterling Heights, Mich.; Parvinder Ahluwalia, Manlius, N.Y.; James S. Brissenden, Baldwinsville, N.Y., and John D. Zalewski, Liverpool, N.Y., assignors to New Venture Gear, Inc., Troy, Mich.
Filed Mar. 11, 1997, Ser. No. 816,022
Int. Cl.^{6} F16H *37/08*
U.S. Cl. 475—206 38 Claims

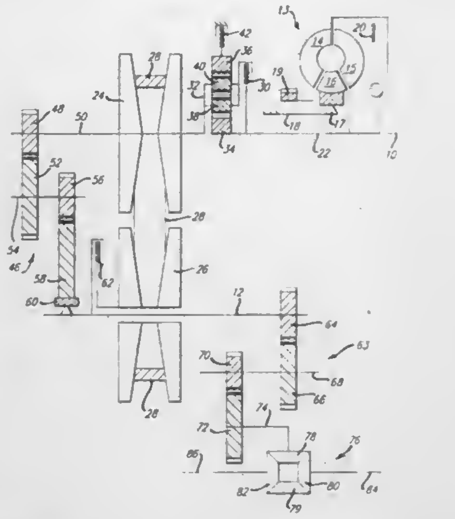


1. A transfer case for transferring drive torque from a drivetrain to first and second drivelines of a motor vehicle, said transfer case comprising:
- an input shaft supported for rotation about a first rotary axis and adapted to be driven by the drivetrain;
- a first output shaft supported for rotation about a second rotary axis and adapted to be interconnected to the first driveline;
- a second output shaft supported for rotation about a third rotary axis which is offset from said first and second axes, said second output shaft adapted to be interconnected to the second driveline;
- a drive shaft supported for rotation about said third rotary axis and driven by said input shaft;
- an interaxle differential having an input, a first output coupled to said first output shaft, and a second output coupled to said second output shaft; and
- a drive mechanism for selectively coupling said input of said interaxle differential to said drive shaft.

5,853,343
DUAL MODE CONTINUALLY VARIABLE TRANSMISSION

Ulrich Eggert, Viersen, Germany; Phillip Koneda, Novi, and Thomas Theodore Tibbles, Livonia, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Sep. 5, 1996, Ser. No. 697,964
Int. Cl.^{6} F16H *37/02*
U.S. Cl. 475—210 28 Claims

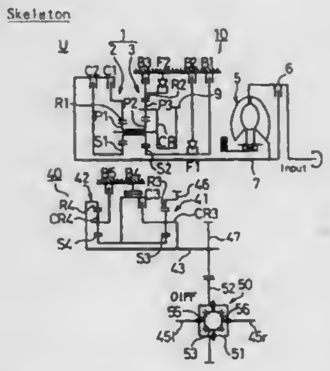
1. A continually variable transmission for a motor vehicle driven by a power source, comprising:
- an input shaft;



- an output shaft;
- a torque converter for producing a hydrodynamic connection between the power source and input shaft;
- a first drive mechanism having a first input and a first output, for producing a fixed ratio of the speed of said first input to the speed of said first output;
- a second drive mechanism arranged in parallel with the first drive mechanism, having a second input and second output, for producing a stepless, continually variable range of ratios of the speed of said second input to the speed of said second output, the lowest ratio produced by the second drive mechanism being higher than the fixed speed ratio produced by the first drive mechanism;
- a mode clutch for alternately driveably connecting and releasing a pair of members selected from either a first group consisting of the first input and second input or a second group consisting of the first output and second output; and
- means for driving the output shaft in the same direction as the input shaft and for reversing the direction of rotation of the output shaft relative to the direction of rotation of the input shaft.

5,853,344
AUTOMATIC TRANSMISSION

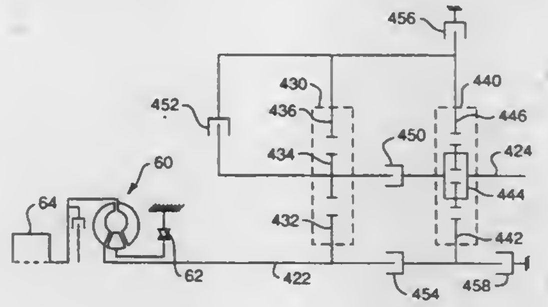
Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masaaki Nishida, both of Anjo; Kengo Nomura, Nishio, all of Japan, and Takashi Morimoto, Bluxells, Belgium, assignors to Aisin AW Co., Ltd., Japan
Filed Jul. 5, 1996, Ser. No. 675,904
Claims priority, application Japan, Jul. 6, 1995, 7-171178
Int. Cl.^{6} F16H *3/44;3/66*
U.S. Cl. 475—269 5 Claims



1. An automatic transmission comprising an input member to which motive power is applied, an output member from which the motive power is transmitted, and a planetary gear unit connecting the input member to the output member, wherein rotation from the input member is output to the output member via one of a plurality of transmission gear states of the planetary gear unit, said planetary gear unit comprising
- a first ring gear,
- a first pinion engaging the first ring gear,
- a second pinion coupled to the first pinion so as to rotate integrally therewith,
- a third pinion engaging the second pinion,
- a second ring gear engaging the third pinion,
- a first sun gear engaging the second pinion,
- a carrier coupled to the output member and supporting the first, second and third pinions,
- said first pinion having a diameter smaller than that of said second pinion, and
- gear state setting means for achieving a first gear state range by transmitting rotation of the input member to the first ring gear and by stopping the second ring gear, for achieving a second range by transmitting rotation of the input member to the first ring gear and by stopping the first sun gear, and for achieving a third range by rotating the planetary gear unit integrally with the input member,
- said smaller diameter of the first pinion relative to the diameter of the second pinion producing reduced output gear ratio in said first and second gear states.

5,853,345
TRANSMISSION WITH COUPLED PLANETARY GEAR SETS

Jong-Sul Park, Seoul, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Nov. 14, 1996, Ser. No. 752,442
Claims priority, application Rep. of Korea, Nov. 23, 1995, 1995/43369; Dec. 11, 1995, 1995/48210; Dec. 11, 1995, 1995/48211; Dec. 11, 1995, 1995/48212
Int. Cl.^{6} F16H *3/62*
U.S. Cl. 475—284 17 Claims



1. A transmission comprising:
- a first simple, single pinion, planetary gear set having first, second, and third elements, the first element of the first gear set receiving rotational motion input to the transmission,
  - the first element of the first gear set being a first sun gear,
  - the second element of the first gear set being a first carrier, and
  - the third element of the first gear set being a first ring gear;
- a second simple, double pinion, planetary gear set having first, second, and third elements, the first element of the second gear set outputting rotational motion from the transmission,
  - the second element of the second gear set being connected to the third element of the first gear set,
  - the first element of the second gear set being a second carrier,
  - the second element of the second gear set being a second ring gear, and
  - the third element of the second gear set being a second sun gear;
- first clutch selectively coupling the second element of the first gear set to the first element of the second gear set;

- a second clutch selectively coupling two elements selected from the group consisting of the second element of the second gear set and the first, second, and third elements of the first gear set;
- a third clutch selectively coupling the first element of the first gear set to the third element of the second gear set;
- a first brake selectively braking the second element of the second gear set; and
- a second brake selectively braking the third element of the second gear set.

5,853,346

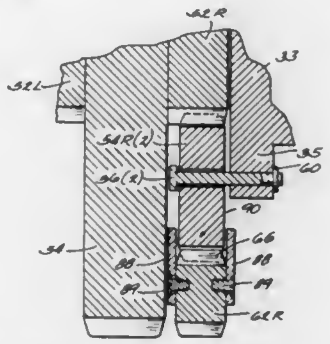
PLANETARY GEAR ASSEMBLY WITH FLOATING RING GEAR

Edward J. Gaffney, N26 N27293 Hwy. SS, Pewaukee, Wis. 53072

Filed Dec. 19, 1995, Ser. No. 575,038

Int. Cl.^{6} F16H *3/72;57/08*

U.S. Cl. 475—346 **14 Claims**



1. A drive mechanism comprising

- a ring gear having an open annular space free of any interior structure, the open annular space being peripherally bounded soley by an interior peripheral gear surface and being otherwise free of a bearing surface,
- a sun gear rotatable within the open annular space of the ring gear about a rotational axis, and
- a planetary gear set presenting an exterior peripheral gear surface and being otherwise free of a bearing surface, the exterior peripheral gear surface of the planetary gear set operatively meshing with the sun gear within the open annular space of the ring gear for rotation about the sun gear, the exterior peripheral gear surface of the planetary gear set also operatively meshing with the interior peripheral gear surface of the ring gear to radially support the ring gear for rotation about the sun gear, the operative meshing of the exterior peripheral gear surface of the planetary gear set with the interior peripheral gear surface of the ring gear providing the sole radial support for the ring gear.

5,853,347

CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

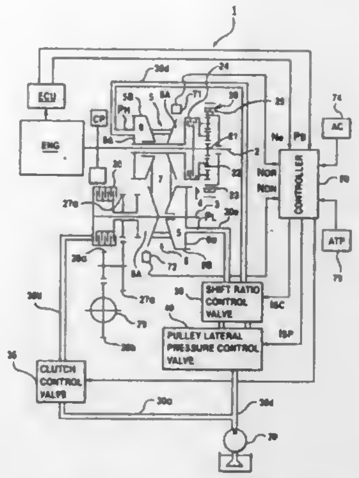
Takashi Aoki; Keiichi Hanyu, and Hideaki Yoshida, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1996, Ser. No. 694,706

Claims priority, application Japan, Aug. 10, 1995, 7-204919

Int. Cl.^{6} F16H *9/00*

U.S. Cl. 477—45 **3 Claims**


1
ECU
ENG
CONTROLLER
AC
ATP
SHIFT RATIO CONTROL VALVE
PULLEY LATERAL PRESSURE CONTROL VALVE
CLUTCH CONTROL VALVE

1. A continuously variable V-belt transmission comprising a drive pulley connected to an input shaft, a driven pulley connected to an output shaft, a V-belt spanning between said drive pulley and said driven pulley, a drive side cylinder for setting a width of said drive pulley, a driven side cylinder for setting a width of said driven pulley, a lateral pressure control valve for controlling a lateral pressure control oil pressure of an oil supplied to said drive side cylinder and said driven side cylinder, and a controller for controlling said lateral pressure control valve,

wherein said controller comprises:

- a transmission torque calculator for calculating a transmission torque based on a signal detected from a drive condition;
- a target belt transmission torque calculator for calculating a target belt transmission torque by adding a designed marginal torque of predetermined value to said transmission torque; and
- a signal converter for generating a control signal for driving said lateral pressure control valve based on said target belt transmission torque, whereby said lateral pressure control oil pressure is generated in a most appropriate form based on said target belt transmission torque.

5,853,348

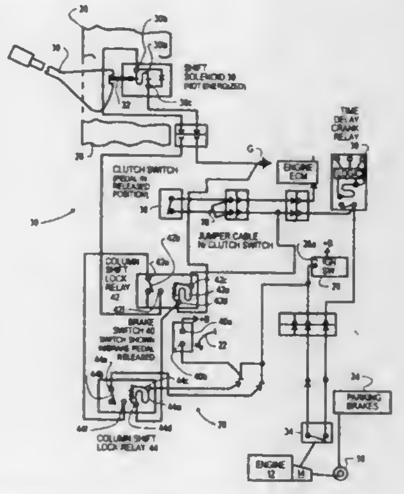
PARK POSITION LOCKING SYSTEM FOR STEERING COLUMN TRANSMISSION SHIFTER

Michael J. Lehman, Fort Wayne, Ind., assignor to Navistar International Transportation Corp, Chicago, Ill.

Filed Nov. 20, 1996, Ser. No. 752,761

Int. Cl.^{6} B60K *41/28;41/26*

U.S. Cl. 477—96 **15 Claims**



1. An automotive vehicle comprising:

a) a powertrain that includes a transmission that is shiftable to plural positions, two of which are NEUTRAL positions;

b) a shifter disposed for operation by a driver of the vehicle for selectively shifting the transmission to its plural positions;

c) service brakes;

d) parking brakes;

e) an electrical system comprising a battery and an ignition switch that when operated to ON position provides battery voltage at an ignition switch ON terminal; and

f) a system for selectively locking the shifter in a PARK position that places the transmission in one of its two NEUTRAL positions, wherein the system comprises,

1) an electrically operated shift lock for releasably locking the shifter in PARK position,

2) a first controlled conductivity device;

3) a second controlled conductivity device; and

4) electric circuitry operatively coupling the shift lock with the transmission and the service brakes comprising a transmission NEUTRAL position sensor that distinguishes between the transmission being in either of its two NEUTRAL positions and not being in either of its two NEUTRAL positions, a service brake sensor that distinguishes between the service brakes being applied and not being applied, a first circuit placing the conductivity of the first controlled conductivity device under the control of the transmission NEUTRAL position sensor, a second circuit placing the conductivity of the second controlled conductivity device under the control of the service brake sensor, and a third circuit placing control of the electrically operated shift lock under the control of both the first controlled conductivity device and the second controlled conductivity device.

5,853,349

SHIFT CONTROL METHOD FOR AUTOMATIC TRANSMISSION

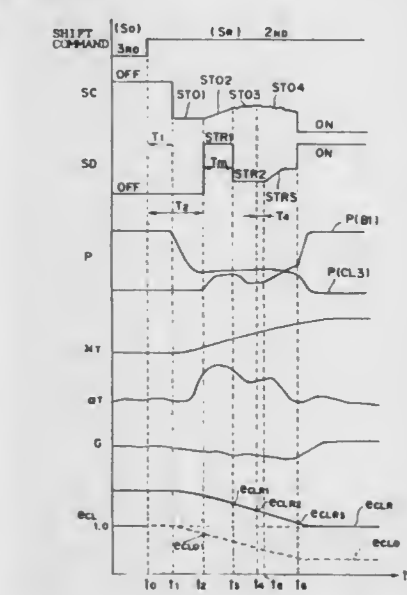
Takamichi Shimada, Sakado, and Noboru Sekine, Kasukabe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1997, Ser. No. 775,928

Claims priority, application Japan, Jan. 8, 1996, 8-000392

Int. Cl.^{6} F16H *61/06;61/08*

U.S. Cl. 477—143 **5 Claims**



1. A shift control method for an automatic transmission which includes a plurality of power transmission paths provided between input and output members, a plurality of engaging elements for selectively establishing said power transmission paths, and engagement-controlling means for controlling engagement-actuation pressures of said engaging elements in response to pressure command signals; said engagement-controlling means carrying out a shift control from an off-going range to an on-coming range by releasing an off-going engaging element and engaging an on-coming engaging element among said plurality of engaging elements in response to a shift command signal; said method comprising the steps of:

- lowering the engagement-actuation pressure of said off-going engaging element during an off-going range releasing stage to release said off-going engaging element in response to said shift command signal;
- setting the engagement-actuation pressure of said on-coming engaging element at a predetermined high-pressure for a predetermined time period after said shift command signal is generated during an on-coming range void-stroke-clearing stage, therein clearing a void stroke of said on-coming engaging element; and
- controlling engaging operation of said on-coming engaging element during an on-coming range engaging stage after completion of said on-coming range void-stroke-clearing stage;

wherein:

- based on condition of the engaging operation of said on-coming engaging element during said on-coming range engaging stage, correcting said predetermined time period of said on-coming range void-stroke-clearing stage for a next shift operation, and wherein based on changes in a rate of slippage of said on-coming engaging element during said on-coming range engaging state, correcting said predetermined time period of said on-coming range void-stroke-clearing stage for a next shift operation.

5,853,350

CONTROL DEVICE FOR LOCKUP CLUTCH

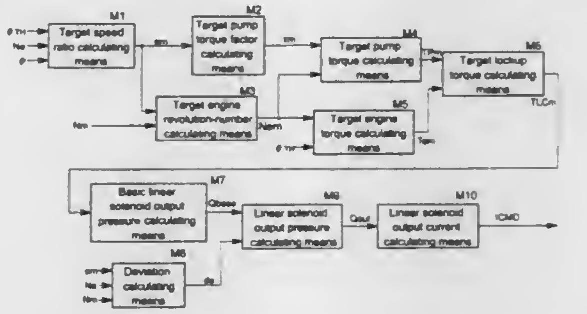
Koichi Hasegawa; Yoshinori Yamamoto, and Toru Iwahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,374

Claims priority, application Japan, Jul. 20, 1995, 7-184251

Int. Cl.^{6} F16H *6/14*

U.S. Cl. 477—166 **3 Claims**


M1
Target speed ratio calculating means
M2
Target pump torque factor calculating means
M3
Target engine revolution-number calculating means
M4
Target pump torque calculating means
M5
Target engine torque calculating means
M6
Target lockup torque calculating means
TLCm
M7
Basic linear solenoid output pressure calculating means
M9
Linear solenoid output pressure calculating means
M10
Linear solenoid output current calculating means
M8
Deviation calculating means

1. A control device for a lockup clutch for controlling the engage force of the lockup clutch such that the actual speed ratio of a torque converter of an automatic transmission becomes equal to a predetermined target speed ratio, said control device comprising:

- a target engine torque calculating means for calculating a target engine torque based on an operational state of a vehicle and a predetermined target speed determined as a function of a main shaft speed and said predetermined target speed ratio;
- a target pump torque calculating means for calculating a target pump torque of the torque converter based on a characteristic map of said predetermined target speed ratio and said main shaft speed;
- a target lockup torque calculating means for calculating a target lockup torque of the torque converter based on said target engine torque and said target pump torque;
- a basic engage pressure calculating means for calculating a basic engage pressure of the lockup clutch based on said target lockup torque; and
- a lockup clutch operating means for operating the lockup clutch based on said basic engage pressure.

5,853,351
METHOD OF DETERMINING AN OPTIMUM WORKLOAD CORRESPONDING TO USER'S TARGET HEART RATE AND EXERCISE DEVICE THEREFOR

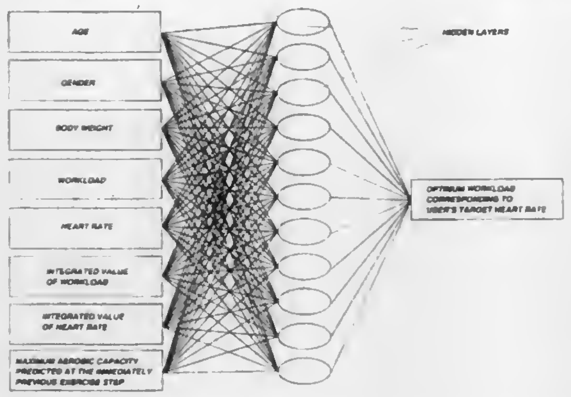
Katsuhiko Maruo, Ikeda; Akiko Ono, Itami; Mototaka Nagai, Osaka, and Satsuki Saeki, Kyoto, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 15, 1993, Ser. No. 151,879

Claims priority, application Japan, Nov. 16, 1992, 4-305643; Dec. 22, 1992, 4-342895

Int. Cl.^{6} A63B *69/00*

U.S. Cl. 482—8 **26 Claims**


AGE
GENDER
BODY WEIGHT
WORKLOAD
HEART RATE
INTEGRATED VALUE OF WORKLOAD
INTEGRATED VALUE OF HEART RATE
MAXIMUM AEROBIC CAPACITY PREDICTED AT THE IMMEDIATELY PREVIOUS EXERCISE STEP
HIDDEN LAYERS
OPTIMUM WORKLOAD CORRESPONDING TO USER'S TARGET HEART RATE

1. A method of determining an optimum workload corresponding to a target heart rate of a user, said method comprising the steps of:

setting said target heart rate of the user;

measuring a steady heart rate of the user during an exercise cycle, in which a first workload is applied to the user, said first workload being derived in accordance with said target heart rate and a statistically obtained workload versus heart rate correlation corresponding to at least one factor selected from the group consisting of the user's age, gender, body weight, body height, and whole body fat; and

entering input parameters including said first workload and the measured heart rate in said exercise cycle into a first multivariate model equation to thereby determine said optimum workload;

wherein said multivariate model equation is defined as a polynomial in said input parameters which is an expression involving a finite sum of terms of form $bx_1^{p1}x_2^{p2} \ldots x_m^{pm}$, where $x_1, x_2, \ldots x_m$ are said input parameters, b is some number, and p1,p2, . . . pm are integers.

5,853,352
REDUCED VERTICAL IMPACT EXERCISE PLATFORM

Steven Login, c/o PT Strategies Corporation, 9 Sewall Ave., Brookline, Mass. 02146, assignor to Steven Login, Brookline, Mass.

Filed Aug. 7, 1997, Ser. No. 908,458

Int. Cl.^{6} A63B *5/16*

U.S. Cl. 482—26 **20 Claims**

1. A reduced vertical impact exercise platform comprising:

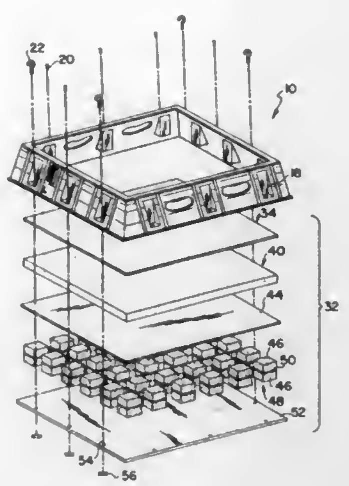
a platform assembly comprising a plurality of distinct layers including in descending order,

an outer contact layer;

a padding layer in at least partial direct contact with said outer contact layer;

a stiffening layer;

a resilient layer comprising a plurality of independent cushioning members;



a foundation layer; and

a frame structure providing structural integrity for said platform assembly.

5,853,353
ERGOMETRIC STATIONARY EQUIPMENT SUITABLE FOR TRAINING, DIAGNOSTIC OR REHABILITATION PURPOSES

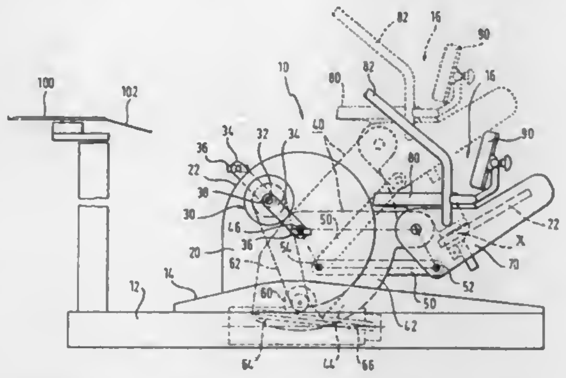
Georg Blümel, Leipzig, Germany, assignor to Bavaria Patente und Lizenzen Verwertungsgesellschaft mbH, Kreischa, Germany

Filed Apr. 18, 1997, Ser. No. 844,300

Claims priority, application Germany, Apr. 18, 1996, 196 15 392.1

Int. Cl.^{6} A63B *22/06*

U.S. Cl. 482—57 **21 Claims**



1. An ergometric stationary piece of equipment comprising:

a base member,

a pedal unit arranged on the base member including a hub which is rotatable about a pedal unit axis,

a carrier element connected to the base member such that it can pivot relative to the base about an axis parallel to the pedal unit axis, and

a seat unit pivotally connected to the carrier element such that the seat unit and the carrier element may be selectively adjusted into different pivot positions, the seat unit including a seat surface, the pivot axis of the carrier element being proximate the pedal unit axis so that the difference between the greatest distance and the least distance occurring from the seat surface to the pedal unit axis is less than ten percent of the average distance between the seat surface and the pedal unit axis in the different pivot positions of the carrier element, and

a mechanism for maintaining a constant inclination of the seat surface relative to the base when the carrier element pivots into different positions, the seat surface inclination maintenance mechanism comprising a parallelogram linkage including the carrier element and a guide member which is pivotally connected to the base member and the seat unit.

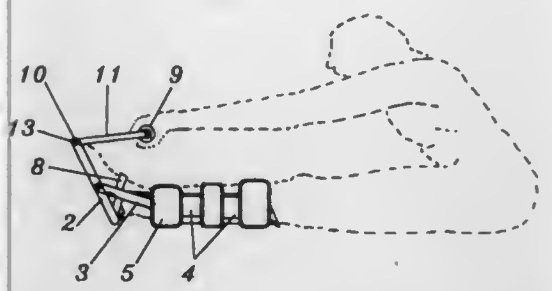
5,853,354
LEG AND ANKLE EXERCISE DEVICE

Kenneth Kubota, 9751 Talbert Ave., Fountain Valley, Calif. 92708

Filed Oct. 17, 1997, Ser. No. 953,677

Int. Cl.^{6} A63B *23/08*

U.S. Cl. 482—80 **3 Claims**



1. A device for exercising the human leg and ankle comprising:

a foot member rotatably attached at a pivot point to a pair of attachment arms which extend longitudinally from either side of a leg member at an angle of between 5 degrees and 70 degrees from the longitudinal axis thereof;

a leg retaining device attached to the leg member and used for attachment of the leg member to the lower leg of a user;

a foot retaining device attached to the foot member for use in positioning and retaining the user's foot; and

a handle attached at a toe end of the foot member by means of a pair of attachment bars.

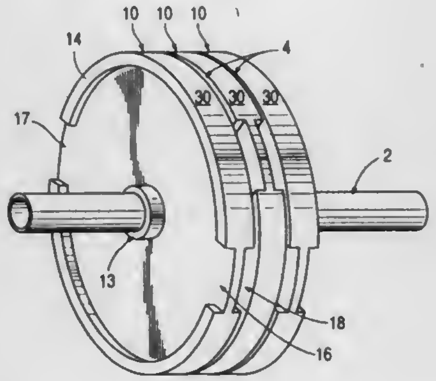
5,853,355
MANIPULATABLE WEIGHT PLATE

Victor J. Standish, Lancaster, Pa., assignor to York Barbell Co., Inc., York, Pa.

Filed Feb. 11, 1997, Ser. No. 798,225

Int. Cl.^{6} A63B *21/072*

U.S. Cl. 482—106 **19 Claims**



1. A highly manipulatable weight plate for use in human exercise, comprising:

a disk body having a mass sufficient to generate a human movement resistance force when employed in human exercise and containing at least one internally located bore having a central axis for receiving a disk body mounting apparatus, said disk body including

first and second generally opposed sides oriented generally radially with respect to said central axis and terminating in first and second circumferential edges, respectively;

an outer periphery surface extending between said first and second circumferential edges of said first and second sides; and

at least one recess contained in said disk body and opening into said outer periphery surface wherein the central axis of said recess intersects the central axis of said central bore, said recess is sufficiently large to receive four fingers of a typical adult male human and said recess allows radial insertion of a plurality of human fingers simultaneously therein so that the fingers can apply an axial force against said disk body to displace the disk body away from an adjacent surface contacting one of said first or second sides.

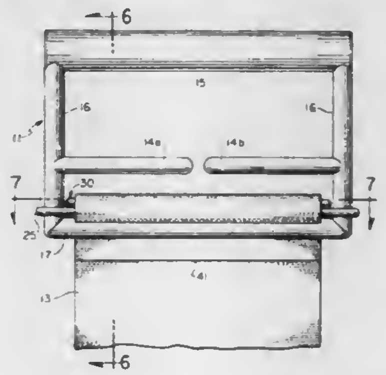
5,853,356
EXERCISING APPARATUS

Henry B. David, Glendale, Calif., assignor to Projects 2000, Inc., Los Angeles, Calif.

Filed Dec. 15, 1997, Ser. No. 991,333

Int. Cl.^{6} A63B *21/02*

U.S. Cl. 482—126 **4 Claims**



1. An exercising apparatus comprising:

(a) first and second gripping handles, each of said gripping handles including a gripping cylinder having supporting legs extending therefrom in parallel spaced relation to each other and an end flange secured to said supporting legs in parallel spaced relation to said gripping cylinder;

(b) guard members extending inwardly from said supporting legs in axial abutment with one another separating the gripping handles from said end flange;

(c) a suspension clip disposed upon said supporting legs adjacent said end flange including a linear bracing member adapted to be adjacent said end flange and in parallel spaced relation thereto;

(d) a locking link having a central slot; and

(e) a planar, elastic band having first and second ends coupled to the first and second gripping handles respectively, each end being disposed through the central slot of said connecting link and about the bracing member of said suspension clip securing the end of said elastic band against the end flange.

5,853,357
ABDOMINAL EXERCISE ADAPTER

Frank Jones, Jr., 2472 Broadway #295, New York, N.Y. 10025

Filed Aug. 20, 1997, Ser. No. 915,484

Int. Cl.^{6} A63B *23/02*

U.S. Cl. 482—140 **5 Claims**

1. An abdominal exercise adapter, in combination with an abdominal exercise device, comprising:

two triangular shaped wedges, each having a horizontal edge, a vertical edge and a third edge extending between the two, the third edge of each wedge being concave shaped; and

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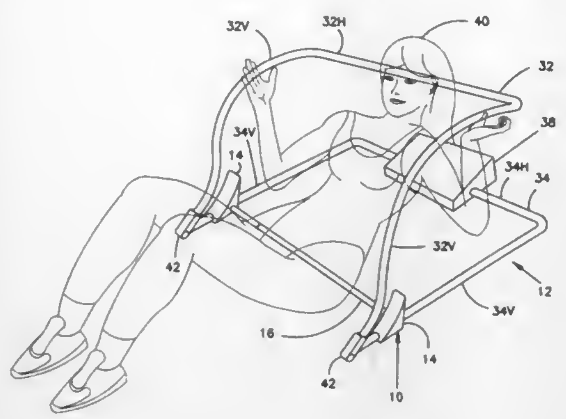


a pole extending between the two wedges.

wherein said abdominal exercise device includes an upper frame and a lower frame, each having one horizontal member and two vertical members and the two frame are joined at a hinge and wherein each wedge rests in a vertical member of the lower frame of the abdominal exercise device, thus when the vertical members of the upper frame of the abdominal exercise device come into contact with the third edge of each wedge, the upper frame is blocked from descending past a certain point and the user is prevented from returning to the rest position in between exercises.

5,853,358
METHOD AND MACHINE TOOL FOR MOUNTING AND DISMOUNTING BLIND COVER

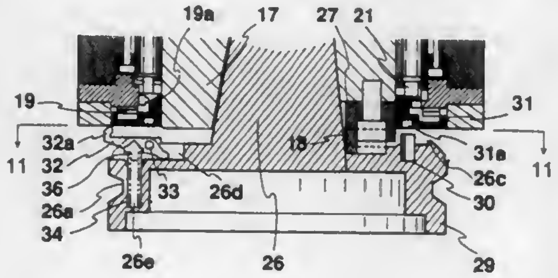
Koji Takenaka, Niwa-gun, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Mar. 24, 1997, Ser. No. 823,204

Claims priority, application Japan, Mar. 26, 1996, 8-097526

Int. Cl.⁶ B73Q *3/157*

U.S. Cl. 483—1 **8 Claims**



1. A method for mounting and dismounting a blind cover for protecting a fixing mechanism of a machine tool which is provided with the fixing mechanism for supplying an attachment, which is capable of mounting and dismounting a tool, to a spindle head and for positioning and fixing the attachment by a swivel indexing mechanism, comprising the steps of:

supplying the blind cover for covering an exposed part of the fixing mechanism with a changing arm capable of carrying and changing a tool and an attachment when the fixing mechanism is not used; and

fixing the blind cover to the spindle head after adjusting the relative position between the blind cover and the fixing mechanism using the swivel indexing mechanism.

5,853,359
DEFLECTION ADJUSTMENT ROLL

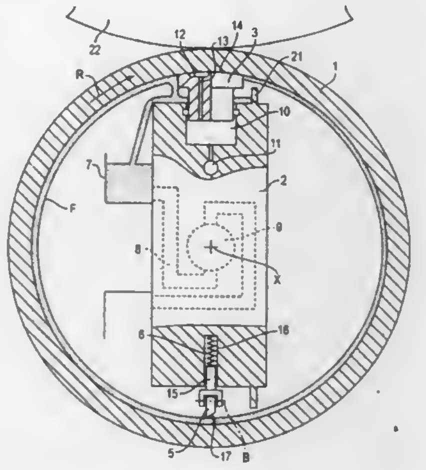
Joachim Grabscheid, Heuchlingen, and Christian Schiel, Heidenheim, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Jun. 12, 1997, Ser. No. 873,564

Claims priority, application Germany, Jun. 13, 1996, 196 23 652.5

Int. Cl.⁶ B21B *29/00*

U.S. Cl. 492—7 **33 Claims**



1. A deflection adjustment roll comprising:

a rotating roll jacket;

a support member axially extending through the roll jacket;

a plurality of at least one of hydrostatic and hydrodynamic support elements located next to one another with a predetermined spacing in an axial direction of the roll jacket to support the roll jacket on the support member;

a fluid removal device that removes operating fluid collected on an inner surface of the roll jacket during operation and that forms a fluid ring that circulates around the plurality of support elements on the inner surface of the roll jacket; and

the fluid removal device comprising a plurality of fluid stripping elements formed on the plurality of support elements that laterally protrude from each support element in a direction of a neighboring support element to strip the fluid circulating around the plurality of support elements from the roll jacket in the flow channels formed between the support elements.

5,853,360
METHOD AND APPARATUS FOR PRODUCING A GUSSETED CONTAINER

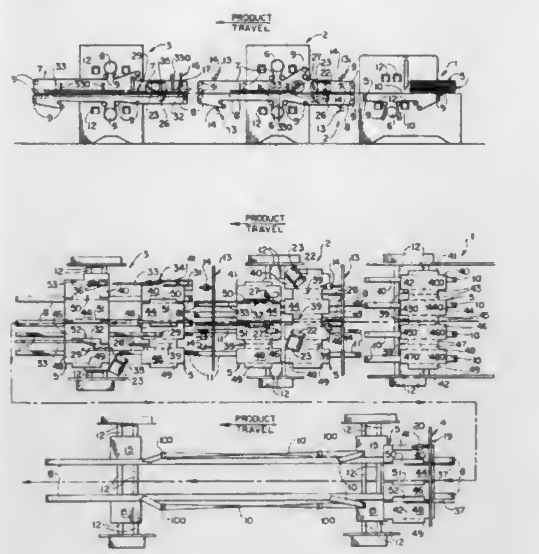
Richard F. Jeffrey, Keithville; Bradley R. Tilton; James A. Mahlum, both of Shreveport; Michael D. Wallace, Mooringsport; Bobby C. Taylor, Eros; Larry E. Reeves, West Monroe, all of La.; Glynn A. Blank, Maud, Tex., and Donald G. Lee, Keithville, La., assignors to J & L Development, Inc., Keithville, La.

Filed Jun. 16, 1995, Ser. No. 491,470

Int. Cl.⁶ B31B *1/06*

U.S. Cl. 493—178 **27 Claims**

1. A method of producing gusseted containers comprising the steps of providing a plurality of unfolded blanks each having a panel tab at each end, an outside panel connected to each of said panel tabs respectively, a pair of inside panels disposed inwardly of said outside panels a first gusset area positioned between and connected with one of said outside panels and one of said inside panels, a second gusset area positioned between and connected with the other of said outside panels and the other of said inside panels and a third gusset area positioned between and connected with said pair of inside panels; advancing said unfolded blanks, sequentially along a linear path through a box folding apparatus in a substantially horizontal plane; applying glue to said gusset areas and to selected ones of said outside panels and said inside panels while said inside and said outside panels are in said horizontal plane or a plane parallel to said horizontal plane; gathering said gusset area so that said gusset areas are out of said horizontal plane and folding said panel tab and said gusset areas against said glue on said selected ones of said outside panels and said inside panels to define gussets in said blank; and folding said outside panels and said inside panels at said gussets to define the gusseted container.



20. Apparatus for producing a gusseted container from an unfolded blank having predetermined gusset areas, said apparatus comprising means for advancing the unfolded blank sequentially along a linear path in a substantially horizontal plane; glue application means for applying glue to the blank; gathering wheels mounted in angular relationship with respect to said linear path for gathering the predetermined gusset areas of the blank to define gussets in the blank; folding means for folding the gussets against the glue on the blank; retaining means for applying pressure to the gussets and facilitating drying of the glue; and folding belt means for engaging the blank and folding the blank at the gussets to define the gusseted container.

5,853,361
INCUBATOR

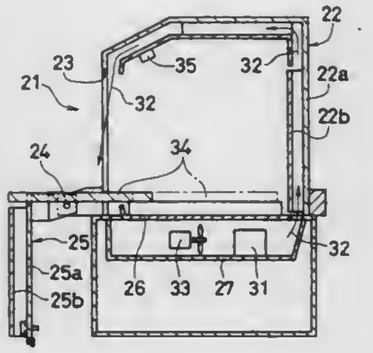
Shinichi Kobayashi, Tokyo; Kazunori Miyagawa, Kawagoe, and Kazuo Matubara, Tokyo, all of Japan, assignors to Atom Medical Corporation, Tokyo, Japan

Filed Apr. 9, 1997, Ser. No. 835,439

Claims priority, application Japan, Apr. 19, 1996, 8-122178

Int. Cl.⁶ A61G *11/00*

U.S. Cl. 600—22 **2 Claims**



1. An incubator characterized by comprising:

a hood formed with a door;

a temperature detector for detecting a temperature in said hood, said temperature detector outputting a temperature signal indicative of said temperature;

a door open detector for detecting an open state of said door, said door open detector outputting a signal indicative of said open state;

a blower for supplying an air having a controlled temperature into said hood; and

a controller having a temperature signal input in communication with said temperature detector output and a door open signal input in communication with said door open detector, said controller in communication with said blower such that said controller increases an air quantity of said blower when said temperature detector detects that the temperature in said hood is not a preset temperature or when said door open detector detects that said door is open.

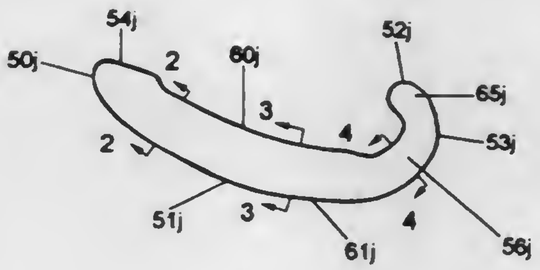
5,853,362
GLANDULAR STIMULATOR DEVICE AND METHOD

Deborah A. Jacobs, 569 Congo St., San Francisco, Calif. 94131

Filed Jun. 28, 1997, Ser. No. 884,375

Int. Cl.⁶ A61H *21/00*

U.S. Cl. 600—38 **11 Claims**



1. A device for inserting into a subcavity of a woman's vagina to stimulate the Grafenberg spot therein, comprising:

an elongated, generally cylindrical shaft having first and second rounded ends, a distal end portion beginning at said first rounded end and terminating at a flared section and a proximal end portion beginning at said flared section and terminating at said second rounded end;

said distal end portion having a predetermined length and adapted to have said first rounded end extend from said vagina subcavity a sufficient distance either for self grasping by the weareror for use with a partner.

said flared section and said proximal end portion bent to form an embedding bookhaving a J shape with said second rounded end being recumbent with respect to said distal end portion;

said proximal end portion being constructed of sufficiently rigid material so as to minimize bending and involuntary dislodgment by said wearer's internal musculature when said proximal end portion is inserted;

said proximal end portion further having a predetermined size and a configuration so that said second rounded end is adapted to contact said Grafenberg spot within said subcavity of a woman's vagina and applies pressure to the Grafenberg spot at approximately 90° to the axis of the vaginal canal;

whereby when inserting said proximal end portion into said subcavity of a woman's vagina, stimulation of said Grafenberg spot is effected by said second rounded end with movement of said distal end portion by said wearer or a partner of said wearer.

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5,853,363

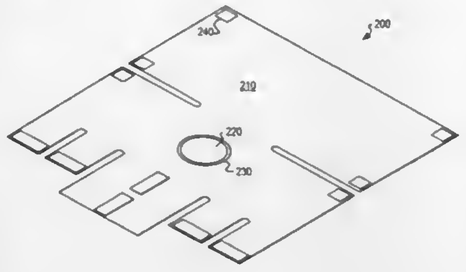
SURGICAL MICROSCOPE OPERATING DRAPE AND METHODS OF OPERATION AND MANUFACTURE THEREOF

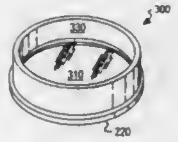
Kimber L. Vought, Columbus, Miss., assignor to Deka Medical, Inc., Columbus, Mich.

Filed Jul. 28, 1997, Ser. No. 901,510

Int. Cl.^{6} A61B *1/04*

U.S. Cl. 600—121 **21 Claims**





1. For use with a surgical microscope having an objective lens barrel protruding therefrom, a drape, comprising:

a sheet, having an elastically-deformable objective lens aperture therethrough, that covers at least a portion of a surgical microscope, said objective lens aperture adapted to receive an objective lens barrel of said surgical microscope therethrough and elastically constrict about said objective lens barrel; and

a transparent objective lens cover, separate from said sheet and having a flexible barrel adapter, said flexible barrel adapter expandable to fit about and cover said objective lens barrel, said sheet and said objective lens cover cooperating to cover said portion of said surgical microscope, including said objective lens barrel.

5,853,364

METHOD AND APPARATUS FOR ESTIMATING PHYSIOLOGICAL PARAMETERS USING MODEL-BASED ADAPTIVE FILTERING

Clark R. Baker, Jr., Castro Valley, and Thomas J. Yorkey, San Ramon, both of Calif., assignors to Nellcor Puritan Bennett, Inc., Pleasanton, Calif.

Filed Jun. 7, 1996, Ser. No. 660,510

Int. Cl.^{6} A61B *5/02*

U.S. Cl. 600—300 **41 Claims**

1. A method for reducing noise effects in a system for measuring a physiological parameter comprising the steps of:

generating a plurality of measurements derived from at least one wavelength of electromagnetic energy transmitted through living tissue;

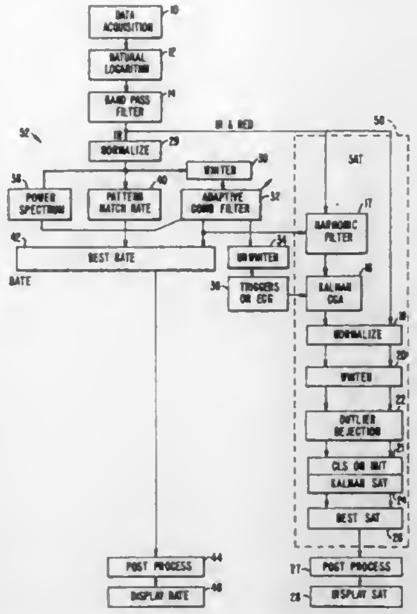
comparing selected measurements with at least one expected measurement characteristic,

assigning one of a plurality of variable weights to each selected measurement based-on the comparing step, thereby generating a plurality of weighted measurements;

assigning the plurality of variable weights in part, in response to a similarity between each selected measurement and a corresponding previous measurements;

averaging the plurality of weighted measurements to obtain a filtered measurement for use in estimating the physiological parameter; and

selectively adjusting at least one step in the averaging and assigning steps, the adjusting step based on knowledge, derived independently of the plurality of measurements in the generating step, of at least one characteristics of the physiological parameter.



5,853,365

MAGNETIC RESONANCE IMAGING USING PULSE SEQUENCE INCLUDING TRAPEZOIDAL-WAVE GRADIENT

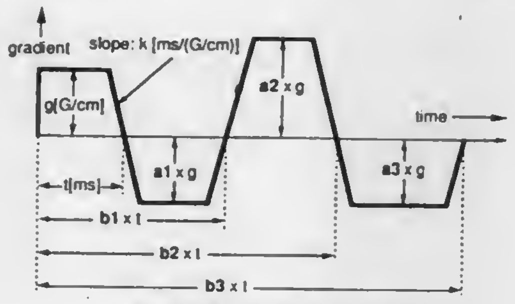
Hitoshi Yamagata, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1997, Ser. No. 828,269

Claims priority, application Japan, Mar. 21, 1996, 8-064857

Int. Cl.^{6} A61B *5/055*

U.S. Cl. 600—410 **20 Claims**



PARAMETERS FOR USE IN DESIGNING QUADRUPLE GRADIENT PULSE

1. A method of magnetic resonance imaging by which an object is scanned using a pulse sequence including a gradient pulse for controlling moments of nuclear spins in motion in the object, comprising the steps of:

analytically preparing the pulse sequence in advance; and

performing a scan on the object using the pulse sequence,

wherein the analytical preparing step further includes the steps of:

providing, as said gradient pulse, a pulse train having three or more trapezoidal-wave pulses of which polarities are alternately inverted,

wherein both an amplitude and a pulse duration of a first trapezoidal-wave pulse residing first in the pulse train and a rise time rate of each of the three or more trapezoidal-wave pulses are given as initial values, a plurality of pulse duration coefficients which determine pulse spacings of trapezoidal-wave pulses other than the first trapezoidal-wave pulse in the pulse train are given as known values, and magnetic field gradient strength coefficients which determine amplitudes of the of the trapezoidal-wave pulses other than the first trapezoidal-wave pulse in the pulse train are given as unknown values;

solving for the unknown magnetic field gradient strength coefficients from expressions concerning a plurality of different dimensions of moments of phase shifts caused by the nuclear spins producing a magnetic resonance signal so that the plurality of different dimensions of the moments of phase shifts are moment by moment at least one of 1) controlled to desired values other than zero and 2) compensated to null values according to a purpose of use of said gradient pulse, the expressions being reflected by both the initial values and the magnetic field gradient strength coefficients; and

selecting one combination from a plurality of combinations of pulse duration coefficients satisfying results performed in the solving step, the one combination determining a shortest pulse train interval.

5,853,366

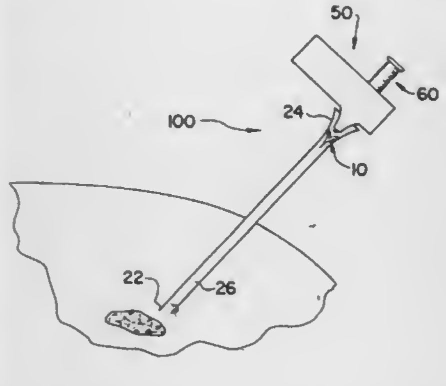
MARKER ELEMENT FOR INTERSTITIAL TREATMENT AND LOCALIZING DEVICE AND METHOD USING SAME

Kambiz Dowlatshahi, Chicago, Ill., assignor to Kelsey, Inc., Chicago, Ill.

Filed Jul. 8, 1996, Ser. No. 676,972

Int. Cl.^{6} A61B *17/00*

U.S. Cl. 600—434 **20 Claims**



1. A localizing device for marking a tissue mass of interest within the body of a patient, the localizing device comprising:

a) an elongate guide member having a first end to be inserted into the body so as to be directed toward a position proximate the tissue mass and an opposite second end to extend from the body after the first end has been inserted therein, the guide member including a guide path extending between the first end and the second end;

b) at least one marker element to be positioned wholly within the body proximate the tissue mass by introducing the marker element into the second end of the guide member and discharging the marker element from the first end of the guide member, wherein said marker element has a resilient member; and

c) a prodding member to urge the marker element along the guide path of the guide member from the second end to the first end so as to discharge the marker element from the first end of the guide member wholly within the body such that the marker element is positioned proximate the tissue mass.

5,853,367

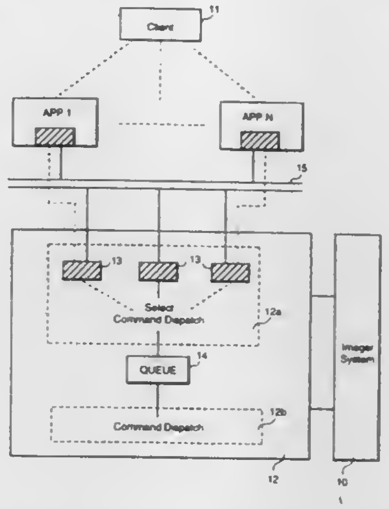
TASK-INTERFACE AND COMMUNICATIONS SYSTEM AND METHOD FOR ULTRASOUND IMAGER CONTROL

Carl Lawrence Chalek, Scotia; William Macomber Leue, Albany, and William Thomas Hatfield, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 17, 1997, Ser. No. 819,237

Int. Cl.^{6} A61B *8/00*

U.S. Cl. 600—437 **20 Claims**



1. A system for controlling complex equipment which is operated by a plurality of computerized task functions, comprising:

(a) a host processor coupled to the complex equipment for controlling operation of the plurality of task functions;

(b) a plurality of client processors each having processing means for running a selected task function of the complex equipment as a remote process therefrom;

(c) a communications network coupling the host processor to the client processors, said host and client processors being provided with respective communication handlers operable with said network for requesting connection of any of the client processors to the host processor, sending commands from the client processor to the host processor, handling of commands by the host processor, communicating responses to commands from the host processor to the client processor, and closing the connection with the host processor; and

(d) a plurality of task interface programs each providing a respective task interface for running a selected task function of the complex equipment on any of the client processors, wherein a task interface program corresponding to the selected task function requested by a client processor resides on the client processor so that the task function can be run as a remote process on the client processor through the corresponding task interface.

5,853,368

ULTRASOUND IMAGING CATHETER HAVING AN INDEPENDENTLY-CONTROLLABLE TREATMENT STRUCTURE

Rodney J. Solomon, Andover; Michael Peszynski, Newburyport, and Martin K. Mason, Andover, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 23, 1996, Ser. No. 774,129

Int. Cl.^{6} A61B *8/00;* **A61N** *1/05*

U.S. Cl. 600—439 **22 Claims**

1. A catheter comprising:

an elongate flexible main catheter body having proximal and distal ends;

an ultrasound transducer, fixedly coupled to said main catheter body and configured to provide a field of view; and

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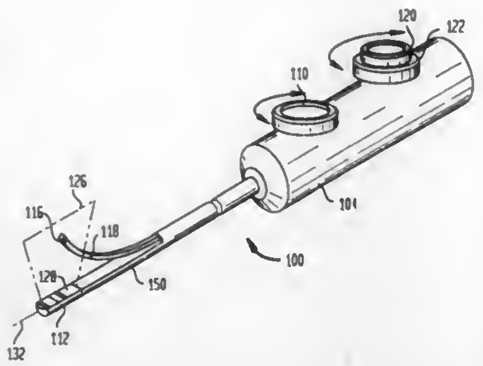


an elongate treatment structure having a deployable segment with a proximate end fixed to said main catheter body and a therapeutic device at its distal end, said deployable segment configured to have a restricted and predetermined range of motion controllable independently of said main catheter body, resulting in said therapeutic device traveling in a predetermined path that confines all operative positions to be within said field of view.

5,853,369

Patent Not Issued For This Number

5,853,370

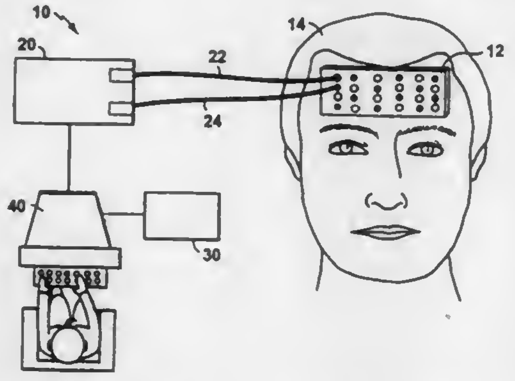
OPTICAL SYSTEM AND METHOD FOR NON-INVASIVE IMAGING OF BIOLOGICAL TISSUE

Britton Chance, Marathon, Fla.; Shoko Nioka, and Qingming Luo, both of Philadelphia, Pa., assignors to Non-Invasive Technology, Inc., Philadelphia, Pa.

Filed Sep. 13, 1996, Ser. No. 713,401

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 600—473 **49 Claims**



1. An optical system for in vivo, non-invasive imaging of tissue change comprising:

a stimulator constructed to stimulate tissue of interest;

an optical module, constructed to be located near said tissue, including an array of input ports and detection ports located in a selected geometrical pattern to provide a multiplicity of photon migration paths in the tissue;

a spectrophotometer including

light source means constructed to introduce electromagnetic radiation of visible or infra-red wavelength into the examined tissue selectively at said input ports, said wavelength being sensitive to a constituent of the imaged tissue;

detector means constructed to detect, at said detection ports, radiation of said selected wavelength that has migrated in the tissue from respective input ports; and

a processor receiving signals of said detected radiation from said detector means, and constructed and arranged to create a defined spatial image of the tissue by effectively producing from signals from the multiplicity of said photon migration paths, a succession of data sets representing, from a selected view, a succession of spatial images of the tissue being stimulated by said stimulator and the tissue not being stimulated, and an image data set related to differences between data of said successive data sets of the stimulated and non-stimulated tissue.

5,853,371

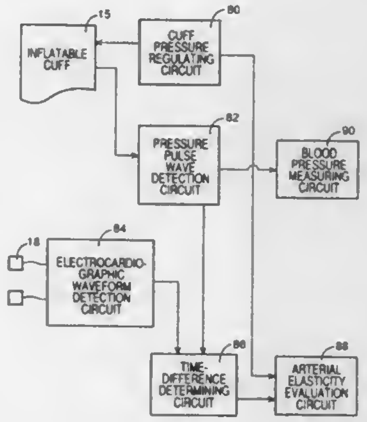
SYSTEM AND METHOD FOR EVALUATING THE DEGREE OF ARTERIAL ELASTICITY IN A LIVING SUBJECT

Hidekatsu Inukai, Nagoya, and Hiroshi Sakai, deceased, late of Komaki, both of Japan, by Hiroko Sakai, legal heir, assignors to Colin Corporation, Komaki, Japan

Filed Jun. 3, 1997, Ser. No. 867,978

Int. Cl.^{6} A61B *5/0205;5/021;5/022*

U.S. Cl. 600—483 **22 Claims**


15
INFLATABLE CUFF
80
CUFF PRESSURE REGULATING CIRCUIT
82
PRESSURE PULSE WAVE DETECTION CIRCUIT
90
BLOOD PRESSURE MEASURING CIRCUIT
84
18
ELECTROCARDIO-GRAPHIC WAVEFORM DETECTION CIRCUIT
86
TIME-DIFFERENCE DETERMINING CIRCUIT
88
ARTERIAL ELASTICITY EVALUATION CIRCUIT

1. A system for evaluating an arterial elasticity of a living subject, comprising:

a constriction device that applies a changing constriction pressure to a portion of the living subject;

a pressure pulse wave detection circuit that detects pressure pulse waves produced by a cardiac muscle of the living subject, the pressure pulse waves propagating through an artery of the living subject; and

an arterial elasticity evaluation device that determines a degree of elasticity of arteries of the living subject based on the detected pressure pulse waves and the constriction pressure applied by the constriction device to the portion of the living subject, the arterial elasticity evaluation device comprising:

an electrocardiographic waveform determiner that determines an electrocardiographic waveform of the living subject;

a time-difference determining circuit that determines time differences between predetermined periodic points on the electrocardiographic waveform of the living subject and predetermined periodic points on corresponding pressure pulse waves of the living subject; and

an arterial elasticity evaluation circuit that determines a degree of elasticity of arteries of the living subject based on a relationship between the time differences determined by the time-difference determining circuit and the constriction pressure applied by the constriction device to the portion of the living subject.

5,853,372

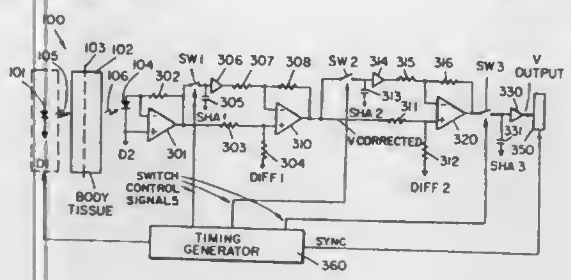
NEAR INFRA-RED SIGNAL PROCESSING SYSTEM

Stuart D. Britton, San Diego, Calif., assignor to Advanced Body Metrics Corporation, Rancho Santa Fe, Calif.

Filed Aug. 14, 1995, Ser. No. 515,047

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 600—500 **20 Claims**



1. A signal processing system comprising,

signal detector means for producing electrical signals representative of the detection of a signal by said signal detection means,

first sample and hold means connected to said signal detector means to selectively sample and hold said electrical signals,

first differential amplifier means connected to said signal detector means and to said first sample and hold means and operative to produce a corrected signal representative of the difference between the electrical signals produced by said signal detector means and the signal selectively held in said first sample and hold means,

second sample and hold means connected to the output of said first differential amplifier means to selectively sample and hold said corrected signal,

second differential amplifier means connected to the output of said first differential amplifier means and to said second sample and hold means and operative to produce a signal representative of the difference between the signals produced by said first differential amplifier means and said second sample and hold means,

third sample and hold means connected to the output of said second differential amplifier means to selectively produce an output signal representative of the difference between the signals produced by said second differential amplifier means and said second sample and hold means, and

timing control means connected to each of said first, second and third sample and hold means to control the operations thereof.

5,853,373

BI-LEVEL CHARGE PULSE APPARATUS TO FACILITATE NERVE LOCATION DURING PERIPHERAL NERVE BLOCK PROCEDURES

Richard Lee Griffith, Allendale; Robert J. Strowe, Ramsey, both of N.J.; Jonathan C. Newell, Glenmont; Peter M. Edic, Albany, both of N.Y.; Ralph F. Messina, Belleville, and Frederick Charles Houghton, Sussex, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

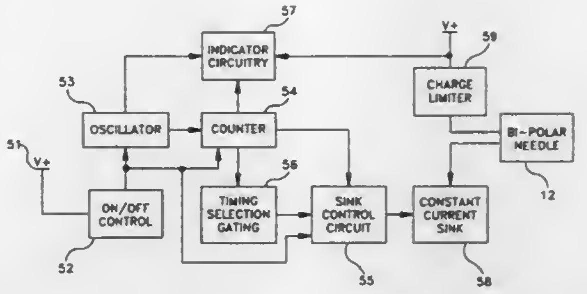
Filed Aug. 5, 1996, Ser. No. 695,151

Int. Cl.^{6} A61B *5/05*

U.S. Cl. 600—554 **7 Claims**

1. An electrolocation apparatus comprising a needle cannula having opposed proximal and distal ends and a lumen extending therebetween, said needle cannula being formed to define first and second conductors electrically insulated from one another; and a stimulator connected to the respective conductors on the needle cannula and operative to generate high and low charge pulses of electrical energy, and wherein said stimulator comprises a current source coupled to one of said respective conductors on said needle cannula;

path means, connected between the other of said respective conductors on said needle cannula and ground, for completing a current path passing through said needle cannula;



pulsing means, connected to said path means, for turning said current on and off to produce charge pulses through said needle cannula, said pulsing means comprising:

a transistor, connected between said needle cannula and said path means, for controlling charge conduction in said current path and through said needle cannula;

gating means, coupled to the base of said transistor, for providing base current thereto for turning conduction through said transistor on and off; counter means, connected to said gating means, for determining the timing of the base current provided to said transistor by said gating means; and means for controlling said counter means to regulate the timing of said base current in turning conduction of said transistor on and off to produce alternating high and low charge pulses across said needle cannula.

5,853,374

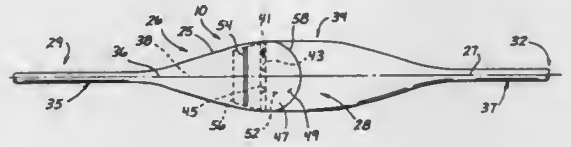
TISSUE COLLECTION AND RETRIEVAL BAG

Charles C. Hart, Huntington Beach, Calif., and Desmond H. Birkett, Boston, Mass., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Oct. 11, 1995, Ser. No. 540,795

Int. Cl.^{6} A61B *10/00*

U.S. Cl. 600—562 **20 Claims**



1. A tissue capture bag adapted for use through a hole in a body wall, comprising:

a flexible tube having a wall defining an interior region extending between a first end and a second end of the tube;

first portions at the first end of the tube having a first edge facing the second end of the tube;

second portions at the second end of the tube having a second edge facing the first end of the tube;

the first edge of the first portions and the second edge of the second portions defining an opening through the wall and into the interior regions of the tube between the first end and the second end of the tube; and

a flap extending through the opening and being disposed interiorly of the first portions of the tube and exteriorly of the second portions of the tube, the flap having a fixed relationship with the first portions of the tube.

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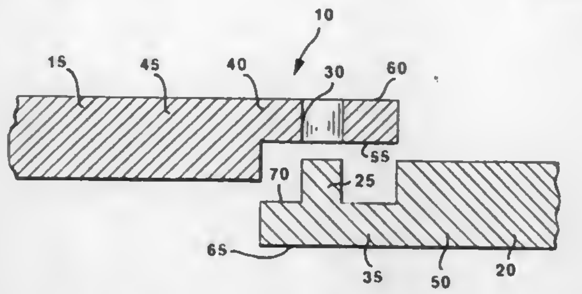
5,853,375
GUIDE WIRE EXTENSION PEG AND HOLE WITH 90 DEGREE LATCH

Gregory C. Orr, Oceanside, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 564,026, Nov. 29, 1995, abandoned. This application Nov. 6, 1997, Ser. No. 968,915

Int. Cl.^{6} A61B *5/00*

U.S. Cl. 600—585 **6 Claims**



1. A guide wire extension assembly for angioplasty including a guide wire and an extension wire to facilitate exchanging a balloon dilatation catheter comprising:

(a) a guide wire having a proximal end, a distal end and a radius;

(b) an extension wire having a proximal end, distal end and a radius;

(c) a first connector member and a second connector member;

(d) the first connector member being mated to one end of the guide wire comprising at least one horizontal surface extending along or parallel to the horizontal axis of the first connector member from the mated end to the opposed end, a longitudinally upwardly curved outer surface connecting the longitudinal sides of the horizontal surface or surfaces and extending from the mated end to the opposed end having the same radius as the guide wire and a first connection means located near the center of the horizontal surface; and

(e) the second connector member being mated to one end of the extension wire, the second connector member comprising a horizontal surface extending along the horizontal axis from the mated end to the opposed end, a longitudinally downwardly curved outer surface connecting the longitudinal sides of the horizontal surface and extending from the mated end to the opposed end having the same radius as the extension wire and a second connection means located near the center of the horizontal surface that is complementary and connectable with the first connection means such that when the first connection means and the second connection means are vertically connected the guide wire and extension wire are joined together.

5,853,376
UROGENITAL MUSCLE EXERCISER

Howard T. Harris, 2235 Whiteback, Houston, Tex. 77084

Continuation-in-part of Ser. No. 329,665, Oct. 26, 1994, Pat. No. 5,531,226, which is a continuation-in-part of Ser. No. 917,786, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 683,558, Apr. 10, 1991, abandoned. This application Jun. 28, 1996, Ser. No. 672,556

Int. Cl.^{6} A61B *5/00*

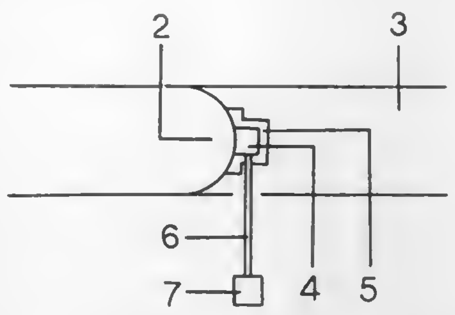
U.S. Cl. 600—587 **8 Claims**

1. A urogenital muscle exercise system LOCATED TOTALLY EXTERNAL to the body to provide muscular feedback comprising:

a sensor means to detect urogenital muscle activity, or the urogenital muscle status or change of status,

a holding means for holding said sensor means in position to detect urogenital muscle activity, or the urogenital muscle status or change of status,

a communications means for said sensor means to communicate to a feedback means, the detected urogenital muscle activity, or the urogenital muscle status or change of status,



and a feedback means to indicate to a user of the urogenital muscle exercise system, the detected urogenital muscle activity, or the urogenital muscle status or change of status.

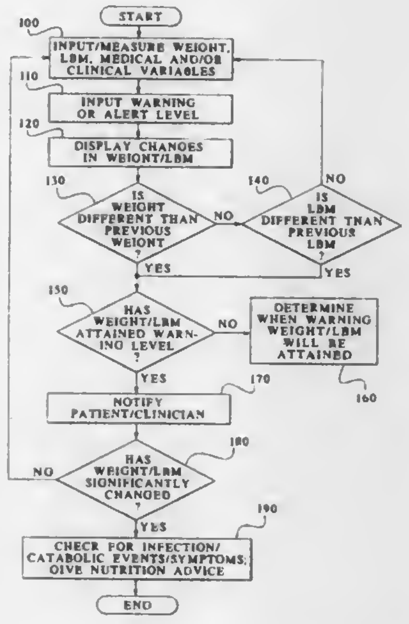
5,853,377
SYSTEM AND METHOD FOR MONITORING AND ANALYZING DYNAMIC NUTRITIONAL STATUS IN PATIENTS WITH CHRONIC DISEASE

David C. Madsen, Libertyville; Chris Kruzel, Chicago, both of Ill.; Susan Trimbo, Madison, N.J.; Theresa Voss, Antioch, Ill.; Kathryn Hennessy, Arlington Heights, Ill.; Carol Siegel, Vernon Hills, Ill., and Hugh N. Tucker, Barrington, Ill., assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 17, 1997, Ser. No. 843,986

Int. Cl.^{6} A61B *5/103*

U.S. Cl. 600—587 **19 Claims**


START
100
INPUT/MEASURE WEIGHT, LBM, MEDICAL AND/OR CLINICAL VARIABLES
110
INPUT WARNING OR ALERT LEVEL
120
DISPLAY CHANGES IN WEIGHT/LBM
130
IS WEIGHT DIFFERENT THAN PREVIOUS WEIGHT ?
NO
YES
140
IS LBM DIFFERENT THAN PREVIOUS LBM ?
NO
YES
150
HAS WEIGHT/LBM ATTAINED WARNING LEVEL ?
NO
YES
DETERMINE WHEN WARNING WEIGHT/LBM WILL BE ATTAINED
160
170
NOTIFY PATIENT/CLINICIAN
180
HAS WEIGHT/LBM SIGNIFICANTLY CHANGED ?
NO
YES
190
CHECK FOR INFECTION/ CATABOLIC EVENTS/SYMPTOMS; GIVE NUTRITION ADVICE
END

1. A system for continuously monitoring, throughout an analysis, a patient having a chronic disease, the system comprising:

input means for entering information relating to the patient having the chronic disease wherein the input means is capable of receiving information relating to LBM of the patient having the chronic disease;

memory means for storing pre-selected conditions relating to physical changes of the patient;

processing means for receiving the information and comparing the information to the pre-selected conditions and producing a signal indicative of a result of the comparison; and

output means for receiving the signal from the processing means.

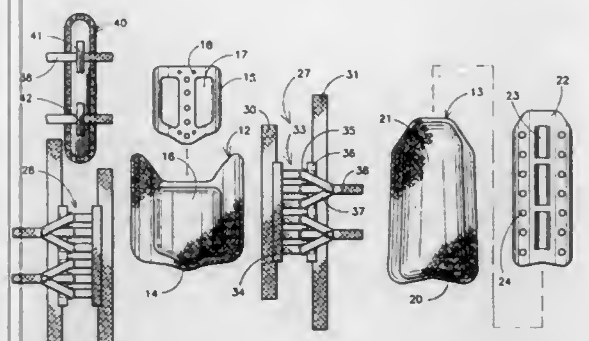
5,853,378
LUMBO-SACRAL ORTHOSIS

Michael D. Modglin, 203 Reisling Dr., Braselton, Ga. 30517

Filed Oct. 2, 1997, Ser. No. 942,745

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—19 **16 Claims**



1. A lumbo-sacral orthopedic brace comprising:

a front flexible member shaped to fit over the front of a patient's torso and having front and rear sides and having first and second edge portions, said front side having the surface thereof formed of hook and loop loop material;

a rear flexible member shaped to fit over the rear of a patient's torso and having first and second edge portions;

a first plurality of flexible straps attached to said front flexible member first edge portion;

a second plurality of flexible straps attached to said front flexible member second edge portion;

a first plurality of loops attached to said rear flexible member first edge portion and having each one of said first plurality of flexible straps passing through one of said first plurality of loops and a plurality of said first straps being attached to one common flexible strap having one portion of hook and loop hook material attached thereto and a second plurality of said first straps being attached to a second common flexible strap having one portion of hook and loop hook material attached thereto; and

a second plurality of loops attached to said rear flexible member second edge portion and having each one of said second plurality of flexible straps passing through one of said second plurality of loops and a plurality of said second straps being attached to one common flexible strap having one portion of hook and loop hook material attached thereto and a second plurality of said second straps being attached to a second common flexible strap having one portion of hook and loop hook material attached thereto, whereby each said common strap can pull a plurality of straps through a plurality of loops and be attached to said front flexible member hook and loop loop material at any desired position for adjusting the brace on a patient.

5,853,379
LOWER BACK BRACE CONSTRUCTION

Stevan R. Ostojic, 6601 W. North Ave., Oak Park, Ill. 60302

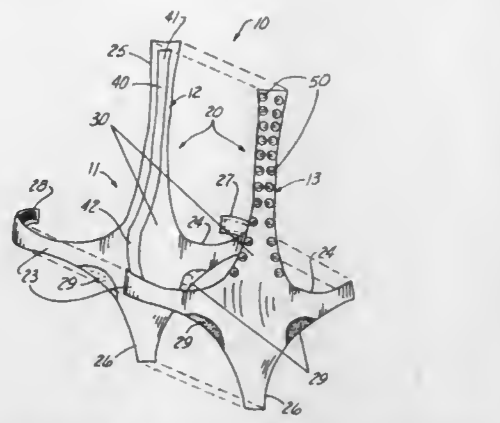
Filed Feb. 6, 1998, Ser. No. 19,951

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—19 **9 Claims**

1. A lower back brace construction comprising:

a generally cruciform shaped flexible cover member including a pair of strap arms, an elongated upper stem portion and a truncated lower stem portion; and



a brace unit including an elongated contoured brace member operatively connected to the upper and lower stem portions of said cover member.

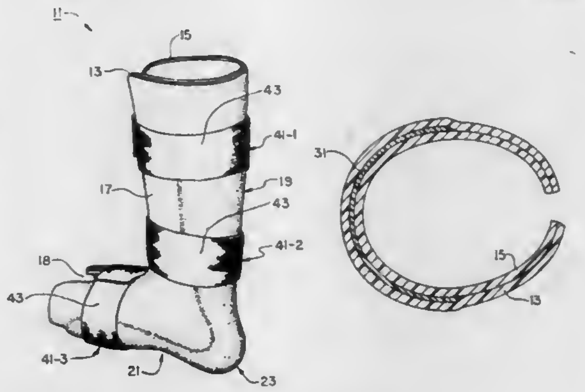
5,853,380
SOFT ANKLE/FOOT ORTHOSIS

John J. Miller, Easton, Mass., assignor to Boston Brace International Inc., Avon, Mass.

Continuation of Ser. No. 587,252, Jan. 16, 1996, abandoned, which is a continuation of Ser. No. 190,342, Feb. 2, 1994, abandoned. This application Jul. 22, 1997, Ser. No. 898,016

Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—27 **7 Claims**



1. A soft ankle and foot orthosis comprising:

(a) an outer layer of soft compressible material;

(b) an inner layer of soft compressible material, said inner layer of soft compressible material being bonded to the inside of said outer layer of soft compressible material, said inner layer and said outer layer together defining a shell, said shell being sized and shaped to substantially completely surround the lower leg and foot of a person on whom it is to be worn; and

(c) at least one reinforcing stay sandwiched between said inner layer and said outer layer to assist in holding said shell in its shape.

5,853,381
ANKLE SUPPORT BRACE

Vernon Leslie Stevenson, Fort Worth, and Kimberly Renee Douglas, Mansfield, both of Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Jul. 24, 1997, Ser. No. 900,215

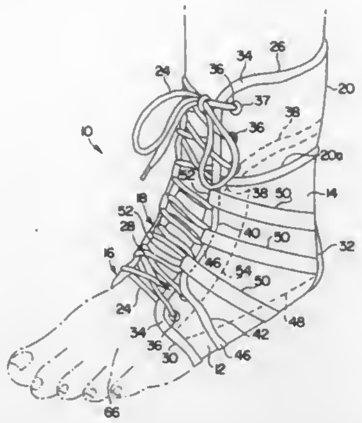
Int. Cl.^{6} A61F *5/00*

U.S. Cl. 602—65 **15 Claims**

1. An ankle support brace comprising:

a flexible medial piece;

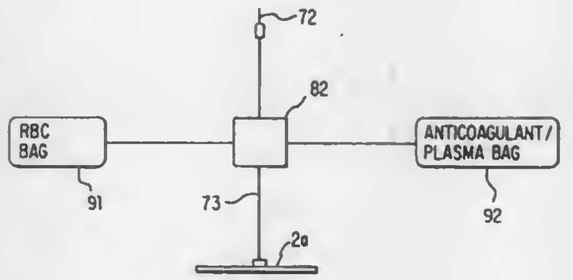
a flexible lateral piece connected to the medial piece;



a first plurality of lace loops disposed generally along a side of the medial piece operable to receive a lace, each of the first plurality of lace loops comprising a flexible material strip extending generally transversely across the medial piece to an opposite side and attached at a plurality of points to a surface of the medial piece; and

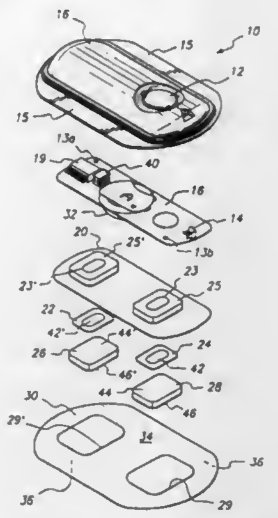
a second plurality of lace loops disposed generally along a side of the lateral piece operable to receive the lace, each of the second plurality of lace loops comprising a flexible material strip extending generally transversely across the lateral piece to the opposite side and attached at a plurality of points to a surface of the lateral piece.

5,853,382
BLOOD COLLECTION AND SEPARATION PROCESS
Gordon F. Kingsley; Thomas D. Headley, both of Wellesley, and Lise N. Halpern, Wayland, all of Mass., assignors to Transfusion Technologies Corporation, Natick, Mass.
Division of Ser. No. 482,617, Jun. 7, 1995, Pat. No. 5,651,766. This application Jun. 13, 1996, Ser. No. 662,613
Int. Cl.^{6} A61M *35/00*
U.S. Cl. 604—4 **16 Claims**



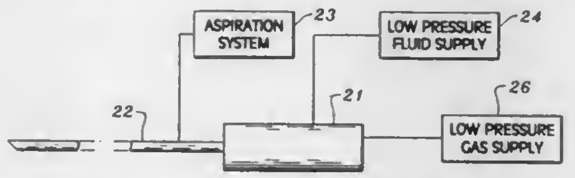
1. A method of collecting into a collection system a volume of whole blood from a donor, the method comprising the steps of:
connecting the donor to the collection system;
disconnecting the donor from the collection system; and
using the collection system to separate the blood into its components by centrifugation,
wherein the blood is collected and processed in a variable-volume rotor, further including the step of
providing an interlock device to prevent the collection system from pumping processed blood components from the rotor until the donor has been disconnected from the collection system, and a controller for controlling flow to and from the rotor, wherein the controller does not permit pumping from the rotor until a portion of the collection system is inserted into the interlock device indicating that the donor has been disconnected from the collection system.

5,853,383
PREPARATION FOR FORMULATIONS FOR ELECTROTRANSPORT DRUG DELIVERY
Thomas Owen Murdock, Vadnais Heights, Minn., assignor to ALZA Corporation, Palo Alto, Calif.
Filed May 3, 1995, Ser. No. 433,173
Int. Cl.^{6} A61N *1/30*
U.S. Cl. 604—20 **10 Claims**



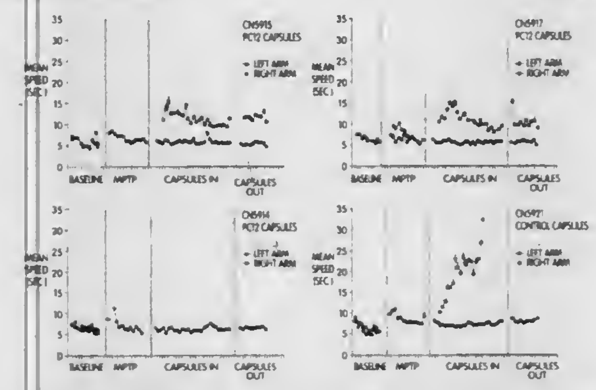
1. A process for making a pH adjusted composition in an electrotransport delivery system comprising the steps of:
providing an aqueous drug solution including drug ions and counter ions;
adjusting the pH of the drug solution by contacting an ion exchanger and the drug in solution;
exchanging hydronium or hydroxyl ions for the counter ions;
removing the ion exchanger from the aqueous solution; and,
adding the aqueous solution to at least one reservoir of the electrotransport delivery system.

5,853,384
FLUID JET SURGICAL CUTTING TOOL AND ASPIRATION DEVICE
Scott Bair, Atlanta, Ga., assignor to SurgiJet, Inc., Orinda, Calif.
Continuation-in-part of Ser. No. 438,905, May 10, 1995, Pat. No. 5,562,692, which is a continuation-in-part of Ser. No. 96,297, Jul. 26, 1993. This application May 8, 1995, Ser. No. 436,138
Int. Cl.^{6} A61B *17/20*
U.S. Cl. 604—22 **13 Claims**



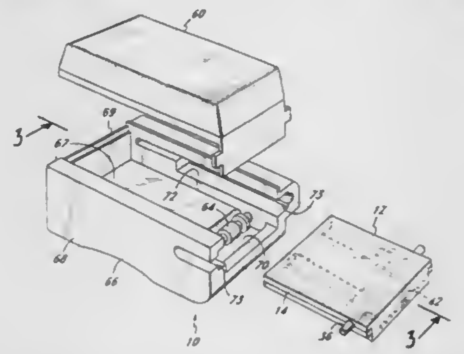
1. A surgical instrument for aspirating fluid and debris from a surgical site, comprising
a housing;
cannula means extending from said housing;
a suction source disposed in said housing for aspirating fluid and debris from said surgical site;
a fluid port disposed on said housing for transporting aspirated fluid and debris from said housing, said suction source being disposed intermediate said cannula means and said fluid port;
said suction source including vacuum generating means for creating a suction force at a distal end of said cannula means;
a gas source connected to said instrument and a venting valve disposed in said housing; wherein said vacuum generating means comprises a piston member driven by said gas source and said venting valve, said gas source and said valve cooperating to reciprocatingly advance and retract said piston member;
said vacuum generating means further including a biasing spring for retracting said piston member during venting of gas through said valve.

5,853,385
ENCAPSULATED PC12 CELL TRANSPLANTS FOR TREATMENT OF PARKINSON'S DISEASE
Dwaine F. Emerich, Providence, R.I.; Patrick Aebischer, Lutry, Switzerland, and Jeffrey H. Kordower, Oak Park, Ill., assignors to CytoTherapeutics, Inc., Lincoln, R.I.
Filed Aug. 26, 1994, Ser. No. 296,967
Int. Cl.^{6} A61M *31/00*
U.S. Cl. 604—49 **3 Claims**



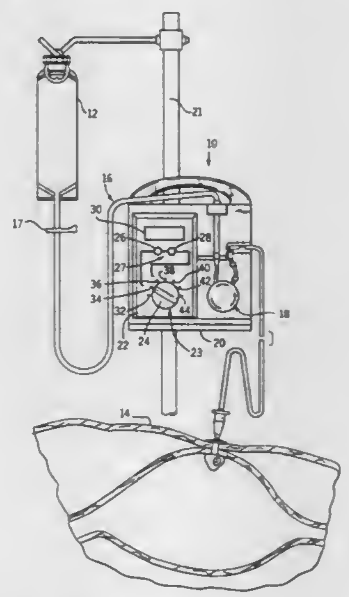
1. A method for slowing or preventing the progression of Parkinson's disease by implantation of a biocompatible immunoisolatory capsule suitable for implantation into individuals with Parkinson's disease for at least six months, said capsule comprising:
(a) a core which contains living PC12 cells capable of secreting a biologically active product or of providing a biological function to an individual; and
(b) an external diffusional surface jacket surrounding said core which is biocompatible and which is sufficient to permit passage of substances between the individual and the core and to protect the isolated PC12 cells in the core from immunological attack.

5,853,386
INFUSION DEVICE WITH DISPOSABLE ELEMENTS
David L. Davis; Robert E. Brasier, and Richard F. Hatch, all of San Diego, Calif., assignors to ALARIS Medical Systems, Inc., San Diego
Filed Jul. 25, 1996, Ser. No. 686,757
Int. Cl.^{6} A61M *31/00*
U.S. Cl. 604—65 **40 Claims**



1. A device for pumping fluid from a fluid source to a patient, comprising:
a fluid delivery conduit disposed between said fluid source and said patient;
a pump which draws fluid from said fluid source, through said delivery conduit, and to said patient; and
a single optical occlusion sensor responsive to dimensional changes in said fluid delivery conduit and optically sensing occlusions both upstream and downstream from said pump.

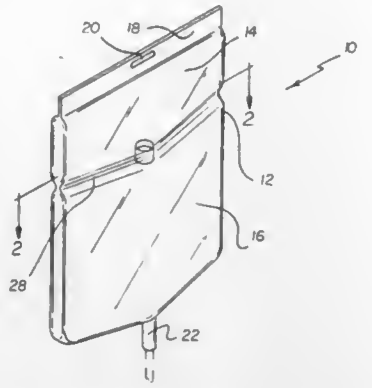
5,853,387
PUMP WITH PROGRAMMABLE HOLD
Robert D. Clegg, Pickerington; Matthew S. Fleming, Columbus; Clark E. Fortney, Gahanna; Barbara J. McAllister, Columbus, and Robert S. Osborne, Gahanna, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Apr. 3, 1996, Ser. No. 647,423
Int. Cl.^{6} A61M *1/00*
U.S. Cl. 606—67 **14 Claims**



1. A pumping system for infusing fluids into a patient, said pumping system comprising:
a pump;
a controller constructed to control operation of said pump, said controller having a hold condition in which said controller deactivates said pump, said controller further including a timer subsystem having a variable duration
a magnitude control operable by a human, said magnitude control connected to said controller and constructed to alter said variable duration of said timer subsystem of said controller and
an alarm connected to said controller, said controller constructed to activate said alarm upon expiration of said variable duration of said timer subsystem.

5,853,388
INTRAVENOUS BAG WITH SEPARATE COMPARTMENT
David Semel, 611 N. Vista Del Sol, Mesa, Ariz. 85207
Filed Aug. 21, 1997, Ser. No. 915,744
Int. Cl.^{6} A61M *37/00*
U.S. Cl. 604—82 **7 Claims**

2. An intravenous bag with separate compartments for separating medications and intravenous solutions prior to use comprising, in combination:
a pouch having an upper section and a lower section, the lower section having an outlet tube extending downwardly therefrom, the outlet tube being in fluid communication with the lower section;



a divider wall separating the upper section from the lower section, the divider wall extending between opposing side walls of the pouch and tapering inwardly to a nadir in a middle of the divider wall, a flexible central channel being positioned at the nadir of the divider wall, the flexible central channel having an open upper end within the upper section and an open lower end within the lower section; and

sealing means disposed within the flexible central channel.

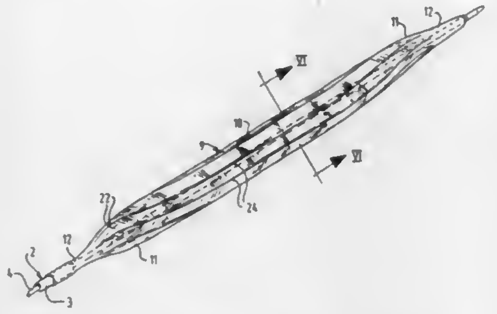
5,853,389
BALLOON CATHETER AND METHOD FOR MANUFACTURING

Lucas Johannes Hijlkema, Groningen, Netherlands, assignor to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 612,340, Mar. 7, 1996, Pat. No. 5,792,415. This application Jan. 14, 1998, Ser. No. 6,860

Int. Cl.^{6} A61M *29/00*

U.S. Cl. 604—96 **9 Claims**



1. A balloon which comprises a tubular central section and, when inflated, frustoconical transition sections on either end of the central section connecting with tubular end sections of less diameter than the central section, said transition sections comprising spiral ridges of material extending from each end section toward the central section, and in which, in deflated condition, the central section and the transition sections are folded in pleats as urged by said spiral ridges.

5,853,390
SYRINGE FOR HYPODERMIC INJECTIONS

Claudio Freschi, Forli', Italy, assignor to Giovanni Freschi, Forli', Italy

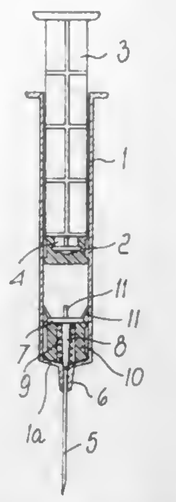
Filed Nov. 4, 1996, Ser. No. 743,035

Claims priority, application Italy, Nov. 10, 1995, BO95 A 000533

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—110 **7 Claims**

1. A syringe for hypodermic injections comprising:



a cylindrical body having a front end, an open rear end, an internal surface and containing a plunger which is axially rigidly coupled to a stem by means of a tang;

a hollow needle connected with said front end of the cylindrical body having a stem and a disk provided at one end of the stem of the needle and arranged on a plane lying transversely to a longitudinal axis of the cylindrical body;

elastic means placed between said front end of the cylindrical body and said disk;

locator means rigidly coupled to the internal surface of said cylindrical body and engaging said disk such that they are actuated by the advancement of said plunger, at the end of the injection, for a snap-action disengagement of the needle;

wherein said needle is adapted to retract inside said cylindrical body, actuated by said

elastic means, at the end of the injection.

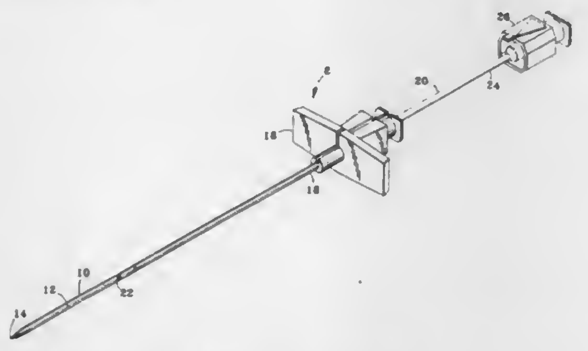
5,853,391
SLOTTED REGIONAL ANESTHESIA NEEDLE

Craig J. Bell, E. Swanzey, N.H., assignor to Medcare Medical Group, Inc., E. Swanzey, N.H.

Filed Jul. 1, 1996, Ser. No. 673,510

Int. Cl.^{6} A61M *5/178*

U.S. Cl. 604—160 **7 Claims**



1. A hypodermic needle device comprising:

a hypodermic needle having a barrel portion with inner and outer walls and a distal end and an opposed proximal end;

a slot axially directed along the length of said hypodermic needle from said distal end to said opposed proximal end, said slot having a minimum width dimension; and

an instrument having an instrument outer diameter, an instrument distal end and an instrument proximal end, inserted into said hypodermic needle device, said instrument comprising a hollow, cannulated stylet, and said slot minimum width dimension being less than said instrument outer diameter and not less than a dimension through which said hollow cannulated stylet can pass therethrough.

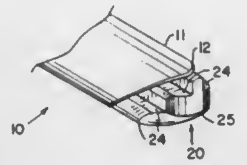
5,853,392
SLEEVE TROCAR WITH PENETRATION INDICATOR

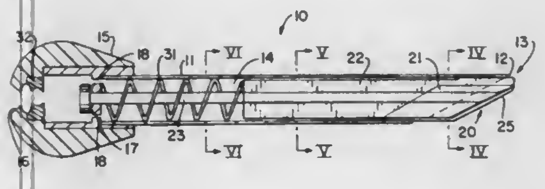
William G. Dennis, 11222 St. Johns Industrial Pkwy., Jacksonville, Fla. 32246

Filed Apr. 3, 1997, Ser. No. 832,294

Int. Cl.^{6} A61M *5/178*

U.S. Cl. 604—164 **6 Claims**





1. In a sleeve trocar device for puncturing tissue to provide a conduit to an internal body cavity inflated by a gas, the sleeve trocar device comprising a spring biased obturator mounted coaxially within a sleeve member having a sharpened piercing tip, said obturator having a head with a blunt tip which extends beyond said piercing tip in the passive state and which is forced into said sleeve member to expose said piercing tip upon contact with tissue at the beginning of a puncturing step, said device further comprising penetration indicator means actuated by gas flow from said internal body cavity through said sleeve member which indicates when said internal body cavity has been breached by said piercing tip, and channel means in said obturator head which allows passage of gas from said internal body cavity through said obturator head and into said sleeve member to actuate said penetration indicator means, the improvement comprising:

locating said channel means around the periphery of said obturator head to form peripheral channels, said peripheral channels being defined by the combination of the interior wall of said sleeve member and the walls of said channel means cut into the periphery of said obturator head.

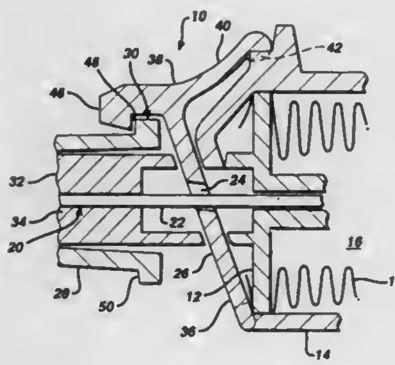
5,853,393
CATHETER NEEDLE LOCKING AND CATHETER HUB UNLOCKING MECHANISM

David L. Bogert, Plainville, Conn., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Jun. 7, 1995, Ser. No. 483,951

Int. Cl.^{6} A61M *5/178*

U.S. Cl. 604—165 **14 Claims**



1. A cannula locking and catheter hub unlocking mechanism for a catheter insertion device, comprising:

(a) a housing having a cannular needle received by said housing, said cannular needle extending from an end of said housing and being adapted to administer a catheter to a patient;

(b) catheter hub supporting structure adjacent said housing and movable along said cannular needle and encompassing a portion of the cannular needle and defining an opening therein;

(c) a catheter slideably mounted on said cannular needle, said catheter including a catheter hub engaged on said catheter hub supporting structure; and

(d) means for locking said catheter hub to said catheter hub supporting structure in the extended operative position of said cannular needle and for releasing said catheter hub in the retracted position of said cannular needle while concurrently forming protective barrier against the tip of said retracted cannular needle being in an exposed condition, wherein said locking means comprises a plate element extending through said opening defined by said catheter hub supporting structure, said plate element including a central aperture whereby said cannular needle passes through said aperture in the extended operative condition and maintains said plate element in a catheter hub locking condition on said catheter hub supporting structure wherein there is a tab on said housing and said plate element has opposite extending arm portions at one end; one said arm portion being hingedly connected to said tab, and another of said arm portions including means for clampingly engaging said catheter hub.

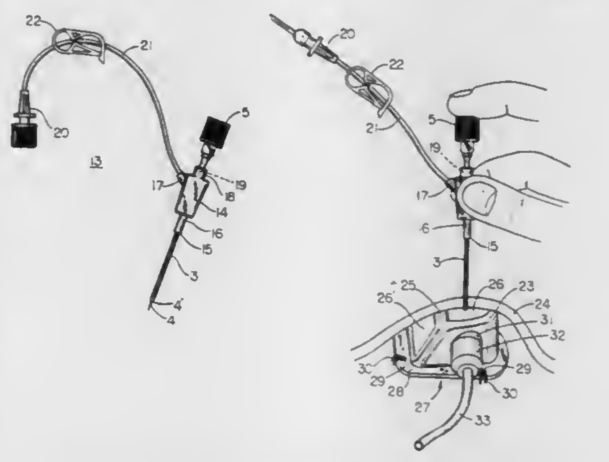
5,853,394
CATHETER

Marc Joshua Tolkoff, 39 Jordan Rd., Brookline, Mass., and Fernando Alvarez de Toledo, 229 Fairhaven Hill, Concord, Mass. 01742

Continuation of Ser. No. 514,945, Aug. 14, 1995, Pat. No. 5,607,407, which is a continuation-in-part of Ser. No. 239,713, May 9, 1994, abandoned. This application Dec. 31, 1996, Ser. No. 775,176

Int. Cl.^{6} A61M *5/178*

U.S. Cl. 604—165 **7 Claims**



1. A subcutaneous access port catheter assembly comprising:

a flexible catheter, said catheter having distal and proximal ends and having an inner wall portion defined by a pretensioned, continuous helical coil and an outer sheathing formed from a tube of smooth, inert flexible plastic material, wherein said sheath is in intimate contact with the outer spiral of said coil; and

an elongated puncture needle having a sharp point at the distal end and a knob member at the proximal end, said puncture needle being inserted coaxially down the length of said catheter such that the sharp point at the distal end of the elongated puncture needle extends beyond the distal end of said catheter,

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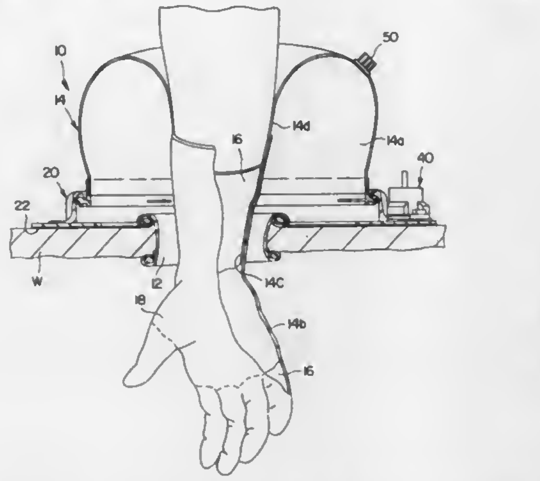
wherein the assembly has sufficient rigidity to penetrate a septum which has a Shore A durometer of at least 25 and wherein said elongated puncture needle can be removed from said catheter.

5,853,395
EXTRACORPOREAL PNEUMOPERITONEUM ENCLOSURE AND METHOD OF USE

Berwyn M. Crook, Yardley; Robert D. Rambo, Sellersville; Thomas E. Lyons, Quakertown, all of Pa., and Frederic C. Feiler, Jr., Raleigh, N.C., assignors to Dexterity, Inc., Blue Bell, and Medical Creative Technologies, Inc., Chalfont, both of Pa.

Filed Feb. 18, 1997, Ser. No. 801,752
Int. Cl.^{6} A61M *5/32;* A61F *5/44*
U.S. Cl. 604—174 30 Claims



1. Apparatus for providing extracorporeal pneumoperitoneum around a surgical incision in a patient, comprising, in combination:

a flexible gas impermeable envelope having a first cuff section with an opening and a second hand section with holes respectively aligned for enabling the thumb and fingers of a hand to extend through said holes said envelope being elongate between said hand section holes and said cuff opening for extending along a hand and forearm of a surgeon in a reversely turned manner when operatively connected to the patient; and

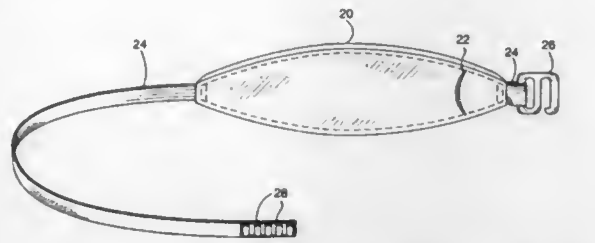
a connecting assembly for securing said first cuff section around the incision, said connecting assembly having a first ring fixed in sealing contact with the periphery of said opening and a second ring for selectively connecting in sealing contact with said first ring; and

a peelable adhesive fixed to said second ring for adhering it in sealing contact with skin around the incision.

5,853,396
TUCK-AWAY BELT FOR PERITONEAL DIALYSIS PATIENTS

Solita M. Bennes, deceased, late of Valparaiso, Fla.; by James M. Bennes, legal representative, 199 Highland St., Valparaiso, Fla. 32580, and Cathy Dickson, 4535 Nancy Ward La., Niceville, Fla. 32578

Continuation-in-part of Ser. No. 526,167, Sep. 11, 1995, Pat. No. 5,669,884. This application Jul. 24, 1996, Ser. No. 685,657
Int. Cl.^{6} A61M *5/32*
U.S. Cl. 604—179 4 Claims



1. A Tuck-Away Belt for use during peritoneal dialysis exchange patient for storage of at least one associated transfer tube comprising:

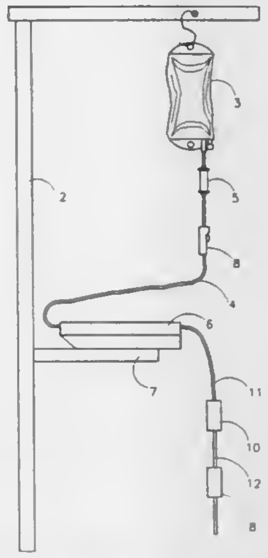
a flexible elongated pocket envelope made form a first outer panel formed from a flexible, self-lined material having a first horizontal length; and a second panel attached to the first panel along the upper and lower sides and along one of the ends and having a second horizontal length; the second horizontal length being less than the first horizontal length so as to define an opening having a fixed width between the first and second panels capable of easily accommodating a dialysis transfer tube, and

a flexible elastic band narrower than the envelope pocket fixedly attached to the first end and the second end of the pocket, one end of said band having a hook and loop fastener type attachment and an opposite end of said band having a D-ring through which the elastic band is pulled through to attach to itself.

5,853,397
MEDICAL INFUSION APPARATUS INCLUDING SAFETY VALVE

Eli Shemesh, Ashdod; Swi Barak, Caesaria, and Haim Raz, Rehovot, all of Israel, assignors to Migada, Inc., N.J.

PCT No. PCT/US94/14334, § 371 Date Sep. 13, 1996, § 102(e) Date Sep. 13, 1996, PCT Pub. No. WO95/16480, PCT Pub. Date Jun. 22, 1995
PCT Filed Dec. 12, 1994, Ser. No. 663,065
Claims priority, application Israel, Dec. 13, 1993, 108004; Jul. 3, 1994, 110198
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—247 4 Claims

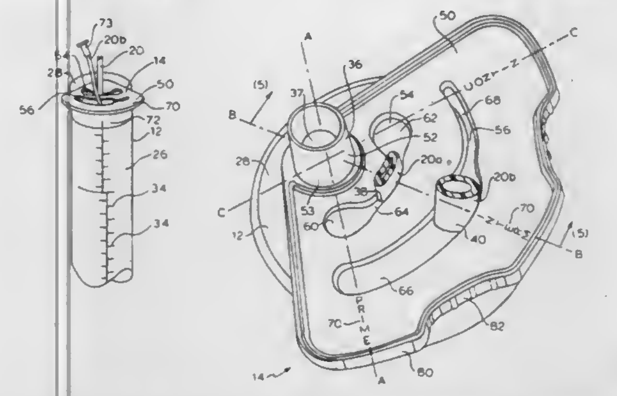


1. Medical infusion apparatus, comprising: a container for a liquid to be infused; tubing leading from the container to the subject to receive an infusion; a pump for pumping the infusion liquid via said tubing to the subject; and a safety valve connected in said tubing between said pump and the subject; said safety valve being normally closed to prevent free-flow of the liquid from the container but being automatically opened when a predetermined minimum pressure is applied to the liquid by said pump, wherein said safety valve comprises: a cannula having an axial passageway from one end of the cannula but closed at an opposite end, and a radial bare adjacent said opposite end leading from said axial passageway to an outer surface of the cannula; and an elastomeric sleeve around the cannula and overlying and normally closing said radial bore, wherein said safety valve is adapted for external manual deformation to open the valve and to permit priming of the apparatus.

5,853,398
CONTAINER WITH PIVOTING TUBE CLAMP

Birendra K. Lal, Lake Zurich, and Lewis E. Daniels, Jr., Wonder Lake, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 19, 1997, Ser. No. 994,883
Int. Cl.^{6} A61M *5/00*
U.S. Cl. 604—250 26 Claims

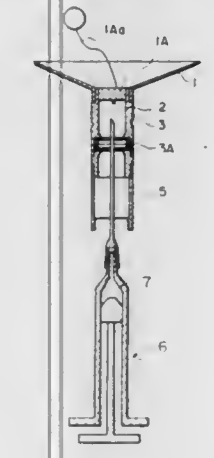


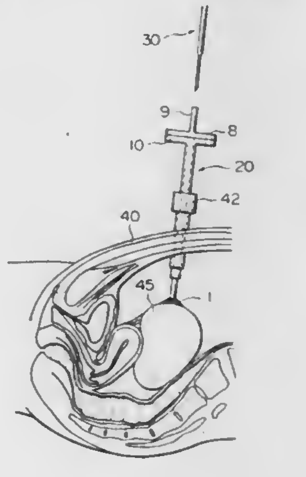
1. A chamber for use with a fluid administration set, the chamber comprising a main body and a cap on the main body, the cap having an inlet port and a pivot member spaced from the inlet port, the chamber further including a clamp having a body portion pivotably mounted thereto about the pivot member, and forming an elongated tube receiving opening formed in the body portion spaced from the pivot member, the opening having at least one wide portion and at least one narrow portion, the body portion being operably attached to the pivot member with the opening overlying the cap inlet port.

5,853,399
MEDICAL INSTRUMENTS AND SYSTEMS FOR PUNCTURING AN ORGAN

Hiroshi Sasaki, 14-9, Nishikata 2-chome, Bunkyo-ku, Tokyo 113, Japan

Filed Dec. 18, 1995, Ser. No. 574,379
Claims priority, application Japan, May 26, 1995, 7-128439
Int. Cl.^{6} A61M *5/00;25/00*
U.S. Cl. 604—264 30 Claims





1. A medical instrument comprising:

a first tubular body having a first end for being inserted into a body cavity and a second end, the first tubular body having a severable portion proximate the first end;

a resilient parasol extending from the first end of the first tubular body, the parasol having a normally opened and a closed position;

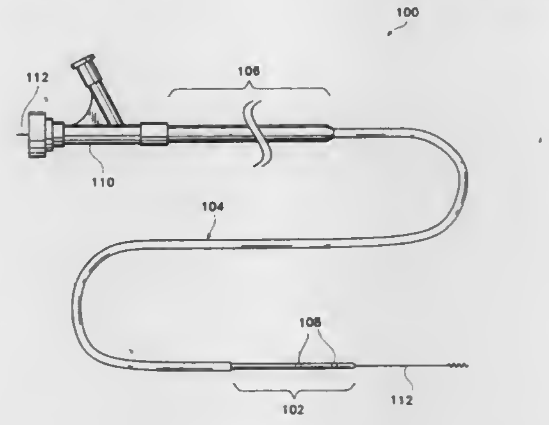
a seal within the severable portion of the first tubular body; and

a second tubular body containing the first tubular body and parasol, the second tubular body having first and second ends corresponding to the first and second ends of the first tubular body, respectively, the second tubular body compressing the parasol and maintaining the parasol in the closed condition when the parasol is within the second tubular body, the first tubular body being movable with respect to the second tubular body such that when the first end of the first tubular body is advanced out of the first end of the second tubular body, the parasol deploys into the normally opened condition.

5,853,400
HIGH PERFORMANCE SPIRAL-WOUND CATHETER

Gene Samson, Milpitas, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Continuation of Ser. No. 338,018, Nov. 10, 1994, Pat. No. 5,658,264. This application Jun. 3, 1997, Ser. No. 868,036
Int. Cl.^{6} A61M *25/00*
U.S. Cl. 604—282 38 Claims



1. A catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

a.) a first ribbon stiffener having a width and thickness, and said first ribbon stiffener is spirally wound with a handedness to form said passageway and an outer stiffener surface and wherein said outer stiffener surface is at least partially coated with an adhesive material, and

b.) at least one polymer tubing member exterior to and contiguous with and adherent to said first ribbon stiffener via said adhesive material, the adhesive material having a softening temperature higher than a heat shrink temperature of the polymer tubing member but lower than a melting temperature of the polymer tubing member.

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5,853,401

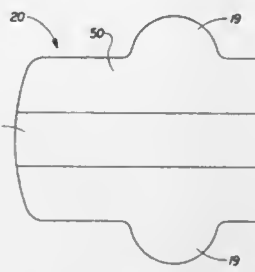
BODY-FITTING COMPOUND SANITARY NAPKIN

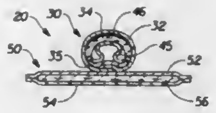
Katherine Louise Mayer, Newport, Ky.; Bruce William Lavash, West Chester, Ohio; John Lee Hammons, Hamilton, Ohio, and Thomas Ward Osborn, III, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 294,663, Aug. 19, 1994, abandoned. This application May 3, 1996, Ser. No. 642,588

Int. Cl.^{6} A61F *13/15;13/20*

U.S. Cl. 604—378 **12 Claims**





1. A compound sanitary napkin comprising: an uppermost primary absorbent member having a length, a width, and an absorptive capacity and a lowermost secondary absorbent member having a length, a width, a caliper and an absorptive capacity, the absorptive capacity of said primary absorbent member being greater than the absorptive capacity of said secondary absorbent member, said primary absorbent member and said secondary absorbent member having a common length, said primary absorbent member including an absorbent core and a resilient member, said resilient member being oriented in an inverted substantially U-shaped cross-sectional configuration along at least a portion of the length of said primary absorbent member, and a liquid pervious topsheet superimposed on said absorbent core, said secondary absorbent member including a liquid pervious topsheet, and a liquid impervious backsheet joined to said topsheet, said primary absorbent member being joined to said secondary absorbent member by union means, said width of said secondary absorbent member being at least 3.0 times said width of said primary absorbent member.

5,853,402

ABSORBENT ARTICLE HAVING A COMPOSITE ABSORBENT CORE

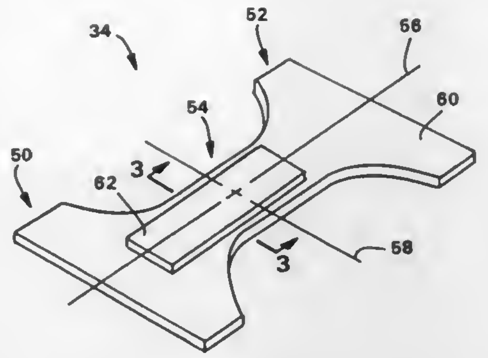
Michael John Faulks, Neenah, and Thomas Walter Odorzynski, Green Bay, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation of Ser. No. 344,777, Nov. 23, 1994, abandoned. This application Feb. 26, 1997, Ser. No. 807,848

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 604—378 **51 Claims**

27. An absorbent article having a front portion, a rear portion and a crotch portion which extends between and connects said front portion to said rear portion, said absorbent article comprising:
- a) an outer cover;
- b) a bodyside liner which is superposed on said outer cover; and
- c) a composite absorbent core which is located between said outer cover and said bodyside liner wherein said absorbent core comprises:
  - 1) at least one absorbent portion; and
  - 2) at least one porous resilient portion which has a void volume and is located adjacent said at least one absorbent portion wherein said at least one porous resilient portion has a mean pore size of at least about 1.50 millimeters as determined according to a Pore Size Test as described herein and a wet compression recovery of at least about 85 percent as determined according to a Wet Compression Recovery Test as described herein.



5,853,403

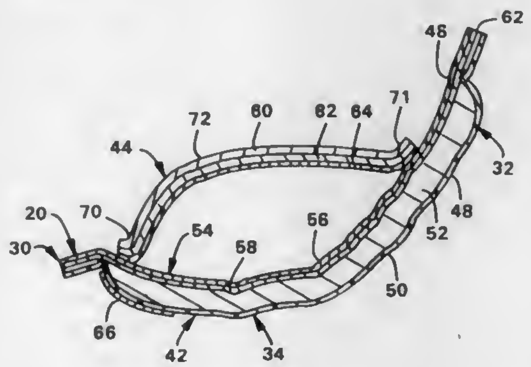
ABSORBENT ARTICLE WITH BODY CONTACTING LIQUID CONTROL MEMBER

Richard Warren Tanzer; Barbara Ann Gossen, both of Neenah; Dan Darold Endres, Appleton; Cynthia Helen Nordness, Oshkosh, and Paula Mary Sosalla, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation-in-part of Ser. No. 328,987, Oct. 25, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 635,816

Int. Cl.^{6} N61F *13/15*

U.S. Cl. 604—385.1 **11 Claims**



1. An absorbent article having a longitudinal axis, an elongate length, a first waistband region, a second waistband region, and an intermediate region interconnecting the first and second waistband regions, the absorbent article comprising:

a garment shell comprising a backsheet layer, an absorbent assembly disposed on the backsheet layer, and a bodyside layer bonded to the backsheet layer and sandwiching the absorbent assembly therebetween; and

a liquid control member having a first stationary zone bonded to the bodyside layer in the first waistband region, an opposite second stationary zone bonded to the bodyside layer in the second waistband region, and an elasticized zone between the first and second stationary zones, the elasticized zone adapted to contract at least about 10 percent of the elongate length, the liquid control member comprising:

a liquid permeable liquid handling layer in substantially direct liquid contact with the absorbent assembly and configured to have a saturated retention capacity of at least about 10 grams per gram and to permit liquid to drain through the liquid handling layer into the absorbent assembly, the absorbent assembly having a smaller pore size than the liquid handling layer, the liquid handling layer having a width dimension in the elasticized zone of less than about 3 inches; and

a pair of elastic members disposed along opposite sides of the liquid handling layer.

5,853,404

DISPOSABLE ABSORBENT ARTICLE HAVING A FOLDED LANDING MEMBER FOR ENGAGING WITH A HOOK-TYPE FASTENING MEMBER

Christoph Johann Schmitz, Euskirchen-Stotzheim, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

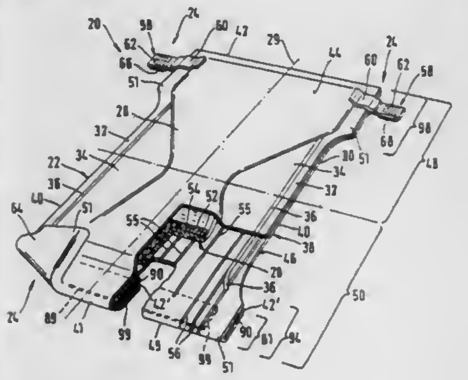
PCT No. PCT/US96/01192, § 371 Date Aug. 15, 1997, § 102(e) Date Aug. 15, 1997, PCT Pub. No. WO96/25132, PCT Pub. Date Aug. 22, 1996

PCT Filed Jan. 30, 1996, Ser. No. 894,294

Claims priority, application European Pat. Off., Feb. 16, 1995, 95102143.5

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 604—386 **18 Claims**



1. An absorbent article comprising:

a liquid pervious topsheet:

a backsheet joined to at least a portion of the topsheet having a garment-facing side and a user-facing side, two longitudinal sides, a front transverse edge, a front waist region located along the front transverse edge, a back transverse edge, and a back waist region located along the back transverse edge;

an absorbent core disposed between at least a portion of the topsheet and at least a portion of the backsheet;

a mechanical fastening system comprising a hook-type fastening member located in the back waist region and extending transversely beyond each longitudinal side, and

a landing member for mechanically engaging with the hook-type fastening member,

the landing member including at least a portion of the topsheet which is doubled over the backsheet in at least a portion of the front waist region, the topsheet being adapted to mechanically engage with the hook-type fastening members; and

attachment means for keeping the topsheet in a doubled-over configuration.

5,853,405

DISPOSABLE ABSORBENT ARTICLE HAVING A GARMENT-LIKE APPEARANCE

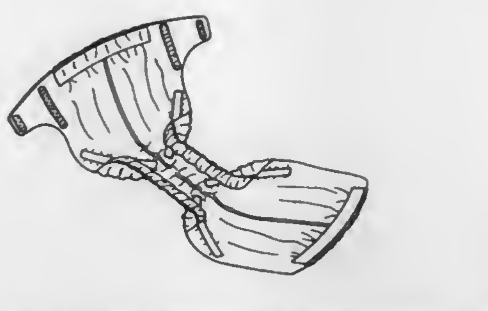
Jody Dorothy Suprise, Neenah, Wis., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation of Ser. No. 561,733, Nov. 22, 1995. This application Jul. 1, 1997, Ser. No. 886,335

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 604—391 **14 Claims**

1. A disposable absorbent article which defines a first side portion, a second side portion, and a longitudinal centerline between said side portions, said absorbent article comprising:
- a) an outer cover which defines a length, a pair of laterally opposed side regions, a pair of longitudinally opposed waist regions, and a crotch region which extends between and connects said waist regions, said outer cover comprising a first side panel which is located in said first side portion of said absorbent article and a second side panel which is located in said second side portion of said absorbent article wherein an edge of said first side panel is connected to an edge of said second side panel to provide a seam which extends along said longitudinal centerline between said side portions of said absorbent article and wherein said seam on each of said side panels defines a "U" shape when said side panel is in a laid flat configuration; and
- b) an absorbent insert which is connected to said outer cover, wherein each of said side panels of said outer cover further comprises a first fastener which is located on one of said waist regions and a second fastener which is located on said opposite waist region and wherein said first fastener and said second fastener on each of said side panels are releasably engageable together.



5,853,406

PASSIVE DRUG DELIVERY APPARATUS

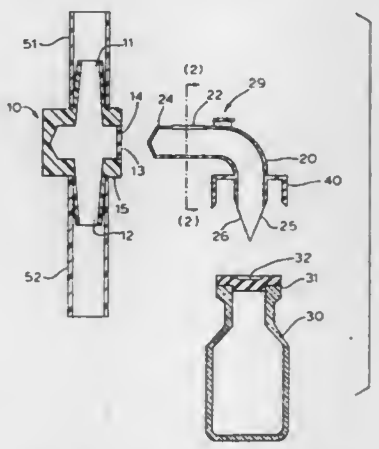
Kouichirou Masuda, Kashiwara; Kazumasa Maeda, Kadoma, and Haruki Kazama, Musashino, all of Japan, assignors to Baxter International Inc., Deerfield, Ill.

Filed Aug. 23, 1996, Ser. No. 704,223

Claims priority, application Japan, Aug. 24, 1995, 239270/95

Int. Cl.^{6} A61M *5/00*

U.S. Cl. 604—414 **9 Claims**



1. An apparatus for the delivery of a passively reconstituted beneficial agent to a patient, the apparatus adapted to be disposed in the middle of a fluid conduit to supply a medical liquid, comprising:

a junction member adapted to be disposed within the fluid conduit, for forming a first flow path to supply the medical liquid through the fluid conduit, and

a coupling member, one end of which is adapted to be coupled to the junction member, an the other end of which is adapted to be inserted into a vial containing the beneficial agent, said coupling member having means for closing the medical liquid flow path, a second flow path for delivering the medical liquid

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into the vial, and a third flow path for delivering the mixed solution containing the medical liquid and beneficial agent.

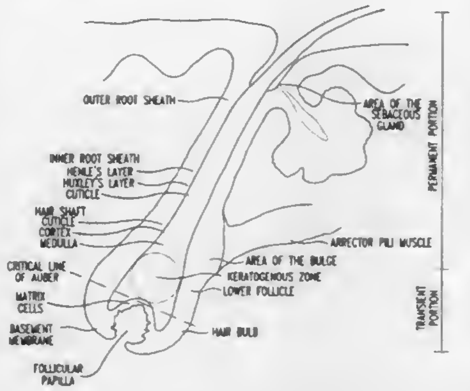
5,853,407
METHOD AND APPARATUS FOR HAIR REMOVAL

Iain D. Miller, Charlestown, Mass., assignor to Luxar Corporation, Bothell, Wash.

Continuation of Ser. No. 621,952, Mar. 25, 1996, Pat. No. 5,630,811. This application Apr. 18, 1997, Ser. No. 844,427

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—9 **16 Claims**



1. A laser treatment method for the removal of unwanted hair from the skin of a human, said method comprising the steps of

irradiating on a first occasion a treatment site comprising a chosen section of human skin containing at least one hair growing within a hair follicular structure with pulsed coherent light with wavelength in the range 650–1000 nm, said light having a peak power level in the range 1–500 Watts and a pulse duration of 1–99 milliseconds and said diameter of treatment beam being in the range 1–5 mm;

allowing the skin to heal for a period of 1–3 months;

irradiating the treatment site on each of a set of subsequent occasions with pulsed coherent light with a wavelength in the range 650–1000 nm, said light having a peak power level of 1–500 Watts and a pulse duration of 1–99 milliseconds and said diameter of treatment beam being in the range 1–5 mm; and

pre-cooling the treatment site, such that damage to the skin tissue surrounding the hairs is minimized.

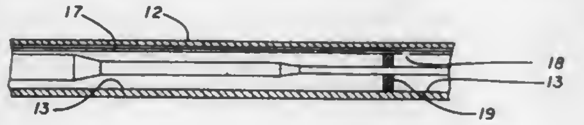
5,853,408
IN-VIVO MODIFICATION OF THE MECHANICAL PROPERTIES OF SURGICAL DEVICES

Ketan P. Muni, San Jose, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 242,410, May 13, 1994, abandoned, which is a continuation of Ser. No. 932,607, Aug. 20, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,325

Int. Cl.^{6} A61N *5/00*

U.S. Cl. 606—27 **16 Claims**



1. A medical device for insertion into and transport through a patient's vascular system, comprising:

an elongate member including a shaft, said shaft having a selected region formed of material having mechanical properties subject to change upon variation of said material's operating temperature; and

means for communicating a temperature controlled fluid to the selected region of said shaft for varying the selected region's operating temperature without varying the operating temperature of an unselected region of the shaft of the elongate member, whereby the mechanical properties of the selected region of the shaft can be changed without changing the mechanical properties of the unselected region of the shaft of the elongate member.

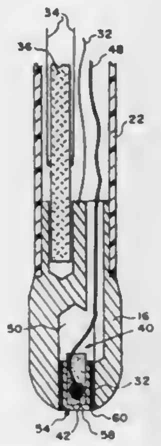
5,853,409
SYSTEMS AND APPARATUS FOR SENSING TEMPERATURE IN BODY TISSUE

David K. Swanson, Mountain View; Sidney D. Fleischman, Menlo Park; Thomas M. Bourne, Mountain View, and Dorin Panescu, San Jose, all of Calif., assignors to E.P. Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 432,321, May 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 266,023, Jun. 27, 1994, abandoned. This application Jan. 27, 1997, Ser. No. 789,294

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—31 **25 Claims**



1. An apparatus for ablating body tissue comprising

an electrode for contacting tissue to transmit ablation energy,

a tissue temperature sensing element,

a carrier on the electrode to hold the tissue temperature sensing element in thermal conductive contact with tissue, the carrier having a thermal conductivity of at least 1.0 W/m K, the carrier being substantially isolated from thermal conductive contact with the electrode,

a first electrical insulator between the carrier and the tissue temperature sensing element, and

a second electrical insulator between the carrier and the electrode.

5,853,410
SMOKE EVACUATOR REMOTE ON/OFF SWITCH APPARATUS AND METHOD

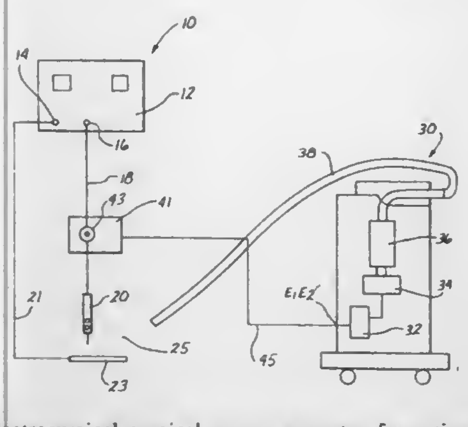
Richard J. Greff, and David W. Tung, both of Yorba Linda, Calif., assignors to Stackhouse, Inc., Palm Springs, Calif.

Continuation of Ser. No. 260,084, Jun. 15, 1994, Pat. No. 5,620,441. This application Apr. 7, 1997, Ser. No. 840,730

Int. Cl.^{6} A61B *17/36*

U.S. Cl. 606—32 **5 Claims**

1. A system, including a surgical tool, for controlling operation of a smoke evacuator in response to operation of the surgical tool which produces smoke as a side effect when performing a surgical function, comprising:



an electrosurgical surgical power generator for activating the surgical tool in order to perform the surgical function at a surgical site;

a conductor for introducing power from the generator to the surgical tool to enable the surgical tool to perform the surgical function at the surgical site, the conductor having a first state when the power is being introduced to the surgical tool and a second state when the power is not being introduced to the surgical tool;

a sensor circuit coupled to the conductor and responsive to the introduction of power from the generator to the tool for producing a transition signal when the conductor changes state from one of the first state and second state to the other of the first state and the second state;

a switch responsive to the transition signal and having properties for momentarily closing when the conductor changes between the first state and the second state;

a smoke evacuator for removing from the surgical site smoke produced by the surgical tool, the evacuator having first suction characteristics and second suction characteristics; and

a control circuit responsive to momentary closure of the switch for changing the condition of the evacuator from one of the first and second suction characteristic to the other of the first and second suction characteristics.

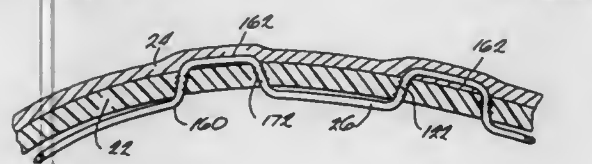
5,853,411
ENHANCED ELECTRICAL CONNECTIONS FOR ELECTRODE STRUCTURES

James G. Whayne, Saratoga; Thomas F. Kordis, San Jose; Sidney D. Fleischman, Menlo Park; Dorin Panescu, Sunnyvale; David K. Swanson, Mountain View; Patrick M. Owens, Cupertino; Jerome Jackson, Sunnyvale; Russell B. Thompson, Los Altos, and David McGee, Sunnyvale., all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Apr. 8, 1996, Ser. No. 629,363

Int. Cl.^{6} A61B *17/39;5/042;* **A61N** *1/05*

U.S. Cl. 606—41 **25 Claims**



1. An electrode assembly comprising

a body having a wall peripherally surrounding an interior area and adapted to selectively assume an expanded geometry having a first maximum diameter and a collapsed geometry having a second maximum diameter less than the first maximum diameter,

electrically conductive material carried by the wall and adapted to conform to both the expanded and collapsed geometry, and

an electrically conductive pathway having a proximal portion adapted to be coupled to a source of electrical energy and a distal portion including a plurality of essentially planar segments affixed to the wall in electrical contact with the electrically conductive material.

5,853,412
BIPOLAR SURGICAL GRASPING INSTRUMENT

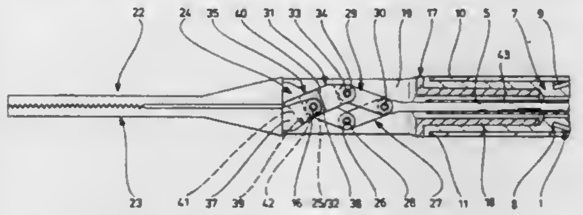
Rupert Mayenberger, Rielasingen, Germany, assignor to Aesculap AG & Co. KG, Tuttlingen, Germany

Filed Mar. 5, 1997, Ser. No. 810,763

Claims priority, application Germany, Mar. 6, 1996, 196 08 716.3

Int. Cl.^{6} A61B *17/39*

U.S. Cl. 606—51 **20 Claims**



1. A bipolar surgical grasping instrument, comprising:

a tubular shank;

first and second arms with associated toggle lever elements;

said first and second arms mounted pivotably at an end of said tubular shank;

said first and second arms adapted to be pivoted via said toggle lever elements by a push-and-pull rod that is displaceable in said tubular shank;

said toggle lever elements being electrically conductively connected to one another;

an insulating part for electrically insulating said second arm from said toggle lever elements;

said insulating part transmitting a pivoting force from at least one of said toggle lever elements to said second arm;

a pivot bearing extending through said second arm and at least one of said toggle lever elements;

said first and second arms pivotable about said pivot bearing; wherein:

said second arm is electrically conductively connected with said tubular shank via said pivot bearing; and

said first arm is electrically insulated from said pivot bearing and said second arm.

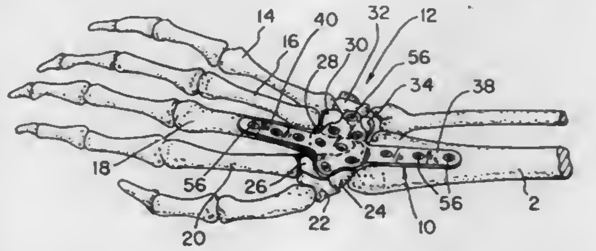
5,853,413
WRIST FUSION PLATE

Peter R. Carter, Dallas, Tex.; Gary T. Hamman, Warsaw, Ind.; Kenneth S. Jackson, Warsaw, Ind., and Mari S. Truman, Warsaw, Ind., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 18, 1997, Ser. No. 844,670

Int. Cl.^{6} A61B *17/80*

U.S. Cl. 606—69 **37 Claims**



17. A method of fusing a wrist using a wrist fusion plate configured to extend over a carpus area and position at least one metacarpal relative to a radius, said method comprising:

attaching a proximal end of said plate to the radius;
attaching a distal end of said plate to one of the metacarpals;
placing a saddle portion interconnecting said proximal end with said distal end over the carpus area; and providing said saddle portion with a width in a medial-lateral direction which is greater than a width of either said proximal end and said distal end, wherein said method includes covering greater than one carpus area bone in the medial-lateral direction with said saddle portion, wherein said method includes covering at least a portion of three carpus area bones, and wherein the method further includes attaching said saddle portion to said three carpus area bones.

5,853,414
ELASTIC CLIP FOR OSTEOSYNTHESIS

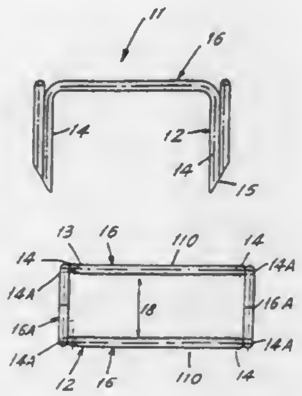
Jorge A. Groiso, Ayacucho 1570 P.9, Buenos Aires 1112, Argentina

Division of Ser. No. 453,905, May 30, 1995, Pat. No. 5,660,188, which is a division of Ser. No. 231,993, Apr. 21, 1994, Pat. No. 5,449,359, which is a continuation of Ser. No. 48,076, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 803,491, Dec. 4, 1991, abandoned. This application Aug. 20, 1997, Ser. No. 915,390

Claims priority, application Argentina, May 9, 1991, 320597

Int. Cl.^{6} A61B *17/56;17/58*

U.S. Cl. 606—75 **24 Claims**



1. A clip for osteosynthesis for connecting at least two bone parts together, the clip comprising a body having four spaced legs, each leg having a lower end which can be inserted into a bone part and each having an upper end, the upper ends of said four legs being attached to corresponding ends of a deformable bridge which is deformable by pressure and which comprises two elongated sections which extend alongside each other, said four legs being attached in pairs to each of the ends of the bridge, the legs of each pair being attached together, the elongated sections of the bridge and said four legs forming two integral clip pieces, each comprising an elongated section of the bridge and a leg attached to each end of the elongated section of the bridge, said integral pieces being spaced and the upper ends of each leg pair being connected together by a cross-piece transverse to said bridge, said two elongated sections being separated by a space therebetween, the two elongated sections being deformable for altering the space therebetween for changing a distance between the leg pairs.

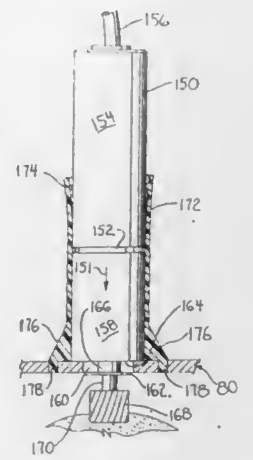
5,853,415
FEMORAL MILLING INSTRUMENTATION FOR USE IN TOTAL KNEE ARTHROPLASTY WITH OPTIONAL CUTTING GUIDE ATTACHMENT

Kim C. Bertin, Bountiful, Utah; Dennis W. Burke, Milton, Mass.; Gregory C. Stalcup, Columbia City, Ind.; Rodney Bays, Pierceton, Ind.; Richard D. Vanlaningham, Leesburg, Ind.; Terry L. Dietz, Columbia City, Ind., and Daniel O'Connor, East Taunton, Mass., assignors to Zimmer, Inc., Warsaw, Ind.

Division of Ser. No. 169,459, Dec. 17, 1993, Pat. No. 5,474,559, which is a continuation-in-part of Ser. No. 087,933, Jul. 6, 1993, abandoned. This application May 1, 1995, Ser. No. 432,481

Int. Cl.^{6} A61B *17/16*

U.S. Cl. 606—80 **3 Claims**



1. A milling device and guide for milling portions of the end of an exposed bone, said milling device for being accommodated by said guide, said guide a guide having at least one slot defined by substantially parallel sides having a predetermined thickness between said sides, said milling device having a housing terminating in an end, a plate being spaced from said end and connected thereto by a tubular shaft such that said end is spaced from said plate by said tubular shaft a distance slightly greater than said predetermined thickness, the milling device also includes a burr shaft extending into the tubular shaft and a burr carried by said burr shaft is adjacent the plate, a motor means connected to an energy source and to said burr shaft to rotate the burr shaft and burr.

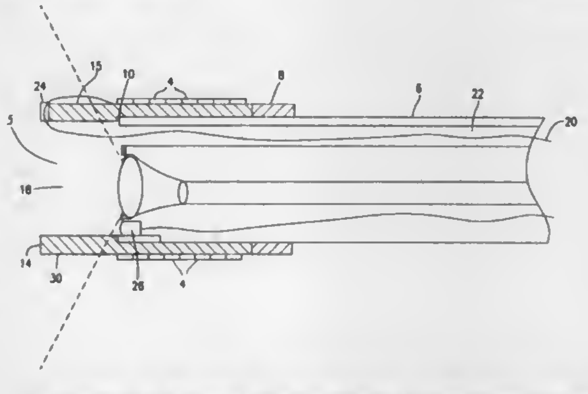
5,853,416
DISTAL END FOR LIGATING BAND DISPENSER

Marc Joshua Tolkoff, Brookline, Mass., assignor to Boston Scientific Corporation, Natick, Mass.

Filed Jun. 4, 1997, Ser. No. 869,055

Int. Cl.^{6} A61B *17/04*

U.S. Cl. 606—140 **12 Claims**



1. A system for dispensing ligating bands to ligate tissue within a living body, the system comprising:

an endoscope where, when the endoscope is in an operative position, a distal end of the endoscope is received within a living body while a proximal end of the endoscope remains outside the living body and wherein a lumen extends from the proximal end of the endoscope to the distal end of the endoscope;
a substantially rigid ligating band supporting structure removably coupled to the distal end of the endoscope, wherein the supporting structure includes a channel extending therethrough from a proximal end of the supporting structure to a distal end of the supporting structure and wherein an abutting surface projects into the channel at a predetermined distance from the distal end of the supporting structure to define within the channel a seating location for the distal end of the endoscope; and
a plurality of ligating bands arranged on the supporting structure, wherein no more than two ligating bands are located distally of the abutting surface.

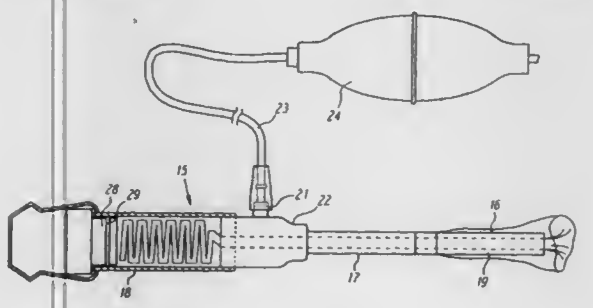
5,853,417
METHODS AND DEVICES FOR BLOOD VESSEL HARVESTING

Thomas J. Fogarty, Portola Valley; Kenneth H. Mollenauer, Santa Clara; Michelle Y. Monfort; George D. Hermann, both of Los Gates, and Allan R. Will, Atherton, all of Calif., assignors to General Surgical Innovations, Inc., Palo Alto, Calif.

Continuation of Ser. No. 475,137, Jun. 7, 1995, Pat. No. 5,730,748, which is a continuation of Ser. No. 444,424, May 19, 1995, Pat. No. 5,601,581. This application Dec. 15, 1997, Ser. No. 991,425

Int. Cl.^{6} A61M *29/00*

U.S. Cl. 606—159 **5 Claims**



1. A method of harvesting a blood vessel from a body comprising:
inserting an inflatable member between a blood vessel and overlying skin and fat and inflating the inflatable member to create a working space over the blood vessel;
inserting a first trocar port and a second trocar port into the working space;
inserting a dissector having a hook on a distal end through the first trocar port into the working space;
engaging the blood vessel with the dissector;
moving the dissector along the blood vessel to separate the blood vessel from connective tissue surrounding the blood vessel; and
monitoring the dissection of the blood vessel via an endoscope coupled to the second trocar port.

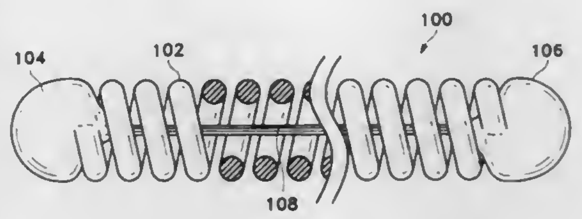
5,853,418
STRETCH RESISTANT VASO-OCCLUSIVE COILS (II)

Christopher G.M. Ken, San Mateo; Son M. Gia, San Jose; Erik T. Engelson, Menlo Park; Joseph C. Eder, Los Altos, and Clifford Teoh, Daly City, all of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 717,285, Sep. 20, 1996, which is a continuation-in-part of Ser. No. 607,593, Feb. 27, 1996, abandoned, which is a continuation-in-part of Ser. No. 497,331, Jun. 30, 1995, Pat. No. 5,582,619. This application Jan. 7, 1997, Ser. No. 779,451

Int. Cl.^{6} A61M *29/00*

U.S. Cl. 606—191 **34 Claims**



1. A vaso-occlusive device comprising:
i. an outer helically wound primary coil having a first end, a second end, defining a lumen between said first end and second end and having a flexibility such that one centimeter will flex more than about 20° when held horizontally; and
ii. a polymeric stretch-resisting member extending through said lumen and fixedly attached to said primary coil in at least two locations.

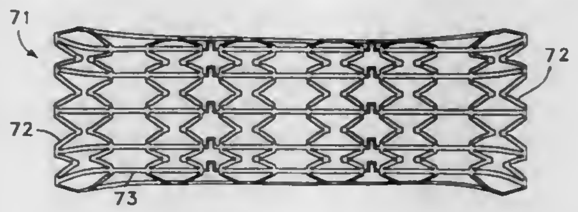
5,853,419
STENT

Mir A. Imran, Los Altos Hills, Calif., assignor to Surface Genesis, Inc., Menlo Park, Calif.

Filed Mar. 17, 1997, Ser. No. 818,274

Int. Cl.^{6} A61M *29/00;* **A61F** *2/06*

U.S. Cl. 606—191 **2 Claims**



1. A stent comprising a cylindrical member having an outside diameter, a length and having first and second ends and an intermediate portion between the first and second ends, said cylindrical member being formed of a metal and having a wall defining a central bore having a longitudinal axis extending from the proximal end to the distal end, said cylindrical member having a plurality struts extending in the wall spaced apart of the longitudinal axis and permitting radial expansion of the cylindrical member from a contracted condition to an expanded condition, means extending in the wall to prevent shrinkage in length of the cylindrical member as it is expanded from a contracted position to an expanded position, said means extending in the wall to prevent shrinkage in length of the cylindrical member as it is expanded being comprised of a plurality of longitudinally extending circumferentially spaced-apart ribs which serve as compression resisting members, each of said ribs extending the length of the cylindrical member, said plurality of struts extending circumferentially between adjacent ribs and being secured to adjacent ribs, said plurality of struts when the cylindrical member is in a contracted

position having portions which are folded with respect to each other, said plurality of struts including struts adjacent the first end of the cylindrical member having lengths which are greater than the lengths of at least certain of the other struts so as to permit said first end to be flared outwardly with respect to the intermediate portion when the stent is moved from the contracted condition to an expanded condition.

5,853,420

ASSEMBLY COMPRISING A BLOOD FILTER FOR TEMPORARY OR DEFINITIVE USE AND DEVICE FOR IMPLANTING IT, CORRESPONDING FILTER AND METHOD OF IMPLANTING SUCH A FILTER

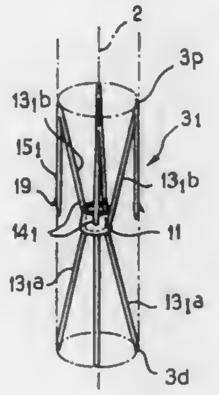
Gérard Chevillon, Montrouge; Guy Nadal, Poitiers, both of France, and Massimo Iachetti, Rome, Italy, assignors to B. Braun Celsa, Chasseneuil Du Poitu, France

Continuation-in-part of Ser. No. 424,086, Apr. 19, 1995, Pat. No. 5,634,942. This application Mar. 4, 1997, Ser. No. 811,294

Claims priority, application France, Apr. 21, 1994, 94 04804; European Pat. Off., Apr. 14, 1995, 95 400 850.4

Int. Cl.^{6} A61F *2/01*

U.S. Cl. 606—200 **6 Claims**



1. A blood filter assembly comprising:

a filter portion including:

(a) a centrally located head;

(b) first legs connected at first ends thereof to the centrally located head and diverging in a first direction to form a first conical profile when unrestrained;

(c) second legs connected at first ends thereof to the centrally located head and diverging in a second direction, opposite the first direction, to form a second conical profile that is inverted with respect to the first conical profile, when unrestrained, the second legs defining an internal passage therebetween when restrained, said internal passage having a minimum diameter;

an implantation portion including:

(d) a sleeve for removably enclosing the filter portion in a radially restrained state;

(e) a maneuvering flexible rod having a distal end and at least a portion of an external diameter smaller than said minimum diameter of the internal passage defined by the second legs in the radially restrained state, said at least a portion of the flexible rod being disposed in the passage between the second legs when the second legs are in the sleeve;

(f) said distal end of the flexible rod and a profile of the head of the filter portion being engaged to complete a releasable connection between the flexible rod and the filter portion for displacing the filter portion from the sleeve into a blood vessel;

(g) the connection existing when the filter portion is temporarily implanted in the vessel permitting axial displacement of the filter portion in axially opposite directions within the sleeve accompanied by retention of the second legs within the sleeve, and the connection being completely released during indefinite implantation of the filter portion in said vessel when the second legs are freed from the sleeve.

5,853,421

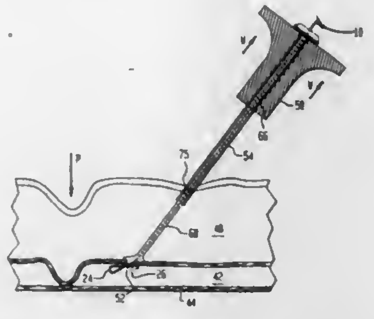
GUIDE WIRE WITH RELEASABLE BARB ANCHOR

Boris Leschinsky, Waldwick; Jeffrey Urbanski, Sparta, and Mark Follman, Glen Rock, all of N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Continuation-in-part of Ser. No. 484,911, Jun. 7, 1995, Pat. No. 5,728,122. This application Jun. 23, 1997, Ser. No. 880,623

Int. Cl.^{6} A61B *17/08*

U.S. Cl. 606—213 **5 Claims**



1. A method for inserting hemostatic material into a wound in a patient wherein said wound is comprised of a puncture in the patient's skin, a puncture in one of the patient's arteries and a wound channel between said puncture, said method comprising the steps of:

inserting into said wound, a two part guide insertion wire with each part in slidable contact with the other and having a proximal end, a distal end, a medial portion and having a longitudinal axis, said distal end having been formed into a releasable anchor that is released by the relative sliding motion of the two parts of the insertion wire, said insertion continuing until said anchor has passed through said arterial puncture and said proximal end is outside the patient's body,

pulling back on said guide insertion wire until said anchor exerts pressure on the inside of said artery,

inserting a sheath/dilator set over said insertion guide wire and removing the dilator portion of said sheath/dilator set before inserting said hemostatic material through the sheath and over the insertion guide wire.

5,853,422

APPARATUS AND METHOD FOR CLOSING A SEPTAL DEFECT

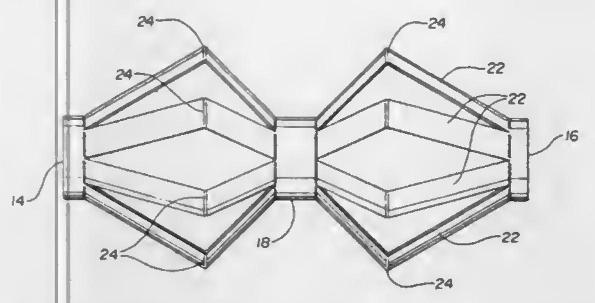
Joseph Huebsch, St. Paul; Paul J. Buscemi, Long Lake; Thomas J. Holman, Minneapolis, and Danney Langanki, Lino Lakes, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 620,286, Mar. 22, 1996, abandoned. This application Sep. 23, 1997, Ser. No. 935,524

Int. Cl.^{6} A61B *17/08*

U.S. Cl. 606—213 **30 Claims**

1. An apparatus for reversibly closing a septal defect, the apparatus comprising:



a) a septal defect closure device that is unitary in construction and comprises a first end, a second end and a center portion, said septal defect closure device having a first configuration comprising a scored, cylindrical shaft having an axis therethrough;

b) a catheter delivery means; and

c) an intralumen mechanical mechanism located in the catheter delivery means; whereby when the device is delivered to an area having a septal defect such that the center portion of the shaft is positioned in the defect, at least two support struts are created as the intralumen mechanical mechanism begins to pull the first and second ends of the shaft toward the center portion thereof, the struts moving radially away from the axis in a hinge like fashion, thereby causing the septal defect closure device to assume a specific second configuration which fits securely into the septal defect and spans both sides of the septal defect, said septal defect closure device in its second configuration being anchored to the septal defect by pressure, causing the defect to be reversibly closed.

5,853,423

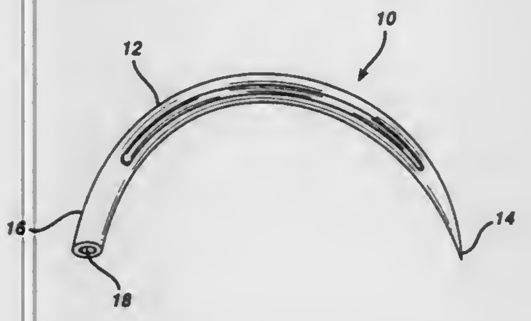
PROCESS FOR THE MANUFACTURE OF SUTURE NEEDLES AND NEEDLES PRODUCED THEREBY

Walter McGregor, Flemington, and Semyon Shchervinsky, Whitehouse Station, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 20, 1993, Ser. No. 139,251

Int. Cl.^{6} A61B *17/04;* B21G *3/18*

U.S. Cl. 606—222 **7 Claims**



1. A process for producing a suture needle from a rod element constituted of metallic material, comprising the steps of:

a) cutting said metallic rod element to a predetermined length;

b) bending said cut rod element into a specified curvilinear configuration;

c) and cold-working said curved rod element to form specific cross-sectional shapes and dimensions along the length thereof.

5,853,424

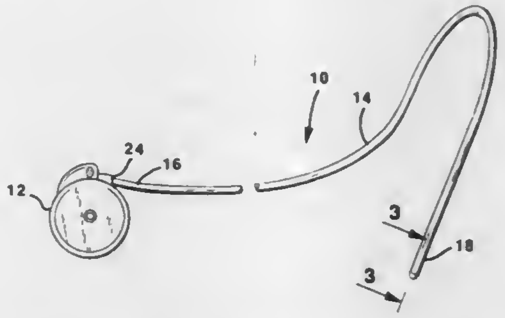
METHOD OF AND APPARATUS FOR PREVENTING TISSUE INGROWTH IN INFUSION CATHETERS

Mark T. Rise, Monticello, Minn., assignor to Medtronic, Inc, Minneapolis, Minn.

Filed Mar. 13, 1996, Ser. No. 615,124

Int. Cl.^{6} A61N *1/04*

U.S. Cl. 607—117 **45 Claims**



1. An infusion catheter for providing fluid to body tissue when the catheter is inserted into body tissue, the catheter having opposite proximal and distal ends in fluid communication with each other, the proximal end being connectable to a source of fluid, the distal end being positionable adjacent to body tissue for delivery of fluid thereto, and an electric element carrying a static electric charge and disposed in a position to influence the growth of body tissue in and around the distal end when the distal end of the catheter is placed in body tissue, wherein the electric element comprises a charged coating carried by at least a portion of a surface of the distal end.

5,853,425

ELECTRODE CATHETER, IN PARTICULAR FOR TEMPORARY USE

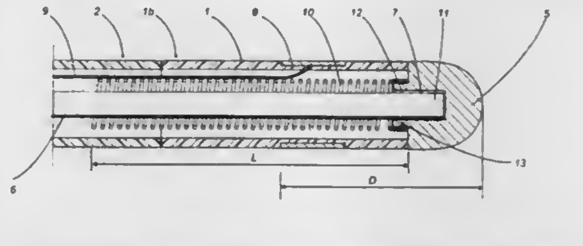
Russ A. Houser, Livermore, Calif., assignor to FIAB S.r.l., Florence, Italy

Filed Apr. 8, 1997, Ser. No. 833,656

Claims priority, application Italy, Apr. 10, 1996, BO96A0197

Int. Cl.^{6} A61N *1/05*

U.S. Cl. 607—122 **10 Claims**



1. An electrode catheter for temporary use which can be inserted in cardiac cavities, and which can be connected to means for commanding and controlling sent or recorded electrical signals, the electrode catheter comprising:

a biocompatible sheath having a distal end and a proximal end;

an ogive element placed in correspondence with and to close said distal end of said sheath, made of conductive material and to which is connected a first conducting wire which extends to said proximal end so as to define a first conducting pole adapted for connection to a command and control means, the ogive element having an end disposed internally to the sheath;

a reinforcing flexible core made of conductive material, placed internally to the sheath and extending to the proximal end of the sheath, and integral, with one of its ends, to said ogive elements;

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the flexible core serving as a shaping element of the sheath, for guaranteeing the definition of an ergonomic conformation of said sheath according to the development of said cardiac cavity;

at least a first metal ring fastened to the exterior of said sheath in proximity with said distal end of the sheath itself, and connected to a second conducting wire extending inside said sheath to said proximal end so as to define a second pole; and

a spiral element, electrically isolated, elastically yielding and shapable, inserted coaxially to said first wire and to said core, wherein the spiral element is removable and exchangeable, said spiral element extending at least in correspondence with said distal end for a length equal at least to a distance between said ogive element and said first ring to allow said distal end to be pre-shaped and elastically deformed, with subsequent adaptation of said length to a conformation and to a variation in the conformation of said cardiac cavity in order to provide a stable contact with a wall of the cardiac cavity.

5,853,426

METHOD AND APPARATUS FOR DELIVERING ATRIAL DEFIBRILLATON THERAPY WITH IMPROVED EFFECTIVENESS

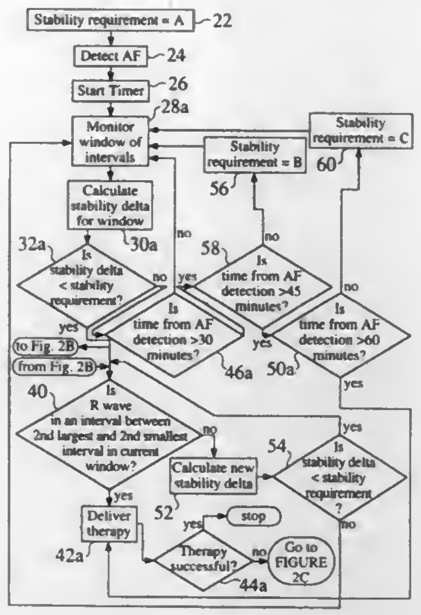
Mae-Mae Shieh, Palo Alto, Calif., assignor to Pacesetter, Inc., Sunnyvale, Calif.

Filed Jun. 2, 1997, Ser. No. 867,318

Int. Cl.^{6} A61N *1/39*

U.S. Cl. 607—5 **22 Claims**

1. A method for defibrillating a patient's atria with an implantable defibrillator, comprising:


Stability requirement = A
22
Detect AF
24
Start Timer
26
28a
Monitor window of intervals
Stability requirement = C
Stability requirement = B
60
56
Calculate stability delta for window
30a
32a
no
58
no
Is stability delta < stability requirement?
no
yes
Is time from AF detection >45 minutes?
no
Is time from AF detection >30 minutes?
yes
Is time from AF detection >60 minutes?
yes
to Fig. 2B
from Fig. 2B
46a
50a
yes
40
Is R wave in an interval between 2nd largest and 2nd smallest interval in current window?
no
yes
54
Calculate new stability delta
Is stability delta < stability requirement ?
yes
52
stop
yes
no
Deliver therapy
Therapy successful?
no
Go to FIGURE 2C
42a
44a

(a) detecting atrial fibrillation in the patient's heart;

(b) during a monitoring time period following atrial fibrillation detection, monitoring cycle length stability of at least one atrial fibrillation signal across first and second implanted electrodes;

(c) comparing said cycle length stability to a preset stability requirement; and

(d) delivering a first atrial defibrillation therapy when said cycle length stability meets said preset stability requirement.

5,853,427

USE OF POLYMERIZABLE OIL FOR LEATHER FATLIQUOR

Paul L. Kronick, Haverford, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 758,028, Nov. 27, 1996, abandoned, which is a division of Ser. No. 501,526, Jul. 12, 1995, Pat. No. 5,607,807. This application Sep. 19, 1997, Ser. No. 933,979

Int. Cl.^{6} C14C *9/02*

U.S. Cl. 8—94.23 **18 Claims**

1. A method of treating mineral-tanned leather, said method comprising

a) combining said leather with a fatliquor composition to form a mixture,

b) agitating the mixture of leather and fatliquor composition,

c) drying the leather from step b) at elevated temperature so as to polymerize the monomers, and

d) washing the dried treated leather with a solvent,

wherein said fatliquor composition comprises monomers dispersed in aqueous solution, and wherein said monomers are unsaturated phosphatidyl ester monomers or unsaturated fatty monomers having chain lengths from about 15C to about 25C and are esters of unsaturated fatty alcohols and acrylic acid, vinyl esters of unsaturated fatty alcohols, vinyl alkenyl ethers or vinyl esters of unsaturated fatty acids, acrylates of branched-chain alcohols having the formula $RR'CH_2OH$ where R and R' are butyl and decyl, hexyl and octyl or heptyl and heptyl, respectively, or mixtures thereof.

5,853,428

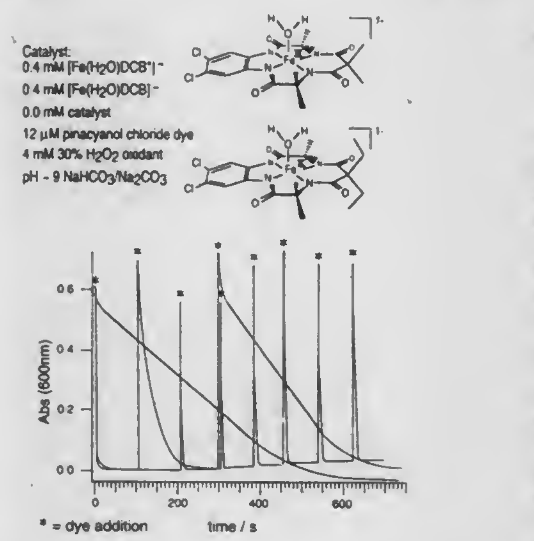
METAL LIGAND CONTAINING BLEACHING COMPOSITIONS

Terrence J. Collins, and Colin P. Horwitz, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 684,670, Jul. 22, 1996. This application Feb. 24, 1997, Ser. No. 804,776

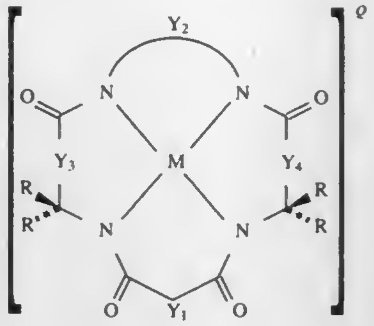
Int. Cl.^{6} D06L *3/00;3/06;* **D21C** *9/16;9/12*

U.S. Cl. 8—107 **39 Claims**



1. A method of bleaching comprising contacting cellulose-based materials with a bleaching composition comprising:

(a) an oxidatively stable activator having the structure



wherein Y_1, Y_3 and Y_4 each represent a bridging group having zero, one, two or three carbon containing nodes for substitution, and Y_2 is a bridging group having at least one carbon containing node for substitution, each said node containing a C(R), $C(R_1)(R_2)$, or a $C(R)_2$ unit and each R substituent is the same or different from the remaining R substituents and (i) is selected from the group consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkynyl, alkylaryl, halogen, alkoxy, phenoxy, CH_2CF_3, CF_3 and combinations thereof, or (ii) form a substituted or unsubstituted benzene ring of which two carbon atoms in the ring form nodes in the Y unit, or (iii) together with a paired R substituent bound to the same carbon atom form a cycloalkyl or cycloalkenyl ring, which may include at least one atom other than carbon; M is a transition metal with oxidation states of I, II, III, IV, V, VI, VII or VIII or selected from Groups 3, 4, 5, 6, 7, 8, 9, 10 and 11 of the Periodic Table of the Elements; and Q is any counterion which would balance the charge of the compound on a stoichiometric basis; and

(b) an amount of a source of an oxidant effective for bleaching said cellulose-base materials.

5,853,429

METHOD FOR CONVERTING MULTIDIMENSIONAL SHEET STRUCTURES CONSISTING OF POLYACRYLONITRILE FIBRES INTO THE THERMALLY STABILIZED STAGE

Michael Heine, Allmanshofen, and Dieter Kompalik, Russelsheim, both of Germany, assignors to SGL Technik GmbH, Germany

Continuation of Ser. No. 645,832, May 14, 1996, abandoned. This application Jul. 11, 1997, Ser. No. 893,737

Claims priority, application Germany, May 16, 1995, 195 17 911.0

Int. Cl.^{6} D01F *9/22*

U.S. Cl. 8—115.54 **15 Claims**

1. A method for producing a multidimensional sheet structure constructed from fibers, using as the starting material a multidimensional sheet structure formed of polyacrylonitrile or polyacrylonitrile containing fibers and having a first flat side and a spaced apart second flat side with the fibers therebetween, comprising converting the multidimensional sheet structure into an infusible noncarbonized form while retaining the textile structure of the multidimensional sheet structure by carrying out the steps of heating a gas containing an oxygen-yielding substance to a temperature in the range of 180° to 320° C., flowing the heated gas in a directed manner exclusively in one direction onto the first flat side of the multidimensional sheet structure, then flowing the heated gas through the multidimensional sheet structure to a second flat side of the multidimensional sheet structure opposite to the first flat side, and then flowing the heated gas in a directed manner off of the multidimensional sheet structure, effecting this flowing through the multidimensional sheet structure for a period of time in the range of 0.5 to 10 hours, controlling the amount and the temperature of gas flowing through the multidimensional sheet structure in the manner that on the one hand a temperature in the multidimensional sheet structure required for operation of chemi-

cal reactions necessary for thermal stabilization of the polyacrylonitrile or polyacrylonitrile containing polymer fibers is maintained and on the other hand damaging overheating of the fibers is avoided.

5,853,430
METHOD FOR PREDISSOLVING DETERGENT COMPOSITIONS

Kenji Shindo, Kobe; Ayako Muramatsu, Nishinomiya; Susumu Murata, Kobe, all of Japan; Nabil Yaqub Sakkab, and Harry Leroy Coleman, Jr., both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 3, 1997, Ser. No. 922,776

Int. Cl.^{6} D06L *1/16;1/12*

U.S. Cl. 8—137 **19 Claims**

1. A method of predissolving a detergent composition, comprising the steps of:

a. providing a hand-held container; and

b. combining a detergent composition, an indicator and a solvent in the container to form a concentrated detergent solution having a surface tension value of from about 10 dyne/cm to about 50 dyne/cm, wherein the indicator indicates when the detergent composition is sufficiently dissolved in the solvent.

5,853,431
1:2 CHROMIUM COMPLEXES, THEIR PRODUCTION AND USE

Klaus Körte, Ettingen, Switzerland, assignor to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

PCT No. PCT/IB97/00204, § 371 Date Nov. 6, 1997, § 102(e) Date Nov. 6, 1997, PCT Pub. No. WO97/32933, PCT Pub. Date Sep. 12, 1997

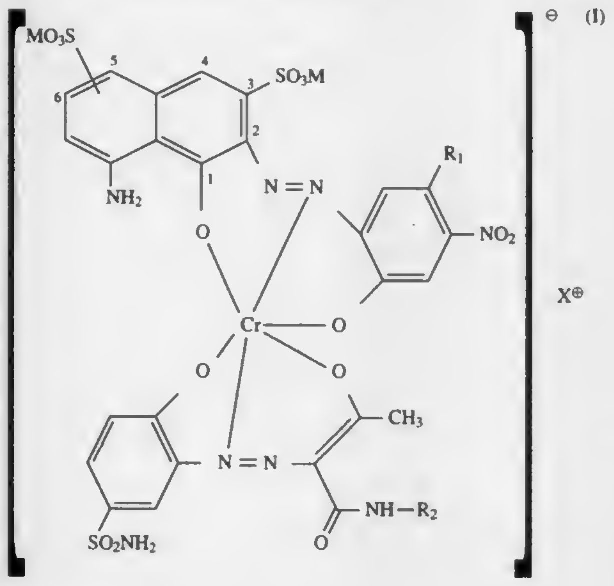
PCT Filed Mar. 6, 1997, Ser. No. 952,035

Claims priority, application United Kingdom, Mar. 7, 1996, 9604816

Int. Cl.^{6} C09B *45/16;* **C25D** *11/24*

U.S. Cl. 8—522 **15 Claims**

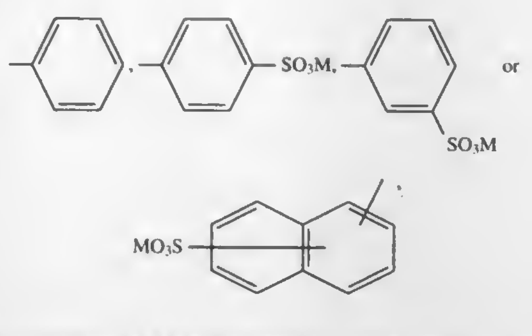
1. A compound according to the formula (I)


(I)

wherein

R_1 is H or SO_3M,

R_2 is



M is hydrogen or a non-chromophoric cation and X^+ is hydrogen or a non-chromophoric cation.

5,853,432
DYE MIXTURES COMPRISING METHINE AND ANTHRAQUINONE DYES

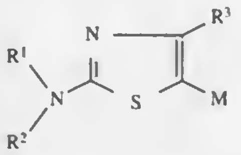
Karl-Heinz Etzbach, Frankenthal, and Rüdiger Sens, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 27, 1996, Ser. No. 703,551

Int. Cl.^{6} C09B *67/22;* **B41M** *5/035*

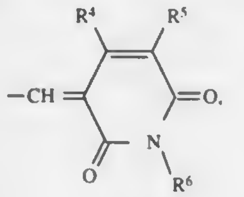
U.S. Cl. 8—643 **6 Claims**

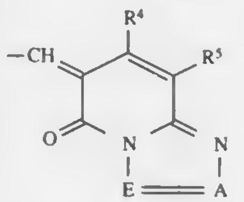
1. A dye mixture, comprising one or more pyridone dyes of the formula I:

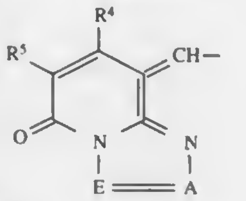

(I)

where

M is a radical of the formula


(IIa)


(IIb)


(II c)

wherein:

R^1 and R^2 are independently of each other C_1–C_{10}-alkyl with or without substitution by C_1– C_4-alkoxycarbonyl, C_1–C_4-alkoxycarbonyloxy, whose alkyl chain may in each case be interrupted by an oxygen atom in ether function, or phenyl and with or without interruption by from 1 to 4 oxygen atoms in ether function, C_5–C_7-cycloakyl, C_3–C_4-alkenyl, unsubstituted or C_1–C_4-alkyl- C_1–C_4-alkoxy-, halogen- or nitro-substituted phenyl, or together with the nitrogen atom joining them together a 5- or 6-membered saturated heterocyclic radical with or without further heteroatoms,

R^3 is tert-butyl,

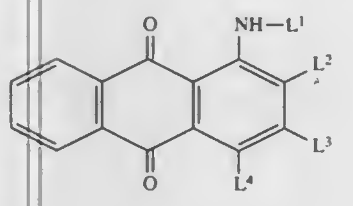
R^4 is hydrogen, C_1–C_6-alkyl or unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro-substituted phenyl,

R^5 is cyano, carbamoyl, mono- or di(C_1–C_8-alkyl) carbamoyl, carboxyl, C_1–C_8-alkoxycarbonyl or benzimidazolyl,

R^6 is C_1–C_{10}-alkyl with or without substitution by phenyl, phenoxy, cyclohexyloxy or pyrazolyl and with or without interruption by from 1 to 4 oxygen atoms in ether function, C_5–C_7-cycloalyl, unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro- substituted phenyl or a radical of the formula NB^1B^2, where B^1 and B^2 are independently of each other hydrogen, C_1–C_{10}-alkyl, unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro-substituted phenyl, C_1–C_9-alkanoyl, C_1–C_8-alkyl-sulfonyl, unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro-substituted benzoyl, pyridylcarbonyl or thienylcarbonyl, and

one of the two radicals A or E is nitrogen and the other is a radical of the formula C—R^7, where R^7 is C_1–C_{10}-alkyl with or without substitution by phenyl, phenoxy, cyclohexyloxy or pyrazolyl and with or without interruption by from 1 to 4 oxygen atoms in ether function, C_5–C_7-cycloalkyl or unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro-substituted phenyl;

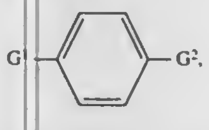
and one or more anthraquinone dyes of the formula III


(III)

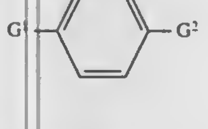
where

L^1 is hydrogen, C_1–C_{10}-alkyl or unsubstituted or C_1–C_4-alkyl-, C_1–C_4-alkoxy-, halogen- or nitro-substituted phenyl,

L^2 and L^3 are independently of each other hydrogen, unsubstituted or phenyl- or C_1– C_4-alkylphenyl-substituted C_1–C_{10}-alkoxy, unsubstituted or phenyl-substituted C_1–C_{10}-alkylthio, halogen, hydroxyphenyl, C_1–C_4-alkoxyphenyl or a radical or the formula



where G^1 is oxygen or sulfur and G^2 is hydrogen or C_1–C_8-monoalkylsulfamoyl whose alkyl chain may be interrupted by 1 or 2 oxygen atoms in ether function with the proviso that either L^2 or L^3 is a radical of the formula,



and

L^4 is amino, hydroxyl or unsubstituted or phenyl-substituted C_1–C_{10}-alkylthio.

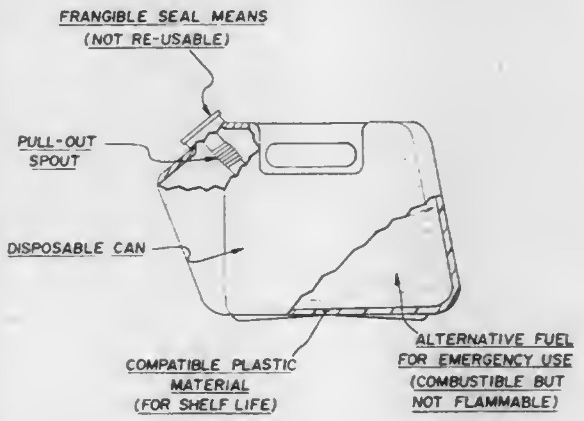
5,853,433
EMERGENCY FUEL FOR USE IN AN INTERNAL COMBUSTION ENGINE

Reginald N. Spencer, Baltimore, and William A. Hubbard, Timonium, both of Md., assignors to Bloom & Kreten, Baltimore, Md.

Continuation-in-part of Ser. No. 604,080, Feb. 20, 1996, Pat. No. 5,681,358, which is a continuation-in-part of Ser. No. 536,366, Sep. 29, 1995, abandoned. This application Oct. 22, 1997, Ser. No. 956,222

Int. Cl.^{6} C10L *1/18*

U.S. Cl. 44—300 **7 Claims**


FRANGIBLE SEAL MEANS (NOT RE-USABLE)
PULL-OUT SPOUT
DISPOSABLE CAN
COMPATIBLE PLASTIC MATERIAL (FOR SHELF LIFE)
ALTERNATIVE FUEL FOR EMERGENCY USE (COMBUSTIBLE BUT NOT FLAMMABLE)

1. An emergency fuel for an internal combustion engine comprising:

mineral spirits, approximately 80% by volume, and

mixed isomers of primary amyl alcohol, approximately 20% by volume, and wherein

the fuel having a flash point of at least 100° F. or higher.

5,853,434
FUEL COMPOSITIONS HAVING POLYALKYLENE SUCCINIMIDES AND PREPARATION THEREOF

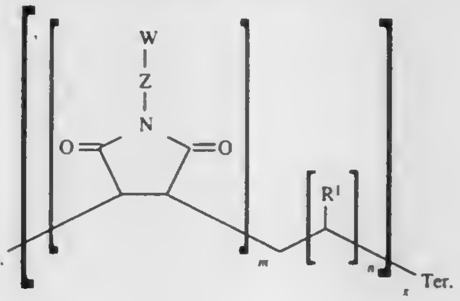
James J. Harrison, Novato, and William R. Ruhe, Jr., Benicia, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Division of Ser. No. 566,231, Dec. 1, 1995. This application Jul. 29, 1997, Ser. No. 902,015

Int. Cl.^{6} C10L *1/18;1/22*

U.S. Cl. 44—331 **6 Claims**

1. A fuel composition comprising a major amount of a hydrocarbon boiling in the gasoline or diesel fuel range and from 10 to 10,000 parts of a polymer per million parts of said hydrocarbon, said polymer having the general formula:


(I)

wherein:

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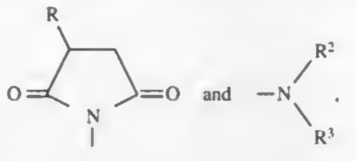
W is a mixture of nitrogen-containing groups consisting of

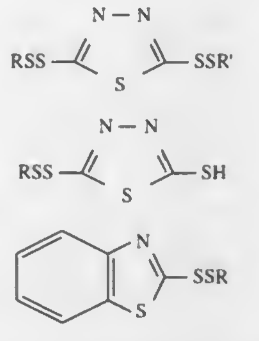


R is a polyalkyl or polyalkylene having a number average molecular weight of at least 1000,
R^1 is an alkyl having from 10 to 24 carbon atoms;
Z is a polyalkylene polyamine linking radical;
m is a whole integer of from 1 to 3
n is a whole integer of from 1 to 3;
x is a whole integer of from 1 to 100;
Int. is an initiating radical;
Ter. is a terminating group; and
wherein R^2 and R^3 are independently hydrogen, alkyl, phenyl, or taken together are alkylene to give a ring group.

5,853,435
POLYMERIC AMINE-HETEROCYCLIC REACTION PRODUCTS AS FUEL AND LUBRICANT ANTIWEAR, DETERGENCY AND CLEANLINESS ADDITIVES

Noyes L. Avery, Bryn Mawr; Joan C. Axelrod, Media, both of Pa.; James T. Carey, Medford, N.J.; Liehpao O. Farng, Lawrenceville, N.J., and Andrew G. Horodysky, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Dec. 30, 1994, Ser. No. 367,414
Int. Cl.^{6} C10L *1/22;1/24*
U.S. Cl. 44—341 **6 Claims**

1. A fuel composition comprising a major proportion of a liquid hydrocarbon combustible fuel, and a multifunctional antiwear, corrosion inhibiting effective amount of a polymeric amine-heterocyclic additive product of reaction prepared by reacting (a) a C_{30}–C_{150} hydrocarbyl polyamine which hydrocarbyl group optionally contains at least one sulfur, oxygen, or nitrogen atom, of a polymeric amine or an amine-containing polymeric hydrocarbyl imide with (b) a sulfur-containing heterocyclic hydrocarbyl compound selected from the structures below:

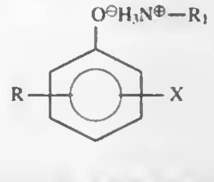


where R and R' are C_2–C_{60} hydrocarbyl under reaction conditions sufficient to form said additive product.

5,853,436
DIESEL FUEL COMPOSITION CONTAINING THE SALT OF AN ALKYL HYDROXYAROMATIC COMPOUND AND AN ALIPHATIC AMINE

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company LLC, San Francisco, Calif.
Filed Dec. 22, 1997, Ser. No. 995,594
Int. Cl.^{6} C10L *1/22*
U.S. Cl. 44—412 **28 Claims**

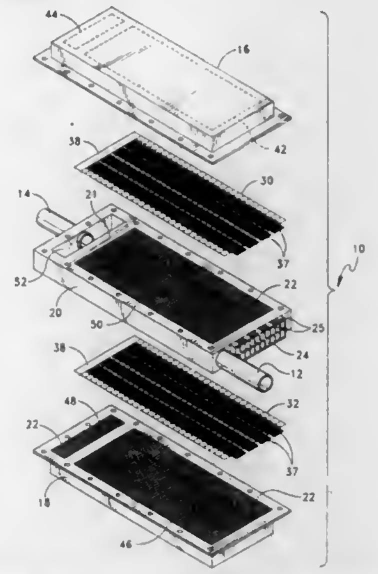
1. A diesel fuel composition comprising a major amount of hydrocarbons boiling in the diesel range and an effective lubricity enhancing amount of a salt of an alkyl hydroxyaromatic compound and an aliphatic amine, wherein the salt has the formula:



wherein R is alkyl of 6 to 25 carbon atoms; R_1 is alkyl or alkenyl of 6 to 50 carbon atoms; and X is hydrogen, hydroxy or the group $—O^-H_3N^+—R_2$, wherein R_2 is alkyl or alkenyl of 6 to 50 carbon atoms wherein the diesel fuel composition contains not more than 0.2 weight % of sulfur.

5,853,437
SELF-CLEANING AND SELF-SEALING PARTICLE FILTER

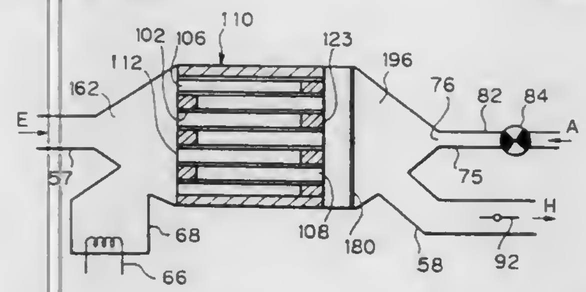
Klaus J. Peter, 53 South St., Natick, Mass. 01760-5526, and Osama M. Ibrahim, 91 Bayberry Rd., Kingston, R.I. 02881
Filed Jul. 18, 1997, Ser. No. 896,613
Int. Cl.^{6} B01D *46/00*
U.S. Cl. 55—282.3 **25 Claims**



1. A Diesel particulate filter cartridge, comprising:
a sheet of inorganic fiber filter material; said sheet of inorganic fiber filter material being positioned to serve as a downstream filter;
a plurality of electrically resistive flat metal filter strips affixed to said organic fiber filter sheet in parallel and spaced apart relation to one another and defining gaps therebetween; said plurality of electrically resistive flat metal filter strips being positioned to serve as upstream filters;
means attached to said plurality of flat metal filter strips for applying an electrical current through said plurality of electrically resistive flat metal filter strips to heat said plurality of electrically resistive flat metal filter strips above the combustion point of entrapped Diesel exhaust particulate, said plurality of electrically resistive flat metal filter strips being positioned such that when an electrical current applied through said plurality of electrically resistive flat metal filter strips, sufficient heat is generated to burn off entrapped Diesel exhaust particulate; and
said sheet of inorganic fiber filter material includes alternating parallel and longitudinal regions of relatively dense weave and relatively open weave; said regions of relatively open weave being substantially aligned with said plurality of electrically resistive flat metal filter strips and said regions of relatively dense weave being substantially aligned with said gaps; whereby Diesel particulate collects in said gaps to self-seal said plurality of electrically resistive flat metal filter strips relative to one another.

5,853,438
FILTER REGENERATING MECHANISM FOR EXHAUST BLACK SMOKE REMOVING SYSTEM

Tatsuki Igarashi, Hino, Japan, assignor to Hino Motors, Ltd., Tokyo, Japan
Filed May 14, 1997, Ser. No. 856,305
Claims priority, application Japan, May 24, 1996, 8-130005
Int. Cl.^{6} F01N *3/02;* **B01D** *39/20*
U.S. Cl. 55—302 **5 Claims**

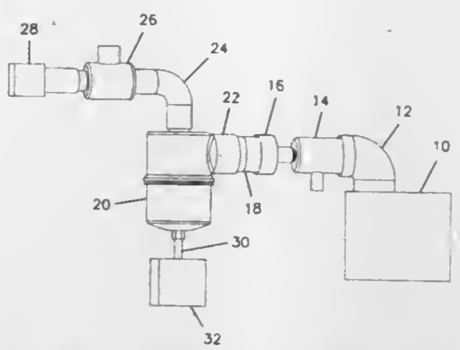


1. A filter regenerating mechanism for an exhaust black smoke removing system of the type wherein a filter made of a gas-permeable porous material has a plurality of first passages extending between an inlet surface and a particulate discharge surface. and a plurality of second passages extending between the first passages and opening on an outlet surface, and wherein exhaust gas discharged from a diesel engine flows successively through the filter inlet surface, the first passages. the gas-permeable porous material lying between the first and second passages. the second passages, and the outlet surface, so that particulates in the exhaust gas are deposited on wall surfaces of the first passages, and wherein cleaning air is supplied to flow in a direction reverse to a flow direction of the exhaust gas, thereby removing the deposited particulates from the wall surfaces of the first passages and allowing the removed particulates to drop into a hopper where they are incinerated, and thus regenerating the filter,
said filter regenerating mechanism characterized by:
an air nozzle for supplying cleaning air, said air nozzle opening toward said outlet surface of said filter:
an air injection valve for injecting cleaning air into said air nozzle; and
a perforated plate disposed between said air nozzle and said outlet surface so as to cover said outlet surface;
said perforated plate having a large number of small holes to distribute cleaning air and pressure waves over the whole outlet surface substantially uniformly.

5,853,439
AEROSOL SEPARATOR AND METHOD

Steven Scott Gieseke, and Robert Allen Dushek, both of Richfield, Minn., assignors to Donaldson Company, Inc.. Minneapolis, Minn.
Filed Jun. 27, 1997, Ser. No. 884,294
Int. Cl.^{6} B01D *46/00*
U.S. Cl. 55—330 **6 Claims**

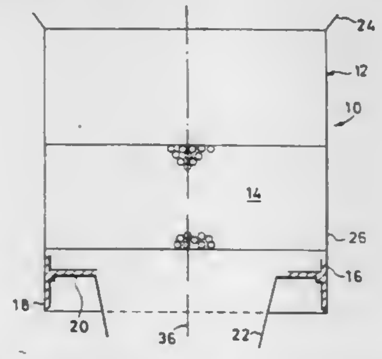
1. An arrangement for separating a hydrophobic liquid phase from a gaseous stream; the arrangement comprising:
(a) a removable and replaceable coalescer filter comprising a nonwoven media of fibers;
  (i) said nonwoven media of fibers being secured between first and second framework sections; said first and second framework sections being circular;
  (ii) said nonwoven media of fiber comprising fibrous media having an average fiber diameter within the range of 9–25 microns and a percent solidity, free state, of no more than about 1.8%;



  (iii) said fibrous media having a first upstream surface area;
(b) a housing construction defining an interior and having a gas flow inlet and a gas flow outlet;
(c) a liquid collection arrangement positioned within said housing construction oriented for receiving liquid collected within said coalescer filter and drained therefrom;
(d) a liquid drain construction in fluid flow communication with said liquid collection arrangement: said liquid drain construction being constructed and arranged to selectively drain collected hydrophobic liquid from said housing construction interior;
  (i) said housing having a funneled portion to direct hydrophobic liquid to said drain construction;
(c) a second stage filter element positioned within said housing and downstream from said coalescer filter;
  (i) said second stage filter element comprising pleated media and having a second upstream surface area;
  (ii) said first upstream surface area of said coalescer filter being no more than 20% of said second upstream surface area of said second stage filter element;
  (iii) said second stage filter element being constructed and arranged for periodic removal from said housing and replacement therein; and
(f) a gas flow direction arrangement constructed and arranged to direct gas flow through said coalescer filter as gas and through said second stage filter element.

5,853,440
SHROUD AND CYCLONIC CLEANING APPARATUS INCORPORATING SAME

James Dyson, Bathford, United Kingdom, assignor to Notetry Limited, Wiltshire, United Kingdom
PCT No. PCT/GB95/03040, § 371 Date Aug. 14, 1997, § 102(e) Date Aug. 14, 1997, PCT Pub. No. WO96/19936, PCT Pub. Date Jul. 4, 1996
PCT Filed Dec. 27, 1995, Ser. No. 860,362
Claims priority, application United Kingdom, Dec. 28, 1994, 9426287
Int. Cl.^{6} B01D *45/12*
U.S. Cl. 55—337 **19 Claims**



1. A shroud for use in apparatus incorporating cyclonic dust separation means for separating dirt and dust from an airflow, the shroud comprising a perforated portion having a lower edge and a

lip depending therefrom, the lip comprising a parallel-sided portion having an inclined distal end, wherein a step is formed radially inwardly of the parallel-sided portion and at the proximal end thereof.

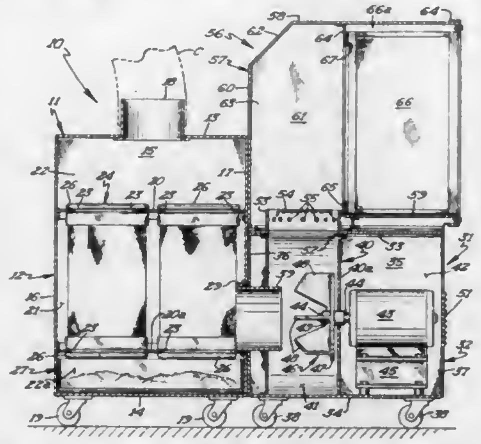
5,853,441
PORTABLE MODULAR VACUUM SYSTEM

Douglas D. Groen, 913 Cortland Dr., Apple Valley, Minn. 55124, and Kenneth W. Witte, 20555 Italy Ave., Lakeville, Minn. 55044

Filed Dec. 19, 1996, Ser. No. 770,566

Int. Cl.^{6} B01D *46/00*

U.S. Cl. 55—350.1 **4 Claims**



1. A portable modular duct cleaning apparatus for cleaning heating, ventilating and air conditioning systems comprising;

a modular vacuum generator unit comprising a housing, a vertical wall in said housing defining the housing interior into a fan chamber and a motor chamber and having an inlet and an outlet, a fan in said fan chamber and a variable frequency drive motor in said motor chamber operatively connected to said fan for driving said fan to cause air to flow into the inlet in the fan housing and through said outlet, castor wheels supporting said vacuum generator unit for movement along a surface,

a modular Hepa filter unit including a housing having an inlet and outlet, said filter housing having a plenum chamber and a filter chamber, a Hepa filter positioned in said filter chamber, said filter housing positioned upon the vacuum generator housing, means releasably securing the Hepa filter unit to said vacuum generator unit, the inlet of said Hepa filter housing being disposed in communicating relation with the outlet of said vacuum generator housing so that air will flow through the inlet of the Hepa filter housing from the outlet of the vacuum generator housing,

a modular prefilter unit including a housing having an inlet and outlet, means releasably securing said modular prefilter unit to said vacuum generator unit, said prefilter housing having a pair of vertically spaced apart apertured transverse walls traversing the interior thereof and forming the interior of said prefilter housing into an upper plenum chamber, an intermediate filter chamber and a lower collection chamber, said inlet of the prefilter housing communicating directly with the upper plenum chamber, said outlet of the prefilter housing communicating directly with the intermediate filter chamber, a plurality of similar vertically disposed open ended flexible tubular filter members positioned within said filter chamber, means securing the upper and lower end portions of the tubular filter members in the apertures of transverse walls, said transverse walls whereby said tubular members directly intercommunicate the plenum chamber, filter chamber, and collection chamber, said prefilter housing having a fitting secured to said inlet for connection to a conduit extending into a duct system to be cleaned whereby when said motor is energized a stream of entraining debris, dust and contaminants is directed into the upper plemum chamber and then into the intermediate filter chamber through the prefilter housing filters and then into the fan housing and thereafter through the Hepa filter for removing impurities and debris from the air stream.

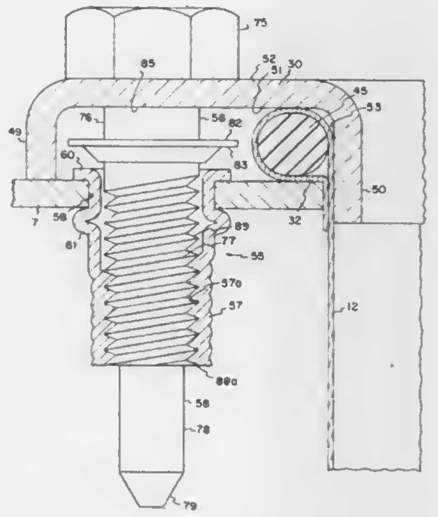
5,853,442
BOLT CONNECTOR ASSEMBLY HAVING RETAINER RING CONSTRUCTION AND REDUCED DIAMETER SHANK PORTION

James R. Glen, Montgomery, and Ted A. Folstad, Eden Prairie, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 18, 1997, Ser. No. 844,063

Int. Cl.^{6} B01D *46/02*

U.S. Cl. 55—378 **14 Claims**



1. An assembly comprising:

(a) a tube top flange having an outer plate with at least one bolt hole therein;

(b) a connector assembly comprising a bolt and a retainer ring;

  (i) said bolt having: a head; a first shank section; a threaded section; and a second shank section;

    (A) said head having a first outer dimension;

    (B) said first shank section being adjacent said head and having a non-threaded outer surface; said first shank section having an outer dimension less than said first outer dimension;

    (C) said threaded section being adjacent said first shank section; said threaded section having an outer diameter;

    (D) a second shank section adjacent said threaded section; said second shank section having an outer dimension no greater than 90% of said outer diameter of said threaded section; and

    (D) said bolt projecting through a bolt hole in said tube top flange;

  (ii) said retainer ring being secured to said first shank section on an opposite side of said tube top flange from said bolt head;

    (A) said ring being spaced from said bolt head and said top tube flange a distance such that when said bolt head abuts said tube top flange, said ring is spaced from said top flange by a gap of 0.27–0.31 inches;

(c) a tube sheet having at least one internally threaded riv-nut therein;

  (i) said tube top flange being secured to said tube sheet by threaded engagement between said bolt and said riv-nut; and

  (ii) said internally threaded riv-nut includes an internally threaded section which extends to a distance away from said bolt head, during assembly, no greater than a distance to which said bolt threaded section extends.

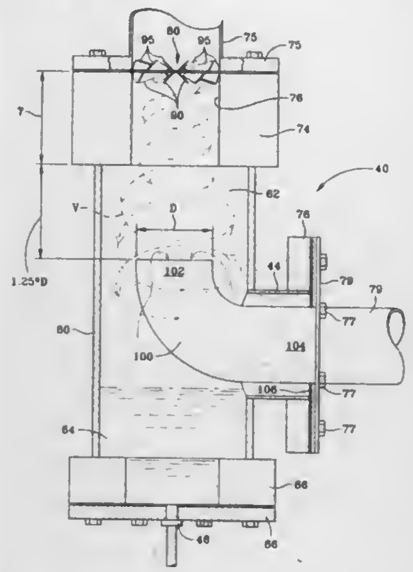
5,853,443
MOISTURE SEPARATOR FOR FLUID COMPRESSOR

Robert C. Rodgers, and Lance S. Hathcock, both of Mooresville, N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 8, 1997, Ser. No. 908,603

Int. Cl.^{6} B01D *45/08;45/16*

U.S. Cl. 55—456 **12 Claims**



1. A moisture separator comprising:

A) a separator tank that defines a separation chamber, the separator tank having an inlet,and a discharge port, the separation chamber further defining a sump;

B) a separation element located at the separator tank inlet, proximate the separation chamber, the separation element comprising an outer ring having a first side and a second side, the outer ring defining a flow opening: a hub located in the flow opening; and a plurality of flow directing elements, each flow directing element comprising a rib joining the outer ring and the hub, a first guide vane made integral with the rib and located along the first side of the outer ring, and a second guide vane made integral with the rib and located along the second side of the outer ring, the moisture separator further comprising a discharge flow tube having a discharge end located in the separator tank discharge port and an inlet end located in the separation chamber, wherein the discharge flow tube is L-shaped, the inlet end of the discharge flow tube has a diameter, and the inlet end of the discharge flow tube is separated from the tank inlet by a distance equal to the product of 1.25 and the diameter of the inlet end.

5,853,444
POROUS PERMEABLE MOLDED BODY

Horst R. Maier, Aachen; Uwe Schumacher, Stolberg; Walter Best, and Wolfgang Schäfer, both of Düren, all of Germany, assignors to Thomas Josef Heimbach GmbH & Co., Germany

Filed Mar. 21, 1997, Ser. No. 821,871

Claims priority, application European Pat. Off., Mar. 23, 1996, 96 104 647

Int. Cl.^{6} B01D *39/20;* **C04B** *38/00*

U.S. Cl. 55—523 **5 Claims**

1. A porous, flow-through molded body capable of removing diesel soot particles from diesel engine exhaust, said body comprising an alternately closed honeycombed body made of silicon carbide

and having a wall thickness of 1.25±0.5 mm;
a porosity of 55 to 60%;
an average pore diameter of 25 to 70 μm; and
a specific permeability of 20 to 100 nPm.

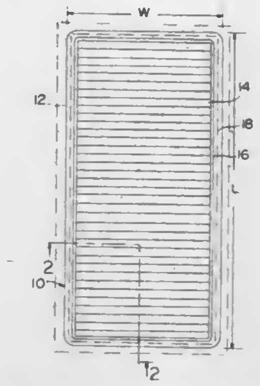
5,853,445
INTERLOCKING DUAL FILTER

Johnny H. Wong, Gastonia; Gregory Keith Rhyne, Denver, and Demetrios Tsengouras, Gastonia, all of N.C., assignors to Dana Corporation, Toledo, Ohio

Filed Aug. 6, 1997, Ser. No. 906,906

Int. Cl.^{6} B01D *46/12*

U.S. Cl. 55—343 **11 Claims**



1. An air filter assembly for mounting in a housing, wherein the air filter assembly comprises:

a first filter element panel for filtering particles, the first filter element panel having an upstream side and a downstream side and including a first filter media mounted in a first filter frame, the first filter frame having a first latching arrangement proximate a downstream side thereof;

a second filter element panel for filtering particles, the second filter element panel having an upstream side and a downstream side and including a second filter media mounted in a second filter frame, the second filter frame having a second latching arrangement at an upstream side thereof for coupling with the first latching arrangement on the downstream side of the first filter, and

a peripheral flange around the juncture of the first and second filter element wherein the air is constrained to flow substantially only from the first filter element through the second filter element.

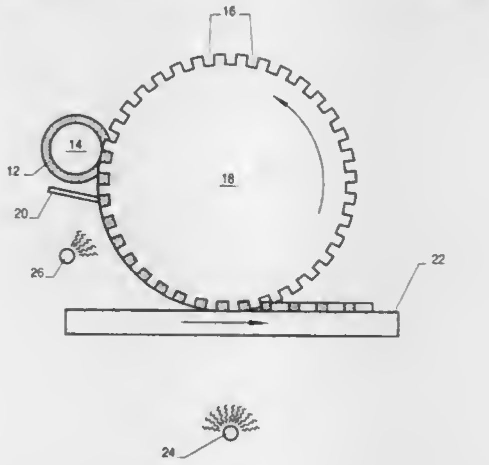
5,853,446
METHOD FOR FORMING GLASS RIB STRUCTURES

Alain R.E. Carre, Le Chatelet-En-Brie; Bernard Eid, LaGrande-Paroisse, both of France; Mark S. Friske, Campbell, N.Y.; Ronald E. Johnson, Tioga, Pa.; Candace J. Quinn, Corning; Frances M. Smith, Elmira, both of N.Y., and Jean-Pierre Themont, Montigny Sur Loing, France, assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 18, 1997, Ser. No. 820,206

Int. Cl.^{6} C03B *21/00;19/01;19/09;23/00*

U.S. Cl. 65—17.3 **28 Claims**



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20. A method of making a glass barrier rib plate for a flat panel display, comprising:
- contacting a formable glass, ceramic, or glass-ceramic frit containing material with an intaglio recessed pattern to thereby form said frit containing material into a shape of a desired barrier rib, and
- hardening said frit containing material sufficiently to retain said shape.

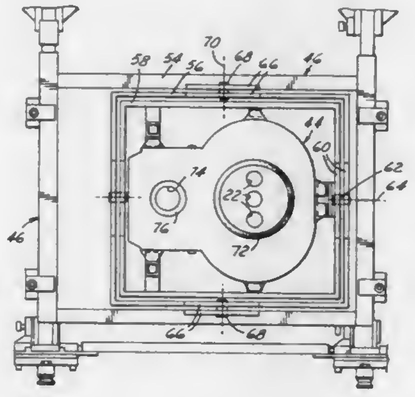
5,853,447
METHOD AND APPARATUS FOR DELIVERING A CASED GLASS STREAM

Garrett Lee Scott, Toledo, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Apr. 14, 1997, Ser. No. 833,201

Int. Cl.⁶ C03B *5/26;7/08;7/088*

U.S. Cl. 65—121 **7 Claims**



1. Apparatus for forming a cased glass stream having an inner core glass surrounded by an outer casing glass, said apparatus including means for delivering core glass from a first source through a first orifice, means forming a second orifice vertically spaced beneath and aligned with said first orifice with a chamber surrounding said second orifice and communicating with said second orifice through a gap between said first and second orifices, and means for delivering casing glass from a second source to said chamber such that glass flows by gravity from said first and second sources through said orifices to form said cased glass stream,
- said first and second orifices being carried by an orifice housing mounted on a frame for movement into seating engagement of said orifice housing against said means for delivering core and casing glass,
- said frame including means mounting said orifice housing to said frame so as to be pivotable about at least one axis orthogonal to an axis of alignment of said orifices for accommodating misalignment between said orifice housing and said delivering means.

6. A method of forming a cased glass stream in which glass from first and second sources is delivered to first and second aligned orifices in such a way that glass from the second source forms a casing around an inner core of glass from the first source, said method including the steps of:
- (a) mounting said first and second orifices in an orifice housing,
- (b) mounting said housing on gimbal mounting means for pivotal motion about at least one axis orthogonal to an axis of alignment of said orifices, and
- (c) moving said orifice housing into seating abutment with said first and second sources in such a way that said housing is free to pivot about said at least one axis to accommodate misalignment between said housing and said first and second sources.

5,853,448
METHOD OF HEATING THE CHARGE OF A GLASS FURNACE

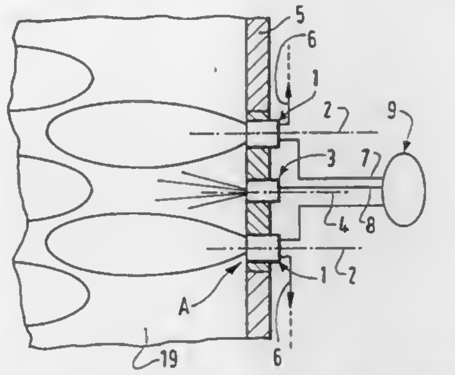
Eric Duchateau, Clarendon Hills; Louls Philippe, Oakbrook Terrace, both of Ill.; Dominique Jouvaud, Paris, France; Robert Plessler, Marselllles, France; Claude Pivard, Paris, France; Etienne Lepoutre, St-Germain-en-Laye, France, and Jean-Thierry Duboudin, Vincennes, France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes George Claude, Paris, France

Continuation-in-part of Ser. No. 765,885, Jan. 8, 1997. This application Dec. 16, 1996, Ser. No. 764,878

Claims priority, application France, Jan. 5, 1996, 96 00076

Int. Cl.⁶ C03B *5/435*

U.S. Cl. 65—134.4 **17 Claims**



1. Method of heating a charge of a glass furnace comprising at least one burner placed in a wall of a furnace so as to heat a bath of glass, comprising the steps of (i) feeding a fuel gas and an oxidizer gas comprising at least 50% of oxygen to a first and a second burner of a combustion assembly arranged in one of the walls of the furnace, said first and second burners being at a distance (D) at least equal to approximately 3 meters from each other, and (ii) feeding oxidizer gas to an oxygen lance arranged between the first and second burners, the first burner, the second burner and the lance forming a combustion assembly, wherein from approximately 30 vol. % to approximately 80 vol. % of oxidizer gas is sent into the lance and from approximately 20 vol. % to approximately 70 vol. % of oxidizer gas is sent to the first and second burners in substantially equal proportions, so as to create a retarded combustion of the fuel and oxidizer gases and to extend substantially the length of a flame compared with the length of the flame obtained with no oxidizer gas injected into the lance.

5,853,449
PLUNGER MECHANISM FOR AN I.S. MACHINE

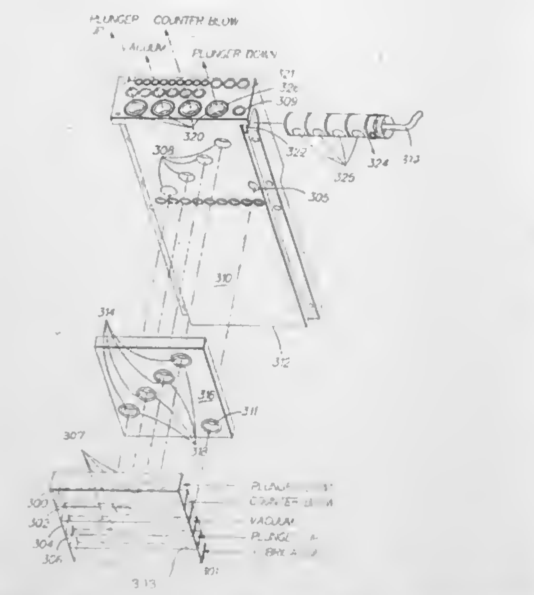
Ove Per Pilskaer; Arne Stenholm, both of Sundsvall, Sweden; Steven J. Pinkerton, Avon, Conn.; Joseph A. Borbone, Paxton, Mass., and Jarmo Kammonen, Sundsvall, Sweden, assignors to Emhart Glass S.A., Cham, Switzerland

Filed Nov. 6, 1997, Ser. No. 965,377

Int. Cl.⁶ C03B *11/12*

U.S. Cl. 65—171 **5 Clalms**

1. A plunger mechanism for an I.S. machine comprising
- a permanent plunger distribution base having a top surface and including a plurality of sets of service conduits, each set including plunger up, plunger down, and counterblow/vacuum or cooling service conduits for one plunger cylinder, each plunger distribution base service conduit having an outlet port communicating with said top surface,
- a selected number, up to the number of said sets of service conduits, of vertically extending cylindrical plunger cylinders each having a bottom surface and including a corresponding set of service conduits including plunger up, plunger down, and counterblow/vacuum or cooling service conduits, with each of said service conduits in a plunger cylinder having an inlet port communicating with the bottom surface of the plunger cylinder,



- a transition plate having a bottom surface for engaging said top surface of said plunger distribution base and a top surface, said transition plate having a number, equal to the number of plunger cylinders, of sets of service conduits, each set including plunger up, plunger down, counterblow/vacuum or cooling service conduits for one of the plunger cylinders,
- each of said sets of service conduits in said transition plate having inlet ports in the transition plate bottom surface for communicating with corresponding outlet ports of one of said sets of service conduits in said plunger distribution base and having outlet ports in the transition plate top surface selectively located to communicating with corresponding inlet ports of one of the plunger cylinders positioned on the transition plate.

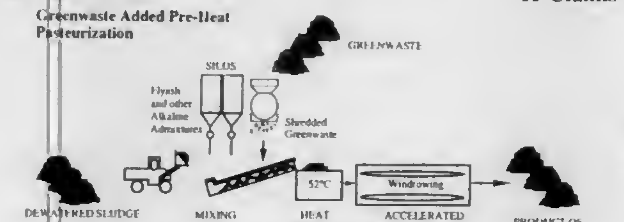
5,853,450
METHOD FOR TREATING BIOORGANIC AND WASTEWATER SLUDGES

Jeffrey C. Burnham, Naples, Fla., and Frederick H. Kurtz, Matawan, N.J., assignors to Medical College of Ohio, Toledo, Ohio

Continuation of Ser. No. 532,273, Sep. 22, 1995, abandoned. This application Sep. 3, 1997, Ser. No. 922,845

Int. Cl.⁶ C02F *11/16*

U.S. Cl. 71—9 **11 Claims**


Greenwaste Added Pre-Heat Pasteurization
GREENWASTE
SILOS
Flyash and other Alkaline Admixtures
Shredded Greenwaste
52°C
Windrowing
DEWATERED SLUDGE
MIXING
HEAT PASTEURIZATION
ACCELERATED BIODEGRADATION
PRODUCT OF THIS INVENTION

1. A method of accelerating composting of greenwaste, comprising vegetative waste including yard waste or agricultural crop remains and either green or woody vegetation remains, while reducing composting odor that comprises the steps of:
- (a) providing a greenwaste to be composted,
- (b) mixing unprocessed wastewater sludge with at least one alkaline material in an amount sufficient to raise the pH of the mixture to 12 or above,
- (c) heating the mixture of said step (b) to pasteurize the mixture,
- (d) subjecting the mixture to aeration and drying to stabilize the mixture,
- (c) blending the greenwaste with the mixture during one of said steps (b), (c) and (d) in an amount in the range of 0.5:1 to 10:1 greenwaste to mixture by volume and
- (f) composting the blend of the greenwaste and the mixture.

5,853,451
ULTRAFINE SPHERICAL NICKEL POWDER FOR USE AS AN ELECTRODE OF LAMINATED CERAMIC CAPACITORS

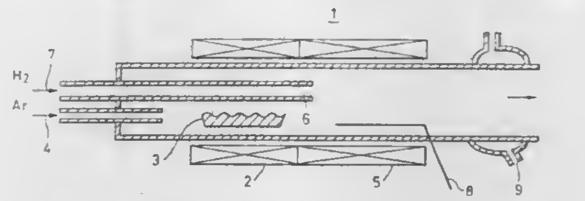
Hiroyuki Ishikawa, Chiba, Japan, assignor to Kawasaki Steel Corporation, Japan

Continuation-in-part of Ser. No. 220,474, Mar. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 711,804, Jun. 7, 1991, abandoned. This application Oct. 2, 1995, Ser. No. 537,477

Claims priority, application Japan, Jun. 12, 1990, 2-151645

Int. Cl.⁶ B22F *1/00*

U.S. Cl. 75—367 **5 Claims**



1. A process for producing ultrafine spherical nickel powder for use in a laminate ceramics capacitor through a vapor phase chemical reaction between nickel chloride and hydrogen, said process comprising the steps of:
- i) charging a reaction vessel with said nickel chloride and evaporating said nickel chloride to generate vapor of nickel chloride;
- ii) mixing an inert gas with said vapor of the nickel chloride to form a mixture gas having a nickel chloride gas concentration of about 0.05 to about 0.3, and sending said mixture gas to a reaction zone;
- iii) bringing, in said reaction zone, said mixture gas into contact and mixing with hydrogen which is supplied from a nozzle at a temperature of about 1004° C. to about 1453° C. at a flow rate of said mixture gas which is decreased by keeping the amount of hydrogen supplied low, such that a flow rate ratio of said hydrogen to said mixture gas meets the condition of $(H_2/(NiCl_2+\text{inert gas})) \leqq 1$, thereby causing said vapor phase chemical reaction;
- iv) generating ultrafine spherical nickel powder having a particle size of 0.2 to 3 μm by said chemical reaction; and
- v) cooling the generated ultrafine nickel powder together with the mixture gas and collecting said ultrafine nickel powder.

5,853,452
SYNTHETIC RUTILE PRODUCTION

Noel A. Warner, Birmingham, United Kingdom, assignor to The University of Birmingham, United Kingdom

PCT No. PCT/GB93/01054, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO93/24668, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 338,639

Claims priority, application United Kingdom, May 23, 1992, 9211052

Int. Cl.⁶ C22B *34/12;* **C21B** *13/00*

U.S. Cl. 75—435 **9 Claims**

1. A method of upgrading titaniferous material; containing iron oxide, comprising the steps of circulating a molten carrier material comprising molten iron and dissolved carbon in a closed loop path through first and second hearths; introducing the titaniferous material into the carrier material; heating the introduced titaniferous material in a heating zone in the first hearth so as to reduce iron oxide to iron and produce a titania slag having a solid rutile phase; removing the titania enriched slag from the molten carrier material before the latter is circulated to the second hearth; introducing carbonaceous reductant into the molten carrier material so as to

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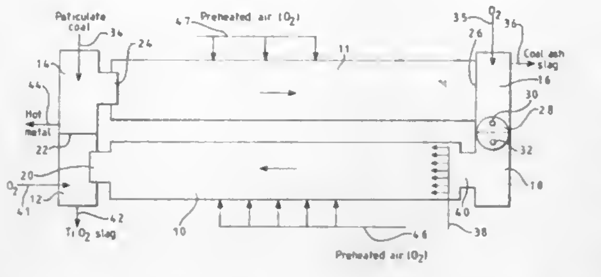


cause carbon to dissolve in the carrier in the second hearth; and performing a further slag removal operation on the circulating molten carrier material before passing the latter to the first hearth.

5,853,453
METHOD OF PROCESSING IRON-CONTAINING METALURGICAL RESIDUAL SUBSTANCES AS WELL AS ARRANGEMENT FOR CARRYING OUT SAID METHOD

Johann Lehner, and Günter Schrey, both of Linz, Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

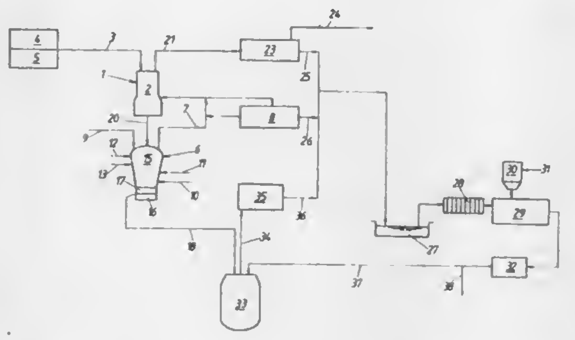
PCT No. PCT/AT96/00079, § 371 Date Dec. 30, 1996, § 102(e) Date Dec. 30, 1996, PCT Pub. No. WO96/34120, PCT Pub. Date Oct. 31, 1996

PCT Filed Apr. 23, 1996, Ser. No. 750,897

Claims priority, application Austria, Apr. 24, 1995, A 701/95

Int. Cl.^{6} C22B *7/02;* C21B *13/14;* C21C *5/28*

U.S. Cl. 75—531 22 Claims



1. A method of processing iron-containing metallurgical residual substances which have been washed out from offgases containing said iron-containing metallurgical residual substances in a steel production process, said method comprising the steps of:

collecting said iron-containing metallurgical residual substances from said offgases using a wet process;

separating said iron-containing metallurgical residual substances from said offgases in the form of a sludge;

dehydrating said sludge;

agglomerating said sludge by mixing said sludge with quick lime after dehydration to bind said sludge, and subsequently granulating the resulting mixture to form granulates; and

recycling said granulates in a steel production process by passing said granulates into a refining stage of said steel production process, said refining stage being performed using an oxygen blowing process.

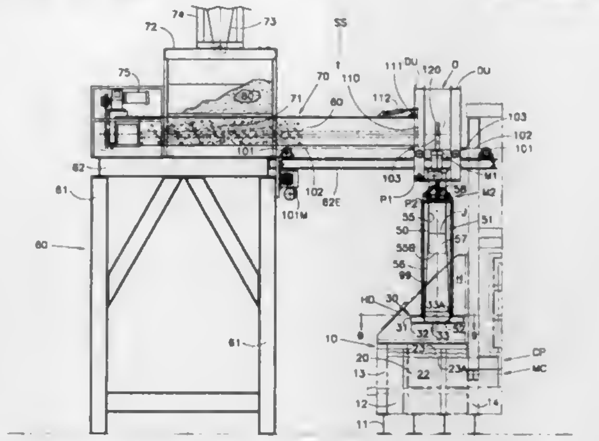
5,853,454
MASS FLOW GRAVITY FEED APPARATUS FOR CHARGING METAL-MELTING FURNACES WITH DROSS LEVEL COMPENSATOR AND METHOD FOR CHARGING METAL-MELTING FURNACES THEREWITH

Larry D. Areaux, Buena Vista, Colo., assignor to Premelt Systems, Inc., Kalamazoo, Mich.

Filed Aug. 28, 1996, Ser. No. 704,120

Int. Cl.^{6} C22B *9/00*

U.S. Cl. 75—581 26 Claims



1. Mass flow gravity feed furnace charger apparatus for use in conjunction with the charge well of a metal-melting furnace and comprising

heat-resistant charge-well cover means adapted to cover a substantial portion of the charge well and having an aperture therein and therethrough and

conduit means for forming a substantially vertically-oriented column of metal chips or scrap within and above said aperture,

the improvement which comprises

said conduit means being adapted for up and down vertical movement within the aperture in said charge-well cover means for shaking down metal chips or scrap from said column into said charge well.

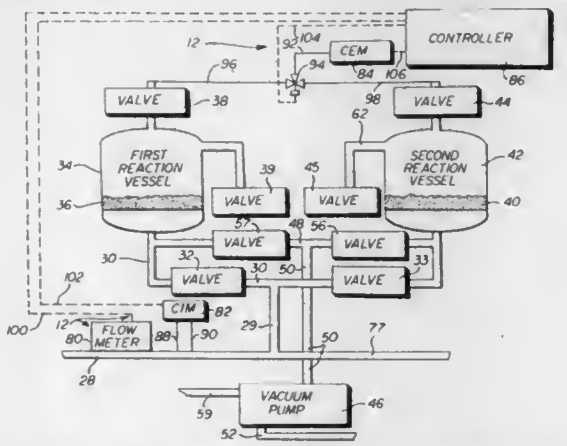
5,853,455
VAPOR RECOVERY SYSTEM WITH CONTINUOUS INLET MONITORING

David L. Gibson, Louisville, Ky., assignor to Jordan Technologies, Inc., Fisherville, Ky.

Filed Apr. 14, 1997, Ser. No. 843,306

Int. Cl.^{6} B01D *53/04*

U.S. Cl. 95—11 12 Claims



1. A method for efficiently controlling operation of a vapor recovery system including a first reaction vessel and first bed of adsorbent, a second reaction vessel and second bed of adsorbent and a vacuum pump for selectively regenerating either of said first and second beds of adsorbent, said method comprising:

adsorbing vapor from an air-volatile liquid vapor mixture on said first bed of adsorbent in said first reaction vessel;

measuring a total amount of said vapor adsorbed by said first bed of adsorbent;

comparing said total amount of vapor adsorbed on said first bed of adsorbent to a first predetermined value that is 100% or less of said first bed's adsorbance capacity; and

regenerating said first bed of adsorbent and adsorbing said vapor from said air-volatile vapor mixture on said second bed of adsorbent in said second reacton vessel upon reaching said first predetermined value whereby regeneration may be initiated before vapor breakthrough.

5,853,456
DEBUBBLING APPARATUS

Michael Bryan, and Idwal V. Pearson, both of Kodak Limited, Headstone Drive, Harrow, Middlesex, HA1 4TY, United Kingdom

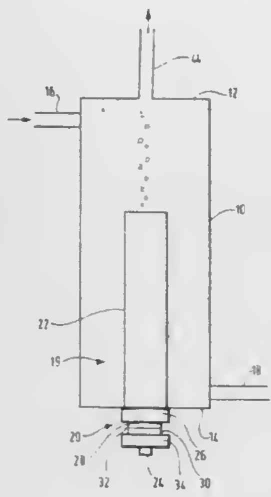
PCT No. PCT/EP96/05322, § 371 Date Jul. 11, 1997, § 102(e) Date Jul. 11, 1997, PCT Pub. No. WO97/20612, PCT Pub. Date Jun. 12, 1997

PCT Filed Dec. 2, 1996, Ser. No. 875,587

Claims priority, application United Kingdom, Dec. 6, 1995, 9524950

Int. Cl.^{6} B01D *51/08*

U.S. Cl. 95—30 12 Claims



1. A debubbling apparatus comprising:

(a) a vessel operating at a pressure of at least about 3 psi, said vessel having a liquid inlet through which a liquid is introduced, a first liquid outlet and a second liquid outlet, said liquid inlet being positioned proximate to a first end of said vessel and said first liquid outlet being positioned proximate to a second end of said vessel, said liquid inlet angled to cause liquid introduced therethrough into said vessel to travel a spiral path through said vessel toward said first liquid outlet;

(b) an ultrasonic horn extending into said vessel from said second end, said ultrasonic horn terminating at an upper face which is short of said first end and said liquid inlet, said ultrasonic horn transmitting ultrasonic energy along a longitudinal axis of said vessel toward said second liquid outlet driving air bubbles entrained in the liquid toward said second outlet; and

(c) a liquid stream drawn through said second liquid outlet containing air bubbles entrained therein.

5,853,457
FILTER MATERIAL AND PROCESS FOR REMOVING OZONE FROM GASES AND LIQUIDS

Jörg Eysmondt, Hofheim; Frank Osan, Kelkheim, and Andreas Schleicher, Beselich, all of Germany, assignors to Ticona GmbH, Frankfurt, Germany

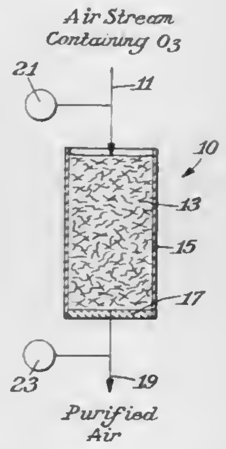
PCT No. PCT/EP95/03081, § 371 Date May 5, 1997, § 102(e) Date May 5, 1997, PCT Pub. No. WO96/04988, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 2, 1995, Ser. No. 793,215

Claims priority, application Germany, Aug. 17, 1994, 44 29 165.5

Int. Cl.^{6} B01D *53/66*

U.S. Cl. 95—138 17 Claims



1. A filtering system comprising:

means for bringing a fluid stream containing ozone into contact with a filter material,

a filter material for reducing the content of ozone in said fluid stream containing ozone, said filter material comprising polymerized unsaturated cycloolefin, and means for recovering a purified fluid stream from said filtering system.

5,853,458
GLYCOL SOLVENTS AND METHOD THEREOF

Gilbert Gavlin, Lincolnwood, and Boris Goltsin, Skokie, both of Ill., assignors to Gavlin Associates, Inc, Lincolnwood, Ill.

Continuation-in-part of Ser. No. 846,215, Apr. 28, 1997, abandoned. This application Aug. 18, 1997, Ser. No. 916,732

Int. Cl.^{6} B01D *47/06*

U.S. Cl. 95—231 12 Claims

5. In a process for dehydrating a gas comprising passing said gas in contact with a solvent comprising a glycol selected from the group consisting of tetraethylene glycol, triethylene glycol, diethylene glycol and ethylene glycol; a potassium carboxylate; and a neopentyl alcohol.

5,853,459
EXHAUST AS PURIFYING METHOD, EXHAUST GAS FILTER, AND EXHAUST GAS FILTER PURIFYING APPARATUS USING SAME

Yoshinobu Kuwamoto, Onojo; Kensei Fukuda, Saga-ken, and Yasuhiro Fujiwara, Kasuga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 8, 1997, Ser. No. 889,734

Claims priority, application Japan, Jul. 18, 1996, 8-189139

Int. Cl.^{6} C04B *38/00;* B01D *46/00*

U.S. Cl. 95—273 15 Claims

1. A method of purifying exhaust gas, the method comprising:

(a) providing an exhaust gas filter comprising:

an outer peripheral wall:

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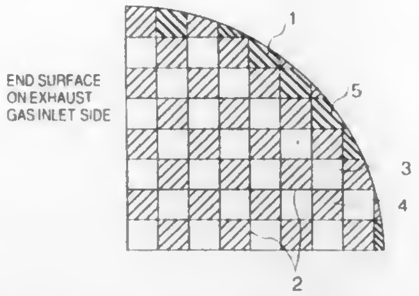


a throughhole diaphragm formed into a honey-comb shape within said outer peripheral wall to partition a plurality of throughholes:

a sealing portion formed on an end of said throughholes, said sealing portion being formed into a checkered pattern on the end on which said sealing portion is formed; and

a second sealing portion formed in a subplurality of said throughholes which are adjacent to said outer peripheral wall and said sealing portion; and

(b) collecting particulates from the exhaust gas in the exhaust gas filter so as to make a quantity of the particulates collected in ones of said plurality of throughholes which are adjacent to said outer peripheral wall of said exhaust gas filter and on said throughhole diaphragm less than a quantity of the particulates collected in other portions of the exhaust gas filter.

5,853,460
AIR PURIFIER USING PLANT ROOT INTERACTION

Isabelo S. Alcordo, 613 E. Summit St., Wauchula, Fla. 33873
Continuation of Ser. No. 668,995, Mar. 13, 1991, abandoned. This application Feb. 21, 1997, Ser. No. 800,231
Int. Cl.^{6} B01D *53/04*
U.S. Cl. 96—134 **2 Claims**

1. An air filtration and purifier system using indoor plants, filter material, water, and a vacuum source, said system comprising:

a center section having an inner wall, an outer wall, a seal bottom and a perforated plate, said perforated plate having an upper surface, a lower surface, and an outer surface, said inner wall affixed to said perforated plate on said upper surface and said outer wall being affixed to said outer surface and thereby forming a filter chamber and a potting space, said seal bottom being affixed to said lower surface of said perforated plate thereby forming a rooting chamber, said outer wall having a protrusion extending downwardly to a point below said perforated plate for forming a sealing joint,

a reservoir for holding a water supply, said reservoir having a chamber for storing a supply of water and a protrusion extending upwardly for engaging said sealing joint, and having a plurality of nozzles for draining said reservoir, and said center section and said reservoir being joined with said protrusions and thereby forming an air tight sealing joint, and

a top seal having a center opening and a depending seal, said seal being inserted within said filter chamber and thereby providing an air tight seal between said inner wall and said outer wall and said center opening providing access for said potting space, and said outer wall having a plurality of nozzles affixed to said outer wall at a point near said top seal for applying a vacuum suction to said center section whereby air is circulated through the purifying system.

5,853,461
PREVENTION OF ELECTROSTATIC CHARGING OF PNEUMATIC TIRES

Herbert Wagner, Bad Schönborn, Germany, assignor to Rhein Chemie Rheinau GmbH, Mannheim, Germany
Filed Jun. 18, 1997, Ser. No. 877,828
Claims priority, application Germany, Jun. 24, 1996, 196 25 091.9
Int. Cl.^{6} C09K *3/00;* **B28B** *7/36*
U.S. Cl. 106—2 **6 Claims**

1. An aqueous external releasing agent composition for pneumatic tires, comprising:

(a) amorphous silica gel powder, in an amount between about 3 and about 20 weight percent of the composition, said amorphous silica gel powder having an average particle diameter of between about 15 and about 30μ and having between about 3 and about 70 percent water of crystallization;

(b) pyrogenic silica, in an amount between about 0.2 and about 0.5 weight percent of the composition, said pyrogenic silica having an average particle diameter of between about 8 and about 20 nm;

(c) (i) conductive furnace carbon black powder, in an amount between about 1 and about 20 weight percent of the composition, said conductive furnace carbon black powder having an average particle diameter of between about 20 and about 30 nm; or

(ii) conductive furnace carbon black dispersion, in an amount between about 4 and about 70 weight percent of the composition, said conductive furnace carbon black dispersion comprising about 25% furnace carbon black having an average particle diameter of between about 20 and about 30 nm, about 6% non-ionic wetting agent, and about 69% water;

(d) silica sol, in an amount between about 0.3 and about 15 weight percent of the composition, said silica sol comprising between about 15 and about 20 weight percent SiO_2 having a particle surface of between about 50 and about 500 m^2/g and an average particle diameter of between about 6 and about 40 nm;

(e) polyethylene dispersion, in an amount of up to about 8 weight percent of the composition, said polyethylene dispersion comprising about 25% polyethylene;

(f) fatty alcohol polyglycol ether, in an amount between about 1 and about 20 weight percent of the composition;

(g) calcium lignosulphonate, in an amount between about 0.2 and about 10 weight percent of the composition;

(h) fatty acid methyltauride sodium salt, in an amount between about 0.1 and about 3 weight percent of the composition;

(i) defoamer, in an amount of up to about 5 weight percent of the composition;

(j) biocide, in an amount between about 0.01 and about 0.05 weight percent of the composition; and

(k) water, in an amount between about 30 and about 80 weight percent of the composition.

5,853,462
CORROSION PROTECTION OF METALS USING AROMATIC AMINE COMPOUND(S)

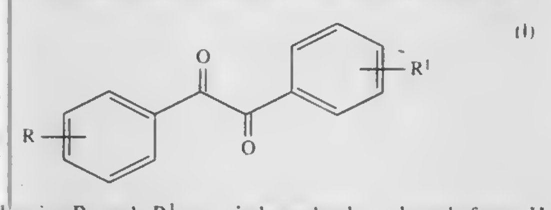
Peter J. Spellane, Ardsley-on-Hudson; Francis A. Via, Yorktown Heights, and Edward D. Weil, New York, all of N.Y., assignors to Akzo Nobel NV, Arnhem, Netherlands
Filed Oct. 30, 1996, Ser. No. 739,766
Int. Cl.^{6} C04B *9/02*
U.S. Cl. 106—14.37 **15 Claims**

1. A method of protecting a metal article from corrosion under prolonged exposure to ambient atmospheric conditions which cause such corrosion, wherein the method comprises coating the metal article, before it has been subjected to corrosion by such corrosive atmospheric conditions, with an adherent organic coating which does not exude corrosive acids, which organic coating comprises an organic resin and an effective amount of at least one aromatic amine compound containing a p-phenylenediamine moiety which is an aminodiphenylamine, which is not an epoxy crosslinking agent, but which is capable of being oxidized in air, or at least one air oxidation product thereof, or a mixture of at least one aromatic amine and at least one air oxidation product thereof.

5,853,463
MARINE ANTIFOULING AGENT

Gary Lewis Willingham, Glenside, and Linda Marguerite Oltman, Collegeville, both of Pa., assignors to Rohm and Haas Company, Phila., Pa.
Filed Jul. 1, 1998, Ser. No. 108,767
Int. Cl.^{6} C09D *5/16;* **H01N** *31/00*
U.S. Cl. 106—18.35 **9 Claims**

1. A method of inhibiting the growth of marine organisms on a marine structure, article, or composition in contact with or intended for contact with sea or brackish water comprising applying to, on, or in such marine structure a marine organism inhibiting amount of a diphenyldione marine antifouling agent of formula:



(I)

wherein R and R^1 are independently selected from H, (C_1-C_{20})alkyl and halo(C_1-C_{20})alkyl.

5,853,464
PIGMENT COMPOSITIONS

Ian Alexander Macpherson, Crail; Iain Frank Fraser, Kilbirnie; Sharon Kathleen Wilson, Pottershill; Peter Cyril White, Drymen, all of Scotland; Calum Hugh Munro, Pittsburgh, Pa., and William Ewen Smith, Glasgow, Scotland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.
Filed May 8, 1997, Ser. No. 854,009
Claims priority, application United Kingdom, Oct. 15, 1996, 9609793
Int. Cl.^{6} C09B *67/50*
U.S. Cl. 106—316 **16 Claims**

1. An ink which contains as one of its components a surface enhanced resonance Raman scattering (SÈRRS) active sol.

5,853,465
BLACK-TO-COLOR BLEED ALLEVIATION USING NON-SPECIFIC IONIC, PH, AND COLLOIDAL EFFECTS

Joseph W. Tsang, and John R. Moffat, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 24, 1997, Ser. No. 821,952
Int. Cl.^{6} C09D *11/02*
U.S. Cl. 106—31.25 **16 Claims**

1. An ink-jet ink set comprising at least two inks for use with ink-jet printers:

(a) a black, macro molecular chromophore-based ink comprising:
  (i) a first vehicle comprising (1) about 0.1 to 50 wt % of at least one substantially water-insoluble organic oil, (2) 0 to about 50 wt % of at least one first organic co-solvent, (3) 0 to about 40 wt % of at least one first amphiphile, and (4) 0 to about 3 wt % of at least one high molecular weight colloid;
  (ii) about 0.5 to 20 wt % of at least one black colorant which consists essentially of a water-soluble, black macromolecular chromophore derived from a chemically-treated black pigment; and
  (iii) the balance water, wherein said first ink exists as a microemulsion of said components, and

(b) at least one second, non-black ink comprising:
  (i) a second vehicle comprising 0 to about 50 wt % of at least one second organic co-solvent and 0 to about 40 wt % of at least one second amphiphile;
  (ii) about 0.5 to 20 wt % of at least one non-black colorant consisting essentially of a water-soluble color dye or a chemically-modified, water-soluble color pigment;
  (iii) an agent for increasing ionic strength of said non-black ink;

and

  (iv) the balance water.

5,853,466
MEDIUM FOR EMULSION INK FOR STENCIL PRINTING

Tomoko Matsuura, and Teruaki Okawa, both of Inashiki-gun, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Jun. 27, 1997, Ser. No. 884,633
Claims priority, application Japan, Jun. 27, 1996, 8-188464
Int. Cl.^{6} C09D *11/02*
U.S. Cl. 106—31.26 **7 Claims**

1. A medium for water-in-oil (W/O) emulsion ink for stencil printing, which is a water-in-oil (W/O) emulsion comprising an oil phase and a water phase, wherein said medium contains an extending pigment in said oil phase but is free from coloring pigments in said oil phase and in said water phase.

5,853,467
SPRAYABLE SURFACE DEFECT DETECTION COMPOSITION AND METHOD OF USING SAME

Brian W. Ostlie, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Sep. 30, 1997, Ser. No. 941,494
Int. Cl.^{6} B05D *7/14;* **C09D** *5/00*
U.S. Cl. 106—31.28 **20 Claims**

1. A composition comprising:

(a) a solvent(s) having an evaporation rate of at least about 0.5 when measured at a temperature of 25° C., wherein if more than one solvent is used, the solvents are miscible with each other;

(b) at least about 0.001 percent by weight of a component selected from the group consisting of solvent dispersible pigments, solvent soluble dyes, and mixtures thereof; and

(c) at least about 1 percent by weight of an antiloading agent(s);

wherein the weight percentages are based upon the total weight of the composition, and wherein the composition has a Brookfield viscosity of less than about 15,000 centipoise, and

wherein the composition is capable of drying within five minutes or less upon coating on a substrate.

5,853,468
WATER-BASED INK COMPOSITION AND INK-JET RECORDING PROCESS EMPLOYING THE SAME

Hideto Yamazaki; Masaya Fujioka, both of Nagoya, and Shunichi Higashiyama, Yotsukaichi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 6, 1996, Ser. No. 743,727
Claims priority, application Japan, Nov. 13, 1995, 7-319558; Nov. 13, 1995, 7-319559; Nov. 13, 1995, 7-319560
Int. Cl.^{6} C09D *11/02*
U.S. Cl. 106—31.43 **16 Claims**

1. A water-based ink composition comprising an aqueous medium, a dye dissolved therein, and a pH adjuster; wherein said pH adjuster comprises any one of the following (1) to (4):

(1) triethanolamine and triethanolamine hydrochloride;
(2) triethanolamine and hydrochloric acid;
(3) tris(hydroxymethyl)aminomethane and tris(hydroxymethyl) aminomethane hydrochloride; and
(4) tris(hydroxymethyl)aminomethane and hydrochloric acid; and the pH of said water-based ink composition is adjusted to a value within the range of from 8 to 10.

5,853,469
INK COMPOSITIONS FOR INK JET PRINTING

Richard L. Colt, Rochester, and Kurt B. Gundlach, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 31, 1997, Ser. No. 903,699
Int. Cl.^{6} C09D *11/02*
U.S. Cl. 106—31.49 **11 Claims**

1. An ink composition which comprises water, a colorant, and an additive selected from the group consisting of imidazolium formate, imidazolium phosphite, and mixtures thereof.

5,853,470
PIGMENTED INK JET INKS CONTAINING ALDEHYDES

Thomas W. Martin; Charles E. Romano, Jr., and Joe E. Maskasky, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 28, 1997, Ser. No. 847,858
Int. Cl.^{6} C07D *11/02*
U.S. Cl. 106—31.86 **7 Claims**

1. A liquid ink jet ink comprising a carrier, a pigment and at least one compound selected from an aldehyde compound and a precursor to an aldehyde compound.

5,853,471
COMPOSITION FOR ANTI-REFLECTION COATING

Takeo Yoshida, and Hatsuyuki Tanaka, both of Shizuoka, Japan, assignors to Hoechst Japan Limited, Tokyo, Japan
Filed Apr. 9, 1997, Ser. No. 838,665
Claims priority, application Japan, Apr. 25, 1996, 8-129056
Int. Cl.^{6} C09D *5/33;* **G03C** *1/73*
U.S. Cl. 106—287.13 **20 Claims**

1. An anti-reflection coating composition comprising:

(a) from 2 to 7 parts by weight (pbw) of a perfluoroalkyl sulfonic acid;
(b) from 0.2–1 pbw of an organic amine;
(c) 1 pbw of a polyvinylpyrrolidone;
(d) from 0.001–0.10 pbw of a water-soluble alkylsiloxane polymer; and
(e) from 50 to 100 minus the total amount of components (a)–(d) pbw of water,

wherein the parts by weight are based on 100 parts of (a) through (c).

5,853,472
TRANSPARENT BISMUTH VANADATE PIGMENTS

Leonardus Johannes Hubertus Erkens, Maastricht; Gregor Schmitt, Landgraaf, both of Netherlands; Hendrikus Maria Anna Hamers, Selfkant, Germany; Johannes Maria Martinus Luijten, Bocholtz, and Jozef Gertruda Emanuel Mains, Nieuwstadt, both of Netherlands, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.
Filed May 27, 1997, Ser. No. 863,312
Claims priority, application Switzerland, May 31, 1996, 1370/96
Int. Cl.^{6} C04B *14/00*
U.S. Cl. 106—479 **12 Claims**

1. A process for the preparation of transparent bismuth vanadate pigments, which comprises

a) preparing an amorphous pigment precursor by precipitation from an acid bismuth salt solution and a vanadate solution, which solutions may contain dissolved metal salts, metal oxides or nonmetal oxides,
b) coating the amorphous pigment precursor so obtained with 1 to 50% by weight, based on the total amount, of an inorganic coating material and subsequently
c) heat treating it in the temperature range from 50° to 800° C. then deagglomerating it.

5,853,473
PATCHING COMPOSITION FOR CONCRETE SURFACES

Harold Donaldson, 113 S. Lucia, Apt. No. 2, Redondo Beach, Calif. 90277
Continuation-in-part of Ser. No. 391,723, Feb. 21, 1995, abandoned, which is a continuation-in-part of Ser. No. 157,311, Nov. 26, 1993, abandoned. This application Jun. 9, 1997, Ser. No. 871,728
Int. Cl.^{6} C04B *7/06*
U.S. Cl. 106—695 **19 Claims**

1. A light weight patching composition for a single coat application to rough surfaced concrete surfaces having holes and voids with a coating thickness and which patching composition has substantially less weight than a conventional concrete to which the patchy composition is applied and which can also match the surface appearance of the original concrete surface and provide a smooth unmottled surface thereto, said composition comprising:

a) a cementitious material in an amount of about 25% to about 65% by weight based on the total weight of the composition;
b) a silica sand having a particle size within the range of No. 30 to No. 60 sieve sizes and which has a size selected so that the patching composition can readily fill a selected void or hole, the silica sand being present in an amount of about 25% by weight to about 65% by weight based on the total weight of the composition;
c) a calcium oxide mixture containing at least 90% calcium oxide and present in an amount effective to increase the curing rate of the composition and the degree of bonding, said amount of calcium oxide being greater than the amount of calcium oxide found in a cementitious composition formulated with a Portland cement and at least about 4% by weight to about 30% by weight based on the total weight of the composition; and
d) the patching composition being mixed with water and having a viscosity with a thick consistency sufficient to create a putty to fill in voids or holes in a concrete surface and remain therein during a hardening stage and also provides a smooth surface texture, said composition being formulated so that it can be applied in a single coat application to provide said smooth unmottled surface, with a coating thickness of no less than about ⅛ inch and no greater than about ¼ inch, and which composition has an initial cure time of up to about 30 minutes, said composition also having a surface appearance and texture similar to the concrete surface to which the composition is applied.

5,853,474
USE OF STABILIZED EAFD AS A RAW MATERIAL IN THE PRODUCTION OF A PORTLAND CEMENT CLINKER

Robert G. Hilton, Knoxville, Tenn., assignor to Conversion Systems, Inc., Horsham, Pa.
Filed Jun. 2, 1997, Ser. No. 869,286
Int. Cl.^{6} C04B *18/06;18/08;18/14;7/36*
U.S. Cl. 106—697 **11 Claims**

1. A method for producing a cement clinker, said method comprising the steps of:

stabilizing untreated electric arc furnace dust to form stabilized electric arc furnace dust; and

adding cement raw materials and said stabilized electric arc furnace dust to a cement kiln to produce said cement clinker.

5,853,475
COMPRESSIVE STRENGTH OF CONCRETE AND MORTAR CONTAINING FLY ASH

John W. Liskowitz, Belle Mead; Methi Wecharatana, Parsippany, both of N.J.; Chai Jaturapitakkul, Bangkok, Thailand, and Anthony E. Cerkanowicz, deceased, late of Livingston, N.J., by Elizabeth M. Cerkanowicz, executrix, assignors to New Jersey Institute of Technology, Newark, N.J.
PCT No. PCT/US95/06182, § 371 Date Nov. 20, 1996, § 102(e) Date Nov. 20, 1996, PCT Pub. No. WO95/32423, PCT Pub. Date Nov. 30, 1995
Continuation-in-part of Ser. No. 246,875, May 20, 1994, Pat. No. 5,624,491. This PCT application May 19, 1995, Ser. No. 737,434
Int. Cl.^{6} C04B *14/00;18/00*
U.S. Cl. 106—705 **10 Claims**

1. A method for predicting a compressive strength of a hardenable mixture containing cement and fly ash comprising

a) measuring a fineness modulus of fly ash wherein the fineness modules defines a distribution of sizes or distribution of partial volumes; and
b) preparing cementitious materials comprising cement and fly ash of a measured fineness modulus;
c) calculating the sum of:
  i) a compressive strength contributed by the cement, which is a function of the amount of cement; and
  ii) a compressive strength contributed by the fly ash of a measured fineness modulus, wherein the compressive strength contributed by the fly ash of a measured fineness of modulus is a function of the fineness modulus of the fly ash, the amount of fly ash in the mixture, and the age of the hardenable mixture in days;

wherein the sum of (i) and (ii) corresponds to the compressive strength of the hardenable mixture.

5,853,476
PROCESS FOR COLORING CONCRETE USING COMPACTED INORGANIC GRANULES

James T. Will, Easton, Pa., assignor to Elementis Pigments, Inc., Fairview Heights, Ill.
Filed Aug. 11, 1997, Ser. No. 909,156
Int. Cl.^{6} C04B *14/00;14/02;14/30;14/36*
U.S. Cl. 106—712 **17 Claims**

1. A process for coloring a cementitious system, comprising: dispersing compacted inorganic granules of a product stream in the cementitious system;

wherein said compacted inorganic granules comprise an inorganic pigment and a dispersing agent;

wherein said compacted inorganic granules are produced by a process consisting of:

(a) mixing an inorganic pigment and a dispersing agent,
(b) compacting the mixture,
(c) milling the compacted mixture, and
(d) classifying the milled compacted mixture into at least three streams, including at least one oversize material stream, at least one undersize material stream and at least one product stream of compacted inorganic granules; and.

wherein a coloring effect of the compacted inorganic granules in the cementitious system equals or exceeds a powder standard.

5,853,477
MANUFACTURE OF TRANSITION METAL CARBIDE, NITRIDE AND CARBONITRIDE WHISKERS

R. Tom Coyle, Yorba Linda, Calif.; Magnus Ekelund, Järna, Sweden; Mats Nygren, Västerled, Sweden, and Mats Johnsson, Hägerstein, Sweden, assignors to Sandvik AB, Sandviken, Sweden, and Advanced Industrial Materials, Yorba Linda, Calif.
Continuation-in-part of Ser. No. 504,779, Jul. 20, 1995. This application Dec. 20, 1996, Ser. No. 772,099
Claims priority, application Sweden, Dec. 22, 1995, 9504626
Int. Cl.^{6} C30B *26/62*
U.S. Cl. 117—87 **7 Claims**

1. A method of producing large volumes of transition metal carbide, nitride or carbonitride whiskers comprising;

mixing a carbon source, a transition metal compound, at least one of the alkali, alkali earth halogenide containing salts LiCl, NaCl, KCl, $CaCl_2$, $MgCl_2$, LiF, NaF or KF in an alkali—alkali earth-halogenide/transition metal molar ratio 0.1–3, and at least one of a Ni containing and Co-containing catalyst in (Ni+Co)/transition metal molar ratio 0.005–0.5 and

heating the mixture to 1000°–1800° C., for 1–15 hours, at 10 mbar-50 bar pressure in an inert or non-oxidizing atmosphere depending on the desired whiskers.

5,853,478

METHOD FOR FORMING CRYSTAL AND CRYSTAL ARTICLE OBTAINED BY SAID METHOD

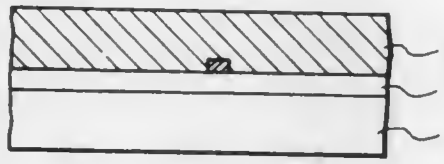
Takao Yonehara, Atsugi, and Yasuhiro Naruse, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 164,788, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 824,875, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 409,284, Sep. 19, 1989, abandoned, which is a continuation of Ser. No. 154,458, Feb. 8, 1988, abandoned, which is a continuation of Ser. No. 30,363, Mar. 26, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 471,160

Claims priority, application Japan, Mar. 28, 1986, 6-068399; Jun. 30, 1986, 6-153273; Mar. 17, 1987, 6-063295

Int. Cl.^{6} C30B *25/18*

U.S. Cl. 117—89 **34 Claims**



5. A method for forming a crystal article on a substrate, said crystal article having a crystal portion formed from a plurality of single crystals and said substrate having a plurality of nucleation surfaces and a second surface comprising:

(a) vapor depositing on each of said plurality of nucleations surfaces a single nucleus for forming a single crystal, each of said nucleation surfaces (i) being amorphous, (ii) being formed of a deposited film of a material, different from the material constituting said second surface, (iii) having an area of 10 μm or less in maximum diameter and (iv) having a nucleation density sufficiently larger than the nucleation density of said second surface to selectively form said single nucleus; said nucleation surfaces being spaced apart from each other by a distance; and

(b) growing by vapor deposition each said single crystal from each said single nucleus on said nucleation surface such that there is one single crystal grown on each said nucleation surface, each said single crystal being formed of a material different from the deposited film material of each said nucleation surface and each said single crystal being overgrown onto said second surface.

5,853,479

APPARATUS FOR DRAWING SINGLE CRYSTALS BY THE CZOCHRALSKI METHOD

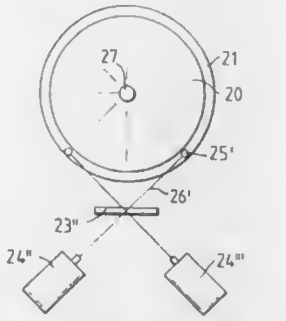
Joachim Aufreiter, Alzenau; Dieter Brüss, Bruchköbel, and Burkhard Altekrüger, Alzenau, all of Germany, assignors to Balzers und Leybold, Hanau am Main, Germany

Filed Dec. 3, 1996, Ser. No. 759,975

Claims priority, application Germany, Dec. 27, 1995, 195 48 845.8

Int. Cl.^{6} C30B *35/00*

U.S. Cl. 117—201 **8 Claims**



1. An apparatus for drawing crystals from a melt by the Czochralski method, said apparatus comprising

a furnace chamber containing a crucible for holding a melt,

means for pulling a crystal from the melt along a vertical axis so that a meniscus ring forms between the crystal and the melt,

first optical viewing means for viewing a first base point on the meniscus ring along first optical path in a plane which is parallel to the vertical axis, said first optical viewing means generating a first image,

second optical viewing means for viewing a second base point on the meniscus ring along a second optical path in a plane which is parallel to the vertical axis, said second optical viewing means generating a second image, said first and second base points being offset from each other on said meniscus,

means for generating first and signals based on respective said first and second images,

means for determining an actual diameter of the crystal based on said first and second signals, and

means for controlling the actual diameter so that it conforms to a nominal diameter.

5,853,480

APPARATUS FOR FABRICATING A SINGLE-CRYSTAL SEMICONDUCTOR

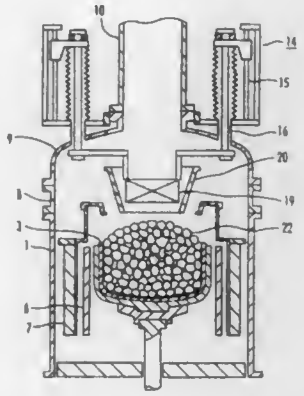
Toshimichi Kubota; Toshiro Kotooka, and Makoto Kamogawa, all of Hiratsuka, Japan, assignors to Komatsu Electronic Metals Co., LTD., Kanagawa, Japan

Filed Feb. 18, 1997, Ser. No. 801,282

Claims priority, application Japan, Apr. 22, 1996, 8-124120

Int. Cl.^{6} C30B *35/00*

U.S. Cl. 117—217 **2 Claims**



1. An apparatus for fabricating a single-crystal semiconductor by means of a Czochralski (CZ) method, comprising:

an after heater adapted for positioning around the side of a growing single-crystal semiconductor;

an elevator for varying the elevation of the after heater; and

a controller for controlling the electric power supplied to the after heater and for controlling the elevator for positioning the after heater at a location along the side of said growing single-crystal semiconductor above the solidification interface and where the temperature thereof is lower than the temperature of a specific region of said single-crystal semiconductor where the temperature gradient changes from a larger gradient to a smaller gradient.

5,853,481

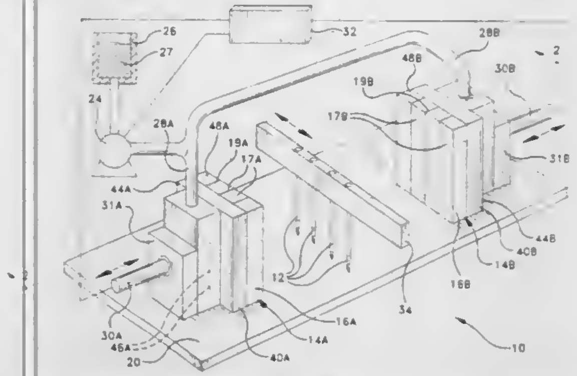
APPARATUS FOR COATING OF OBJECTS USING A POROUS RESILIENT MATRIX

Victor A. Williamitis, Dayton, Ohio; Jeanne E. Lambert, Conyers, Ga.; Min Shiu Lee, and Robert A. Taller, both of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 509,395, Jul. 31, 1995, abandoned. This application May 28, 1997, Ser. No. 864,610

Int. Cl.^{6} B05C *1/00*

U.S. Cl. 118—679 **5 Claims**



1. An apparatus for applying a coating to an object comprising:

a first reciprocating member including a drive mechanism, a coating feed system and a porous resilient pad;

a second reciprocating member in opposing relationship to the first reciprocating member wherein the second reciprocating member includes a drive mechanism, a coating feed system and a porous resilient pad;

a coating supply system operatively connected to the first reciprocating member and the second reciprocating member, the coating supply system including a reservoir and a delivery system for containing and supplying the coating to said coating feed systems;

an object handling system for placing the object in a position between said reciprocating members for coating, holding the object in said position during coating and removing the object after coating;

a frame mounted to said first reciprocating member and said second reciprocating member for motion toward and away from each other;

a control system operatively connected to the object handling system, the first reciprocating member and the second reciprocating member wherein the control system controls a movement sequence of said first reciprocating member drive mechanism, said second reciprocating member drive mechanism, said object handling system and said coating supply system:

said movement sequence comprising an initial rest position wherein there is a space between said reciprocating members, a coating loading position wherein said reciprocating members are in physical contact so that said resilient pads have a degree of compression with each other for loading the coating, an intermediate rest position wherein there is a space between said reciprocating members, a coating delivery position wherein said reciprocating members are in physical contact with each other and the object in said position for coating so that said resilient pads have a degree of compression with each other and the object thereby applying the coating to the object, said degree of compression of said resilient pads in said coating loading position being greater than said degree of compression of said resilient pads in said coating delivery position, said movement sequence being completed by a return to said initial rest position; and

said object handling system including means for placing the object in said position for coating between said reciprocating members when said reciprocating members are in said intermediate rest position, holding the object in said position for coating when said reciprocating members are in said coating delivery position and removing the object when said reciprocating members are in said initial rest position.

5,853,482

METHOD AND APPARATUS FOR APPLYING A COATING SOLUTION

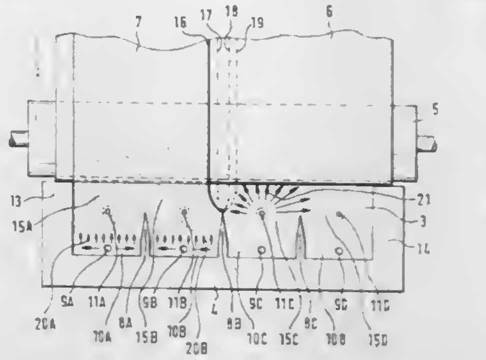
Uwe Gartmann, Eltville; Hermann Idstein, Oestrich-Winkel, and Guenter Hultzsch, Wiesbaden, all of Germany, assignors to AGFA-Gervaert AG, Leverkusen, Germany

Filed Aug. 19, 1996, Ser. No. 699,402

Claims priority, application Germany, Aug. 19, 1995, 195 30 516.7

Int. Cl.^{6} B05C *3/12*

U.S. Cl. 118—419 **18 Claims**



1. An apparatus for applying a coating solution to a running substrate, comprising:

a pair of die lips forming a slot die which contains a die gap between the die lips;

a mask positioned in the die gap, the mask having gap limitations and separating webs between the gap limitations to control a width of coating solution applied on the running substrate, whereby the coating solution is guided laterally by one of the gap limitations and at least one of the separating webs;

gas feeding means in at least one of the die lips;

coating solution feeding means in at least one of the die lips:

at least one manifold chamber in at least one of the die lips and communicating directly with the coating solution feeding means and the gas feeding means: and

an outlet at the end of said die gap, said die gap communicating with the manifold chamber for releasing the coating solution on to the running substrate.

5,853,483

SUBSTRATE SPIN TREATING METHOD AND APPARATUS

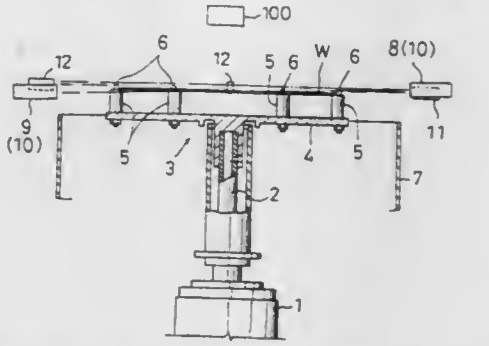
Akihiko Morita, and Kenji Ueno, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 10, 1996, Ser. No. 644,376

Claims priority, application Japan, May 5, 1995, 7-141270; May 2, 1995, 7-236070

Int. Cl.^{6} B05C *11/00;* **B08B** *3/00*

U.S. Cl. 118—712 **18 Claims**



1. A substrate spin treating apparatus for effecting a predetermined treatment of a substrate by spinning the substrate about a vertical axis, said apparatus comprising:

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substrate supporting means including support elements for supporting said substrate, and positioning elements for contacting outer peripheries of said substrate supported by said support elements to check for horizontal movement thereof, said support elements and said positioning elements being cooperative to support said substrate;
rotating means for rotating said substrate supporting means about said vertical axis;
a substrate sensor, for determining whether said substrate is supported by said substrate supporting means;
light projecting means disposed around said substrate supporting means for projecting light traveling horizontally along a plurality of projection tracks overlapping said substrate supported by said substrate supporting means and extending at an angle to one another;
light receiving means disposed around said substrate supporting means for receiving the light projected by said light protecting means and having traveled horizontally along said projection tracks;
posture determining means for determining whether said substrate is correctly supported by said substrate supporting means, based on results of determination made by said substrate sensor and result of reception by said light receiving means of the light prolected by said light projecting means and having traveled horizontally along said projection tracks; and
substrate treating means for effecting said predetermined treatment of said substrate supported by said substrate supporting means;
wherein said posture determining means is operable, while said substrate supporting means is maintained motionless, to determine whether said substrate is correctly supported by said substrate supporting means, and when said substrate is determined to be correctly supported by said substrate supporting means said substrate supporting means is rotated about said vertical axis for allowing said substrate treating means to effect said predetermined treatment of said substrate correctly supported by said substrate supporting means.

5,853,484

GAS DISTRIBUTION SYSTEM AND METHOD FOR CHEMICAL VAPOR DEPOSITION APPARATUS

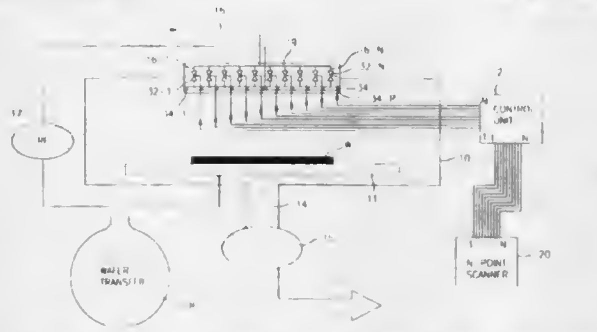
Kyung Cheol Jeong, Kyungsangbook-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Choongcheongbuk-Do, Rep. of Korea

Filed Oct. 9, 1996, Ser. No. 727,903

Claims priority, application Rep. of Korea, Oct. 28, 1995, 1995 37891

Int. Cl.⁶ C23C *16/00*

U.S. Cl. 118—715 **10 Claims**



1. A gas distribution system for a chemical vapor disposition (CVD) apparatus having a deposition chamber, the system comprising,
a gas supply pipe;
a plurality of gas supply sub-pipes communicating with said gas supply pipe;
a plurality of metering valves each associated with a respective one of said plurality of gas supply sub-pipes for controlling a flow of a gas therethrough;
a gas distribution head for jetting the gas therefrom, said gas distribution head having a plurality of cell gas discharge outlets arranged on a rectangular matrix, each communicating with a respective one of said plurality of gas supply sub-pipes;
a control unit for individually controlling said plurality of metering valves; and
a scanner connected with said control unit and being constructed and arranged to detect a thickness of a film deposited by CVD on a workpiece at a plurality of points on the deposited film, each point corresponding in location to a respective one of said plurality of cell gas discharge outlets, and to pass said thickness information on to said control unit, wherein said control unit is constructed and arranged to compare said thickness information corresponding to gas distribution with reference data, and output control signals to said plurality of metering valves according to the comparison, whereby the gas flow to each said cell gas discharge outlet is controlled.

5,853,485

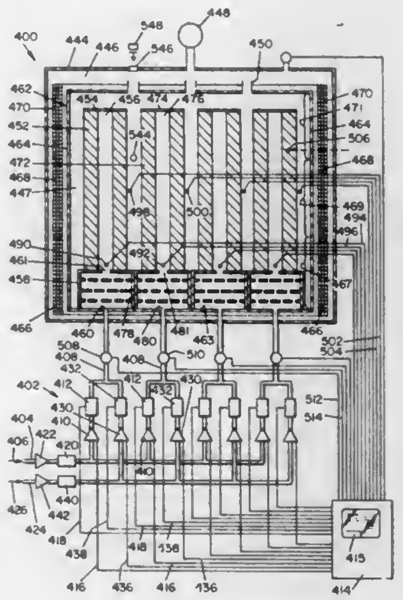
PRESSURE GRADIENT CVI/CVD APPARATUS PROCESS AND PRODUCT

James W. Rudolph, Colorado Springs, Colo., and Mark J. Purdy, Akron, Ohio, assignors to The B. F. Goodrich Company, Richfield, Ohio

Continuation of Ser. No. 476,951, Jun. 6, 1995, abandoned, which is a division of Ser. No. 340,150, Nov. 15, 1995, Pat. No. 5,519,160. This application May 6, 1997, Ser. No. 851,860

Int. Cl.⁶ C23C *16/00*

U.S. Cl. 118—715 **20 Claims**



5. An apparatus for CVI/CVD densifying a plurality of porous aircraft brake disk structures, comprising:
a CVI/CVD furnace that defines a furnace volume;
a vacuum apparatus in fluid communication with said furnace volume;
a first main gas line for supplying a first reactant gas;
a plurality of furnace supply lines in fluid communication with said first main gas line; and,
a plurality of stacks of the porous aircraft brake disk structures disposed within said furnace volume, each stack defining an enclosed cavity, at least two of said enclosed cavities being in fluid communication with a different furnace supply line and sealed within said furnace volume such that a reactant gas flow introduced into each enclosed cavity through the corresponding furnace supply line is forced to disperse through said porous aircraft brake disk structures before being withdrawn from said furnace volume by said vacuum apparatus.

5,853,486

TREATMENT SYSTEM AND TREATMENT APPARATUS WITH MULTI-STAGE CARRIER STORAGE CHAMBERS

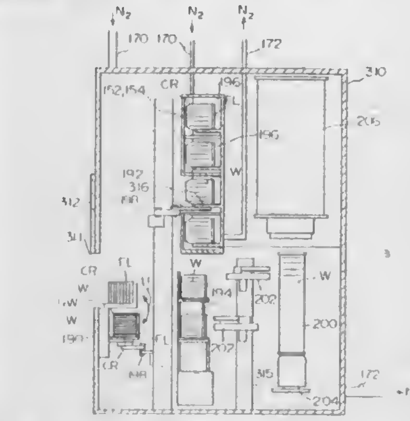
Yuji Ono, Sagamihara, and Katsuhiko Mihara, Hachioji, both of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 212,884, Mar. 14, 1994, Pat. No. 5,527,390, which is a continuation-in-part of Ser. No. 89,827, Jul. 12, 1993, Pat. No. 5,378,145. This application Mar. 25, 1996, Ser. No. 620,535

Claims priority, application Japan, Mar. 19, 1993, 5-059847

Int. Cl.⁶ C23C *16/00*

U.S. Cl. 118—719 **8 Claims**



1. A treatment system, comprising:
a treatment apparatus for performing a treatment for planar workpieces contained in carriers; and
a first air-tight carrier storage chamber for storing said carriers, wherein said treatment apparatus comprises:
a treatment chamber;
a furnace disposed in said treatment chamber and adapted for heat-treating the planar workpieces contained in said carriers;
second air-tight carrier storage chambers disposed in said treatment chamber and adapted for storing said carriers;
a means for loading and unloading said carriers into said treatment chamber;
a transfer stage disposed within said treatment chamber and adapted for holding said carriers to allow said workpieces to be removed for heat-treating by said furnace;
a carrier elevator disposed within said treatment chamber for transferring said carriers between said loading/unloading means, said second air-tight carrier storage chambers, and said transfer stage;
gas supply means for supplying an inert gas to said second air-tight storage chambers; and
gas exhaust means for exhausting a gas from said second air-tight carrier storage chambers, and
wherein said second air-tight carrier storage chambers are arranged in a multi-stage manner, each second air-tight carrier storage chamber having an opening, a pair of guides disposed at said opening and an independently operable door between said pair of guides for opening and closing said opening.

5,853,487

PROCESS FOR PRODUCING LOW DE STARCH HYDROLYSATES BY NANOFILTRATION FRACTIONATION AND BLENDING OF RESULTANT PRODUCTS, PREFERABLY IN LIQUID FORM, WITH OTHER CARBOHYDRATES

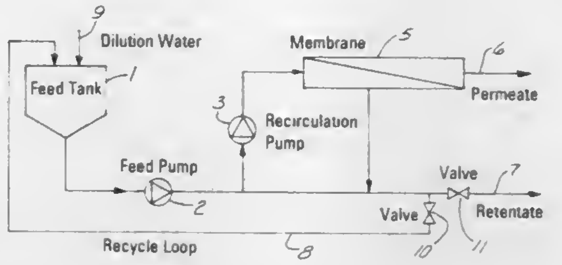
Dan Tang, Quincy; Liuming Zhou, Hamilton, and Robert Gerhardt, Sutter, all of Ill., assignors to Roquette Freres, France

Filed Apr. 27, 1998, Ser. No. 66,651

Int. Cl.⁶ C08B *31/00*

U.S. Cl. 127—32 **20 Claims**

1. A process for producing a substantially non-retrograding starch hydrolysate, said process comprising fractionating a starch hydrolysate comprising a DE greater than about 21 using a nanofiltration membrane selected from the group consisting of teflon membranes, stainless steel membranes, ceramic membranes, polyamide membranes, and polysulfonated polysulfone membranes having a molecular weight cut-off of less than about 4,000 daltons under nanofiltration conditions effective to result in a low DE starch hydrolysate fraction comprising a DE of less than about 25.



5,853,488

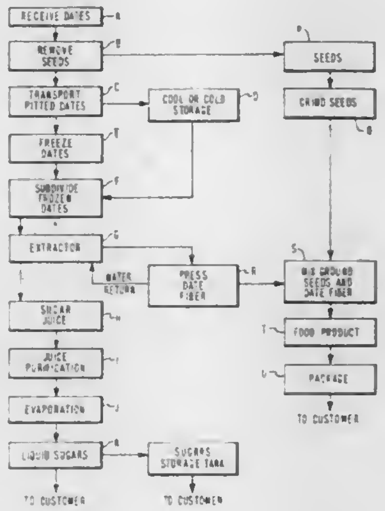
PROCESSES FOR EXTRACTING SUGARS FROM DATES AND FOR MAKING NOVEL FOOD PRODUCTS

Barnard Stewart Silver, 4391 Carol Jane Dr., Salt Lake city, Utah 84124-3601

Continuation-in-part of Ser. No. 653,502, May 24, 1996, Pat. No. 5,700,464, which is a continuation of Ser. No. 443,579, May 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 289,923, Aug. 12, 1994, Pat. No. 5,456,893, which is a continuation-in-part of Ser. No. 106,077, Aug. 18, 1993, abandoned. This application Apr. 3, 1997, Ser. No. 834,739

Int. Cl.⁶ C13D *1/00;* C13F *1/08;* C13J *1/08;* C08B *30/00*

U.S. Cl. 127—43 **21 Claims**



1. A process for extracting sugar from dates which comprises the steps of:
at least partially freezing pitted dates:
subdividing said pitted dates into particle sizes suitable for extraction while said pitted dates are at least partially frozen:
contacting the subdivided date particles with at least one extraction liquid for a sufficient time and at sufficiently elevated temperatures so as to extract at least some sugar therefrom: and
separating the date fibers from the sugar enriched extraction liquid.

5,853,489

CLEANING PROCESS

Kozo Kitazawa, Wakayama, Japan, assignor to Kao Corporation, Tokyo, Japan

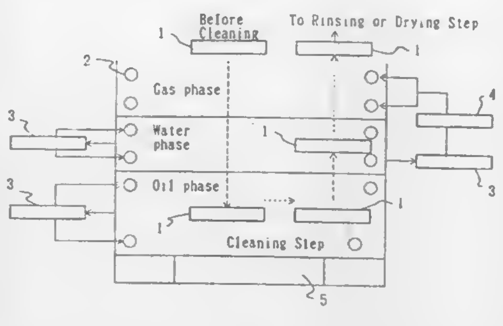
PCT No. PCT/JP95/00416, § 371 Date Sep. 18, 1996, § 102(e) Date Sep. 18, 1996, PCT Pub. No. WO95/25606, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 13, 1995, Ser. No. 714,154

Claims priority, application Japan, Mar. 18, 1994, 6-074254

Int. Cl.^{6} B08B *3/12;7/04;3/00;9/00*

U.S. Cl. 134—1 **13 Claims**



1. A process for cleaning a cleaning object, comprising the steps of:

placing water and organic substances containing a nonionic surfactant composition having a cloud point of not higher than 100° C. in a ratio of not less than 30% by weight, with or without previous blending, in a cleaning vessel, wherein the organic substances have a specific gravity higher than that of water and, when mixed with water, placed in the cleaning vessel and kept standing at a temperature of from 20° to 100° C. for 30 minutes, exhibit phase separation such that not less than 50% by weight of the organic substances is separated into a lower layer;

maintaining a temperature above the cloud point of the nonionic surfactant, thereby allowing water and the organic substances to be in the state of phase separation in which the concentration of the organic substances in a lower layer is higher than that in an upper layer; and

cleaning the cleaning object in the lower layer.

5,853,490

USE OF BICARBONATES AND CARBONATES IN METAL CLEANING FORMULATIONS TO INHIBIT FLASH RUSTING

Steven Dunn, Hillsborough; Steven A. Bolkan, Hopewell; Francis Cala, Highland Park, and Anthony Winston, East Brunswick, all of N.J., assignors to Church & Dwight Inc., Princeton, N.J.

Continuation of Ser. No. 311,252, Sep. 23, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,684

Int. Cl.^{6} C23G *1/14;1/16;1/19;* **C23F** *11/16*

U.S. Cl. 134—2 **13 Claims**

1. A method of treating iron containing substrates so as to simultaneously clean and prevent the formation of flash rust thereof comprising contacting contaminated surfaces of said substrates with an aqueous solution consisting essentially of carbonate salts in amounts of from about 0.01 to 10 wt % of said aqueous solution, bicarbonate salts in amounts of from about 0.1 to 10 wt % of said aqueous solution, at least one surfactant and an alkali metal salt of an intermediate chain length linear monocarboxylic fatty acid having carbons C_7–C_{13}, said contacting taking place for a sufficient time to remove contaminants from the surfaces of said substrates, wherein said aqueous solution has a pH range of from at least 8 to about 11.0.

5,853,491

METHOD FOR REDUCING METAL CONTAMINATION OF SILICON WAFERS DURING SEMICONDUCTOR MANUFACTURING

Peter Schulz, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 266,279, Jun. 27, 1994, Pat. No. 5,637,151. This application Mar. 27, 1997, Ser. No. 827,150

Int. Cl.^{6} B08B *3/04;* **C23F** *1/24;* **C23G** *1/02*

U.S. Cl. 134—2 **8 Claims**

1. A method for reducing the metal contamination on the surface of a silicon wafer during an "RCA-clean" cleaning sequence performed on said silicon wafer in fabricating semiconductor devices therefrom, said method comprising the improvement steps of:

adding a said concentration ranging from 0.05 mg/l to 0.10 mg/l of a complex building agent EDTA to a chemical solution selected from the group consisting of ($NH_4OH+H_2O_2+O_3$) or ($NH_4OH+H_2O_2+H_2O$) provided for use in an "SC 1" cleaning step of said "RCA-clean", to provide a modified "SC 1" cleaning solution for keeping metal complexes bound in solution to substantially prevent the metals from being retained on the surface of said silicon wafer said concentration of EDTA being dependent upon the concentrations of ammonium hydroxide and ozone;

retaining said modified "SC 1" cleaning solution in a tank tool; and

submerging said silicon wafer in said modified "SC 1" cleaning solution in said tank tool, for a predetermined period of time to form a chemical complex with metal contaminates on the surface of silicon wafers during an "SC 1" step of said improved "RCA-clean".

5,853,492

WET CHEMICAL EMITTER TIP TREATMENT

David A. Cathey, and Terry Gilton, both of Boise, Id., assignors to Micron Display Technology, Inc., Boise, Id.

Filed Feb. 28, 1996, Ser. No. 608,153

Int. Cl.^{6} E03C *23/00*

U.S. Cl. 134—3 **19 Claims**

1. A wet chemical process for treating emitter tips formed on a substrate of an emitter for use in a field emission display, the process comprising applying a solution to the emitter tips to remove native oxides on the emitter tips.

5,853,493

CLEANING OF INDUSTRIAL FABRICS USING CRYOBLASTING TECHNIQUES

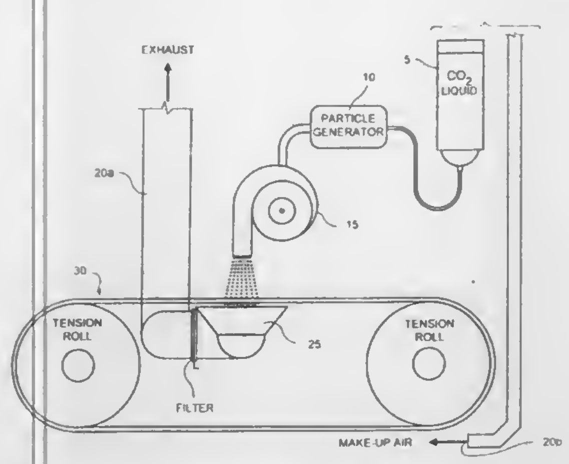
John Skelton, Sharon, Mass.; Salvatore Panarello, Sewell, N.J., and Dana Burton Eagles, Sherborn, Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Aug. 22, 1997, Ser. No. 916,617

Int. Cl.^{6} B08B *7/00*

U.S. Cl. 134—7 **10 Claims**

1. A process for removing contaminants from industrial process fabrics used in wet laid and dry laid processes comprised of the steps of impacting a surface of an industrial process fabric having contaminants on the surface with solid particles of carbon dioxide and removing the contaminants from the industrial process fabric.



5,853,494

METHOD FOR AUTOMATIC WASHING OF VEHICLES

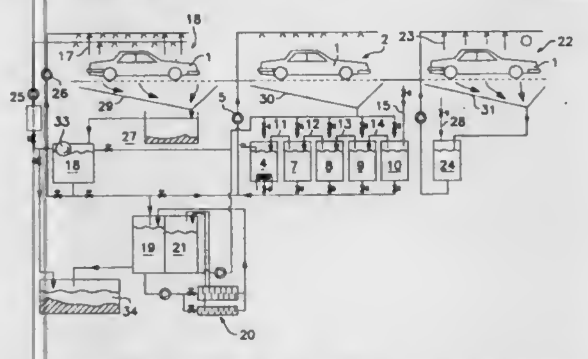
Kenneth Andersson, Postlåda 2484D, S-446 92 Älvängen, Sweden, assignor to Kenneth Andersson, Alvangen, and Lars Erik Samuelson, Onsala, both of Sweden

Continuation of Ser. No. 313,173, Dec. 7, 1994, abandoned. This application Dec. 11, 1996, Ser. No. 764,648

Claims priority, application Sweden, Apr. 9, 1992, 9201153

Int. Cl.^{6} B08B *3/04;7/04*

U.S. Cl. 134—10 **17 Claims**



1. A method for automatically cleaning vehicles of impurities contained thereon comprising the steps of:

providing at least a first washing tank and a second washing tank;

positioning a vehicle in a first treatment center for performing at least one washing treatment cycle thereon;

obtaining a treatment liquid from the first washing tank and adding an additive to the treatment liquid before washing the vehicle of a portion of said impurities by spraying the vehicle with the treatment liquid and the additive, thereby producing a used first treatment liquid containing the impurities;

collecting the used first treatment liquid and directing it into the first washing tank without providing a means for removing said portion of said impurities from the first treatment liquid;

obtaining a second treatment liquid from the second washing tank and adding a second additive to the second treatment liquid before washing the vehicle of the remaining impurities by spraying the vehicle with the second treatment liquid and second additive thereby producing a used second treatment liquid containing a relatively smaller amount of impurities as said used first treatment liquid;

collecting the used second treatment liquid and directing it into the second washing tank without providing a means for removing said impurities from the second treatment liquid;

repeatedly spraying said first treatment liquid and second treatment liquid and collecting said used first and second treatment liquids;

obtaining a fresh treatment liquid from an outside source and supplying the fresh treatment liquid to the second washing tank upon demand in order to replenish said second treatment liquid;

replenishing said first washing tank upon demand with a portion of the used second treatment liquid from the second washing tank;

reusing and recirculating the first treatment liquid and the second treatment liquid of each respective washing tank thereby establishing a counter-flow principle wherein the first treatment liquid containing the highest impurities relative to said tanks is initially used to clean said vehicle, said used second treatment liquid in the second washing tank containing a higher percentage of the fresh treatment liquid than the first treatment tank is used to clean said vehicle in a repeated washing cycle.

5,853,495

PROCESS AND DEVICE FOR SURFACE TREATMENT OF STRIPS WITH LIQUIDS

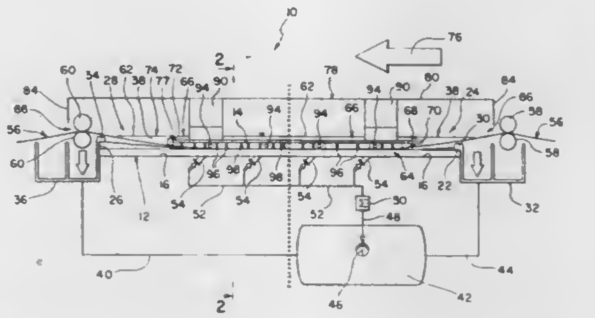
Peter Gravert, Vienna, and Gunther Hiden, St. Stefan o.L., both of Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft, m.b.H., Graz, Austria

Filed Mar. 5, 1997, Ser. No. 811,924

Claims priority, application Austria, Mar. 14, 1996, 478/96

Int. Cl.^{6} B08B *1/02;3/04*

U.S. Cl. 134—15 **34 Claims**



1. An apparatus for immersing a strip material in a liquid bath, the apparatus comprising:

a trough having a longitudinal dimension with a bottom wall, first and second side walls, a strip material receiving end and a strip material discharge end, said trough being dimensioned to receive a treating liquid and contain a liquid bath; and

at least one panel mounted within said trough and submerged in the liquid bath, said at least one panel having a bottom surface spaced from said bottom wall of said trough for defining a contact zone between said panel and bottom wall of said trough and extending substantially the length of said trough, said at least one panel further having a top surface defining a return zone for receiving liquid from said discharge end of said trough and directing said liquid along said top surface from said discharge end to said receiving end of said trough;

wherein said at least one panel extends substantially a length of said trough from said receiving end to said discharge end, and extends from said first side wall to said second side wall to separate said contact zone from said return zone.

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5,853,496

TRANSFER MACHINE, TRANSFER METHOD, CLEANING MACHINE, AND CLEANING METHOD

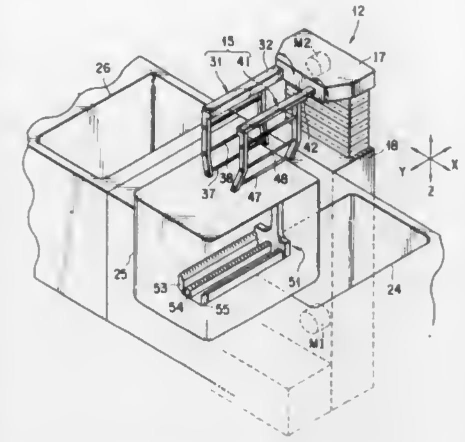
Yoshiyuki Honda, Kanzakimachi, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Aug. 2, 1996, Ser. No. 691,233

Claims priority, application Japan, Aug. 8, 1995, 7-222548

Int. Cl.⁶ B08B *7/04;3/00;1/02*

U.S. Cl. 134—18 **22 Claims**



1. A transfer machine comprising:

a pair of holding members which oppose each other to hold a plurality of objects at their peripheral edges;

a drive mechanism for selectively driving said holding members toward and away from each other in order to selectively execute holding and releasing of said objects by said holding members; and

a transfer mechanism for transferring said objects and said holding members to a bath in order to process said objects in said bath,

wherein each of said holding members has upper and lower holders and wherein each of the upper and lower holders has a plurality of holding notches for holding peripheral edges of said objects, and wherein each holding notch of each upper holder has a first taper part positioned adjacent to an opening of the holding notch and a second taper part positioned adjacent to a bottom of the holding notch and extending from said first taper part, and

wherein with respect to a line bisecting said holding notch a first angle extends between said line and a side wall of said holding notch in said first taper part and a second angle extends between said line and the side wall of said holding notch in said second taper part, and wherein said first angle is larger than said second angle such that said first taper part has an opening angle larger than an opening angle of said second taper part.

5,853,497

HIGH EFFICIENCY MULTI-JUNCTION SOLAR CELLS

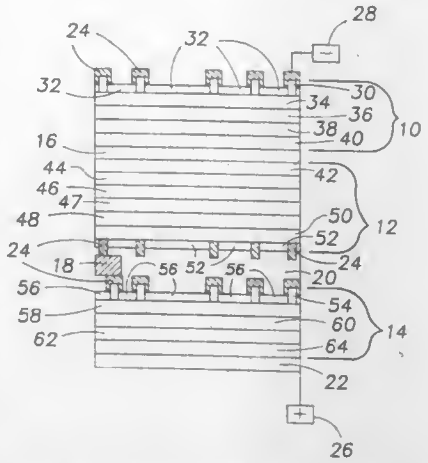
David R. Lillington, Rancho Palos Verdes, and David E. Joslin, Valley Village, both of Calif., assignors to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Dec. 12, 1996, Ser. No. 764,805

Int. Cl.⁶ H01L *25/00;31/00*

U.S. Cl. 136—249 **15 Claims**

1. A photovoltaic device for converting photons into electrical energy, comprising:



GaInP, GaAs and GaInAsP cells, wherein said cells are connected to each other in a tandem configuration such that photons enter said GaInP, GaAs and GaInAsP cells in turn.

5,853,498

THIN FILM SOLAR CELL

Claus Beneking; Marcus Kubon, and Magnus Kolter, all of Aachen, Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

PCT No. PCT/DE95/00379, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/26050, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 17, 1995, Ser. No. 718,587

Claims priority, application Germany, Mar. 24, 1994, 44 10 220.8

Int. Cl.⁶ H01L *31/075*

U.S. Cl. 136—258 **5 Claims**

1. Thin-film solar cells with at least one layer sequence of p-doped, undoped (i) and n-doped layers, a TCO-layer neighboring the first p-doped layer and a contact layer especially a metallic layer bonded to the last n-doped layer characterized in that between the TCO layer and the p-doped layer neighboring same an n-doped intermediate layer is provided and at least the intermediate layer or its neighboring p-doped layer is microcrystalline.

5,853,499

GRAIN-ORIENTED ELECTRICAL STEEL SHEET AND METHOD OF MANUFACTURING THE SAME

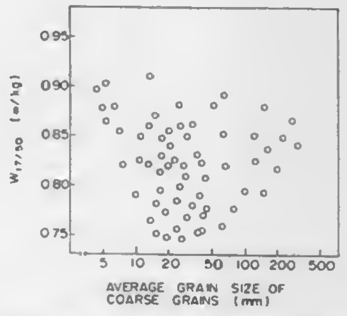
Michiro Komatsubara; Kunihiro Senda; Takafumi Suzuki; Hiroaki Toda, and Hirol Yamaguchi, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Division of Ser. No. 756,213, Nov. 25, 1996, Pat. No. 5,718,775. This application Aug. 28, 1997, Ser. No. 919,758

Claims priority, application Japan, Nov. 27, 1995, 7-307794

Int. Cl.⁶ H01F *1/147*

U.S. Cl. 148—113 **4 Claims**



1. In a method of manufacturing a grain-oriented electrical steel sheet having a very low iron loss, wherein hot rolling is applied to an electrical steel slab to make a hot-rolled sheet, said slab comprising from about 0.01 to 0.10 wt % C, from about 1.5 to 5.0 wt % Si, from about 0.04 to 2.0 wt % Mn, and from about 0.005 to 0.050 wt % Al, and wherein a final sheet thickness is achieved through one or more stages of cold rolling, with intervening annealing in the case of plural stages of cold rolling, and then said cold-rolled steel sheet is subjected to decarburization annealing, the steps which comprise:

(a) annealing immediately before final cold rolling to form a desiliconization layer on said steel sheet;

(b) conducting from two to about ten passes of final cold or warm rolling, at least about two of which passes comprise warm rolling at a temperature within a range of from about 150° to 300° C.;

said decarburizing annealing being conducted such that, after decarburizing annealing, the surface of said steel sheet has an oxide composition having a peak ratio of fayalite (Af) to silica (As) in infrared reflection spectrum, Af/As, of at least about 0.8;

(c) adding to said steel an annealing separator before said final annealing, with metal oxides that are capable of slowly releasing oxygen at least at a temperature within a range of from about 800° to 1,050° C., said annealing separator including a plurality of metal oxides added in a total amount within a range of from about 1.0 to 20% of said annealing separator;

wherein said final annealing is carried out at a heating rate of at least about 5° C./hr. from about 870° C. to at least about 1,050° C.; and

(d) forming a tension coating on said steel sheet after said final annealing.

5,853,500

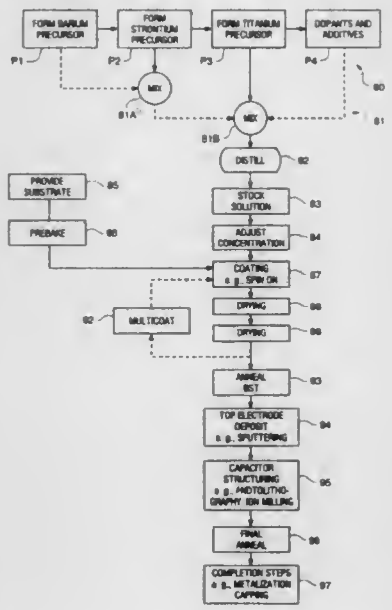
METHOD FOR FABRICATING THIN FILMS OF BARIUM STRONTIUM TITANATE WITHOUT EXPOSURE TO OXYGEN AT HIGH TEMPERATURES

Vikram Joshi, and Carlos A. Paz de Araujo, both of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo.

Filed Jul. 18, 1997, Ser. No. 896,574

Int. Cl.⁶ B05D *5/12*

U.S. Cl. 148—247 **25 Claims**



1. A method of fabricating a thin film of barium strontium titanate, said method comprising the steps of:

(a) providing a substrate;

(b) forming a thin film containing barium, strontium, oxygen, and titanium on said substrate; and

(c) heating said thin film in an oxygen-free atmosphere at a temperature of between 500° C. and 900° C. to form a solid thin film of said barium strontium titanate on said substrate.

5,853,501

HOT ROLLED CR-NI STAINLESS STEEL PLATE OF LOW ANISOTROPY AND PROCESS FOR PRODUCING THE SAME

Shin-ichi Teraoka, and Eiichiro Ishimaru, both of Hikari, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

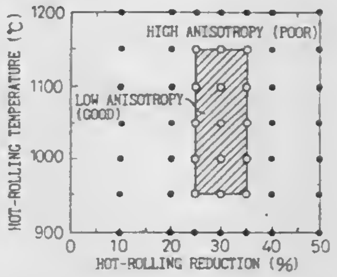
PCT No. PCT/JP97/00067, § 371 Date Mar. 11, 1997, § 102(e) Date Mar. 11, 1997, PCT Pub. No. WO97/26378, PCT Pub. Date Jul. 24, 1997

PCT Filed Jan. 16, 1997, Ser. No. 913,502

Claims priority, application Japan, Jan. 17, 1996, 8-006059

Int. Cl.⁶ C22C *38/40;* **C21D** *8/02*

U.S. Cl. 148—327 **2 Claims**



1. A low anisotropic Cr—Ni-based stainless steel hot-rolled sheet, which has a texture with (100), (110), (111), (311) and (211) ND plane intensity from 0.5 to 1.5 in an inverse pole figure measured for a ¼ section of the sheet thickness.

5,853,502

CARBURIZING STEEL AND STEEL PRODUCTS MANUFACTURED MAKING USE OF THE CARBURIZING STEEL

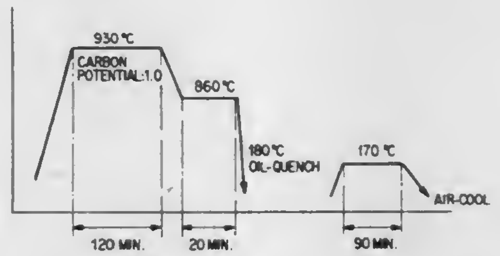
Kenji Aihara, Osaka; Yasuhide Fujioka, Wakayama; Kazuhiko Yoshida, Fukuroi; Tatsuhiro Goto, and Akira Wakita, both of Iwata, all of Japan, assignors to Sumitomo Metal Industries, Ltd., and NTN Corporation, both of Osaka, Japan

Filed Aug. 9, 1996, Ser. No. 694,744

Claims priority, application Japan, Aug. 11, 1995, 7-227382; Aug. 11, 1995, 7-227383

Int. Cl.⁶ C23C *8/22;* **C22C** *38/32*

U.S. Cl. 148—319 **13 Claims**



1. A part of a constant velocity universal joint for a drive shaft which is made of a steel consisting of the following elements:

C: 0.1 to 0.25%,
Si: 0.2 to 0.4%,
Mn: 0.3 to 0.9%,
P: 0.02% or less,
S: 0.001 to 0.15%,
Cr: 0.5 to 0.9%,
Mo: 0.15 to 1%,
Al: 0.01 to 0.1%,
B: 0.0005 to 0.009%,

N: less than 0.006%, and

the balance of Fe and incidental impurities, wherein % is on a weight basis, the part having a surface hardness (Hv) of 650–800, core hardness (Hv) of 250–450, and carburized layer having a case depth of 0.2–1.2 mm.

5,853,503
HOT ROLLED STEEL SHEETS AND METHOD OF PRODUCING THE SAME

Kazuhiro Seto; Kei Sakata; Osamu Furukimi, and Takashi Obara, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

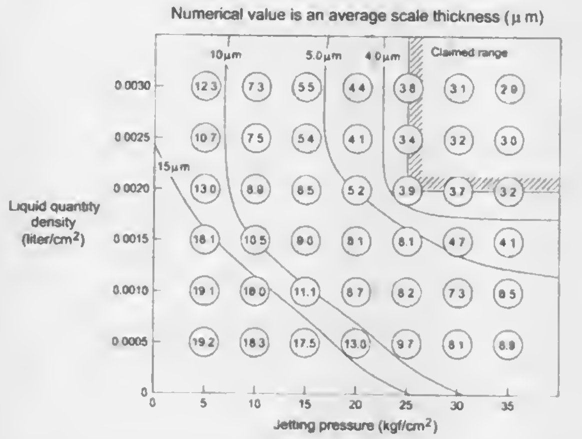
PCT No. PCT/JP96/02455, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO97/08355, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 30, 1996, Ser. No. 817,947

Claims priority, application Japan, Aug. 31, 1995, 7-222874

Int. Cl.^{6} C21C *8/00;* C22C *38/04;38/06*

U.S. Cl. 148—320 **6 Claims**



1. A hot rolled steel sheet comprising C: 0.001–0.20 wt %, Si: 0.01–0.50 wt %, Mn: 0.05–2.0 wt %, P: not more than 0.05 wt %, S: not more than 0.05 wt %, sol.Al: 0.01–0.10 wt %, N: not more than 0.020 wt % and the balance being Fe and inevitable impurities, and having an average surface scale thickness of not more than 4 μm and a surface roughness (Ra) of not more than 0.8 μm developed after rough rolling at a completing temperature of (Ar_3 point+100° C.)–(Ar_3 point+50° C.) and super-high pressure descaling at a liquid quantity density of not less than 0.002 liter/cm^2 under a jetting pressure of not less than 25 kgf/cm^2 and then subsequent finish rolling.

5,853,504
MATERIAL FOR LAPPING TOOLS AND LAPPING SURFACE PLATE USING THE SAME

Takanobu Nishimura, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

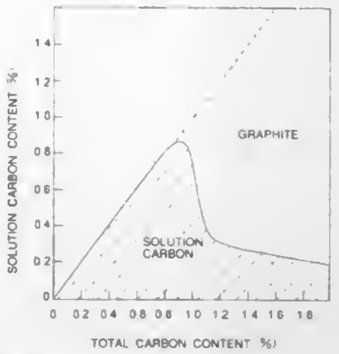
Filed Aug. 28, 1997, Ser. No. 919,220

Claims priority, application Japan, Sep. 5, 1996, 8-235512

Int. Cl.^{6} C22C *37/04*

U.S. Cl. 148—324 **11 Claims**

1. An Fe-base material for lapping tools, consisting essentially of 0.8 to 3.5 wt % of C, 1 to 7 wt % of Si, 5 to 15 wt % of Ni, $0<Mn\leqq$ wt %, $0<X\leqq 0.1$ wt % where X equals at least one element selected from the group consisting of Mg, Ca and Ce, 2 wt % or less of Cr, 2 wt % or less of at least one element selected from the group consisting of Mo, Nb, Ti, and V, and the balance of the material substantially comprising Fe, wherein said material in the as-cast condition has a matrix of at least 30% by area of martensite, and includes a plurality of spheroidal graphite, and said material having a hardness value of 250 Hv or more.



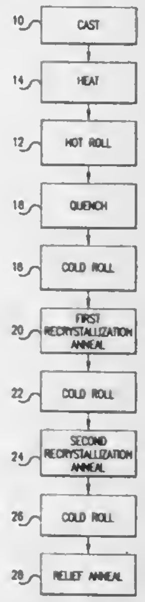
5,853,505
IRON MODIFIED TIN BRASS

Dennis R. Brauer, Brighton, Ill.; John F. Breedis, Trumbull, Conn.; Ronald N. Caron, Branford, Conn., and Carl Deppisch, Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 18, 1997, Ser. No. 844,478

Int. Cl.^{6} C22C *9/02*

U.S. Cl. 148—433 **12 Claims**



1. A copper alloy, consisting essentially of:

from 1% to 4% by weight of tin;

from 0.8% to 4.0% by weight of iron;

from 8% to 20% by weight of zinc;

amount effective to promote the formation of iron phosphide up to 0.4% by weight of phosphorous; and

the remainder copper and inevitable impurities, said alloy having a refined as-cast average crystalline grain size of less than 100 microns and precipitates selected from the group consisting of iron and iron phosphide via dispersion hardening.

5,853,506
METHOD OF TREATING METAL WORKING DIES

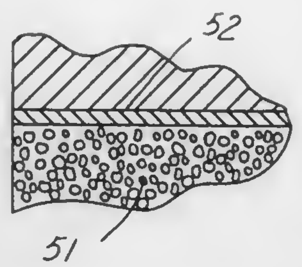
Fritz Meldrum, Bedford, Ind., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 7, 1997, Ser. No. 888,593

Int. Cl.^{6} B23P *15/24*

U.S. Cl. 148—514 **6 Claims**

1. A method of enhancing the working life of metal working dies, comprising:



(a) forming a metal working die part constituted of consolidated particulated material with micro pores providing a porosity in the range of 0.01–0.5%;

(b) immersing the part in a lubricant that is flowable under the working conditions of use for the die part, the lubricant being contained within a pressure chamber;

(c) raising the pressure within the chamber to about 1,000–3,500 psi, and the temperature of the lubricant to about 80°–120° C., for a period of time sufficient to allow the lubricant to migrate and be trapped within the micro pores of said part to create a positive internal pressure; and

(d) placing the die part, impregnated with the lubricant into use for cold working that subjects a work piece to shear with no burn-in or redressing between placement of said lubricant in said micro pores and the use of said die part in said cold working use.

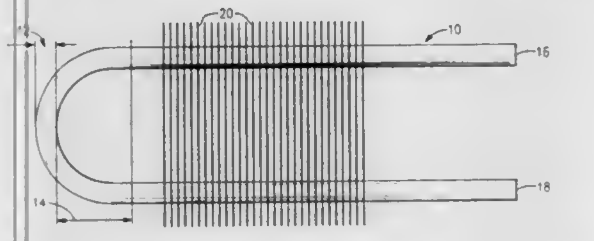
5,853,507
METHOD FOR MANUFACTURING HEAT EXCHANGERS TO ALLOW UNIFORM EXPANSION OF TUBING

Amer F. Ali; Kenneth P. Gray, both of East Syracuse, and Daniel P. Gaffaney, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 11, 1996, Ser. No. 763,864

Int. Cl.^{6} C21D *8/10*

U.S. Cl. 148—519 **6 Claims**



1. A method of manufacturing a heat exchanger, with the heat exchanger being of the type having round tubing with plate fins attached thereto, the tubing having areas of increased material harness from the cold work imparted thereon to form hairpin bend sections, the method promoting removal of the increased area of material hardness to provide a uniform material hardness along the entirety of the linear sections of the tubing and correspondingly uniform expansion during fluidic or electromagnetic expansion, the method comprising:

a) forming said hairpin sections by bending each tubing section into a "U" shape, thereby creating an area of cold work, wherein said area of cold work includes the bend and the linear sections of the tubing near the bend;

b) heating said area of cold work in said linear sections to a predetermined temperature sufficient to relieve the increased hardness caused by said cold work;

c) gradually cooling said heated area; and

d) expanding the tubing by enclosing the volume of the tubing and introducing an expansion fluid therein at a pressure which surpasses the tube yield strength causing the tube walls thereof to expand radially outward.

5,853,508
WEAR RESISTANT EXTRUDED ALUMINIUM ALLOY WITH A HIGH RESISTANCE TO CORROSION

Louis Walter Marie Paul Tack, Reet, Belgium; Edouard Willem Suman, Alkmaar, and Henricus Matheus Van Der Donk, Velserbroek, both of Netherlands, assignors to Hoogovens Aluminium NV, Belgium

Filed Feb. 13, 1997, Ser. No. 798,740

Claims priority, application Belgium, Feb. 14, 1996, 1002334

Int. Cl.^{6} C22C *21/02*

U.S. Cl. 148—550 **26 Claims**

1. An aluminum alloy in extruded form which comprises substantially no Si particles, consisting of in weight %:

Si 11.5–13.5
Mg 0.5–2.0
Fe not more than 1.0
Cu not more than 0.35
Zr not more than 0.1
Ni not more than 0.1
Cr not more than 0.1
Zn not more than 0.1
Sr 0.2–0.1
Mn not more than 1.2
Bi not more than 1.0
Pb not more than 1.0
Sn not more than 1.0
balance Al and unavoidable impurities.

10. A method for manufacturing an aluminum alloy comprising substantially no Si particles, consisting of in weight %:

Si 11.5–13.5
Mg 0.5–2.0
Fe not more than 1.0
Cu not more than 0.35
Zr not more than 0.1
Ni not more than 0.1
Cr not more than 0.1
Zn not more than 0.1
Sr 0.02–0.1
Mn not more than 1.2
Bi not more than 1.0
Pb not more than 1.0
Sn not more than 1.0
balance Al and unavoidable impurities,

said method comprising the steps of, in succession.

- (a) casting the aluminum alloy,
- (b) homogenizing the cast aluminum alloy,
- (c) hot extruding the homogenized aluminum alloy,
- (d) a process step selected from
  - (d) (i) solution heat treatment, and
  - (d) (ii) quenching directly after the hot working of step (c),
- (e) ageing.

5,853,509
TIRE HAVING OPTIMUM CHARACTERISTICS FOR THE RIDE COMFORT OF A VEHICLE

Maurizio Boiocchi, Segrate; Federico Mancosu, Milan, and Giuseppe Matrascia, Seregno, all of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed Nov. 18, 1996, Ser. No. 752,258

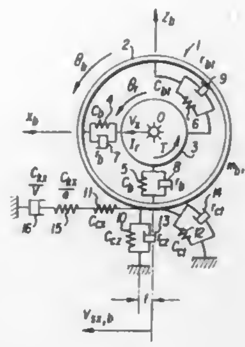
Claims priority, application Italy, Nov. 21, 1995, MI95A2398

Int. Cl.^{6} B60C *5/00*

U.S. Cl. 152—450 **3 Claims**

1. A tire for a wheel of a vehicle comprising a tread strip, shoulders, sidewalls, beads provided with cores and bead fillers, a carcass and a belt structure comprising belt plies, where said tire and tread strip are representable respectively by a dynamic rigid-ring tire model and a brush model with concentrated parameters comprising dampenings concentrated parameters and stiffness concentrated parameters,

said tire having construction features substantially functionally equivalent to said dynamic tire model concentrated parameters that, determined under a vertical load ranging from 200



kg to 650 kg, fall within the following intervals corresponding to preselected indices of comfort:

rb=100–300 (Ns/m)

rbt=2–40 ((Nms/rad)

rcz=100–350 (Ns/m)

rct=10–90 (Nms/rad)

Ckx=18,000–70,000 (N)

wherein rb is a radial foundation dampening of said dynamic tire model; rbt is a torsional foundation dampening of said dynamic tire model; rcz is a residual radial dampening of said dynamic tire model; rct is residual torsional dampening of said dynamic tire model; and Ckx is a slipping stiffness of said brush model of said tread.

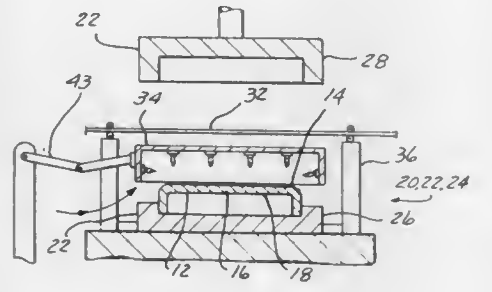
5,853,510
METHOD FOR MANUFACTURING A COMPOSITE

Henry J. Lawson, Clinton Township, Mich., assignor to Blue Water Plastics, Inc., Marysville, Mich.

Continuation of Ser. No. 354,288, Dec. 12, 1994, abandoned. This application Oct. 14, 1997, Ser. No. 950,326

Int. Cl.^{6} B32B *31/00;* G05G *15/00*

U.S. Cl. 156—64 **36 Claims**



1. A method of making a composite, comprising the steps of:

placing a substantially rigid thermoplastic substrate and a bonding layer in a bonding device, the substantially rigid thermoplastic substrate having a bonding surface and a residue;

applying controlled heating to the bonding device, to cause a flow state in said bonding surface of the substrate, wherein the step of applying controlled heating comprises applying heating of an appropriate temperature for an appropriate period of time to cause the bonding surface to flow without causing substantial heat soaking, melting or other damage, by warpage or otherwise, to the residue of the substrate or the bonding layer; and then

closing the bonding device to cause pressurized contact at an interface between said bonding surface and said bonding layer while the bonding surface is in a flow state, to form a bond at said interface.

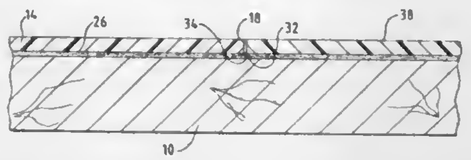
5,853,511
METHOD FOR JOINT REINFORCEMENT OF DISSIMILAR MATERIALS

Robert P. Fairbanks, 6038 Tridale Ct., Cincinnati, Ohio 45230

Continuation of Ser. No. 235,604, Apr. 29, 1994, abandoned. This application May 13, 1996, Ser. No. 645,135

Int. Cl.^{6} B32B *31/12*

U.S. Cl. 156—71 **10 Claims**



1. A method for joint reinforcement of dissimilar material comprising the steps of:

providing a substrate material having a substantially planar surface;

providing a plurality of covering material sheets having a top surface and an underside, said plurality of material sheets comprised of a material different from said substrate material;

applying a first adhesive to a portion of said planar surface of said substrate;

disposing a reinforcement interleave having a top surface and an underside on the remainder portion of said planar surface;

disposing a second adhesive different from said first adhesive on the top surface of said reinforcement interleave;

placing said material sheets on said planar surface such that a seam is formed therebetween adjacent said reinforcement interleave, the seam defining a length between the top surface and underside of the material sheets;

extruding said second adhesive through the entire length of said seam; and

maintaining said first adhesive separate from said second adhesive when applying said first adhesive and disposing said second adhesive and during said extruding step.

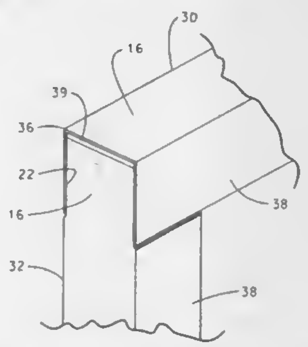
5,853,512
METHOD OF MANUFACTURING UNITARY FRAMED FOAM PANELS

Matthew M. McKinney, Somerville, Ala., assignor to EFP Corporation, Decatur, Ala.

Filed Feb. 21, 1997, Ser. No. 804,391

Int. Cl.^{6} B29C *67/20;* E04C *1/00*

U.S. Cl. 156—78 **6 Claims**



1. A method of manufacturing unitary framed foam panels comprising the steps of:

(a) providing channel shaped frame members each having a swedged end portion and a straight end portion and cut to predetermined lengths suitable for forming a rectangle and having inner and outer surfaces thereon;

(b) coating the inner surfaces of each frame member with heat activated glue;

(c) assembling said frame members into a rectangular frame by fitting a swedged end portion of each frame member into a straight end portion of another frame member;

(d) placing said assembled frame in a foam molding press;

(e) filling said assembled frame with foam material;

(f) activating said heat activated glue and molding said foam within said frame by the introduction of pressurized, high temperature steam into said foam molding press so as to form a unitary framed foam panel;

(g) removing the molded panel from said molding press;

(h) cooling said molded panel in a controlled manner so as to prevent warping of the panel.

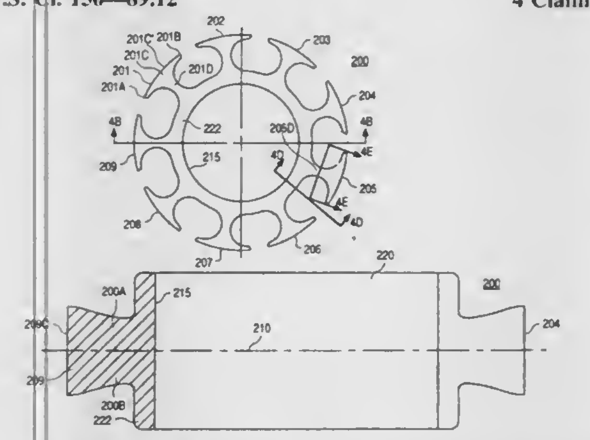
5,853,513
METHOD OF PRODUCING A STATOR FOR A DISK DRIVE MOTOR

Gary F. Kelsic, Longmont, Colo., assignor to Mobile Storage Technology Inc., Boulder, Colo.

Division of Ser. No. 392,452, Feb. 22, 1995, abandoned. This application Apr. 22, 1996, Ser. No. 636,096

Int. Cl.^{6} C04B *37/00*

U.S. Cl. 156—89.12 **4 Claims**



1. A method of fabricating a stator for a disk drive motor comprising the steps of:

providing a mold in the shape of a first half of a stator;

filling the mold with a low loss magnetic material to form a molded first stator half;

removing the molded first stator half from the mold;

heating the molded first stator half to a temperature within the range of 510 degrees C. to approximately 1320 degrees C. to form a sintered molded first stator half;

filling the mold with a low loss magnetic material to form a molded second stator half;

removing the molded second stator half from the mold;

heating the molded second stator half to a temperature within the range of approximately 510 degrees C. to approximately 1320 degrees C. to form a sintered molded second stator half, said second stator half having a shape identical with and symmetrical to said first stator half; and

joining the sintered first stator half with the sintered second stator half to provide a substantially monolithic stator, said monolithic stator comprising a plurality of pole pieces, said pole pieces being rounded and smooth to eliminate sharp edges.

5,853,514
METHOD OF PRODUCING A PIEZOELECTRIC/ ELECTROSTRICTIVE FILM ELEMENT

Yukihisa Takeuchi, Miyoshi-cho; Tsutomu Nanataki, Toyoake; Koji Kimura, Nagoya, and Nobuo Takahashi, Owariasahi, all of Japan, assignors to NGK Insulators, Ltd., Japan

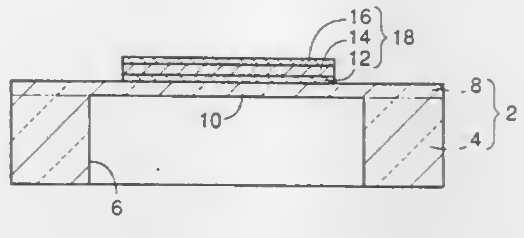
Filed Sep. 20, 1996, Ser. No. 716,876

Claims priority, application Japan, Sep. 27, 1995, 7-249302

Int. Cl.^{6} C04B *37/00;* H01L *41/08*

U.S. Cl. 156—89.12 **5 Claims**

1. A method of producing a piezoelectric/electrostrictive film element comprising: a zirconia substrate having at least one window, and a diaphragm portion formed as an integral part of said zirconia substrate and closing each of said at least one window;



and a film-like piezoelectric/electrostrictive unit including a lower electrode, a piezoelectric/electrostrictive layer and an upper electrode, which are formed in the order of description on an outer surface of said diaphragm portion by a film-forming process, said method comprising the steps of:

preparing said zirconia substrate which has been sintered and in which at least said diaphragm portion contains alumina in an amount of 1.1–5.0 parts by weight;

forming, by a film-forming process, said lower electrode on said outer surface of said diaphragm portion, and said piezoelectric/electrostrictive layer on said lower electrode by using a piezoelectric/electrostrictive material which contains magnesia or a component which gives magnesia, in an independent form or in a compound form; and

firing said piezoelectric/electrostrictive layer, so as to deposit particles consisting principally of a compound of alumina and magnesia at least on an interface between said diaphragm portion and said lower electrode, said interface being located right under said piezoelectric/ electrostrictive layer.

5,853,515
PROCESS FOR PRODUCING A MULTILAYER CERAMIC CAPACITOR

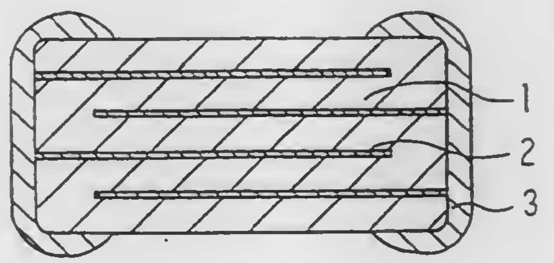
Harunobu Sano, Kyoto, and Yukio Hamaji, Shiga, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Division of Ser. No. 478,026, Jun. 7, 1995, Pat. No. 5,600,533. This application Mar. 26, 1996, Ser. No. 622,068

Claims priority, application Japan, Jun. 23, 1994, 6-141799

Int. Cl.^{6} B32B *31/26;* H01G *4/008*

U.S. Cl. 156—89.16 **6 Claims**



1. A process for producing a multilayer ceramic capacitor which comprises the steps of:

forming, by a thin-film forming method, a nickel or nickel alloy layer on ceramic green sheets comprising barium titanate, a bismuth compound, and an anti-reducing agent;

superposing said ceramic green sheets on one another to form an assemblage; and

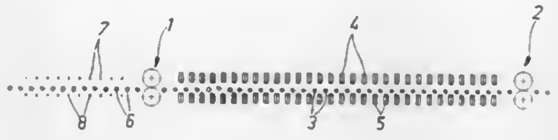
subjecting said assemblage to high-speed firing,

wherein the high-speed firing comprises heating the assemblage at an oxygen partial pressure of 10^{-6} to 10^{-10} MPa to a temperature in the range of 1000° to 1180° C. at a heating and cooling rate of 10° C. per minute or greater.

5,853,516

METHOD AND APPARATUS FOR LAMINATING GLASS SHEETS

Esko Lehto, Kangasala, Finland, assignor to Tamglass Engineering Oy, Tampere, Finland
Filed Oct. 16, 1995, Ser. No. 543,780
Claims priority, application Finland, Oct. 20, 1994, 944920
Int. Cl.^{6} B32B *31/20;31/26*
U.S. Cl. 156—102 4 Claims

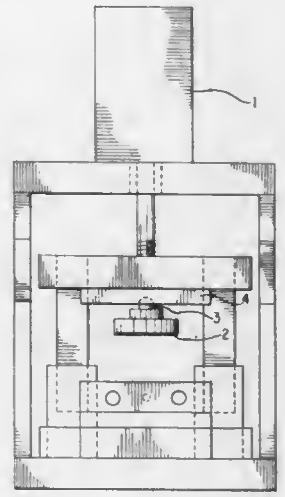


1. A method for laminating glass sheets, in which method a plastic film is laid between glass sheets and a resulting sandwich structure is carried through a first pair of press rolls (1), followed by heating the snadwich element such that the glass and film have a temperature which rises to the temperature range of 60° C.–85° C. and carrying the heated sandwich structure through a second pair of press rolls (2), characterized in that upstream of the first pressing the snadwich structure is preheated with radiation heat (7, 8) and between the pressing operations the sandwich structure is heated by means of two-sided hot-air blasting (4, 5).

5,853,517

METHOD FOR COINING SOLDER BALLS ON AN ELECTRICAL CIRCUIT PACKAGE

William George Petefish; Boydd Piper, and Thomas E. Walker, all of Eau Claire, Wis., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Nov. 8, 1996, Ser. No. 745,400
Int. Cl.^{6} H05K *03/00*
U.S. Cl. 156—196 8 Claims



1. A method for coining solder balls of an organic chip package, said method comprising the steps of:

a) providing a chip package having a plurality of solder balls on a first surface thereof;
b) placing a slug on one or more of the solder balls; and
c) applying sufficient pressure for a sufficient period of time to the slug to flatten the surface of the solder balls so as to form planar solder coins, wherein said planar solder coins have an average flatness on a surface thereof of less than about 21 microns across about 12 millimeters.

5,853,518

CATHETER

Jan Utas, Kungsbacka, Sweden, assignor to Astra Aktiebolag, Sodertalje, Sweden
PCT No. PCT/SE95/01558, § 371 Date Jan. 30, 1996, § 102(e) Date Jan. 30, 1996, PCT Pub. No. WO96/19254, PCT Pub. Date Jun. 27, 1996
PCT Filed Dec. 20, 1995, Ser. No. 586,762
Claims priority, application Sweden, Dec. 22, 1994, 9404486
Int. Cl.^{6} A61M *25/16*
U.S. Cl. 156—245 12 Claims

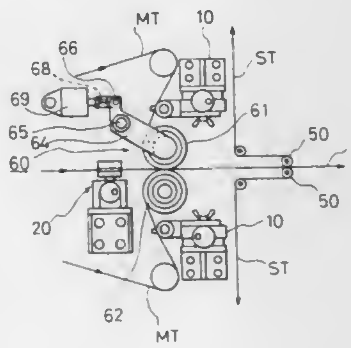
1. A process for manufacturing a catheter for insertion into a body cavity, said catheter having a tip portion and a tube portion, said tip portion being provided with one or more drainage or flushing openings, said tip portion being at the end of the catheter which is inserted into the body cavity, the outside of the catheter being provided with a coating substantially along the entire length of said catheter, the process comprising the steps of:

forming said tip portion by injection molding, said tip portion being formed separate from the tube portion, said tip portion including an inner lumen and said one or more drainage or flushing openings, the inner and outer diameter of said tip portion corresponding to the inner and outer diameter of said tube portion;
forming an end of the tube portion and an end of the tip portion to conform to each other for a subsequent joining operation; and
joining said tip portion to said tube portion;
wherein the coating is applied to said tube portion before the joining operation is performed.

5,853,519

PROCESS FOR APPLYING MASKING TAPE AND APPARATUS FOR CARRYING OUT THE SAME PROCESS

Sizuo Watanabe, Tokyo, and Koji Sakaki, Ibaraki, both of Japan, assignors to Nippon Mining & Metals Co., Ltd., Tokyo, Japan
Filed Jul. 1, 1997, Ser. No. 886,276
Claims priority, application Japan, Jul. 30, 1996, 8-216834
Int. Cl.^{6} B32B *31/00*
U.S. Cl. 156—247 20 Claims



1. A process for continuously applying masking tape on an elongated metal strip in a longitudinal direction thereof, comprising:

a first step for guiding said metal strip to a given position in a width direction thereof;
a second step for continuously cutting an original masking tape into a given number of tapes having predetermined widths with reference to said guided given position and for supplying them;
a third step for continuously pressure adhering said cut masking tapes on said elongated metal strip by means of pressure adhering means; and
a fourth step for continuously separating and removing part of said applied masking tapes.

5,853,520

PREAPPLIED SILICONE THREADLOCKER AND SEALANT

Richard D. Rich, Avon; Eerik Maandi, Rocky Hill; Paula M. Gontarz, Berlin, and Hsien-Kun Chu, Wethersfield, all of Conn., assignors to Loctite Corporation, Hartford, Conn.
Division of Ser. No. 603,845, Feb. 22, 1996, Pat. No. 5,635,546. This application Jan. 23, 1997, Ser. No. 788,724
Int. Cl.^{6} C09J *4/02*; F16B *39/00*
U.S. Cl. 156—293 20 Claims

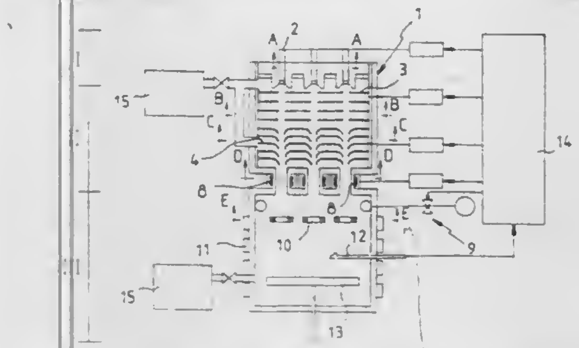
1. A method for producing a threadlockable matable part useful for subsequent adhesive bonding engagement of the matable part with a complimentary engagement structure, said method comprising the steps of:

a) applying an aqueous emulsion of a reactive silicone (meth)acrylate containing a plurality of microcapsules holding a peroxy initiator, to at least a portion of an engagement surface of the matable part which is matably engageable with the complimentary engagement structure, to yield an emulsion-coated engagement surface; and
b) drying the emulsion-coated engagement surface to form a latently activatable dried coating thereon.

5,853,521

MULTI-CATHODE ELECTRON BEAM PLASMA ETCHER

Kie-hyung Chung, Pyongtaek; Kil-ju Yun, Puchon; Sang-young Kim, Songtan, and Tae-Young Kim, Seoul, all of Rep. of Korea, assignors to Soosan Precision Co., Ltd., Chungchongnamdo, and Korean Accelerator & Plasma Research Association, Seoul, both of Rep. of Korea
Filed Jan. 16, 1996, Ser. No. 587,906
Claims priority, application Rep. of Korea, Jan. 16, 1995, 793/1995
Int. Cl.^{6} C23F *1/02*
U.S. Cl. 156—345 22 Claims

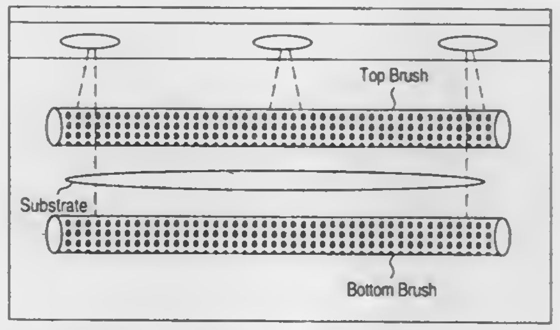


1. A multi-cathode electron beam plasma etcher comprising:
a vacuum chamber;
several cathodes which are installed in the upper end of the upper part of the chamber and generates an electron beam in order to generate plasma in a large area;
an acceleration electrode and a deceleration electrode which form an acceleration and a deceleration tube structure in order to extract much electron beam and are arranged sequentially from the front of the cathode and form an electrostatic lens when a differential voltage is applied respectively;
first vacuum evacuation means to make the upper part of said chamber vacuum;
an etching gas injection means which is installed in the side wall around the upper end of the lower part of said chamber;
second vacuum evacuation means which is installed in the lower part of said chamber; and
a holder of the etched body which is installed in the lower part of said chamber;
wherein a lens is included additionally in the inside of the chamber between the deceleration electrode and the etching gas injection means in order to control the dispersion and distribution of the electron beam, condense the electron beam and then, diffuse the electron beam.

5,853,522

DRIP CHEMICAL DELIVERY APPARATUS

Wilbur C. Krusell, and Lane L. Larson, both of San Jose, Calif., assignors to OnTrak Systems, Incorporated, San Jose, Calif.
Division of Ser. No. 617,434, Mar. 18, 1996, which is a continuation of Ser. No. 275,785, Jul. 15, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 688,257
Int. Cl.^{6} H01L *21/00*
U.S. Cl. 156—345 22 Claims



1. An apparatus for cleaning a substrate comprising:
a substrate holder;
a brush to scrub said substrate;
a drip mechanism to drip a solution on said brush.

5,853,523

PLASMA-ETCHING ELECTRODE PLATE

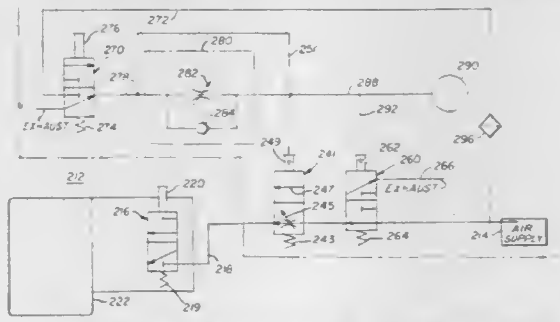
Osamu Machida, Odawara, and Hisayuki Hamajima, Chigasaki, both of Japan, assignors to Tokai Carbon Company, Ltd., Tokyo, Japan
Filed Feb. 14, 1997, Ser. No. 799,943
Claims priority, application Japan, Feb. 15, 1996, 8-052466
Int. Cl.^{6} C23F *1/02*
U.S. Cl. 156—345 7 Claims

1. A plasma-etching electrode plate in the form of flat glassy carbon plate which is characterized by flatness with a warp smaller than 0.3 mm.

5,853,524

PNEUMATIC CIRCUIT FOR STRAPPING TOOL HAVING ADJUSTABLE TENSION CONTROL

Robert J. Nix, Algonquin, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 26, 1997, Ser. No. 883,555
Int. Cl.^{6} B32B *31/00*
U.S. Cl. 156—358 20 Claims



1. A timing control arrangement for a fluid-actuatable tool, comprising:

first, normally-closed means for controlling fluid flow from a source of fluid at a predetermined line pressure to said tool;
second, normally-open means, disposed within a first fluid conduit connecting said first, normally-closed fluid flow control-

ling means to said source of fluid so as to be interposed between said first, normally-closed fluid flow controlling means and said source of fluid, for controlling fluid flow from said source of fluid to said first, normally-closed fluid flow controlling means;
- third, normally-closed means, having an upstream end and a downstream end, for controlling fluid flow from said source of fluid to said second, normally-open fluid flow controlling means;
- a second fluid conduit fluidically connecting said source of fluid to said upstream end of said third, normally-closed fluid flow controlling means;
- a fluid reservoir having a predetermined volume;
- a third fluid conduit fluidically connecting said downstream end of said third, normally-closed fluid flow controlling means to said reservoir;
- variable flow-controlling means, disposed within said third fluid conduit so as to be interposed between said fluid reservoir and said downstream end of said third normally-closed fluid flow controlling means, for controlling the rate of fluid flow to said reservoir and the time for attaining fluid at said predetermined line pressure within said reservoir and said third fluid conduit after said third, normally-closed fluid flow controlling means has been moved from a closed position to an open position;
- said second, normally-open fluid flow controlling means being fluidically connected to said third fluid conduit at a position disposed downstream of said variable flow-controlling means such that said second, normally-open fluid flow controlling means is responsive to said fluid at said predetermined line pressure within said third fluid conduit whereby said second, normally-open fluid flow controlling means is moved from an open position to a closed position so as to interrupt fluid flow from said source of fluid to said first, normally-closed fluid flow controlling means and said tool even when said first, normally-closed fluid flow controlling means has been moved to an open position so as to actuate said tool; and
- two-position fluid flow controlling means, disposed within said first fluid conduit and fluidically connected to said third fluid conduit at a position upstream of said variable flow-controlling means so as to be responsive to said fluid at said predetermined line pressure within said third fluid conduit when said third, normally-closed fluid flow controlling means is disposed at said open position, for providing restricted fluid flow from said source of fluid to said tool as a result of said two-position fluid flow controlling means being disposed at a first position when said third, normally-closed fluid flow controlling means is disposed at said closed position, and for providing unrestricted fluid flow from said source of fluid to said tool as a result of said two-position fluid flow controlling means being moved, from said first position to a second position, by said fluid at said predetermined line pressure within said third fluid conduit when said third, normally-closed fluid flow controlling means is disposed at said open position.

5,853,525
APPARATUS FOR FORMING A RADIAL TIRE

Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

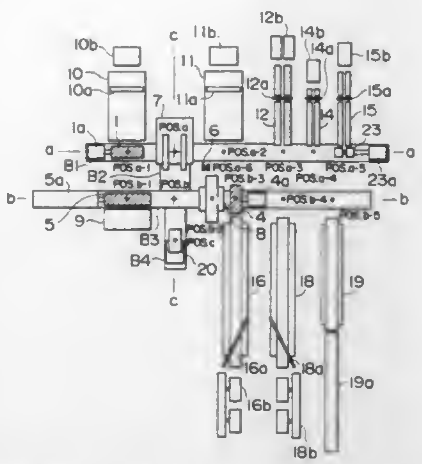
Division of Ser. No. 413,953, Mar. 30, 1995, Pat. No. 5,582,666. This application Sep. 16, 1996, Ser. No. 713,125

Claims priority, application Japan, Apr. 11, 1994, 6-72095; Apr. 26, 1994, 6-88376

Int. Cl.^{6} B29D *30/20*

U.S. Cl. 156—396 **4 Claims**

1. An apparatus for forming a radial tire by a process in which a carcass ply is joined in advance into a cylindrical shape and expanded on a shaping drum so as to wrap a bead core, said apparatus comprising:



- a first band forming drum for winding of an inner liner, said first band forming drum being movable between a first position, a second position and a third position on a first axis a—a to form a first assembly by moving of said inner liner to have a carcass ply laminated on an outer periphery of said inner liner to form a carcass band and expansion of said first band forming drum to press the carcass band against an inner peripheral surface of a bead core, said first position, said second position and said third position being spaced apart sufficiently for performing separate tire forming steps;
- a separate, second band forming drum different in function from said first band forming drum and movable along said first axis a—a to form a second assembly, different from said first assembly, including a sidewall and a metal chafer, with the second band forming drum being expanded inside the first assembly to press the second assembly against an inside of the first assembly to form a third assembly;
- a shaping drum movable between a fourth position and a fifth position on a second axis b—b extending parallel to said first axis a—a for insertion and expansion of the shaping drum in the third assembly;
- a belt drum movable from a sixth position on said second axis b—b for lamination of a belt ply and a tread to form a cylindrical belt-tread assembly, said fourth position, said fifth position and said sixth position being spaced apart sufficiently for performing separate tire forming steps;
- a first transfer, movable between said first position on said first axis a—a and said fourth position on said second axis b—b, for holding and transferring of said first assembly and said third assembly, and
- a second transfer, movable between said fifth position and said sixth position on said second axis b—b, for receiving the belt-tread assembly assembled on said belt drum and delivering said belt-tread assembly at the position of said shaping drum for pressing the third assembly on said shaping drum against an inner peripheral surface of the belt-tread assembly.

5,853,526
TIRE ASSEMBLING AND VULCANIZATION

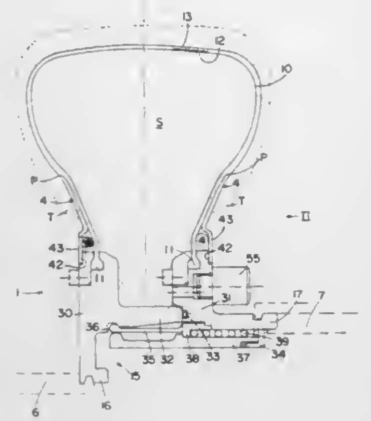
Daniel Laurent, Meylan, and Hervé Mousty, Orcet, both of France, assignors to Sedepro, Paris, France

Continuation of Ser. No. 449,419, May 24, 1995, abandoned. This application Jan. 23, 1997, Ser. No. 785,422

Claims priority, application France, May 27, 1994, 94 06656

Int. Cl.^{6} B29D *30/12*

U.S. Cl. 156—396 **4 Claims**



1. A transportable tire manufacturing module for building a tire outside a mold and vulcanizing a tire within a mold, said module comprising an inflatable and deflatable flexible bladder having an outer tire building and molding surface, a bladder holder having relatively movable plates for anchoring the bladder along opposite edges of the bladder, the plates being separated to facilitate the removal of the vulcanized tire from the module, a central hub receiving means in one of the plates of the bladder holder for the rotation of the module during the deposit of products on the bladder, actuatable locking means between the relatively movable plates which are accessible and releasable through the hub receiving means for holding the plates together during the building and vulcanization of the tire and permitting them to be separated for the removal of the vulcanized tire from the module, the holder and bladder defining an inflatable enclosure which, in inflated condition, has a toroidal shape which serves as an inner reference surface for building and vulcanizing a tire, sealing means between the plates when the plates are held together, valve means in the holder for introducing and discharging an inflation medium into and from the enclosure for inflating and deflating the bladder, the enclosure being adapted to contain a heated fluid during vulcanization, at least one rigid wall mounted on one of the plates adjacent to the outside of the bladder in the region of the inner periphery of the bladder adjacent the anchored edges thereof, said rigid wall being retractable radially and inwardly over the bladder to permit removal of the tire from the module after vulcanization and moving outwardly when the bladder is inflated to provide a circumferentially continuous supporting surface for building the inner side wall of the bead portion of the tire during the assembling of the tire and a molding surface for the inner surface of the bead portion of the tire during vulcanization, and axially opposite coupling parts on the module adapted to be coupled with releasable grasping means and in which the said wall is formed by an assembly of members which are articulated on said plate, around an axis perpendicular to a radial plane, forming a continuous inner convex surface engagable with the bladder and outer concave surface on which the inner surface of the bead portion of the tire is built and molded when the bladder is inflated, the members being arranged alternately one below the other in retracted position.

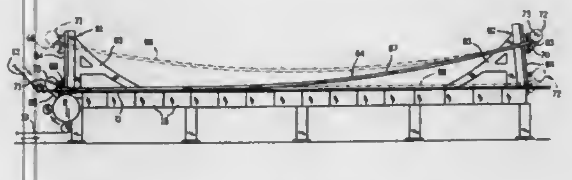
5,853,527
STATIONARY HOLDDOWN MAT FOR CORRUGATOR DOUBLE BACKER

Carl R. Marschke; Harold D. Welch, and James A. Cummings, all of Phillips, Wis., assignors to Marquip, Inc., Phillips, Wis.

Continuation of Ser. No. 643,627, May 6, 1996, Pat. No. 5,746,010, which is a continuation-in-part of Ser. No. 494,327, Jun. 26, 1995, Pat. No. 5,561,918. This application Jul. 31, 1997, Ser. No. 904,071

Int. Cl.^{6} B31F *1/00*

U.S. Cl. 156—470 **15 Claims**



1. An apparatus for providing an adjustable holddown force on the upper surface of a laminated paperboard web traveling over a flat web-supporting surface, said apparatus comprising:
- a flexible mat extending over the web in the direction of web travel, said mat providing a load directly to the web; and.
- a lift device operative to move one mat end generally vertically with respect to the web to vary the length of the mat resting upon the web.

5,853,528
METHOD FOR MANUFACTURING LAMINATES AND APPARATUS PERFORMING THE METHOD

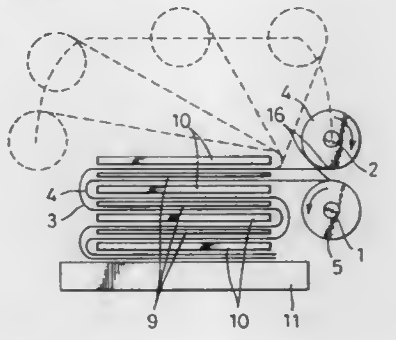
Hiroshi Maeda; Kazushi Kawamura, and Takeshi Okamoto, all of Kadoma, Japan, assignors to Marsushita Electric Works. Ltd., Osaka, Japan

Filed Mar. 18, 1997, Ser. No. 819,294

Claims priority, application Japan, Mar. 21, 1996, 8-064666

Int. Cl.^{6} B30B *7/02;* B32B *31/20*

U.S. Cl. 156—474 **15 Claims**



1. An apparatus for manufacturing laminates, characterized in comprising a laminate block forming device including two rolls of continuous metal sheets would respectively on each of two reels, driving power sources for transferring the continuous metal sheet rolls respectively in vertical directions and in horizontal directions while keeping the continuous metal sheets in tension, and a working table for forming thereon a laminate block; an electric power source for electrically heating the two continuous metal sheets in the laminate block; and a molding press for pressing the laminate block in a state of being electrically heated.

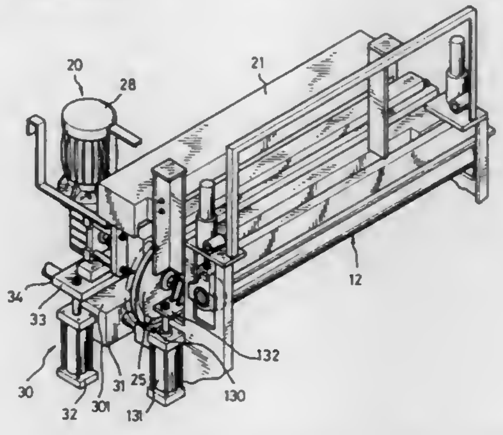
5,853,529
MACHINE FOR CUTTING AND FUSING PLASTIC PLATES

Tien-Fu Yeh, No. 53, Alley 87, Lane 538, Sec. 4, Anho Rd., Tainan, Taiwan

Filed Sep. 26, 1997, Ser. No. 938,861

Int. Cl.^{6} B32B *31/00*

U.S. Cl. 156—512 **4 Claims**



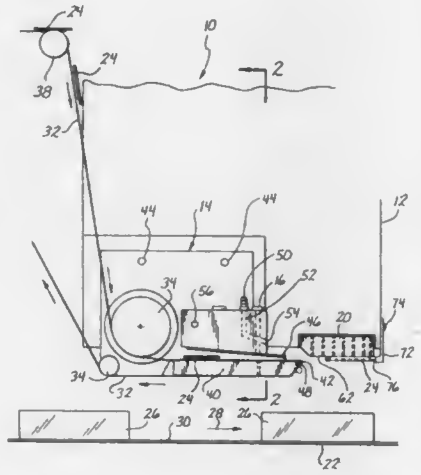
1. A machine for cutting and fusing plastic plates, comprising:
- a feeding means for feeding said plastic plates;
- a first compressing device disposed next to said feeding means and having a first supporting plate being flush with said feeding means and at least one first compressing plate which is controlled by at least one first cylinder disposed beside said first supporting plate;
- a cutting means disposed next to the first compressing means and having a frame transversely disposed above said first compressing means and a first motor disposed to one of two ends of said frame, a first pulley driven by said first motor and the other end of said frame having a second pulley disposed

thereto so that a belt is movably reeved around said first pulley and said second pulley, said belt having a base member fixedly connected thereto which is connected to a disk blade connected to a second motor;

a second compressing means movably connected to said first supporting plate and having a second supporting plate being flush with said first supporting plate and a second compressing plate which is connected to at least one second cylinder disposed beside said second supporting plate, and

a fusing means disposed next to the second compressing means and having two shafts and one of said shafts being driven by a third motor, two transmitting belts respectively reeved around said two shafts and each having a securing member disposed thereto so that a heating blade is connected between said two securing members.

5,853,530
LABEL APPLICATOR
George Allen, Irvine, Calif.. assignor to Label Aire Inc., Fullerton, Calif.
Filed Apr. 11, 1997, Ser. No. 833,967
Int. Cl.^{6} B32B *31/00*
U.S. Cl. 156—541 **15 Claims**



1. A label applicator for applying a label having an adhesive side and a non-adhesive side to an article, comprising:

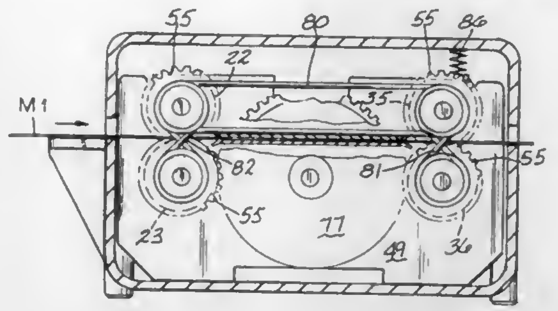
a supporting structure;

a label receiver having a receiving face which is adapted to receive and releasably retain a label, the receiving face having a plurality of openings in fluid connection with a plurality of passageways extending through the label receiver, at least some of the plurality of passageways being adapted for connection to a supply of compressed gas and for transmitting a blast of the gas through at least some of the plurality of openings and against the label retained on the receiving face to transfer the label to the article;

a label dispenser mounted to the supporting structure for dispensing a label in a predetermined direction of travel onto the receiving face; and

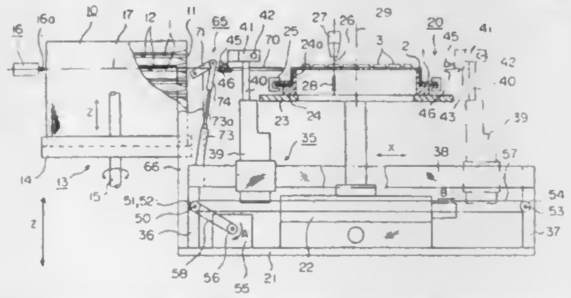
a manifold having a passageway with a first end for fluid connection with a supply of gas, said passageway being in fluid connection with at least one orifice for discharging a flow of said gas against the rear and across the non-adhesive side of the label and towards the label receiver to assist in moving the label onto the receiving face; wherein said orifice is oriented so that said gas discharge flows in a direction ranging from parallel to away from said receiving face.

5,853,531
LAMINATING MACHINE
Willis A. Murphy, Deep River, and Peter J. Anderson, Madison, both of Conn., assignors to 1 Figments 5, LLC, Madison, Conn.
Filed Sep. 24, 1997, Ser. No. 936,443
Int. Cl.^{6} B32B *31/00*
U.S. Cl. 156—555 **16 Claims**



1. A laminating machine which comprises upper and lower platens defining a passage therethrough for material to be laminated, upper and lower rolls for accepting material passed between said platens, end support members for said rolls, drive means connected to the lower of said rolls at one end thereof, normally meshing gears on said rolls at the ends opposite said drive means whereby said lower roll may drive said upper roll, means pivotally mounting said upper roll to said end support members whereby said upper roll may pivot upwardly, pulley means on each of said rolls and a belt connecting said pulley means whereby said lower roll may drive said upper roll when said upper roll pivots upwardly to an extent where said gears are out of mesh.

5,853,532
WAFER RING SUPPLY AND RETURN DEVICE
Osamu Nakamura, Kokubunji; Shigeru Ichikawa, Higashiyamato, and Tsuneharu Arai, Fussa, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Aug. 16, 1996, Ser. No. 698,666
Claims priority, application Japan, Aug. 18, 1995, 7-232108
Int. Cl.^{6} B32B *35/00*
U.S. Cl. 156—584 **2 Claims**



1. A wafer ring supply and return device in a semiconductor processing apparatus, said device comprising:

a wafer ring cassette in which wafer rings having wafer sheets with semiconductor pellets adhesively mounted thereon are held,

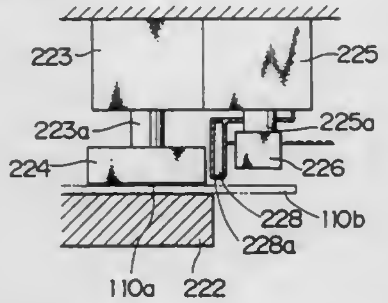
an elevator device which raises and lowers said wafer ring cassette,

a wafer ring conveying means which conveys said wafer rings one at a time from said wafer ring cassette to a pellet pick-up device and then returns depleted wafer rings from which said semiconductor pellets have been removed to said wafer ring cassette,

a pair of guide rails which guide both side edges of said wafer rings conveyed by said wafer ring conveying means, said pair of guide rails being pivotable between a vertical and horizontal positions about a rotary shaft provided adjacent to said wafer ring cassette, and

an actuating means for causing said pair of guide rails to pivot from said vertical position to said horizontal position so that said pair of guide rails are positioned horizontally when said wafer rings are being conveyed.

5,853,533
WAFER SLICE BASE PEELING SYSTEM
Masuaki Yasunaga, and Takeshi Kagamida, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., LTD., Tokyo, Japan
Division of Ser. No. 835,637, Apr. 10, 1997, Pat. No. 5,759,344, which is a division of Ser. No. 398,179, Mar. 2, 1995, abandoned. This application Feb. 20, 1998, Ser. No. 27,207
Claims priority, application Japan, Mar. 22, 1994, 6-075286; Jun. 20, 1994, 6-162824
Int. Cl.^{6} B32B *35/00*
U.S. Cl. 156—584 **3 Claims**



1. A wafer slice base peeling system comprising:

a clamp base for receiving a substrate portion of a wafer;

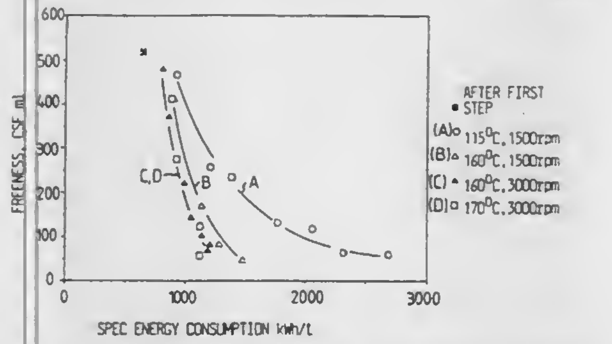
a clamper for fixing said substrate portion to said clamp base;

a pusher arranged near said clamper at a side of a slice base, which is adhered to said substrate portion of said wafer, for pushing said slice base;

a nozzle placed between said clamper and said pusher and provided with a blow-off opening to a boundary portion between said substrate portion and said slice base; and.

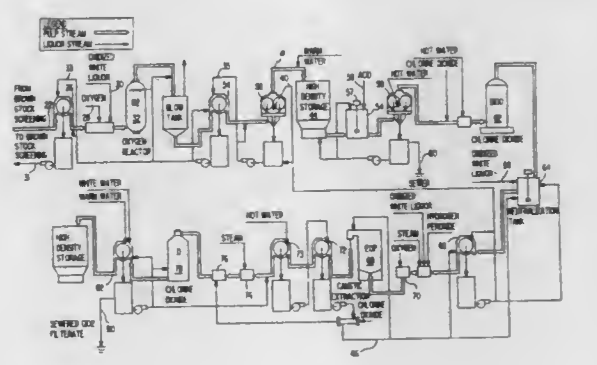
hot air generating means connected with said nozzle for generating hot air at a predetermined temperature.

5,853,534
METHOD OF PRODUCING PULP WITH HIGH YIELD USING A TWO-STAGE REFINING SYSTEM OPERATING AT DIFFERENT TEMPERATURES
Hans Höglund, Matfors; Roland Bäck, Njurunda, and Ove Danielsson, Stockholm, all of Sweden, assignors to Sunds Defibrator Industries AB, Sweden
Continuation of Ser. No. 464,882, Jun. 29, 1995, abandoned. This application Sep. 18, 1997, Ser. No. 932,526
Claims priority, application Sweden, Dec. 30, 1992, 9203943
Int. Cl.^{6} D21B *1/02*
U.S. Cl. 162—23 **21 Claims**



1. A method for producing pulp from lignocellulose-containing fibrous material with a yield of greater than about 85% comprising: feeding said lignocellulose-containing fibrous material to a first refining step conducted at a first temperature less than the softening temperature of lignin, mechanically processing said lignocellulose-containing fibrous material in said first refining step to produce a first refined lignocellulose-containing fibrous material, feeding said first refined lignocellulose-containing fibrous material to a second refining step conducted at a second temperature greater than the softening temperature of lignin, and mechanically processing said first refined lignocellulose-containing fibrous material in said second refining step to produce said pulp.

5,853,535
PROCESS FOR MANUFACTURING BLEACHED PULP INCLUDING RECYCLING
Gerald E. Maples; Joseph R. Caron, both of Pensacola, Fla., and John A. Fleck, Westchester, Ohio, assignors to Champion International Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 224,690, Apr. 8, 1994, which is a division of Ser. No. 944,327, Sep. 14, 1992, Pat. No. 5,352,332, which is a continuation-in-part of Ser. No. 873,673, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 646,179, Jan. 28, 1991, abandoned. This application Nov. 7, 1994, Ser. No. 335,099
Int. Cl.^{6} D21C *11/04;11/10*
U.S. Cl. 162—30.1 **52 Claims**



1. A process for manufacturing bleached wood comprising subjecting wood pulp having a Kappa Number equal to or less than about 30 after at least one brown stock washing stage to the following steps:

a first acidic bleaching stage wherein the pH at some point during said bleaching stage is less than 7; and

an oxidative alkaline extraction stage wherein the pH at some point during said extraction stage is greater than 7; and said process further comprising:

subjecting said pulp to an acid wash wherein the pH at some point during said acid wash is less than 7, prior to said first acidic bleaching stage to remove all or a portion of non-process metals contained in said pulp;

recycling countercurrently all or a portion of the filtrate from said first acidic bleaching stage and all or a portion of the filtrate from said oxidative alkaline extraction stage as wash water to said at least one brownstock washing stage and to a weak black liquor to form a weak black liquor which comprises said recycled filtrates;

recycling said weak black liquor to a black liquor evaporation stage to produce a strong black liquor which comprises chloride and/or potassium salts and sulfur containing compounds;

combusting said strong black liquor to produce a smelt stream and a flue gas comprising particulates which comprise chloride and/or potassium salts and sulfur containing compounds and separating said smelt stream and said flue gas;

treating said flue gas to separate said particulates as ash, and treating said ash to form a component relatively low in

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chloride and/or potassium salts and relatively rich in sulfur containing compounds and a component comprising chloride and/or potassium salts; and

recycling said component relatively low in chloride and/or potassium salts and relatively rich in sulfur containing compounds to the strong black liquor and discharging said component comprising chloride and/or potassium salts; and

recycling said smelt to a causticizing system to regenerate pulping liquor.

5,853,536

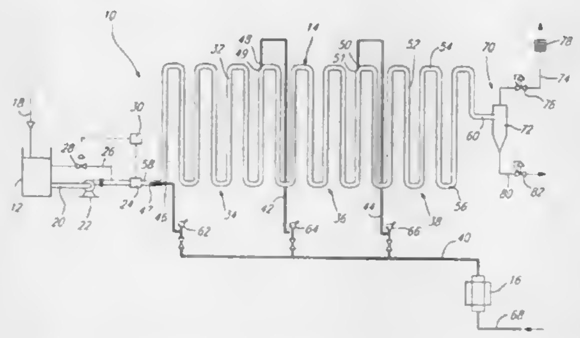
METHOD FOR OZONE BLEACHING OF CELLULOSIC PULP AT LOW CONSISTENCY

Derek Hornsey, Beaconsfield; John Ayton, Delta; Michel Epiney, Duvernay, and Gordon Homer, West Vancouver, all of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada LTEE, Quebec, Canada

Filed Sep. 27, 1996, Ser. No. 718,706

Int. Cl.^{6} D21C *9/14;9/153*

U.S. Cl. 162—65 **10 Claims**



1. A method of bleaching an aqueous cellulosic pulp at low consistency comprising:

(i) exposing an aqueous cellulosic pulp at low consistency to a bleaching with at least one of chlorine and chlorine dioxide to effect partial bleaching of the pulp,

(ii) flowing aqueous partially bleached cellulosic pulp from step (i) along a flow line effective to provide a high ratio of flow path of aqueous pulp to length of effective travel of the aqueous pulp,

(iii) introducing ozone under pressure into said aqueous pulp in a total amount effective to further bleach the pulp, said ozone being injected into said flow path through a plurality of spaced apart injection ports,

the ozone injected at each port being a fraction of said total amount,

the fraction of ozone injected at each port and the spacing of the ports being such that a low partial pressure of ozone is established in said flow path, effective for chemical oxidation of lignin in the pulp by the ozone with low chemical attack of cellulose in the pulp by the ozone, and with the amount of ozone injected at the spaced apart injection ports along the flow path being a controlled amount such that the aqueous cellulosic pulp arriving at each immediate downstream port has substantially consumed all of the ozone entrained during the flow of the aqueous cellulosic pulp from each immediate upstream injection port.

5,853,537

PROCESS FOR TREATING PULPWOODS AND PULPS WITH A PITCH DEGRADING FUNGUS OF THE GENUS OPHIOSTOMA

Robert A. Blanchette, Shoreview, Minn.; Roberta L. Farrell, Danvers, Mass.; Yitzhak Hadar, Rehovot, Israel; Johnnie E. Merritt, II; Robert A. Snyder, both of Ashland, Va.; Philip A. Wendler, Belmont, and Wendy Zimmerman, Newton, both of Mass., assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Continuation of Ser. No. 188,371, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 891,620, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 566,940, Aug. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 310,814, Feb. 13, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 465,638

Int. Cl.^{6} C12N *1/14;* **D21H** *25/02*

U.S. Cl. 162—72 **69 Claims**

1. A process for reducing the pitch content of pulpwood or pulp without substantially degrading cellulose content comprising applying to the pulpwood or pulp a biologically pure inoculum of a wood penetrating, pitch-degrading fungus of the genus Ophiostoma, said inoculum being derived from a purified culture of said fungus and applying to the pulpwood or pulp the fungus in an amount effective for reduction of the pitch content of the pulpwood or pulp and maintaining the inoculated pulpwood or pulp under conditions which allow growth of the inoculated fungus for a time sufficient to effect a reduction of the pitch content of the pulpwood or pulp by such fungus.

5,853,538

METHOD OF PRODUCING A NONWOVEN MATERIAL AND NONWOVEN MATERIAL PRODUCED ACCORDING TO THE METHOD

Lennart Reiner, Matfors, Sweden, assignor to SCA Hygiene Paper AB, Göteborg, Sweden

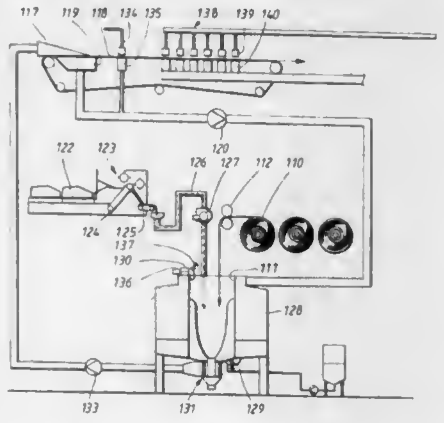
PCT No. PCT/SE95/00847, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/02701, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 12, 1995, Ser. No. 750,864

Claims priority, application Sweden, Jul. 13, 1994, 9402468; Jul. 13, 1994, 9402470

Int. Cl.^{6} D21H *13/00;25/16*

U.S. Cl. 162—101 **12 Claims**



1. Method of producing a nonwoven material for use in hydroentangling of a fibre web, said method comprising the steps of:

metering dry fibres, natural and/or synthetic, into a dispersion vessel, the fibres being dispersed in a foamable liquid comprising water and a tenside for forming a foamed fibre dispersion,

applying the foamed fibre dispersion to a wire in a closed and, during forming, foam-filled forming unit, and

recirculating the foamable liquid, after passing through the wire, to the dispersion vessel in a simple closed circuit via a closed foam tank in which the foamable liquid is separated into a liquid phase and a lighter foam phase,

wherein liquid from the bottom of the foam tank is led to the dispersion vessel via a first pipeline and the foam pass to the dispersion vessel via a second pipeline in the top of the foam tank,

wherein fibres are added to the dispersion vessel and dispersed in he foamable liquid, and

wherein the pressure in the foam tank is kept substantially constant.

5,853,539

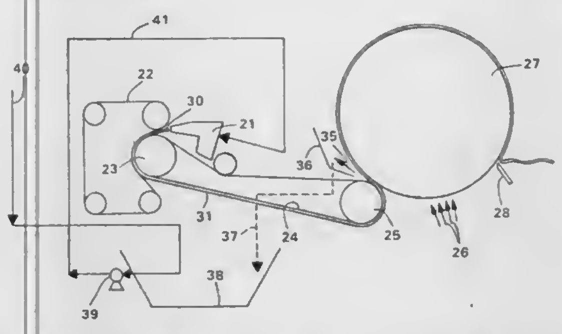
METHOD OF APPLYING DRY STRENGTH RESINS FOR MAKING SOFT, STRONG, ABSORBENT TISSUE STRUCTURES

Michael John Smith, Neenah, and Stephen John McCullough, Fond du Lac, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Jul. 21, 1997, Ser. No. 897,327

Int. Cl.^{6} D21H *21/18*

U.S. Cl. 162—112 **7 Claims**



1. A method for making a creped tissue comprising: (a) forming a wet tissue web by depositing an aqueous papermaking furnish onto a forming fabric; (b) partially dewatering the tissue web; (c) applying a creping adhesive and one or more dry strength agents to the surface of a Yankee dryer, said dry strength agent being selected from the group consisting of modified starches, gums, and polyacrylamides; (d) adhering the tissue web to the surface of the Yankee dryer with a pressure roll such that the dry strength agent is transferred to the tissue web wherein water is removed from the web and water and the dry strength agent are recycled to the aqueous papermaking furnish of step (a); and (e) creping the web.

5,853,540

WATER-RESISTANT RECORDING MATERIAL FOR INKJET PRINTING

Axel Niemoller; Klaus Gotzen, both of Duren, and Manuel Gold, Koblenz, all of Germany, assignors to SIHL GmbH, Duren, Germany

PCT No. PCT/EP95/04848, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/20091, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 8, 1995, Ser. No. 836,376

Claims priority, application Germany, Dec. 24, 1994, 44 46 551.3

Int. Cl.^{6} B41M *5/00;* **D21H** *13/26;13/24;13/08*

U.S. Cl. 162—135 **12 Claims**

1. Water-resistant recording material for an inkjet process using water-based inks, said recording material comprising:

a substrate paper containing from 10% by weight to 90% by weight of cellulosic fibers and from 40% by weight to 1% by weight of synthetic fibers, said synthetic fibers selected from the group consisting of polyamide fibers, polyester fibers, viscose fibers, and mixtures thereof,

said substrate paper comprising from 50% by weight to 5% by weight of binder selected from the group consisting of polyvinyl acetate, polyvinyl acetate copolymers, styrene/butadiene copolymers, styrene/butadiene/acrylonitrile terpolymers, styrene/(meth)acrylate copolymers, (meth)acrylic polymers and ethylene/(meth)acrylic acid copolymers, said binder excluding water soluble polymer binders;

at least one recording layer arranged on at least one main surface of the substrate paper said recording layer having a basis weight of 10 g/m^2 to 50 g/m^2 and containing an abrasion-resistant pigment and a dried residue of an aqueous polymer dispersion as polymeric binder;

said aqueous polymer dispersion having a minimum film formation temperature between −20° C. and +50° C. and, if desired, said recording layer further containing a water soluble binder selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, starch, starch derivatives and a crosslinking agent for the binder; and

said recording material after storage for 24 hours at 23° C. in water having over 80% of a tear strength of said recording material before said storage in water, measured according to DIN 53128 and having a colour difference ΔE of less than 10, measured according to DIN 6174, of areas of primary colours applied to the recording layer in an inkjet process, based on initial colour values before said storage in water.

5,853,541

DEGRADABLE COTTON BASE CELLULOSIC AGRICULTURAL MAT

Stephen H. Monroe, Memphis, Tenn.; James A. Goettmann, and Gerald A. Funk, both of North East, Pa., assignors to International Paper Company, Tuxedo Park, N.Y.

Continuation-in-part of Ser. No. 386,487, Feb. 10, 1995, Pat. No. 5,532,298. This application Jun. 28, 1996, Ser. No. 671,874

Int. Cl.^{6} D21F *11/00;* **D21H** *13/00;17/00;21/00*

U.S. Cl. 162—141 **13 Claims**

1. A degradable ground cover comprising cotton linters, hardwood kraft pulp, softwood kraft pulp, and a water holdout material.

5,853,542

METHOD OF SIZING PAPER USING A SIZING AGENT AND A POLYMERIC ENHANCER AND PAPER PRODUCED THEREOF

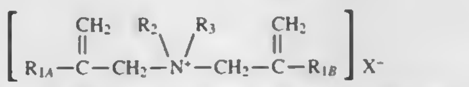
Kyle J. Bottorff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 11, 1995, Ser. No. 526,812

Int. Cl.^{6} D21H *17/45;17/72;23/76;21/16*

U.S. Cl. 162—168.2 **62 Claims**

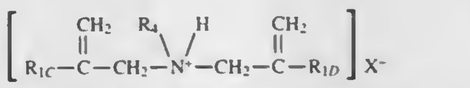
1. A method of producing sized paper with enhanced sizing property characteristics which comprises employing in the manufacture of sized paper sizing agent and a sizing enhancer that is a polymerization reaction product of monomer consisting essentially of at least one quaternary diallylammonium monomer of formula (I):



$$\left[R_{1A}-\overset{\overset{\displaystyle CH_2}{\|}}{C}-CH_2-\overset{R_2\ \ \ R_3}{\overset{\diagdown\ \diagup}{N^+}}-CH_2-\overset{\overset{\displaystyle CH_2}{\|}}{C}-R_{1B} \right] X^-$$

(I)

and at least one diallylammonium monomer of formula (II):



$$\left[R_{1C}-\overset{\overset{\displaystyle CH_2}{\|}}{C}-CH_2-\overset{R_4\ \ \ H}{\overset{\diagdown\ \diagup}{N^+}}-CH_2-\overset{\overset{\displaystyle CH_2}{\|}}{C}-R_{1D} \right] X^-$$

(II)

where R_{1A}, R_{1B}, R_{1C} and R_{1D} are independently hydrogen or C_1–C_{22} straight chain or branched alkyl;

R_2 and R_3 are independently alkyl, alkenyl or aryl;

R_4 is hydrogen, alkyl, alkenyl or aryl; and

X^- is a monovalent anion or a multivalent equivalent of a monovalent anion, wherein the sizing enhancer contains about 20 to about 98 mole percent of units from the monomer of formula (I) and about 80 to about 2 mole percent of units from the monomer of formula (II) and wherein the sizing agent and size enhancer are added in amounts sufficient to produced a sized paper containing from about 0.005 wt % to about 1.5 wt % of the sizing agent, and from about 0.002 wt % to about 0.6 wt % of the sizing enhancer, based on the weight of the dried sized paper.

5,853,543

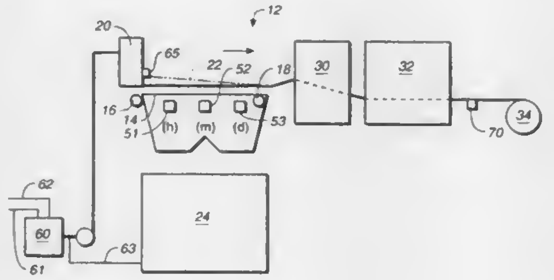
METHOD FOR MONITORING AND CONTROLLING WATER CONTENT IN PAPER STOCK IN A PAPER MAKING MACHINE

Hung-Tzaw Hu, Saratoga, and Francis Tu, Cupertino, both of Calif., assignors to Honeywell-Measurex Corporation, Cupertino, Calif.

Filed Jan. 27, 1997, Ser. No. 789,086

Int. Cl.^{6} D21F *11/00;* G01N *33/34*

U.S. Cl. 162—198 **22 Claims**



1. A method of predicting the dry stock weight of a sheet of material that is on a moving water permeable fabric of a de-watering machine that includes a dryer section located downstream from the water permeable fabric said method comprising the steps of:

a) placing three or more water weight sensors adjacent to the fabric wherein the sensors are positioned at different locations in the direction of movement of the fabric and placing a sensor to measure the dry weight of the sheet material after exiting the dryer section;

b) operating the machine at predetermined operating parameters aid measuring the water weights of the sheet of material at the three or more locations on the fabrics with the water weight sensors and simultaneously measuring the dry weight of a part of the sheet of material exiting the dryer section;

c) performing bump tests to measure changes in water weight in response to perturbations in three or more operating parameters wherein each bump test is performed by alternately varying one of the operating parameters while keeping the others constant, and calculating the changes in the measurements of the three or more water weight sensors and wherein the number of bump tests correspond to the number of water weight sensors employed;

d) using said calculated changes in the measurements from stop c to obtain a N×M matrix that expresses changes in the three or more water weight sensors as a function of changes in the three or more operating parameters about the predetermined operating parameters wherein N is equal to the number of water weight sensors employed and M is equal to the number of bump tests performed and N is equal to or greater than M; and

e) developing an inverted N×M matrix that provides the predicted dry weight for a segment after being dried in the dryer section based on measurements from the three or more water weight sensors for said segment of the sheet of material on the moving fabric.

5,853,544

TWIN WIRE FORMER

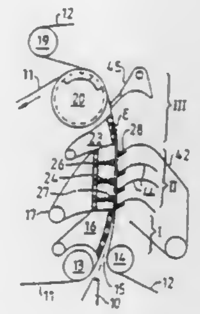
Dieter Egelhof; Klaus Henseler, both of Heidenheim, Germany; Werner Kade, Neenah, Wis.; Albrecht Meinecke, Heidenheim, Germany; Wilhelm Wanke, Heidenheim, Germany; Hans-Jurgen Wulz, Heidenheim, Germany, and Rudolf Bück, deceased, late of Heidenheim, Germany, by Else Bück, executor, assignors to J.M. Voith GmbH, Germany

Continuation of Ser. No. 556,769, Nov. 2, 1995, Pat. No. 5,718,805, which is a continuation of Ser. No. 286,948, Aug. 8, 1994, Pat. No. 5,500,091, which is a continuation of Ser. No. 55,918, Apr. 29, 1993, Pat. No. 5,389,206, which is a continuation of Ser. No. 773,965, Nov. 12, 1991, abandoned. This application Feb. 13, 1998, Ser. No. 23,435

Claims priority, application Germany, Aug. 22, 1989, 39 27 597.3

Int. Cl.^{6} D21F *1/00*

U.S. Cl. 162—203 **2 Claims**



1. A method for the production of a paper web from a fiber suspension in a twin wire former comprising:

causing first and second web forming wire belts to travel along a path together to form a twin wire zone of the twin wire former, with the web between the wire belts as the wire belts travel along the path through the twin wire zone, each wire belt forming an endless loop;

feeding the wire belts across a single forming roll at the start of the path through the twin wire zone;

supporting the wire belts such as to form a wedge shaped entrance slot into the twin wire zone;

supplying a fiber suspension from a headbox directly to the wedge shaped entrance slot of the twin wire zone;

draining water from the fiber suspension by means of the forming roll in order to form the web from the fiber suspension;

feeding the wire belts with the fiber suspension and the web being generated therebetween downstream of the forming roll between a plurality of first drainage strips, which are positioned within the loop of the first wire belt for contacting the first wire belt, and a plurality of second drainage strips, which are positioned within the loop of the second wire belt for contacting the second wire belt, the first strips being shifted in position along the path of the wire belts with respect to the second strips so that the first and second strips are offset and in a non-opposing relationship;

resiliently supporting the first drainage strips against the first wire belt that the strips contact;

rigidly supporting the second drainage strips against the second wire belt;

supplying a vacuum in the area of the second drainage strips;

feeding the wire belts with the web therebetween downstream of said drainage strips across a stationary drainage element in the twin wire zone such that as the wire belts travel over the stationary drainage element, water is drained through the wire belt in contact with said stationary drainage element; and

maintaining the twin wire zone apart from said single forming roll free of rolls which would deflect the twin wire zone.

5,853,545

ARRANGEMENT FOR FEEDING STOCK TO A HEADBOX IN A PAPERMAKING MACHINE

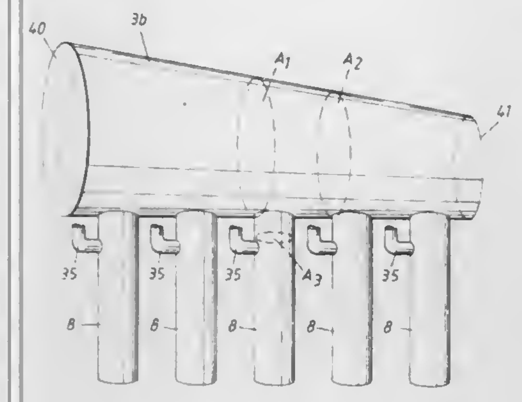
N. Ulf A. Haraldsson, Karlstad, Sweden; Jyrki M. Huovila, Muurame, Finland; Ingvar B. E. Klerelid, and Louise M. Törnefalk, both of Karlstad, Sweden, assignors to Valmet-Karlstad AB, Karlstad, Sweden

Filed Mar. 7, 1997, Ser. No. 811,888

Claims priority, application Sweden, Mar. 8, 1996, 9600943

Int. Cl.^{6} D21F *1/08*

U.S. Cl. 162—343 **3 Claims**



1. An apparatus for feeding diluted paper stock to a papermaking machine, said apparatus comprising:

(a) at least one stock header for feeding stock to the papermaking machine, said at least one stock header having an inlet end and an opposite recirculation end and defining a header flow direction extending therebetween, said header further defining a row of uniformly spaced outlets each having a predetermined cross sectional area for permitting stock to flow from the header in a direction generally perpendicular to the header flow direction, said stock header being tapered to define a cross sectional area which decreases from each outlet to the adjacent outlet in the header flow direction by an amount equal to the cross sectional area of each said outlet such that the flow velocity through the stock header is substantially equal to the flow velocity into each outlet;

(b) a recirculation conduit connected to a recirculation exit adjacent said recirculation end of said stock header;

(c) a recirculation valve located at the recirculation exit and permitting control of the static pressure at the recirculation end of said stock header;

(d) a stock conduit connected to each of said stock header outlets having an upstream end connected to the respective stock header outlet and a downstream end adapted to be attached to the inlet end of the papermaking machine, said stock conduits each having a predetermined inner cross sectional area equal to the cross sectional area of the connected stock header outlet;

(e) a dilution header for feeding a diluent to at least one of said stock conduits, said dilution header having an inlet and a plurality of outlets permitting the diluent to leave the dilution header; and

(f) a diluent conduit connected to each of said dilution header outlet and permitting a diluent to pass from the respective dilution header outlet through said diluent conduit to one of said plurality of stock conduits for diluting the stock passing therethrough, each of said diluent conduits having an upstream end connected to the respective dilution header and a downstream end connected to the respective stock conduit.

5,853,546

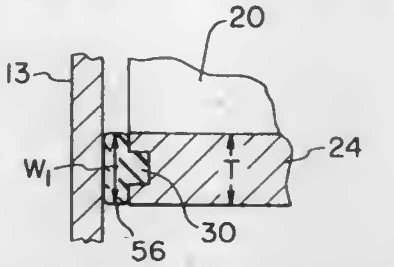
SEALED TITANIUM SLICE LIP FOR A HEADBOX

Edwin X. Graf, Menasha, Wis., assignor to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Aug. 21, 1997, Ser. No. 915,813

Int. Cl.^{6} D21F *1/02*

U.S. Cl. 162—344 **14 Claims**



1. A headbox for a paper-making machine, said headbox including an inlet for receiving a fiber suspension and an outlet for discharging the fiber suspension, said headbox comprising:

a plurality of walls including an apron and a pair of side plates, said side plates disposed at opposite ends of said headbox, said apron comprised of steel;

a beam extending between said side plates and including opposite ends, each said end disposed a predetermined distance from a respective said side plate when at an ambient temperature, said beam comprised of steel;

a slice lip carried by said beam, said slice lip positioned at said outlet and including a working edge defining an outlet gap with said apron, said slice lip having a height extending substantially orthogonal to said working edge, said slice lip having a pair of longitudinal ends, each said longitudinal end disposed a predetermined distance from a respective said side plate when at the ambient temperature, each said longitudinal end including a slot extending from and substantially orthogonal to said working edge, said slice lip consisting essentially of titanium; and

a pair of seals, each said seal being disposed in a respective one of said slots and extending substantially across said height of said slice lip, each said seal sealing between a respective said longitudinal end of said slice lip and a respective said side plate along said height of said slice lip, each said seal comprised of a non-woven, porous material.

5,853,547

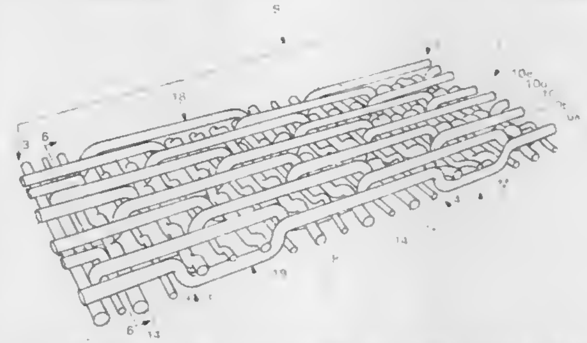
PAPERMAKING FABRIC, PROCESS FOR PRODUCING HIGH BULK PRODUCTS AND THE PRODUCTS PRODUCED THEREBY

Frederick W. Ahrens, Hortonville, Wis.; Thomas Gulya, Raleigh, N.C.; Gary L. Worry, Appleton, and Walter P. Wright, Larsen, both of Wis., assignors to Asten, Inc., Charleston, S.C.

Continuation of Ser. No. 628,235, Apr. 4, 1996, abandoned. This application Oct. 18, 1996, Ser. No. 733,934

Int. Cl.^{6} D21F *1/10*

U.S. Cl. 162—348 **18 Claims**



1. A papermaker's fabric for forming and transporting an aqueous paper web comprising a single layer fabric having machine

direction filaments interwoven with alternating smaller and larger cross direction filaments to form a pattern of knuckles and baskets, the fabric characterized by: each machine direction filament being woven over seven cross direction filaments, three of said seven cross direction filaments of each MD sheet side float being of the larger diameter and four of said seven cross direction filaments being of the smaller diameter, and

the smaller diameter cross direction filaments forming central support members at the bottom of said baskets.

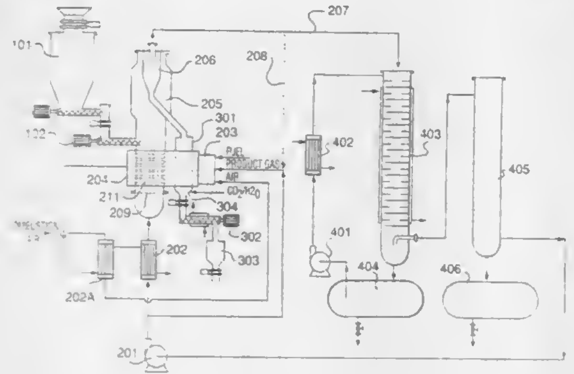
5,853,548
ENERGY EFFICIENT LIQUEFACTION OF BIOMATERIALS BY THERMOLYSIS

Jan Piskorz; Piotr Majerski, and Desmond Radlein, all of Waterloo, Canada, assignors to RTI Resource Transforms International Ltd., Canada

Continuation-in-part of Ser. No. 650,947, May 20, 1996. This application Sep. 11, 1996, Ser. No. 712,191

Int. Cl.⁶ C10B *49/10*

U.S. Cl. 201—7 **20 Claims**



1. A process for the thermolysis of shredded biomass, comprising:

(a) introducing the biomass, shredded to a sufficiently small size so that its size does not limit significantly the production of combustible vapours, aerosols and gas, into a thermolysis reactor having a bed of inert material with a height to width ratio greater than one;

(b) introducing substantially non-oxidizing gas upwardly through the bed at a linear velocity so as to cause automatic elutriation of product char and fluidizing of the bed of inert material to form a fluidized bed;

(c) heating indirectly the fluidized bed so that the substantially non-oxidizing gas and fluidized bed have a temperature in the range of 360° to 490° C. and the substantially non-oxidizing gas and fluidized bed cause the thermolysis of the biomass producing an effluent reactor stream comprising hot char particles and volatiles, namely, gas, aerosols, and vapours; and

(d) removing the elutriated char particles from the effluent reactor stream;

wherein the fluidized bed is sufficiently deep so that the residence time of the substantially non-oxidizing gas in the reactor is greater than 2 seconds.

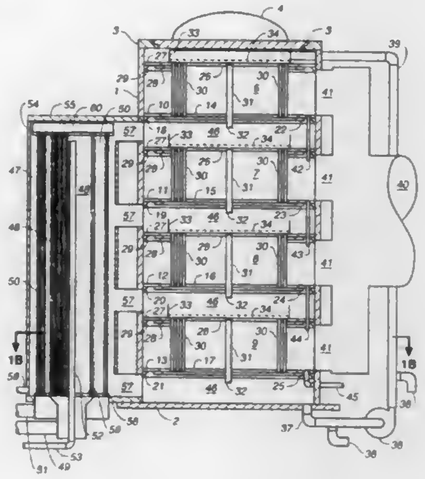
5,853,549
DESALINATION OF SEAWATER BY EVAPORATION IN A MULTI-STACK ARRAY OF VERTICAL TUBE BUNDLES, WITH WASTE HEAT.

Hugo H. Sephton, 120 York Ave., Kensington, Calif. 94708

Continuation-in-part of Ser. No. 405,170, Mar. 14, 1995, abandoned. This application Oct. 4, 1996, Ser. No. 726,126

Int. Cl.⁶ B01D *1/22;3/10;3/42;* C02F *1/04*

U.S. Cl. 203—2 **11 Claims**



1. A process for evaporation of a liquid by single-effect downflow vertical tube evaporation, with heat of low value used to drive said evaporation, comprising:

(a) providing for a vertically stacked unit of several multi-tube evaporation stages, wherein said stages are a multiplicity of said stages within a single evaporator vessel;

(b) heating said stages in parallel with low temperature waste heat in the range of about 100° to 160° F. under vacuum at the same temperature in each of said stacked stages; (c) cascading said liquid to downflow as films through said stacked unit of evaporation stages and partially evaporating said liquid producing vapor;

(d) controlling vapor pressure drop within said tubes in said stages during said partial evaporation of said liquid and (e) condensing said vapor to produce distilled liquid.

8. A process for desalination of seawater by single-effect downflow vertical tube evaporation with power plant turbine reject steam being applied to cause said evaporation, comprising:

(a) providing for a unit consisting of a multiplicity of vertically stacked bundles of vertical evaporation tubes, wherein said unit of stacked bundles are within a single evaporator vessel, or providing for a multiplicity of several units in parallel array within said single evaporator vessel to increase the capacity for producing vapor from said seawater;

(b) heating said unit by flowing said steam at a temperature in the range of about 100° to 160° F. under vacuum via parallel steam conduits into said tube bundles and by condensing said steam on said tubes at constant temperature with controlled pressure losses;

(c) partially evaporating said seawater by causing said seawater to downflow as films through said vertical evaporation tubes through said multiplicity of vertically stacked bundles to produce vapor from said seawater;

(d) controlling vapor pressure drop during said partial evaporation and

(e) condensing said vapor to form distilled water product.

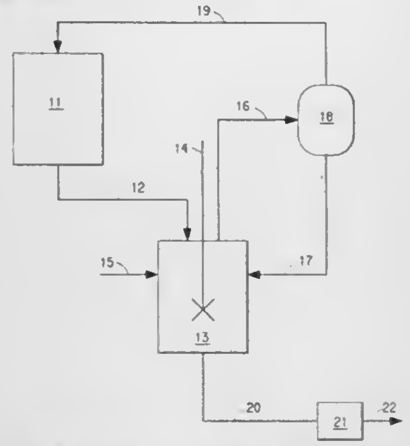
5,853,550
PROCESS FOR SEPARATING TAR FROM A REACTION MIXTURE

Robert Brent Landers, Ponca City, Okla.; Vijay Kumar Gupta, Hockessin, Del., and Vinci Martinez Felix, Kennett Square, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 12, 1996, Ser. No. 631,394

Int. Cl.⁶ B01D *3/36*

U.S. Cl. 203—29 **9 Claims**



1. A process for separating tar and non-volatile reagents from hydrogen fluoride and other reaction components of a reaction mixture formed in the production of 1,1-difluoroethane (HFC-152a) wherein hydrogen fluoride and at least one halogenated carbon compound selected from the group consisting of chloroethene, fluoroethene, 1,1-dichloroethane, and 1-chloro-1-fluoroethane (HCFC-151a) are allowed to react in a liquid phase, optionally in the presence of metal halide catalyst and other additives, comprising the steps of:

(a) removing a liquid phase aliquot from the reaction mixture,

(b) distilling a first portion of components from the liquid phase aliquot to form a remainder,

(c) combining with the remainder at least one saturated halogenated hydrocarbon solvent and optionally HF, and

(d) distilling a second portion of components comprising HF and saturated halogenated hydrocarbon solvent therefrom resulting in a composition comprising saturated halogenated hydrocarbon solvent, tar, and non-volatile reagents.

5,853,551
PROCESS FOR THE SEPARATION OF ALPHA-OLEFINS BY DISTILLATION OF AN EFFLUENT COMPRISING ETHYLENE AND 1-BUTENE

Pierre Boucot, Ternay; Jean-Alain Chodorge, Antony; Alain Forestiere, Vernaison; Yves Glaize, Saint Symphorien D'Ozon, and François Hughes, Vernaison, all of France, assignors to Institut Francais du Petrole, France

Filed Jul. 23, 1996, Ser. No. 720,384

Claims priority, application France, Jul. 24, 1995, 95 09059

Int. Cl.⁶ B01D *3/34;3/14*

U.S. Cl. 203—70 **21 Claims**

1. In a process for the separation of a mixture comprising: (a) ethylene, (b) a hydrocarbon cut principally comprising hydrocarbons containing 4 carbon atoms per molecule of which the major portion is 1-butene, (c) a hydrocarbon cut principally comprising hydrocarbons containing at least 6 carbon atoms per molecule of which the major portion consists of alpha-olefins containing at least 6 carbon atoms per molecule, the ethylene content of said mixture being in the range 30% to 70% by weight, said process comprising conducting the in separation in a distillation zone to obtain an overhead fraction and a bottoms fraction, the improvement comprising supplying said distillation zone with supplemental 1-butene in an amount in the range 1 to 40 times the quantity by weight of 1-butene present in said mixture and conducting the distillation so as to obtain an overhead fraction comprising the major portion of the ethylene present in said mixture and between 0% and 100% by weight of the total of both the 1-butene present in said mixture and in said supplemental 1-butene.

5,853,552
PROCESS FOR THE PRODUCTION OF ELECTROLUMINESCENCE ELEMENT, ELECTROLUMINESCENCE ELEMENT

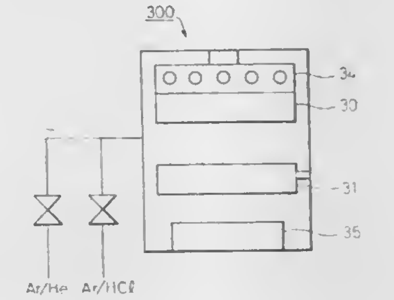
Hajime Ishihara, Nagoya; Yutaka Hattori, Okazaki; Masayuki Katayama, Handa; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 7, 1994, Ser. No. 300,552

Claims priority, application Japan, Sep. 9, 1993, 5-250063; Sep. 9, 1993, 5-250064; Dec. 17, 1993, 5-344343

Int. Cl.⁶ C23C *14/34*

U.S. Cl. 204—192.26 **8 Claims**



1. A process for producing an electroluminescence element provided with a luminescent layer sandwiched between two electrodes on an insulating substrate, said luminescent layer being composed of a host material with a luminescent center element added, said process comprising:

pretreating an atmosphere of a growth chamber by introducing a chlorine-containing gas and an inactive gas into said growth chamber prior to forming said luminescent layer;

replacing, after said pretreating step, said atmosphere in said growth chamber with an inactive gas free from said chlorine-containing gas; and

depositing, in said inactive gas, said luminescent layer onto said insulating substrate by a sputtering method using a source material composed of said host material with said luminescent center element added, said luminescent center element being a fluoride selected from samarium fluoride terbium oxyfluoride and manganese fluoride.

5,853,553
SACRIFICIAL ANODE AND METHOD OF MAKING SAME

Richard Twigg, Muskogee, Okla., assignor to Alumax Extrusions, Inc., Cressona, Pa.

Division of Ser. No. 713,564, Sep. 13, 1996, Pat. No. 5,728,275. This application Jan. 5, 1998, Ser. No. 3,049

Int. Cl.⁶ C25B *11/00*

U.S. Cl. 204—286 **6 Claims**

1. A method of making a sacrificial anode, comprising the steps of:

(a) extruding a galvanically active metal to form a rod having an anchoring end portion;

(b) forging an end cap having a generally cylindrical portion from the anchoring end portion of the rod; and

(c) machining threads on the generally cylindrical portion of the end cap.

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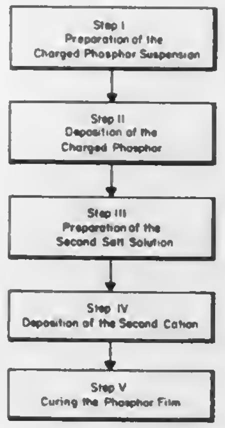
5,853,554
COMPOSITION AND METHOD FOR PREPARING PHOSPHOR FILMS EXHIBITING DECREASED COULOMBIC AGING

Christo Pavel Bojkov; Leif Goran Fredin, both of Austin; Nalin Kumar, Canyon Lake, and Howard Khan Schmidt, Houston, all of Tex., assignors to SI Diamond Technology, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 382,319, Feb. 1, 1995, abandoned. This application Mar. 27, 1996, Ser. No. 622,307

Int. Cl.^{6} C25D *13/02*

U.S. Cl. 204—487 **11 Claims**



1. A process for producing a phosphor screen comprising the following steps:

preparing a charged phosphor suspension, wherein said suspension comprises a plurality of phosphor particles having a cation adsorbed to said phosphor particles;

electrophoretically depositing said charged phosphor particles onto a conductive substrate to form a phosphor film;

preparing an inorganic salt solution, said solution having a different composition than said phosphor suspension;

depositing said inorganic salt onto said phosphor film;

curing said phosphor film with said deposited salt in an oxidizing atmosphere.

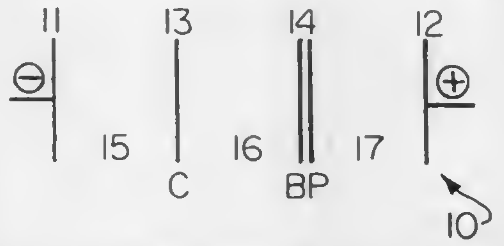
5,853,555
SYNTHESIS OF ONIUM HYDROXIDES FROM ONIUM SALTS

Hossein Sharifian, and David R. Hulme, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.

Filed Apr. 3, 1997, Ser. No. 832,266

Int. Cl.^{6} B01D *61/44*

U.S. Cl. 204—537 **31 Claims**



1. A process for preparing onium hydroxide from a corresponding onium salt and for purifying onium hydroxide comprising:

(A) providing an electrochemical cell comprising a cathode, an anode, a divider and a bipolar membrane, the bipolar membrane having an anion selective side facing the anode and a cation selective side facing the cathode, wherein the divider is positioned between the cathode and the bipolar membrane, and the bipolar membrane is positioned between the divider and the anode, thereby defining a feed compartment between the divider and the bipolar membrane, a recovery compartment between the divider and the cathode, and a water compartment between the bipolar membrane and the anode;

(B) charging a solution comprising at least one of the onium salt and the onium hydroxide to be purified to the feed compartment;

(C) charging a liquid electrolyte to the other compartments;

(D) passing a current through the electrochemical cell to produce the onium hydroxide in the recovery compartment; and

(E) recovering the onium hydroxide from the recovery compartment.

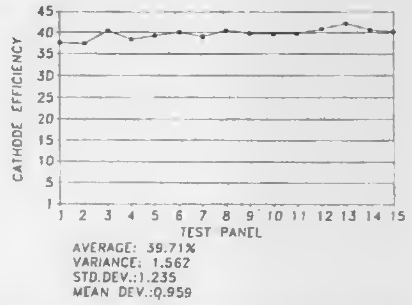
5,853,556
USE OF HYDROXY CARBOXYLIC ACIDS AS DUCTILIZERS FOR ELECTROPLATING NICKEL-TUNGSTEN ALLOYS

Walter J. Wieczerniak, Shelby Township, Mich., assignor to Enthone-OMI, Inc., Warren, Mich.

Continuation of Ser. No. 615,133, Mar. 14, 1996, abandoned. This application May 22, 1997, Ser. No. 861,894

Int. Cl.^{6} C25D *3/56;21/18*

U.S. Cl. 205—101 **20 Claims**



1. A process for continued electroplating of tungsten alloys with greater cathode efficiency and producing improved ductile deposits comprising electroplating of a tungsten alloy plate from a bath comprising:

an effective amount of tungsten ions;

an effective amount of metal ions selected from the group consisting of nickel, iron, cobalt and mixtures thereof;

an effective amount of a hydroxy carboxylic acid and an effective amount of ammonium ions; and

replenishing the above bath with tungsten ions by addition of an effective amount of a tungsten replenishing additive consisting essentially of ionic tungsten complexed with a hydroxy carboxylic acid prior to addition to the bath, said effective amount being sufficient for restoring tungsten ion concentration which was depleted from the bath during electroplating, whereby the cathode efficiency is improved and the ductility of the deposit is improved.

5,853,557
LOW FRICTION, DUCTILE, MULTILAYER ELECTRODEPOSITS

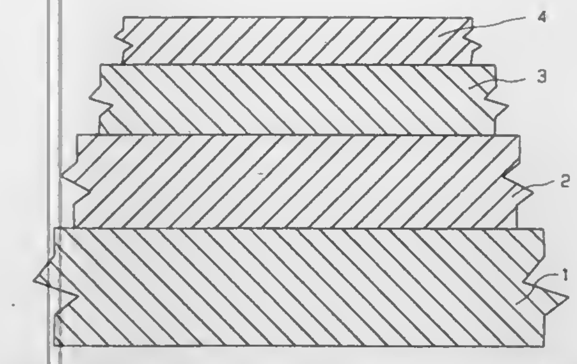
Theresa R. Souza, Cranston, and Allen E. Molvar, Barrington, both of R.I., assignors to Handy & Harman, North Attleboro, Mass.

Continuation-in-part of Ser. No. 627,542, Apr. 4, 1996, Pat. No. 5,667,659. This application Apr. 4, 1997, Ser. No. 833,009

Int. Cl.^{6} C25D *15/00*

U.S. Cl. 205—109 **14 Claims**

1. A method for reducing the force necessary for assembling separable electronic components which comprises providing mating surfaces of the components with a surface layer electrodeposited over at least a portion of the components, said surface layer comprising tin, lead, silver or an alloy thereof and at least about 5 weight percent of co-deposited polymeric particles having a diameter of about 0.1 to 0.45 μm dispersed throughout, wherein the surface layer has a thickness sufficient to provide an initial, relatively lower coefficient of friction to the electrodeposit, but which, after being removed during the assembling of the components or thereafter to expose portions of the components, has a relatively higher coefficient of friction.



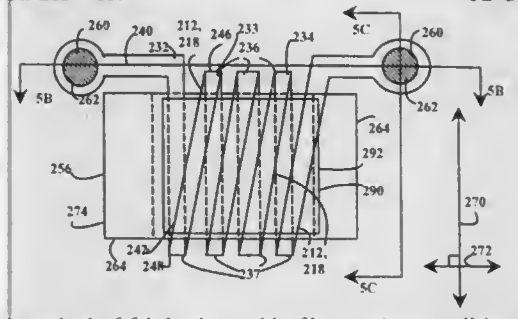
5,853,558
METHOD OF FABRICATING A THIN FILM CONDUCTOR COIL ASSEMBLY

G. Robert Gray, Fremont, and Arun Malhotra, San Jose, both of Calif., assignors to AIWA Research and Development Inc., Fremont, Calif.

Division of Ser. No. 390,470, Feb. 17, 1995, Pat. No. 5,621,594. This application Jan. 31, 1997, Ser. No. 789,913

Int. Cl.^{6} C25D *5/02*

U.S. Cl. 205—119 **32 Claims**



1. A method of fabricating a thin film conductor coil assembly comprising:

forming a plurality of via holes in a ceramic substrate having a substantially planar first surface and an opposing second surface, the via holes extending from the first surface to the second surface;

filling the plurality of via holes with a conductive material passing from the first surface to the second surface of the ceramic substrate to form a conducting pathway across the ceramic substrate;

forming a first patterned coil layer on the substantially planar first surface of the ceramic substrate including forming a plurality of mutually detached first coil layer elements, elements of the first coil layer having a first end and a second end;

depositing a first insulating layer overlying the first coil layer, leaving exposed the first and second ends of the first coil layer elements;

forming a magnetic core overlying the first insulating layer and insulated from the first patterned coil layer;

depositing a second insulating layer overlying the magnetic core, leaving exposed the first and second ends of the first coil layer elements; and

forming a second patterned coil layer overlying the second insulating layer and insulated from the magnetic core by the second insulating layer, the second patterned coil layer including a plurality of mutually detached second coil layer elements, elements of the second coil layer having a first end coupled to the first end of a first element of the first coil layer elements and having a second end coupled to the second end of a second element of the first coil layer elements, the first and second elements of the first coil layer being different elements so that the first and second coil layer elements are coupled in an alternating sequence having a first end and a second end, the first and second ends of the alternating sequence being coupled to vias of the plurality of the conductive material filled vias.

5,853,559
APPARATUS FOR ELECTROPLATING A SEMICONDUCTOR SUBSTRATE

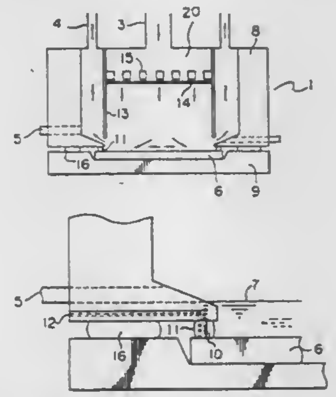
Masahiro Tamaki, and Katsuya Kosaki, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1997, Ser. No. 891,870

Claims priority, application Japan, Feb. 17, 1997, P 09-031854

Int. Cl.^{6} C25D *7/12;* **C25B** *9/00;* **B05B** *5/025*

U.S. Cl. 205—157 **8 Claims**



1. An electroplating apparatus comprising:

an electrolyte tank including a base for supporting a semiconductor wafer, a tank body sealable at a first seal to the base to define a volume inside the electrolyte tank, and sealing means for sealing a peripheral portion of an upper surface of a semiconductor wafer supported on the base in the tank to the tank body at a second seal;

gas introducing means for pressurizing the volume; and

electrolyte discharge means for discharging an electrolyte from the volume pressurized by a gas introduced by the gas introducing means, the electrolyte discharge means including a discharge tube extending through a wall of the tank body to a position immediately above the semiconductor wafer within the volume.

5,853,560
ELECTROLYTIC MAGNESIUM PRODUCTION PROCESS USING MIXED CHLORIDE-FLUORIDE ELECTROLYTES

Ram A. Sharma, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1997, Ser. No. 801,888

Int. Cl.^{6} C25C *3/04*

U.S. Cl. 205—405 **4 Claims**

1. A method of producing magnesium metal using a feedstock comprising a material selected from the group consisting of magnesium chloride, magnesium oxide and mixtures of magnesium chloride and magnesium oxide, said method comprising

adding said feedstock to an electrolytic cell comprising a molten salt electrolyte, an anode and a cathode immersed in said electrolyte, said electrolyte consisting essentially of magnesium cations and lithium and/or calcium cations and chloride and fluoride anions, the composition of said anions and cations corresponding to a molten salt mixture of magnesium fluoride and at least two salts selected from the group consisting of LiF, LiCl, CaF_2 and $CaCl_2$; and

applying a direct current potential to said anode and cathode.

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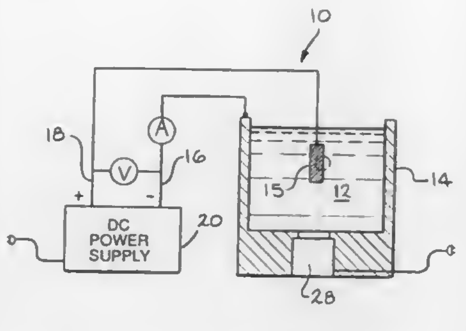
5,853,561
METHOD FOR SURFACE TEXTURING TITANIUM PRODUCTS

Bruce A. Banks, Olmstead Township, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 23, 1997, Ser. No. 999,562

Int. Cl.^{6} C25F *3/08*

U.S. Cl. 205—646 **19 Claims**



7. A method of texturing the surface of a titanium or titanium alloy workpiece with a pattern of pock mark pores comprising the steps of:

a) providing a metal tank,
b) filling said metal tank with a near saturated solution of sodium chloride and water,
c) immersing the workpiece to be textured within said solution of sodium chloride and water,
d) electrically connecting said workpiece to the positive terminal of a direct current power source wherein said workpiece becomes an anode electrode,
e) electrically connecting said metal tank to the negative terminal of said direct current power source wherein said tank becomes a cathodic electrode,
f) imposing a direct current voltage across said anodic and cathodic electrodes,
f) introducing ultrasonic vibrations into said into said solution of sodium chloride and water wherein said vibrations are transmitted through said solution to the surface of said workpiece.

15. The method as claimed in claim 7 including the step of cycling the imposed electrical current on and off.

5,853,562
METHOD AND APPARATUS FOR ELECTROLYZING WATER

Toshio Eki; Akemi Kuroda; Toshiharu Otsuka, and Yoshinobu Uchimura, all of Kita-kyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan

PCT No. PCT/JP95/01310, § 371 Date Dec. 27, 1996, § 102(e) Date Dec. 27, 1996, PCT Pub. No. WO96/00700, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 30, 1995, Ser. No. 765,598

Claims priority, application Japan, Jun. 30, 1994, 6-172066

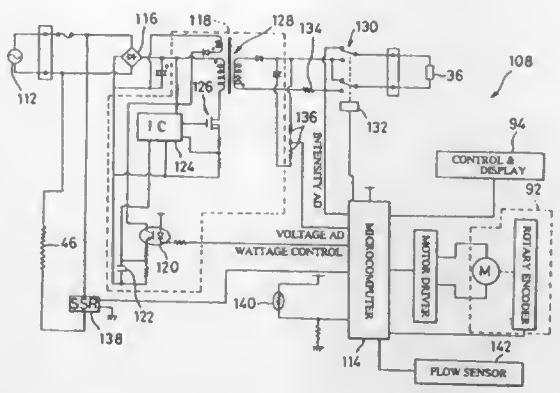
Int. Cl.^{6} C02F *1/461*

U.S. Cl. 205—743 **5 Claims**

1. A method for electrolyzing water that extends the life of the electrodes, characterized by repeating in sequence the steps of:

subjecting water to electrolysis by feeding water through an electrolytic cell having a pair of electrodes facing with each other without intervention of a membrane therebetween and by applying a DC potential of a first polarity between said electrodes; and

removing precipitates deposited on the electrodes during the preceding step by stopping feed of water through the cell and by applying a DC potential of a second polarity opposite the first polarity between said electrodes while water between the electrodes stays stagnant and whereby precipitates are dissolved into the stagnant water.



5,853,563
TREATMENT OF WASTE PETROLEUM

Ian Stanley Ripley, 75 The Willows, Marton, Middlesbrough, Cleveland TS7 8BP, and Antony Hugh Needham, 50 Thames Avenue, Guisborough, Cleveland TS14 8AF, both of Great Britain

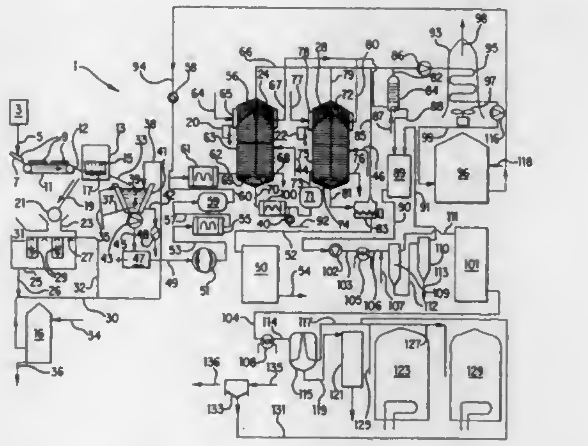
PCT No. PCT/GB94/00099, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/17155, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 19, 1994, Ser. No. 492,070

Claims priority, application United Kingdom, Jan. 19, 1993, 9300969

Int. Cl.^{6} C10G *21/00*

U.S. Cl. 208—13 **23 Claims**



1. A process for reclaiming petroleum from waste petroleum which comprises the steps of isolating a water petroleum composition that has a solids content of from about 1 weight percent to about 98 weight percent, a petroleum content of from about 1 weight percent to about 98 weight percent, and a water content of from about 1 weight percent to about 98 weight percent, in which the petroleum is mixed with solids and water contaminants, decoupling association of the petroleum with the contaminants by solvent treatment and subjecting the solvent containing mixture with petroleum to an ultrasonic treatment at a rate in cycles per second sufficient to note an increase in the separation of the solids component from the petroleum component without substantial emulsification with the water that is present, wherein the combination of solvent and ultrasonic treatments activates the solvation of the petroleum such that more is extracted from solids on a per volume basis than with the solvent treatment alone, thereby to form a mixture comprising a solvent solution containing petroleum, and solids and water contaminants, separating the contaminants by washing with a non-solvent for the petroleum component and the solvent, and then separating the petroleum from the solvent.

5,853,564
PETROLEUM-WAX SEPARATION

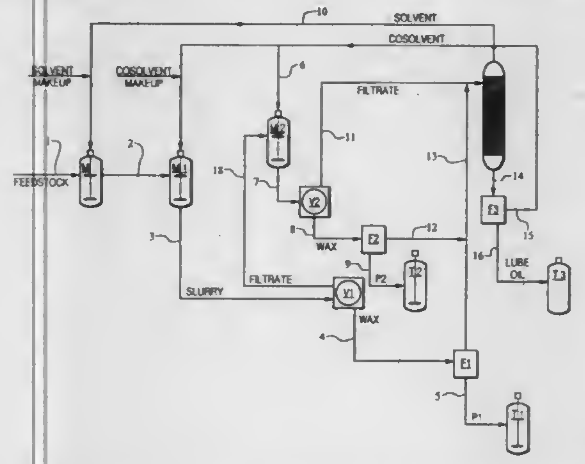
Michael D. Ackerson, Fayetteville, Ark.; Seyed-Hamid Arabshahi, Tehran, Islamic Rep. of Iran, and Robert E. Babcock, Fayetteville, Ark., assignors to University of Arkansas, Little Rock, Ark., and Advanced Refining Technologies, Inc., Lakewood, Colo.

Continuation of Ser. No. 465,759, Jun. 6, 1995, Pat. No. 5,620,588, which is a continuation of Ser. No. 279,801, Jul. 25, 1994, Pat. No. 5,474,668, which is a continuation-in-part of Ser. No. 17,024, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 653,626, Feb. 11, 1991, Pat. No. 5,196,116. This application Apr. 14, 1997, Ser. No. 833,242

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.^{6} C10G *73/06*

U.S. Cl. 208—33 **23 Claims**



1. A petroleum wax separation process for separating the wax and oil in a waxy feedstock comprising the steps of:

combining a waxy feedstock at a temperature at least at about its pour point with a solvent essentially free of a cosolvent to form a feedstock/solvent mixture,

adding the cosolvent to the feedstock/solvent mixture to cause wax to precipitate and form a first feedstock/solvent/cosolvent slurry, said cosolvent being essentially immiscible with the wax at and below the mixing temperature, essentially immiscible with the oil, miscible with the feedstock/solvent mixture, and significantly miscible with water,

filtering said first slurry at a reduced pressure to form a first wax product and a first filtrate having a lower temperature than that of said first slurry,

adding cosolvent to said first filtrate to induce additional wax precipitation and form a second slurry, and

filtering said second slurry to form a second filtrate and a second wax product.

5,853,565
CONTROLLING THERMAL COKING

Roger Cayton, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Apr. 1, 1996, Ser. No. 625,935

Int. Cl.^{6} C10G *9/16*

U.S. Cl. 208—48 AA **14 Claims**

1. A method for controlling thermal coking in a petroleum residuum containing a coke promoting compound, which comprises:

blending a petroleum residuum containing a coke promoting compound with an attenuating agent to produce a treated residuum, wherein the attenuating agent is present in the treated residuum as dispersed solid particles and, wherein the coke promoting compound is not a porphyrin and includes molybdenum, and wherein the attenuating agent includes an attenuating metal selected from the group consisting of antimony, lead, tin, bismuth or a mixture thereof;

thermal coking the treated residuum at reaction conditions including a hydrogen partial pressure of about 0.01 to about 2 atmospheres, a temperature in the range of about 400 to about 500 degrees C., and a residence time of about one to about forty hours to produce coke and a distillate boiling range product; and

recovering the distillate product in a measurable proportion, based on the weight of the petroleum residuum blended, which is significantly greater than the proportion recoverable without blending the petroleum residuum with the attenuating agent.

5,853,566
ZEOLITE-BETA CONTAINING CATALYST COMPOSITIONS AND THEIR USE IN HYDROCARBON CONVERSION PROCESSES FOR PRODUCING LOW BOILING POINT MATERIALS

Bettina Kraushaar-Czarnetzki, and Johannes Wijnbelt, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 25, 1996, Ser. No. 755,989

Claims priority, application European Pat. Off., Nov. 28, 1995, 95203269

Int. Cl.^{6} C10G *47/16*

U.S. Cl. 208—109 **16 Claims**

1. A catalyst comprising as first cracking component a zeolite beta having a silica to alumina molar ratio of at least 50 which is in the form of crystals with sizes in the range from 20 to 95 nm, a second cracking component selected from the group consisting of (i) crystalline molecular sieves having pores with diameters greater than 0.6 nm, (ii) crystalline, mesoporous aluminosilicates having pores with diameters of at least 1.3 nm, and (iii) clays, and at least one hydrogenation component.

10. A process for converting a hydrocarbonaceous feedstock into lower boiling materials which comprises contacting the feedstock with hydrogen at elevated temperature and elevated pressure in the presence of a catalyst composition comprising as first cracking component a zeolite beta having a silica to alumina molar ratio of at least 50 which is in the form of crystals with sizes in the range of 20 to 95 nm; a second cracking component selected from the group consisting of (i) crystalline molecular sieves having pores with diameters greater than 0.6 nm, (ii) crystalline, mesoporous aluminosilicates having pores with diameters of at least 1.3 nm, and (iii) clays; and at least one hydrogenation component.

5,853,567
METHODS AND APPARATUS FOR THE VISCOSITY REDUCTION OF HEAVY HYDROCARBON FEEDSTOCKS

Luc Gouzien, Le Havre; Elisabeth Mouchot, Etoutteville; Pierre Lutran, Vincennes, and Marc Persing, St. Andresse, all of France, assignors to Total Raffinage Distribution, S.A., Puteaux, France

Filed Dec. 4, 1996, Ser. No. 759,520

Claims priority, application France, Dec. 4, 1995, 95 14313

Int. Cl.^{6} C10G *9/14;9/18;* F28D *7/00*

U.S. Cl. 208—132 **23 Claims**

1. A visbreaking method for a liquid heavy hydrocarbon feedstock comprising the steps of

bringing said feedstock to a temperature capable of cracking at least a portion of the hydrocarbons present in said feedstock,

introducing said feedstock into a lower portion of a maturation zone,

flowing said feedstock and products produced therefrom from the lower portion to an upper portion of said maturation zone,

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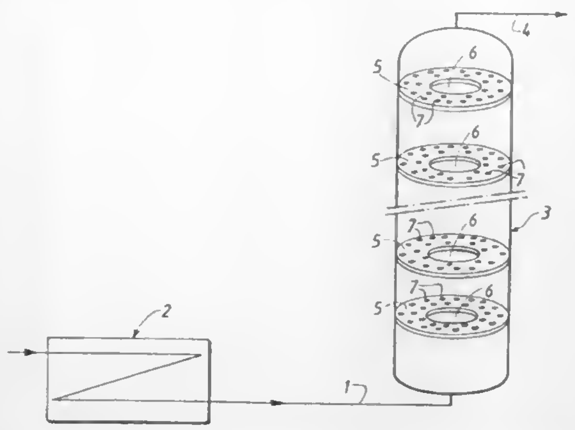


discharging the resulting products from the upper portion of said maturation zone,

said maturation zone containing a plurality of annular discs mounted transversely to the direction of flow displacement of the feedstock in said zone with each disc being spaced apart from one another and having a circular central passage substantially coaxial to a longitudinal axis of said maturation zone through which central passage flows the greatest portion of the feedstock and its products, which portion is several times any other portion flowing through any other non-central passage across such discs.

5,853,568
FLUID CAT CRACKING HEAVY USING STRIPPED CATALYST FOR FEED PREHEAT AND REGENERATOR TEMPERATURE CONTROL

John F. R. Brander, Tadworth, England, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 30, 1997, Ser. No. 903,425

Int. Cl.^{6} C10G *11/00;35/10*

U.S. Cl. 208—160 **11 Claims**

1. A fluid catalytic cracking process for producing lighter boiling products from a hydrocarbon feed which comprises the steps of:

(a) contacting said feed with a particulate, hot, regenerated cracking catalyst in a catalyst cracking reaction zone at conditions effective to catalytically crack said feed and produce lower boiling hydrocarbons and coked catalyst particles which contain strippable hydrocarbons;

(b) separating said lower boiling hydrocarbons from said coked catalyst particles which contain said strippable hydrocarbons;

(c) passing said coked catalyst particles which contain said strippable hydrocarbons into a stripping zone and stripping said strippable hydrocarbons from said coked catalyst particles to produced stripped, coked catalyst particles;

(d) passing said stripped, coked catalyst particles from said stripping zone into a catalyst regenerating zone, with at least a portion of said particles also passing through a heat exchange zone located between said stripping and regenerating zones, in which at least a portion of said feed is heated by said stripped, coked catalyst particles in indirect heat exchange relationship prior to being passed into said catalytic cracking zone;

(e) passing a gas comprising oxygen into said regenerating zone which operates at conditions effective for oxygen to oxidize said coke and regenerate said catalyst particles, and

(f) passing said regenerated catalyst particles into said catalytic cracking zone.

5,853,569
METHOD FOR MANUFACTURING A PROCESS OIL WITH IMPROVED SOLVENCY

Keith K. Aldous, League City; Jacob Ben Angelo, Spring, both of Tex., and Joseph Philip Boyle, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 10, 1997, Ser. No. 988,416

Int. Cl.^{6} C10G *21/00*

U.S. Cl. 208—212 **8 Claims**

1. A method for producing a process oil comprising:

hydrotreating a naphthenic rich feed at a temperature of from about 300° C. to about 375° C., a hydrogen partial pressure of 300 to 2500 psia and a space velocity of 0.1 to 2 (v/v/hr) to provide a hydrotreated feed;

removing hydrogen sulfide and ammonia from the hydrotreated feed to provide in a stripped hydrotreated feed;

adding an aromatic extract oil to the stripped hydrotreated feed in a volume ratio ranging between about 10% to 90% to provide an enriched feed; and,

solvent extracting the enriched feed to provide a process oil.

5,853,570
PROCESS FOR DESULFURIZING CATALYTICALLY CRACKED GASOLINE

Shigeto Hatanaka, Kanagawa; Osamu Sadakane; Satoru Hikita, both of Tokyo, and Tadao Miyama, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1996, Ser. No. 701,957

Claims priority, application Japan, Aug. 25, 1995, 7-239025

Int. Cl.^{6} C10G *45/60*

U.S. Cl. 208—216 PP **4 Claims**

1. The process for desulfurizing a feedstock oil of a catalytically cracked gasoline containing sulfur compounds and olefin components in a reactor having a reactor inlet which comprises hydrodesulfurizing the gasoline under reaction conditions shown in (a) below and using a desulfurization catalyst shown in (b) below;

(a) Reaction conditions:

a hydrogen feed rate measured at the reactor inlet of from 1 to 5 mols per mol of the feedstock oil and of from 5 to 50 mols per mol of the olefin components contained in the feedstock oil, a reaction temperature of from 200° to 300° C., a total pressure inside the reactor of from 10 to 20 kg/cm^{2}G, and a liquid hourly space velocity (LHSV) of from 2 to 8 l/hr;

(b) Catalyst:

a catalyst which comprises a support mainly comprising alumina and having a surface area of 200 m^2/g or larger, wherein MoO_3 in an amount of from 10 to 20 wt % and CoO in an amount of from 3 to 6 wt % in terms of inner content are fixed to the support, and the weight ratio of MoO_3 to the CoO is from 2.5 to 4.5, wherein the amount of MoO_3 fixed to the catalyst support is not more than 80% of the amount of MoO_3 capable of being dispersed on the surface of the support in the form of a monomolecular layer.

5,853,571
PYRITE DEPRESSANT USEFUL IN FLOTATION SEPARATION

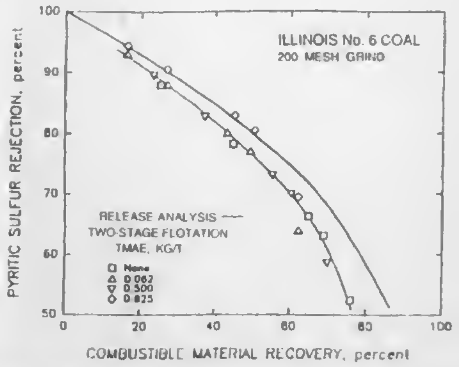
Guy H. Harris, 1673 Georgia Dr., Concord, Calif. 94519, and Douglas W. Fuerstenau, 1440 LeRoy Ave., Berkeley, Calif. 94708

Filed Jun. 17, 1997, Ser. No. 877,321

Int. Cl.^{6} B03D *1/014;1/06;1/012;1/01*

U.S. Cl. 209—167 **2 Claims**

1. Process for separating pyrite from sulfide ores and coal which comprises subjecting said sulfide ore or coal containing said pyrite to flotation in the presence of a depressant for pyrite, said depressant comprises about 0.05 to 0.75 pounds per ton of a pyrite depressant selected from the group consisting of



(1) R1, R2, R3 $N^+O_2H_4SR4X^-$

where

R1, R2 and R3 are lower alkyls wherein the final sum of the carbon atoms is in a range of 3 to 6,

X is chlorine, bromine or iodine, and

R4 is amidine.

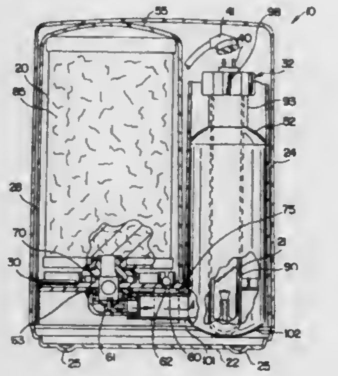
5,853,572
HOME WATER PURIFICATION SYSTEM

Roy W. Kuennen, Kentwood; Robin M. Dykhouse, Grand Rapids; Dennis J. Kool; Ronald C. Markham, both of Kentwood; Bradley J. Pippel, Grandville; Dennis E. Kidd, Rockford, and Merlin G. Tiede, Ada, all of Mich., assignors to Amway Corporation, Ada, Mich.

Continuation of Ser. No. 479,430, Jun. 7, 1995, abandoned, which is a division of Ser. No. 35,011, Mar. 22, 1993, Pat. No. 5,536,395. This application Jan. 25, 1997, Ser. No. 788,251

Int. Cl.^{6} B01D *35/143;36/00*

U.S. Cl. 210—87 **6 Claims**



1. A point of use water treatment system for home use comprising:

a pressed carbon block filter for removing particulates and organic contaminants from water, said filter comprising:

(i) an activated carbon having a narrow pore size distribution with a substantial number of pores that are 10 microns in diameter and less;

(ii) a high molecular weight low melt index polymeric binder which minimizes masking of said activated carbon; and

(iii) a radially inward flow path extending between a radially distal filter water inlet and a centrally located filter water outlet; and

a source of radiant ultraviolet energy for receiving water from said filter and killing microorganisms in said water, said source of radiant energy comprising:

(i) an elongate ultraviolet discharge lamp having an elongate central axis defining an axial direction;

(ii) means for establishing plug-like spiral flow with a substantial axial and tangential component about said elongate ultraviolet discharge lamp between a source water inlet and a source water outlet;

means for housing said pressed carbon block filter and said energy source;

interlock means for automatically disconnecting said energy source from a power supply when a user accesses said housing means;

filter monitoring means for monitoring the amount of water flowing through said filter and providing an indication to a user when said filter has reached end-of-life; and means for automatically reducing power to said energy source in response to a signal from said filter monitoring means

whereby filtration is optimized, ample water flow is provided, water quality is maximized and microbiological kill rates are enhanced.

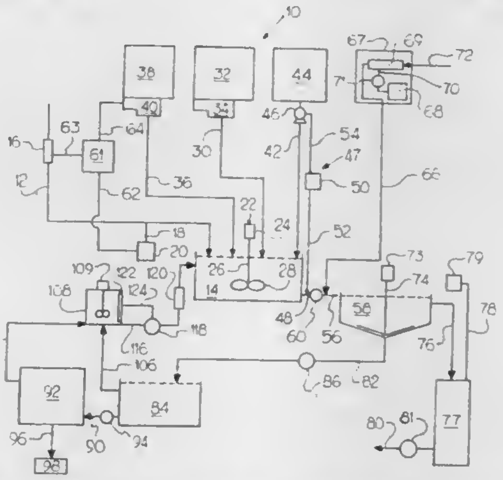
5,853,573
GROUNDWATER TOTAL CYANIDE TREATMENT APPARATUS

Albert Yablonsky, Woodsfield; Eugene R. Bolo, St. Clairsville, both of Ohio, and John D. Reggi, Wheeling, W. Va., assignors to Ormet Corporation, Wheeling, W. Va.

Division of Ser. No. 491,495, Jun. 16, 1995, Pat. No. 5,647,996. This application Jul. 11, 1997, Ser. No. 890,808

Int. Cl.^{6} C02F *1/58*

U.S. Cl. 210—96.1 **7 Claims**



1. An apparatus for the removal of total cyanide from aqueous solution, said apparatus comprising:

a reaction tank to hold the aqueous solution;

a lime tank in flow communication with said reaction tank;

a ferrous sulfate tank in flow communication with said reaction tank;

an acid tank for holding an acid, wherein said acid tank is in flow communication with said reaction tank;

a pH control assembly for controlling the flow of acid from said acid tank into said reaction tank; an influent flow meter; an influent sampler for determining total cyanide concentration in said aqueous solution; a ferrous sulfate feeder/conveyor assembly; a proportional controller, wherein said influent flow meter and said influent sampler are in electronic communication with said proportional controller and wherein said proportional controller is in electronic communication with said ferrous sulfate feeder/conveyor assembly to maintain a predetermined ratio of Fe/CN in said reaction tank;

a reaction tank agitation assembly having an agitator, wherein said agitator extends into an interior of said reaction tank;

a clarifier tank;

a clarifier feed conduit extending between said reaction tank and said clarifier tank;

means for transporting a mixture from said reaction tank to said clarifier tank; and

a polyelectrolyte tank in flow communication with said clarifier feed conduit.

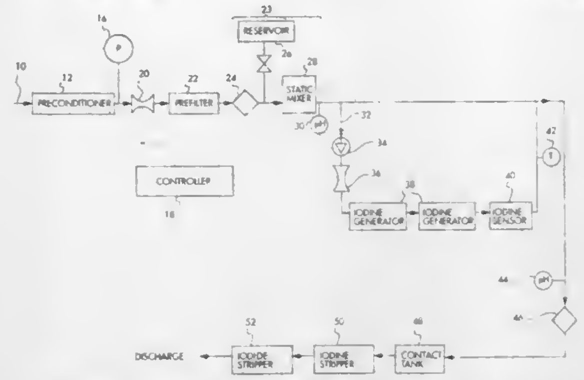
5,853,574
METHOD OF DISINFECTING WATER WITH IODINE SPECIES

Wayne A. Harvey, Halifax; Terence F. Mullins, and Daniel J. MacDonald, both of Dartmouth, all of Canada, assignors to IoSolutions Incorporated, Nova Scotia, Canada

Division of Ser. No. 701,762, Aug. 22, 1996. This application Apr. 1, 1998, Ser. No. 53,129

Int. Cl.⁶ C02F *1/76*

U.S. Cl. 210—103 **3 Claims**



1. A water treatment system for producing bacteria- and virus-free water from a bacteria- and virus-containing water supply, said system comprising

(a) generator means for holding solid elemental iodine and to allow solubilization of said iodine under dynamic aqueous flow;
(b) means for feeding a first portion of said water supply to said generator means to produce an aqueous concentrated iodine solution;
(c) means for providing a second portion of said water supply;
(d) means for providing said aqueous concentrated iodine solution to said second portion of said water supply to provide a blended water supply;
(e) storage means for holding said blended water supply to provide said bacteria- and virus-free water;
(f) means for measuring water flow of said first and said second portions;
(g) means for measuring the pH of said second portion;
(h) means for adjusting the pH of said second portion;
(i) means for measuring the temperature of said concentrated aqueous solution; and
(j) control means for receiving flow data, pH data and temperature data from said means for measuring flow of said first and said second portions, said means for measuring pH of said second portion, said means for measuring temperature of said concentrated aqueous solution and means for adjusting pH of said second portion.

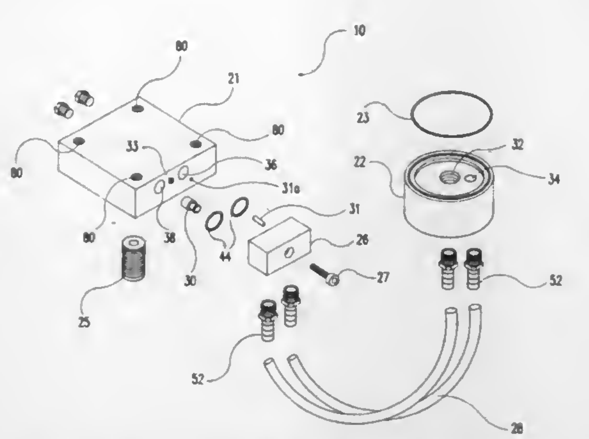
5,853,575
REMOTE MOUNT FUEL FILTER KIT WITH PRIME MAINTAINING CHECK VALVE

William W. Wydra, Ashland, and Mark D. Mensch, Catawissa, both of Pa., assignors to Ashland Technologies, Inc., Ashland, Pa.

Filed Nov. 14, 1996, Ser. No. 749,212

Int. Cl.⁶ B01D *35/02*

U.S. Cl. 210—136 **7 Claims**



1. A fuel filter assembly for remotely mounting a fuel filter to a fuel system of an internal combustion engine of a vehicle, said fuel filter assembly comprising:

a fuel filter including a fuel inlet and a fuel outlet at an upper end thereof,

a remote filter head including an upper surface, a lower surface, and a vertical mounting surface extending between said upper and lower surfaces, wherein said lower surface includes means for mounting said fuel filter thereto, an inlet channel extending from said mounting surface to the lower planar surface for connection to the fuel inlet of said fuel filter, an outlet channel extending from said mounting surface to the lower planar surface for connection to the outlet of the fuel filter, wherein said inlet channel includes a recess opening to said mounting surface;

a unitary connection block including a vertical mounting face and a horizontal lower face, an inlet passage extending from the lower face to said mounting face, an outlet passage extending from said lower face to said mounting face, wherein said inlet channel includes a recess opening to said mounting face;

means for mounting the mounting face of said connection block to the mounting surface of said filter head such that the recess of the inlet channel of the filter head aligns with the recess of the inlet passage of the connection block and the outlet channel of the filter head aligns with the outlet passage of the connection block; and

first check valve means disposed within a cavity formed by the aligned recesses of the inlet channel of the filter head and the inlet passage of said connection block for permitting flow in a direction toward the the inlet of the fuel filter while blocking flow in a direction away from the inlet of the fuel filter.

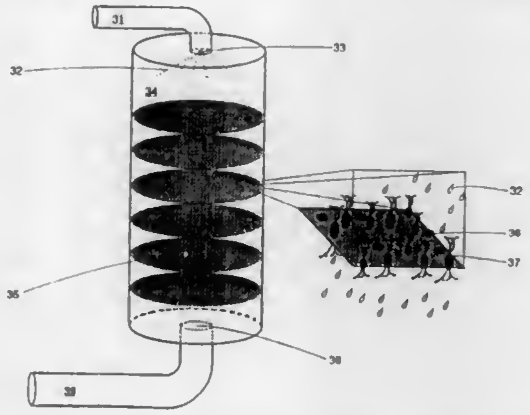
5,853,576
PHYTORECOVERY OF METALS USING SEEDLINGS

Yoram Kapulnik, Highland Park, N.J.; Burt Ensley, Newtown, Pa., and Ilya Raskin, Manalapan, N.J., assignors to Phytotech, Inc., Monmouth Junction, N.J.

Division of Ser. No. 602,078, Feb. 15, 1996, Pat. No. 5,728,300. This application Aug. 15, 1997, Ser. No. 911,655

Int. Cl.⁶ C02F *3/32*

U.S. Cl. 210—150 **12 Claims**



1. A system to effect a depletion of metal in a metal-containing solution comprising:

(a) chamber means containing a biomass of etiolated metal-accumulating plant seedlings, said seedlings not requiring external nutrients or external energy in the form of light or heat beyond the requirements to achieve normal germination temperatures prior to or during contact with a metal-containing solution; and
(b) means for contacting said contained biomass of plant seedlings with said metal-containing solution comprising an inlet means for introducing said metal-containing solution into said chamber means and an outlet means for separating a metal-depleted solution from said contained biomass of plant seedlings.

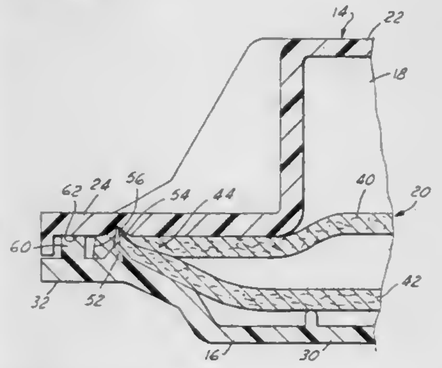
5,853,577
ORBITAL VIBRATION WELDED FILTER

John W. Gizowski, Lagrange Park; Glenn T. Gajda, Grayslake; Daniel J. Morrison, Arlington Heights; Louis P. Macino, Carol Stream, and Joseph A. Geisler, Des Plaines, all of Ill., assignors to SPX Corporation, Muskegon, Mich.

Filed Sep. 22, 1997, Ser. No. 934,677

Int. Cl.⁶ B01D *35/30;35/027;29/23*

U.S. Cl. 210—168 **4 Claims**



1. A fluid filter comprising:

a housing including first and second cover members each having a peripheral flange,

the peripheral flanges of said cover members being joined together to define a housing chamber having an inlet and an outlet,

a filtration media disposed in the housing chamber between said inlet and said outlet,

the flange of said first cover member having a rib formation projecting toward the flange of said second cover member, and a series of filtration media retention spikes which project from said rib formation and engages with an edge portion of the filtration media;

the flange of said second cover member having a gutter formation opposed to said rib formation, and

said filtration media having said edge portion compressed between said rib and said gutter formations to form a seal preventing fluid entering said inlet from reaching said outlet without passing through said filtration media.

5,853,578
METHOD FOR BIOLOGICAL PURIFICATION OF LIQUIDS AND BIOLOGICAL FILTER FOR PURIFICATION OF LIQUIDS

Nina Flyaks, and Alexander Shkolnik, both of 485 Dartmouth Ave., San Carlos, Calif. 94070

Filed Jul. 10, 1996, Ser. No. 677,848

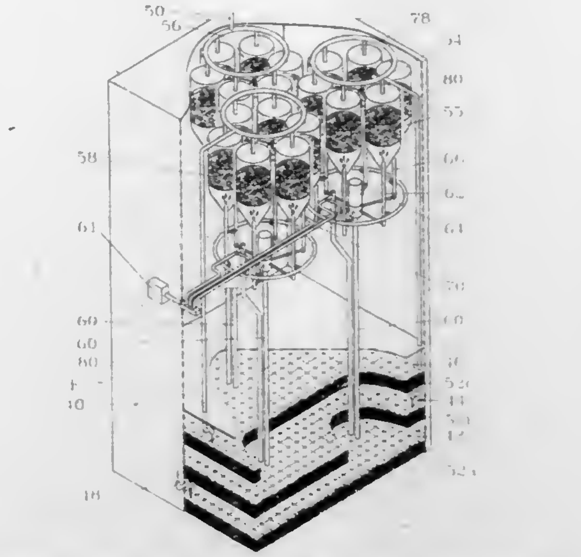
Int. Cl.⁶ B01D *24/02*

U.S. Cl. 210—169 **44 Claims**

1. A biological filter for purification of liquid having an inlet, an outlet and filtering materials covered with a biofloc film provided between said inlet and said outlet, said biological filter comprising:

a plurality of primary filtering stages comprising at least two primary filtering stages, each having a bed of a particulate material;

said plurality of primary filtering stages having a first primary filtering stage;



a plurality of secondary filtering stages, each containing a fine-fiber material which is different from the particulate material of the primary filtering stages;

said plurality of secondary filtering stages having a last secondary filtering stage;

said primary filtering stages of said plurality of primary filtering stages and said secondary filtering stages of said plurality of secondary filtering stages forming a succession of filtering groups, each comprising at least one primary filtering stage of said plurality of primary filtering stages;

means for moving said liquid between said filtering groups of said succession of filtering groups;

means for aerating said liquid during movement of said liquid by said means for moving said liquid by aerating means provided in each of said filtering stages;

said inlet of said biological filter being connected to said first primary filtering stage; and

said outlet of said biological filter being connected to said last secondary filtering stage.

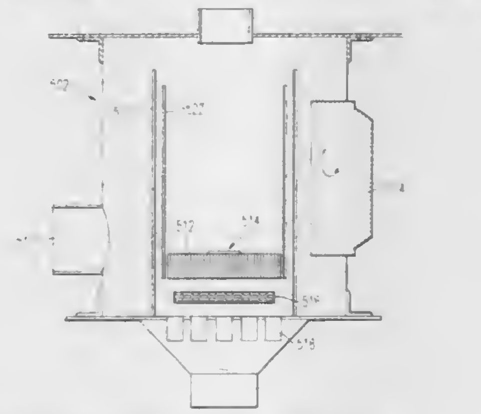
5,853,579
TREATMENT SYSTEM

John M. Rummler, Kittery Point, Me.; Thomas R. Beal, Barrington, N.H., and Guy D. Marchesseault, Boxford, Mass., assignors to Wastech International Inc., Portsmouth, N.H.

Filed Nov. 26, 1996, Ser. No. 756,673

Int. Cl.⁶ C02F *9/00;11/10;* B01D *36/02*

U.S. Cl. 210—170 **44 Claims**



1. An apparatus for handling waste comprising:

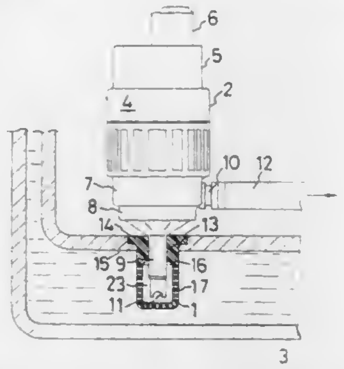
a chamber having an inlet for receiving waste;

a substrate disposed in said chamber for supporting waste received through said inlet, said substrate including means for allowing drainage of liquids from said waste;

means for incinerating waste supported by said substrate;
a microwave trap disposed below said substrate;
a passageway in communication with said chamber for receiving liquids draining from waste supported on said substrate; and
an exhaust gas conduit extending from said passageway for removing exhaust gases generated in said chamber;
wherein said substrate includes at least one of:
(a) a microwave transparent refractory ceramic material and a lossy material;
(b) an oxide bonded silicon carbide material; and
(c) a ferrite material.

5,853,580
FILTER FOR ELECTRIC PUMPS OF AUTOMOBILE VEHICLE WINDSCREEN WASHERS

Luis Boguña Rusiñol, and Miguel Mota Lopez, both of Rubi, Spain, assignors to Fico Transpar, S.A., Barcelona, Spain
PCT No. PCT/ES96/00177, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO97/13663, PCT Pub. Date Apr. 17, 1997
PCT Filed Sep. 16, 1996, Ser. No. 849,915
Claims priority, application Spain, Oct. 10, 1995, 9501954
Int. Cl.⁶ B01D *35/027;29/33;* **B60S** *1/48;* **F04D** *29/70*
U.S. Cl. 210—172 **1 Claim**

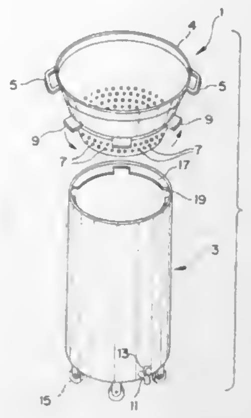


1. A filter for electric pumps of automobile vehicle wind screen washers which can be coupled to electric pumps, the filter comprising a filter body formed as a sole piece of elastic material of a generally hollow cylindrical shape and having an open rear end provided with means for a leak-tight coupling of an electric pump with a cleaning liquid reservoir and also having a front end which is closed, said filter body having at a side a plurality of through orifices which form two regular reticula diametrically opposite to one another, said filter body having at a front a plurality of further through orifices forming a regular reticulum, said filter body at its interior forming two coaxial cylindrical portions which are linked to each other and include a rear portion and a front portion of different diameters, said rear portion having a smaller diameter and being pressed by elastic reaction on an axial tubular aspiration extension, while said front portion has a larger diameter and is arranged at a free end of the axial tubular aspiration extension to form an intermediate chamber into which said first mentioned through orifices and said further through orifices emerge.

5,853,581
DRAIN BUCKET

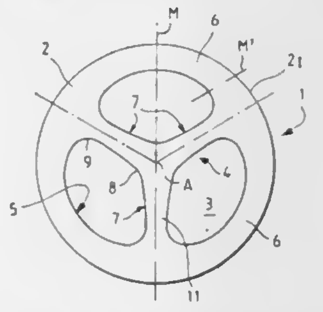
Redrick D. Rayborn, and Gerald Rayborn, both of 5100 Highpoint Rd., Apt. 64, Union City, Ga. 30291
Filed Apr. 11, 1997, Ser. No. 834,016
Int. Cl.⁶ B01D *35/027*
U.S. Cl. 210—241 **4 Claims**

1. A colander-like receptacle combined with a portable liquid storage container comprising:
an upper receptacle with a plurality of lower liquid drainage holes therein, said receptacle having protruding members located on its lower exterior surface which can engage slots in a lower portable liquid storage container; and
a lower portable liquid storage container with protrusion receiving slots mounted under said receptacle, said container having a liquid drain valve to drain stored liquids therefrom and lower rolling members to permit the movement of the container along an underlying surface.



5,853,582
TUBULAR INORGANIC FILTER ELEMENT HAVING INCREASED MECHANICAL STRENGTH AND INCREASED FILTER AREA

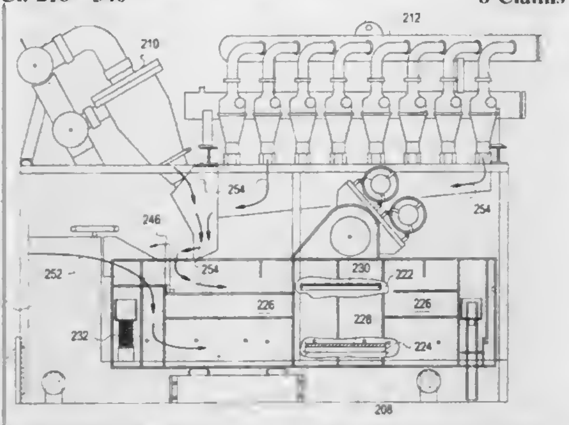
AndréGrangeon, Valreas, and Philippe Lescoche, Favcow, both of France, assignors to T.A.M.I. Industries Societe Anonyme, Nyons, France
Filed Dec. 5, 1996, Ser. No. 760,751
Claims priority, application France, Dec. 5, 1995, 95 14512
Int. Cl.⁶ B01D *63/06*
U.S. Cl. 210—321.89 **9 Claims**



1. An inorganic filter element for filtering a fluid medium in order to recover a filtrate, the filter element comprising:
an inorganic rigid porous support of cylindrical shape having a longitudinal central axis and an outside surface; and
channels formed in the support parallel to its central axis and presenting respective surfaces each covered in at least one separator layer that is intended to come into contact with a fluid medium, the channels having a right cross-section that is non-circular and at least some peripheral channels having their centers situated on a circle that is coaxial about the central axis, the at least some peripheral channels presenting both a peripheral wall situated facing the outside surface of the support and cooperating therewith to define a direct through passage for the filtrate, and at least one radial wall cooperating with a facing radial wall of an adjacent channel to define a partition, the walls being interconnected by connection fillets; and
wherein the through passage of each of the peripheral channels increases in thickness on either side a midplane bisecting the respective passage so that each of the through passages possesses a profile in the form of a vault for the purpose of increasing its mechanical strength.

5,853,583
MULTI-FUNCTIONAL LINEAR MOTION SHAKER FOR PROCESSING DRILLING MUD

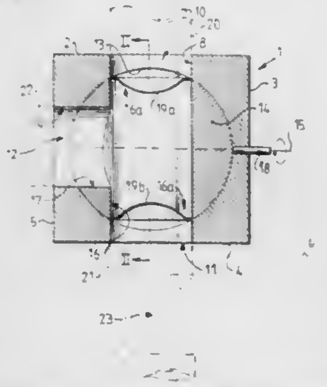
Dilipkumar P. Shah, Houston, Tex., assignor to Kem-Tron Technologies, Inc., Houston, Tex.
Filed Mar. 31, 1997, Ser. No. 829,059
Int. Cl.⁶ B01D *33/03*
U.S. Cl. 210—340 **8 Claims**



1. A linear motion shaker used in oil and gas drilling operations which is configurable as a flowline shaker or as a combination simultaneous flowline shaker and drying shaker, said linear motion shaker comprising:
a carriage support frame,
a bed frame supporting an upper deck and a lower deck in a spaced vertical relationship,
said bed frame supported within said carriage frame,
a means for imparting vibratory motion to said bed frame,
a drilling fluid inlet tank attached to said carriage frame and adjacent said upper deck and said lower deck,
said drilling fluid inlet tank configured to direct drilling fluid flow onto said upper deck, and
said upper deck including means for diverting said drilling fluid flow directly to said lower deck and thereby bypassing said upper deck to allow isolation of independent drilling fluid flows to each of said upper deck and said lower deck.

5,853,584
SELF-CLEANING FILTER FOR FILTERING OF LIQUIDS AND GASES

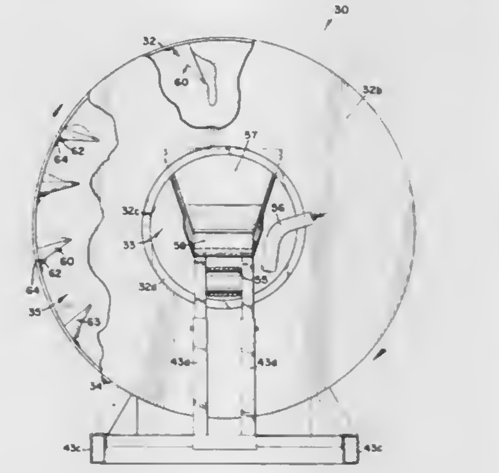
Hans Terje Solbakke, Lunde, Norway, and Björn Säfwenberg, Saltsjö-Duvnäs, Sweden, assignors to Bandak AS, Lunde, Norway
PCT No. PCT/SE96/00605, § 371 Date Jan. 8, 1997, § 102(e) Date Jan. 8, 1997, PCT Pub. No. WO97/46301, PCT Pub. Date Dec. 11, 1997
PCT Filed May 8, 1996, Ser. No. 765,906
Claims priority, application Sweden, May 8, 1995, 9501705
Int. Cl.⁶ B01D *35/04;35/22*
U.S. Cl. 210—390 **7 Claims**



1. Filter for filtering of a fluid, including a housing (**1**) having an inlet port (**10**) for the fluid to be filtered, an outlet port (**12**) for filtered fluid and an outlet port (**11**) for reject as well as a body (**14**) arranged in the housing to be rotatable between at least two positions of rotation and having at least two intercommunicating flow channels of which at least a first (**16***a*, **16***b*) is provided with a filtering means (**19***a*) through which filtering takes place in a first rotational position, wherein one end (**16***a*) of the first flow channel communicates with the inlet port (**10**), and through which backwash takes place in the second rotational position, wherein said end (**16***a*) of the first flow channel communicates with the outlet port (**11**) for reject, characterized in that the first flow channel (**16***a*, **16***b*) is provided with a filtering means (**19***a*, **19***b*) at each end,
that a second (**17**) of the at least two flow channels connects to the first (**17**) flow channel between the filtering means (**19***a*, **19***b*) and is in constant connection with the outlet port (**12**) for filtered fluid, and
that the outlet port (**11**) for reject is provided with a shutting means (**23**) openable for backwashing.

5,853,585
ROTARY SEPARATOR APPARATUS

Clinton A. Nesseth, Cameron, Wis., assignor to NTH, Inc., Barron, Wis.
Division of Ser. No. 355,522, Dec. 14, 1994, Pat. No. 5,628,912. This application Dec. 10, 1996, Ser. No. 763,972
Int. Cl.⁶ B01D *33/06*
U.S. Cl. 210—394 **29 Claims**



24. A slurry separator, comprising:
(a) a container generally symmetrical about an axis extending through at least one end of said container, said container having a solid wall defining an inner cavity and an access port to said inner cavity formed through said one end;
(b) a plurality of lift paddles mounted to said container and longitudinally extending in the axial direction across said inner cavity;
(c) a support connected with said container for supporting said container for rotation about said axis;
(d) an inlet extending through said access port for introducing a volume of liquid/solid slurry into said inner cavity for retention by said container;
(e) an outlet extending from from said inner cavity and through said access port external of said container for collecting and carrying separated solids from said container; and
(f) a drive connected with said container for rotating said container and lift paddles about said axis; wherein said lift paddles lift a portion of said slurry volume in said container and drop solids from the lifted slurry into said outlet and allow liquids from said lifted slurry to return to said slurry volume in the container.

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5,853,586

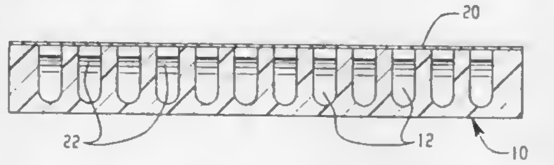
THIN PLIABLE POLYMERIC FILM FOR SEALING MICROPLATES

Ronald J. Valus, Valley View, Ohio, and Jonathan N. Lipsky, Hanover, Mass., assignors to Whatman, Inc., Mass.

Division of Ser. No. 714,760, Sep. 16, 1996, Pat. No. 5,665,247. This application May 12, 1997, Ser. No. 854,668

Int. Cl.^{6} G01N *1/14*

U.S. Cl. 210—406 **4 Claims**



1. A multi-well microfiltration device in combination with a sealing member, the sealing member comprising a flexible sealing material adapted to stretch across an upper surface of said multi-well microfiltration device, said microfiltration device comprising an upper surface having multiple well openings, each of said well openings having a perimeter on the upper surface of said microfiltration device, sidewalls extending downward from said perimeter, and a bottom surface such that a well for retaining a media to be filtered is formed, said flexible sealing member individually sealing said perimeter of each well opening and in response to the application of differential pressure, said flexible sealing member being capable of flexing or collapsing into each well, at a rate independent of the flexing or collapsing rate in any other well, so as to maintain a constant differential pressure around said device.

5,853,587

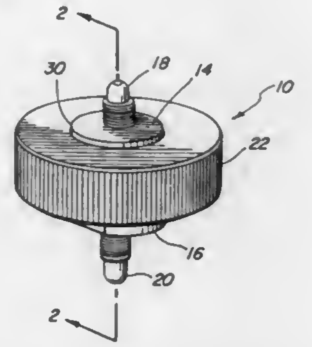
CORROSIVE RESISTANT DISK FILTER

Richard T. Young, 7141 Thomas St., uena Park, Calif. 90621

Filed Dec. 14, 1996, Ser. No. 767,588

Int. Cl.^{6} B01D *25/00*

U.S. Cl. 210—44 S **12 Claims**



1. A fluid filter device for installation in a pressurized line containing caustic or corrosive fluid comprising, in combination:
- a body having a first male portion and a second female portion;
- a hollow chamber formed in said body between said first male portion and said second female portion;
- fluid passages formed through said first male portion and said second female portion and connected to said hollow chamber;
- filter means secured between a pair of filter holding disks in said hollow chamber;
- a plurality of concentric walls having spaces therebetween formed on said pair of filter holding disks and fluidly connected to said filter means;
- sealing means formed between said first male portion and said second female portion to prevent leakage of fluid from said filter device; and
- said first male portion including an annular wall having a tapered end and a plurality of internal and external cuts formed on said annular wall to allow said annular wall to collapse when compressed in an accordion-type manner, to provide an effective internal seal between said first male portion and said second female portion.

5,853,588

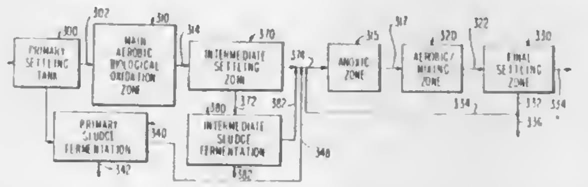
WASTEWATER TREATMENT PROCESS

Alan H. Molof, New City, N.Y.; Zuwhan Yun, and Sungtai Kim, both of Seoul, Rep. of Korea, assignors to Polytechnic University, Brooklyn, N.Y.

Division of Ser. No. 577,821, Dec. 22, 1995, Pat. No. 5,651,891, which is a division of Ser. No. 335,203, Nov. 7, 1994, Pat. No. 5,733,455, which is a continuation of Ser. No. 909,027, Jul. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 388,955, Aug. 2, 1989, Pat. No. 5,128,040. This application Feb. 3, 1997, Ser. No. 794,660

Int. Cl.^{6} C02F *3/30*

U.S. Cl. 210—605 **24 Claims**



1. A wastewater treatment process providing increased nitrogen, phosphate and biochemical oxygen demand removal comprising the steps of:
- (a) passing wastewater containing ammonia nitrogen, phosphate and biochemical oxygen demand through a main aerobic biological oxidation zone and therein oxidizing at least a portion of the ammonia nitrogen to nitrate nitrogen and at least a portion of the biochemical oxygen demand and converting at least a portion of the biochemical oxygen demand into suspended solids;
- (b) passing (i) effluent from the main aerobic biological oxidation zone, (ii) at least one volatile acid, and (iii) final sludge recycled from settling step (d) to a zone to which no additional oxygen is added and therein reducing at least a portion of the ammonia and nitrate nitrogen to molecular nitrogen and thereby releasing phosphate;
- (c) passing effluent from the zone of step (b) to an aerobic/mixing zone wherein the effluent is mixed under aerobic conditions and molecular nitrogen and phosphate are removed;
- (d) passing effluent from the aerobic/mixing zone to a final settling zone and therein separating
  - (i) a purified wastewater having decreased biochemical oxygen demand and a decreased phosphate and nitrogen content and
  - (ii) a final sludge containing suspended solids and phosphate; and
- (e) recycling at least a portion of the final sludge to the zone of step (b).

5,853,589

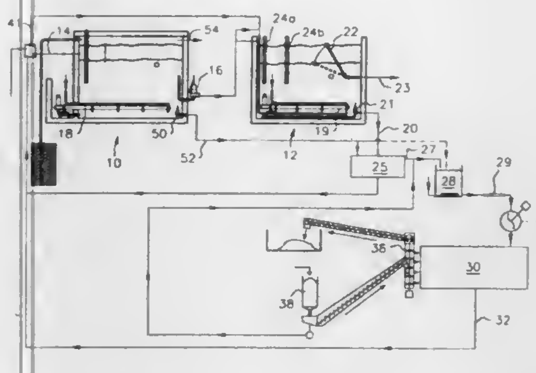
ADVANCED BIOLOGICAL PHOSPHORUS REMOVAL USING A SERIES OF SEQUENCING BATCH REACTORS

Gaétan Desjardins, Repentigny; Yves Comeau, Laval, and Gino Bélanger, Montreal, all of Canada, assignors to ECO Equipment Fep, Inc., Quebec, Canada

Filed Jun. 4, 1997, Ser. No. 869,420

Int. Cl.^{6} C02F *3/30*

U.S. Cl. 210—605 **12 Claims**



1. A biological process for treating wastewater having a ratio of biodegradable BOD loads to phosphorus in solution at least equal to 25/1, in order to remove said phosphorus and thus obtain clarified water, said process using at least two sequencing batch reactors (SBR) filled with a sludge-mixed liquor and comprising the steps of:
- a) continuously feeding said wastewater into a first (SBR) operating under anaerobic conditions;
- b) in said first SBR,
  - i) equalizing and anaerobically mixing the wastewater;
  - ii) controlling in-time any fermentation reaction occurring therein in order to produce and maximize an acidogenesis fermenting phase of organic materials and prevent a methanogenesis fermenting phase thereof;
- c) rapidly transferring the wastewater from the first SBR to a second SBR;
- d) in said second SBR,
  - i) anaerobically treating the waste water from the first SBR in order to store a maximum amount of volatile fatty acids (VFAs) within a phosphorus removal biomass;
  - ii) mixing and aerating the wastewater, such aerating causing the phosphorus removal biomass to rapidly consume the volatile fatty acids stored therein and to absorb the phosphorus in solution in the wastewater, thereby producing a phosphorus-rich sludge-mixed liquor;
  - iii) removing a given amount of the phosphorus-rich sludge-mixed liquor from the second SBR under oxygenated conditions to avoid resolubilization of the phosphorus in the water;
  - iv) allowing the sludge remaining in the second SBR to settle, thereby causing formation of an upper layer of clarified water; and
  - v) decanting the upper layer of clarified water formed above the liquor after the settling period (iv), said clarified water containing a low concentration of phosphorus.

5,853,590

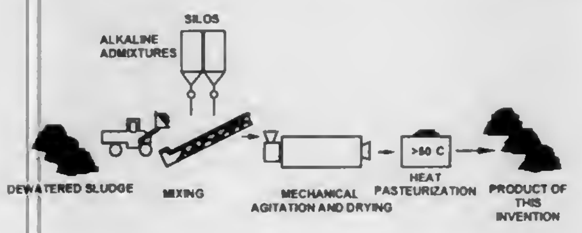
METHOD FOR TREATING BIOORGANIC AND WASTEWATER SLUDGES

Jeffrey C. Burnham, Naples, Fla., assignor to Medical College of Ohio, Toledo, Ohio

Continuation of Ser. No. 520,959, Aug. 30, 1995, abandoned. This application Sep. 3, 1997, Ser. No. 922,847

Int. Cl.^{6} C07F *11/16*

U.S. Cl. 210—609 **10 Claims**



1. A method of treating sludge to provide a stable product for use as a beneficial soil or fertilizer for agricultural lands which includes the steps of:
- (a) mixing sludge with at least one alkaline material in an amount sufficient to raise pH of the mixture to a level of at least 12 and to increase percent solids in the mixture to at least 40% by weight, and such that odorant sludge organics and inorganics are bound to adsorbent particles of the alkaline material,
- (b) aerating and drying the mixture by agitation and heating to stabilize the mixture and increase the percent solids to at least 50% by weight, and
- (c) pasteurizing the dried mixture at a temperature at or above 52° C. by application of heat resulting from an exothermic reaction of the alkaline material with water in the sludge, wherein said step (b) is carried out in a mechanical means selected from the group consisting of a drum dryer, a pelletizer, and a fluidized bed apparatus, and wherein the heat applied for drying in said step (b) reduces the amount of additional heat required for pasteurization in said step (c) thereby reducing the amount of alkaline material needed for said exothermic reaction.

5,853,591

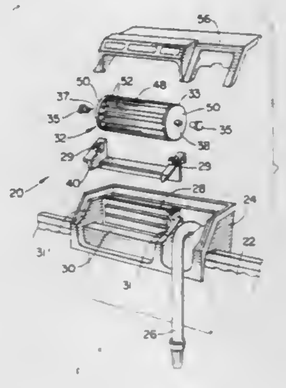
ROTATING BIOLOGICAL AQUARIUM FILTER SYSTEM

Wilfred Philip Snyder, Thousand Oaks; Charles Otto Fuerst, and Joseph Scott Bussing, both of Simi Valley, all of Calif., assignors to Aquaria, Inc., Moorpark, Calif.

Division of Ser. No. 4,678, Jan. 14, 1993, Pat. No. 5,423,978, which is a continuation of Ser. No. 535,905, Jun. 11, 1990, abandoned. This application Oct. 3, 1994, Ser. No. 994,165

Int. Cl.^{6} A01K *63/04*

U.S. Cl. 210—619 **15 Claims**



1. A method of filtering aquarium water comprising the steps of: circulating the aquarium water:
- partially submerging a rotatable filter body within the circulating aquarium water such that the circulating water imparts rotational movement to the filter body alternately exposing a portion of the filter body to the aquarium water and the air to foster the growth of aerobic bacteria on the surface of the filter body.

15. A method of biologically filtering aquarium water comprising the steps of:
- (a) rotating a turbine to submerge a portion of the turbine in the water of the aquarium;
- (b) further rotating the turbine to expose the turbine portion to ambient air; and
- (c) directing a flow of aquarium water toward the turbine to effect rotation of the turbine to thereby cyclicly repeat steps (a) and (b) above so as to promote the growth of aerobic bacteria on the turbine portion.

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5,853,592

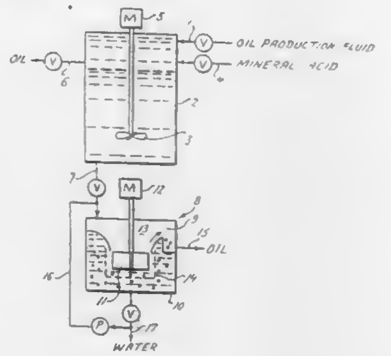
METHOD OF REMOVING WATER SOLUBLE ORGANICS FROM OIL PROCESS WATER WITH AN ORGANIC ACID AND A MINERAL ACID HAVING A PLURALITY OF PKA'S

Thomas J. Bellos, St. Louis, and Gregory P. Noelken, St. Peters, both of Mo., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 614,760, Mar. 13, 1996, Pat. No. 5,637,223, which is a continuation of Ser. No. 259,424, Jun. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 25,348, Mar. 2, 1993, Pat. No. 5,364,532, which is a continuation-in-part of Ser. No. 939,771, Sep. 3, 1992, abandoned. This application May 20, 1997, Ser. No. 859,297

Int. Cl.^{6} C02F *1/26;* **B01D** *17/05*

U.S. Cl. 210—639 **16 Claims**



1. A method of removing water soluble organics from oil process water containing cations that tend to form scale upon exposure to phosphoric acid, comprising the steps of

- a) adjusting the pH of the water to within the range of about 2–6 by incorporating in the water an organic acid and a mineral acid selected from the group consisting of phosphoric acid, phosphorous acid, sulfuric acid and sulfurous acid, in an organic acid to mineral acid molar ratio of from about 99:1 to about 1:99, the organic acid having a pKa and the mineral acid have a plurality of pKa's, at least one of which is higher than the pKa of the organic acid, the organic acid being added in an amount sufficient to form water soluble salts with said cations thereby to inhibit scale formation in the water after addition thereto of the mineral acid, the organic acid being incorporated into the water simultaneously with or prior to the incorporation of the mineral acid into the water thereby to form acidified water;
- b) thereafter or simultaneously contacting the acidified water intimately with oil with the result that the content of water soluble organics in the water is substantially reduced by migration from the water to the oil; and
- c) separating the oil and the water.

5,853,593

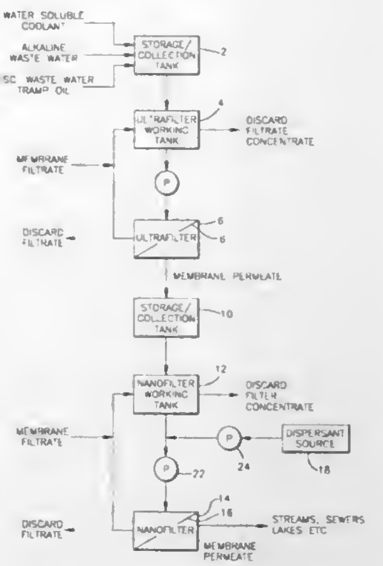
FILTRATION METHOD FOR METAL WORKING WASTE WATER

Rhonda Miller, Willoughby Hills, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 7, 1996, Ser. No. 646,406

Int. Cl.^{6} B01D *61/00*

U.S. Cl. 210—652 **4 Claims**



1. A method for treating waste water containing free and emulsifiable oils, metalworking fluids and water-soluble organometallic complexes of water-soluble organic compounds bound to metallic cations present in an amount greater than one part per million of the cation per part of the waste water, said metallic cations having a valence in whole integers of at least two, and said method including the steps of:

- (a) passing the waste water through at least one ultrafiltration membrane operative to separate the free and emulsifiable oils and metalworking fluids from the waste water as an ultrafilter waste water filtrate therefrom and enable the remaining waste water to pass as an ultrafilter waste water permeate therethrough;
- (b) disposing of the ultrafilter waste water filtrate of step (a);
- (c) introducing a dispersant water solution into the ultrafilter waste water permeate of step (a) at a range by volume of about 1 part of the solution to from about 700 to about 3,000 parts of the ultrafilter permeate effective to provide a dispersed ultrafilter waste water permeate having the metallic cations and soluble organic compounds separately held in solution;
- (d) passing the dispersed ultrafilter waste water permeate of step (c) through at least one nanofilter membrane operative to separate the metallic cations and soluble organic compounds as a nanofilter waste water filtrate therefrom and enable the remaining ultrafilter waste water permeate to pass as a nanofilter waste water permeate therethrough for disposal in sanitary sewers, streams, lakes or the like; and
- (e) disposing of the nanofilter waste water filtrate of step (d).

5,853,594

Patent Not Issued For This Number

5,853,595

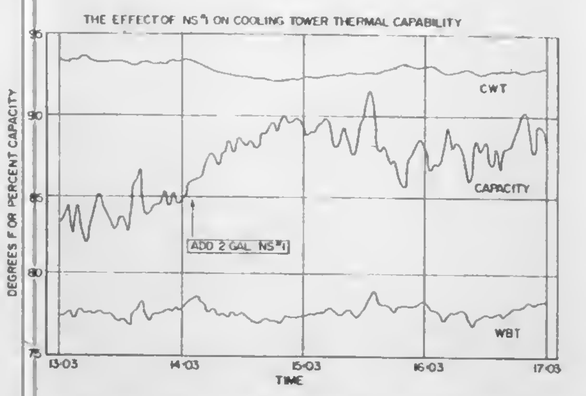
PROCESS FOR INCREASING THE SYSTEM THERMAL CAPABILITY OF A SPLASH FILLED COOLING TOWER

R. Douglas Hancock, Dothan, Ala.; Andrew A. Romano, Sparta, N.J., and Russell T. Noble, Birmingham, Ala., assignors to Ashland, Inc., Columbus, Ohio

Filed Mar. 28, 1996, Ser. No. 623,555

Int. Cl.^{6} C02F *5/10*

U.S. Cl. 210—698 **20 Claims**



1. A process for increasing the system thermal capability of a cooling tower comprising:

contacting the circulating water of the cooling tower with a nonionic surfactant composition in an amount effective to increase the system thermal capability of said cooling tower, said nonionic surfactant composition comprising at least one nonionic surfactant having the following characteristics:

- (a) a hydrophobic segment; and
- (b) a hydrophilic segment;

such that the average HLB of the nonionic surfactant composition is from 9–12; monitoring the thermal capability of said cooling tower; and adjusting feeding of said nonionic surfactant when needed based upon the said monitoring.

5,853,596

METHOD FOR REDUCING CHEMICAL OXYGEN DEMAND OF WATER CONTAINING ORGANIC MATERIAL EMULSIFIED BY A SURFACTANT

Michael W. Gibson, Fairfield, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Dec. 9, 1996, Ser. No. 761,952

Int. Cl.^{6} C02F *1/56*

U.S. Cl. 210—708 **9 Claims**

1. A method for reducing the COD of water contaminated with an emulsion of water-insoluble organic material and a surfactant, wherein the contaminated water comprises the effluent from a process for producing surfactants, which comprises: adding to the water from about 5 to about 200 parts per million by weight of a cationic polymer flocculent and maintaining the water at a temperature of from about 37° C. to about 95° C. to form an organic material containing phase and water with reduced COD.

5,853,597

METHOD OF AND APPARATUS FOR DISCHARGING SEDIMENTARY SOLID PARTICLES

Masahiro Yoshioka; Masahiko Ito; Mitsuru Sakuta; Makoto Suzuki, and Masaharu Ikeda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

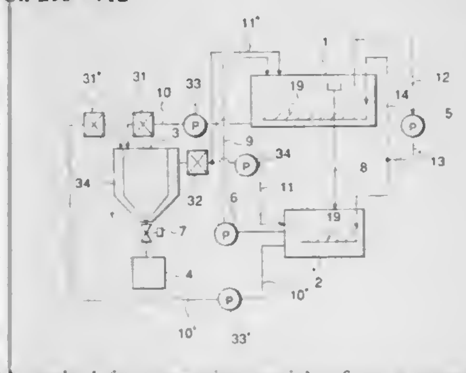
PCT No. PCT/JP96/02780, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO97/12077, PCT Pub. Date Apr. 3, 1997

PCT Filed Sep. 26, 1996, Ser. No. 836,699

Claims priority, application Japan, Sep. 28, 1995, 7-251141; Sep. 29, 1995, 7-252604; Sep. 29, 1995, 7-252605

Int. Cl.^{6} B01D *21/24*

U.S. Cl. 210—712 **23 Claims**



1. A method for preventing particles from accumulating in a tank, used for pickling or plating metallic materials, which comprises at least one ejector and which can hold sedimentary solid particles on a bottom of the tank and a first solution, the method comprising:

ejecting a liquid from the at least one ejector into the sedimentary solid particle on the bottom of the tank, so as to move the sedimentary solid particles to a predetermined place from which the sedimentary solid particles can be discharged out of the tank;

discharging from the tank a second solution containing at least one of the sedimentary solid particles;

cooling the second solution to a temperature below a temperature of the first solution and below 40 degrees centigrade to precipitate solid particles from of the second solution; and

separating at least one solid particle from the second solution.

5,853,598

PROCESS FOR TREATING WASTE WATER OF FLUE GAS DESULFURIZATION

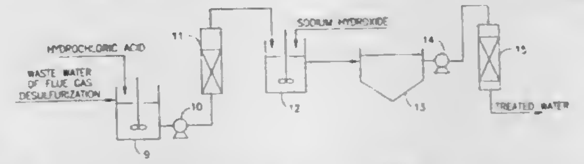
Tsutomu Ogoshi; Yohka Tsurumaru; Hisao Tsuboya; Tsukasa Watanabe, and Masao Enami, all of Tokyo, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Feb. 28, 1997, Ser. No. 808,397

Claims priority, application Japan, Mar. 8, 1996, 8-080919

Int. Cl.^{6} C02F *1/58*

U.S. Cl. 210—724 **18 Claims**



10. A process for treating waste water of flue gas desulfurization, said waste water containing selenium compounds, comprising successively adjusting the pH of the waste water to 5 or less, bringing the waste water into contact with a column packed with fine particles of iron, flocculating the waste water, removing formed flocs from the waste water by solid-liquid separation, and bringing the remaining waste water into contact with a resin for COD adsorption, whereby selenium in the treated water is decreased to a concentration of 0.1 mg/liter or less.

5,853,599

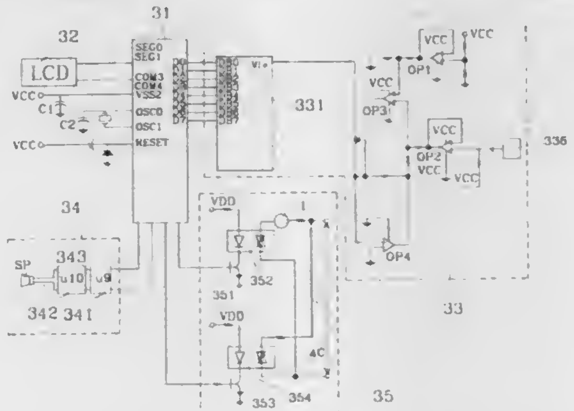
MONITORING PROCESS FOR A REVERSE OSMOSIS PURIFICATION SYSTEM OF DRINKING WATER

Chao Fou Hsu, 109, Lane 316, Dah Shuenn 3th Rd., Kaohsiung, Taiwan

Filed Mar. 11, 1996, Ser. No. 613,377

Int. Cl.^{6} B01D *61/12;17/12*

U.S. Cl. 210—739 **1 Claim**



1. A monitoring process for a reverse osmosis purification system for drinking water which comprises at least a reverse osmosis filtration element and a water pressure pump for pumping pressurized water through said reverse osmosis filtration element, comprising the steps of:

(a) inputting and formatting a specific service life datum of said reverse osmosis filtration element into a microprocessor as a predetermined reference value, wherein said specific service life datum is a water flow value at a water outlet of said reverse osmosis filtration element when said reverse osmosis filtration element is clogged with impurities and becomes ineffective;

(b) monitoring a functional condition of said reverse osmosis filtration element by at least a detector which is a water flow detecting sensor installed at said water outlet of said reverse osmosis filtration element, wherein said monitoring of said reverse osmosis filtration element is operated by detecting a reduction in an outlet water flow amount at said water outlet of said reverse osmosis filtration element and transmitting a detected signal to a reverse osmosis detecting circuitry which is connected with said detector and said microprocessor;

(c) generating a condition detecting value with respect to said functional condition that is said detected signal regarding said outlet water flow amount of said reverse osmosis filtration and element and comparing said condition detecting value with said predetermined reference value, regarding said service life of said reverse osmosis filtration element, by said reverse osmosis detecting circuitry;

(d) temporarily ceasing supply of drinking water from said reverse osmosis filtration element by a power switching means which is activated by said microprocessor periodically, so as to backwash and clean said reverse osmosis filtration element;

(e) sending a digital signal, which is readable by said microprocessor, to said microprocessor by said reverse osmosis detecting circuitry when said condition detecting value of said reverse osmosis filtration element is detected approximating to said predetermined reference value, indicating that said service life of said reverse osmosis filtration element is expired;

(f) sending an activation signal to a warning means which is electrically connected with said microprocessor and advancing a warning information sound signal by said warning means to remind a timing of replacing said reverse osmosis filtration element;

(g) cutting off electric power to said water pressure pump to cease drinking water supply of said reverse osmosis purification system by said power switching means which is electrically connected with said microprocessor and activated by said microprocessor when said warning means is activated to generate said warning information sound signal for a time period exceeding a predetermined period of time; and

(h) manually stopping said warning information sound signal of said warning means and restarting said reverse osmosis purification system to produce drinking water again when said reverse osmosis filtration element is replaced by another new reverse osmosis filtration element.

5,853,600

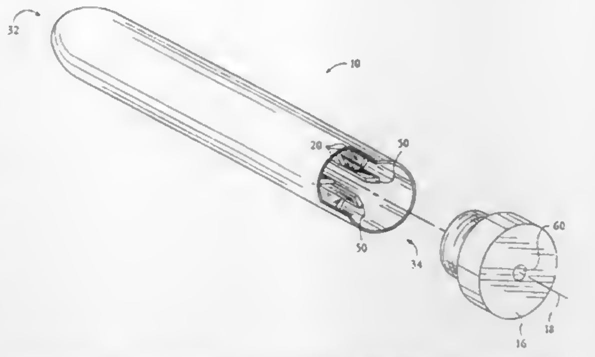
AXIAL SPIN BLOOD SEPARATION SYSTEM AND METHOD

Jack D. McNeal, Long Beach, and Michael L. Bell, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 538,309, Oct. 3, 1995, abandoned. This applicatinn Sep. 19, 1997, Ser. No. 933,989

Int. Cl.^{6} B01D *21/26*

U.S. Cl. 210—789 **40 Claims**



35. A method for separating serum or plasma from cells in a blood sample with a separation gel, the method comprising the steps of:

introducing the separation gel and the sample into a sample tube, the sample tube having a plurality of substantially longitudinally extending internal ribs attached to the sample tube to support the separation gel; and

spinning the sample tube to form substantially concentric shells of cells and gel.

5,853,601

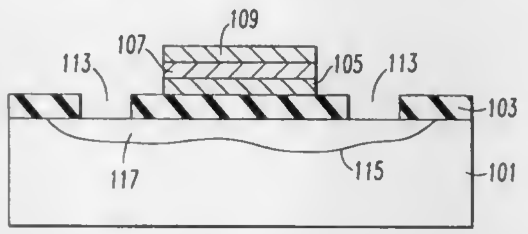
TOP-VIA ETCH TECHNIQUE FOR FORMING DIELECTRIC MEMBRANES

Silaipillayarputhur V. Krishaswamy, Monroeville; William F. Valek, McDonald; Thomas M. Valko, West Mifflin, all of Pa.; Curtis E. Milton, Jr., Glen Burnie, and Joel F. Rosenbaum, Seabrook, both of Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 3, 1997, Ser. No. 832,080

Int. Cl.^{6} H01L *21/00;* B44C *1/22*

U.S. Cl. 216—2 **21 Claims**



1. A method of fabricating a film bulk acoustic resonator comprising the steps of:

a) depositing a membrane layer on an upper planar surface of a substrate;

b) forming a film bulk acoustic resonator on the membrane layer;

c) depositing a photoresist etch mask on the membrane layer and the film bulk acoustic resonator;

d) opening respective first and second vias through the membrane layer and the photoresist etch mask at respective first and second ends of the film bulk acoustic resonator to expose the substrate;

e) isotropically etching the substrate through the first and second vias to form air gaps under the membrane layer along the first and second ends of the film bulk acoustic resonator; and

f) removing the photoresist etch mask.

5,853,602

METHOD OF DRY ETCHING FOR PATTERNING REFRACTORY METAL LAYER IMPROVED IN ETCHING RATE, ANISOTROPY AND SELECTIVITY TO SILICON OXIDE

Hideyuki Shoji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

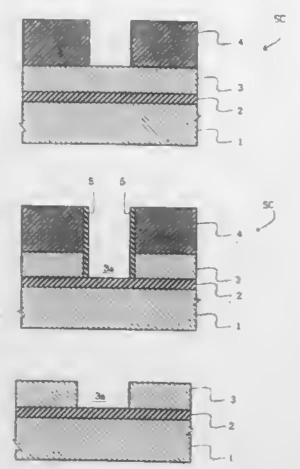
Filed Feb. 13, 1997, Ser. No. 799,883

Claims priority, application Japan, Feb. 16, 1996, 8-028891

Int. Cl.^{6} C23F *1/12*

U.S. Cl. 216—46 **11 Claims**

1. A method of dry etching for a refractory metal layer, comprising the steps of:



a) preparing a multi-layer structure having a refractory metal layer;

b) patterning a photo-resist layer on said refractory metal layer into a photo-resist etching mask; and

c) exposing said refractory metal layer to a gaseous etchant containing SF_6, Cl_2 and CO effective to etch said refractory metal layer, wherein a reaction product layer produced from said CO prevents a part of said refractory metal layer located under said photo-resist etching mask from radicals produced from said SF_6 and said Cl_2.

9. A method of dry etching for a refractory metal layer, comprising the steps of:

a) preparing a multi-layer structure having a refractory metal layer; and

b) exposing said refractory metal layer in a reaction chamber to a gaseous etchant containing SF_6, Cl_2 and CO effective to etch said refractory metal layer, wherein said gaseous etchant is introduced into said reaction chamber at a flow rate ratio between SF_6, Cl_2 and CO of 20:0.5–1.5:2–10, respectively.

5,853,603

MANUFACTURING PROCESS OF A MICROELECTRONIC DEVICE CONTAINING, ON A SUBSTRATE, A PLURALITY OF INTERCONNECTED ELEMENTS

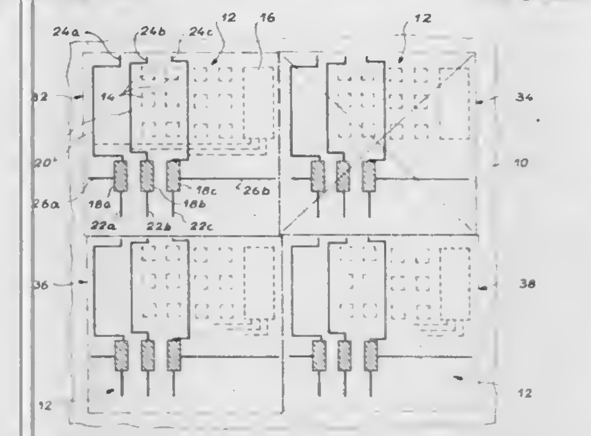
Patrice Caillat, Echirolles, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 12, 1996, Ser. No. 747,929

Claims priority, application France, Nov. 17, 1995, 95 13658

Int. Cl.^{6} H01L *21/00;* B44C *1/22*

U.S. Cl. 216—84 **10 Claims**



1. A method of manufacturing and reconfiguration of a microelectronic device containing, on a substrate, a plurality of interconnected elements, comprising the steps of:

(a) manufacturing cells on a substrate, each of the cells having at least one element, each of the cells being electrically isolated from each other, and at least one element of each of the cells having at least one connection terminal for interconnecting the cells according to a given connection plan;

(b) testing the cells in order to distinguish cells having valid elements from cells containing at least one invalid element; and

(c) forming junction bands in an electrical conductive material connecting at least one connection terminal of at least one element of a valid cell with at least one element of another valid cell, the junction bands being formed in valid, substantially identical fields, each valid field covering respectively a valid cell and comprising at least one marginal overlapping zone with at least one neighboring valid field, the overlapping zone comprising at least one portion of a junction band.

5,853,604

METHOD OF PLANARIZING AN INSULATING LAYER IN A SEMICONDUCTOR DEVICE

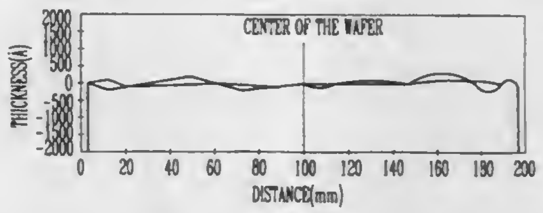
Sang Yong Kim, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 19, 1997, Ser. No. 877,635

Claims priority, application Rep. of Korea, Jun. 21, 1996, 96-22804

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 216—88 **7 Claims**



1. A method of planarizing an insulating layer of a semiconductor device using a chemical mechanical polish apparatus which comprises a rotatable platen, a polishing pad secured to said platen and a rotating carrier having recesses for holding a wafer, said rotating carrier operated to position said wafer on said polishing pad, the method comprising steps of:

a first polishing step for rotating said platen and said rotating carrier holding said wafer contacted with said polishing pad secured to said platen, applying a nitrogen (N_2) gas to the rear surface of the wafer to contact a surface of said wafer with the polishing pad, and applying force to said wafer through said rotating carrier to press said wafer against said polishing pad;

a second polishing step for increasing a speed of revolution of said platen and said rotating carrier and decreasing the force applied to said wafer.

5,853,605

LIQUID METAL POURING DUCT, PROCESS AND DEVICE FOR HOMOGENIZING METAL

Jean-Louis Comarteau, Chatenoy-le-Royal; Christophe Liebaut, Mercurey; Patrice Nykiel, Beaumont-sur-Crosne, and Alain Remy, Chalon-sur-Saone, all of France, assignors to SEVA, Chalon-Sur-Saone, France

PCT No. PCT/FR95/01602, § 371 Date Aug. 8, 1997, § 102(e) Date Aug. 8, 1997, PCT Pub. No. WO96/17703, PCT Pub. Date Jan. 13, 1996

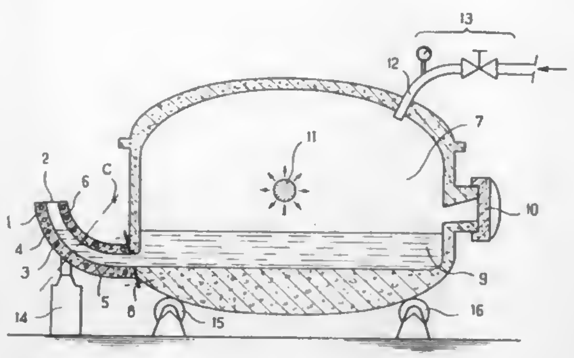
PCT Filed Dec. 5, 1995, Ser. No. 849,378

Claims priority, application France, Dec. 9, 1994, 94 15026

Int. Cl.^{6} B22D *35/06*

U.S. Cl. 222—593 **6 Claims**

1. An elongate duct (1) for pouring liquid metal to feed a casting mold, the duct having a closed cross-section opening at one, exit end to define a pouring orifice (2) for feeding said mold, said duct comprising, over its length, a heating element constituted by a

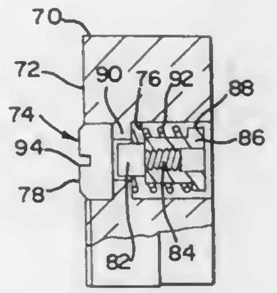


coil-shaped inductor (3) through whose cooled turns (4) an alternating electric current flows, said inductor being embedded in concrete (5) surrounding a heat-resistant tube (6), wherein the inductor turns as a whole are asymmetrically disposed in both a longitudinal direction of the duct, being more closely spaced proximate said exit end, and in a transverse direction of the duct such that a longitudinal axis of the inductor turns is laterally offset from a longitudinal axis of the duct, so as to make the temperature of the metal (9) homogeneous.

5,853,606

MOLD IDENTIFICATION DEVICE

Borislav Boskovic, 2102 Bannockburn, Inverness, Ill. 60067
Filed Jan. 5, 1998, Ser. No. 2,814
Int. Cl.⁶ B29C *33/00*
U.S. Cl. 249—103 **14 Claims**



1. An identification device for a mold for impressing indicia on each molded product formed in the mold, comprising

a. a plug retaining portion, said plug retaining portion having a face shaped to form a working part of the mold when the identification device is located in the mold,

b. at least one bore in said plug retaining portion through said face,

c. a plug member located in each said bore, said plug member including a plug having a mold engaging surface adjacent said face and substantially filling said bore proximate said face,

d. a shank extending axially into said bore from said plug, said shank having a threaded portion at a distal end of said shank,

e. a stop on said shank proximate said threaded portion,

f. a retainer threadedly mounted on said threaded portion and bearing against said stop,

g. means seating said plug member in said bore, and

h. a series of indicia on at least one of said surface and said face adjacent said bore.

5,853,607

CVD PROCESSING CHAMBER

Jun Zhao, Milpitas; Tom Cho, San Francisco; Charles Dornfest, Fremont; Stefan Wolff, Sunnyvale; Kevin Fairbairn, Saratoga; Xin Sheng Guo, Mountain View; Alex Schreiber, Santa Clara, and John M. White, Hayward, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Division of Ser. No. 348,273, Nov. 30, 1994, Pat. No. 5,558,717. This application Oct. 11, 1995, Ser. No. 540,812
Int. Cl.⁶ A62C *1/00;* **A62D** *1/00*
U.S. Cl. 252—8 **5 Claims**

1. A method for controlling process gas distribution across the surface of a semiconductor substrate in a semiconductor process chamber having top and bottom regions, comprising the steps of:

a) providing a process chamber with
  (i) a process gas source;
  (ii) an exhaust plenum located in the top region of the process chamber, which is continuously disposed about the periphery of the top chamber region and
  (iii) a vacuum port in communication with the exhaust plenum for drawing process gas from the process chamber into the exhaust plenum and out of the process chamber;
b) introducing process gas into the process chamber; and
c) drawing process gas directly from said process chamber into the continuous peripheral exhaust plenum,

wherein the location and configuration of the exhaust plenum generally provides gas flow uniformity across a surface of the substrate during substrate processing.

5,853,608

LOW TEMPERATURE SINTERING RADIO FREQUENCY SOFT FERRITE MATERIAL, AND METHOD FOR MANUFACTURING A WIRE COILING INDUCTOR CORE USING SUCH MATERIAL

Chang Sik Kim, Suwon-si, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea
Filed Jun. 19, 1997, Ser. No. 879,201
Claims priority, application Rep. of Korea, Nov. 30, 1996, 1996 60292
Int. Cl.⁶ C03C *4/00;8/14;* **H01F** *1/01*
U.S. Cl. 252—62.6 **28 Claims**

1. An Ni—Cu—Zn low temperature sintering radio frequency soft ferrite material comprising: a raw material composed of in mole %: 40.0–51.0% of Fe_2O_3, 1.0–10.0% of CuO, 38.0–48.0% of NiO, and 1.0–10.0% of ZnO, and

the soft ferrite material further comprising in weight %: 1–25% of B_2O_3—Bi_2O_3—ZnO glass.

5,853,609

POLYOL ESTER LUBRICANTS FOR HERMETICALLY SEALED REFRIGERATING COMPRESSORS

Nicholas E. Schnur, Cincinnati, and Eugene R. Zehler, West Chester, both of Ohio, assignors to Henkel Corporation, Plymouth Meeting, Pa.
Continuation of Ser. No. 268,879, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 27,628, Mar. 10, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,206
Int. Cl.⁶ C09K *5/04;* **C10M** *105/38*
U.S. Cl. 252—68 **20 Claims**

1. A refrigerant working fluid which remains in a single phase between about −40° C. and about 71° C., said working fluid comprising a substantially chlorine-free fluoro-group-containing heat transfer fluid that comprises at least one of pentafluoroethane, 1,1-difluoroethane, 1,1,1-triflouroethane and tetrafluoroethane and a composition of matter suitable for serving as a lubricant base stock, said composition being a liquid with a viscosity between about 22.5 and about 44 centistokes at 40° C. and consisting essentially of a mixture of polyol ester molecules in which at least 85% of the monobasic acid molecules in the acid mixture consist of molecules having five or nine carbon atoms each, at least about 92% of the alcohol moieties are selected from the group consisting of alcohol moieties derived from PE and DPE and at least about 92% of the acyl groups are selected from the group consisting of the acyl groups of all the straight and branched chain monobasic and dibasic carboxilic acids with from four to twelve carbon atoms each, said alcohol moieties and acyl groups being further selected subject to the constraints that (a) a total of at least about 7% of the acyl groups in the mixture are acyl groups of i-C_5 acid; (b) the ratio of the percentage of acyl groups in the mixture that contain 8 or more carbon atoms and are unbranched to the percentage of acyl groups in the mixture that are both branched and contain not more than six carbon atoms is not greater than about 1.56; (c) the percentage of acyl groups in the mixture that contain at least nine carbon atoms, whether branched or not, is not greater than about 81; (d) not more than about 2% of the acyl groups in the ester mixture are part of acid molecules with more than two carboxyl groups each; (e) at least 60% of the monobasic acid molecules in the acid mixture consist of molecules having no more than ten carbon atoms each; and (f) a total of at least about 20% of the acid molecules in the mixture are one of the trimethylhexanoic acids; at least about 85% of the alcohol moieties in the esters are those of PE; and not more than about 7.5% of the acyl groups in the ester mixture are dibasic.

5,853,610

ANTIFREEZE AND DE-ICING AGENT, ESPECIALLY FOR THE DE-ICING OF SURFACES

Gertrude Kaes, Vienna, Austria, assignor to Lang & Co. Chemisch-Technische Produkte Kommanditgesellschaft, Mauerbach/Wien, Austria
Filed Aug. 25, 1997, Ser. No. 918,243
Claims priority, application Austria, Aug. 26, 1996, A1521/96
Int. Cl.⁶ C09K *3/18;5/00*
U.S. Cl. 252—70 **16 Claims**

1. An antifreeze and deicing agent, which consists essentially of:

(a) at least one inorganic chloride selected from the group consisting of sodium chloride, calcium chloride and magnesium chloride as a freezing point-lowering defrosting substance; and

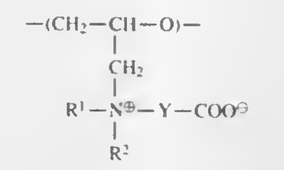
(b) an additive to said freezing point-lowering reducing substance, said additive consisting essentially of a mixture of potassium carbonate and at least one water soluble alkali silicate wherein the alkali silicate amounts to 1 to 10% by weight of the additive with the balance potassium carbonate, and wherein the additive is present in an amount of 1 to 50% by weight of the antifreeze and deicing agent.

5,853,611

POLYETHER POLYMER, PREPARATION PROCESS AND USE THEREOF

Hiroshi Kawamukai; Katsuhiko Rindo; Takashi Oda, all of Wakayama; Masaaki Moriyama; Hideyuki Hanazawa, both of Chiba, and Yasushi Kajihara, Ibaraki, all of Japan, assignors to Kao Corporation, Tokyo, Japan
PCT No. PCT/JP96/00291, § 371 Date Sep. 11, 1997, § 102(e) Date Sep. 11, 1997, PCT Pub. No. WO96/26233, PCT Pub. Date Aug. 29, 1996
PCT Filed Feb. 9, 1996, Ser. No. 894,556
Claims priority, application Japan, Feb. 24, 1995, 7-036681; Apr. 6, 1995, 7-081112
Int. Cl.⁶ C11D *9/30;* **C08F** *283/04*
U.S. Cl. 252—89 **10 Claims**

1. A polyether polymer having structural units represented by the following general formula (1):



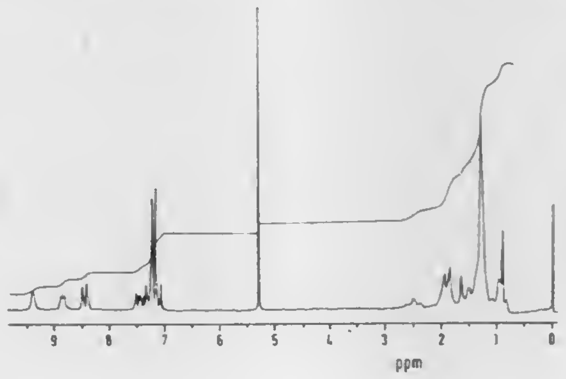
$$-(CH_2-\underset{\substack{|\\ CH_2\\ |\\ R^1-N^{\oplus}-Y-COO^{\ominus}\\ |\\ R^2}}{CH}-O)- \qquad (1)$$

wherein R1 and R2 mean individually an alkyl group of 1–20 carbon atoms, which may have one or more hydroxyl groups, and Y denotes an alkylene group of 1–10 carbon atoms, which may have a hydroxyl group; said polyether polymer having a weight-average molecular weight of 5,000–1,000,000.

5,853,612

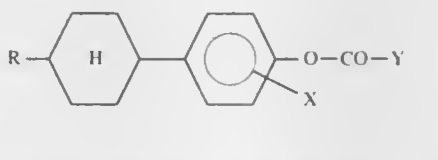
COMPOUND FOR USE IN LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL COMPOSITION COMPRISING THE SAME, AND LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME

Hidenori Fujiwara, Kakegawa, and Kazuya Nagao, Kawagoe, both of Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany
Continuation of Ser. No. 665,006, May 15, 1996, abandoned, which is a continuation of Ser. No. 362,010, Dec. 22, 1994, abandoned. This application Nov. 24, 1997, Ser. No. 977,929
Claims priority, application Japan, Dec. 27, 1993, 5-333181
Int. Cl.⁶ C09K *19/34;* **C07D** *307/02*
U.S. Cl. 252—299.61 **6 Claims**



1. A compound of the general formula (I):

(I)



wherein R represents an alkyl group having from 1 to 10 carbon atoms, X represents a hydrogen atom, a methyl group, an ethyl group or a halogen atom and Y presents furan-2-yl.

5,853,613
CHIRAL CYCLOHEXYL COMPOUNDS

John William Goodby; Kenneth Johnson Toyne; Michael Hird, and Stephen John Lock, all of Hull, United Kingdom, assignors to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

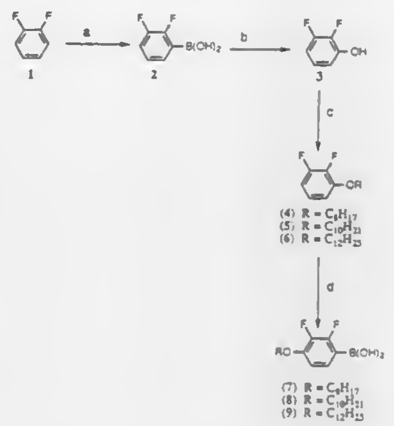
PCT No. PCT/GB95/01538, § 371 Date Jan. 16, 1997, § 102(e) Date Jan. 16, 1997, PCT Pub. No. WO96/00710, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 29, 1995, Ser. No. 765,713

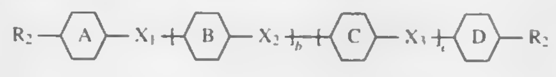
Claims priority, application United Kingdom, Jun. 29, 1994, 9412709

Int. Cl.^{6} C09K *19/30;19/34;19/12;* **C07C** *29/20*

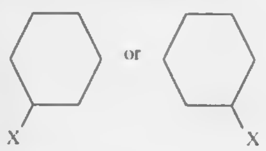
U.S. Cl. 252—299.63 **15 Claims**



1. An optically active compound of formula I:



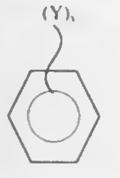
wherein A, B, C, D are independently selected from any of phenyl, pyridine, pyrimidine, cyclohexyl, or substituted phenyl and at least one of the cyclohexyl groups:



must be present:

- wherein X is any one of OH, OR$_3$, R$_3$, CH$_2$OR$_3$, F, Cl, OCF$_3$, CF$_3$, CH$_2$F, CHF$_2$, or CN, where R$_3$ is C_{1-5} alkyl and may itself contain a chiral centre;
- R$_1$ is C_{1-16} straight or branched chain alkyl or alkoxy and may contain a chiral centre;
- R$_2$ is C_{1-16} straight or branched chain alkyl or alkoxy and may contain a chiral centre or R$_2$ is H;

substituted phenyl is given by the formula:



wherein Y is individually selected from F, Cl or CN and y is 1–4;

X$_1$, and X$_2$, and X$_3$ are single bond;

b and c are independently 0 or 1;

provided that at least one of A, B, C or D is substituted phenyl wherein Y is F.

5,853,614
LONG DECAY LUMINESCENT MATERIAL

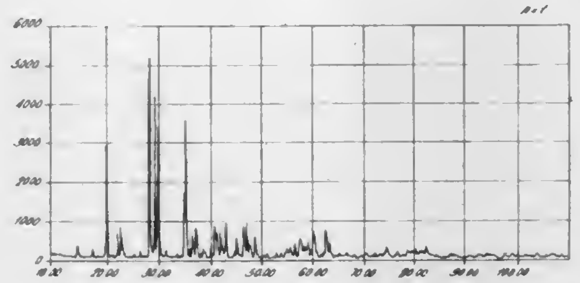
Hao Qinglong; Xu Qian; Li Jun; Li Pengcheng; Liu Baochan; Atsushi Ogura, and Hao Qingfen, all of Fuchu, Japan, assignors to Beijing Hongye Coating Materials Company, Beijing, China, and Chemitech, Inc., Tokyo, Japan

Filed Jul. 21, 1997, Ser. No. 897,000

Claims priority, application Japan, Dec. 17, 1996, 8-353559

Int. Cl.^{6} C09K *11/08;11/55;11/63;11/77*

U.S. Cl. 252—301.4 R **5 Claims**



1. The long decay luminescent materials is represented by the formula as

$$(Sr_{0.9995\sim0.998}Eu_{0.0005\sim0.002})Al_2O_4\cdot(Sr_{0.9995\sim0.998}Eu_{0.0005\sim0.002})O\cdot n(Al_{1-a-b}B_bDy_a)_2O_3$$

in it a=0.0005~0.002, b=0.001~0.35, n=1~8 and is characterized in having improved long decay time and improved high brightness.

5,853,615
FLUORESCENT COVERING FOR ROADS, PARKING AREAS ETC, WHICH FLUORESCES UPON ILLUMINATION WITH ULTRAVIOLET LIGHT

Jörn Arne Suhr, Everöd, Sweden, assignor to Cleanosol International AB, Sweden

Continuation of Ser. No. 640,829, Jun. 27, 1996, abandoned. This application Oct. 31, 1997, Ser. No. 962,224

Claims priority, application Sweden, Nov. 15, 1993, 9303750

Int. Cl.^{6} E01F *9/04;* **C09D** *5/22*

U.S. Cl. 252—301.21 **5 Claims**

1. A fluorescent covering composition for roads and parking areas comprising: an organic optical whitener, a pigment and a binder said binder comprising a solid solution of an amorphous polymer mixture including at least one hydrocarbon resin which fluoresces with a white to yellow-white colour, said binder having a glass transition temperature of 20° C. to 60° C. and a coefficient of elasticity which is less than 1000 MPa at −10° C. and greater than 1 MPa at +60° C. and which fluoresces upon illumination with ultraviolet light and wherein said composition included about 10 parts of zinc-white by weight and about 5 parts of titanium dioxide by weight, and wherein said binder is provided in an amount of about 25 parts by weight, said organic optical whitener is provided in an amount of about 1 part by weight, glass pearls are provided in an amount of about 20 parts by weight and a reinforcing agent is provided in an amount of about 39 parts by weight.

5,853,616
METHOD FOR PREPARING LOW-CONCENTRATION POLYALUMINOSILICATE MICROGELS

Robert Harvey Moffett, Landenberg, Pa., and John Derek Rushmere, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 548,224, Oct. 25, 1995, Pat. No. 5,648,055, which is a continuation-in-part of Ser. No. 345,890, Nov. 28, 1994, Pat. No. 5,503,820, which is a continuation-in-part of Ser. No. 166,679, Dec. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 093,157, Jul. 23, 1993, Pat. No. 5,312,595, which is a division of Ser. No. 887,793, May 26, 1992, Pat. No. 5,279,807. This application Jun. 13, 1997, Ser. No. 874,141

Int. Cl.^{6} C01B *33/26*

U.S. Cl. 252—315.5 **3 Claims**

1. A method for continuously preparing a polyaluminosilicate microgel resulting in reduced silica deposition in which the microgel comprises a solution of from 1 to 2 nm diameter silica particles having a surface area of at least about 1000 m^2/g which are linked together into individual chains to form three-dimensional network structures and comprises:

(a) simultaneously introducing a first stream comprising a water soluble silicate solution and a second stream comprising an alkali metal aluminate into a mixing zone where the streams converge at an angle of not less than 30 degrees and at a rate sufficient to produce a Reynolds number in the mixing zone of at least about 4000 and a resulting silicate/acid/salt mixture having a silica concentration in the range of from 1 to 6 wt. % and a pH>8;

(b) aging the silicate/aluminate mixture for a period of time sufficient to achieve a desired level of partial gelation, but not longer than 15 minutes; and

(c) diluting the aged mixture to a silica concentration of not greater than 2.0 wt. %.

5,853,617
METHOD AND COMPOSITION FOR SUPPRESSING OIL-BASED FOAMS

Christopher T. Gallagher; Patrick J. Breen; Brian Price, and Alan F. Clemmit, all of Baker Performance Chemicals 1600 Industrial Blvd., Sugarland, Tex. 77478

Filed May 14, 1997, Ser. No. 856,439

Int. Cl.^{6} B01D *19/04;* **C09K** *3/00*

U.S. Cl. 252—321 **13 Claims**

1. A method for suppressing oil-based foam in a system comprising:

- introducing from about 4 to 10 wt. % fluorosilicone into the foam; and
- introducing from about 96 to 90 wt. % non-fluorinated siloxane into the foam,
- where the proportions are based on the total amount of fluorosilicone and non-fluorinated siloxane;
- where the fluorosilicone and the non-fluorinated siloxane may be added in any sequence.

5,853,618
FOAM

Catherine Louise Barker; Patrick Jean-François Etesse, both of Brussels; Jose Louis Vega, Strombeek-Bever, and Jan Hendrik Maria Verbiest, Antwerp, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US96/11273, § 371 Date May 5, 1998, § 102(e) Date May 5, 1998, PCT Pub. No. WO97/03176, PCT Pub. Date Jan. 30, 1997

PCT Filed Jul. 3, 1996, Ser. No. 983,205

Claims priority, application European Pat. Off., Jul. 13, 1995, 95870088

Int. Cl.^{6} B01D *19/04*

U.S. Cl. 252—321 **8 Claims**

1. A foam having a bulk density of less than 250 g/l,

- the foam having a stability in air of at least 15 seconds, the stability being defined as the time for the foam to collapse to half its volume when measured in a glass beaker having a 111 mm internal diameter and 62 mm internal height,
- wherein the foam has a stability on water at 20° C. of less than 2 hours, the stability on water being defined as the time taken for a 150 ml foam mass on the surface of 450 ml distilled water in a glass beaker having a 111 mm internal diameter and 62 mm internal height, to collapse to reveal a 2 cm diameter area of the water surface which is substantially free from foam.

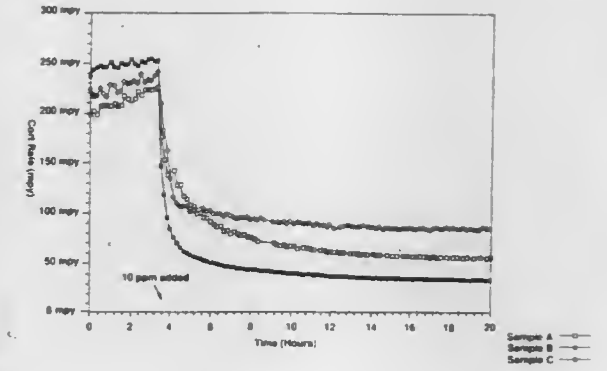
5,853,619
LOW TOXIC CORROSION INHIBITOR

James D. Watson, and John G. Garcia, Jr., both of Houston, Tex., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugar Land, Tex.

Filed Nov. 22, 1996, Ser. No. 755,309

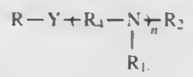
Int. Cl.^{6} C23F *11/14*

U.S. Cl. 252—391 **12 Claims**



1. A method of inhibiting corrosion of a ferrous metal by a fluid encountered in petroleum operations, which comprises:

(a) introducing into the fluid inhibiting amounts of a two-component corrosion inhibitor comprising (A) mercaptoacetic acid and (B) an amine derivative having the formula of



$$R-Y+R_4-\underset{\substack{|\\ R_1}}{N}+_nR_2$$

Where

- n is an integer of 1 to 6;
- R is a C_{6-20} hydrocarbon group;
- R$_4$ is an alkyl group having from 2 to 6 carbon atoms;
- R$_1$ and R$_2$ are independently $(CH_2)_p$ COOH groups where p is an integer of 1 to 4; and

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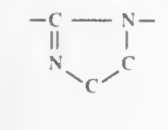
Y is selected from the group consisting of an amide having the formula of —CO—NH— and an imidazoline group having the formula



5,853,620

COMPOSITIONS AND COMPOUNDS TO MINIMIZE HYDROGEN CHARGING AND HYDROGEN INDUCED CRACKING OF STEELS

Russell D. Kane, Houston, and Michael S. Cayard, Woodlands, both of Tex., assignors to InterCorr-CLI International, Inc., Houston, Tex.

Filed Feb. 28, 1995, Ser. No. 393,268

Int. Cl.^{6} C23F *11/14;* **C09K** *15/16*

U.S. Cl. 252—394 **3 Claims**

1. A composition to minimize hydrogen charging and hydrogen induced cracking of steels consisting essentially of:

a carrier selected from the group consisting of diesel oil, mineral oil, and grease; N-tallow 1,3 propylene diamine; and N-coco 1,3 propylene diamine.

5,853,621

CORROSION RESISTANT PAINT

Granville G. Miller, Birmingham, Ala.; Lawrence W. Shacklette, Maplewood, N.J.; Ronald L. Elsenbaumer, Arlington, Tex.; Bernhard Weszling, Bargteheide, Germany; Peter Whang, Livingston, N.J., and Vaman G. Kulkarni, Charlotte, N.C., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 452,244, May 26, 1995, Pat. No. 5,648,416. This application Jul. 3, 1997, Ser. No. 888,274

Int. Cl.^{6} H01B *1/00;1/02;* **B32B** *9/04*

U.S. Cl. 252—500 **16 Claims**

1. A coated metal substrate comprising:

a metal substrate formed from a metal which is subject to corrosion; and

a coating on all or a portion of one or more of the surfaces of said substrate; said coating having an electrical conductivity of less than about 10^{-8} S/cm and comprising one or more polymeric binders and an anti-corrosion effective amount of one or more nonconductive conjugated polymers in addition to said polymeric binder wherein said one or more nonconductive conjugated polymers is a conjugated homopolymer or copolymer having (a) a conjugated main backbone chain and side chains which comprise a number of carbon and hetero atoms and (b) having a doping level of from zero to about 0.5 mole % based on the total number of carbon and hetero atoms which comprise the conjugated main backbone chain or side chains.

5,853,622

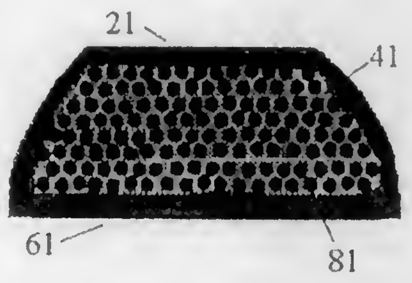
TRANSIENT LIQUID PHASE SINTERING CONDUCTIVE ADHESIVES

Catherine Gallagher, San Marcos; Goran Matijasevic, San Clemente, and M. Albert Capote, Carlsbad, all of Calif., assignors to Ormet Corporation, Carlsbad, Calif.

Continuation-in-part of Ser. No. 483,079, Jun. 7, 1995, Pat. No. 5,716,663, which is a continuation-in-part of Ser. No. 324,060, Oct. 17, 1994, which is a division of Ser. No. 769,892, Oct. 1, 1991, Pat. No. 5,376,403, which is a continuation-in-part of Ser. No. 477,678, Feb. 9, 1990, abandoned. This application Aug. 28, 1996, Ser. No. 704,467

Int. Cl.^{6} H01B *1/22;* **C21B** *3/02*

U.S. Cl. 252—512 **20 Claims**



1. A conductive adhesive composition comprising:

in the range of about 5 up to about 65% by volume of a high melting point metal, wherein said metal is in the form of a substantially spherical powder,

in the range of about 5 up to about 60% by volume of a low melting point metal or metal alloy, wherein said metal or metal alloy is in the form of a substantially spherical powder,

in the range of about 2 up to about 60% by volume of a chemically protected crosslinking agent, wherein said chemically protected crosslinking agent is an acid or strong base which has been chemically modified by the addition of a chemically or thermally triggered species to become reactive only at or near the time the low melting point metal or metal alloy, or an alloy thereof with said high melting point metal melts,

in the range of 0 up to about 35% by volume of a resin,

in the range of 0 up to about 35% by volume of a reactive monomer or polymer that is not the same as said resin, and

in the range of 0 up to about 10% by volume of a metal additive,

with the proviso that said composition must contain either said resin and/or said reactive monomer or polymer, or, in the alternative, said resin and/or said reactive monomer or polymer can be combined with said chemically protected crosslinking agent to produce a single component of said composition.

5,853,623

PEPTIDYL COMPOUNDS AND THEIR THERAPEUTIC USE AS INHIBITORS OF METALLOPROTEINASES

John Montana; David Alan Owen; Jonathan Dickens, and Andrew Douglas Baxter, all of Cambridge, United Kingdom, assignors to Chiroscience Limited, United Kingdom

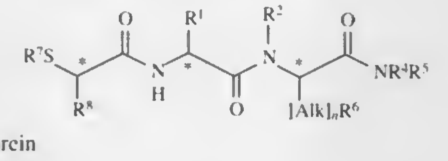
Filed May 10, 1996, Ser. No. 644,383

Claims priority, application United Kingdom, Nov. 10, 1993, 9323165

Int. Cl.^{6} C07K *5/062;* **A61K** *38/55*

U.S. Cl. 260—998.2 **10 Claims**

1. A compound of formula I



(I)

wherein

R^1 is C_{2-6} alkyl, C_{2-6} alkenyl, aryl, (C_{1-6}alkyl)aryl or C_{1-6} alkyl—AR^9 where A is O, NR^9 or S(O)$_m$, where m=0–2, and the or each R^9 is H, C_{1-4} alkyl, aryl or (C_{1-4} alkyl)aryl;

R^2 is H or C_{1-6} alkyl;

either R^4 is H or C_{1-6} alkyl optionally substituted by amino (NH_2), arylamino, protected amino, aryl, di(C_{1-6} alkyl)amino, mono(C_{1-6} alkyl)amino, CO_2H, protected carboxyl, carbamoyl, mono(C_{1-6} alkyl)carbamoyl or di(C_{1-6} alkyl)carbamoyl, and R^5 is H or C_{1-6} alkyl, or NR_4R_5 is pyrrolidino, piperidino or morpholino;

R^6 is optionally-substituted C_{3-6} cycloalkyl, C_{3-6} cycloalkenyl, C_{1-6} alkyl, benzyl, (C_{1-6} alkoxy)benzyl, benzyloxybenzyl or 3-indolylmethyl;

Alk is C_{1-6} alkyl or C_{2-6} alkenyl and n=0 or 1;

R^7 is H or R^{10}CO where R^{10} is C_{1-4} alkyl, (C_{1-4} alkyl)aryl, C_{3-6} cycloalkyl, (C_{3-6} cycloalkyl)C_{1-4} alkyl, C_{2-6} alkenyl or (C_{2-6} alkenyl)aryl;

R^8 is H, C_{1-4} alkyl, (C_{1-4} alkyl)aryl or aryl;

aryl is optionally-substituted phenyl or naphthyl, and the optional substituents are selected from halogen, CF_3, C_{1-6} alkyl, alkoxy and phenyl;

or a salt, solvate or hydrate thereof.

5,853,624

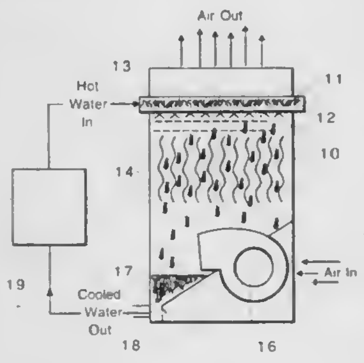
FLUIDIC SPRAY NOZZLES FOR USE IN COOLING TOWERS AND THE LIKE

Surya Raghu, Columbia, and Ronald D. Stouffer, Silver Spring, both of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Feb. 12, 1997, Ser. No. 798,685

Int. Cl.^{6} B01F *3/04*

U.S. Cl. 261—81 **11 Claims**



1. In a cooling tower having a housing, a wet deck, a manifold for receiving hot water from a heat source, a plurality of hot-water spray nozzles mounted on said manifold for spraying said hot water on said wet deck, air blower means for blowing air over said wet deck and causing a small portion of said hot water issuing from said spray nozzles to evaporate and remove heat from the remaining water thereby cooling said remaining water by evaporation, and a sump means for collecting said remaining water and returning said remaining water to said heat source, the improvement wherein said spray nozzles include a low pressure fluidic oscillator for: (a) forming large sized droplets of hot water uniformly over a large area, (b) reducing the quantity of droplets of hot water that are less than 2 mm diameter, (c) issuing a spray pattern that reduces aerodynamic interference with air flow from said air blower, and (d) reduces sediments getting into the spraying of said hot water.

5,853,625

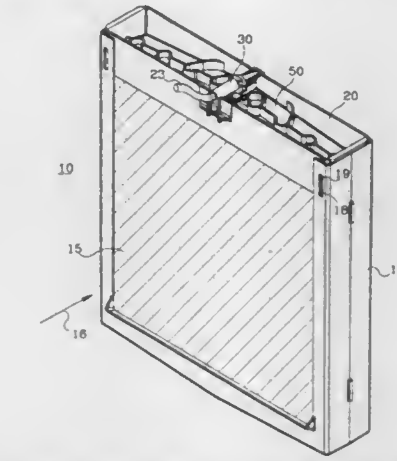
WATER DISTRIBUTION TRAY FOR A PAD-TYPE HUMIDIFIER UNIT

Timothy J. Kensok, Minnetonka, and Timothy J. Smith, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 27, 1997, Ser. No. 883,986

Int. Cl.^{6} B01F *3/04*

U.S. Cl. 261—106 **16 Claims**



1. An elongate water distribution tray to be disposed in a level, upright position above a pad in a pad type humidifier, said tray comprising an elongate floor having first and second ends and having a plurality of holes distributed lengthwise in it, said tray further having a plurality of channels formed by vertical walls projecting from the upper surface of the upright tray's floor, each said channel having an open end in flow communication with a water reception area of the floor and a second closed end forming a chamber enclosing at least one hole in the floor, wherein when the tray is level, the tray floor slopes downwardly from the water reception area, and wherein the chamber of at least a first of the channels encloses a hole at a point within the first channel lower when the tray assembly is level, than any other point within the channel.

5,853,626

OPTICAL MODULE AND A FABRICATION PROCESS THEREOF

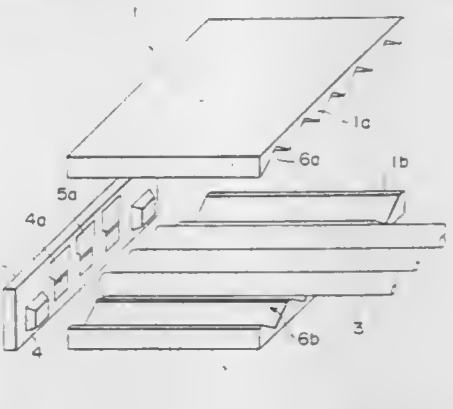
Masayoshi Kato, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 670,015, Jun. 25, 1996, Pat. No. 5,759,453, which is a division of Ser. No. 272,734, Jul. 11, 1994, Pat. No. 5,555,333. This application Oct. 15, 1997, Ser. No. 950,733

Claims priority, application Japan, Jul. 12, 1993, 5-171726; Aug. 23, 1993, 5-207365; Oct. 22, 1993, 5-264763; Dec. 16, 1993, 5-315709; May 6, 1994, 6-94144

Int. Cl.^{6} B29D *11/00;* **G02B** *6/36*

U.S. Cl. 264—1.25 **1 Claim**



1. A method for manufacturing an optical module that includes: a first substrate carrying one or more grooves on an upper major surface thereof at respective, predetermined positions, said one or more grooves extending substantially parallel with each other for carrying one or more optical fibers therein; and a second substrate carrying one or more optical devices on an upper major surface thereof in correspondence to said one or more optical fibers; said second substrate having at least a pair of polygonal projections at respective predetermined positions corresponding to grooves on said upper major surface of said first substrate; said second substrate being mounted upon said first substrate such that an end surface of said first substrate faces said upper major surface of said second substrate and such that said polygonal projections on said upper major surface of said second substrate engage with corresponding grooves on said upper major surface of said first substrate, at said end surface of said first substrate; said method comprising the steps of:
- forming said polygonal projections by applying an anisotropic etching process to said device substrate; and
- forming an optical device on at least one of said polygonal projections monolithically.

5,853,627

PLASTIC MOLDING APPARATUS AND METHOD

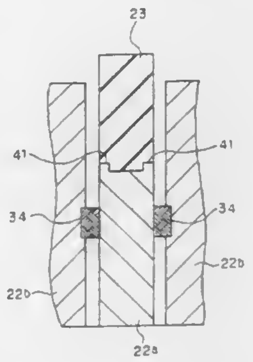
Jun Watanabe, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 7, 1997, Ser. No. 965,845

Claims priority, application Japan, Nov. 7, 1996, 8-294688; Mar. 12, 1997, 9-057428

Int. Cl.^{6} B29D *11/00*

U.S. Cl. 264—2.3 **33 Claims**



1. A plastic molding apparatus for molding a plastic base material, comprising:
- a first die having,
  - a first side, and
  - a second side configured to receive a main clamping force along a main clamping direction;
- a second die having,
  - a first side with a cavity having a mirror surface formed therein, said first side opposing said first side of said first die;
  - a second side that receives the main clamping force such that said first die and said second die clamp said plastic base material therebetween when said main clamping force is applied to said first die and said second die, said second die comprising, a separation die including,
    - a cavity forming portion having a cavity forming surface with edge portions having engagement portions that engage said plastic base material, said cavity forming portion positioned to generally face said first side of said first die,
    - a cavity side board portion being adjacent to the cavity forming portion, and
    - an elastic member mounted between the cavity forming portion and the cavity side board portion, and
  - a controllable die clamping mechanism disposed at third and fourth sides of said second die and configured to exert a lateral clamping force to said third and fourth sides that is generally oriented perpendicular to the main clamping direction, wherein
    - said lateral clamping force compresses said elastic portion and urges said cavity side board portion to contact said edge portions of said cavity forming portion so as to maintain a predetermined shape of said cavity when subject to said lateral clamping force, and
    - said elastic portion separating said cavity forming portion and the cavity side board portion as a result of a resiliency action therefrom when said lateral clamping force is released.

5,853,628

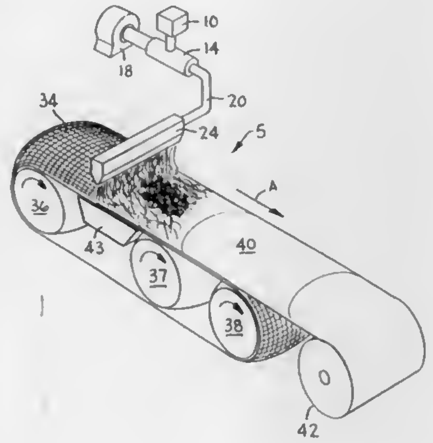
METHOD OF FORMING NONWOVEN FABRIC HAVING A PORE SIZE GRADIENT

Eugenio Go Varona, Marietta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Sep. 12, 1996, Ser. No. 712,818

Int. Cl.^{6} D04H *1/70*

U.S. Cl. 264—6 **29 Claims**



1. A method of forming a nonwoven web having a varying pore size gradient, comprising:
- providing a foraminous shaped forming surface that is substantially linear in a machine direction along a first horizontal axis and that includes one of a concave or convex curvature along a second horizontal axis that is perpendicular to said first horizontal axis;
- forming thermoplastic fibers;
- directing the thermoplastic fibers at an angle of inclination relative to said second horizontal axis against said forming surface so as to form a web thereon, said forming surface having a central zone and at least one peripheral zone, wherein said central zone has a smaller angle of inclination relative to said second horizontal axis than an angle of inclination of said at least one peripheral zone such that said fibers in said central zone have less fiber alignment than fibers in said at least one peripheral zone resulting in a larger average pore size in said central zone than a pore size in said peripheral zone.

5,853,629

METHOD OF LINING THE INTERNAL SURFACE OF A PIPE

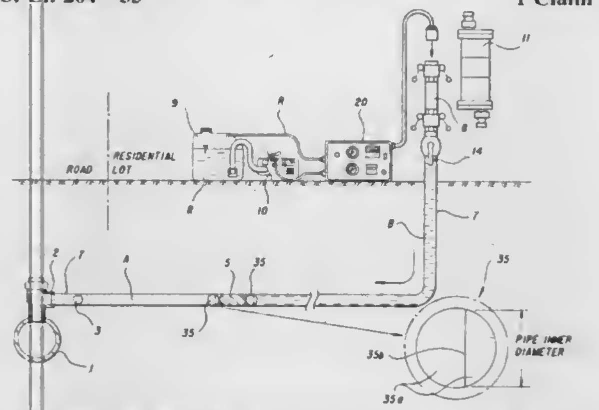
Shigeru Toyoda, Saitama-ken; Shuichi Yagi, and Masaaki Itagaki, both of Kanagawa-ken, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Division of Ser. No. 560,928, Nov. 20, 1995, Pat. No. 5,700,405. This application Nov. 6, 1996, Ser. No. 746,195

Claims priority, application Japan, Nov. 28, 1994, 6-293500; Nov. 28, 1994, 6-293501; Nov. 29, 1994, 6-294734; Nov. 29, 1994, 6-294735

Int. Cl.^{6} B32B *35/00;* E04B *1/16*

U.S. Cl. 264—35 **1 Claim**



1. A method of lining an internal surface of a pipe, the method comprising the steps of:
- inserting a lining pig into the pipe from an open end thereof:
- introducing an amount of a resin, which is necessary to line the internal surface of the_pipe, into the pipe from the open end subsequent to the insertion of the lining pig;
- providing first and second spherical bodies each of a soft resilient material, as first and second liquid blocking pigs;
- interposing a flexible liquid barrier diaphragm inside each of the first and second liquid blocking pigs at a position offset from a center position of the spherical body and corresponding to an inner diameter of the pipe;
- forming each liquid barrier diaphragm into a circular shape having a diameter equal to the inner diameter of the pipe;
- inserting into the pipe behind the resin a) the first liquid blocking pig, b) a liquid absorbing material for absorbing liquid remaining on the pipe internal surface and c) the second liquid blocking pig for blocking a liquid in order to prevent the resin from mixing with the liquid;
- injecting an amount of pressurized liquid into the pipe subsequent to the insertion of the second liquid blocking pig:
- forcing the lining pig, the resin, the first liquid blocking pig, the liquid absorbing material and the second liquid blocking pig to move forwardly through the pipe by the pressurized liquid until a front end of the resin reaches an inner end of the pipe; and
- sucking back the injected pressurized liquid such that the first liquid blocking pig, the liquid absorbing material, the second liquid blocking pig, the resin and the lining pig are moved backwardly through the pipe so as to line the internal surface of the pipe with a layer of the resin wherein an even resin lining layer is evenly applied to the internal surface of the pipe by means of the lining pig.

5,853,630

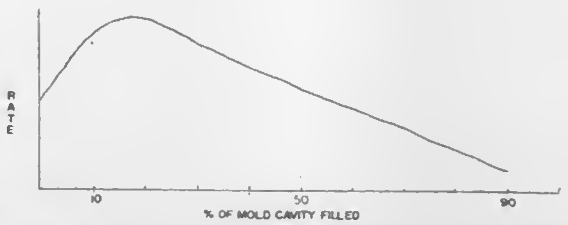
LOW PRESSURE METHOD FOR INJECTION MOLDING A PLASTIC ARTICLE

Siebolt Hettinga, 2123 NW. 111th St., Des Moines, Iowa 50325

Continuation of Ser. No. 492,232, Jun. 19, 1995, abandoned. This application Sep. 8, 1997, Ser. No. 925,553

Int. Cl.^{6} B29C *45/77*

U.S. Cl. 264—40.5 **21 Claims**



1. A method for directing and controlling the flow of plastic material into a mold cavity of a mold unit in a manner which maintains an unbroken melt front on the injected plastic material throughout the molding process, the steps of the method comprising:
- (a) providing a first mold section;
- (b) providing a second mold section which, when pressed into sealed engagement with said first mold section, forms a mold cavity for molding a plastic article;
- (c) pressing said second mold section into sealed engagement with said first mold section to form said mold cavity;
- (d) providing an injection device in operable communication with said mold cavity;
- (e) injecting a plastic material into said mold cavity with said injection device at a rate sufficient to produce an unbroken melt front along a leading edge of said plastic material:
- (f) increasing the rate at which said plastic material is injected into said mold cavity, while maintaining said unbroken melt front along said leading edge of said plastic material; and
- (g) after increasing the rate of injection, but before said mold cavity is completely filled with said plastic material, decreasing the rate at which said plastic material is injected into said mold cavity while maintaining said unbroken melt front along said leading edge of said plastic material.

5,853,631

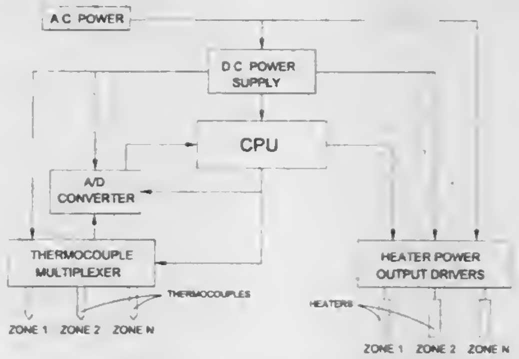
MOLD HEATER STARTUP METHOD

Thomas P. Linehan, Clarkston, Mich., assignor to D-M-E Company, Madison Heights, Mich.

Filed Dec. 8, 1997, Ser. No. 986,347

Int. Cl.^{6} B29C *45/74*

U.S. Cl. 264—40.6 **3 Claims**



1. In an injection molding system including a mold with a heated runner system for supplying plastic melt to a cavity within the mold and a plurality of heating elements associated with the mold and runner system, a method for bringing the mold and runner system to a desired operating temperature comprising the steps of:
- (a) positioning the heaters within the mold and runner system to divide the mass of the mold and runner system into multiple zones,
- (b) positioning temperature sensors within each zone to provide feedback concerning the temperature within the associated zone at any point in time,
- (c) applying a controlled current to the heating elements within each zone for a defined period of time,
- (d) monitoring the temperature of each zone using the feedback from the temperature sensors;
- (e) determining the rate of temperature increase for each zone based on the temperature change produced by the controlled

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current and thereby identifying the relative thermal mass associated with each zone;

(f) establishing a startup sequence for the zones based on the relative thermal mass determined in step (e) so that the heaters in the zones having greater thermal mass will be activated to heat the associated mass of the mold and runner system to a predetermined set point before the heaters in the zones having less thermal mass are actuated.

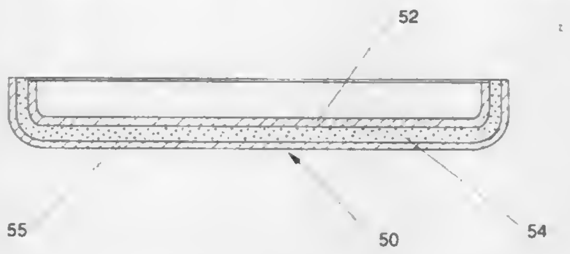
5,853,632

PROCESS FOR MAKING IMPROVED MICROWAVE SUSCEPTOR COMPRISING A DIELECTRIC SILICATE FOAM SUBSTANCE COATED WITH A MICROWAVE ACTIVE COATING

Paul Ralph Bunke; Robert Lawrence Prosise, both of Cincinnati, and Phillip Floyd Pflaumer, Hamiltion, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1995, Ser. No. 580,676
Int. Cl.^{6} C04B *38/00*

U.S. Cl. 264—42 **32 Claims**



1. A process for making a dry dielectric silicate foamed microwave susceptor comprising the following steps:

a) preparing pourable aqueous alkali metal dielectric silicate slurry;
b) pouring said slurry into a smooth surface substrate mold;
c) heating said poured slurry at an effective elevated temperature to foam the slurry in said mold;
d) drying said foam at an effective elevated temperature to provide a dry dielectric silicate foam substrate having a moisture level of from 0% to 5%, by weight of dry foam, and having at least one substantially smooth surface;
e) coating at least a portion of said substantially smooth surface with a flowable microwave active coating, said microwave active coating comprising an alkali metal silicate binder and a microwave active constituent; and
f) drying said flowable coating at an effective temperature to form a dry microwave active coating layer and wherein said dry layer of microwave active coating has a surface concentration of said active constituent of at least about 1.0 gram per square meter.

5,853,633

METHOD OF PRODUCING MICROPOROUS THERMOPLASTIC RESIN MEMBRANE

Koichi Kono, and Kotaro Takita, both of Kawasaki, Japan, assigoors to Tonen Chemical Corporation, Tokyo, Japan

Filed Jun. 19, 1996, Ser. No. 666,074
Claims priority, application Japan, Jun. 19, 1995, 7-175502
Int. Cl.^{6} C08J *9/18*

U.S. Cl. 264—54 **7 Claims**

1. A method of producing a microporous thermoplastic resin membrane, comprising subjecting a thermoplastic resin foam incorporating microfine cells having a ratio B/A between a void size (A) and a wall thickness (B) of cells from 0.099 to less than 0.5 and having a void ratio of not less than about 50% to plastic deformation to deform the shape of the cells, and breaking boundaries of the cells.

5,853,634

METHOD OF FORMING LIGHT WEIGHT CONSTRUCTION SHEET GOODS FROM RECYCLABLE MATERIAL

Orville M. Ontkean, 40397 Calle Medusa, Temecula, Calif. 92591

Filed Aug. 13, 1997, Ser. No. 910,689
Int. Cl.^{6} B28B *1/26*

U.S. Cl. 264—86 **12 Claims**

1. A method of forming a sheet of building material comprising the steps of:

forming an aqueous pulp slurry having a pH of about 6.5 and comprising approximately 25–35 parts by weight of washed and macerated cellulosic material, approximately 8–14 parts by weight of unmacerated cellulosic material, and approximately 35–40 parts by weight of an expanded rock powder;
adding to the aqueous pulp slurry an aqueous emulsion containing approximately 5 parts by weight of a surfactant selected from the group consisting of stearates, oleates and palmitate;
adjusting the pH of the aqueous pulp slurry to approximately 6.5–7 by adding an aqueous mixture containing approximately 0.5–3.0 parts by weight of aluminum sulphate and 3.0–6.0 parts by weight of magnesium sulphate;
adding 21–50 units by weight of expanded silicates having a particle diameter of about ⅛ of an inch;
adding approximately 8–16 units by weight of polystyrene grindings and adjusting the pH to about 7.5–8;
draining the aqueous solution from the slurry;
washing the remaining solid mixture with water having a pH of approximately 7–7.5;
adding to the washed solids approximately 30 units by weight of particulate polystyrene and approximately 75 units by weight of an expanded rock particles;
forming the solids mixture into a sheet and dewatering the sheet using a pressure of at least about 0.5–6.0 psi; and
drying the dewatered sheet at about 180–200 degrees F.

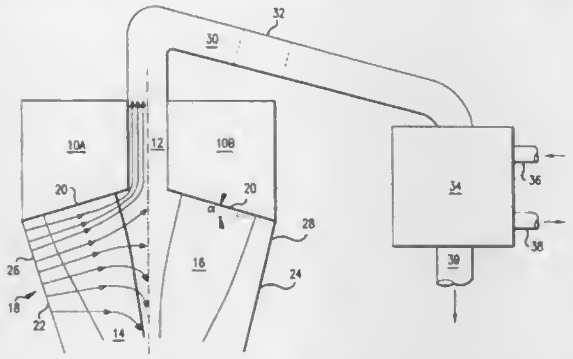
5,853,635

METHOD OF MAKING HETEROCONSTITUENT AND LAYERED NONWOVEN MATERIALS

Charles J. Morell, and Bryan D. Haynes, both of Roswell, Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Jun. 18, 1997, Ser. No. 878,288
Int. Cl.^{6} D04H *1/56;3/16*

U.S. Cl. 264—103 **57 Claims**



1. A method of making a heteroconstituent nonwoven material including a mixture of polymer filaments of a first type A and filaments of a second type B, comprising the steps of:

extruding filaments of the first type A from a first spinpack;
extruding filaments of the second type B from a second spinpack;
quenching the filaments of the first type A and second type B by supplying a first air stream laterally of the type A filaments and a second opposing air stream laterally of the type B filaments;
the first and second opposing air streams having sufficient velocities and flow rates to bring the type A and type B filaments together and cause at least some mixing of the type A and type B filaments resulting in a heteroconstituent nonwoven material;
wherein the first air stream and second air stream are supplied at about 5°–25° C.

5,853,636

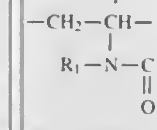
FIBER TREATMENT COMPOSITION

Takeshi Munekiyo, Yao; Tamotsu Matsunaga, Nabari, and Hirofumi Ishida, Yao, all of Japan, assignors to Matsumoto Yushi-Seiyaku Co., Ltd., Osaka, Japan

Filed Jul. 29, 1997, Ser. No. 875,478
Claims priority, application Japan, Nov. 29, 1995, 7-310694
Int. Cl.^{6} D01D *5/08;* **D06M** *15/59*

U.S. Cl. 264—129 **11 Claims**

1. A fiber treatment composition which comprises (1) at least one member selected from the group consisting of poly(N-vinylalkylamides) having repeating units of formula I:



$$\begin{array}{l} -CH_2-CH- \\ \qquad\quad | \\ \quad R_1-N-C-R_2 \\ \qquad\qquad\ \| \\ \qquad\qquad\ O \end{array}$$

(I)

in which R_1 is H or an alkyl group having 1–3 carbon atoms, and R_2 is an alkyl group having 1–5 carbon atoms and copolymers containing the N-vinylalkylamide units in the amount of not less than 50 mol %; and (2) di- or more valent water soluble polyols and/or derivatives thereof; in the weight ratio of (1):(2) being 1:5 to 1:300.

5. A method for producing synthetic fibers by conducting a melt-spinning process operated at 1,000 m/min or more, wherein the fiber treating composition as defined in claim 1 is applied.

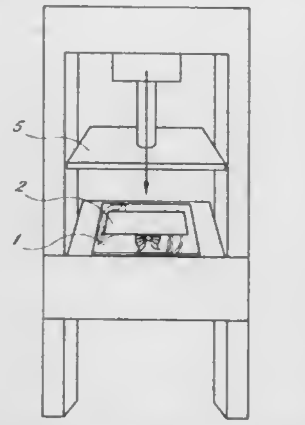
5,853,637

METHOD OF REPLICATING IMAGES OF BIOLOGICAL SPECIMENS ONTO LEATHER

Terry Keith Bryant, 718 Griffin Ave. Apt. 236, Enumclaw, Wash. 98022-3462

Filed Sep. 28, 1995, Ser. No. 535,343
Int. Cl.^{6} B29C *33/40;* **C14B** *1/32*

U.S. Cl. 264—132 **4 Claims**



1. A method of forming a detailed three dimensional image of a biological specimen on leather comprising the steps of:

providing a formed thermoplastic sheet, having an indented facsimile impression of said biological specimen thereon, made by the method of forming an indented facsimile impression of a thickly contoured, semi-rigid biological specimen in a transparent thermoplastic sheet to faithfully and substantially microscopically reproduce three dimensional thickness detail of the specimen without materially distorting or otherwise impairing the light transmitting properties of the bordering area of the plastic sheet surrounding the facsimile impression therein, said method of forming comprising subjecting the specimen to cushioned pressure and elevated temperature for a substantial time by: sandwiching a flat-faced thermoplastic sheet and the biological specimen directly in contact with one another; directly interposing said sheet and specimen between polished plates; backing at least one of said plates with a flat sheet of cushioning material; uniformly applying to said plates sufficient pressurization to cause an impression to be made in the thermoplastic sheet when in a near-plastic condition but insufficient pressurization to permanently upset the surface configurations of the specimen, the pressurization of the specimen being characterized by an initial pressurization for an initial period, and intermediate pressurization for an intermediate period and maximum pressurization for a final period, such successive periods of pressurization each being about equal, and the initial pressurization being about one-third the final pressurization, while the intermediate pressurization is about two-thirds the final pressurization, and final pressurization being from about 30–200 psi with relatively greater maximum pressures being used for relatively more rigid specimens; heating the pressurized assembly to an elevated temperature just below the temperature of plasticity of the thermoplastic sheet; maintaining the assembly in heated condition for a time sufficient for the specimen to form an inverse impression in the near-plastic thermoplastic sheet; cooling the pressurized assembly to substantially room temperature while maintaining the pressurization thereof; then disassembling the assembly and removing the specimen from the formed thermoplastic sheet;
placing a surface of said leather over said indented facsimile impression in said formed thermoplastic sheet;
applying pressure to said formed thermoplastic sheet and leather to form a replica of said indented facsimile impression, and thus said detailed three dimensional image of a biological specimen, on said leather;
then removing said leather from said formed thermoplastic sheet; and applying stain or dye to said leather.

5,853,638

PROCESS FOR PRODUCING STRETCHED POROUS FILM

Young-Kyoo Han, Seoul, Rep. of Korea, assignor to Samsung General Chemicals Co., Ltd., Chungnam, Rep. of Korea

Filed Jun. 27, 1997, Ser. No. 884,656
Int. Cl.^{6} B29C *55/14;55/16;67/20*

U.S. Cl. 264—154 **6 Claims**

1. A process for producing a porous film, which comprises the steps of:

compounding 50 to 200 parts by weight of an inorganic filler coated with stearic acid, 0.1 to 30 parts by weight of polyethylene wax, and 100 parts by weight of a polyethylene resin mixture of low density polyethylene having a density of 0.916 to 0.922 grams/cubic centimeter, linear low density polyethylene having a density of 0.923 to 0.930 grams/cubic centimeter, and medium density polyethylene having a density of 0.931 to 0.940 grams/cubic centimeter to produce a compound,
melt-molding said compound to produce a film, and stretching said film at an area stretching ratio of 1.5 to 36 times.

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5,853,639

ORIENTED POLYGLYCOLIC ACID FILM AND PRODUCTION PROCESS THEREOF

Yukichika Kawakami; Nobuo Sato; Mitsuru Hoshino; Toshitaka Kouyama, all of Fukushima, and Zenya Shiiki, Chiba, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

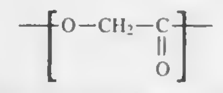
Filed Apr. 18, 1997, Ser. No. 844,408

Claims priority, application Japan, Apr. 30, 1996, 8-134217; Apr. 8, 1997, 9-105160

Int. Cl.^{6} B29C ***47/12;*** **B52B** ***5/00***

U.S. Cl. 264—177.19 **21 Claims**

19. A process for producing an oriented polyglycolic acid film, comprising the steps of melt-extruding a thermoplastic resin material which comprises polyglycolic acid having a repeating unit represented by the following formula (1):



$$-\!\left[O-CH_2-\underset{\underset{\displaystyle O}{\|}}{C}\right]\!- \qquad (1)$$

and the following physical properties:

(a) the melt viscosity, η*, as measured at a temperature of the melting point, Tm, of the polymer+20° C. and a shear rate of 100/sec, being 500–100,000 Pa.s;

(b) the melting point, Tm, being at least 150° C.;

(c) the melt enthalpy, ΔHm, being at least 20 J/g; and

(d) the density being at least 1.50 g/cm^3 as measured in an unoriented, crystallized form, the melt extruding being performed through a T-die and in a temperature range of from the melting point, Tm, to 255° C., to form the thermoplastic resin material into a sheet; immediately quenching the sheet to the crystallization temperature, Tc_1, of the polymer or lower; causing the quenched sheet to pass through stretching rolls in a temperature range of from the glass transition temperature, Tg, of the polymer to the crystallization temperature, Tc_1, to stretch the sheet in a uniaxial direction at a draw ratio higher than one time but not higher than 20 times; and optionally heat-setting the stretched sheet for 1 second to 3 hours in a temperature range of from Tc_1 to Tm+10° C. while maintaining its length constant or under tension.

5,853,640

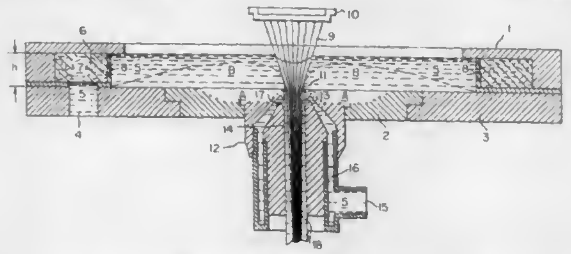
PROCESS FOR MAKING HIGH TENACITY ARAMID FIBERS

Takeji Furumai, Nagoya; Kouzou Imaeda, Susono, both of Japan; Stephen D. Moore, Powhatan, Va., and Mikio Ohno, Kounan, Japan, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., and Du Pont Toray, Tokyo, Japan

Filed Oct. 14, 1997, Ser. No. 950,250

Int. Cl.^{6} D01D ***5/06;*** **D01F** ***6/60***

U.S. Cl. 264—180 **4 Claims**



1. A process for making filaments of poly(p-phenylene terephthalamide) having a tenacity of at least 28 grams per denier comprising the steps of: (a) extruding filaments of an acid solution containing at least 30 grams of poly(p-phenylene terephthalamide) having an inherent viscosity of at least 4 per 100 milliliters of acid, out of a spinneret and through a layer of inert noncoagulating fluid into a coagulating bath and then through a spin tube along with overflowing coagulating liquid; (b) jetting additional coagulating liquid symmetrically about the filaments in a downward direction forming an angle of 0 to 85 degrees with respect to the filaments within 2.0 milliseconds from the time the filaments enter the spin tube, (i) maintaining a ratio of the mass flow rate of combined overflowing and jetted coagulating liquid to mass flow rate of the filaments of greater than 250, (ii) maintaining an average linear velocity of combined overflowing and jetted coagulating liquid in the spin tube which is less than the velocity of the filaments exiting from the spin tube, and (iii) maintaining constant the flow rates of both the jetted and the overflowing coagulating liquids; and (c) drying the filaments,

the improvement comprising employing a spinneret having capillaries with diameters of up to 0.051 millimeter (2 mils) and drying the filaments under a tension of at least 3.0 grams per denier.

5,853,641

METHOD FOR PREPARING POLYOLEFIN FIBERS CONTAINING ANTIMICROBIAL SILOXANE QUARTERNARY AMMONIUM SALTS

Ronald Sinclair Nohr, Roswell, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 686,228, Jul. 23, 1996, Pat. No. 5,777,010, which is a division of Ser. No. 450,451, May 25, 1995, Pat. No. 5,569,732, which is a division of Ser. No. 249,788, May 26, 1994, Pat. No. 5,567,372, which is a continuation-in-part of Ser. No. 76,529, Jun. 11, 1993, abandoned. This application Apr. 20, 1998, Ser. No. 63,171

Int. Cl.^{6} B28B ***3/20;*** **D01F** ***1/10***

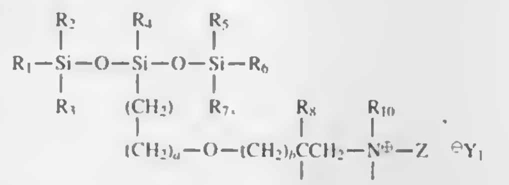
U.S. Cl. 264—211 **11 Claims**

1. A method for preparing fibers having antimicrobial properties which comprises:

melting a melt-extrudable thermoplastic composition; and

extruding the molten composition through multiple orifices to form streams of molten composition which are cooled to form fibers;

in which said melt-extrudable thermoplastic composition comprises at least one thermoplastic polyolefin and at least one additive which comprises a siloxane-containing moiety and an antimicrobial moiety, which additive is adapted to surface segregate upon extrusion of the molten composition to impart antimicrobial properties to the surfaces of said fibers, wherein said additive has either the general formula A.



wherein:

(1) each of R_1–R_7 is independently selected from the group consisting of monovalent C_1–C_{20} alkyl phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;

(2) each of R_8 and R_9 is a monovalent group independently selected from the group consisting of (a) hydrogen and (b) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_8 and R_9 cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_8 and R_9 represent a carbonyl group;

(3) each of R_{10} and R_{11} is a methyl group;

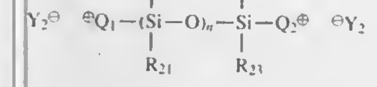
(4) a represents an integer from 1 to about 20;

(5) b represents an integer from 1 to about 20;

(6) Z is a monovalent group having from about 8 to about 30 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, and heterocyclic groups, and combinations thereof, wherein Z is terminated by an alkyl moiety which includes at least about 8 carbon atoms in a single continuous chain;

(7) Y_1 is an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and

(8) said additive has a molecular weight of from about 600 to about 1,700; or the general formula B.



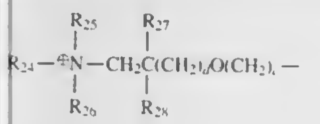
$$Y_2^{\ominus}\quad {}^{\oplus}Q_1-(\underset{R_{21}}{\overset{R_{20}}{Si}}-O)_n-\underset{R_{23}}{\overset{R_{22}}{Si}}-Q_2^{\oplus}\quad {}^{\ominus}Y_2$$

wherein:

(1) each of R_{20}–R_{23} is independently selected from the group consisting of monovalent C_1–C_{20} alkyl, phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;

(2) n represents an integer of from 1 to about 19;

(3) each of Q_1 and Q_2 represents an independently selected quaternary ammonium group having the general formula,



$$R_{24}-{}^{\oplus}\underset{R_{26}}{\overset{R_{25}}{N}}-CH_2\underset{R_{28}}{\overset{R_{27}}{C}}(CH_2)_dO(CH_2)_c-$$

in which:

(a) R_{24} is a monovalent alkyl group having from about 8 to about 30 carbon atoms, at least about 8 carbon atoms of which make up a single continuous chain;

(b) R_{25} and R_{26} are methyl groups;

(c) each of R_{27} and R_{28} is a monovalent group independently selected from the group consisting of (i) hydrogen and (ii) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_{27} and R_{28} cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_{27} and R_{28} represent a carbonyl group;

(d) c represents an integer of from 2 to about 20; and

(e) d represents an integer of from 2 to about 20;

(4) Y_2 represents an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and

(5) said additive has a polydispersity of up to about 3.0 and a weight-average molecular weight of from about 800 to about 2,000;

wherein said additive is present in said melt-extrudable composition in an amount sufficient to impart antimicrobial activity to the surfaces of a shaped article prepared therefrom by a melt-extrusion process.

5,853,642

PROCESS FOR THE IN-LINE POLYMERIZATION OF OLEFINIC MONOMERS

Allen R. Siedle, Lake Elmo; Gaddam N. Babu, Woodbury; Katherine A. Brown-Wensley, Lake Elmo, and James R. Peterson, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1994, Ser. No. 281,733

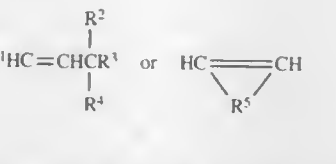
Int. Cl.^{6} B29C ***71/00***

U.S. Cl. 264—236 **30 Claims**

1. A process for making a poly(olefin) film in an in-line procedure comprising the steps:

a) coating a substrate with a layer of a mixture comprising

1) at least one olefinic monomer, having 5 to 30 carbon atoms, having one of the formulae



wherein

(A) R^1 is hydrogen and R^2, R^3, and R^4 are independently hydrogen or a C_1–C_{27} aryl, aralkyl, aliphatic, or cycloaliphatic group, with the provisos that at least one of R^2, R^3, and R^4 must be hydrogen and that R^2, R^3, and R^4 cannot all be hydrogen, or

(B) R^1 and at least one of R^2, R^3, and R^4, as well as the carbon atoms to which they are attached, form at least one strained aliphatic ring, and

(C) R^5 is $(CR^2R^3)_m$ where m is 1 or 2 and R^2 and R^3 are independently hydrogen or a C_1–C_{27} aryl, aralkyl, aliphatic, or cycloaliphatic group with the provisos that R^2 and R^3 cannot be hydrogen when m is 1 and that R^2 and R^3 cannot both be hydrogen when m is 2; and

2) an effective amount of a catalyst system comprising a transition metal-containing species; and

b) allowing said at least one monomer in said layer on said substrate to polymerize to a poly(olefin) film.

5,853,643

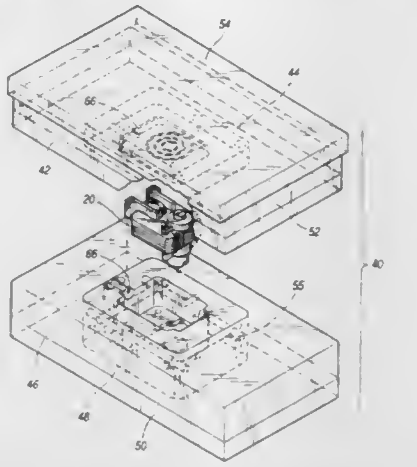
METHOD FOR CONSTRUCTING A LIQUID-IMPERVIOUS ELECTRIC MOTOR ASSEMBLY

Scott V. Bauer, 499 Safinwood Ter., Buffalo Grove, Ill. 60089

Filed Jul. 19, 1996, Ser. No. 690,233

Int. Cl.^{6} B29C ***45/14;45/36;70/72***

U.S. Cl. 264—272.15 **7 Claims**



1. A method for constructing a liquid-impervious electric motor assembly comprising the steps of:

providing an electric motor having an armature and associated drive shaft wherein said drive shaft is supported by a bearing bracket, said bearing bracket being provided with a notch, said motor further having an associated power cord extending therefrom;

providing a multi-piece mold having an internal cavity which is larger in size than the size of said motor and with one part of said mold having an aperture for slidingly receiving said motor shaft and supporting said motor within said cavity, said one mold part further having a projection alignable with said notch of said bearing bracket, said mold further being separable about a plane substantially coincident with the central axis of said motor power cord when said motor is supported within said cavity;

inserting said motor shaft into said aperture with said mold separated and moving said bearing bracket into abutment with said one mold part

engaging said notch with said projection to retain said motor in a fixed orientation within said mold cavity when said motor

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shaft is inserted into said aperture and said bearing bracket is moved into abutment with said one mold part;

closing said mold with said power cord exiting therefrom;

injecting liquid resinous material into said closed mold to thereby form a jacket around said motor;

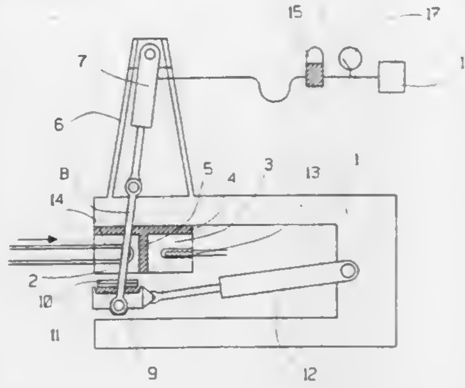
allowing said resinous material to cool and harden;

opening said mold; and

ejecting said jacketed motor from said mold cavity.

5,853,644
DEVICE FOR PRESSING PLASTICS

Karl-Erik Leeb, Lillebo, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
PCT No. PCT/SE95/00687, § 371 Date Dec. 13, 1996, § 102(e) Date Dec. 13, 1996, PCT Pub. No. WO95/34419, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 8, 1995, Ser. No. 750,620
Claims priority, application Sweden, Jun. 14, 1994, 9402085
Int. Cl.^{6} B29C *43/04*
U.S. Cl. 264—322 **15 Claims**



14. A method of pressing plastic material comprising the steps of:

carrying a plastic material with a press tool;

holding the press tool with a tool holder;

pressing the press tool held by the tool holder against a press surface common to a hot device and a cold device thereby pressing the plastic material;

moving the tool holder holding the press tool between the hot device and the cold device along the press surface while the press tool is pressed against the press surface, thereby heating and cooling the plastic material during the pressing thereof; and

removing the press tool carrying the plastic material from the tool holder.

5,853,645
LOW PRESSURE MOLDING COMPOSITIONS

Robert Lawrence Seats, Winfield; Kenneth Earl Atkins, South Charleston, and Carroll Glenn Reid, Charleston, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.
Filed Feb. 5, 1996, Ser. No. 596,722
Int. Cl.^{6} C08J *5/00*
U.S. Cl. 264—331.15 **9 Claims**

1. A process for molding an article comprising:

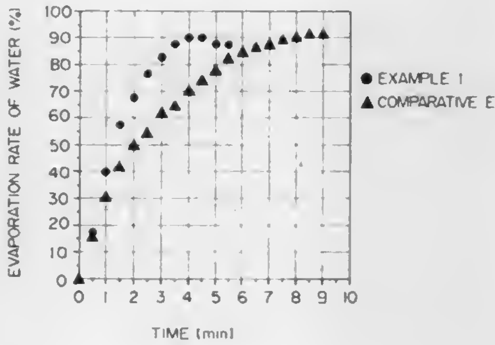
(A) forming a molding composition comprising:
- (i) an unsaturated thermosetting resin;
- (ii) an olefinically unsaturated monomer which is copolymerizable with said unsaturated thermosetting resins;
- (iii) a thermoplastic additive having an Acid Number of from 4 to 8; and
- (iv) a thickener which comprises one or more alkaline earth metal oxides or hydroxides in an amount effective to provide the molding composition with a Molding Viscosity of less than 25 MMcps:

(B) aging the molding composition for at least one day; and

(C) molding the aged molding composition at an effective pressure, temperature and time to form said molded article.

5,853,646
MOLDING METHOD AND DILUTION AGENT FOR MOLD RELEASING AGENT

Masayuki Yamana, and Tsukasa Aga, both of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan
PCT No. PCT/JP95/00876, § 371 Date Nov. 7, 1996, § 102(e) Date Nov. 7, 1996, PCT Pub. No. WO95/31321, PCT Pub. Date Nov. 23, 1995
PCT Filed May 8, 1995, Ser. No. 737,136
Claims priority, application Japan, May 11, 1994, 6-121949
Int. Cl.^{6} B29C *33/58*
U.S. Cl. 264—338 **4 Claims**



1. A preparation method comprising first preparing a dilution agent consisting essentially of a water solution containing 0.01 to 1.0% by weight of a surfactant and thereafter diluting a mold releasing agent with the dilution agent at the time of use in a molding process.

5,853,647
PROCESS FOR THE STABILIZATION OF THE PROPERTIES OF CELLULOSIC MEMBRANES

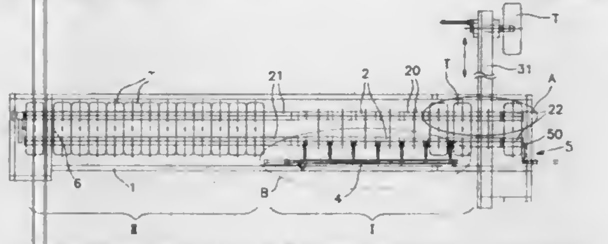
Hans-Günther Breidohr; Michael Pelger, and Panajotis Argyrladis, all of Wuppertal, Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands
Filed Feb. 26, 1997, Ser. No. 806,924
Claims priority, application Germany, Mar. 7, 1996, 196 08 840.2
Int. Cl.^{6} B29B *17/00;* B01D *33/21;39/00*
U.S. Cl. 264—345 **8 Claims**

1. Process for the stabilization of the properties of cellulosic membranes comprising

conditioning the cellulosic membranes at a temperature between about 30° C. and 60° C. and at a relative humidity between about 10% and 60%, wherein prior to the conditioning, the cellulosic membranes are enveloped at a relative humidity of about 40% to 60% and at a temperature of about 20° C. to 25° C. in packaging which is at least substantially impermeable to the passage of moisture.

5,853,648
COOLING OF TIRES AT THE END OF THEIR VULCANIZATION

Daniel R. Cleveland, Simpsonville, S.C., assignor to Sedepro, Paris, France
Filed Jul. 25, 1996, Ser. No. 686,321
Claims priority, application France, Aug. 8, 1995, 95/09705
Int. Cl.^{6} B29C *35/16;71/02*
U.S. Cl. 264—348 **14 Claims**



1. An apparatus for the cooling of vulcanized tires comprising:

a frame comprising a base intended to be firmly mounted on the ground, defining the horizontal direction;

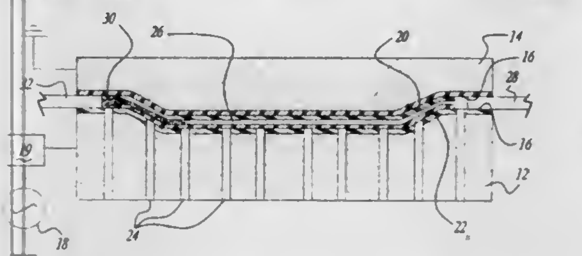
two shafts mounted for rotation on said frame, substantially parallel to each other and substantially parallel to the horizontal, at a distance from each other less than the outside diameter of the tires to be cooled;

means for placing at least one of the two shafts in rotation;

wherein each shaft includes at least one group of two adjacent frustoconical bearing surfaces inclined towards each other, the groups of each of the shafts being disposed facing each other so as to define a groove receiving a tire, so that, when a tire is disposed on said shafts with the axis of rotation of said tire arranged substantially parallel to the axis of said shafts, said means for placing in rotation being activated, said tire is subjected to a gyroscopic force and remains in equilibrium and is subjected to forced heat exchanges to cool the tire.

5,853,649
METHOD FOR MANUFACTURING A FOAM PANEL

Michael Derek Tisack, Ann Arbor, and Kenneth Andrew Winowiecki, Waterford, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Aug. 11, 1997, Ser. No. 909,255
Int. Cl.^{6} B29C *44/06;44/12;44/14*
U.S. Cl. 264—446 **17 Claims**



1. A method of manufacturing a panel having a foam interlayer comprising the steps of:

placing a flexible cover adjacent a first mold of an open tool;

placing a rigid substrate adjacent a second mold or atop the cover adjacent the first mold of said open tool;

electrically isolating said first mold from said second mold;

applying a vacuum to draw said cover against said first mold;

closing said tool and causing said cover to be positioned juxtaposed said substrate and creating a space therebetween;

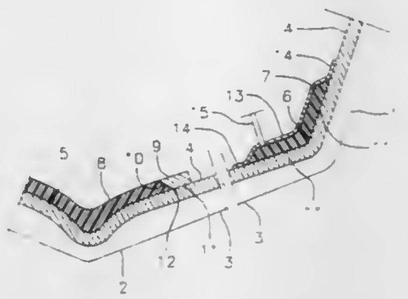
drawing a vacuum in said space;

applying an RF electric field between said first and second molds and causing a plasma to be created within said space, said plasma activating said cover and substrate; and

while said space is still under vacuum, injecting a foaming material into said space, said foaming material is drawn into said space by said vacuum and adheres to said activated cover and substrate.

5,853,650
METHOD OF MANUFACTURING BOAT HULLS IN A FEMALE MOULD

Anders Lönnö , Holländargatan 9A, S-111 26 Stockholm, Sweden, and Petter Håkanson, Ekskogens gard, S-186 96 Vallentuna, Sweden
PCT No. PCT/SE95/00750, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO95/35231, PCT Pub. Date Dec. 28, 1995
PCT Filed Jun. 20, 1995, Ser. No. 750,964
Claims priority, application Sweden, Jun. 20, 1994, 9402167
Int. Cl.^{6} B36B *5/24*
U.S. Cl. 264—511 **3 Claims**



1. A method of manufacturing a boat hull made in a female mould, said boat hull comprising a rigid structural shell made from reinforced plastics and, located upon said rigid structural shell is a protective layer made from plastic or a rubber material that is softer and more elastic than the reinforced plastics of the rigid structural shell, the protective layer being manufactured by cast moulding in a cast mould comprising two cast mould parts, one of said two cast mould parts being made by applying a layer of material directly on a particular portion of a plug for said female mould of said boat hull and the other of said two cast mould parts being made by applying a layer of material on a model of the protective layer. joining said two cast mould parts together and forming the protective layer between said two cast mould parts removing the protective layer from the cast mould and applying the protective layer to an inner surface of the female mould for said boat hull corresponding to the plug portion, whereafter the structural shell is made upon the protective layer and free parts of the inner surface of said female mould.

5,853,651
HIGH PRESSURE HOLLOW PROCESS FOR MANUFACTURING COMPOSITE STRUCTURES

Howard A. Lindsay, Cordova, Tenn.; Jeffrey A. Mears; Robert F. Monks, both of Chandler, Ariz.; Steven M. Motoyama, and Christopher K. DeLap, both of Phoenix, Ariz., assignors to Simula, Inc., Phoenix, Ariz.
Filed Aug. 28, 1996, Ser. No. 711,181
Int. Cl.^{6} B29C *44/06;* B28B *7/30*
U.S. Cl. 264—512 **21 Claims**

1. A method for manufacturing a hollow composite structure comprising:
- (a) manufacturing a first half and a second half of a hollow semi-rigid inner mandrel from a thermoplastic material;
- (b) placing an elastomeric tube inside the first half of the inner mandrel, and taping the second half of the inner mandrel over the elastomeric tube and the first half of the inner mandrel;
- (c) wrapping the inner mandrel with layers of plies of a composite prepreg of thermosetting or thermoplastic resin having high strength reinforcement fibers therein, such that the layers of plies can be characterized as having an angle between successive layers, and such that said successive layers of said plies overlap with the angle between said successive layers of said plies have fiber orientations of at least three angles selected from the group consisting of −60°, −45°, −30°, 30°, 30°, 45°, 60° and 90°;

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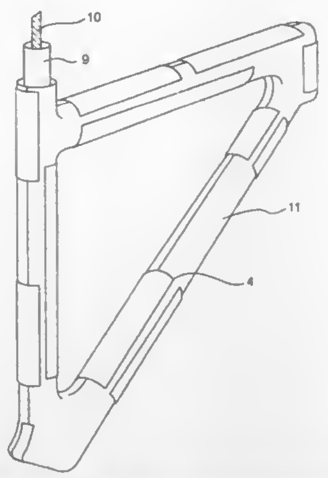


(d) placing the plies of said composite prepreg and the inner mandrel together in a mold for fabricating the hollow composite structure;
(e) inflating the elastomeric tube to a pressure in excess of 20 psi;
(f) heating the plies of said composite prepreg and the inner mandrel to an elevated temperature in excess of 200° F.;
(g) selecting a time period of at least fifteen minutes and curing the plies of said composite prepreg and the inner mandrel at the elevated temperature for the selected time period;
(h) allowing the plies of said composite prepreg and the inner mandrel to cool to a temperature below 150° F., at a maximum cooling rate of five to seven° F. per minute;
(i) removing the elastomeric tube; and
(j) removing the mandrel by solvent extraction thereby providing said hollow composite structure.

5,853,652
METHOD OF MANUFACTURING A MEDICAL ELECTRICAL LEAD

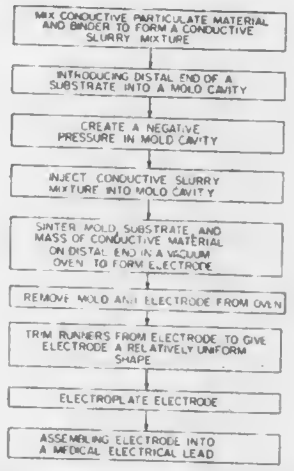
Gary R. Schildgen, White Bear Lake, and Charles R. Wait, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

PCT No. PCT/US94/11651, § 371 Date Apr. 24, 1996, § 102(e) Date Apr. 24, 1996, PCT Pub. No. WO95/11723, PCT Pub. Date May 4, 1995

Continuation-in-part of Ser. No. 146,265, Oct. 29, 1993, abandoned. This PCT application Oct. 14, 1994, Ser. No. 632,429

Int. Cl.^{6} B28B *1/24;* B22F *7/00*

U.S. Cl. 264—614 **21 Claims**


MIX CONDUCTIVE PARTICULATE MATERIAL AND BINDER TO FORM A CONDUCTIVE SLURRY MIXTURE
INTRODUCING DISTAL END OF A SUBSTRATE INTO A MOLD CAVITY
CREATE A NEGATIVE PRESSURE IN MOLD CAVITY
INJECT CONDUCTIVE SLURRY MIXTURE INTO MOLD CAVITY
SINTER MOLD, SUBSTRATE, AND MASS OF CONDUCTIVE MATERIAL ON DISTAL END IN A VACUUM OVEN TO FORM ELECTRODE
REMOVE MOLD AND ELECTRODE FROM OVEN
TRIM RUNNERS FROM ELECTRODE TO GIVE ELECTRODE A RELATIVELY UNIFORM SHAPE
ELECTROPLATE ELECTRODE
ASSEMBLING ELECTRODE INTO A MEDICAL ELECTRICAL LEAD

1. A method of manufacturing a lead (**1**) having an electrode (**22**) used to stimulate and sense a body comprising the steps of introducing a substrate (**23**) into a mold (**50**) having a mold cavity (**54**) and positioning a conductive particulate material onto the substrate (**23**) in the mold cavity (**54**), the step of positioning a conductive particulate material onto the substrate (**23**) characterized in that:
creating a negative pressure in the mold cavity (**54**) through a first port (**62**) in the mold (**50**);
injecting a slurry comprising a binder and a conductive particulate material into the mold cavity (**54**) during the step of creating the negative pressure in the mold cavity (**54**);
heating the mold (**50**) having the substrate (**23**) and the particulate material in an oven to conjoin the particulates and thereby form an electrode (**22**);
removing the mold (**50**) from the oven;
removing the electrode (**22**) from the mold (**50**), and
assembling the electrode into a lead.

5,853,653
PROCESS FOR PRODUCING CERAMIC MATRIX COMPOSITES BY LIQUID INFILTRATION OF CERAMIC POLYMERIC PRECURSORS

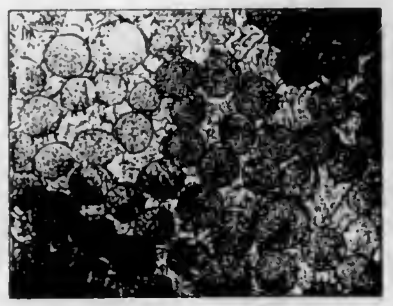
Aldo Donato, Rome; Carlo Alberto Nannetti, Leghorn; Alberto Ortona, Naples; Elisabetta Borsella, Grottaferrata; Sabina Botti, Rome; Sergio Casadio, Anguillara Sabazia; Gianni D'Alessandro, Bracciano; Antonio Alessandro Licciulli, Mesagne; Stefano Martelli, Rome, and Amedeo Masci, Vetralla, all of Italy, assignors to Enea Ente Per Le Nuove Technologie, L'Energia E L'Ambiente, Rome, Italy

Filed Apr. 7, 1997, Ser. No. 826,785

Claims priority, application Italy, Apr. 5, 1996, RM96A0220

Int. Cl.^{6} C04B *35/80*

U.S. Cl. 264—625 **23 Claims**



1. A process for making ceramic composite material comprising the steps of:
step I: impregnating the single cloths of ceramic fibers with a solution of a polymer which is a ceramic precursor;
step II: hardening the cloths provided by step I;
step III; pyrolysis of the hardened cloths to form a pyrolyzed material;
step IV; repeatedly thickening the pyrolyzed material by a thickening process comprising infiltrating polymer which is a ceramic precursor into the pyrolyzed material and pyrolyzing the material after infiltration;
wherein the precursor solution of said step I comprises filling powder with a nanometric granulometry, wherein the particle sizes of respective particles of the filling powder are lower than a mean distance between the fibers and wherein the nanometric powder of said step I is subjected to a surface treatment with sterically acting dispersants in an amount of 1–2% relative to said powder so as to facilitate the dispersion and lower the solution viscosity.

5,853,654
PROCESS AND APPARATUS FOR MAKING CERAMIC ARTICLES

Jean-Pierre Meynckens, and Jean-Pierre Robert, both of Villers-Perwin, Belgium, assignors to Glaverbel, Brussels, Belgium

PCT No. PCT/BE95/00109, § 371 Date May 27, 1997, § 102(e) Date May 27, 1997, PCT Pub. No. WO96/16918, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 24, 1995, Ser. No. 849,168

Claims priority, application United Kingdom, Nov. 28, 1994, 94 23 985

Int. Cl.^{6} B05D *1/08;* C04B *35/65*

U.S. Cl. 264—635 **19 Claims**

1. A process for making a ceramic article, comprising:
a. providing a powder mixture comprised of refractory particles and combustible particles which react exothermically;
b. heating a metal former to a temperature of at least 850° C.;
c. projecting the powder mixture against the metal former, either before or after heating the metal former to a temperature of at least 850° C., in the presence of an oxygen-rich gas so that the combustible particles react exothermically and produce a ceramic article on the metal former from the refractory particles and the reaction product of the combustible particles, which ceramic article is comprised of a coherent refractory material and has a shape which conforms to that of the metal former; and
d. separating the metal former from the ceramic article.

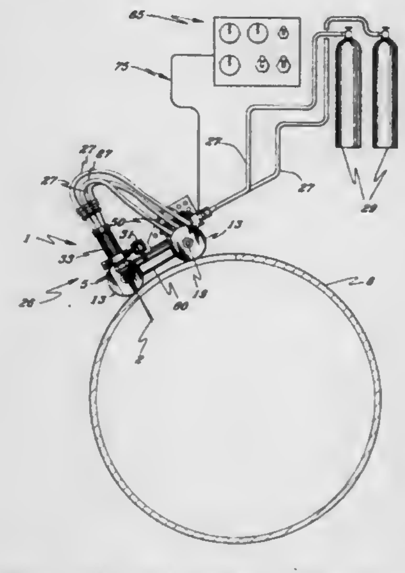
5,853,655
MAGNETIC WHEEL GUIDED CARRIAGE WITH POSITIONING ARM

Ronald Glenn Baker, 531 S. 38th, Apt. 36, West Richland, Wash. 99353

Filed Nov. 7, 1996, Ser. No. 747,020

Int. Cl.^{6} C21B *13/00*

U.S. Cl. 266—44 **22 Claims**



1. A magnetic wheel guided carriage with positioning arm comprising:
A. a carriage; a magnetic wheel system affixed to the carriage by mounting means; the magnetic wheel system having magnetic wheel means oriented to rotate approximately in the same or parallel planes; each magnetic wheel means generally in contact with a surface upon which the invention is to travel;
B. drive power and transmission means for the magnetic wheel system affixed by mounting means to the carriage and interrelated to the magnetic wheel system to rotate the magnetic wheel means; the magnetic wheel system to propel the carriage along a direction of a carriage travel;
C. a positioning arm affixed to the carriage by mounting means and having an arm; the arm having an arm longitudinal axis generally orthogonal to the direction of carriage travel; one or a plurality of bracket means disposed on the arm; remote control means for control of the magnetic wheel system; cutting and/or welding supply means disposed on the carriage.

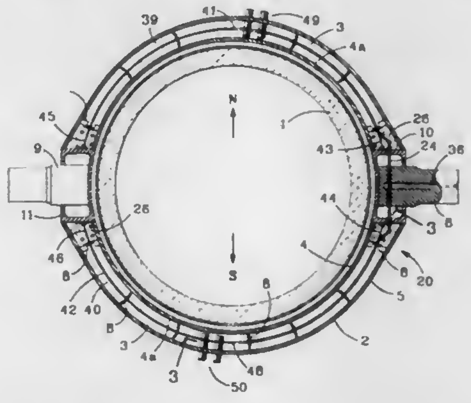
5,853,656
APPARATUS AND METHOD FOR COOLING A BASIC OXYGEN FURNACE TRUNNION RING

C. David Besterman, Valparaiso; Kelan J. Nowak, LaPorte, and Leon R. Brown, Crown Point, all of Ind., assignors to Bethlehem Steel Corporation, Del.

Filed Jul. 8, 1997, Ser. No. 889,857

Int. Cl.^{6} C21B *7/16*

U.S. Cl. 266—47 **28 Claims**



1. In a BOF trunnion ring supporting a BOF vessel, the trunnion ring having an interior space defined by spaced apart webs, a top flange, a bottom flange and transverse stiffeners extending between the spaced apart webs, an improved cooling apparatus comprising:
a) a nozzle to generate a water mist;
b) at least one conduit extending from said nozzle and communicating with the interior space of the trunnion ring, said conduit having at least one discharge to disperse said water mist into the interior space, said water mist being vaporized by contact with a hot surface in the interior space, the heat transfer of vaporization cooling the trunnion ring; and
c) at least one vent to discharge said vapor from the interior space.

5,853,657
REDUCED DUSTING BATH SYSTEM FOR METALLURGICAL TREATMENT OF SULFIDE MATERIALS

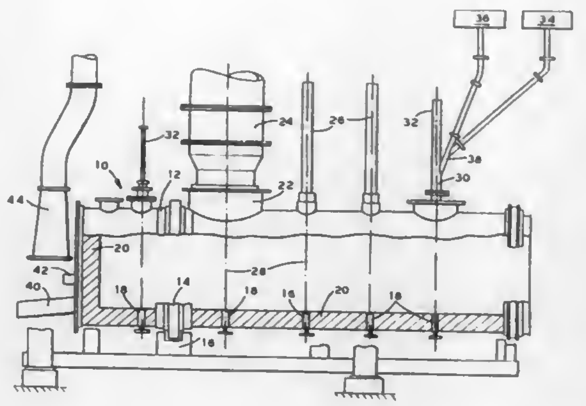
Carlos Manuel Diaz, Mississauga; Samuel Walton Marcuson, Sudbury; Anthony Edward Warner, Burlington, and Geoffrey Edwin Osborne, Welland, all of Canada, assignors to Inco Limited, Toronto, Canada

Division of Ser. No. 401,081, Mar. 8, 1995, Pat. No. 5,658,368. This application Mar. 26, 1997, Ser. No. 824,809

Int. Cl.^{6} C22B *15/06*

U.S. Cl. 266—145 **12 Claims**

1. A reduced dusting pyrometallurgical system comprising a vessel, the vessel including a body, the body defining a central chamber therein, the vessel including a lower portion for holding molten material, a roof disposed above the lower portion of the vessel, and two opposed end walls, porous means for injecting inert gas extending through the lower portion of the vessel, the porous means for injecting inert gas adapted to form at least one bath eye in the molten material, an oxidizing gas lance positioned above the lower portion of the vessel so as to direct the oxidizing gas toward a sphere of influence of a bath eye, and means for drop



feeding material into the vessel positioned above the lower portion of the vessel so as to direct the feed toward the sphere of influence of a bath eye.

5,853,658

GAS PURGING DEVICE IN THE BLOWPIPE OF A DEGASSING VESSEL

Klaus Aichinger, Villach, Austria, and Heinrich Niehues, Mülheim/Ruhr, Germany, assignors to Veitsch-Radex Aktiengesellschaft fur Feuerfeste Erzeugnisse, Vienna, Austria

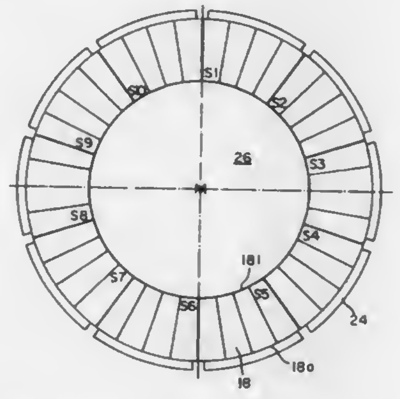
PCT No. PCT/EP95/02956, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/03530, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 26, 1995, Ser. No. 776,817

Claims priority, application Germany, Jul. 26, 1994, 44 26 368.6; Mar. 29, 1995, 295 12 335 U

Int. Cl.^{6} C21C *7/10*

U.S. Cl. 266—217 **9 Claims**



1. A gas purging device for a blowpipe (**10**, **12**) of a degassing vessel, the vessel being lined with a refractory material, the gas purging device having a plurality of channels (**20**, **22**) with a diameter between 0.5 and 2 mm which run, in rotational symmetry over the periphery of refractory material of the blowpipe (**10**, **12**), through the refractory lining (**14**) in radial direction with regard to the central longitudinal axis M of the blowpipe (**10**, **12**), and are connectable at the outside to at least one gas supply pipe, wherein the channels (**20**, **22**)

a) have a distance between each other of less than 10 cm,
b) are offset in height,
c) have different cross sections, and
d) can be supplied with gas in such a way that the gas, after each entry into the blowpipe (**10**, **12**), infiltrates into the molten metal with different depth, however only over a relatively short distance and further ascends directly adjacent to the inner wall thereof.

5,853,659

STEEL, STEEL SHEET HAVING EXCELLENT WORKABILITY AND METHOD OF PRODUCING THE SAME BY ELECTRIC FURNACE-VACUUM DEGASSING PROCESS

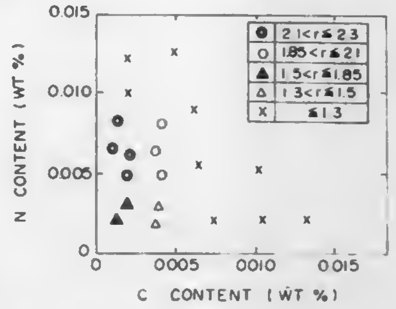
Takashi Sekita; Taro Yahiro; Saiji Matsuoka; Toshio Fujimura; Takemi Yamamoto; Masahiko Morita; Osamu Furukimi, and Arata Ueda, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Feb. 26, 1997, Ser. No. 806,765

Claims priority, application Japan, Feb. 29, 1996, 8-043141; Jul. 15, 1996, 8-184812; Jul. 15, 1996, 8-184813

Int. Cl.^{6} C21C *5/52;* C21D *8/02;* C22C *38/08;38/14*

U.S. Cl. 420—92 **35 Claims**



1. A steel having excellent workability, produced by an electric furnace-vacuum degassing process, wherein said composition comprises about:

C: 0.0050 wt % or less
Si: 1.5 wt % or less
Mn: 1.5 wt % or less
P: 0.10 wt % or less
Al: 0.10 wt % or less
S: 0.020 wt % or less
O: 0.01 wt % or less
Cu: 0.02 to 1.5 wt %
Ni: 0.02 to 2.0 wt %
Ti and/or Nb: from 0.001 to 0.10 wt %
N: from 0.0040 to 0.0090 wt %.

5,853,660

ROLLING BEARING MADE OF IMPROVED BEARING STEEL

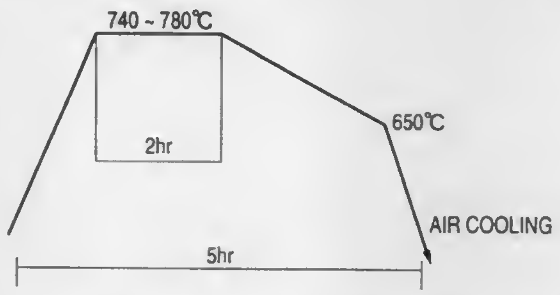
Yasuo Murakami; Nobuaki Mitamura, and Seiji Sato, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,828

Claims priority, application Japan, Oct. 14, 1994, 6-249508

Int. Cl.^{6} C22C *38/18*

U.S. Cl. 420—104 **2 Claims**



1. A rolling bearing comprising component parts of an inner race, an outer race and a plurality of rolling elements, at least one of the component parts being made of a bearing steel comprising:

0.70 to 0.93 wt % of C;
0.15 to 0.50 wt % of Si;
0.50 to 1.10 wt % of Mn;
0.3 to 0.65 wt % of Cr; and
the balance being Fe,

wherein the one of the component parts satisfies a relationship of $0.4 \leqq Cr/C \leqq 0.7$ to thereby avoid generation of eutectic carbides.

5,853,661

HIGH GOLD CONTENT BIO—COMPATIBLE DENTAL ALLOY

Jens Fischer, Kirchlindach, Switzerland, assignor to Cendres ET Metaux SA, Biel, Switzerland

Continuation-in-part of Ser. No. 496,416, Jun. 29, 1995, abandoned. This application Dec. 24, 1996, Ser. No. 772,896

Claims priority, application European Pat. Off., Jul. 5, 1994, 94810394

Int. Cl.^{6} C22C *5/02*

U.S. Cl. 420—507 **23 Claims**

1. A bio-compatible dental alloy of high gold content comprising, by weight, from 91 to 99.4% of gold, from 0.5 to 3% of at least one metal selected from the group consisting of titanium and tantalum, and an effective amount of tungsten to provide grain refinement, and 0–1% platinum.

5,853,662

METHOD FOR PRESERVING POLISHED INORGANIC GLASS AND METHOD FOR PRESERVING ARTICLE OBTAINED BY USING THE SAME

Takayuki Watanabe, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 17, 1996, Ser. No. 634,061

Int. Cl.^{6} B01J *19/00*

U.S. Cl. 422—40 **22 Claims**

1. A compact and easy method for preserving a polished inorganic glass which comprises:

enclosing a polished inorganic glass in a container having a gas barrier property with an oxygen permeability of 10 ml/^{2}•Day•atm or below at 25° C. at 60% RH and a water vapor permeability of 1 g/m^2•Day or below at 40° C. at 90% RH together with an oxygen absorbent requiring no moisture for absorption of oxygen and a drying agent, and

then, sealing the container to remove substantially both oxygen and moisture from the container, thereby preventing weathering of the polished glass.

5,853,663

PRESSURE DISTRIBUTOR AND MULTI-MACROCARRIER ASSEMBLY FOR BALLISTIC TRANSFER TRANSFECTION APPARATUS

Burghardt Wittig; Matthias Schroff, and Joseph Schroff, all of c/o Shuguang Zhang, 25 Bowker St., Lexington, Mass. 02173-4142

Filed Mar. 14, 1996, Ser. No. 615,770

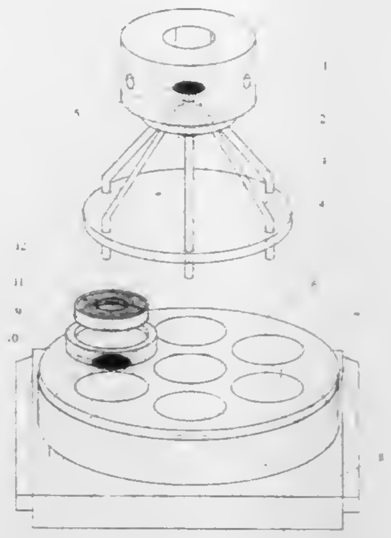
Claims priority, application Germany, Mar. 14, 1995, 195 10 696.2

Int. Cl.^{6} G01N *1/14;15/06;* A61K *41/00;* C07H *21/04*

U.S. Cl. 422—50 **3 Claims**

1. An apparatus for the transfection of cells comprising:

a) a pressure separation means that divides a cold gas shock wave into more than one pressure wave that propel macroprojectiles into the direction of cells that are to be transfected by biological matter,
b) a plurality of microprojectile launching devices and
c) a macroprojectile launching device holding means positioned underneath said pressure separation means, holding in place said plurality of macroprojectile launching devices so as to expose said launching devices to the individual pressure bursts released by said pressure separation means.



5,853,664

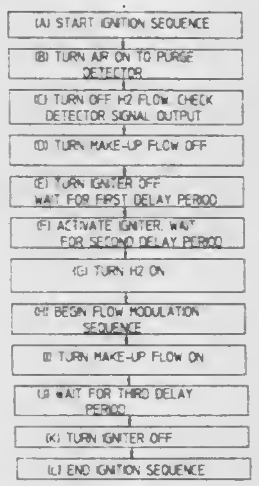
FLOW MODULATION FOR FACILITATING DETECTOR IGNITION

Paul B. Welsh, Wilmington, Del., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 670,033, Jun. 25, 1996, Pat. No. 5,723,091. This application Oct. 10, 1997, Ser. No. 948,880

Int. Cl.^{6} B01D *15/08;* G01N *27/00*

U.S. Cl. 422—54 **8 Claims**


(A) START IGNITION SEQUENCE
(B) TURN AIR ON TO PURGE DETECTOR
(C) TURN OFF H2 FLOW. CHECK DETECTOR SIGNAL OUTPUT
(D) TURN MAKE-UP FLOW OFF
(E) TURN IGNITER OFF WAIT FOR FIRST DELAY PERIOD
(F) ACTIVATE IGNITER, WAIT FOR SECOND DELAY PERIOD
(G) TURN H2 ON
(H) BEGIN FLOW MODULATION SEQUENCE
(I) TURN MAKE-UP FLOW ON
(J) WAIT FOR THIRD DELAY PERIOD
(K) TURN IGNITER OFF
(L) END IGNITION SEQUENCE

1. An analytical method for detecting the presence of an analyte in a sample fluid, comprising the steps of:

providing a selected flow of at least one of a plurality of detector fluids, said plurality including a first detector fluid and a second detector fluid.
determining flow modulation criteria that facilitate ignition;
generating an electronic control signal; and
modulating, in response to the electronic control signal, said selected flow;
providing a flame-based detector for receiving the sample fluid and the modulated selected flow;
wherein said modulation in the selected flow is provided according to the predetermined flow modulation criteria and wherein said control signal is applied in a predetermined ignition sequence wherein said modulated flow is effected according to a continuous transition from a first predetermined flow rate to a second predetermined flow rate and according to said flow modulation criteria.

5,853,665

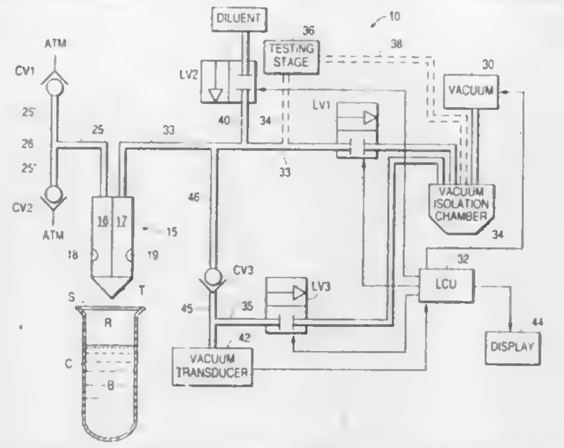
APPARATUS AND METHOD FOR MONITORING VENT LINE VACUUM

Rodrigue Ade, Miami; Robert Autrey, Pembroke Pines; Santiago Galvez; Pedro E. Leon, both of Miami, and Michael A. Krou, Davie, all of Fla., assignors to Coulter International Corp., Miami, Fla.

Filed Sep. 16, 1997, Ser. No. 931,178

Int. Cl.⁶ G01N *1/14*

U.S. Cl. 422—62 **10 Claims**



1. In an apparatus for automatically drawing a blood sample from a sealed container having an internal pressure below atmospheric pressure, said container being sealed by a pierceable cap, said apparatus comprising: (a) an aspirating needle for both piercing said cap to aspirate blood from said container, and venting the interior of the container to the surrounding atmosphere through venting means operatively connected to said aspirating needle; and (b) a vacuum pump for aspirating the blood from the container, said vacuum pump being connected to said aspirating needle through an aspiration line, the improvement comprising:

means for sensing a failure of the venting means, said failure-sensing means comprising: (i) means for producing a first signal indicative of the negative pressure associated with said vacuum pump; (ii) means for producing a second signal indicative of said internal pressure within said sealed container after said cap has been pierced by said aspirating needle; and (iii) logic and control means for storing a predetermined nominal value and for comparing said first and second signals to said predetermined nominal value, said logic and control means further producing a third signal in the event that either said internal pressure is less than said predetermined nominal value or said negative pressure is other than said predetermined nominal value.

5,853,666

OPTICAL READER AND SAMPLE CARD TRANSPORT STATIONS FOR BIOLOGICAL SAMPLE TESTING MACHINE

William Ernest Seaton, Chesterfield; Mark Joseph Fanning, Florissant; David B. Shine, University City, and Craig Drager, Ballwin, all of Mo., assignors to bioMérieux Vitek, Inc., Hazelwood, Mo.

Division of Ser. No. 604,472, Feb. 21, 1997, Pat. No. 5,670,375. This application Feb. 12, 1997, Ser. No. 798,093

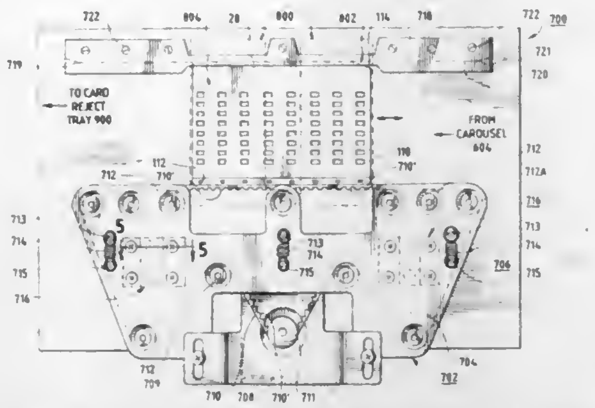
Int. Cl.⁶ G01N *35/02*

U.S. Cl. 422—65 **9 Claims**

1. In a sample testing machine having an incubation station for storing and incubating a sample card having at least one sample well, a sample card transport system for automatically moving said sample card from said incubation station to a fixed optical station for reading said sample card, comprising:

a means for ejecting said sample card from said incubation station;

a drive system receiving cards from said incubation station ejected by said ejecting means and comprising means for



moving said card from said incubation station in a linear fashion to said optical station wherein said optical station is operative to read said sample well;

said drive system comprising (a) a motor (b), a drive belt operative in a forward direction to move said sample card from said incubation station to said optical station, and in a reverse direction to move said sample card from said optical station back to said incubation station, and (c) a guide member, said test sample card positioned between said belt and said guide member as said test sample card is moved between said optical station and said incubation station;

said drive belt moving said sample card without substantial slippage between said drive belt and said card, thereby enabling said card to be moved with substantial precision relative to said optical station for reading of said well.

5,853,667

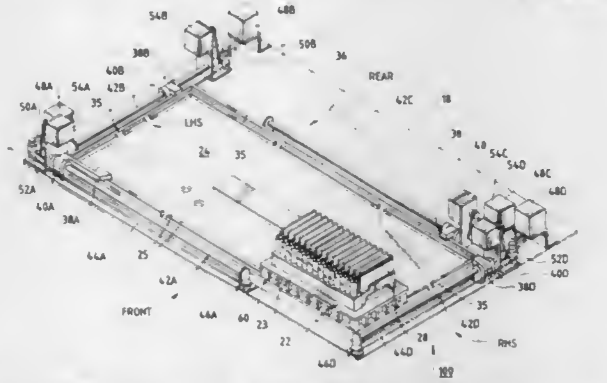
TEST SAMPLE POSITIONING SYSTEM

William Ernest Seaton, Chesterfield; Mark Joseph Fanning, Florissant; Craig Drager, Ballwin; Ron Robinson, Bridgeton; Roger James Morris, St. Louis, all of Mo.; Jean-Pierre Bernard Gayral, Amberieu en Bugey, France, and JoAnne T. Gerst, St. Louis, Mo., assignors to bioMérieux Vitek, Inc., Hazelwood, Mo.

Continuation of Ser. No. 604,725, Feb. 21, 1996, Pat. No. 5,736,102. This application Sep. 22, 1997, Ser. No. 934,934

Int. Cl.⁶ G01N *35/04*

U.S. Cl. 422—65 **6 Claims**



1. A system for moving a sample holder within a machine, the sample holder having first and second side panels, comprising:

a base pan having a first side region and an adjacent second side region, said sample holder placed on and moved about said machine on said base pan;

a first drive system engageable with said first side panel of said sample holder for moving said sample holder in a forward direction along said base pan aligned with said first side region, said first drive system positioned adjacent to said first side region of said base pan and operative, when engaged with said first side panel of said sample holder, to pull said sample holder over said base pan wherein said sample holder slides over said base pan;

a second drive system engageable with said second side panel of said sample holder for moving said sample holder in a forward direction along said base pan aligned with said second side region, said second drive system positioned adjacent to said second side region of said base pan and operative, when engaged with said second side panel of said sample holder, to pull said sample holder over said base pan wherein said sample holder slides over said base pan;

wherein said first and second drive systems are independently operable so as to move said sample holder about said base pan sequentially along said first and second side regions and without requiring the presence of other sample holders on said base pan to effectuate the movement of said sample holder about said base pan in said forward direction.

5,853,668

APPARATUS ALLOWING SEQUENTIAL CHEMICAL REACTIONS

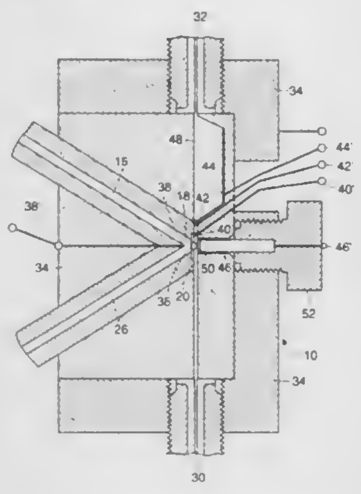
Geoffrey Stephen Begg, Heidelberg; Richard John Simpson, Richmond, and Antony Wilks Burgess, Camberwell, all of Australia, assignors to Ludwig Institute for Cancer Research, Zurich, Switzerland

Division of Ser. No. 842,363, Apr. 30, 1992, Pat. No. 5,516,698. This application May 25, 1995, Ser. No. 450,378

Claims priority, application Australia, Apr. 11, 1990, PJ9605/90

Int. Cl.⁶ G01N *27/30;27/447*

U.S. Cl. 422—82.02 **13 Claims**



1. An apparatus for conducting a sequential chemical reaction, comprising:

a sample electrode disposed in a reaction chamber; immobilizing means for securing a first reactant to said reaction chamber;

means for electrophoretically introducing to said reaction chamber at least one additional reactant;

means to energize said sample electrode to thereby electrolytically activate a reaction between said first reactant and said additional reactant or to electrolytically attract said additional reactant to said reaction chamber; and

means to remove from said reaction chamber any remaining additional reactant or a reaction by-product resulting from the reaction between said first reactant and said additional reactant, wherein said means to remove comprises a remote electrode which is energizable to electrolytically attract said remaining additional reactant or said reaction by-product.

5,853,669

SENSOR MEMBRANE FOR INDICATING THE PH OF A SAMPLE, THE FABRICATION AND USE THEREOF

Otto S. Wolfbeis, Graz, Austria, assignor to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

Continuation of Ser. No. 211,272, Mar. 29, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 588,767

Claims priority, application Austria, Sep. 30, 1991, 91-1961

Int. Cl.⁶ G01N *21/29;21/00;33/48;21/75*

U.S. Cl. 422—82.05 **10 Claims**

1. Sensor membrane for the reversible optical indication of the pH of a sample, having a mechanically stable support element and an indicator dye layer disposed thereon, which comprises a hydrophilic homogeneous, non-fibrous accommodating layer disposed on at least one side of the support element, which layer contains the indicator dye in an immobilized form.

5,853,670

LIQUID TRANSFER DEVICE FOR CONTROLLING LIQUID FLOW

Roger Abraham Bunce, Kings Norton, England, assignor to British Technology Group Limited, London, England

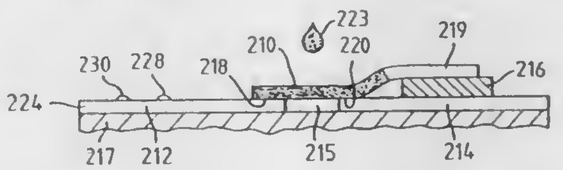
PCT No. PCT/GB94/02587, § 371 Date Apr. 30, 1996, § 102(e) Date Apr. 30, 1996, PCT Pub. No. WO95/14532, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 25, 1994, Ser. No. 637,724

Claims priority, application United Kingdom, Nov. 26, 1993, 9324310

Int. Cl.⁶ G01N *33/48*

U.S. Cl. 422—100 **21 Claims**



1. A liquid transfer device for controlling liquid flow, comprising:

first, second and third capillary flow channels, a fluid impermeable support mounting said second and third channels in spaced apart relationship, and said first channel being positioned overlying said second and third channels to define a first interface region between the first and second channels and a second interface region between the first and third channels,

said first channel defining a volume definition zone for a first liquid to be applied, said volume definition zone being in fluid connection with said second channel by way of the interface region,

said first channel defining a means for receiving excess first liquid spaced from said second and third channels in fluid connection with the volume definition zone and in fluid connection with said second channel only via said first channel,

wherein said third channel is arranged for direct application of a second liquid,

wherein said first channel has a higher capillarity than that of said second and third channels, and wherein said first, second and third channels with the first and second interface regions provide an ongoing liquid flowpath from a region of application of the second liquid, through the interface regions, to a downstream region, such that the second liquid is able to entrain first liquid in the volume definition zone and carry it to the downstream region.

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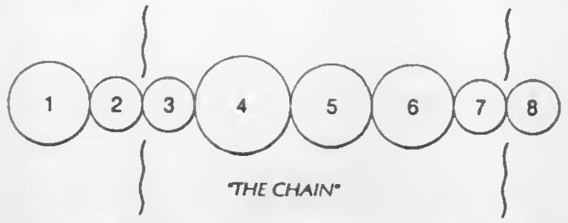
5,853,671
CONDENSER COOLING AND TEMPERATURE CONTROL SYSTEM

Kai Lieberam, 1307 Countryside Pl., Smyrna, Ga. 30080
Continuation of Ser. No. 311,290, Feb. 16, 1989, abandoned. This application Nov. 4, 1994, Ser. No. 334,758
Int. Cl.^{6} G05D *16/00;* **B01D** *3/42;3/10*
U.S. Cl. 422—112 **48 Claims**

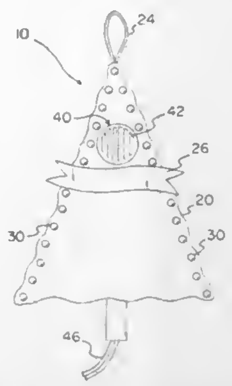


1. A condenser cooling and temperature control system for condensing the vapor resulting from the processing of a boiling batch not containing resin, comprising:
- (a) an enclosed container for cooking or cooling a batch not containing resin, and including a first opening in said container for receiving a vapor recovery line means and a second opening in said container for receiving a reflux line means;
- (b) a condenser means for condensing the vapor produced during the processing of said boiling batch in the container;
- (c) a vapor recovery line means in communication with said first opening and with the condenser means whereby vapor and particles resulting from the processing of said batch are permitted to escape from the container and vapor is transported to the condenser;
- (d) a vacuum pump means and a vacuum line located downstream of said condenser means for establishing a pressure differential between said condenser means and said vacuum line whereby the vapor and particles from the processing of said batch are drawn from the container through the vapor recovery line means and through the condenser means;
- (e) a reflux line means for carrying a condensate from the condenser means to the enclosed container, said reflux line means having a positive pressure;
- (f) an entrainment extraction means providing removal of particles from the vapor drawn from the container and introduced into the vapor recovery line means, said entrainment removal means being located before the introduction of said vapor into said condenser means;
- (g) a means for determining the pressure differential between the container and the vacuum line; and
- (h) at least one alternative vapor recovery line means for routing vapor and particles resulting from the processing of said batch from said container to said condenser means, and a flow directing means in communication with said alternative vapor recovery line means, wherein said entrainment extraction means is bypassed in response to a reduction of said pressure differential by a predetermined amount.

5,853,672
AUTOMOBILE AIR FRESHENER DISPENSING SYSTEM

Mikhail Lorman, and Osker Purer, both of 5714 Old Sunrise Hwy., Massapequa, N.Y. 11758
Filed Nov. 18, 1996, Ser. No. 749,519
Int. Cl.^{6} A61L *9/12*
U.S. Cl. 422—124 **13 Claims**

1. An automobile air freshener dispensing system comprising:
an encasement having an interior cavity; and
a scent dispensing means for dispensing a scent into an area, said scent dispensing means being secured within said interior cavity, said scent dispensing means further being adapted for electrically coupling to a brake light switch of a vehicle such that said scent dispensing means is activated when the brake light switch is closed, whereby said scent dispensing means emits said scent when said brake light switch is closed;
said encasement being further structured to include an aperture;



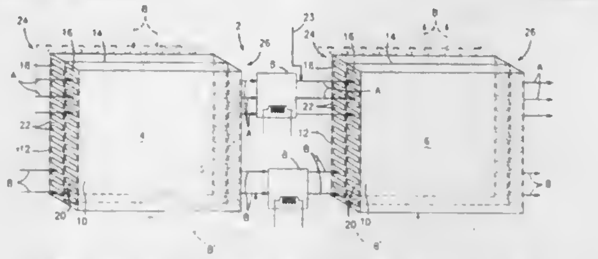
said scent dispensing means including a fan secured within said interior cavity of said encasement, said fan being juxtaposed to said aperture, said fan further being electrically coupled to said brake light switch;
at least one aroma filter having a selected scent; and
a vent cover, said vent cover being removably coupled to an outside of said encasement and surrounding said aperture;
wherein said aroma filter is positioned between said aperture and said vent cover such that said vent cover retains said aroma filter juxtaposed to said aperture.

5,853,673

Patent Not Issued For This Number

5,853,674
COMPACT SELECTIVE OXIDIZER ASSEMBLAGE FOR FUEL CELL POWER PLANT

Roger R. Lesieur, Enfield, Conn., assignor to International Fuel Cells, LLC, So. Windsor, Conn.
Filed Jan. 11, 1996, Ser. No. 584,512
Int. Cl.^{6} F01N *31/10*
U.S. Cl. 422—173 **5 Claims**



1. A selective oxidizer assembly for reducing carbon monoxide in a stream of a fuel gas and oxygen mixture to a concentration which is less than about ten parts per million without significantly decreasing the hydrogen content of the fuel gas, so as to condition said fuel gas for use in a fuel cell power plant, said oxidizer assembly comprising:
- a) a fuel gas inlet line for directing a mixture of the fuel gas and oxygen into said assembly, said inlet line leading to a gas flow section in said assembly for receiving a stream of the fuel gas and oxygen mixture, said gas flow section being formed from first and second spaced-apart plates with a plurality of separate catalyst-coated gas passages sandwiched between said first and second plates;
- b) a coolant inlet line for directing a coolant into said assembly, said coolant inlet line leading to a coolant section in said assembly, said coolant section being adjacent to said gas flow section and said coolant section being formed from said first plate and a third plate which is spaced-apart from said first plate on a side thereof opposite said second plate, said coolant section further including a plurality of coolant passages sandwiched between said first and third plates, said first plate providing heat transfer from gas flowing through said gas passages to coolant flowing through said coolant passages, said coolant being maintained at an inlet temperature which is less than about 220° F. and at an outlet temperature which is less than about 360° F. whereby said fuel gas and oxygen mixture is cooled within the assembly from an inlet temperature of about 360° F. to an outlet temperature of about 170° F.

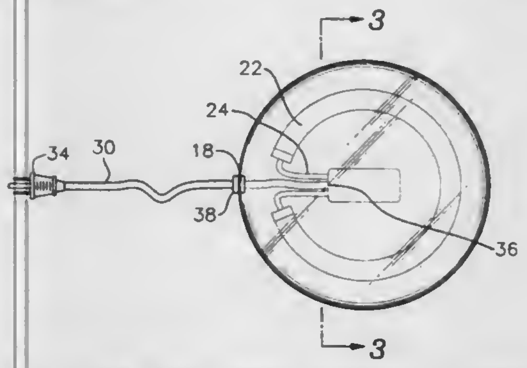
5,853,675
COMPOSITE MOUNTING SYSTEM

Gary F. Howorth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 30, 1995, Ser. No. 497,104
Int. Cl.^{6} B01D *50/00;* **F01N** *3/24;* **B32B** *5/16*
U.S. Cl. 422—179 **21 Claims**

1. A pollution control device comprising:
- (a) a housing;
- (b) pollution control element disposed within said housing; and
- (c) a composite mounting element disposed between said housing and said pollution control element, said composite mounting element comprising a flexible mat and, laminated or adhered thereto, a layer formed of an intumescent paste comprising an intumescent material and about 20 to 60 dry weight percent of organic binder wherein the flexible mat and the layer expand at differen' temperatures.

5,853,676
UV SPA AND POOL SANITIZING DEVICE

W. Wayne Morgan, Jr., 202 King St., Uxbridge, Ontario, Canada, L9P 1B2
Filed Oct. 22, 1997, Ser. No. 955,592
Int. Cl.^{6} B01J *19/08*
U.S. Cl. 422—186.3 **1 Claim**



1. A pool or spa sterilizing device comprising, in combination:
a housing having a disk-shaped configuration with a circular top face, a circular bottom face, and a tubular periphery formed therebetween thereby defining an interior space, the housing being constructed from an elastomeric material including fuse silica and having an aperture formed in the periphery thereof;
an insulative ballast having a rectangular configuration coupled to a central extent of the bottom face of the housing within the interior space thereof;
a generally annular ultra-violet tube having a pair of ends with a pair of conductive rigid parallel mounting arms mounted to the ballast such that the ultra-violet tube is positioned in the interior space of the housing in concentric relationship therewith, wherein the ultra-violet tube emits ultra-violet radiation upon the receipt of power, the arms being covered with an elastomeric lining;
a power cord with a length of at least 10 feet and situated through the aperture of the housing, the power cord having a first end with a standard grounded power plug for being releasably connected with an alternating current receptacle and a second end coupled to the ballast and further electrically connected to the conductive arms of the ultra-violet tube within the ballast via a pair of conduits formed in the ballast, whereby power is supplied to the ultra-violet tube upon the plug of the power cord being plugged into the current receptacle; and
a grommet integrally coupled to the power cord and further sealingly secured to the aperture of the housing for precluding the entry of water within the housing;
whereby the housing has a mean density less than that of water thereby permitting the housing to float.

5,853,677
CONCENTRATION OF SOLIDS BY FLOCCULATING IN THE BAYER PROCESS

Peter V. Avotins, Easton; Roderick G. Ryles, Milford, both of Conn., and Gregory Flieg, Prairieville, La., assignors to Cytec Technology Corp., Wilmington, Del.
Filed Apr. 18, 1997, Ser. No. 844,354
Int. Cl.^{6} C01F *7/00;* **C22B** *21/00;* **B03D** *3/06;* **B01D** *21/01*
U.S. Cl. 423—121 **19 Claims**

1. A solids/liquids separation process comprising (a) contacting and mixing a Bayer process stream comprising red mud with amounts of (i) a multivalent cationic salt and (ii) a water-soluble polymer containing pendant carboxylic acid groups or salts thereof effective to form flocculated solids, said polymer having a molecular weight ranging from about 1×10^6 to about 1×10^8, and (b) centrifuging said flocculated solids to separate centrifuged solids from centrate, wherein said centrifuged solids have a solids content of greater than about 60% by weight based on total weight, and wherein said solids content is higher than when said (i) is not present.

5,853,678
METHOD FOR REMOVING HYDRIDES, ALKOXIDES AND ALKYLATES OUT OF A GAS USING CUPRIC HYDROXIDE

Yoshiaki Sugimori; Tadaharu Watanabe; Hitoshi Kikuchi; Fumitaka Endo, all of Yamanashi; Shinji Ichimura; Megumi Yoshida, both of Kawasaki, and Hiroaki Imai, Yamanashi, all of Japan, assignors to Nipon Sanso Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 335,699, Dec. 23, 1994, abandoned. This application Jun. 3, 1997, Ser. No. 867,790
Claims priority, application Japan, Mar. 17, 1993, 56653/1993; Nov. 15, 1993, 284843/1993; Nov. 15, 1993, 284847/1993; Dec. 22, 1993, 324408/1993
Int. Cl.^{6} B01D *53/44;53/34*
U.S. Cl. 423—210 **6 Claims**

1. A method of removing a volatile harmful component selected from the group consisting of hydrides of Si, P, As, B, Se and Ge and alkylates and alkoxides of B, Al, Si, P, Ti, Zn, Ga, Ge, As, Se, Zr, In, Sn and Ta from a gas stream containing the harmful component, which comprises contacting the gas stream with crystalline cupric hydroxide.

5,853,679

REMOVAL OF NITROGEN OXIDE FROM EXHAUST GAS

Mitsunori Tabata; Masaaki Kawatsuki; Katsumi Miyamoto, all of Saitama; Hiroshi Tsuchida, Kanagawa; Tomohiro Yoshinari, Saitama; Kazushi Usui, Chiba; Fujio Suganuma, Saitama; Tadao Nakatsuji, Osaka; Hiromitsu Shimizu, Osaka; Ritsu Yasukawa, Osaka; Hideaki Hamada, Ibaraki; Takehiko Ito, Ibaraki; Yoshiaki Kintaichi, Ibaraki, and Motoi Sasaki, Ibaraki, all of Japan, assignors to Japan as Represented by Director General of Agency of Industrial Science and Technology; Petroleum Energy Center; Cosmo Oil Co., Ltd., all of Tokyo, and Sakai Chemical Industry Co., Ltd., Osaka, all of Japan

Continuation of Ser. No. 420,907, Apr. 12, 1995, abandoned, which is a continuation of Ser. No. 174,339, Dec. 28, 1993, abandoned. This application Oct. 17, 1996, Ser. No. 733,697

Claims priority, application Japan, Aug. 5, 1993, 5-213336; Nov. 11, 1993, 5-305976; Dec. 17, 1993, 5-344274; Dec. 28, 1993, 4-361389

Int. Cl.^{6} B01J *8/02*

U.S. Cl. 423—213.2 **8 Claims**

1. A process for removing nitrogen oxide from exhaust, comprising contacting exhaust containing nitrogen oxide with an alumina catalyst containing not more than 0.5% by weight of an alkali metal and/or an alkaline earth metal and having a pore volume of pores of not greater than 60 Å of from 0.06 to 0.2 $cm^3 \cdot g^{-1}$ and a pore volume of pores of not greater than 80 Å of not less than 0.1 $cm^3 \cdot g^{-1}$ and less than 0.26 $cm^3 \cdot g^{-1}$ in an oxidative atmosphere containing excess oxygen provided by said exhaust in the presence of a hydrocarbon or an oxygen-containing organic compound, wherein said nitrogen oxide is removed from said exhaust by contacting said exhaust comprising said oxidative atmosphere containing excess oxygen, said hydrocarbon or said oxygen-containing compound and said exhaust containing nitrogen oxide with said catalyst, wherein the excess oxygen is present in an amount so as to provide an oxygen excess ratio of about 20% or more, wherein said oxygen excess is over the theoretical amount necessary for completely oxidizing carbon monoxide, hydrogen, and hydrocarbons or oxygen-containing organic compounds which are present in said exhaust, wherein said alumina catalyst contains from 0.01 to 30% by weight of tin based on alumina.

5,853,680

PROCESS FOR THE REMOVAL OF HIGHLY CONCENTRATED CARBON DIOXIDE FROM HIGH-PRESSURE NATURAL GAS

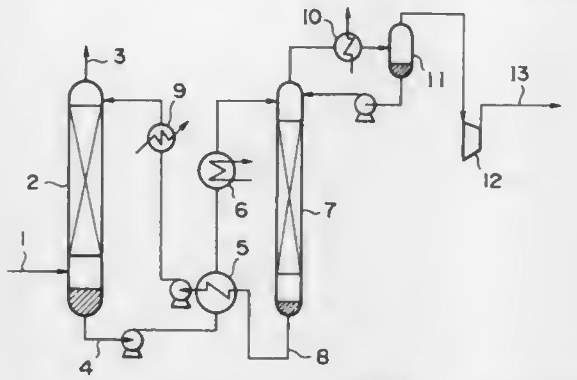
Masaki Iijima, Tokyo, and Shigeaki Mitsuoka, Hiroshima-ken, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 676,638

Claims priority, application Japan, Oct. 3, 1995, 7-256174

Int. Cl.^{6} B01D *53/62*

U.S. Cl. 423—220 **9 Claims**



1. A process for a removal of highly concentrated carbon dioxide from high-pressure natural gas which comprises:

- an absorption step of bringing high-pressure natural gas having a carbon dioxide partial pressure of 2 kg/cm^2 (absolute pressure) or greater, and a pressure of 30 kg/cm^2 (absolute pressure) or greater, into gas-liquid contact with a regenerated carbon dioxide-lean absorbing fluid, said carbon dioxide-lean absorbing fluid having saturated carbon dioxide absorption levels at 40° C. and 12020 C. which differ by at least 30 Nm^3 per metric ton of solvent at a carbon dioxide partial pressure of 2 kg/cm^2 (absolute pressure), whereby highly concentrated carbon dioxide present in the high-pressure natural gas is absorbed into the carbon dioxide-lean absorbing fluid, to produce refined natural gas having a reduced carbon dioxide content and a carbon dioxide-rich absorbing fluid;
- a regeneration step of heating the carbon dioxide-rich absorbing fluid without depressurizing it under conditions effective to liberate high pressure carbon dioxide having a pressure of 10 kg/cm^2 (absolute pressure) or greater and a carbon dioxide-lean absorbing fluid is regenerated; and
- a recycling step of recycling said regenerated carbon dioxide-lean absorbing fluid to said absorption step.

5,853,681

ABSORBENTS

Patrick John Denny, Darlington; Peter John Herbert Carnell, Cleveland; Brian Peter Williams, Darlington; Cathy Anne Woodroffe, and Peter Wood, both of Cleveland, all of United Kingdom, assignors to Imperial Chemical Industries PLC, Millbank, England

PCT No. PCT/GB95/00448, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/24962, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 2, 1995, Ser. No. 704,639

Claims priority, application United Kingdom, Mar. 17, 1994, 9405269

Int. Cl.^{6} C01B *17/16*

U.S. Cl. 423—225 **12 Claims**

1. Shaped absorbent units having an average size within the range 1–10 mm and containing at least 75% by weight of an uncalcined absorbent material selected from the group consisting of copper carbonate, basic copper carbonate, copper hydroxide and mixtures thereof, said units having a bulk density of at least 1.2 kg/l and a BET surface area of at least 10 m^2/g.

5,853,682

PROCESS FOR CRACKING AMMONIA PRESENT IN A GAS CONTAINING HYDROGEN SULPHIDE

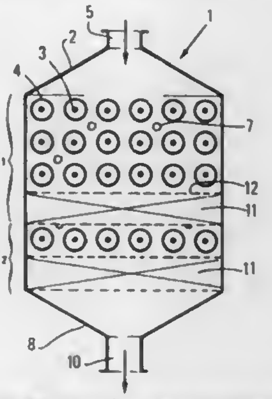
Christian Busson, Charbonniere, and Thomas Nietsch, Lyons, both of France, assignors to Institut Francais du Petrole, France

Filed Mar. 7, 1997, Ser. No. 813,595

Claims priority, application France, Mar. 8, 1996, 96 02909

Int. Cl.^{6} C01C *3/00*

U.S. Cl. 423—237 **21 Claims**



20. A process for the selective catalytic cracking of ammonia present in a fluid consisting essentially of NH_3 or NH_4OH, and hydrogen sulphide, and optionally H_2O and HCN, said process comprising introducing said fluid into a reaction zone heated to between 1000° C. and 1400° C. and comprising a selective cracking catalyst, and recovering a catalytic cracking effluent, wherein said reaction zone is heated by means consisting essentially of electric heating or indirect heat exchange means disposed inside the reaction zone.

5,853,683

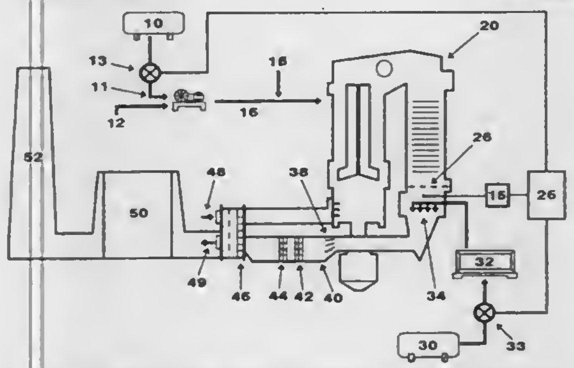
HYBRID SCR/SNCR PROCESS

Francis X. Gibbons, Toms River; Alexander L. Huhmann, Woodbridge, and Albert J. Wallace, Colonia, all of N.J., assignors to Public Services Electric & Gas Corporation, Newark, N.J.

Continuation-in-part of Ser. No. 492,140, Jun. 19, 1995, abandoned. This application Apr. 17, 1997, Ser. No. 840,841

Int. Cl.^{6} B01J *8/00*

U.S. Cl. 423—239.1 **10 Claims**



1. A process for reducing the amount of nitrogen oxides contained in a flue gas stream of a carbonaceous material combustion process, the process comprising the steps of:

- providing means for introducing into the flue gas stream a first nitrogenous treatment agent effective in the selective non-catalytic reduction of nitrogen oxides;
- providing means for introducing into the flue gas stream a second nitrogenous treatment agent effective in the selective catalytic reduction of nitrogen oxides, said means for introducing the second nitrogenous treatment agent located downstream from the means for introducing the first nitrogenous treatment agent;
- providing a catalyst effective for the selective catalytic reduction of nitrogen oxides in the presence of said second nitrogenous treatment agent, said catalyst having a maximum effective nitrogen oxides level reducing capability;
- selecting a non-zero baseline amount of first nitrogenous treatment agent to be the minimum amount of first nitrogenous treatment agent added during all periods the process is operating;
- contacting the flue gas with at least said selected non-zero baseline amount of said first nitrogenous treatment agent causing at least a portion of the nitrogen oxides in the flue gas to be reduced by the selective non-catalytic reduction of nitrogen oxides during all periods when the flue gas stream contains nitrogen oxides;
- contacting the flue gas with said second nitrogenous treatment agent;
- then contacting the flue gas with said catalyst effective for the selective catalytic reduction of nitrogen oxides in the presence of said second nitrogenous treatment agent causing additional nitrogen oxides in the flue gas to be reduced by the selective catalytic reduction of nitrogen oxides; and
- wherein during periods when the level of nitrogen oxides in the flue gas exceeds the amount of nitrogen oxides which can be removed by the combination of selective non-catalytic reduction using said selected non-zero baseline amount of first nitrogenous treatment plus selective catalytic reduction using said maximum effective nitrogen oxides level reducing capability of said catalyst, additional first treatment agent is introduced into the flue gas stream in an amount effective to reduce the level of nitrogen oxides in the flue gas approximately to the level of said maximum effective nitrogen oxides level reducing capability of said catalyst.

5,853,684

CATALYTIC REMOVAL OF SULFUR DIOXIDE FROM FLUE GAS

Ming Fang, Clearwater Bay, and Jian-Xin Ma, Tai Po Tsai Village, both of Hong Kong, assignors to The Hong Kong University of Science & Technology, Hong Kong, Hong Kong

Continuation of Ser. No. 558,694, Nov. 14, 1995, abandoned. This application Aug. 21, 1997, Ser. No. 914,615

Int. Cl.^{6} B01J *8/00*

U.S. Cl. 423—244.1 **20 Claims**

1. A single-stage process for the simultaneous removal of SO_2 and NO_x from a gas stream comprising the steps of:

- (a) passing said gas stream through a catalytic reactor containing an La_2O_2S containing catalyst bed;
- (b) introducing a reducing gas stream into said catalytic reactor, wherein said reducing gas is selected from the group consisting of carbon monoxide, hydrogen, light hydrocarbons, ammonia, and mixtures thereof;
- (c) reacting sulfur dioxide and nitrogen oxide containing gas stream with said reducing gas in the presence of said La_2O_2S containing catalyst to produce elemental sulfur and nitrogen;
- (d) removing said elemental sulfur from said reaction gas stream; and
- (e) feeding said reaction gas stream from which sulfur has been removed to a stack.

5,853,685

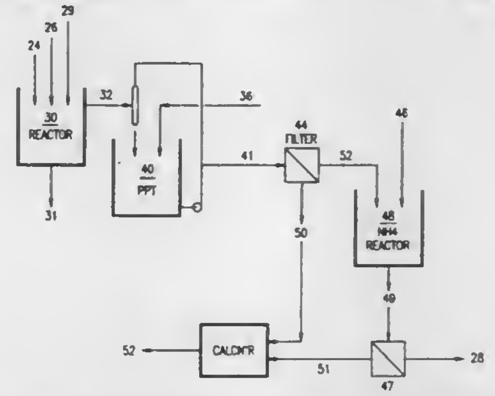
PROCESS FOR THE PRODUCTION OF HIGH PURITY SILICA FROM WASTE BY-PRODUCT SILICA AND HYDROGEN FLUORIDE

William R. Erickson, 239 Lake Hollingsworth Dr., Lakeland, Fla. 33803

Filed Aug. 28, 1996, Ser. No. 705,901

Int. Cl.^{6} C01B *33/12*

U.S. Cl. 423—335 **19 Claims**



1. A process for the purification of silica, comprising the steps of:

- reacting a first-purity silica which contains impurities with hydrogen fluoride in the presence of sulfuric acid to produce gaseous silicon tetrafluoride and a mother liquor in which said impurities are contained;
- separating said gaseous silicon tetrafluoride from said mother liquor, said impurities remaining in said mother liquor;
- contacting the removed gaseous silicon tetrafluoride with water substantially free of impurities to form a slurry of hydrofluosilicic acid and a second-purity silica of a purity higher than said first-purity silica;
- separating a first part of said second-purity silica from said slurry of hydrofluosilicic acid and second-purity silica; and

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recovering said first part of said second-purity silica.

5,853,686

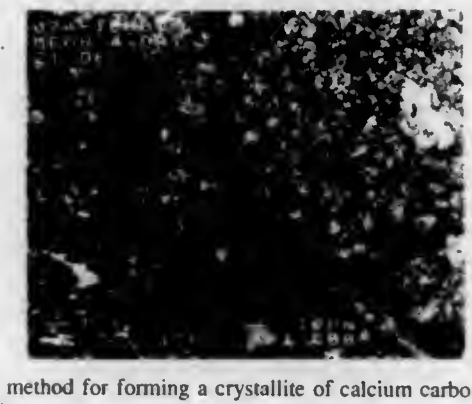
CALCIUM CARBONATES OF ALTERED CRYSTAL HABIT OR MORPHOLOGY AND METHODS FOR PRODUCING SAME

Kenneth M. Doxsee, Eugene, Oreg., assignor to State of Oregon acting by and through the Oregon State Board of Higher Education on behalf of the University of Oregon, Eugene, Oreg.

Continuation-in-part of Ser. No. 104,863, Aug. 10, 1993, Pat. No. 5,545,394. This application Aug. 12, 1996, Ser. No. 695,800

Int. Cl.^{6} C01F *11/18;* **B01D** *9/00*

U.S. Cl. 423—430 **16 Claims**



1. A method for forming a crystallite of calcium carbonate, the method comprising;

(a) adding a calcium salt and a carbogate salt, at least one of the salts being substantially soluble in water, and a complexing agent to an essentially non-aqueous reaction solvent to form a reaction system, the calcium, salt and carbonate salt being reactive with each other in water to form a first crystallite of calcium carbonate, the complexing agent being soluble in the reaction solvent and being selected from a group consisting of crown ethers, tris(metboxyethoxyethyl)amines, poly(ethylene glycols), and glymes, the complexing agent being capable of forming chelation complexes with at least one of the salts in the reaction solvent, the calcium salt and carbonate salt being added to the reaction solvent for reaction with each other in the reaction system to form a calcium carbonate;

(b) allowing the calcium salt and carbonate salt to react with each other in the reaction system to form a second crystalline precipitate, the second crystallite comprising crystals of calcium carbonate that have a different habit or morphology from calcium carbonate crystals in the calcium carbonate in the first crystallite that would otherwise be formable in water by reaction of the calcium salt and carbonate salt without the complexing agent.

5,853,687

METHOD OF MANUFACTURE OF CARBON BLACK BY PYROLYSIS OF RUBBER WASTE PREVIOUSLY GROUND AND FROM WHICH THE SCRAP HAS BEEN REMOVED

Jean Morlec, and Christian Hamon, both of Saint Nazaire, France, assignors to Institut Francais du Petrole, France

Continuation of Ser. No. 517,959, Aug. 22, 1995, abandoned. This application Apr. 17, 1997, Ser. No. 837,425

Claims priority, application France, Aug. 22, 1994, 94/10.236

Int. Cl.^{6} C09C *1/48*

U.S. Cl. 423—449.7 **4 Claims**

1. A method of manufacturing carbon black by pyrolysis of ground, scrap-depleted rubber waste comprising conducting the pyrolysis in the presence of carbon dioxide, in a rotary kiln indirectly heated by combustion of gases generated during said pyrolysis, said kiln having an inlet and an outlet in which the pyrolysis area is operated at between approximately 600° and 1,100°C., the product being collected at a temperature of between approximately 150° and 350° C.

5,853,688

CRYSTALLINE LEAD-CONTAINING OXFLUORIDES

Munirpallam Appadorai Subramanian, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1997, Ser. No. 893,435

Int. Cl.^{6} C01B *9/08*

U.S. Cl. 423—464 **5 Claims**

2. A process of making a crystalline lead-containing oxyfluoride of the formula $PbMO_2F$, wherein M is selected from the group consisting of Ga, Sc, In, Lu, Yb, Tm, Er and Tl comprising the steps of:

a) mixing stoichiometric amounts of precursor oxides and fluorides;

b) heating the mixture in a sealed container to a temperature of 550° C. to 900° C. and a pressure of 50×10^8 Pa to 70×10^8 Pa for 30 to 75 minutes;

c) quenching the container to room temperature; and

d) recovering the oxyfluoride.

5,853,689

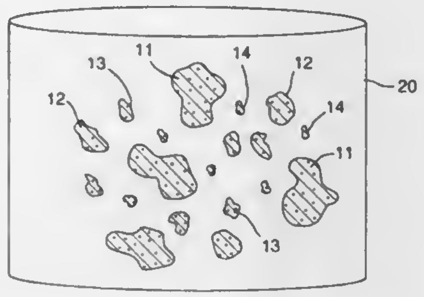
METHOD FOR PRODUCING CHLORINE DIOXIDE BY ACTIVATING AN IMPREGNATED ZEOLITE CRYSTAL MIXTURE, AND MIXTURES FOR PERFORMING SUCH METHOD

Fred Klatte, Two Spruce St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 798,873, Feb. 11, 1997. This application Jun. 3, 1998, Ser. No. 89,611

Int. Cl.^{6} C01B *11/02*

U.S. Cl. 423—478 **63 Claims**



10. A method for producing chlorine dioxide, including the steps of:

(a) providing a zeolite crystal mixture, the zeolite crystal mixture comprising zeolite crystals impregnated with sodium chlorate, zeolite crystals impregnated with sulfuric acid, zeolite crystals impregnated with at least one of a deliquescent and a water absorbing and retaining substance, and zeolite crystals impregnated with an oxidizer; and

(b) causing the zeolite crystal to contact a moisture-containing fluid, thereby activates the zeolite crystal mixture to produce the chlorine dioxide.

5,853,690

METHOD FOR DECOMPOSING WATER USING AN ACTIVATED CARBON CATALYST

Kouetsu Hibino, Susono, and Kyoichi Tange, Mishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 24, 1997, Ser. No. 805,338

Claims priority, application Japan, Feb. 28, 1996, 8-041674

Int. Cl.^{6} C01B *7/19;7/01;* **B01J** *21/18*

U.S. Cl. 423—483 **10 Claims**

1. A method of decomposing water to produce a hydrogen halide and oxygen by reacting water with a halogen as represented by the chemical equations:

$$H_2O+X_2 \rightarrow HX+HXO \qquad (1)$$

$$HXO \rightarrow HX+\tfrac{1}{2}O_2 \qquad (2)$$

wherein X is a halogen, in the presence of an activated carbon catalyst, and wherein the activated carbon is coated with a heat-resistant, oxidation-resistant film.

5,853,691

SILVER HALIDES OF ALTERED CRYSTAL HABIT OR MORPHOLOGY AND METHODS FOR PRODUCING SAME

Kenneth M. Doxsee, Eugene, Oreg., assignor to State of Oregon acting by and through the Oregon State Board of Higher Education on the behalf of the University of Oregon, Eugene, Oreg.

Continuation-in-part of Ser. No. 104,863, Aug. 10, 1993, Pat. No. 5,545,394. This application Aug. 12, 1996, Ser. No. 695,784

Int. Cl.^{6} C01B *9/00;* **C01G** *5/02*

U.S. Cl. 423—491 **18 Claims**

1. A method for forming a silver halide crystallite, the method comprising:

(a) adding a silver salt and a halide salt, at least one of the salts being substantially soluble in water, and a complexing agent to an essentially non-aqueous reaction solvent to form a reaction system, the silver salt and halide salt being reactive with each other in water to form a first crystallite of silver halide, the complexing agent being soluble in the reaction solvent and being selected from a group consisting of crown ethers, tris (methoxyethoxyethyl)amines, poly(ethylene glycols), and glymes, the complexing agent being capable of forming chelation complexes with at least one of the salts in the reaction solvent, the silver salt and halide salt being added to the reaction solvent for reaction with each other in the reaction system to form a silver halide:

(b) allowing the silver salt and halide salt to react with each other in the reaction system to form a second crystallite precipitate, the second crystallite comprising crystals of silver halide that have a different habit or morphology from silver halide crystals in the first crystallite that would otherwise be formable in water by reaction of the silver salt and halide salt without the complexing agent.

5,853,692

PROCESS FOR MANUFACTURING HIGH PURITY NICKEL CHLORIDE BY RECYCLING WASTE NICKEL ANODE

Jae Young Lee; Jin Gun Sohn; Seon Hwan Ahn, and Myung Ho Bae, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd., and Research Institute of Industrial Science & Technology, both of Pohang, Rep. of Korea

Continuation of Ser. No. 392,846, Mar. 1, 1995, abandoned. This application Jul. 24, 1997, Ser. No. 899,956

Claims priority, application Rep. of Korea, Jul. 2, 1993, 1993/12393

Int. Cl.^{6} C01G *53/09*

U.S. Cl. 423—493 **18 Claims**

1. A process for manufacturing nickel chloride, comprising the steps of:

pre-treating a waste nickel anode having a specific surface area and obtained from an electroplating factory of a steel manufacturing plant to remove impurities adhered on the surface of the waste nickel anode;

working the pre-treated waste nickel anode into chips so as to provide an increased specific surface area:

putting the worked waste nickel anode chips into an aqueous hydrochloric acid solution of 10–35% such that equivalence ratios of the number of equivalents of Ni inputted/number of equivalents of a target $NiCl_2$ concentration and the number of equivalents of HCl inputted/number of equivalents of a target $NiCl_2$ concentration are 1.0 or more, and dissolving said worked waste nickel anode chips at a reaction temperature of 20°–80° C. so as to form an aqueous nickel chloride solution having the target $NiCl_2$ concentration, wherein the two equivalence ratios have the same target $NiCl_2$ concentration:

stopping the dissolving step by passing said aqueous nickel chloride solution through a filter to remove insoluble materials:

placing said aqueous nickel chloride solution in an impurity treating tank and adding an alkaline compound to adjust the pH to 2–5;

injecting an oxidizing gas into said aqueous nickel chloride solution in the impurity treating tank with the pH level maintained at 2–5 so as to form Fe and Cr ions into a sludge, and carrying out a filtering step; and

adding a Ni powder in the amount of 0.1–2.0 g/l into said aqueous nickel chloride solution to remove heavy metal ions.

5,853,693

HYDROGENATION CATALYST FOR PRODUCTION OF HYDROGEN PEROXIDE, AND METHOD FOR PREPARATION OF SAME

Kazuharu Ogasawara; Tomio Kato; Norikazu Okuda, all of Tokyo; Tetsuya Konishi, Ibaraki-ken, and Kenji Kato, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 19, 1997, Ser. No. 820,085

Claims priority, application Japan, Apr. 3, 1996, 8-081365; Apr. 3, 1996, 8-081366; Apr. 3, 1996, 8-081367; Apr. 3, 1996, 8-081368

Int. Cl.^{6} C01B *15/023*

U.S. Cl. 423—588 **15 Claims**

1. A method for preparing hydrogen peroxide in accordance with an anthraquinone method, comprising hydrogenating at least one anthraquinone with a hydrogenation catalyst comprising palladium and at least one alkali metal, supported on a silica carrier, wherein the at least one alkali metal is in an amount of 0.1 to 5 wt % based on the weight of the silica carrier.

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5,853,694

TRANSPORT VEHICLES FOR MACROMOLECULES

Jan Bernard Frederik Nicolaas Engberts, Groningen; Anno Wagenaar, Uithuizermeeden; Dirk Hoekstra, Zuidhorn; Irene Van Der Woude, Groningen, and Marcel Herman Jozef Ruiters, Zuidhorn, all of Netherlands, assignors to Stitching Voor DeTechnische Wetenschappen, Utrecht; Rijksuniversiteit Groningen, Groningen, and Stichting Scheikundig Ondoerzoek in Nederland, The Hague, all of Netherlands

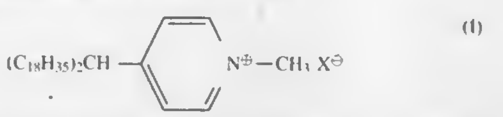
Filed Jul. 24, 1996, Ser. No. 686,045

Claims priority, application Netherlands, Jul. 25, 1995, 1000884

Int. Cl.^{6} A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.21 **7 Claims**

1. A compound with the general formula I



in which: X is selected from the group consisting of Cl , Br and I .

5,853,695

METHOD FOR PALLIATION OF PAIN IN HUMAN BONE CANCER USING THERAPEUTIC TIN-117M COMPOSITIONS

Suresh C. Srivastava, Setauket; George E. Meinken, Middle Island; Leonard F. Mausner, Stony Brook, and Harold L. Atkins, Setauket, all of N.Y., assignors to Brookhaven Science Associates LLC, Upton, N.Y.

Continuation of Ser. No. 237,003, May 2, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 743,287

Int. Cl.^{6} A61K *51/04;* **C07F** *5/00;* **A61N** *5/00*

U.S. Cl. 424—1.65 **11 Claims**

1. A method for palliation of pain associated with cancer in skeletal bone of a human, comprising a step of administering to the human a composition comprising a pharmaceutically acceptable carrier and an Sn-117 m (Sn^{4+}) chelate complex, wherein the composition has a specific activity of Sn-117m of at least about 2 mCi/mg, at a dosage of between about 10 mCi and about 50 mCi per 70 kg of body weight, wherein the administration of the composition does not result in bone marrow toxicity, thereby relieving said pain.

5,853,696

SUBSTITUTED 2-CARBOXYALKYL-3(FLUOROPHENYL)-8-(3-HALOPROPEN-2-YL) NORTROPANES AND THEIR USE AS IMAGING AGENTS FOR NEURODEGENERATIVE DISORDERS

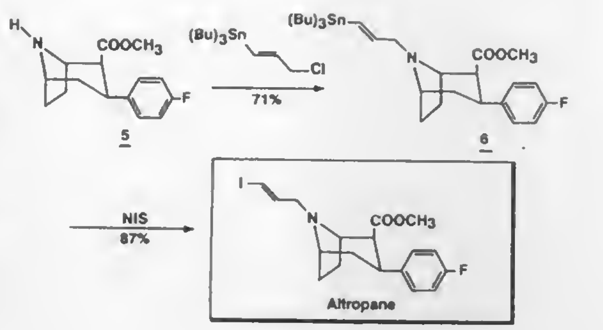
David R. Elmaleh; Bertha K. Madras, both of Newton; Peter Meltzer, Lexington, and Robert N. Hanson, Newton, all of Mass., assignors to Organix, Inc., Woburn; The General Hospital Corporation, Boston; The President and Fellows of Harvard College, Cambridge, and Northeastern University, Boston, all of Mass.

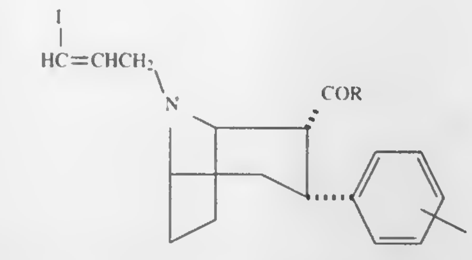
Division of Ser. No. 142,584, Oct. 25, 1993, Pat. No. 5,493,026. This application Feb. 20, 1996, Ser. No. 605,332

Int. Cl.^{6} A61K *51/04*

U.S. Cl. 424—1.85 **4 Claims**

1. A method of detecting parkinsonism in a human patient comprising administration to said patient of a detectably labelled compound detecting the binding of said compound to CNS tissue, said compound having the formula:





wherein the following conditions are imposed on that formula:

R is $—CH_3$, $—CH_2CH_3$, $—CH(CH_3)_2$, $—(CH_2)_nCH_3$, $—(CH_2)_nC_6H_4X$, $—C_6H_4X$, $—C_6H_5$, $—OCH_3$, $—OCH_3CH_2$, $—OCH\ (CH_3)_2$, $—OC_6H_5$, $—OC_6H_4X$, $—O(CH_2)_nC_6H_4X$, or $—O(CH_2)_nCH_3$; wherein X is —Br, —Cl, —I, —F, —OH, $—OCH_3$, $—CF_3$, $—NO_2$ $—NH_2$, —CN, $—NHCOCH_3$, $—N(CH_3)_2$, $—(CH_2)_nCH_3$,CHOCH$_3$, or $—C(CH_3)_3$, and n is between 0 and 6 inclusive.

5,853,697

METHODS OF TREATING ESTABLISHED COLITIS USING ANTIBODIES AGAINST IL-12

Warren Strober; Ivan Fuss, both of Bethesda, Md., and Markus Neurath, Mainz, Germany, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Oct. 25, 1995, Ser. No. 547,979

Int. Cl.^{6} A61K *39/395;* **C07K** *16/24;* **C12P** *21/08;* **G10N** *33/543*

U.S. Cl. 424—9.2 **11 Claims**

1. A method for treating the inflammatory response of an established colitis in a human subject with inflammatory bowel disease, comprising administering to a subject diagnosed with an established colitis from an inflammatory bowel disease an amount of an antibody to interleukin-12 effective in reducing the colitis-inducing effect of interleukin-12, thereby treating the inflammatory response of an established colitis.

5,853,698

METHOD FOR MAKING POROUS MICROPARTICLES BY SPRAY DRYING

Julie Ann Straub, Winchester; Edith Mathiowitz, Brookline; Howard Bernstein, Cambridge; Henry T. Brush, Somerville, all of Mass., and Richard E. Wing, Bloomfield, N.J., assignors to Acusphere, Inc., Cambridge, Mass.

Continuation of Ser. No. 611,248, Mar. 5, 1996, Pat. No. 5,611,344. This application Nov. 8, 1996, Ser. No. 745,676

Int. Cl.^{6} A61B *8/13*

U.S. Cl. 424—9.52 **10 Claims**

1. A method for making a microparticle formed of a synthetic biocompatible polymer useful as an ultrasound contrast agent, wherein the microparticle is formed by emulsifying a solution of the synthetic biocompatible polymer with an aqueous solution of volatile salt pore forming agents, then removing the polymer

solvent and water with the volatile salt pore forming agents to form a porous microparticle, prior to administration as an ultrasound contrast agent.

5,853,699

USE OF TETRA AZACYCLE COMPLEXES AS X-RAY DIAGNOSTIC AGENTS FOR THE LIVER AND GALLBLADDER

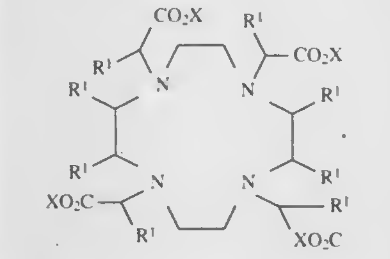
Franz-Karl Maier; Michael Bauer; Werner Krause; Ulrich Speck; Gabriele Schuhmann-Giampiere, all of Berlin; Andreas Mühler, Neuenhagen; Thomas Balzer, and Wolf-Rüdiger Press, both of Berlin, all of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation-in-part of Ser. No. 387,408, Feb. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 351,086, Nov. 30, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,397

Int. Cl.^{6} A61B *5/055*

U.S. Cl. 424—9.363 **23 Claims**

3. In a method of performing computer tomography of the liver and the biliary tracts, the improvement wherein a contrast agent is administered and said contrast agent is a metal complex is of formula IV

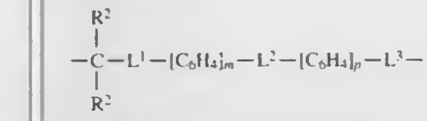


(VI)

wherein

X is, in each case, independently of one another, hydrogen or a metal ion equivalent of an element of the atomic numbers 39–42, 44–51 or 56–83.

R^1 is, in each case, independently of one another, hydrogen, or a radical of formula Ia



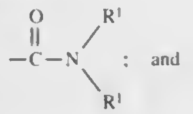
$$-\underset{\substack{|\\R^2}}{\overset{\substack{R^2\\|}}{C}}-L^1-[C_6H_4]_m-L^2-[C_6H_4]_p-L^3-R^2. \qquad (Ia)$$

m and p are each independently 0 or 1, wherein at least one of m or p is 1, and if either m or p is equal to zero, two or more heteroatoms are not directly connected to one another.

R^2 is, in each case, independently of one another, hydrogen or a branched or unbranched, saturated or unsaturated C_1–C_6 hydrocarbon radical, and

L^1, L^2 and L^3 are, in each case, independently of one another, a direct bond, an oxygen atom, a sulfur atom, —N(H), —N(R^2), a C_1–C_{10} alkylene chain, or a C_1–C_{10} alkylene chain interrupted by an oxygen atom, a sulfur atom, —N(H) or —N(R^2);

wherein free carboxyl groups that are not used for complexing can optionally be present as salts of physiologically compatible cations or as amides of the formula



$$-\overset{\overset{O}{\|}}{C}-N\begin{matrix}\diagup R^1\\ \diagdown R^1\end{matrix} ;\ \text{and}$$

at least one of the R^1 groups is a radical of formula Ia.

5,853,700

HYDRO-ALCOHOLIC AEROSOL HAIR COSMETIC COMPOSITIONS CONTAINING A HYDROLYTICALLY STABLE SILICONE GLYCOL BLOCK COPOLYMER DISPERSION

John L. Gormley, Midland Park, and Gary T. Martino, Plainsboro, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Nov. 6, 1996, Ser. No. 744,294

Int. Cl.^{6} A61K *7/11*

U.S. Cl. 424—47 **17 Claims**

1. A hair cosmetic composition providing improved spray aesthetics and foam dissipation comprising:

from about 0.001 to about 0.9% by weight of a polymer, said polymer being an Si—C linked polypropylene oxide-modified polydimethylsiloxane block copolymer of the alkoxy-end blocked type or the alkyl-pendant type which contains essentially no ethylene oxide;

from about 1 to about 15% by weight of at least one film-forming resin;

up to about 70% by weight of a solvent;

from about 10 to about 60% by weight of a propellant; and

water as the balance;

wherein the composition contains essentially no starch syrup and no more than about 80% of one or more volatile organic compounds.

5,853,701

CLEAR AEROSOL HAIR SPRAY FORMULATIONS CONTAINING A SULFOPOLYESTER IN A HYDROALCOHOLIC LIQUID VEHICLE

Scott E. George, 4005 Foxfire La., Kingsport, Tenn. 37664; Vicki L. Underwood, 2416 E. Stone Dr. #800 A, Kingsport, Tenn. 37660; D. Michael Garber, 769 Bayless Rd., Jonesborough, Tenn. 37659, and Andy H. Singleton, 453 Eastley Ct. Apt. 4, Kingsport, Tenn. 37660

Continuation of Ser. No. 254,011, Jun. 3, 1994, Pat. No. 5,674,479, which is a continuation-in-part of Ser. No. 081,897, Jun. 25, 1993, abandoned, and a continuation of Ser. No. 523,312, Sep. 5, 1995, Pat. No. 5,660,816, and a continuation of Ser. No. 254,010, Jun. 3, 1994, Pat. No. 5,662,893. This application May 7, 1997, Ser. No. 852,504

Int. Cl.^{6} A61K *7/11*

U.S. Cl. 424—47 **2 Claims**

1. A clear aerosol hair spray composition exhibiting less than 20 NTU's consisting essentially of a liquid vehicle, a propellant, and a sulfopolyester having repeating units of dimethyl-5-sodiosulfoisophalate, isophthalic acid, 1,4-cyclohexanedimethanol, and diethylene glycol.

5,853,702

PENICILLIUM PURPUROGENUM MUTANASES AND NUCLEIC ACIDS ENCODING SAME

Randy M. Berka, Davis, Calif.; Stephan Christgau, Gentofte; Torben Halkier, Frederiksberg C, both of Denmark; Jeff Shuster, Davis, Calif., and Claus Crone Fuglsang, Copenhagen, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Novo Nordisk Biotech, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 598,881, Feb. 9, 1996, abandoned. This application Feb. 7, 1997, Ser. No. 797,366

Int. Cl.^{6} A61K *1/28;* **C12N** *9/24;* **C07K** *1/00;* **C07H** *21/04*

U.S. Cl. 424—50 **8 Claims**

1. An isolated polypeptide having mutanase activity obtained from a *Penicillium purpurogenum* strain which

(a) has a pH optimum of about 3.0 to about 4.5 at 40° C.;

(b) has a temperature optimum throughout the range of 45° C. to 55° C. at pH 5.5; and

(c) is encoded by a nucleic acid sequence which hybridizes under low stringency conditions with (i) the nucleic acid sequence of SEQ ID NO:2, or (ii) its complementary strand.

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PREVENTING AND REVERSING THE FORMATION OF ADVANCED GLYCOSYLATION ENDPRODUCTS

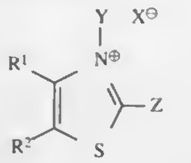
Anthony Cerami, Shelter Island, N.Y.; Peter C. Ulrich, Old Tappan, N.J.; Dilip R. Wagle, Valley Cottage, N.Y.; San-Bao Hwang, Sudbury, Mass.; Sara Vasan, Yonkers, N.Y., and John J. Egan, Mountain Lakes, N.J., assignors to The Picower Institute for Medical Research, Manhasset, N.Y., and Alteon Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 473,104, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 375,155, Jan. 18, 1995, Pat. No. 5,656,261. This application Jan. 18, 1996, Ser. No. 588,249

Int. Cl.^{6} A61K ***31/38;*** **C07D** ***277/24***

U.S. Cl. 424—53 **86 Claims**

1. A composition for inhibiting the advanced glycosylation of a target protein in the oral cavity, and reversing pre-formed advanced glycosylation crosslinks, comprising an effective amount of a compound selected from the group consisting of compounds of the structural formula:



(I)

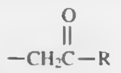
:

wherein

R^1 and R^2 are independently selected from the group consisting of hydrogen, hydroxy(lower)alkyl, lower aceloxy(lower)alkyl, lower alkyl, lower alkenyl, or R^1 and R^2 together with their ring carbons may be an aromatic fused ring, optionally substituted by one or more amino, halo or alkylenedioxy groups;

Z is hydrogen or an amino group;

Y is amino, a group of the formula



$$-CH_2\overset{\overset{O}{\|}}{C}-R$$

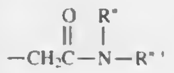
wherein R is a lower alkyl, alkoxy, hydroxy, amino or an aryl group, said aryl group optionally substituted by one or more lower alkyl, lower alkoxy, halo, dialkylamino, hydroxy, nitro or alkylenedioxy groups;

a group of the formula

$$—CH_2R'$$

wherein R' is hydrogen, or a lower alkyl, lower alkynyl, or aryl group;

or a group of the formula



$$-CH_2\overset{\overset{O}{\|}}{C}-\overset{\overset{R''}{|}}{N}-R'''$$

wherein R" is hydrogen and R"' is a lower alkyl group, optionally substituted by an aryl group, or an aryl group, said aryl group optionally substituted by one or more lower alkyl, halo, or alkoxylcarbonyl groups; or R" and R"' are both lower alkyl groups;

X is a halide, tosylate, methanesulfonate or mesitylenesulfonate ion;

and mixtures thereof, and a carrier therefor.

5,853,704

FLUORIDE DENTIFRICES OF ENHANCED EFFICACY

Yun Po Zhang, Hillsborough, and Abdul Gaffar, Princeton, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 22, 1997, Ser. No. 935,367

Int. Cl.^{6} A61K ***7/16;7/18***

U.S. Cl. 424—52 **14 Claims**

1. A multicomponent anticaries dentifrice composition comprising, a first dentifrice component containing a dentifrice vehicle with a fluoride ion releasing compound therein, that is free of any casein glycomacropeptide compound and a second dentifrice component containing a dentifrice vehicle with a casein glycomacropeptide compound therein, that is free of any fluoride ion, the components being physically separate before use and when combined upon application to the teeth, providing enhanced enamel remineralization.

5,853,705

ANTI-AGING COSMETIC COMPOSITION

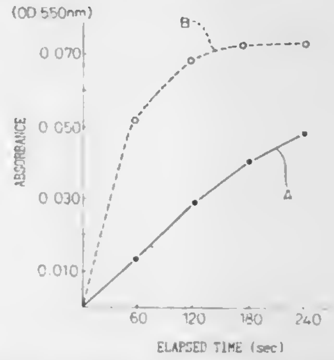
Yasukazu Nakayama; Shoji Nishiyama, both of Yokohama; Yoichi Shimatani, Tokyo; Shigetoyo Sawaki, Osaka; Katsuhisa Yamada, Osaka, and Kazufumi Naitoh, Osaka, all of Japan, assignors to Shiseido Company, Ltd., Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 823,834

Claims priority, application Japan, Mar. 27, 1996, 8-097654

Int. Cl.^{6} A61K ***7/42***

U.S. Cl. 424—59 **19 Claims**



1. An anti-aging cosmetic composition comprising a solution obtained by treating, with at least one enzyme, an alkali extract of a hypoallergenic rice obtained by treating rice with a proteinase;

wherein said at least one enzyme is selected from the group consisting of an actinase, a pepsin, a trypsin, a papain, a peptidase, and bromelin and wherein said at least one enzyme is used in an amount of not tore than 0.05 parts by weight of the alkali extract.

5,853,706

SCENTED HAIR GEL HAVING PARTICULATE MATTER IN THE FORM OF GLITTER

Cindi Klar, New York, N.Y., assignor to Townley Jewelry, Inc., New York, N.Y.

Filed Mar. 19, 1997, Ser. No. 820,759

Int. Cl.^{6} A61K ***7/06***

U.S. Cl. 424—70.1 **3 Claims**

1. A hair gel composition having glitter contained therein, comprising:

a) a surface active hair treatment system for moisturizing, conditioning, and lubricating the hair and scalp, and for holding stylized hair in place, selected from the group consisting of propylene glycol, polyvinylpyrrolidone-dimethyaminoethylmethacrylate copolymer, acrylates-steareth-20, methylacrylate copolymer, polyvinylpyrrolidone, polyvinylpyrrolidone , vinyl acetate (PVP/VA) copolymers disodium ethylenediaminetetraacetate (EDTA), EDTA, malic acid, panthenol; petrolatum, aloe vera gel, glycerin, mineral oil, lanolin, collagen amino acids, bentonite, triethanolamine, thixagel, hectorite, sepigel, sodium aspartate, polysorbate and combinations thereof; being in the range of 7.5% to 10.0% by weight of the hair gel composition;

b) at least one pH adjuster selected from the group consisting of triethanolamine, diethanolamine, glycine, ethanolamine, tromethamine, and combinations thereof; being in the range of 0.5% to 2.0% by weight of the hair gel composition;

c) a preservative system for preserving the hair gel composition against microbial contamination selected from the group consisting of urea, sorbic acid, hexetidine, honeysuckle extract, Iceland moss extract and combinations thereof; being in the range of 0.40% to 2.4% by weight of the hair gel composition;

d) at least one anti-oxidant and light stabilizer for preventing oxidation of the hair gel composition selected from the group consisting of benzophenone-2, benzophenone-4, octyl dimethyl para-aminobenzoic acid (PABA), octyl methoxycinnamate, octyl salicylate, ascorbic acid, isopropyl methoxycinnamate and combinations thereof, being in the range of 0.02% to 0.3% by weight of the hair gel composition;

e) a diluent in the form of water in the range of 80.0% to 95.0% of the hair gel composition; and

f) suspended particulate matter for aesthetic ornamentation of the hair being colorized acrylic polyester and micas and being in the range of 2.0% to 5.0% by weight of the hair gel composition.

5,853,707

CONDITIONING SHAMPOOS CONTAINING POLYVALENT METAL CATIONS

Robert Lee Wells, Cincinnati; Michael Albert Snyder, and Lisa Ann Napolione, both of Mason, all of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Continuation of Ser. No. 85,695, Jun. 30, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,400

Int. Cl.^{6} H61K ***7/00;7/07***

U.S. Cl. 424—70.12 **15 Claims**

1. A hair conditioning shampoo composition comprising:

(a) from about 5% to about 50%, by weight, of a detersive surfactant, or mixture thereof, selected from the group consisting of anionic sulfate surfactants;

(b) a nonvolatile hair conditioning agent selected from the group consisting of water soluble cationic conditioning agents, insoluble silicone conditioning agents and mixtures thereof; said cationic conditioning agents being present at a level of from about 0.05% to about 5%, by weight of the composition, and said insoluble silicone conditioning agents being present at a level of from about 0.05% to about 10%, by weight of the composition;

(c) from about 20% to about 94.95%, by weight, of water;

wherein said composition further comprises from about 0.004M to about 0.08M of magnesium cations in free ion form.

5,853,708

COSMETIC COMPOSITIONS CONTAINING AT LEAST ONE ANIONIC SURFACTANT OF ALKYLGALACTOSIDE URONATE TYPE AND AT LEAST ONE SYNTHETIC HYDROCARBON OIL

Daniele Cauwet, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 553,429, Nov. 28, 1995, abandoned. This application Oct. 30, 1997, Ser. No. 961,034

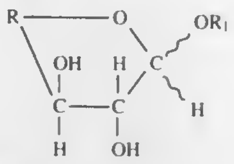
Claims priority, application France, Jun. 1, 1993, 93 06532

Int. Cl.^{6} A61K ***7/00;7/07***

U.S. Cl. 424—70.22 **18 Claims**

1. Cosmetic composition comprising, in a cosmetically acceptable aqueous medium:

(A) between 0.5 and 30% by weight of at least one anionic surfactant of alkylgalactoside uronate type of formula:



(I)

in which:

R$_1$ denotes a linear or branched C_8–C_{22} alkyl radical

R denotes a group

(i) $CH—CH(OH)—CO_2R_2$ or

(ii) $—CH(OH)—CH—CO_2R_2$, in which the carbon carrying the hydroxyl group is connected to the endocyclic oxygen atom; R$_2$ denotes a hydrogen, an alkali metal or an alkaline-earth metal or a quaternary ammonium group which is unsubstituted or substituted by alkyls or hydroxyalkyls; and

(B) between 0.1 and 20% by weight of at least one synthetic hydrocarbon oil selected from the group consisting of: hydrogenated and non-hydrogenated polyisobutenes; and hydrogenated and non-hydrogenated polydecenes.

5,853,709

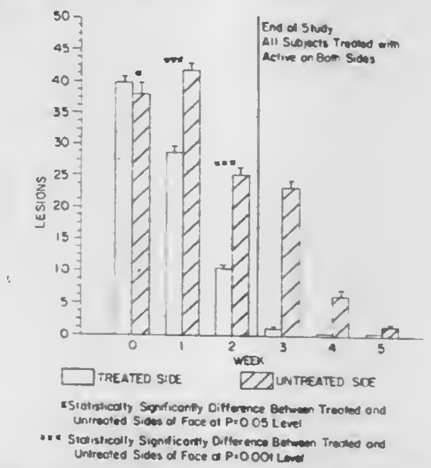
SHAVING COMPOSITION AND METHOD FOR PREVENTING PSEUDOFOLLICULITIS BARBAE

Isaac Willis, Atlanta, Ga.; Adu Gyamfi Darkwa, Olympia Fields, and Apolonio L. Villanueva, Northbrook, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Filed Dec. 12, 1996, Ser. No. 766,395

Int. Cl.^{6} A61K ***7/15***

U.S. Cl. 424—73 **52 Claims**



1. A topically applied shaving composition for use by a human subject suffering from or prone to development of pseudofolliculitis barbae or razor bumps, said composition consisting of about 0.01–5% by weight of a bacteriostatic/hemostyptic agent selected from the group consisting of stannous fluoride, stannous bromide, sodium monofluarophosphate and combinations thereof, and said composition further consisting of an aqueous or water-miscible solvent, about 0.5–10% by weight of a cyclomethicone and a thickening agent.

5,853,710

SHAVE GEL COMPOSITION

Louis Dehan, Seraing, and Didier Juprelle, Sluizen, both of Belgium, assignors to Colgate-Palmolive Co., New York, N.Y.

Filed Sep. 26, 1997, Ser. No. 938,303

Int. Cl.^{6} A61K ***7/15***

U.S. Cl. 424—73 **20 Claims**

1. A nonaerosol shave gel composition comprising

- a) about 12 to 30 wt. % of amine salts of a mixture of lauric acid, myristic acid, and palmitic acid wherein the weight ratio of the myristic acid to the lauric acid and palmitic acid is respectively about 2.5 to about 3.75:1:1,
- b) about 1 to 3 wt. % of a sugar ester of a long-chain alkyl carboxylic acid having from about 8 to about 18 carbon atoms, inclusive,
- c) about 2 to about 4 wt. % of an ethoxylated emollient, slip agent,
- d) about 1 to about 2 wt. % of an ethoxylated alkyl glycoside ester of a diacid having an alkyl group of about 8 to about 18 carbon atoms, and
- e) about 0.3 to 0.9 wt. % of a cellulose gelling agent.

5,853,711

WATER-IN-OIL EMULSION COSMETIC COMPOSITION

Tadashi Nakamura, and Kenzo Ito, both of Yokohama, Japan, assignors to Shiseido Company, Ltd, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 723,937

Claims priority, application Japan, Sep. 29, 1995, 7-277121; Sep. 29, 1995, 7-277122; Sep. 29, 1995, 7-277123

Int. Cl.^{6} A61K *7/02;7/48*

U.S. Cl. 424—78.03 **14 Claims**

1. A water-in-oil emulsion cosmetic composition comprising a mixed powder of (A) an organopolysiloxane elastomer spherical powder having an average particle size of 2.0 to 5.0 μm and a particle size distribution of 1 to 15 μm and (B) a hydrophobic silica powder having trimethylsilylated or dimethylsilylated hydroxy groups on the surface thereof and having an average particle size of not more than 2.0 μm, wherein the weight ratio of (A) and (B) is 1:0.1 to 1:5, (C) an oil phase, (D) an emulsifying agent having an HLB value of not more than 7 and (E) water.

4. A water-in-oil emulsion cosmetic composition comprising a mixed powder of (A) an organopolysiloxane elastomer spherical powder having an average particle size of 2.0 to 5.0 μm and a size distribution of 1 to 15 μm and (B) a hydrophobic particle silica powder having trimethylsilylated or dimethylsilylated hydroxy groups on the surface there of and having an average particle size of not more than 0.2 μm, wherein the weight ratio of (A) to (B) is 1:0.1 to 1:5, (C') an oil phase containing at least 30% by weight, based upon the total oil phase component, of silicone oil, (D) an emulsifying agent having an HLB value of not more than 7, and (E) water.

7. A water-in-oil emulsion cosmetic composition comprising a mixed powder of (A) an organopolysiloxane elastomer spherical powder having an average particle size of 2.0 to 5.0 μm and a particle size distribution of 1 to 15 μm and (B) a hydrophobic silica powder having trimethylsilylated or dimethylsilylated hydroxy groups on the surface there of and having an average particle size of not more than 0.2 μm, wherein the weight ratio of (A) to (B) is 1:0.1 to 1:5, (C') an oil phase containing at least 30% by weight, based upon the total oil phase component, of silicone oil, (D) an emulsifying agent having an HLB value of not more than 7, (E) water, and (F) a metallic soap.

11. A water-in-oil emulsion cosmetic composition comprising a mixed powder of (A) an organopolysiloxane elastomer spherical powder having an average particle size of 2.0 to 5.0 μm and a particle size distribution of 1 to 15 μm and (B) a hydrophobic silica powder having trimethylsilylated or dimethylsilylated hydroxy groups on the surface there of and having an average particle size of not more than 0.2 μm, wherein the weight ratio of (A) to (B) is 1:0.1 to 1:5, (C') an oil phase containing at least 30% by weight, based upon the total oil phase component, of silicone oil, (D) an emulsifying agent having an HLB value of not more than 7, (E) water, and (G) an organically modified clay mineral.

5,853,712

COSMETIC COMPOSITIONS CONTAINING WATER DISPERSIBLE PIGMENT WHICH IS SURFACE TREATED WITH A POLYMER AND PROCESS

Anne Langlois, Staines Middlesex, Great Britain, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/08755, § 371 Date Sep. 2, 1997, § 102(e) Date Jun. 2, 1997, PCT Pub. No. WO96/03964, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 13, 1995, Ser. No. 776,427

Claims priority, application United Kingdom, Jul. 30, 1994, 9415421

Int. Cl.^{6} A61K *7/021*

U.S. Cl. 424—78.03 **8 Claims**

1. A color cosmetic water-in-oil or oil-in-water emulsion wherein the aqueous phase contains from about 0.1% to about 25% by weight of the emulsion of a water dispersible pigment selected from the group consisting of iron oxide and titanium dioxide pigment and the pigment is surface treated with diglycol cyclohexanedimethanol isophthalates and sulfoisophthalates copolymer and the oil phase contains from about 0.1% to about 25% by weight of the emulsion of an oil-dispersible pigment.

5,853,713

BIOLOGICALLY COMPATIBLE LINEAR BLOCK COPOLYMERS OF POLYALKYLENE OXIDE AND PEPTIDE UNITS

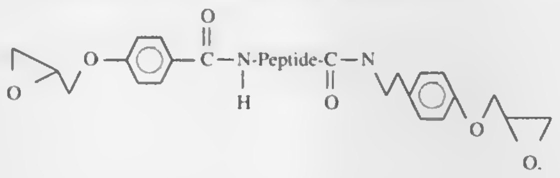
Eugene R. Cooper, Berwyn, Pa.; Stephen P. Jones, Morpeth, United Kingdom; Colin M. Pouton, Bristol, United Kingdom, and Michael D. Threadgill, Bath, United Kingdom, assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 203,106, Feb. 28, 1994, Pat. No. 5,618,528. This application Feb. 3, 1997, Ser. No. 790,854

Int. Cl.^{6} A61K *47/42;38/02;* **C08G** *59/22;69/36*

U.S. Cl. 424—78.38 **12 Claims**

1. An intermediate compound of the formula:



5,853,714

METHOD FOR PURIFICATION OF IL-12

Jeffrey S. Deetz, Melrose, Mass.; Bonnie Germain, Webster, N.H.; Brian Hubbard, Newbury, Mass.; Lei Shi, Wilmington, Mass.; Thomas Spitznagel, Woburn, Mass., and Dwight Winters, Camarillo, Calif., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Mar. 27, 1995, Ser. No. 411,028

Int. Cl.^{6} A61K *45/05*

U.S. Cl. 424—85.2 **1 Claim**

1. A method for purification of IL-12 heterodimer comprising the following steps in the following order:

(a) loading a solution containing IL-12 heterodimer onto an anion exchange resin at a pH of 8.0, washing the loaded anion exchange resin with a solution of a pH of 5.5, and eluting said IL-12 heterodimer from said anion exchange resin;

(b) loading the eluate of step (a) onto a cation exchange resin at a pH of 6.0, washing the loaded cation exchange resin with a solution of a pH of 7.2, and eluting said IL-12 heterodimer from said cation exchange resin;

(c) loading the eluate of step (b) onto a hydrophobic interaction chromatography (HIC) resin, washing the loaded HIC resin with a solution comprising isopropanol at a concentration sufficient to elude excess p40 subunit of the heterodimer (p40) from said loaded HIC resin without eluting said IL-12 heterodimer, and eluting said IL-12 heterodimer from said HIC resin;

(d) concentrating the eluate of step (c) by tangential-flow ultrafiltration, and

(e) loading the concentrate from step (d) onto a size exclusion resin and eluting said IL-12 heterodimer from said size exclusion resin.

5,853,715

CROSS-PROTECTIVE EQUINE HERPESVIRUS PREPARATIONS AND METHOD OF MAKING AND USING THE SAME

Joseph Macek, Paola, Kans.; Karen K. Brown, Parkville, Mo., and Bobby O. Moore, Merriam, Kans., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1996, Ser. No. 698,630

Int. Cl.^{6} A61K *35/12*

U.S. Cl. 424—93.1 **12 Claims**

1. A monovalent EHV-1 vaccine which provides protection against diseases associated with EHV-1 and EHV-4 comprising an EHV-1 virus represented by strain AB69 which is designated as ATCC VR-2581.

5,853,716

GENETICALLY ENGINEERED CHIMERIC VIRUSES FOR THE TREATMENT OF DISEASES ASSOCIATED WITH VIRAL TRANSACTIVATORS

Peter J. Tattersall, and Susan F. Cotmore, both of Guilford, Conn., assignors to Yale University, New Haven, Conn.

Filed Jul. 25, 1996, Ser. No. 690,174

Int. Cl.^{6} A01N *63/00*

U.S. Cl. 424—93.2 **12 Claims**

1. A replication competent chimeric cytocidal parvovirus that infects human host cells, comprising a chimeric regulatory region that initiates and completes the replicative process without the addition of parvoviral genes in trans, of the chimeric cytocidal parvovirus in response to a regulatory factor produced by virus infected human host cells.

5,853,717

METHODS AND COMPOSITIONS OF GROWTH CONTROL FOR CELLS ENCAPSULATED WITHIN BIOARTIFICIAL ORGANS

Malcolm Schinstine, Ben Salem, Pa.; Molly S. Shoichet, Toronto, Canada; Frank T. Gentile, Warwick; Joseph P. Hammang, Barrington, both of R.I.; Laura M. Holland, Horsham, Pa.; Brian M. Cain, Everett; Edward J. Doherty, Mansfield, both of Mass.; Shelley R. Winn, Smithfield, R.I., and Patrick Aebischer, Lutry, Canada, assignors to CytoTherapeutics, Inc., Lincoln, R.I.

Division of Ser. No. 432,698, May 9, 1995, which is a continuation-in-part of Ser. No. 279,773, Jul. 20, 1994. This application May 23, 1995, Ser. No. 447,356

Int. Cl.^{6} A01N *63/00*

U.S. Cl. 424—93.21 **14 Claims**

1. A method for controlling distribution of cells within a bioartificial organ comprising:

(a) providing a biocompatible, permselective jacket defining an internal volume;

(b) forming an inert scaffold within the internal volume defined by the jacket, wherein the inert scaffold is formed from a compound selected from the group consisting of poly(hydroxyethyl methacrylate) and poly(hydroxethyl methacrylate-co-methyl methacrylate); and

(c) loading cells within the internal volume defined by the jacket, wherein the inert scaffold provides a structure for adhering and distributing the cells within the bioartificial organ.

5,853,718

METHOD OF IMMUNIZATION USING BIOLOGICALLY CONTAINED BACTERIAL CELLS

Søren Molin, Holte; Poul Kirketerp Andersson, Frederiksberg; Kenn Axø Gerdes, Virum, and Per Klemm, Frederiksberg, all of Denmark, assignors to Genexpress ApS, Frederiksberg, Denmark

Division of Ser. No. 205,824, Mar. 4, 1994, abandoned, which is a continuation of Ser. No. 947,910, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 132,942, Nov. 6, 1987, abandoned. This application May 2, 1995, Ser. No. 434,353

Claims priority, application Denmark, Mar. 26, 1986, 1455/86; Dec. 23, 1986, 6294/86

Int. Cl.^{6} A61K *39/02;39/12;39/002;39/108*

U.S. Cl. 424—93.2 **29 Claims**

1. A method of immunizing a vertebrate animal comprising oral or parental administration of an isolated bacterial host cell, where said bacterial host cell is transformed with a recombinant replicon, said replicon being selected from the group consisting of

(I) a replicon comprising a first gene encoding a first gene product which has a host cell killing function, wherein the first gene is under the control of an invertible promoter, thereby leading to the stochastic expression of the first gene product within the host cell which results in the killing of the transformed host cell,

(II) a replicon comprising a first gene encoding a first gene product which directly or indirectly activates the transcription of a second gene, the second gene encoding a host cell killing function, wherein the first gene is under the control of an invertible promoter, thereby leading to the stochastic expression of the first gene product within the host cell and, in turn, causing the transcription of the second gene and the expression of the host cell killing function, which results in the killing of the transformed host cell, and

(III) a replicon comprising a first gene encoding a antisense RNA which directly or indirectly inhibits the expression of a host cell killing function, wherein the first gene is inserted between directly repeated nucleotide sequences of a sufficient size such that recombination between the repeats will occur at a certain frequency and result in the stochastic excision of the first gene, thereby leading to the expression of the host cell killing function within the host cell, which results in the killing of the transformed host cell, and

(IV) a replicon comprising a first gene encoding a protein which directly or indirectly inhibits the transcription of a second gene, the second gene encoding a host cell killing function, wherein the first one is inserted between directly repeated nucleotide sequences of a sufficient size such that recombination between the repeats will occur at a certain frequency and result in the stochastic excision of the first thereby leading to the expression of the host cell killing function within the host cell, which results in the killing of the transformed host cell,

and said replicon (I)–(IV) further comprising a gene encoding an antigen comprising one or more epitopes from a pathogenic agent, wherein the antigen is expressed and transported to the outer surface of the bacterial host cell.

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5,853,719
METHODS FOR TREATING CANCERS AND PATHOGEN INFECTIONS USING ANTIGEN-PRESENTING CELLS LOADED WITH RNA

Smita K. Nair; David J. Boczkowski, and Eli Gilboa, all of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Apr. 30, 1996, Ser. No. 640,444

Int. Cl.^{6} A01N *63/00*

U.S. Cl. 424—93.21 **17 Claims**

1. A method for producing an RNA-loaded antigen presenting cell (APC) that presents on its surface a tumor antigenic epitope encoded by the RNA, wherein the epitope induces T cell proliferation, said method comprising:

introducing into an antigen-presenting cell in vitro RNA obtained from a tumor comprising tumor-specific RNA that encodes an antigen that induces T cell proliferation and tumor immunity thereby producing an RNA-loaded APC that presents on its surface a tumor antigenic epitope encoded by the RNA, wherein the epitope induces T cell proliferation.

5,853,720
COMBINED PROCESS FOR THE PURIFICATION OF VANCOMYCIN HYDROCHLORIDE

Zlatko Pflaum, Kranj, and Robert Turkalj, Kamnik, both of Slovenia, assignors to LEK, tovarna farmacevtskih in kemicnih Izdelkov, d.d., Ljubljana, Slovenia

PCT No. PCT/SI96/00003, § 371 Date Jul. 28, 1997, § 102(e) Date Jul. 28, 1997, PCT Pub. No. WO96/24615, PCT Pub. Date Aug. 15, 1996

PCT Filed Feb. 6, 1996, Ser. No. 875,443

Claims priority, application Slovenia, Feb. 7, 1995, P-9500039

Int. Cl.^{6} A61K *38/12;* **C07K** *5/12*

U.S. Cl. 424—124 **17 Claims**

1. A new process for the purification of vancomycin antibiotics, characterized in that it combined preparative chromatography on a silica gel column containing an alkaline water-methanolic mobile phase and precipitation with ethanol from a salt-water-ethanolic solution for side fractions, which comprises the following stages:

a) concentrating the acidified combined side fractions of the antibiotic having concentrations up to about 1.5 g/l by reverse osmosis;
b) addition of NaCl and stirring to achieve the dissolution of the salt and the crystallization of the antibiotic;
c) addition of ethanol to the resulting suspension at room temperature to cause first the dissolution of the crystallized antibiotic and a further addition of ethanol (totally four times more ethanol than water) to initiate the precipitation of the antibiotic;
d) the cooling of the obtained suspension to about 5° C. and centrifugation;
e) desalting of the antibiotic in reverse osmosis and continuing the process as used for the main fraction.

5,853,721
ANTIBODY TO INTERLEUKIN-12 RECEPTOR

Maurice Kent Gately, Pine Brook; David Howard Presky, Glen Ridge, and Chang-you Wu, Belleville, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 31, 1995, Ser. No. 381,059

Int. Cl.^{6} A61K *39/395;* **C07K** *16/00*

U.S. Cl. 424—144.1 **1 Claim**

1. A combination of human IL-12 receptor specific immunoglobulins which is capable of inhibiting the binding of human IL-12 to the high affinity human IL-12 receptor and is capable of neutralizing human IL-12 bioactivity by binding to the human IL-12 receptor, wherein each individual immunoglobulin is not individually capable of inhibiting the binding of human IL-12 to the high affinity human IL-12 receptor.

5,853,722
USE OF C5-SPECIFIC ANTIBODIES FOR REDUCING IMMUNE AND HEMOSTATIC DYSFUNCTIONS DURING EXTRACORPOREAL CIRCULATION

Scott Rollins, Monroe; Brian R. Smith, Madison, and Stephen P. Squinto, Bethany, all of Conn., assignors to Alexion Pharmaceuticals, Inc., and Yale University, both of New Haven, Conn.

Continuation of Ser. No. 217,391, Mar. 23, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 575,057

Int. Cl.^{6} A61K *39/395;* **C07K** *16/36*

U.S. Cl. 424—145.1 **8 Claims**

1. A method for performing a therapeutic procedure on a patient comprising:

(a) passing circulating blood from a blood vessel of the patient, through a conduit, and back to a blood vessel of the patient, the conduit having a luminal surface comprising a material capable of causing at least one of complement activation, platelet activation, leukocyte activation, or platelet-leukocyte adhesion in the patient's blood; and
(b) introducing an antibody that specifically binds to complement component C5 and has the following effects when added to blood passing through such a conduit in vitro:
  (1) the antibody reduces complement activation;
  (2) the antibody reduces leukocyte activation; and
  (3) the antibody produces essentially no reduction in the generation of plasma C3a;

into the patient's bloodstream in an amount effective to reduce at least one of complement activation, platelet activation, leukocyte activation, or platelet-leukocyte adhesion resulting from passage of the circulating blood through said conduit,

wherein step (a) occurs in at least one temporal relation to step (b) selected from the group consisting of before step (b), during step (b), and after step (b).

5,853,723
TARGETING OF PEG ANTIBODY CONJUGATES TO ISLET CELLS

Harvey Jacobs, Dallas, Pa.; Sung Wan Kim, and Virginie Menard, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Sep. 20, 1996, Ser. No. 710,653

Int. Cl.^{6} A61K *39/395;39/44;47/00*

U.S. Cl. 424—178.1 **12 Claims**

1. A method for delaying onset of insulin dependent diabetes mellitus in an individual predisposed to developing the disease comprising administering to said individual an effective amount of a composition comprising (a) a monoclonal antibody or fragment thereof, wherein said monoclonal antibody or fragment thereof binds glutamic acid decarboxylase and (b) a nonimmunogenic hydrophilic polymer covalently coupled to said monoclonal antibody or fragment thereof, wherein said polymer provides a hydration shell around said monoclonal antibody or fragment thereof.

5,853,724
DAMPENING OF AN IMMUNODOMINANT EPITOPE OF AN ANTIGEN FOR USE IN PLANT, ANIMAL AND HUMAN VACCINES AND IMMUNOTHERAPIES

Robert R. Garrity, Middletown; Peter L. Nara, Frederick, both of Md., and Jaap Goudsmit, Amsterdam, Netherlands, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 109,934, Aug. 20, 1993, Pat. No. 5,585,250. This application Dec. 13, 1996, Ser. No. 764,575

Int. Cl.^{6} A61K *39/00;39/21;* **C07K** *1/00;14/00*

U.S. Cl. 424—184.1 **14 Claims**

1. An immunogenic composition, comprising:

a modified form of a native antigen of a pathogen, the native antigen having disposed at a position thereon an immunodominant epitope comprising a plurality of amino acids, said modified form of the native antigen having a modified epitope at the position of the immunodominant epitope of the native antigen, said modified epitope having been immunodampened so as to substantially redirect an immune response away from the modified epitope and toward a different part of said modified form of the native antigen; and

a pharmacologically acceptable carrier.

5,853,725
PREVENTION AND TREATMENT OF RETROVIRAL DISEASE

Jonas Salk, La Jolla, and Dennis J. Carlo, Rancho Santa Fe, both of Calif., assignors to The Immune Response Corporation, Carlsbad, Calif.

Continuation of Ser. No. 121,318, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 975,899, Nov. 10, 1992, Pat. No. 5,256,767, which is a continuation of Ser. No. 200,752, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 60,280, Jun. 10, 1987, abandoned. This application Apr. 26, 1994, Ser. No. 233,508

Int. Cl.^{6} A61K *39/00;39/38;39/21;* **C07K** *1/00*

U.S. Cl. 424—188.1 **20 Claims**

1. A method of stimulating the immune system of a human to produce antibodies, reduce viral burden or maintain CD4+ levels, comprising administering an immunogen comprising non-infectious intact HIV devoid of outer envelope proteins.

5,853,726
METHOD FOR EXTRACTING AND FIXING AROMAS ON NON-AQUEOUS SUBSTRATE, MACHINE FOR IMPLEMENTING THE METHOD, AND PRODUCT THEREBY

Pierre Chevereau, 1, avenue Naast, 94340 Joinville le Pont, France

Filed Jul. 21, 1995, Ser. No. 504,859

Int. Cl.^{6} A61K *35/78;7/46*

U.S. Cl. 424—195.1 **6 Claims**

1. A process of extraction and fixation of aromas on a non-aqueous substrate, whereby aromatic plants and a non-aqueous substrate selected from the group consisting essentially of fats and oils are disposed in a treatment zone and, finally, microwave radiation is produced in the treatment zone so as to heat primarily the aqueous parts of the plants rather than the components of the substrate, wherein:

the plants are completely submerged in the substrate;

the microwave radiations are regulated so as to produce a quantity of heat sufficient to heat the submerged plants without decomposing the substrate with temperatures are sufficiently low such that the aromatic products are volatilized without being altered, by one or more of the following:

with an exposure of 4 to 6 minutes, or

by stopping the exposure when the external temperature of the treatment vessel is still lower than 50° C., or

when the ratio of the temperatures, measured in degrees centigrade, of the plants to the substrate is approximately two to one; or

the treatment is interrupted upon the appearance of bubbles in the mixture;

the process comprises a step of local cooling by exchange or by spraying;

the process comprises a step of recovery of the volatilized essences;

the process comprises a separation step, then a clarification step, and finally a storage or packaging step;

the radiation step is repeated a plurality of times, separated by cooling steps; and

a resulting end product consists of an aromatized substrate.

5,853,727
PREPARATION AND USE OF INULA EXTRACTS AS A FUNGICIDE FOR THE CONTROL OF PLANT DISEASES

Yigal Cohen, Kiryat, Israel, assignor to Agrogne Ltd., Israel

Filed Jul. 26, 1996, Ser. No. 690,423

Int. Cl.^{6} A61K *35/78*

U.S. Cl. 424—195.1 **19 Claims**

1. A method for preparing an extract of Inula species which comprises:

(a) contacting whole shoots of the species with an organic solvent at room temperature for 10 to 15 seconds to form a solution and debris;
(b) removing said debris from said solution; and
(c) evaporating said solution to form a paste.

5,853,728
POLYPHENOLIC COSMETIC COMPOSITION

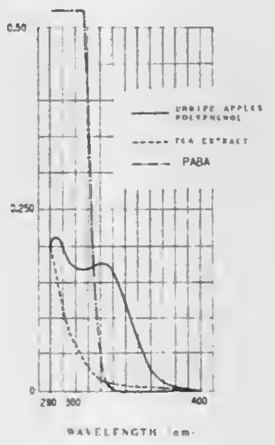
Masayuki Tanabe, Matsudo; Tomomasa Kanda, Kashiwa; Akio Yanagida, Tokyo, and Toshihiko Shoji, Nagareyama, all of Japan, assignors to The Nikka Whisky Distilling Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 773,596

Claims priority, application Japan, Dec. 28, 1995, 7-342603

Int. Cl.^{6} A01N *65/00*

U.S. Cl. 424—195.1 **9 Claims**



1. A cosmetic composition comprising (1) a cosmetic base and (2) an effective amount of at least one polyphenol obtained from the unripe fruits of Rosaceae namely unripe apples, unripe pears or unripe peaches.

5,853,729
METHOD AND COMPOSITION FOR TREATMENT OF IMPAIRED GLUCOSE TOLERANCE

Ping Sun, Burnaby, Canada, assignor to Volkspharm Healthcare Inc., Burnaby, Canada

Filed Mar. 25, 1997, Ser. No. 823,588

Claims priority, application Canada, Mar. 26, 1996, 2172641

Int. Cl.^{6} A61K *35/78;31/555*

U.S. Cl. 424—195.1 **12 Claims**

1. A composition for treating impaired glucose tolerance in a mammal comprising chromic picolinate and Fructus Schisandrae Chinensis and Fructus Schisandrae Chinensis is present in the composition in an amount in the range of 10 milligrams to 150 grams.

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5,853,730

CLEANING SOLUTION USING CITRUS WATER DISTILLATE

Henry M. Picken, Jr., 1500 Beaumont Dr., Kennesaw, Ga. 30144

Continuation-in-part of Ser. No. 702,769, Aug. 22, 1996, Pat. No. 5,741,481. This application Mar. 31, 1997, Ser. No. 829,228

Int. Cl.^{6} C11D *7/44*

U.S. Cl. 424—195.1 **4 Claims**

1. A solution for removing water resistant, hydrocarbon-based chemical residues from agricultural products comprising:

5–95% by weight citrus water distillate, said distillate produced from the process of concentrating citrus juice; and

a surfactant.

5,853,731

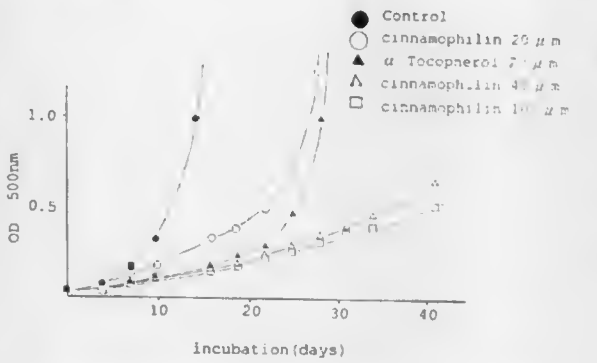
THROMBOXANE A2 RECEPTOR ANTAGONISM AND ANTIOXIDANT ACTION OF CINNAMOPHILIN AND ITS DERIVATIVES, THEIR PHARMACEUTICAL COMPOSITIONS AND USES

Tian-Shung Wu, Tainan; Che-Ming Teng, and Sheu-Meei Yu, both of Taipei, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

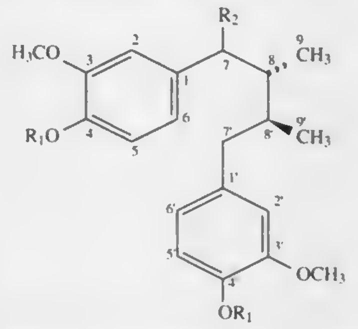
Division of Ser. No. 394,113, Feb. 24, 1995, Pat. No. 5,656,274. This application Apr. 29, 1997, Ser. No. 841,053

Int. Cl.^{6} A01N *65/00;* **A61K** *35/78*

U.S. Cl. 424—195.1 **6 Claims**



1. A pharmaceutical formulation for enteral or parenteral administration and possessing vasorelaxing effect of aortic contraction, comprising an effective amount of any compound selected from those compounds represented by formula (A) and a pharmaceutical acceptable vehicle: wherein formula (A) is:



(Formula A)

further wherein R_1 represents H, C_{1-8} alkyl, or —OCOR, R_2 represents OH, or COO^-, and R represents H, or C_{1-8} alkyl.

5,853,732

PHARMACEUTICAL COMPOSITIONS CONTAINING KUKUI NUT OIL

James W. Munden, Portage, Mich., assignor to Pharmacia & Upjohn Company, Kalamazoo, Mich.

Filed Oct. 27, 1997, Ser. No. 958,273

Int. Cl.^{6} A61K *35/78;47/44;9/06*

U.S. Cl. 424—195.1 **13 Claims**

1. A pharmaceutical composition comprising:

a) an effective amount of dermopharmaceutical active agent,

b) about 1.0% to about 10% of kukui nut oil by weight of the total composition, and

c) up to about 98% by weight of the total composition of a pharmaceutically acceptable base which comprises ingredients selected from the group consisting of propylene glycol, glycerin, xanthin gum, methyl paraben, propyl paraben, stearic acid, menthyl lactate, cetearyl alcohol (and) ceteareth 20, polyoxyl 40 stearate, glyceryl stearate (and) PEG-100 stearate, isopropyl myristate, isopropyl alcohol, oleyl alcohol, oleic acid, dimethicone, or C_{12}–C_{15} alcohols benzoate and purified water.

5,853,733

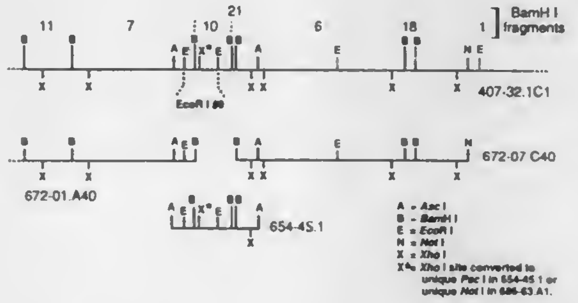
RECOMBINANT HERPESVIRUS OF TURKEYS AND USES THEREOF

Mark D. Cochran, Carlsbad, and Richard D. Macdonald, San Diego, both of Calif., assignors to Syntro Corporation, Lenexa, Kans.

Continuation of Ser. No. 288,065, Aug. 9, 1994, which is a continuation-in-part of Ser. No. 23,610, Feb. 26, 1993. This application Jun. 13, 1996, Ser. No. 663,566

Int. Cl.^{6} A61K *39/12;39/245;* **C12N** *7/01*

U.S. Cl. 424—199.1 **27 Claims**



1. A recombinant herpesvirus of turkeys comprising a foreign DNA inserted into a herpesvirus of turkeys genome, wherein the foreign DNA is inserted within a region which corresponds to an EcoR1 #9 fragment of the herpesvirus of turkeys genome, and is capable of being expressed in a host cell into which the virus is introduced.

24. The recombinant herpesvirus of turkeys of claim 1, further comprising one or more foreign DNA inserted within the StuI site within the US2 gene of the Unique short region of the herpesvirus of turkeys genome.

5,853,734

GLYCOPROTEIN L AND CLYCOPROTEIN M FROM KAPOSI'S SARCOMA ASSOCIATED HERPESVIRUS, DNA ENCODING SAME AND USES THEREOF

Yuan Chang, New York, N.Y.; Roy A. Bohenzky, Mountain Valley, Calif.; James J. Russo, New York, N.Y.; Isidore S. Edelman, and Patrick S. Moore, both of New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Nov. 13, 1996, Ser. No. 747,887

Int. Cl.^{6} A61K *34/12;* **C12N** *15/00*

U.S. Cl. 424—194.1 **20 Claims**

1. An isolated nucleic acid molecule encoding Kaposi's sarcoma-associated herpesvirus glycoprotein M having an amino acid sequence as set forth in SEQ ID NO:2.

11. An isolated nucleic acid molecule encoding Kaposi's sarcoma-associated herpesvirus glycoprotein L having an amino acid sequence as set forth in SEQ ID NO:23.

5,853,735

AVIRULENT ANTI-RABIES VACCINE

Jacqueline Benejean, Chilly Mazarin; Anne Flamand, Gif Sur Yvette; Marie-Christine Tuffereau, Paris; Patrice Coulon, Palaiseau, and Florence Lafay, Versailles, all of France, assignors to Virbac, France

Continuation of Ser. No. 95,163, Jul. 20, 1993, abandoned. This application Jan. 17, 1997, Ser. No. 785,616

Claims priority, application France, Jul. 20, 1992, 92 08947

Int. Cl.^{6} C12N *15/00;* **C12P** *21/06;* **A61K** *39/21;39/205*

U.S. Cl. 424—208.1 **7 Claims**

1. An isolated double avirulent mutant of the SAD Berne strain of rabies virus, deposited in the Collection Nationale de Cultures de Micro-organismes (C.N.C.M.)-INSTITUT PASTEUR-FRANCE on 9th Jul. 1992 under no. I-1238, said mutant having in position 333 glutamic acid, whose codon differs from all codons of arginine by at least two nucleotides.

5,853,736

POTENTIATION OF IMMUNOGENIC RESPONSE

Robert S. Becker, Henryville; Karen Biscardi, South Sterling; Laura Ferguson, Bethlehem, and Lorne Erdile, Stroudsberg, all of Pa., assignors to Connaught Laboratories, Inc., Swiftwater, Pa.

Continuation of Ser. No. 385,587, Feb. 8, 1995, Pat. No. 5,662,909, which is a continuation of Ser. No. 943,173, Sep. 14, 1992, abandoned. This application Feb. 18, 1997, Ser. No. 801,152

Int. Cl.^{6} A61K *39/12;39/21;39/02*

U.S. Cl. 424—234.1 **18 Claims**

1. A method for achieving an enhanced immune response to an antigen in a naive animal, wherein a naive animal is an animal which has not been previously immunized by a highly immunogenic form of the antigen, which method comprises the steps of:

simultaneously administering said antigen to said animal in at least two different physio-chemical forms to provide a synergistic immune response to the antigen in the naive animal greater than the immune response to the individual physio-chemical forms of the antigen in the naive animal.

5,853,737

METHOD FOR INDUCING A CD1-RESTRICTED IMMUNE RESPONSE

Robert L. Modlin, Sherman Oaks; Peter A. Sieling, Malibu, both of Calif.; Michael B. Brenner, Brookline; Steven A. Porcelli, Brighton, both of Mass., and Patrick J. Brennan, Fort Collins, Colo., assignors to Brigham and Women's Hospital, Boston, Mass.; University of California, Los Angeles, Los Angeles, Calif., and Colorado State University Research Foundation, Fort Collins, Colo.

Continuation-in-part of Ser. No. 80,072, Jun. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 989,790, Dec. 19, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 322,979

Int. Cl.^{6} A61K *31/185;31/70;39/04*

U.S. Cl. 424—248.1 **60 Claims**

1. A method for inducing a CD1-restricted immune response, wherein the method comprises administration to the mammal of an effective immune-enhancing amount of an isolated CD1-presented lipoarabinomannan antigen which can induce the CD1-restricted immune response thereby enhancing the immunity of the mammal.

5,853,738

METHODS FOR TREATMENT OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION WITH PSEUDOMONAS PHOSPHOAMINOLIPID EXTRACT

Nicolae Istrate, Lexington; Gita Muni, North Reading; Edgard Brauner, Brighton, and Fazal Raheman, Burlington, all of Mass., assignors to Dynagen, Inc., Cambridge, Mass.

Filed Oct. 30, 1995, Ser. No. 550,393

Int. Cl.^{6} A61K *39/108;39/21;39/02*

U.S. Cl. 424—260.1 **16 Claims**

1. A method of treating a subject infected with human immunodeficiency virus comprising:

administering to a subject infected with human immunodeficiency virus an immunomodulating phosphoaminolipid extract derived from bacteria of the genus *Psuedomonas aeruginosa* in an amount effective to cause at least one of the outcomes selected from the group consisting of:

(a) an increase in $CD4^+$ cells in the subject; and

(b) a reduction in the levels of circulating human immunodeficiency virus in the subject.

5,853,739

TRANSMISSION-BLOCKING VACCINE AGAINST MALARIA

David C. Kaslow, Kensington, Md., and Philip J. Barr, Oakland, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 11,039, Jan. 29, 1993, abandoned, which is a division of Ser. No. 697,275, May 8, 1991, Pat. No. 5,217,898, which is a continuation-in-part of Ser. No. 658,845, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 188,918, May 2, 1988, abandoned. This application Dec. 29, 1994, Ser. No. 365,997

Int. Cl.^{6} A61K *39/015;* **C12N** *15/00;7/00;* **C12P** *21/02*

U.S. Cl. 424—268.1 **13 Claims**

1. A vaccine for reducing the sexual development of *Plasmodium falciparum* within a mosquito comprising a Pfs25 *Plasmodium falciparum* protein, wherein the Pfs25 protein lacks a native N-terminal secretory sequence and a native hydrophobic carboxy-terminal region, wherein vaccine elicits antibodies that recognize the Pfs25 *Plasmodium falciparum* protein and the antibodies are capable of reducing the sexual development of *Plasmodium falciparum* within a mosquito.

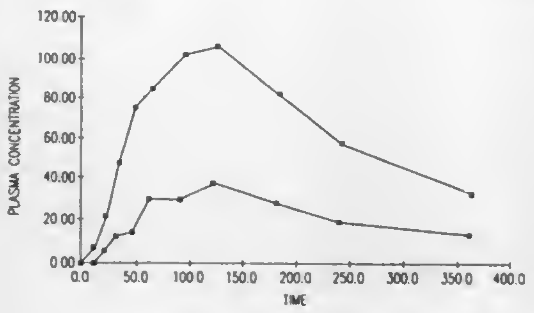
5,853,740
DELIVERY SYSTEM FOR PHARMACEUTICAL AGENTS ENCAPSULATED WITH OILS

Mou-Ying Fu Lu, Lake Bluff; Akwete L. Adjei, Wadsworth, and Hillard W. Johnson, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 7, 1996, Ser. No. 693,724

Int. Cl.^{6} A61K *9/113*

U.S. Cl. 424—400 **11 Claims**



1. A uniform dispersion of droplets in aqueous medium, suitable for oral administration, the droplets comprising

- a core comprising between about 2% volume by volume to about 10% volume by volume water,
- between about 2% volume by volume to about 10% volume by volume of a non-toxic C_2–C_5 alkanol,
- between about 1 mg/ml to 10 mg/ml of a water soluble drug selected from the group consisting of agonists and antagonists of luteinizing hormone releasing hormone (LHRH), inhibitors of renin, and modulators of anaphylatoxin biologic factors, and a pharmaceutically acceptable salt thereof;
- between about 10% volume by volume to about 50% volume by volume of a surfactant, and
- a coating surrounding the core comprising between about 20% volume by volume to about 50% volume by volume one or more pharmaceutically acceptable oils, based upon the volume of the droplet, wherein the total volume of the droplets comprises from about 10% to about 30% the total volume of the dispersion, said droplets having a mean particle size of less than one micron in diameter.

5,853,741
VITAMIN C DELIVERY SYSTEM

Alexander Paul Znalden, Trumbull; Brian Andrew Crotty, Branford, and Anthony Johnson, Fairfield, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 13, 1996, Ser. No. 696,305

Int. Cl.^{6} A61K *7/48*

U.S. Cl. 424—401 **4 Claims**

1. A cosmetic composition comprising:

- (i) from 1 to 10% of ascorbic acid;
- (ii) from 1 to 15% by weight of a crosslinked non-emulsifying siloxane elastomer formed from a divinyl monomer reacting with the Si-H linkages of a siloxane backbone; and
- (iii) from 10 to 80% of a volatile siloxane.

5,853,742
COSMETIC COMPOSITIONS CONTAINING LACTATE DEHYDROGENASE INHIBITORS

John Brian Bartolone, Bridgeport, Conn.; Christine Marie Penksa, Westwood, N.J.; Uma Santhanam, Tenafly, N.J., and Brian David Lang, North Bergen, N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Greenwich, Conn.

Continuation of Ser. No. 359,975, Dec. 20, 1994, Pat. No. 5,690,944. This application Jan. 29, 1997, Ser. No. 790,409

Int. Cl.^{6} A61K *7/48*

U.S. Cl. 424—401 **16 Claims**

1. A composition for topical application to human skin, the composition comprising:

- (i) from about 0.001% to about 20% of an inhibitor of lactate dehydrogenase selected from the group consisting of oxamic acid, an N-substituted oxamic acid, 1,6-dihydro NAD, 4-pyridyl pyruvic acid, quinoline-2-carboxylic acid, suramin sodium, isoquinoline, papaverine, berberine, and mixtures thereof;
- (ii) a sunscreen; and
- (iii) a cosmetically acceptable vehicle for the lactate dehydrogenase inhibitor; and wherein the vehicle comprises water and wherein the lactate dehydrogenase inhibitor acts within the human skin.

5,853,743
LIGHT DUTY LIQUID CLEANING COMPOSITIONS

Joan E. Gambogi, Belle Mead; Gary J. Jakubicki, Robbinsville, and Leonard A. Zyzyck, Skillman, all of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Filed Aug. 5, 1997, Ser. No. 906,684

Int. Cl.^{6} A01N *23/32*

U.S. Cl. 424—405 **6 Claims**

1. A clear light duty liquid cleaning composition which comprises approximately by weight:

- (a) 4% to 18% of an alkali metal or ammonium salt of a C_{8-18} ethoxylated alkyl ether sulfate;
- (b) 4% to 12% of a betaine surfactant;
- (c) 1% to 6% of a sodium salt of a linear C_8–C_{16} alkyl benzene sulfonate surfactant;
- (d) 0% to 12% of at least one solubilizing agent;
- (e) 4% to 16 % of an alkyl polyglucoside surfactant;
- (f) 0 to 8% of an amine oxide;
- (g) 0.2 to 4% of an ethoxylated C_{12}–C_{14} alkyl monoalkanol amide;
- (h) 1% to 14 % of a magnesium salt of a linear C_8–C_{16} alkyl benzene sulfonate surfactant; and
- (i) the balance being water.

5,853,744
SOLID-PHASE METHOD FOR ATTACHING A BIOMOLECULE TO A SUBSTRATE SURFACE WITH A PHOTOREACTIVE CROSSLINKING AGENT

Daniel L. Mooradian, Eagan, and Gregg B. Fields, Brooklyn Park, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 20, 1996, Ser. No. 699,965

Int. Cl.^{6} A61F *2/06;* C12N *5/00;11/06;* C07K *17/06*

U.S. Cl. 424—422 **23 Claims**

1. A solid-phase method of modifying a substrate surface to include a biomolecule, the method comprising:

- (a) providing an immobilized biomolecule comprising a peptide having an N^α-terminus covalently attached to a support material;
- (b) attaching a photoreactive crosslinking agent comprising at least one photoreactive group to the immobilized peptide at the N^α-terminus of the peptide to form an immobilized photoreactive analog of the biomolecule;

- (c) removing the photoreactive analog of the biomolecule from the support material; and
- (d) attaching the photoreactive analog of the biomolecule to a substrate surface by activating the photoreactive group of the photoreactive analog.

5,853,745
MEDICAL IMPLANT HAVING A DURABLE, RESILIENT AND EFFECTIVE ANTIMICROBIAL COATING

Rabih O. Darouiche, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Division of Ser. No. 555,028, Nov. 8, 1995, Pat. No. 5,765,145. This application Mar. 26, 1997, Ser. No. 824,596

Int. Cl.^{6} A61F *2/00;2/02;* A61M *25/00*

U.S. Cl. 424—423 **4 Claims**

1. A medical implant having at least one of its surfaces coated with a composition comprised of:

- an antimicrobial coating layer having an antimicrobial agent in an effective concentration to inhibit the growth of bacterial and fungal organisms relative to uncoated medical implant; and
- a protective coating formed over said antimicrobial coating layer, wherein said protective coating is comprised of:
  - a durable coating layer; and
  - a resilient coating layer; and
  - wherein said resilient coating layer is comprised of collodion.

5,853,746
METHODS AND COMPOSITIONS FOR THE TREATMENT AND REPAIR OF DEFECTS OR LESIONS IN CARTILAGE OR BONE USING FUNCTIONAL BARRIER

Ernst B. Hunziker, Riedholz, Switzerland, assignor to Robert Francis Shaw, Sausalito, Calif.

Continuation-in-part of Ser. No. 524,034, Sep. 6, 1995, abandoned, which is a continuation of Ser. No. 338,126, Nov. 1, 1994, abandoned, which is a continuation of Ser. No. 979,904, Nov. 23, 1992, Pat. No. 5,368,858, which is a division of Ser. No. 648,274, Jan. 31, 1991, Pat. No. 5,206,023. This application Jun. 28, 1996, Ser. No. 672,618

Int. Cl.^{6} A61F *2/28;* A61K *9/127;9/50*

U.S. Cl. 424—426 **30 Claims**

1. A method for treating full-thickness defects in cartilage in animals which comprises:

- filling the cartilage portion of the defect with a matrix containing an effective amount of an anti-angiogenic agent to prevent ingrowth of blood vessels into the cartilage.

5,853,747
THERAPEUTIC AND DIETETIC USES OF A BRAIN PHOSPHOLIPID-BASED COMPLEX

Yves Ponroy, Versailles, France, assignor to Institut De Recherche Biologique, France

PCT No. PCT/FR95/00771, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO96/00077, PCT Pub. Date Jan. 4, 1996

PCT Filed Jun. 13, 1995, Ser. No. 617,806

Claims priority, application France, Jun. 27, 1994, 94 07867

Int. Cl.^{6} A61K *35/30;* C12P *23/00*

U.S. Cl. 424—439 **6 Claims**

1. A method of treating aging disorders selected from the group consisting of memory disorders, attention disorders, intellectual efficacy disorders, humor and affectivity disorders, comprising orally administering to a human in need thereof brain phospholipids extracted from pig's brains.

5,853,748
PHARMACEUTICAL COMPOSITIONS

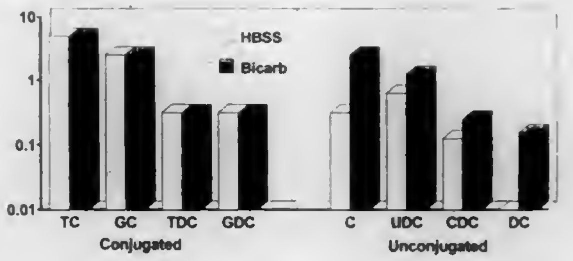
Roger Randal Charles New, London, United Kingdom, assignor to Cortecs (UK) Limited, United Kingdom

Filed Feb. 24, 1997, Ser. No. 804,508

Claims priority, application United Kingdom, Aug. 31, 1994, 9417524

Int. Cl.^{6} A61K *9/00;9/20;9/14*

U.S. Cl. 424—439 **19 Claims**



1. A pharmaceutical and/or veterinary composition comprising:

- (i) a biologically active proteinaceous material, oligonucleotide or analogue thereof or polysaccharide;
- (ii) a bile acid or salt; and
- (iii) an agent having the ability to adjust the pH of the gut to a value of from 7.5 to 9.

5,853,749
GEL WOUND DRESSING

Tracey Susan Hobbs, Swindon, Great Britain, assignor to Scimat Limited, Great Britain

PCT No. PCT/GB95/01804, § 371 Date Mar. 31, 1997, § 102(e) Date Mar. 31, 1997, PCT Pub. No. WO96/15368, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 31, 1995, Ser. No. 776,481

Claims priority, application United Kingdom, Jul. 30, 1994, 9415739.3

Int. Cl.^{6} A61K *31/74;* A61L *15/16*

U.S. Cl. 424—443 **26 Claims**

1. A gel wound dressing which comprises a mixture of:

- (a) a water absorbent copolymer of a starch and a monounsaturated carboxylic acid or an ester or salt thereof, the copolymer being in the form of particles of which at least about 70% by weight have a size of not more than about 100 μm; and
- (b) water.

5,853,750
POLYMERIZED MICROEMULSION PRESSURE SENSITIVE ADHESIVE COMPOSITIONS AND METHODS OF PREPARING AND USING SAME

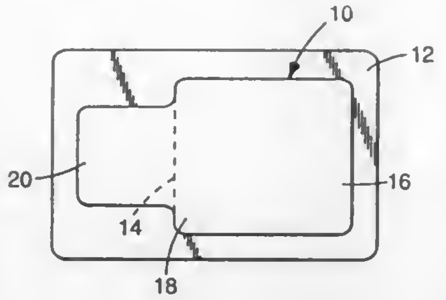
Timothy M. Dietz, St. Paul; Ying-Yuh Lu, Woodbury; Rosa Uy, St. Paul, and Chung I. Young, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 507,006, Jul. 25, 1995, Pat. No. 5,670,557, which is a continuation-in-part of Ser. No. 188,269, Jan. 28, 1994, abandoned. This application Sep. 23, 1997, Ser. No. 935,385

Int. Cl.^{6} A61F *13/02;* B32B *7/12*

U.S. Cl. 424—448 **5 Claims**

1. A mammalian skin covering comprising: an adhesive layer for contacting mammalian skin and backing layer, the adhesive layer adhered to the backing layer and comprising a polymerized microemulsion pressure sensitive adhesive composition having a con



tinuous phase of a hydrophobic pressure sensitive adhesive polymer and a continuous phase of a hydrophilic polymer.

5,853,751

MOLECULAR TRANSDERMAL TRANSPORT SYSTEM

John J. Masiz, 26 High St., Topsfield, Mass. 01983

Continuation-in-part of Ser. No. 542,068, Oct. 12, 1995, Pat. No. 5,645,854, which is a continuation-in-part of Ser. No. 227,365, Apr. 13, 1994, Pat. No. 5,460,821, which is a continuation-in-part of Ser. No. 81,567, Jun. 23, 1993, abandoned. This application Jun. 9, 1997, Ser. No. 871,156

Int. Cl.^{6} A61F *13/00*

U.S. Cl. 424—449 **16 Claims**

1. A transdermal delivery system for delivering an active ingredient through the skin of a living body, comprising:

a. an active ingredient;

b. a vasodilator;

c. first means for enhancing the permeation of said active ingredient through said skin; and

d. second means for binding said active ingredient and said vasodilator and first means into a singular transport vehicle, said second means releasing said active ingredient upon contact with a bodily fluid having a non-neutral pH.

5,853,752

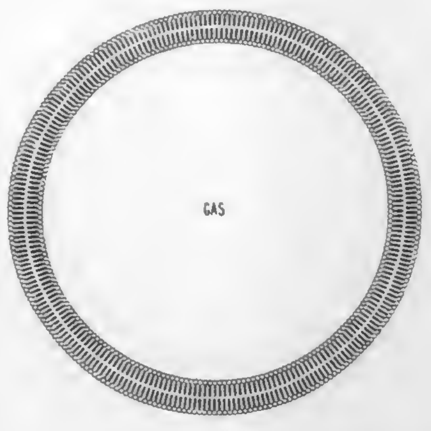
METHODS OF PREPARING GAS AND GASEOUS PRECURSOR-FILLED MICROSPHERES

Evan C. Unger; Thomas A. Fritz; Terry Matsunaga; VaradaRajan Ramaswami; David Yellowhair, and Guanli Wu, all of Tucson, Ariz., assignors to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Division of Ser. No. 159,687, Nov. 30, 1993, Pat. No. 5,585,112, which is a continuation-in-part of Ser. No. 160,232, Nov. 30, 1993, Pat. No. 5,542,935, and Ser. No. 159,674, Nov. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 76,239, Jun. 11, 1993, Pat. No. 5,469,854, which is a continuation-in-part of Ser. No. 717,084, Jun. 18, 1991, Pat. No. 5,228,446, and Ser. No. 716,899, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned, said Ser. No. 160,232 is a continuation-in-part of Ser. No. 76,239, said Ser. No. 717,084 is a continuation-in-part of Ser. No. 569,828. This application Jun. 6, 1995, Ser. No. 487,230

Int. Cl.^{6} A61K *9/127*

U.S. Cl. 424—450 **51 Claims**



1. A method for preparing temperature activated gaseous precursor-filled lipid microspheres comprising shaking an aqueous solution comprising a lipid in the presence of a gaseous precursor at a temperature below the gel state to liquid crystalline state phase transition temperature of the lipid, wherein upon activation of said gaseous precursor to a gas the lipid microspheres have at least about 50% volume of gas in the interior thereof.

5,853,753

LIPOSOMES, METHOD OF PREPARING THE SAME AND USE THEREOF IN THE PREPARATION OF DRUGS

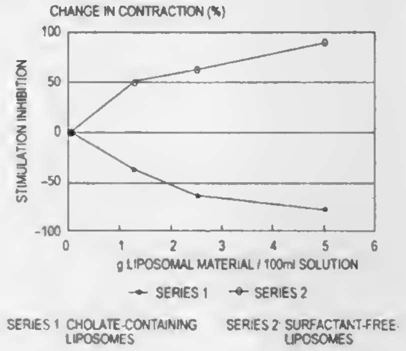
Günther Maierhofer, Munich; Paul Höfer, Dietersheim, and Oswald Rottmann, Freising, all of Germany, assignors to Dianorm G. Maierhofer GmbH, Munich, Germany

Continuation of Ser. No. 367,128, Jan. 6, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 800,802

Claims priority, application Germany, Jul. 8, 1992, 42 2 447.0; Sep. 25, 1992, 42 32 231.6

Int. Cl.^{6} A61K *9/127;9/133*

U.S. Cl. 424—450 **10 Claims**



1. A method for reducing the intracellular ATP content in activated cells comprising the step of administering to a host a pharmaceutically effective amount of liposomes having an average mean diameter of 50–200 nm produced by a process comprising the steps of:

a) mixing i) bilayer-forming lipids or bilayer-forming lipids dissolved in a water-miscible solvent wherein said bilayer-forming lipids comprise unsaturated fatty-acid chains, with ii) an aqueous solution of at least one detergent selected from the group consisting of sodium cholate, sodium deoxycholate, sodium glycocholate, sodium taurocholate, sodium taurodeoxycholate, sodium ursocholate and sodium chenoxycholate at a molar ratio of lipid:detergent of 2.7:1–6.7:1 to form a mixture; and

b) supplying mechanical energy until the liposomes are formed;

wherein the cells are activated by a process selected from the group consisting of:

i) transformation into tumor cells;

ii) intracellular amplification of viruses;

iii) contact with an allergen or antigen;

iv) contact with an inflammation causing agent;

v) agitation of nerve cells; and

vi) stimulation of the immune system;

and wherein said liposomes are free of drugs.

5,853,754

Patent Not Issued For This Number

5,853,755

BIPHASIC MULTILAMELLAR LIPID VESICLES

Marianna Foldvari, Saskatoon, Canada, assignor to PharmaDerm Laboratories Ltd., Saskatchewan, Canada

Continuation of Ser. No. 507,923, Jul. 27, 1995, abandoned, and a continuation-in-part of Ser. No. 098,102, Jul. 28, 1993, abandoned. This application Jun. 10, 1997, Ser. No. 872,068

Int. Cl.^{6} A61K *9/127*

U.S. Cl. 424—450 **14 Claims**

1. A liposomal composition for topical administration of a compound, comprising

a suspension of liposomes formed by (i) preparing an oil-in-water emulsion, said oil-in-water emulsion stabilized by a surfactant and (ii) mixing said oil-in-water emulsion with vesicle-forming lipids, said liposomes being composed of (i) a lipid-bilayer outer membrane composed of said vesicle-forming lipids, (ii) a central core compartment containing said oil-in-water emulsion and (iii) an entrapped compound.

5,853,756

CONTROLLED RELEASE FORMULATIONS OF RANITIDINE

Shri Shirish Bhagwanlal Mody, Maharashtra; Madhukant Mansukhlal Doshi, Maharashtra, and Milind Dattatraya Joshi, Maharashtra, all of India, assignors to J. B. Chemicals & Pharmaceuticals Limited, Bombay, India

Filed Sep. 1, 1995, Ser. No. 522,843

Claims priority, application India, Jan. 11, 1995, 17/BOM/95

Int. Cl.^{6} A61K *9/26;9/58;9/62*

U.S. Cl. 424—451 **6 Claims**

1. An oral pharmaceutical formulation of Ranitidine Hydrochloride in capsule form, said formulation comprising granules containing a therapeutically effective amount of Ranitidine Hydrochloride in combination with a specified polymer which are coated with a coating comprising a specified polymer and encapsulated, said specified polymer in said coating and said granules being selected from the group consisting of alkyl celluloses, hydroxymethylcellulose, hydroxypropylcellulose, hydroxypropylmethylcellulose, sodium carboxymethylcellulose, polyvinylpyrrolidone, polyethylene glycol, polymethacrylate copolymers, and mixtures, thereof, said polymer being included in said granules taken in quantity equivalent to about 0.2 to about 1.2 times the weight of said Ranitidine Hydrochloride, said oral pharmaceutical formulation providing a minimum effective concentration of Ranitidine Hydrochloride for a sustained period of at least about 12 hours.

5,853,757

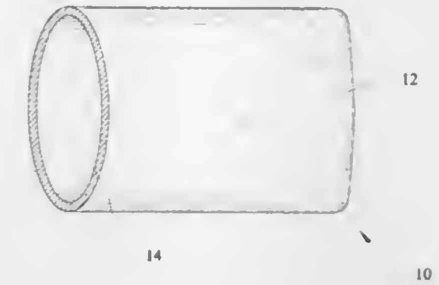
CARRIER FOR ANIMAL MEDICATION

Mark Roger Durand, and Debra Marie Durand, both of 13572 49th St., N., Royal Palm Beach, Fla. 33411

Filed May 12, 1997, Ser. No. 854,499

Int. Cl.^{6} A61K *9/48*

U.S. Cl. 424—451 **9 Claims**



1. In the method of having an animal swallow a pill, tablet or capsule, the improvement comprising:

forming a soft edible sack from a dehydrated meat by-product admixed with a soy flour and water mixture and a glycerine lubricant adapted to react with the animal's saliva thereby providing a slick surface to facilitate swallowing thereof, said sack having an interior chamber with a neck opening leading to said chamber;

inserting a pill, tablet or capsule into said chamber of said sack;

sealing said chamber by deforming of said neck opening;

placing said sack in the mouth of an animal.

5,853,758

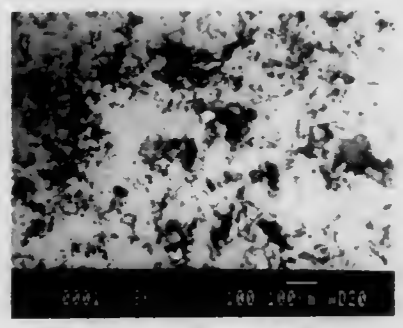
PREPARATION OF TABLETS OF INCREASED STRENGTH

Julian Belknap Lo, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 256,296, Jul. 13, 1994, abandoned, which is a continuation of Ser. No. 819,553, Jan. 13, 1992, abandoned. This application Jul. 10, 1996, Ser. No. 677,992

Int. Cl.^{6} A61K *9/20*

U.S. Cl. 424—464 **7 Claims**



1. A tablet of increased strength made according to a method for the preparation thereof which comprises the steps of

(a) combining and compressing a water soluble meltable binder, at least one excipient and a pharmaceutically active agent into a tablet wherein said pharmaceutically active agent is fluconazole, piroxicam, tenidap or doxylamine succinate,

(b) melting said binder in said tablet, and

(c) solidifying said binder.

5,853,759

EFFERVESCENT ALENDRONATE FORMULATION

Ashok V. Katdare, Norristown; Kenneth A. Kramer, Green Lane, and Colin R. Gardner, Blue Bell, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 8, 1997, Ser. No. 848,460

Int. Cl.^{6} A61K *9/14;9/46*

U.S. Cl. 424—466 **5 Claims**

1. A formulation comprising (in mg):

Alendronate sodium (in mg alendronic acid)	5–10 mg
citric acid	600–750
sodium bicarbonate	300–500
sodium carbonate	20–60
sodium benzoate	5–15
water	0–5.

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5,853,760

DEVICE FOR THE CONTROLLED RELEASE OF ACTIVE SUBSTANCES

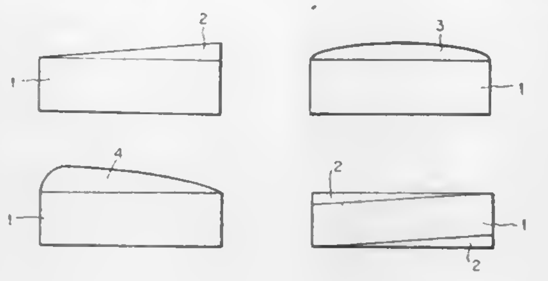
Karsten Cremer, Bonn, Germany, assignor to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuwied, Germany

Filed Dec. 2, 1994, Ser. No. 348,493

Claims priority, application Germany, Dec. 4, 1993, 43 41 442.7

Int. Cl.^{6} A61K *9/24;9/28*

U.S. Cl. 424—484 **14 Claims**



1. A device for the controlled release of at least one active substance into a liquid medium comprising

a controlled release active substance-containing matrix, said matrix having an active substance releasing surface, and

at least one covering layer containing a solid material which is erodible in said liquid medium, said covering layer covering at least partially said active substance releasing surface of said matrix,

wherein said covering layer has a thickness profile with at least one thickness gradient different from zero and wherein the erosion of said covering layer having said thickness profile effects a controlled and continuous uncovering of said partially covered active substance releasing surface.

5,853,761

STABILIZING AGENT FOR OLEAGINOUS, PHYSIOLOGICALLY ACTIVE SUBSTANCES

Kiyoshi Kumabe, Funabashi; Hiroyuki Yanaka, Hino; Takayuki Kondo, Edogawa, and Jun Shirai, Yokohama, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/00235, § 371 Date Aug. 4, 1997, § 102(e) Date Aug. 4, 1997, PCT Pub. No. WO96/25053, PCT Pub. Date Aug. 22, 1996

PCT Filed Feb. 6, 1996, Ser. No. 875,601

Claims priority, application Japan, Feb. 13, 1995, 70-23824; Sep. 8, 1995, 7-231127

Int. Cl.^{6} A61K *9/16*

U.S. Cl. 424—484 **14 Claims**

1. A composition consisting essentially of:

a substance having an objectionable odor selected from the group consisting of docosahexaenoic acid (DHA), eicosahexaenoic acid (EPA), fat-soluble vitamins and carotenes;

an effective amount of calcium gluconate to mask the odor of said substance, and

a reticular matrix-forming agent selected from the group consisting of milk calcium, milk casein milk casein hydrolyzates and pectin.

5,853,762

DELIVERY OF CONTROLLED-RELEASE SYSTEM(S)

Garry L. Myers; Gerald E. Battist, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies Ltd, Chantilly, Va.

Division of Ser. No. 334,729, Nov. 4, 1994, Pat. No. 5,567,439, which is a continuation-in-part of Ser. No. 259,496, Jun. 14, 1994, and a continuation-in-part of Ser. No. 259,258, Jun. 14, 1994. This application Aug. 16, 1996, Ser. No. 698,922

Int. Cl.^{6} A61K *9/20;31/70;47/36*

U.S. Cl. 424—488 **17 Claims**

1. A comestible unit, having a controlled-release system, which disperses quickly in the mouth prepared from the process comprising:

a) initiating crystallization of shearform matrix;

b) before or after initiating crystallization combining a controlled-release system with said shearform matrix to form flowable, compactible micro-particulates; and

c) compacting the combination resulting from step "b," which includes at least partially crystallized shearform matrix, to form said unit.

5,853,763

METHOD FOR DELIVERING BIOACTIVE AGENTS INTO AND THROUGH THE MUCOSALLY-ASSOCIATED LYMPHOID TISSUE AND CONTROLLING THEIR RELEASE

Thomas R. Tice; Richard M. Gilley; John H. Eldridge, and Jay K. Staas, all of Birmingham, Ala., assignors to Southern Research Institute, and The UAB Research Foundation, both of Birmingham, Ala.

Continuation of Ser. No. 116,484, Sep. 7, 1993, which is a continuation of Ser. No. 629,138, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 325,193, Mar. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 169,973, Mar. 18, 1988, Pat. No. 5,075,109, which is a continuation-in-part of Ser. No. 923,159, Oct. 24, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 467,314

Int. Cl.^{6} A61K *9/52;39/085;39/12;39/39*

U.S. Cl. 424—489 **52 Claims**

1.A method of delivering a bioactive agent to the mucosally associated lymphoreticular tissues of an animal, comprising administering microcapsules to said animal so that an immunogenically effective amount of said microcapsules reach and are selectively taken up by said mucosally associated lymphoreticular tissues, wherein said microcapsules comprise said agent encapsulated in a biocompatible excipient and wherein said microcapsules are of a size of between approximately 1 micrometer and approximately 10 micrometers.

5,853,764

PROCESS FOR PREPARING FINE POWDER OF SILK FIBROIN

Kozo Tsubouchi, Ibaraki-ken, Japan, assignor to National Institute of Sericultural and Entomological Science, Ministry of Agriculture, Forestry and Fisheries, Director General, Japan

PCT No. PCT/JP96/00154, § 371 Date Sep. 26, 1996, § 102(e) Date Sep. 26, 1996, PCT Pub. No. WO96/23020, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 26, 1996, Ser. No. 702,451

Claims priority, application Japan, Jan. 27, 1995, 7-031417

Int. Cl.^{6} A61K *7/021;7/035;9/50;* **D06M** *11/00*

U.S. Cl. 424—499 **10 Claims**

1. A process for the preparation of a fine powder of silk fibroin, comprising:

contacting a silk substance containing crystalline fibroin with an alkaline aqueous solution at a temperature of 95° C. or higher, while maintaining the crystallinity of the silk fibroin in the silk substance, to reduce the tensile strength of said silk substance;

dealkalinizing the resulting silk substance;

drying the dealkalinized silk substance; and

finely pulverizing the resulting dried silk substance to form the fine powder of silk fibroin having a crystallinity as high as the crystallinity of the fibroin in the silk substance used in said contacting and having an average particle size in the range of 3–6 μm.

5,853,765

ANTI-CHOLESTEROLEMIC EGG, VACCINE AND METHOD FOR PRODUCTION, AND USE

Ralph J. Stolle, and Lee R. Beck, both of Lebanon, Ohio, assignors to DCV, Inc., Wilmington, Del.

Division of Ser. No. 67,088, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 658,437, Feb. 20, 1991, abandoned, which is a continuation of Ser. No. 1,842, Jan. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 546,162, Oct. 27, 1983, Pat. No. 4,636,384, which is a continuation-in-part of Ser. No. 384,625, Jun. 3, 1982, abandoned, which is a continuation-in-part of Ser. No. 622,130, Jun. 19, 1984, Pat. No. 4,748,018, which is a continuation-in-part of Ser. No. 577,804, Feb. 7, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 487,419

Int. Cl.^{6} A61K *35/54;39/02;45/00;47/00*

U.S. Cl. 424—581 **18 Claims**

1. A method for reducing the development of atheromatous lesions in a mammal being fed a high-cholesterol diet (HCD) to levels lower than those in said mammal being fed a HCD when untreated, said method comprising orally administering to said mammal egg or a fraction thereof, wherein said egg is produced by a method comprising:

immunizing a female avian with a composition comprising at least one bacterial antigen from each of the following bacterial strains: *Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus pyogenes* A. Type 1, *Streptococcus pyogenes* A. Type 3, *Streptococcus pyogenes* A. Type 5, *Streptococcus pyogenes* A. Type 8, *Streptococcus pyogenes* A. Type 12, *Streptococcus pyogenes* A. Type 14, *Streptococcus pyogenes* A. Type 18, *Streptococcus pyogenes* A. Type 22, *Aerobacter aerogenes, Escherichia coli, Salmonella enteritidis, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella typhimurium, Haemophilus influenzae, Streptococcus mitis, Proteus vulgaris, Shigella dysenteriae, Diplococcus pneumoniae, Propionibacter acnes* (anaerobe), *Streptococcus sanguis, Streptococcus salivarius, Streprococcus mutans*, and *Streptococcus agalactiae;*

maintaining said female avian in a hyperimmune state by administering to said female avian booster injections of said composition, and

collecting said egg from said female avian in said hyperimmune state.

9. A method for maintaining the level of lipid deposits in the aorta of a mammal comprising administering an egg or egg product to a mammal wherein said egg or egg product does not alter the level of lipid deposits in the aorta of said mammal from the levels found in said mammal prior to administration, said method comprising administering to said mammal, egg or egg product in an amount and for a time sufficient to produce said lipid-maintaining effect, wherein said egg is produced by a method comprising:

immunizing a female avian with a composition comprising at least one antigen from each of the following bacterial strains: *Aerobacter aerogenes, Escherichia coli, Salmonella enteritidis, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella typhimurium, Haemophilus influenzae, Proteus vulgaris*, and *Shigella dysenteriae;*

maintaining said female avian in a hyperimmune state by administering to said female avian booster injections of said composition; and

collecting said egg from said female avian in said hyperimmune state.

11. A method for maintaining the level of lipid deposits in the liver of a mammal comprising administering an egg or egg product to a mammal wherein said egg or egg product does not alter the level of lipid deposits in the liver of said mammal from those levels found in said mammal prior to administration, said method comprising administering to said mammal, egg or egg product in an amount and for a time sufficient to produce said lipid-maintaining effect, wherein said egg is produced by a method comprising:

immunizing a female avian with a composition comprising at least one bacterial antigen from each of the following bacterial strains: *Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus pyogenes* A. Type 1, *Streptococcus pyogenes* A. Type 3, *Streptococcus pyogenes* A. Type 5, *Streptococcus pyogenes* A. Type 8, *Streptococcus pyogenes* A. Type 12, *Streptococcus pyogenes* A. Type 14, *Streptococcus pyogenes* A. Type 18, *Streptococcus pyogenes* A. Type 22, *Aerobacter aerogenes, Escherichia coli, Salmonella enteritidis, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella typhimurium, Haemophilus influenzae, Streptococcus mitis, Proteus vulgaris, Shigella dysenteriae, Diplococcus pneumoniae, Propionibacter acnes* (anaerobe), *Streptococcus sanguis, Streptococcus salivarius, Streptococcus mutans*, and *Streptococcus agalactiae;*

maintaining said female avian in a hyperimmune state by administering to said female avian booster injections of said composition; and

collecting said egg from said female avian in said hyperimmune state.

15. A method for lowering the serum cholesterol in a mammal compared to the level of serum cholesterol in a mammal ingesting a normal egg comprising administering egg or egg product to a mammal wherein said egg or egg product does not elevate the level of serum cholesterol in said mammal to the level found in said mammal ingesting a normal egg, said method comprising administering to said mammal, egg or egg product in an amount and for a time sufficient to produce said serum cholesterol lowering effect, wherein said egg is produced by a method comprising:

immunizing a female avian with a composition comprising at least one antigen from each of the following bacterial strains: *Aerobacter aerogenes, Escherichia coli, Salmonella enteritidis*, Pseudomonas aeruginosa, Klebsiella pneumoniae, Salmonella typhimurium, Haemophilus influenzae, Proteus vulgaris, and *Shigella dysenteriae;*

maintaining said female avian in a hyperimmune state by administering to said female avian booster injections of said composition; and

collecting said egg from said female avian in said hyperimmune state.

5,853,766

WOOD PRESERVATIVES

Reimer Goettsche, and Hans-Volker Borck, both of Baden-Baden, Germany, assignors to Dr. Wolman GmbH, Sinzheim, Germany

Continuation of Ser. No. 329,425, Oct. 24, 1994, Pat. No. 5,635,217, which is a continuation of Ser. No. 860,155, Mar. 30, 1992, abandoned. This application Jan. 21, 1997, Ser. No. 785,084 .

Claims priority, application Germany, Apr. 18, 1991, 41 12 652.1

Int. Cl.^{6} A01N *43/653;59/20;57/00*

U.S. Cl. 424—632 **32 Claims**

1. A wood preservative comprising:

i) a copper compound, in an amount fungicidally effective against wood destroying fungi;

ii) an alkanolamine;

iii) propiconazole, in an amount fungicidally effective against wood destroying fungi; and

iv) an emulsifier.

5,853,767
COMPOSITIONS FOR TREATING FUNGAL, PARASITIC AND/OR BACTERIAL INFECTIONS, ESPECIALLY INFECTIONS OF ORGANS SUCH AS THE SKIN AND VAGINA

Steven A. Melman, 8909 Iverleigh Ct., Potomac, Md. 20854
Filed Jan. 2, 1997, Ser. No. 778,269
Int. Cl.^{6} A61K *33/22;31/19*
U.S. Cl. 424—659 **14 Claims**

1. A composition comprising acetic acid in an amount between 0.1–10% by weight of the total composition and boric acid in an amount between 0.1–30% by weight of the total composition; wherein said composition is in a form suitable for vaginal treatment being selected from the group consisting of vaginal suppository, vaginal douche, vaginal shampoo, vaginal cream, vaginal ointment; vaginal gel, vaginal creme rinse, vaginal foam and vaginal solution.

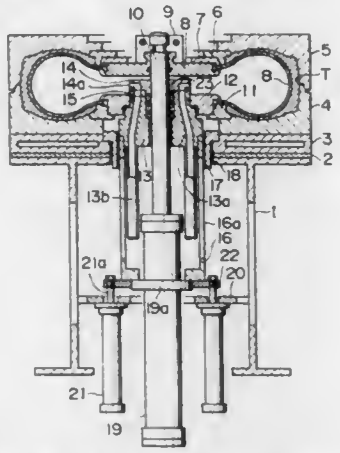
5,853,768
TOPICAL PREPARATION AND METHOD FOR PAIN RELIEF

James Altadonna, 90 E. 2nd St., Deer Park, N.Y. 11729
Continuation of Ser. No. 399,105, Mar. 1, 1995, abandoned. This application Mar. 4, 1997, Ser. No. 811,276
Int. Cl.^{6} A61K *33/36*
U.S. Cl. 424—667 **2 Claims**

1. A topical preparation composition for the relief of minor pain in humans consisting essentially of:
(materials are listed by weight of the total composition)
tincture of iodine 1–5%
camphor 0.5–under 3%
menthol 0.5–1.5%.

5,853,769
CENTER MECHANISM OF A TIRE VULCANIZER

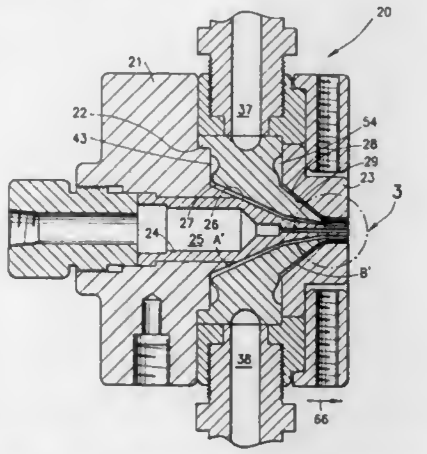
Keiichi Tohmoto, and Toshifumi Murakami, both of Nagasaki, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan
Filed Jul. 7, 1997, Ser. No. 889,176
Claims priority, application Japan, Sep. 3, 1996, 8-233163
Int. Cl.^{6} B29C *33/30;35/02;35/16*
U.S. Cl. 425—38 **2 Claims**



1. A center mechanism of a tire vulcanizer comprising, an upper clamp ring for holding the upper opening end of a bladder, a lower clamp ring for holding the lower opening end of the bladder, a lower ring for supporting said lower clamp ring, a spacer having an upper end portion connected to said lower clamp ring and having a lower end portion connected to an hydraulic center post elevating cylinder, said hydraulic cylinder having a vertically aligned movable piston rod forming, when extended, the center post for the center mechanism, with said center post extending through an opening in both the center of said lower ring and said lower clamp ring to said upper clamp ring and means connecting the upper end of said center post to said upper clamp ring wherein said spacer includes a ventilating window located intermediate the upper and lower end portions thereof to dissipate heat from the center post to the atmosphere external of said bladder during the tire vulcanizing operation.

5,853,770
COEXTRUSION DIE COMPONENT SYSTEM

Arthur Roger Guillemette, 10 Pike St., West Warwick, R.I. 02893
Continuation-in-part of Ser. No. 625,779, Mar. 29, 1996, Pat. No. 5,667,818, which is a continuation of Ser. No. 148,009, Nov. 5, 1993, abandoned. This application Sep. 13, 1996, Ser. No. 713,520
Int. Cl.^{6} B29C *47/26*
U.S. Cl. 425—113 **1 Claim**

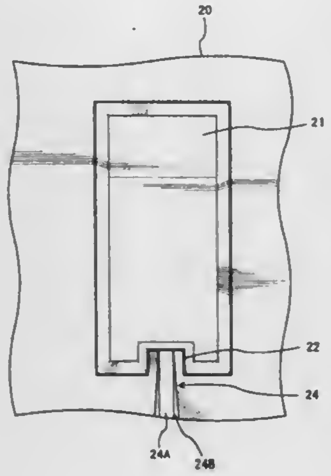


1. An extrusion die formed by an assembly of aligned components for extruding tubular plastic products having multiple layers, wherein the molten plastic materials used for forming adjacent layers have different properties, said assembly of components comprising:

a. a die body having an axially extending bore having upstream and downstream ends;
b. a tip die assembled downstream, adjacent to the die body and having a bore aligned with the axially extending bore of the die body to form a continuous bore therewith, the upstream surface of said tip die bore forming a first conical surface, said tip die having a second conical surface axially displaced downstream from said first conical surface, said conical surfaces being tapered radially inward in the downstream direction;
c. an end die assembled downstream, adjacent to the tip die and having a bore aligned with the axially extending bores of the die body and the tip die to form a continuous bore therewith, said end die having a mating conical surface which cooperates with the downstream conical surface of the tip die to form a first extrusion passage;
d. a tip inserted in the continuous bore and extending through said continuous bore to its downstream end, said tip having a central axial bore extending the length of the die assembly, said tip being constructed with an outer conical surface which cooperates with the first conical surface of the tip die to form a second extrusion passage;
e. separate supply channels constructed in the die assembly to distribute molten plastic to the first and second extrusion passages, each of said supply channels comprises a supply passage constructed in the components of the die assembly, said supply passage having upstream and downstream ends relative to the direction of plastic flow and further comprising:
    (i) an inlet constructed in one of the components to provide access to the supply passage, said inlet communicating with a source of flowable plastic to receive said plastic therefrom;
    (ii) first and second flow channels constructed in said one of the components in communication with the inlet, said flow channels extending downstream within the component;
    (iii) a distribution groove, constructed within said one of the components generally transverse to the direction of plastic flow, said groove forming an annular chamber to receive flowing plastic, said groove having first and second inlets positioned symmetrically in the chamber and communicating with said first and second channels respectively to receive flowing plastic therefrom, said groove having a downstream edge communicating with an annular outlet to allow flowing plastic to escape therefrom, said groove further comprising a pair of blending means to direct the flow of plastic towards the downstream edge, said blending means positioned symmetrically in the annular chamber equidistant from the first and second groove inlets;
f. said extrusion passages formed by the cooperation of the tip die with the end die and the tip extending to form an exit to enable the layers to be joined external to the die assembly under ambient pressure and temperature, said exit further comprising:
    (i) a first extended nozzle portion constructed in the tip to extend the central bore of the tip through the die assembly;
    (ii) a second extended nozzle portion constructed in the tip die to extend the first and second conical surfaces of the tip die to the downstream end of the die assembly; and
    (iii) said first and second nozzle portions and said end die cooperating to form separate concentric and coterminous exit channels for each of the extrusion passages and said central axial bore.

5,853,771
MOLDING DIE SET AND MOLD PACKAGE

Jirou Matsumoto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1998, Ser. No. 62,972
Claims priority, application Japan, Aug. 19, 1997, 9-222514
Int. Cl.^{6} B29C *45/02;45/14;45/27*
U.S. Cl. 425—116 **21 Claims**

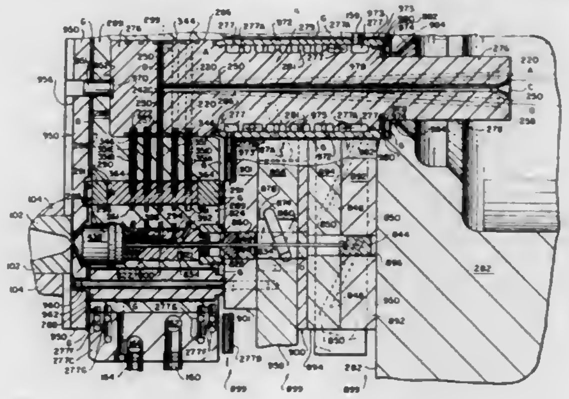


1. A molding die set used for fabricating a mold package, which protects an IC (Integrated Circuit) therein, comprising:

an upper die which comprises an upper cavity; and
a lower die which comprises a lower cavity arranged to face the upper cavity, and a gate which guides plasticized resin into the lower cavity and the upper cavity, wherein
the lower cavity is provided with a projection region which is projecting inwardly; and the gate is arranged to be extending in the projection region.

5,853,772
METHODS AND APPARATUS FOR INJECTION MOLDING AND INJECTION BLOW MOLDING MULTI-LAYER ARTICLES, AND THE ARTICLES MADE THEREBY

Frederick G. Kudert, Niles; Maurice G. Latreille, Batavia; Robert J. McHenry, St. Charles; George F. Nahill, Crystal Lake, all of Ill.; Henry Pfutzenreuter, III, Alta Loma, Calif.; William A. Tennant, Schaumburg, Ill.; Thomas T. Tung, Hoffman Estates, Ill., and John Vella, Jr., Aurora, Ill., assignors to American National Can Company, Chicago, Ill.
Continuation of Ser. No. 341,700, Nov. 18, 1994, Pat. No. 5,523,045, which is a continuation of Ser. No. 740,749, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 563,169, Aug. 3, 1990, Pat. No. 5,037,285, which is a continuation of Ser. No. 397,348, Aug. 22, 1989, Pat. No. 5,946,365, which is a continuation of Ser. No. 283,000, Dec. 2, 1988, abandoned, which is a continuation of Ser. No. 909,941, Sep. 19, 1986, abandoned, which is a division of Ser. No. 484,707, Apr. 13, 1983, Pat. No. 4,712,990. This application May 29, 1996, Ser. No. 657,622
Int. Cl.^{6} B29C *45/22*
U.S. Cl. 425—130 **21 Claims**



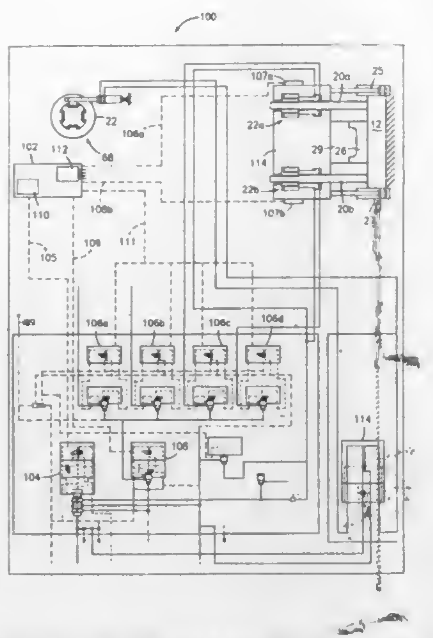
1. An injection molding machine, comprising:

a plurality of co-injection nozzle means each having an associated injection cavity mold, each nozzle means being adapted to receive a valve means, and each having plural passages for feeding respective ones of plural polymeric materials,
a plurality of valve means, there being a separate valve means for each of the co-injection nozzle means and each adapted to operate therethrough to identically permit and prevent the injection of the respective plural polymeric materials from each nozzle means,
drive means associated with each valve means and adapted for simultaneously and identically driving the plurality of valve means in a manner that simultaneously provides identical movements of each of the valve means within its associated nozzle means and provides as to each nozzle means simultaneous identical control over the flow and non-flow of the respective plural polymeric materials from each of the co-injection nozzle means, and
control means in communication with the drive means, for moving the valve means in a desired mode which provides said identical simultaneous flow controls.

5,853,773
CONTROL SYSTEM FOR MOLD CLAMPING UNITS

Christopher W. M. Choi, Richmond Hill, Canada, assignor to Husky Injection Molding Systems Ltd., Canada
Division of Ser. No. 582,434, Jan. 2, 1996, Pat. No. 5,753,153. This application Jun. 24, 1997, Ser. No. 881,876
Int. Cl.^{6} B29C *45/64*
U.S. Cl. 425—136 **19 Claims**

1. A system for controlling mold activity of a molding machine, comprising:



- a movable mold platen having a movable mold half and a fixed mold platen having a fixed mold half;
- means for moving said movable platen relative to said fixed platen;
- connecting means attaching said platens together;
- clamping means for exerting and sustaining a force clamping said platens together, and for exerting an opposite force for separating said platens, said clamping means releasably connected to said connecting means at an adjustable starting position;
- means for determining said adjustable starting position of said clamping means, wherein said adjustable starting position provides sufficient stroke for exerting said force for clamping and separating said platens, said means for determining including means for measuring the actual shutheight of said platens in the mold closed position, means for measuring the actual position of said clamping means, and means for calculating said adjustable starting position from said measurements;
- means for checking the position of said clamping means to determine if said sufficient stroke of said clamping means is present;
- means for adjusting said adjustable starting position based on the checked position of the clamping means so as to obtain sufficient stroke of the clamping means;
- means for sustaining said clamping force for a predetermined time;
- means for actuating said clamping means for developing said force for separating; and
- means to actuate said moving means to separate said mold halves.

5,853,774

APPARATUS FOR EXPRESSING A PLASTIC MASS FROM ONE OR MORE CARTRIDGES

Volker Dreve, Fröndenberg, Germany, assignor to Dreve-Otoplastik GmbH, Unna, Germany

Filed May 6, 1997, Ser. No. 852,018

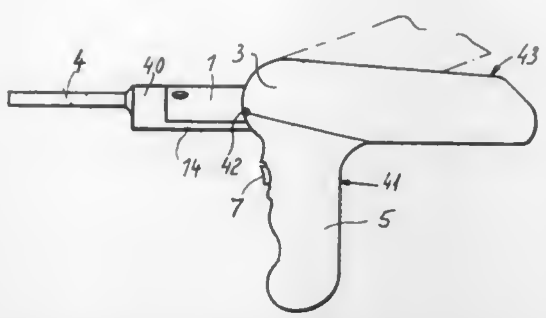
Claims priority, application Germany, Oct. 16, 1996, 29617872.1; Mar. 6, 1997, 29704113.4

Int. Cl.^{6} B67D *05/44*

U.S. Cl. 425—87 **11 Claims**

1. An apparatus for expressing a pasty mass from a cartridge, comprising:

- a housing having a longitudinally extending portion in which an elongated cartridge containing a pasty mass and having a movable bottom is received;



- a piston in said housing displaceable longitudinally in line with said cartridge and bearing against said bottom to drive said pasty mass out of said cartridge; and
- a drive including an electric motor in said housing operatively connected with said piston for displacing said piston from a starting position corresponding to a full cartridge to an end position corresponding to complete discharge of the pasty mass from said cartridge, said housing having a handle extending transversely of said longitudinally extending portion, and a cartridge holder on said portion receiving said cartridge and provided with an outlet nozzle for discharging said pasty mass, said apparatus including a second piston operatively connected to said drive, said outlet nozzle being provided with a mixer, and said cartridge holder being capable of receiving at least one cartridge having a pair of cylindrical chambers with respective movable bottoms, each chamber receiving a respective pasty mass and communicating with said mixer, said pistons respectively bearing against said respective movable bottoms, said drive including a speed-reducing transmission connected with said electric motor and a mechanism in said housing for displacing said pistons, said motor and said transmission being received in said handle and said transmission having an output shaft detachably connectable with a driven shaft of said mechanism, said mechanism including a pair of piston rods each connected to a respective one of said pistons, a yoke connecting said piston rods, a flexible tension member connected to said yoke and adapted to be wound on said driven shaft whereby winding of said tension member on said driven shaft displaces said yoke to displace said piston rods until said pistons reach said end position.

5,853,775

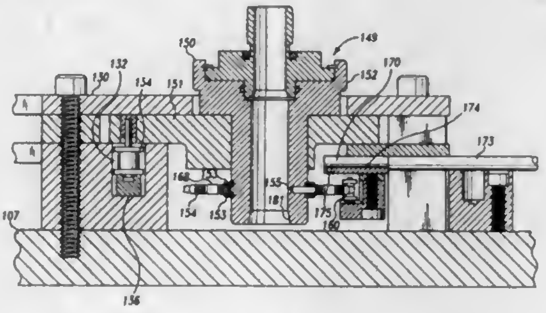
NON-ROUND CONTAINER BLOW MOLDING APPARATUS

David C. Oas, Vandalia; Carl L. Knepper; David P. Meiring, both of Troy, and Timothy L. Bright, Greenville, all of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio

Filed Dec. 5, 1997, Ser. No. 986,256

Int. Cl.^{6} B29C *49/68*

U.S. Cl. 425—145 **12 Claims**



1. Apparatus for blow molding a non-round container having a substantially uniform side wall thickness from a rotationally symmetric parison, the apparatus comprising:

- a blow molding station including at least one blow mold, a heating station coupled to the molding station including a source of heat, and a transportation system extending through the heating station and the blow molding station for transporting parisons through the heating station and into the blow molding station, the transportation system including:
- a rotation driver for cyclically rotating the parisons at a prescribed non-uniform rate as the parisons are transported through the heating station to induce thermal variations in the parisons,
- at least one sensor for identifying an angular orientation of each parison at a selected position in the heating station, and
- repositioning apparatus for angularly reorienting each parison immediately prior to introduction into the blow molding station so that the thermal variations can be employed to facilitate formation of non-round containers having a substantially uniform side wall thickness within the blow molding station.

5,853,776

INJECTION MOLDING SYSTEM HAVING A SPACER MEMBER

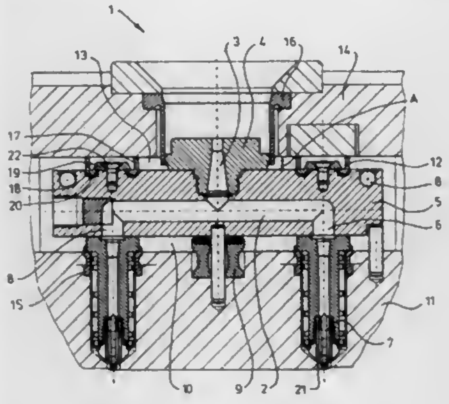
Hans Meijer, Dordrecht, Netherlands, assignor to Eurotool Beheer B.V., 's-Gravendeel, Netherlands

Filed May 9, 1997, Ser. No. 854,253

Claims priority, application European Pat. Off., May 10, 1996, 96201291

Int. Cl.^{6} B29C *45/17*

U.S. Cl. 425—570 **14 Claims**



1. An injection molding system comprising:

- a spacer member; and
- a manifold element carrying a melt passage,
- said manifold element being connected to an inlet at a first end for receiving molten material and at a second end to a nozzle opening into a gate of a mold,
- said manifold element being heated, and being spaced from at least one of a clamped plate element and a cavity plate element by said spacer member,
- said spacer member comprising a thin walled, annular spacer having an annular wall generally extending in a direction of a center line of the spacer member, and two oppositely directed bearing surfaces extending transversely to the center line,
- said annular wall comprising a first resilient wall part located between the oppositely directed bearing surfaces in the form of a step or a bend part extending transversely to the general direction of the annular wall.

5,853,777

NOZZLE RETAINING APPARATUS

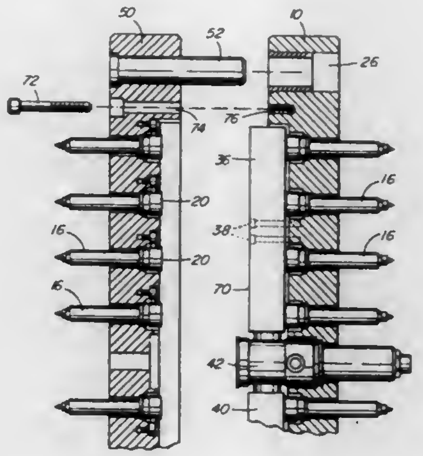
Jobst Ulrich Gellert, 7A Prince Street, Georgetown, Ontario, Canada, L7G 2X1

Filed Jun. 18, 1997, Ser. No. 878,034

Claims priority, application Canada, Jun. 4, 1997, 2206972

Int. Cl.^{6} B29C *45/22*

U.S. Cl. 425—549 **3 Claims**



1. In an injection molding apparatus for stack molding having a plurality of heated nozzles with each nozzle having a rear end, a front end, and a central melt bore for conveying melt to a gate leading to a cavity in a mold adjacent the front end of the nozzle, wherein a melt distribution manifold secured to a first manifold retainer plate is mounted between the first manifold retainer plate and a second manifold retainer plate secured to the first manifold retainer plate, a first group of the nozzles are seated in the first manifold retainer plate with the front ends of the first group of the nozzles extending away from the melt distribution manifold in one common direction, each nozzle of the first group of the nozzles being retained in a seat in the first manifold retainer plate by a face of the melt distribution manifold abutting against the rear end of the nozzle, a second group of the nozzles are seated in the second manifold retainer plate with the front ends of the second group of nozzles extending away from the melt distribution manifold in a common direction opposite to the direction in which the first group of the nozzles extend, the improvement further comprising:

- nozzle retaining apparatus for retaining each nozzle of the second group of nozzles in a respective seat in the second manifold retainer plate during assembly and disassembly comprising a main body having a screw opening therethrough, a retaining pin extending laterally from the main body into a matching opening in the nozzle, and a screw extending through the screw opening in the main body into a threaded hole in the second manifold retainer plate to removably secure the main body and the retaining pin to the second manifold retainer plate.

5,853,778

FOOD PRODUCTS UTILIZING EDIBLE FILMS AND METHOD OF MAKING AND PACKAGING SAME

Walter Goldston Mayfield, Houston, Tex., assignor to Arriba Corporation, Houston, Tex.

Filed Jan. 29, 1997, Ser. No. 790,656

Int. Cl.^{6} A21D *13/00*; A23L *1/325*

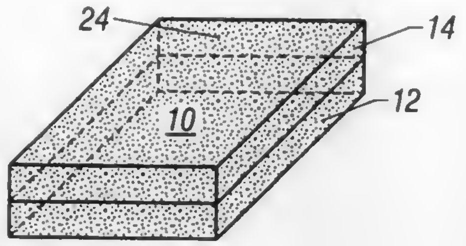
U.S. Cl. 426—89 **12 Claims**

1. A food product, comprising:

(a) an amorphous food made into a desired shape; and

(b) a flexible film of edible material at a thickness less than 1.0 mm on opposite sides the amorphous food for

(i) aiding the amorphous food to retain moisture, and



(ii) aiding the amorphous food in maintaining the desired shape.

5,853,779

PROCESS FOR PREPARING GRAIN PRODUCT

Minoru Takebe; Yoshio Ando, both of Tokyo, and Sunao Kikushima, Kyoto, all of Japan, assignors to Nichimo Co., Ltd., Tokyo, Japan

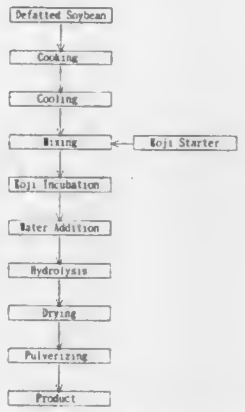
PCT No. PCT/JP94/00763, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/26127, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 362,602

Claims priority, application Japan, May 11, 1993, 5-109565; Oct. 12, 1993, 5-254326

Int. Cl.^{6} A23L *1/211*

U.S. Cl. 426—20 **8 Claims**



1. A process for preparing a grain food product comprising the steps of:

a. cooking grains,

b. cooling said cooked grains,

c. inoculating a koji mold on said grains as a starting material and incubating said grain containing said koji mold for a period of time sufficient to cause hydrolysis of phytic acid by enzymes secreted from said koji mold to form a koji mold grain preparation,

d. adding water into said koji mold grain preparation,

e. keeping said koji mold grain preparation at 30°–65° C. for a period of time until hydrolysis of remaining phytic acid is substantially completed and

f. drying said koji mold grain preparation to produce said grain food product.

5,853,780

BEVERAGE MAKING PENCIL

Ajaya Kumar, P.O. Box 4563, New Delhi, India, 110016

Filed Sep. 11, 1996, Ser. No. 712,085

Int. Cl.^{6} B65B *29/02;* **A21D** *10/02;* **B65D** *85/00*

U.S. Cl. 426—82 **20 Claims**

1. A hand-held beverage preparation device for preparing a beverage from a liquid in a vessel comprising:

a pedestal including an upper end and a lower end;

a porous pouch mounted to said lower end of said pedestal in which an extractable beverage making ingredient can be provided; and

an impervious cap which is removably attached to said upper end of said pedestal and which said cap together with said upper end of said pedestal totally encloses said pouch such that upon removal of said cap, said upper end of said pedestal is grasped to lower said pouch into the liquid in the vessel to stir the liquid with said pouch and thus to diffuse the beverage ingredient into the liquid to form the beverage and then said cap is reattached to prevent leakage from the pouch.

5,853,781

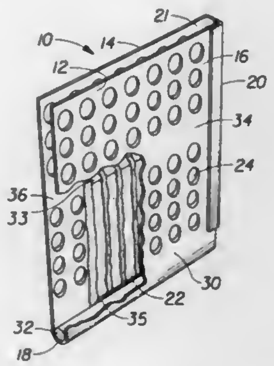
CONTAINER FOR HEATING FRENCH FRIES IN A TOASTER

James L. Bono, Cincinnati; Lewis A. Tucker, Fairfield, and Deborah J. Yee, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 21, 1996, Ser. No. 668,488

Int. Cl.^{6} A21D *10/02;* **A23L** *1/216;* **A47J** *37/08;* **B29D** *22/00*

U.S. Cl. 426—110 **21 Claims**



1. A toasted French fries product for providing a plurality of toasted French fries comprising:

a plurality of French fries, said French fries being aligned vertically substantially adjacent to each other in one layer, said French fries having a bottom end and a top end; and

a container for supporting said French fries to be heated in a toaster, said container having an article receiving slot, said container comprising an upright structure having a closed bottom and a front and a back substantially parallel to said front, said front and said back being held together along adjacent edges by a means other than adhesive, said upright structure having an openable top for access to heated French fries therein, said front and said back having apertures providing an open area in said front and said back to pass toaster radiation heat into said container to heat said French fries and for steam from said heated French fries to exit said container, said front and said back having non-apertured zones at the elevation of said bottom end and said top end of said French fries, said closed bottom of said container forming a drip trough, said upright structure also having a portion extending sufficiently above said toaster to enable a user to lift said container from said toaster by gripping said portion without having to place fingers in said article receiving slot of said toaster.

5,853,782

ARRANGEMENT AND METHOD FOR CONTINUOUS ADDITION OF NITROGEN GAS TO A BEVERAGE

Ebbe Larsson, Genarp, Sweden, assignor to Alfa Laval AB, Lund, Sweden

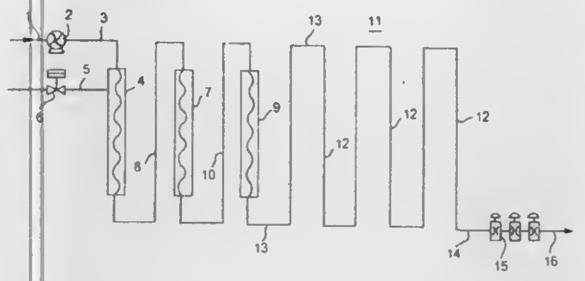
PCT No. PCT/SE95/01449, § 371 Date Sep. 16, 1996, § 102(e) Date Sep. 16, 1996, PCT Pub. No. WO96/17529, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 4, 1995, Ser. No. 714,146

Claims priority, application Sweden, Dec. 5, 1994, 9404210

Int. Cl.^{6} A23L *2/00;* **C12G** *3/00*

U.S. Cl. 426—474 **13 Claims**



9. A method for the continuous addition of nitrogen gas to a beverage comprising the steps of directing the beverage to an arrangement for adding the nitrogen gas while the beverage is at a temperature of no greater than 15° C., increasing the pressure of the beverage to at least 10 bar, adding the nitrogen gas to the beverage through at least one static mixer at a pressure above 12 bar, maintaining the beverage at said pressure above 12 bar for 10–30 seconds, and passing the beverage through means arranged to lower the beverage pressure to one suitable for packaging such that the beverage after packaging has a nitrogen gas content of up to 35 ppm at a CO_2 content up to 5 g/l.

5,853,783

METHOD AND DEVICE FOR RELAXING A SHEET OF DOUGH

Cornelis Rijkaart, Kortenhoef, Netherlands, assignor to Sasib Bakery Holland N.V., Asperen, Netherlands

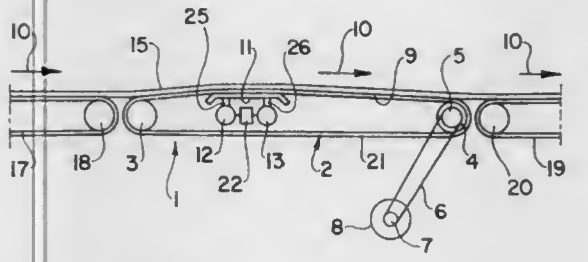
PCT No. PCT/NL96/00132, § 371 Date Sep. 29, 1997, § 102(e) Date Sep. 29, 1997, PCT Pub. No. WO96/29877, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 29, 1996, Ser. No. 930,523

Claims priority, application Netherlands, Mar. 29. 1995, 9500601

Int. Cl.^{6} A21C *9/00;* **A21D** *6/00*

U.S. Cl. 426—496 **21 Claims**



1. Method for relaxing a sheet of dough, comprising conveying the sheet of dough at a first speed of conveyance on a supporting means, generating a mechanical vibration with an essentially constant frequency and transmitting it to the supporting means, transmitting the vibration by way of the supporting means to the sheet of dough, and discharging the sheet of dough at a second speed of conveyance which is essentially the same as the first speed of conveyance of the supporting means.

5,853,784

STABILISATION OF FLAVORS

Marcos Pery Campos, Rio de Janeiro, Brazil, and Rosemary Elizabeth O'Reilly, Eastleigh, England, assignors to British-American Tobacco Company Limited, Middlesex, England

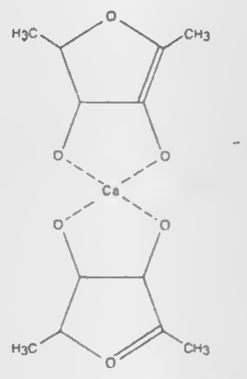
PCT No. PCT/GB96/01028, § 371 Date Oct. 16, 1997, § 102(e) Date Oct. 16, 1997, PCT Pub. No. WO96/34540, PCT Pub. Date Nov. 7, 1996

PCT Filed Apr. 30, 1996, Ser. No. 930,705

Claims priority, application United Kingdom, May 5, 1995, 9509109

Int. Cl.^{6} A23L *1/22*

U.S. Cl. 426—536 **21 Claims**



1. A stable flavour complex, comprising an alkaline earth metal ion and two cyclic molecules, wherein for each of said molecules the cyclic ring thereof comprises first and second functional groups, which functional groups are located at adjacent positions of the cyclic ring each of which functional groups provides a bond with said ion, said cyclic ring further comprises a double bond in a conjugated relationship with said second functional group, and one at least of said cyclic molecules being a flavour molecule, said flavour molecule being released upon exposure of said flavour complex to moisture and/or heat.

5,853,785

DRY MIX FOR PRODUCING A SLUSH BEVERAGE

Dalip K. Nayyar, Washingtonville; Walter W. Schulok, Stony Point; Fouad Z. Saleeb, Pleasantville, and Eileen M. Modesta, Peekskill, all of N.Y., assignors to Kraft Foods Inc., Northfield, Ill.

Filed Aug. 28, 1996, Ser. No. 704,183

Int. Cl.^{6} A23L *2/121*

U.S. Cl. 426—565 **17 Claims**

1. A slush beverage dry mix capable of being combined with water or milk and frozen to produce a slush beverage within about 3.5 hours in a household freezer, the dry mix when dissolved in water at about 15% solids level producing a liquid which has an onset melting point greater than −6.5° C. and a viscosity of less than 15 mPas at 14.7° C., and wherein said dry mix contains at least 2% of water-soluble hydrolyzed hydrocolloid, wherein a 2% solution of said hydrocolloid has a viscosity of less that 10 mPas at 20° C.

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5,853,786
PROCESS FOR CONTINUOUS PRODUCTION OF PROCESSED CHEESE

Ahmet Anbarci, Unterhaching; Josef Sebastian Nassauer, Langenbach, and Stephan Simburger, Munich, all of Germany, assignors to Kraft Foods, Inc., Northfield, Ill.

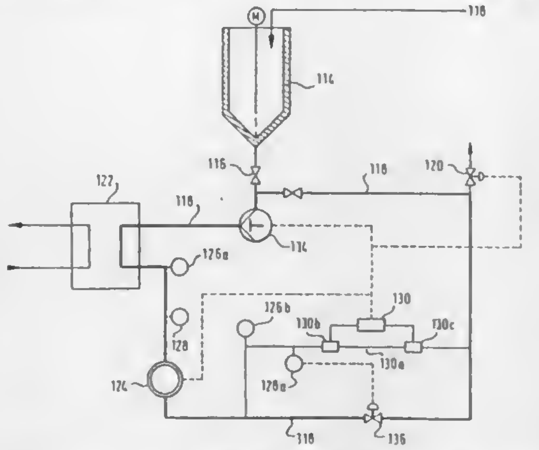
PCT No. PCT/GB95/01591, § 371 Date Apr. 5, 1996, § 102(e) Date Apr. 5, 1996, PCT Pub. No. WO96/01567, PCT Puh. Date Jan. 25, 1996

PCT Filed Jul. 6, 1995, Ser. No. 612,899

Claims priority, application Germany, Jul. 7, 1994, 44 23 988.2

Int. Cl.^{6} A23C *19/08*

U.S. Cl. 426—582 **12 Claims**



1. A process for the continuous production of cheese products, which comprises:

producing an essentially homogeneous liquid product stream from starting materials necessary to produce the cheese product, the starting materials comprising a milk component, selected from the group consisting of milk, cream, skim milk, and mixtures thereof, and one or more cheese making additives;

directing all or part of the liquid product stream through a closed circulation system;

subjecting at least part of the liquid product stream in the closed circulation system to a shear force effective to achieve a desired viscosity;

conducting at least part of the liquid product stream that has achieved the desired viscosity from the closed circulation system;

keeping flow rate of the liquid product stream inside the closed circulation system larger in a starting phase than flow rate of a liquid product stream introduced into or conducted from the closed circulation system;

measuring the viscosity of the liquid product stream in the closed circulation system; and

regulating the shear force according to the measured viscosity of the liquid product stream in the closed circulation system in order to maintain the desired viscosity.

8. Apparatus for adjusting the viscosity of a liquid product stream, comprising:

means for producing an essentially homogeneous liquid product stream from starting materials necessary to produce a cheese product, the starting materials comprising a milk component, selected from the group consisting of milk, cream, skim milk, and mixtures thereof, and one or more cheese making additives;

a closed circulation system, through which all or part of the essentially homogeneous liquid product stream can be directed and, wherein at least part of the essentially homogeneous liquid product stream is subjected to a shear force effective co achieve a desired viscosity value,

means for heating the essentially homogeneous liquid product stream prior to introduction of the essentially homogeneous liquid product stream into the closed circulation system;

means for cooling the essentially homogeneous liquid product stream after it has been heated to a temperature suitable for achieving a desired viscosity of the essentially homogeneous liquid product stream by said heating means prior to directing the essentially homogeneous liquid product stream into the closed circulation system, comprising a region for the means for cooling the essentially homogeneous product stream and a region of the closed circulation system, both of which are isolated from an environment;

means for essentially homogeneous liquid product stream diversion which is constructed as a system isolated from the environment;

means which is part of the closed circulation system which is for measuring the viscosity value of the essentially homogeneous liquid product stream; and

means for regulating the shear force according to the viscosity measurement of the essentially homogenous liquid product stream.

5,853,787
METHOD FOR REDUCING COFFEE ACIDITY

Ismail Macit Gurol, Seattle, Wash., assignor to TAMER International, Seattle, Wash.

Filed Dec. 22, 1995, Ser. No. 577,147

Int. Cl.^{6} A23F *5/00;* **A23L** *2/00;* **C12C** *3/08;* **A23C** *1/10*

U.S. Cl. 476—595 **23 Claims**

1. A method of producing coffee having reduced acidity, comprising adding to a coffee product an acid-neutralizing composition comprising calcium carbonate, potassium hydroxide, magnesium hydroxide, and potassium chloride wherein the acid-neutralizing composition is added to the coffee product in an amount sufficient to produce a brewed coffee having a pH of from about 5.7 to 6.1, and wherein the acid-neutralizing composition does not impair the flavor, aroma, and taste integrity of the coffee product.

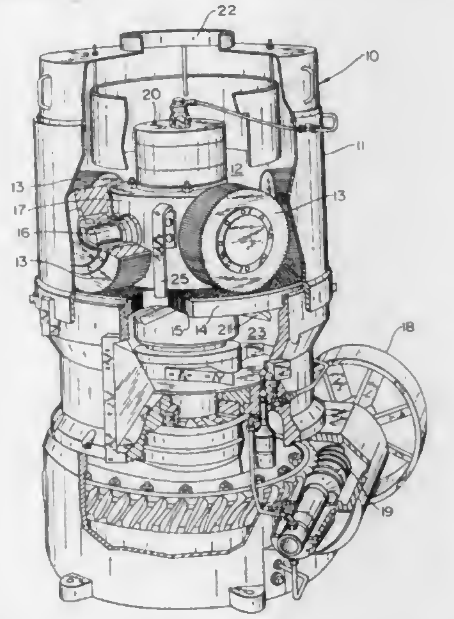
5,853,788
DENSIFIED FLOWABLE ROASTED AND GROUND COFFEE

Sean Mackay Murphy, Longmeadow, Mass.; Helmut Sieling, and Gerald Sigmund Wasserman, both of Bremen, Germany, assignors to Kraft Foods, Inc., Northfield, Ill.

Division of Ser. No. 639,048, Apr. 24, 1996, Pat. No. 5,725,898. This application Nov. 25, 1997, Ser. No. 978,387

Int. Cl.^{6} A23F *5/00;* **A23C** *9/00;* **A23B** *4/03*

U.S. Cl. 426—595 **5 Claims**



1. A flowable particulate roasted and ground coffee product in the form of aggregates of granular roasted and ground coffee particles, said aggregates having a median volumetric particle size of from 270 to 1100 μm, a bulk density of from 0.5 to 0.7 gm/cc and which when brewed will have a brew yield of from 30 to 41%, said product being in the form of aggregates of granular roasted and ground coffee particles, said particles having a maximum median volumetric particle size of 270 μm.

5,853,789
METHOD FOR PRODUCING TONYU

Masami Hoshino; Miyoko Yamasaki, both of Uji, and Nobuyuki Ohshima, Osaka, all of Japan, assignors to Co. Lim Marushou, Osaka, Japan

Filed Mar. 18, 1997, Ser. No. 819,807

Claims priority, application Japan, May 31, 1996, 8-139081

Int. Cl.^{6} A23L *1/20;* **C12C** *3/08;* **C12G** *2/40*

U.S. Cl. 426—634 **10 Claims**

1. A method for producing Tonyu comprising the steps of:

grinding down beans to obtain Go, filtering the Go to remove Okara and collecting a solution of Tonyu,

wherein said method further comprises the step of adding 3 to 25 weight % of alcohol in beans or mixture of beans and water at any stage of producing Tonyu, said solution of Tonyu including 3 to 25% by weight of alcohol, such that said solution of Tonyu can be concentrated by distillation under reduced pressure without bubble formation or germ formation.

5,853,790
VALUE ENHANCING METHOD FOR PROCESSING POULTRY

John F. Glancy, Winter Park, Fla., assignor to The Elevated Systems Limited Partnership, and The Elevated Technology Limited Partnership, both of Orlando, Fla.

Filed Feb. 25, 1997, Ser. No. 806,836

Int. Cl.^{6} A23L *1/315*

U.S. Cl. 426—644 **17 Claims**

1. A method for commercial preparation of poultry meat through which effective use of said poultry meat for human consumption is maximized and through which whole birds are formed into a minimum of three raw food portions, with one of said raw food portions being a dark meat food portion comprising a de-boned flavor and nutrition enhanced leg quarter, and at least two of said raw food portions being white meat food portions comprising de-boned flavor and nutrition enhanced poultry breasts, said method comprising the steps of providing a cooled processing room having its temperature maintained according to USDA requirements, a bird ready for sectioning which has leg quarters and poultry breasts, cutting means, de-boning means, grinding means, blending means, extruding means, cryogenic freezing means, a plurality of flavor enhancing ingredients, and at least one non-meat nutrition-enhancing protein ingredient; positioning said bird, said cutting means, said de-boning means, said grinding means, said blending means, said flavor enhancing ingredients, and said non-meat nutrition-enhancing protein ingredients within said cooled processing room; using said cutting means to separate each of said dark meat leg quarters from the remainder of said bird; using said cutting means to separate each of said white meat poultry breasts from said remainder of said bird; using said de-boning means to de-bone each of said dark meat leg quarters, each of said white meat poultry breasts, and said remainder of said bird to provide residual poultry meat, said de-boning of each of said dark meat leg quarters being performed so as to leave intact one continuous solid piece of thigh and drumstick muscle tissue; using said grinding means to grind said residual poultry meat and one of said dark meat leg quarters into ground poultry meat; using said blending means to add said flavor enhancing ingredients and said non-meat nutrition-enhancing protein ingredients to said ground poultry meat to form a seasoned ground poultry meat blend; continuing to use said blending means to mix said seasoned ground poultry meat blend until said seasoned ground poultry meat blend solidifies into a cohesively bonded mass; using said cutting means to cut a pocket into the remaining one of said dark meat leg quarters and said breast; using said extruding means to place an amount of said seasoned ground poultry meat blend into each of said pockets; rolling said dark meat leg quarters and said breast so as to retain said seasoned ground poultry meat blend within the center of each of said portions during storage and cooking; and cryogenically freezing said portions for storage so as to maximize use of the meat on an entire poultry carcass while converting a commodity into a food product.

5,853,791
PROCESS FOR THE PRODUCTION OF A FOOD INGREDIENT CONSTITUTED ESSENTIALLY OF MUSCULAR PROTEIN FIBERS

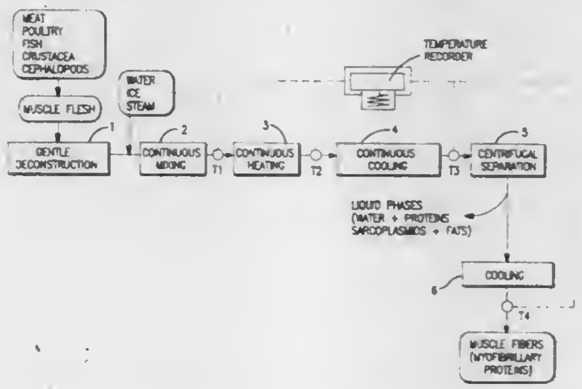
Hervé Roussel, Bouchemaine, France, assignor to Protial, Societe Anonyme, Beaucouze, France

Filed Oct. 22, 1996, Ser. No. 734,917

Claims priority, application France, Aug. 2, 1996, 96 09803

Int. Cl.^{6} A23L *1/31*

U.S. Cl. 426—646 **6 Claims**



1. A process for the production of a natural and gelling food ingredient constituted by proteins of muscular fibers from red meat muscular flesh or muscular flesh of fish, crustacea, mollusks, or cephalopods, comprising:

a) subjecting the muscular flesh to a gentle destructuring to obtain particles having a size of not less than 1 mm in order not to damage the muscular fibers,

b) continuously mixing the muscular flesh thus destructured with a predetermined volume of water for a period of 5 to 1800 seconds to obtain a mixture having a temperature in the range of 2° to 15° C.,

c) thermally adjusting the temperature of the mixture to at least one precisely predetermined temperature in the range of 15° to 45° C., and maintaining the mixture at said predetermined temperature for a period of 60 to 300 seconds,

d) subjecting the mixture thus thermally treated to fractionation centrifugally or by mechanical pressure so as to recover a solid phase, and

e) rapidly cooling the recovered solid phase for a period of about 60 seconds to a temperature below 10° C. to produce a natural and gelling food ingredient that contains 70% to 80% myofibrillar protein fibers which are not denatured.

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5,853,792
LOW SODIUM EDIBLE SALT COMPOSITION AND PROCESS FOR ITS PREPARATION

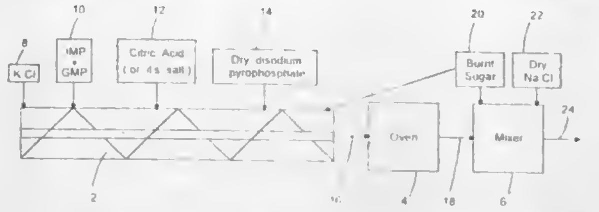
Shaul Zolotov, Lehavim; Oleg Braverman, Beer-Sheva; Margarita Genis, Arad, and David Biale, Kfar Miamon, all of Israel, assignors to Dead Sea Works Ltd, Beer Sheva, Israel

Filed Feb. 11, 1997, Ser. No. 798,254

Claims priority, application Israel, May 28, 1996, 118460

Int. Cl.^{6} A23L *1/237*

U.S. Cl. 426—649 **9 Claims**



1. A low sodium edible salt composition comprising, based on dry weight of ingredient, 0–50% NaCl, 45– 99.5% KCl and at least 0.5% additives, which comprise at least one edible nucleotide monophosphate salt, a burnt sugar, and at least one member other than said nucleotide monophosphate salt selected from the group consisting of low organic acid, low organic acid salt, phosphoric acid, phosphate salt, a magnesium salt and sugar.

5,853,793
METHOD FOR PRODUCING A SENSOR FOR SENSING A TEMPERATURE AND/OR A FLOW

Heinrich Zitzmann, Lauf an der Pegnitz, Germany, assignor to Sensotherm Temperatursensorik GmbH, Nürnberg, Germany

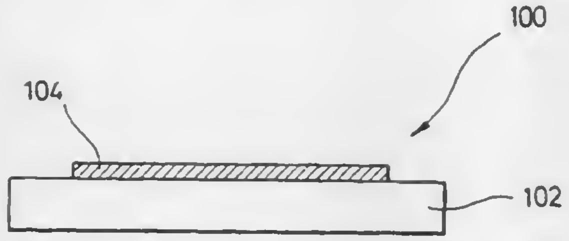
PCT No. PCT/EP95/02689, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO96/01983, PCT Pub. Date Jan. 25, 1996

PCT Filed Jul. 11, 1995, Ser. No. 765,749

Claims priority, application Germany, Jul. 12, 1994, 9411235 U

Int. Cl.^{6} B05D *5/12;3/02;1/38*

U.S. Cl. 427—8 **6 Claims**



1. A method for producing a sensor which is used for sensing a temperature or a flow and which comprises a substrate and a structured resistance layer arranged on said substrate, comprising the following method steps:

a) providing a mixture consisting of a platinum resinate paste and a rhodium resinate paste, wherein the platinum resinate paste contains 12% by weight of platinum, the rest of said platinum resinate paste consisting of a resinate, and the rhodium resinate paste contains 7% by weight of rhodium, the rest of said rhodium resinate paste consisting of a resinate;
b) printing a layer of the mixture by means of a screen printing process onto said substrate;
c) drying the mixture;
d) burning in the mixture at such a temperature for such a period of time that a resinate component contained in the layer will be burnt out;
e) repeating steps b, c, and d on the same substrate until a desired overall mixture layer thickness has been obtained; and
f) tempering the substrate with the whole layer so as to adjust the temperature coefficient.

5,853,794
DOPED POLYANILINE SOLUTIONS

Brian J. Melody, Greenville; John T. Kinard, and Philip M. Lessner, both of Simpsonville, all of S.C., assignors to Kemet Electronics Corp., Greenville, S.C.

Filed Oct. 31, 1997, Ser. No. 962,059

Int. Cl.^{6} H01B *1/20;* **B05D** *5/12;7/14*

U.S. Cl. 427—58 **8 Claims**

1. A process for forming a polymeric film by the steps comprising:

applying to an article a solution comprising an acid-doped polyaniline polymer dissolved in a solvent comprising N-ethylpyrrolidone; and

allowing said solvent to evaporate.

5,853,795
LUMINANT FOR FIELD EMISSION DISPLAY FABRICATED THROUGH PHYSICAL VAPOR DEPOSITION AND METHOD FOR FABRICATING THE SAME

Myung Hwan Oh; Yun Hi Lee; Byeong Kwon Ju, and Man Ho Song, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed May 15, 1996, Ser. No. 647,525

Claims priority, application Rep. of Korea, Nov. 4, 1995, 1995-39797

Int. Cl.^{6} B05D *5/06;* **C23C** *14/00*

U.S. Cl. 427—64 **15 Claims**

1. A method for fabricating a luminant for a field emission display fabricated through PVD, which comprises the steps of forming a ZnO:Zn luminescent thin film on a glass substrate through PVD, and

treating said luminant with heat after said ZnO:Zn luminescent thin film is formed.

5,853,796
METHOD OF MANUFACTURING A CATHODE RAY TUBE SCREEN

Hyeon-sang Kim, and Jong-ho Oh, both of Suwon, Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 401,981, Mar. 10, 1995, Pat. No. 5,717,032. This application May 5, 1997, Ser. No. 851,090

Claims priority, application Rep. of Korea, Oct. 25, 1994, 94-27272

Int. Cl.^{6} B05D *5/06*

U.S. Cl. 427—64 **4 Claims**

1. A method for manufacturing a screen comprising:

forming a phosphor layer on an inner surface of a panel where a black matrix layer is present;

applying and drying a filming composition comprising an emulsion including a copolymer of methyl methacrylate, butyl methacrylate, ethyl acrylate, and methyl acrylic acid, the copolymer having a molecalar weight of 1.5–2.5 million and a decomposition starting temperature of 200°–250° C., as a main component, on the phosphor layer to form a film; and

forming a metal layer on the film.

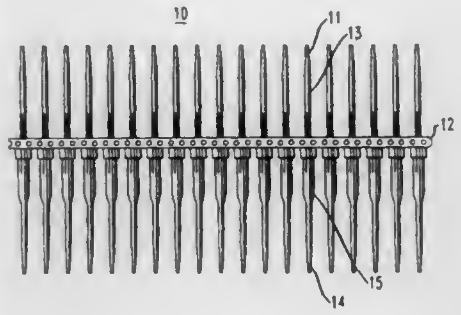
5,853,797
METHOD OF PROVIDING CORROSION PROTECTION

Harold E. Fuchs, Kansas City, Mo.; Henry Hon Law, Berkeley Heights, N.J., and Daniel George Muth, Leawood, Kans., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 560,694, Nov. 20, 1995, abandoned. This application Sep. 30, 1997, Ser. No. 941,250

Int. Cl.^{6} B05D *7/14*

U.S. Cl. 427—96 **11 Claims**



1. A method for treating electrical contact members for corrosion protection comprising exposing the members to a solution consisting essentially of a phosphonate, a lubricant, and a solvent having a flash point above 49 degrees C., wherein the lubricant is not a phosphonate material.

5,853,798
PROCESS FOR FORMATION OF AN ELECTRODE ON AN ANION EXCHANGE MEMBRANE

James R. Dubé, Boston, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 12, 1997, Ser. No. 928,169

Int. Cl.^{6} B05D *3/10;5/12*

U.S. Cl. 427—125 **4 Claims**

1. A process for formation of an electrode on an anion exchange membrane, comprising the steps of:

a. soaking a polymer anion exchange membrane in a solution containing a metal catalyst wherein said metal catalyst is selected from the group consisting of chloroplatanic acid and potassium tetrachloroplatinate, so that anions of the metal catalyst exchange into the membrane; and
b. exposing the membrane to a reducing agent that reduces the anions of the metal catalyst to a metallic form at a reaction surface of the membrane to thereby form the electrode adjacent the reaction surface.

5,853,799
LIQUID METHYLTIN HALIDE COMPOSITIONS

William Albert Larkin, 38 Sylvania Ave., Avon by the Sea, N.J. 07717

Division of Ser. No. 459,958, Jun. 2, 1995, Pat. No. 5,725,904. This application Aug. 20, 1997, Ser. No. 915,108

Int. Cl.^{6} C23C *16/40*

U.S. Cl. 427—160 **2 Claims**

1. An improved process for the pyrolytic deposition of a tin oxide coating on a substrate wherein the improvement comprises the use of a composition which is liquid at 24° C. consisting essentially of a methyl tin halide selected from the group consisting of mono methyl tin trichloride, dimethyl tin dichloride and mixtures thereof, and an alky tin trichloride which is liquid at 25° C. to deposit said tin oxide coating.

5,853,800
MATERIAL FOR AND METHOD OF PREPARING WATER-REPELLENT COATINGS ON OPTICAL SUBSTRATES

Reiner Dombrowski, Höchst, and Martin Friz, Mühltal, both of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Germany

Filed Oct. 25, 1996, Ser. No. 736,668

Claims priority, application Germany, Oct. 26, 1995, 195 39 789.4

Int. Cl.^{6} C23C *16/24*

U.S. Cl. 427—162 **3 Claims**

1. A method of preparing water-repellent coatings on optical substrates comprising thermal vapor coating, said optical substrate with organosilane compounds in a high vacuum, wherein said thermal vaporization is performed at a pressure of from 10^{-3} to 10^{-5} mbar and comprises

impregnating a porous inorganic oxide matrix material with compounds of the formula I

$$C_nF_{2n+1}\text{—}(CH_2)_m\text{—}Si(R^1R^2R^3) \qquad (I)$$

in which

R^1 is alkoxy having 1 to 3 carbon atoms or is $C_nF_{2n+1}\text{—}(CH_2)_m\text{—}Si(R^2R^3)\text{—}O\text{—}$,
R^2 and R^3 are alkyl or alkoxy having 1 to 3 carbon atoms,
n is 1 to 12 and
m is 1 to 6

evaporating the compounds of formula I from the matrix material in a high vacuum at 300° to 500° C.; and

depositing the evaporated compounds on the surface of an optical substrate heated to 50° to 300° C.

5,853,801
PROCESS FOR THE PREPARATION OF CONTINUOUS OPTICAL COMPENSATORY SHEET

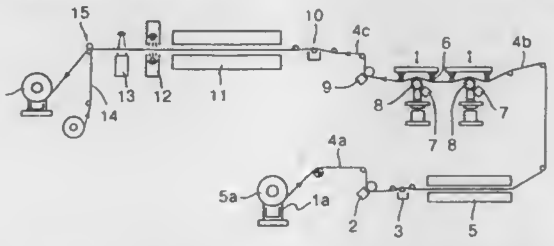
Yasushi Suga; Kenji Nakajima; Kiyoshi Kobayashi; Takashi Nawano, and Hidetomo Itoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 3, 1996, Ser. No. 697,888

Claims priority, application Japan, Sep. 4, 1995, 7-250248; Sep. 4, 1995, 7-250249; Sep. 6, 1995, 7-255598; Sep. 6, 1995, 7-255599

Int. Cl.^{6} B05D *1/28;3/12;3/02;5/06*

U.S. Cl. 427—164 **8 Claims**



5. A process for the preparation of a continuous optical compensatory sheet comprising the continuous steps of:

i) bringing a surface of a transparent resin layer into contact with a rubbing sheet of a rubbing roller having the rubbing sheet thereon under revolution while removing dust on the rubbing sheet by use of an ultrasonic dust-removing machine to impart orientation property to the transparent resin layer, whereby an orientation layer is obtained;
ii) removing dust from the orientation layer by using an ultrasonic dust-removing machine;
iii) coating a coating liquid of a discotic compound having liquid crystalline property in a solvent on the orientation layer to form a coated layer;
iv) drying the coated layer;
v) heating the coated layer to form a discotic nematic phase, whereby a layer of discotic compound is formed; and

- vi) winding up the transparent film having the orientation layer and the layer of discotic compound.

5,853,802

METHODS FOR SPRAY-ON INSULATION

Harold F. Boyer, Houston; Steven A. Kempe, Richmond, and William F. Boyer, Pearland, all of Tex., assignors to International Cellulose Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 509,544, Jul. 31, 1995, Pat. No. 5,684,068. This application Oct. 31, 1997, Ser. No. 962,161

Int. Cl.⁶ B05D *5/10*

U.S. Cl. 427—207.1 **32 Claims**

1. A method for treating cellulose fibers comprising
treating cellulose fibers with an boric acid, and
applying an adhesive composition to the cellulose fibers, the adhesive composition comprising
polyvinyl alcohol cooked without addition of boric acid.

5,853,803

RESIST PROCESSING METHOD AND APPARATUS

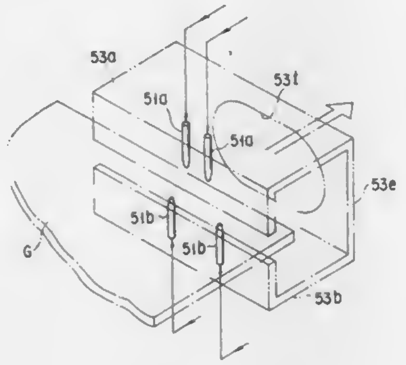
Kiyohisa Tateyama; Kimio Motoda; Tatsuya Iwasaki, all of Kumamoto; Takenobu Matsuo, Kofu; Kazuki Denpoh, Nirasaki, and Eiji Yamaguchi, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Division of Ser. No. 416,369, Apr. 4, 1995, Pat. No. 5,718,763. This application Nov. 5, 1997, Ser. No. 964,608

Claims priority, application Japan, Apr. 4, 1994, 6-089138; Jun. 2, 1994, 6-143841; Jul. 4, 1994, 6-174797

Int. Cl.⁶ B05D *3/12*

U.S. Cl. 427—240 **7 Claims**



1. A method of resist-processing a rectangular substrate comprising, the steps of;
a resist coating step of supplying resist solution to the substrate, while spin-rotating the substrate, to form resist film at least on one surface of the substrate; and
a resist removing step of jetting removing liquid, which can dissolve the resist, to peripheral portions of both surfaces of the substrate to remove the resist film from the peripheral portions.

7. A method of resist-processing a rectangular substrate comprising;
spin-rotating the substrate while supplying resist solution into a process vessel;
exhausting the process vessel while introducing an outside air into said process vessel to generate air current flowing above the substrate which is being resist-coated and from the center to the outer rim of the substrate; and
replacing atmosphere in the process vessel by the outside air after the resist coating step is finished.

5,853,804

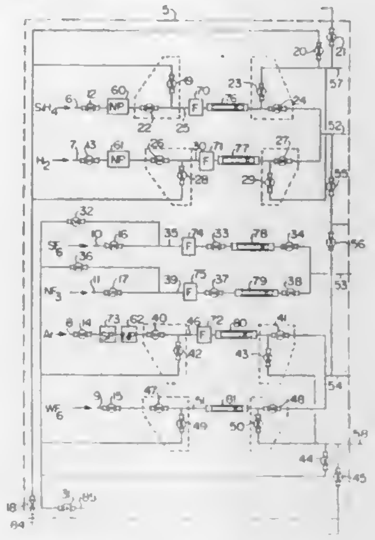
GAS CONTROL TECHNIQUE FOR LIMITING SURGING OF GAS INTO A CVD CHAMBER

Keith J. Hansen, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 390,329, Feb. 17, 1995, Pat. No. 5,681,613, which is a division of Ser. No. 739,773, Jul. 29, 1991, Pat. No. 5,391,394, which is a continuation of Ser. No. 461,959, Jan. 8, 1990. This application May 6, 1997, Ser. No. 851,846

Int. Cl.⁶ C23C *16/44*

U.S. Cl. 427—248.1 **5 Claims**



1. A method performed by a structure for providing gases to a CVD chamber comprising:
providing one or more gases to one or more input ports;
opening a first valve connected downstream from one of said input ports for flowing a gas applied to one of said input ports into a gas line;
closing a second valve connected downstream from said first valve to prevent said gas from flowing into said CVD chamber;
detecting a flow rate of said gas through a mass flow controller connected between said first valve and said second valve;
opening a third valve connected to a vacuum line coupled to said gas line between said first valve and said second valve and controlling said mass flow controller to cause said gas to flow through said vacuum line such that a flow rate of said gas into said vacuum line is substantially equal to a flow rate to be used during processing of a semiconductor wafer in said CVD chamber;
closing said third valve; and
opening said second valve to cause said gas to enter said CVD chamber, thus allowing substantially no surging of said gas into said CVD chamber.

5,853,805

APPARATUS AND PROCESS FOR FORMING ELECTRODES OF ELECTRONIC COMPONENTS

Takashi Mizuguchi; Shushi Saoshita, and Manabu Sumita, all of Toyama, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

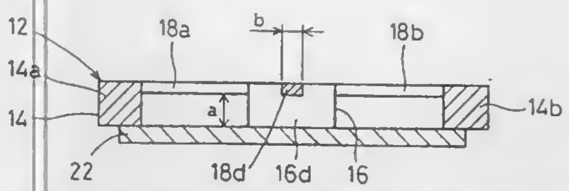
Filed Sep. 23, 1996, Ser. No. 717,930

Claims priority, application Japan, Sep. 28, 1995, 7-276552

Int. Cl.⁶ B05D *5/12;* **C23C** *16/00;14/00*

U.S. Cl. 427—250 **5 Claims**

1. A process for forming at least one electrode of an electronic component, comprising the steps of:
preparing a work;
preparing a mask including two principal planes and at least one through-hole extending from one of the principal planes of the mask to the other principal plane, at least one masking portion adapted to be brought into contact with a predetermined portion of the work to completely shield the predetermined portion of the work, and at least one pseudo masking portion that is formed to have a bottom surface located spaced from a bottom surface of the at least one masking portion in a thickness direction of the mask for partially masking the work when the mask is disposed in contact with the work, the mask being formed such that a ratio b/a is less than 3, where a represents a distance between the bottom surface of the at least one pseudo masking portion and the bottom surface of the at least one masking portion, and b represents a width of the at least one pseudo masking portion;
placing the mask on an upper surface of the work; and
applying an electrode material over the mask onto the upper surface of the work by one of a sputtering process and a vapor deposition process to form an electrode on the work.



5,853,806

PROCESS FOR HOT DIP-COATING STEEL MATERIAL WITH MOLTEN ALUMINUM ALLOY BY ONE-STAGE COATING METHOD USING FLUX AND BATH OF MOLTEN ALUMINUM ALLOY METAL

Seijun Higuchi; Shigeru Nakano, and Toshiyuki Aishima, all of Tokyo, Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 577,371, Dec. 22, 1995, abandoned. This application Mar. 24, 1997, Ser. No. 822,762

Claims priority, application Japan, Jan. 10, 1995, 7-018507; Apr. 10, 1995, 7-109105

Int. Cl.⁶ B05D *3/04*

U.S. Cl. 427—310 **4 Claims**

1. A process for hot dip-coating a steel material with a molten aluminum alloy according to a one-stage metal alloy coating method using a flux, wherein said method consists essentially of:
removing an oxide layer which is present on a steel material surface,
conducting activating treatment for the steel material surface, and
(i) coating the steel material surface with a chloride flux solution consisting essentially of (a) at least one chloride selected from the group consisting of calcium chloride and magnesium chloride and (b) at least one chloride selected from the group consisting of potassium chloride, lithium chloride and sodium chloride and then drying the steel material surface, thereby forming a coating film of a dried chloride flux in an adhered amount of 1.5 g/m² to 30 g/m² on the steel material wherein the content of (i)(a) chloride flux component selected from the group consisting of calcium chloride and magnesium chloride, based on total weight of the chloride flux solution, satisfies the following range:

$$5\% \text{ by weight} \leqq \text{content } (a)/\{\text{content } (a)+\text{content } (b)\}\times 100 \leqq 70\% \text{ by weight}$$

and
(ii) then, dipping the thus treated steel material in a molten aluminum alloy coating bath containing a floating, molten fluoride-containing flux consisting essentially of (c) a fluoride containing aluminum, (d) at least one chloride selected from the group consisting of calcium chloride and magnesium chloride and (e) at least one chloride selected from the group consisting of potassium chloride, lithium chloride and sodium chloride, wherein the content of (ii) (c) fluoride-containing aluminum, based on total weight of the fluoride-containing flux, satisfies the following range:

$$15\% \text{ by weight} \leqq \text{content } (c)/\{\text{content } (c)+\text{content } (d)+\text{content } (e)\}\times 100 \leqq 60\% \text{ by weight}$$

thereby coating the steel material surface with aluminum alloy.

5,853,807

COMPOSITION, FOR USE IN PAINT, BASED ON A MIXTURE OF EMULSION(S) AND OF DISPERSION(S) OF POLYOL POLYMER AND COATING(S) PRODUCED THEREFROM

Bruno Langlois, Sainte Genevieve des Bois; Arnauld Ponce, Aubervilliers, and Gilles Guerin, Eaubonne, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 600,355, Feb. 12, 1996, Pat. No. 5,739,206. This application Feb. 2, 1998, Ser. No. 17,018

Int. Cl.⁶ B05D *3/02;3/04;3/16*

U.S. Cl. 427—340 **17 Claims**

1. A process of coating a surface comprising the steps of:
(1) coating said surface with a composition physically stable one month or more upon storage, consisting essentially of:
at least one masked polyisocyanate in the form of an aqueous emulsion whose mean size is between about 0.1 and about 10 micrometers; and
at least one polyhydroxylated polymer in the form of an aqueous dispersion whose mean size is between about 10 and about 200 nanometers, wherein the quantity of polyhydroxylated polymer(s) in the mixture in mass percent is at least equal to 35–0.75R or does not exceed 45–2R, R being equal to the ratio of the mean size (d_{50}) of the emulsion to that of the dispersion of polyhydroxylated polymer; and
(2) crosslinking said composition.

5,853,808

METHOD OF USING SILOXANE POLYMERS

Barry C. Arkles; Donald H. Berry, both of Dresher, and Lisa Kiernan Figge, Philadelphia, all of Pa., assignors to Gelest Inc., Tullytown, and University of Pennsylvania, Philadelphia, both of Pa.

Division of Ser. No. 527,051, Sep. 12, 1995, abandoned. This application Sep. 3, 1997, Ser. No. 922,613

Int. Cl.⁶ B05D *3/02*

U.S. Cl. 427—377 **20 Claims**

1. A method of forming a SiO_2-containing ceramic film on a substrate comprising applying a coating containing a siloxane polymer onto a substrate and processing the coated substrate in an atmosphere containing at least 0.5% relative humidity under conditions sufficient to convert the siloxane polymer into a SiO_2-containing ceramic film,
wherein the siloxane polymer comprises a polymeric reaction product containing at least about five up to about 75 silanol groups per 100 silicon atoms and obtained from the hydrolysis and condensation polymerization of an organosilane containing a β-substituted alkyl group, the organosilane having the general formula:

$$R_nSiX_{(4-n)}$$

where n is 1 or 2; X is a halogen selected from the group consisting of chlorine, bromine, fluorine, and iodine, or an alkoxy selected from the group consisting of methoxy, ethoxy and propoxy substituents; and R is an alkyl group having at least one but not more than two β-substituents that are electronegative.

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5,853,809

SCRATCH RESISTANT CLEARCOATS CONTAINING SUFACE REACTIVE MICROPARTICLES AND METHOD THEREFORE

Donald H. Campbell, Farmington; Janice E. Echols, Detroit, and Walter H. Ohrbom, Hartland Township, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Sep. 30, 1996, Ser. No. 723,436

Int. Cl.^{6} B05D *1/36*

U.S. Cl. 427—407.1 **9 Claims**

1. A method for forming a scratch resistant automotive coating comprising

I) applying to a substrate a pigmented basecoat composition;

II) forming a basecoat film of the coating composition applied in I);

III) applying to the basecoat film a clearcoat coating composition, wherein the clearcoat coating composition comprises

(A) a film forming binder system containing a crosslinkable resin and optionally a crosslinking agent reactive with the crosslinkable resin;

(B) substantially colorless inorganic microparticles, ranging in size from about 1 to 1000 nanometers prior to incorporation into the clearcoat composition, wherein the microparticles are reacted with a divalent coupling agent to form composite particles of the inorganic particles and coupling agent, said coupling agent comprising a backbone portion which is a polyvalent linking group having thereon a first functionality reactive with the inorganic particles, and a second functionality reactive with the crosslinkable resin;

(C) a solvent system for the crosslinkable resin, optional crosslinking agent, and microparticles, wherein the crosslinkable resin is present in an amount from about 10 to about 80% by weight and the inorganic microparticles are present in an amount from 0.1 to 60.0% by weight based on the sum of the weights of the crosslinkable resin, the optional crosslinking agent, and the inorganic microparticles; and

IV) baking the basecoat and clearcoat either separately or together to form a cured film on the substrate.

5,853,810

METHOD OF PREVENTING STATICS FOR SPACE STRUCTURE

Feng Zhang, and Mengqi Yu, both of Shanghai, China, assignors to Baoshan Iron and Steel (Group) Corporation, Shanghai, China

PCT No. PCT/CN95/00073, § 371 Date Mar. 10, 1997, § 102(e) Date Mar. 10, 1997, PCT Pub. No. WO96/08620, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 12, 1995, Ser. No. 793,686

Claims priority, application China, Sep. 12, 1994, 94 1 15525.0

Int. Cl.^{6} B05D *1/38;3/12;5/12*

U.S. Cl. 427—407.1 **9 Claims**

1. A method of preventing statics for bulk space structure, comprising:

forming said bulk space structure with antistatic wall(s), a ceiling and a ground, and at least one selected from glass doors and glass windows;

coating said wall(s), ceiling and ground of said bulk space structure with a multi-layer antistatic material wherein each of said wall(s), ceiling and ground comprises a base layer, an interlayer, and a top layer;

said base layer being prepared by clearing up surfaces of the wall(s), ceiling and ground, smoothing portions thereof by filling an antistatic filling material thereinto, and after a period of about 5 to about 10 hours, scraping the entire surface of the base layer smooth and compacting the same between 1 and 4 times;

said interlayer layer being prepared by spray-coating, brush-coating or roll-coating the base layer with an antistatic coating material, wherein the wet-thickness is about 0.3 to about 2 mm, drying for about 5 to about 26 hours, and repeating the interlayer layer coating up to four times;

said top layer being prepared by spray-coating, brush-coating or roll-coating the interlayer layer with an antistatic coating material, wherein the wet-thickness is about 0.1 to about 0.4 mm, drying for about 2.5 to about 8 hours, and repeating the top layer coating at least once to up to 5 times; and

preparing at least one selected from glass doors and glass windows by roll-coating, spray-coating or brush-coating onto said at least one selected from glass doors and glass windows a transparent antistatic material, wherein the wet-thickness of about 0.1 to about 0.3 mm, drying for about 1 to about 3 hours, and repeating the transparent coating at least once to up to 8 times.

5,853,811

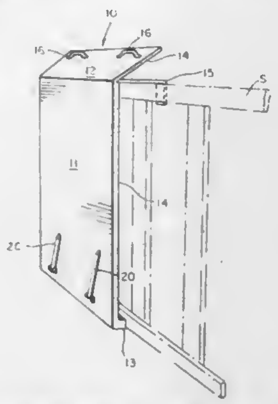
SPRAY SHIELD

David Poague, P.O. Box 2038, Manassas, Va. 22110

Division of Ser. No. 581,216, Dec. 29, 1995, Pat. No. 5,688,329. This application Jul. 28, 1997, Ser. No. 901,623

Int. Cl.^{6} B05D *1/02;1/32;* **B05B** *1/28*

U.S. Cl. 427—421 **19 Claims**



1. A method of confining and collecting excess spray/mist when treating an article, the method including the steps of:

disposing a sheet of material rearwardly of said article;

providing a support member extending outwardly of said sheet of material from a point above the lower edge of said sheet of material, for engaging a fixed support and maintaining said sheet of material in a position behind the article to be treated;

providing a trough at the lower edge of said sheet of material; and

providing flanges about the remaining edges of said sheet of material, whereby the excess spray/mist will be confined and directed downwardly and over said sheet of material into said trough for disposal therefrom.

5,853,812

METHOD AND APPARATUS FOR PROCESSING SUBSTRATES

Tetsu Kawasaki, Yamanashi-ken, and Kimio Motoda, Kumamoto, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Aug. 7, 1997, Ser. No. 907,419

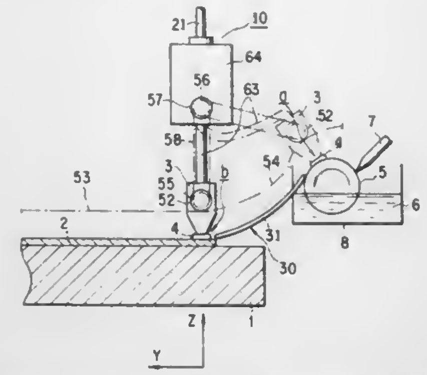
Claims priority, application Japan, Aug. 30, 1996, 8-249227

Int. Cl.^{6} B05D *1/02;* **B05B** *3/00;1/00*

U.S. Cl. 427—421 **14 Claims**

1. A method for processing substrates, comprising the steps of:

(a) disposing a substrate on a supporting table such that the peripheral portion of the substrate is located in an operating position, followed by preparing a nozzle and a contact member in a waiting position apart from the substrate disposed on the supporting table and further preparing removing means in a position intermediate between said waiting position and an operating position;



(b) adhering a solvent to said contact member in the waiting position and moving the contact member relative to said nozzle so as to bring the process solution present in the solution discharge port of the nozzle into contact with the solvent adhered to the contact member adjust the condition of the process solution present in the solution discharge port of the;

(c) spurting the process solution from the nozzle while moving the nozzle from the waiting position to an operating position through said removing means so as to allow the process solution spurted from the nozzle to be deposited on the removing means; and

(d) spurting the process solution from the nozzle while moving said substrate and the nozzle relative to each other so as to form a film of the process solution on the substrate.

5,853,813

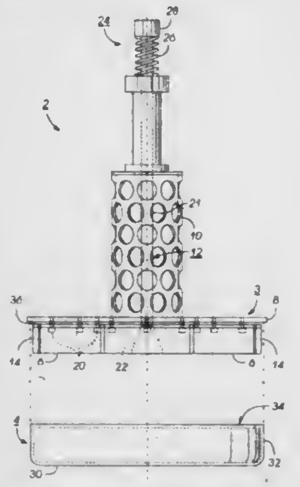
SUBSTRATE INTERIOR PRESSURE CONTROL METHOD

John S. Chambers, Rochester; Bryan M. Knauss, Webster; Huoy-Jen Yuh, Pittsford, and Robert T. Cosgrove, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 11, 1997, Ser. No. 799,681

Int. Cl.^{6} B05D *1/18*

U.S. Cl. 427—430.1 **5 Claims**



1. A substrate coating method comprising:

(a) positioning a hollow substrate having a first end and an open second end in a solution, wherein the open second end is submerged in the solution, wherein gas is present in the hollow portion of the substrate between the solution and the first end, thereby defining a quantity of trapped gas molecules;

(b) removing the substrate from the solution;

(c) changing the quantity of the trapped gas molecules by (i) withdrawing a portion of the trapped gas molecules, or (ii) introducing additional gas molecules into the hollow portion, wherein (i) and (ii) are accomplished through the second end of the substrate, thereby controlling the pressure of the gas in the hollow portion; and

(d) depositing a coating on the exterior surface of the hollow substrate.

5,853,814

PROCESS FOR FOAM TREATING PILE FABRICS

Peter Michael Murphy, Ooltewah, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 707,687, Sep. 4, 1996, abandoned. This application Sep. 22, 1997, Ser. No. 935,328

Int. Cl.^{6} B05D *1/18;3/00;* **D06M** *11/00*

U.S. Cl. 427—434.6 **8 Claims**

1. A process comprising applying a treating agent in the form of a foam to fibrous material said foam having a half life of from about 2 to about 5 minutes and a blow ratio of from about 2:1 to about 6:1 at a wet pick up of from about 80% to about 150% using liquid application equipment wherein said material is passed through a chemical bath containing the treating agent.

5,853,815

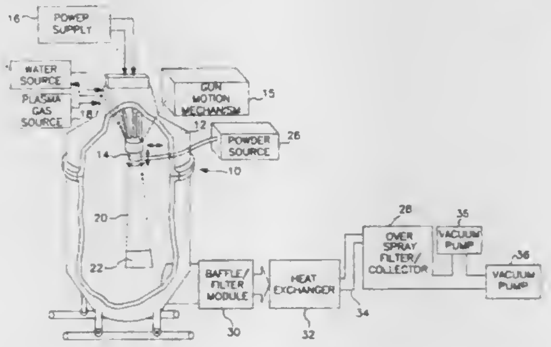
METHOD OF FORMING UNIFORM THIN COATINGS ON LARGE SUBSTRATES

Erich Muehlberger, San Clemente, Calif., assignor to Sulzer Metco AG, Wohlen, Switzerland

Continuation of Ser. No. 667,116, Jun. 19, 1996, abandoned, which is a division of Ser. No. 292,399, Aug. 18, 1994, Pat. No. 5,679,167. This application Sep. 2, 1997, Ser. No. 922,001

Int. Cl.^{6} B05D *1/08*

U.S. Cl. 427—446 **15 Claims**



1. A method of forming a coating on a substrate with a plasma gun, comprising the steps of:

providing a plasma gun and a substrate;

operating the plasma gun to produce a plasma stream which flows from the plasma gun to the substrate, the step of operating including introducing a plasma gas into the plasma gun to establish plasma gas operating conditions;

introducing coating material into the plasma stream within the plasma gun so that the coating material is carried by the plasma stream to the substrate to form a coating on the substrate;

providing an ambient pressure outside of the plasma gun and an internal pressure within the plasma gun which is substantially larger than and forms a relatively large ratio with the ambient pressure; and

providing the plasma gun with an exit configuration for the plasma stream through an opening which, for the plasma gas, plasma gas operating conditions and the ratio of the internal pressure with the ambient pressure, causes the plasma to undergo substantial expansion, with accompanying shock waves and turbulence, as the plasma stream exits the plasma gun, so that enough energy is contained in the plasma stream to provide a relatively uniform coating of the coating material on the substrate, over a region of the substrate many times wider than the width of the opening of the plasma gun.

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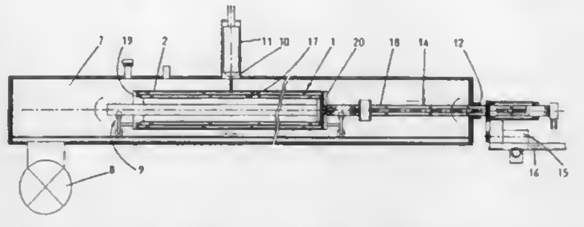
5,853,816

METHOD OF COATING A SPUTTER CATHODE WITH A LAYER OF MATERIAL TO BE APPLIED TO A SUBSTRATE BY SPUTTERING

Johan Vanderstraeten, Drongen-Gent, Belgium, assignor to Emiel Vanderstraeten, Gent, Belgium
Continuation of Ser. No. 310,420, Sep. 22, 1994, abandoned, which is a division of Ser. No. 92,115, Jul. 14, 1993, abandoned. This application Feb. 4, 1997, Ser. No. 794,058
Claims priority, application Belgium, Jul. 15, 1992, 09200664
Int. Cl.^{6} C23C *4/04*
U.S. Cl. 427—452 **18 Claims**



1. A method for coating of a sputter cathode with a layer of material that is to be applied to a substrate by means of sputtering, said method comprising the steps of:

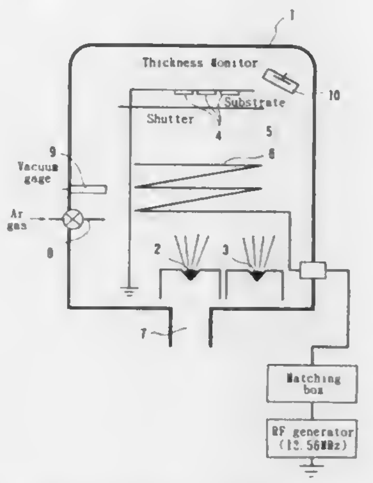
a) forming conductive particles consisting of silicon particles coated with a conductive film selected from the group consisting of aluminum, nickel and an aluminum-nickel alloy; and

b) vacuum plasma-metal spraying said particles on to an electrically conductive carrier to form a layer of material that can be applied to a substrate by means of sputtering.

5,853,817

METHOD FOR PRODUCING A THIN FILM RESIN MATRIX

Yoichi Murayama, Tokyo, Japan, assignor to C. Itoh Fine Chemical Co., Ltd., and Yoichi Murayama, both of Japan
Continuation of Ser. No. 581,370, Dec. 29, 1995, abandoned. This application Nov. 20, 1997, Ser. No. 974,998
Claims priority, application Japan, Sep. 18, 1995, 7-238861
Int. Cl.^{6} C08F *2/46*
U.S. Cl. 427—488 **14 Claims**

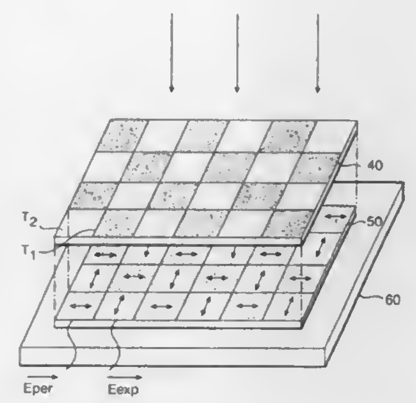


1. A method forming a thin film resin matrix on a substrate as a black matrix of a color filter formed from organic pigments of different colors, which comprises the steps of vaporizing organic pigments of different colors, which are capable of vaporizing upon heating, onto a substrate, forming a thin film resin matrix on said substrate by plasma exciting deposition using an RF generating source, said thin film resin matrix having an optical density of up to 3 and a reflectance of about 2%, throughout the entire visible radiation region within a wavelength range of 380 to 700 nm.

5,853,818

METHOD FOR MANUFACTURING MULTI-DOMAIN LIQUID CRYSTAL CELL

Soon Bum Kwon; Jong Hyun Kim, both of Seoul, Rep. of Korea; Oleg Yaroshchuk, Kyyiv, and Andrey Dyadyusha, Kiev, both of Ukraine, assignors to LG Electronics, Inc., Seoul, Rep. of Korea
Filed Mar. 11, 1997, Ser. No. 815,110
Claims priority, application Rep. of Korea, Jul. 29, 1996, 1996-30940
Int. Cl.^{6} C08J *7/04*
U.S. Cl. 427—510 **30 Claims**



1. A method for controlling an alignment direction in a liquid crystal (LC) cell, comprising the steps of:

providing a photosensitive alignment layer, wherein when said photosensitive alignment layer is subjected to an energy dose, said alignment layer aligns in a first alignment direction if said energy dose is within a first predetermined energy dose range and aligns in a second, different alignment direction if said energy dose is within a second predetermined energy dose range, said second predetermined energy dose range is different than said first predetermined energy dose range;

subjecting a first portion of said photosensitive alignment layer to a first energy dose within said first predetermined energy dose range to impart said first alignment direction in said first portion of said photosensitive alignment layer; and

subjecting a second portion of said alignment layer to a second energy dose within said second predetermined energy dose range to impart said second alignment direction in said second portion of said photosensitive alignment layer.

5,853,819

IMAGING ELEMENT COMPRISING AN ELECTRICALLY CONDUCTIVE LAYER FORMED BY A GLOW DISCHARGE PROCESS

Mark Lelental, Rochester; Bradley Keith Coltrain, Fairport; David Appler Glocker, West Henrietta; Dennis R. Freeman, Spencerport, and Jeremy Matthew Grace, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 439,199, May 11, 1995, abandoned, which is a division of Ser. No. 297,993, Aug. 30, 1994, abandoned. This application Oct. 24, 1996, Ser. No. 738,948
Int. Cl.^{6} B05D *3/06*; G03C *1/85*
U.S. Cl. 427—537 **8 Claims**

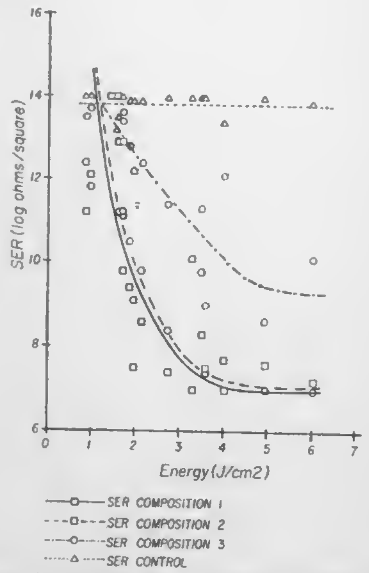
1. A method for the manufacture of an electrically-conductive material that is useful as a base for a photographic element; said method comprising the steps of:

(1) providing a polymeric support;

(2) forming a coating composition comprising a metallo-organic compound and a film-forming binder;

(3) coating a non-conductive layer of said coating composition on the surface of said support; and

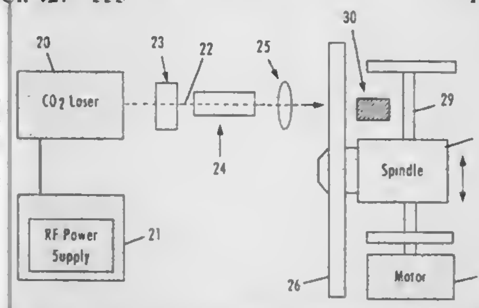
(4) subjecting said non-conductive layer to glow discharge treatment in an oxygen containing atmosphere for a period of time of from 0.3 seconds to 15 seconds wherein the metallo-organic compound is decomposed and the layer is rendered electrically-conductive.



5,853,820

CONTROLLED LASER TEXTURING GLASS-CERAMIC SUBSTRATES FOR MAGNETIC RECORDING MEDIA

David Kuo, Castro Valley, and Don Polensky, San Jose, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Jun. 23, 1997, Ser. No. 880,368
Int. Cl.^{6} B05D *3/00*
U.S. Cl. 427—555 **19 Claims**



1. A method of manufacturing a magnetic recording medium, which method comprises:

texturing a surface of a glass-ceramic substrate with a pulsed, focused laser light beam to form a plurality of protrusions on and extending above the substrate surface; wherein the crystalline phase of the glass-ceramic substrate is less than about 70% by volume.

5,853,821

METHOD OF PROTECTING A PART MADE OF A CARBON-CONTAINING COMPOSITE MATERIAL AGAINST OXIDATION

Aline Balhadere, Vendays Montalivet; Jacques Thebault, Bordeaux, and Bruno Bernard, Pessac, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France
Continuation of Ser. No. 429,816, Apr. 27, 1995, abandoned. This application May 16, 1997, Ser. No. 857,434
Claims priority, application France, Nov. 4, 1994, 94 13179
Int. Cl.^{6} B06B *1/20*
U.S. Cl. 427—601 **14 Claims**

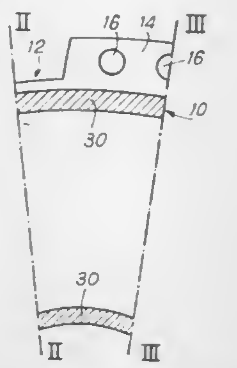
1. A method for the protection against oxidation of a part made of a composite material containing carbon and presenting open internal residual pores, said method comprising the steps of:

in-depth treating a part made of a composite material by introducing an aqueous solution into open internal pores of the composite material, the aqueous solution including a wetting agent,

drying the part to leave a deposit of said wetting agent in the internal pores of the composite material,

thereafter impregnating the part with an impregnation composition comprising a solution of at least one phosphate, said wetting agent deposit imparting to the composite material increased wettability by the impregnation composition to allow substantial in-depth penetration of the impregnation composition into the internal pores of the composite material, and

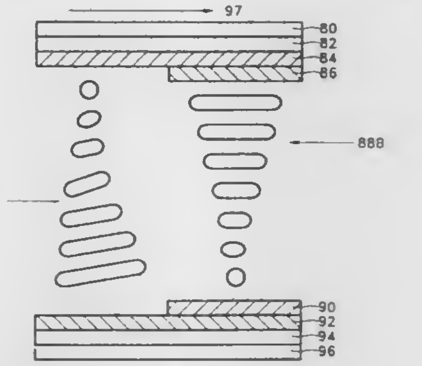
heat-treating the impregnated part to obtain an internal phosphate type protection against oxidation that is substantially anchored within the volume of the composite material.



5,853,822

LIQUID CRYSTAL DISPLAY AND MANUFACTURING METHOD THEREFOR

Jae-jin Lyu, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Oct. 30, 1996, Ser. No. 739,570
Claims priority, application Rep. of Korea, Oct. 31, 1995, 95-39036
Int. Cl.^{6} G02F *1/1337*
U.S. Cl. 428—1 **12 Claims**



1. A liquid crystal display comprising:

upper and lower substrates having electrodes formed thereon and facing each other;

liquid crystal material held between said upper and lower substrates;

a first alignment layer formed on said upper and lower substrates and formed of a material which aligns longer axes of molecules of said liquid crystal material parallel to each plane of said substrates and is aligned perpendicular to a rubbing direction; and

a second alignment layer pattern formed on said first alignment layer and formed of a material which aligns longer axes of said molecules of liquid crystal material parallel to each plane of said substrates and is aligned parallel to said rubbing direction.

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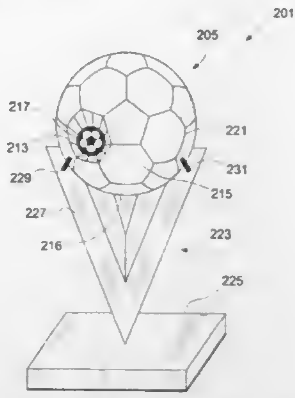
5,853,823
SPORTS AWARD PLURAL COMPONENT DISPENSER DEVICE

Paul A. McKenna, Ocean Crest, 14 Washington Rd. Suite 312, Princeton Junction, N.J. 08550

Continuation-in-part of Ser. No. 657,280, Jun. 4, 1996. This application Feb. 14, 1997, Ser. No. 801,901

Int. Cl.^{6} A47G *7/00*

U.S. Cl. 428—7 **18 Claims**



1. A plural component dispenser device, which comprises:

(a) support means for supporting a framework of an object, said support means having a base and a plurality of adjacent hollow holders for holding a plurality of separate, removable insert pieces, each holder being connected to its adjacent holders and having a polygonal shaped cross-section and a generally conically-shaped length;

(b) a plurality of separate, removable insert pieces, each insert piece sized and shaped to be removably inserted into a corresponding said holder; and,

(c) a plurality of covers openably connected to each of said plurality of insert pieces.

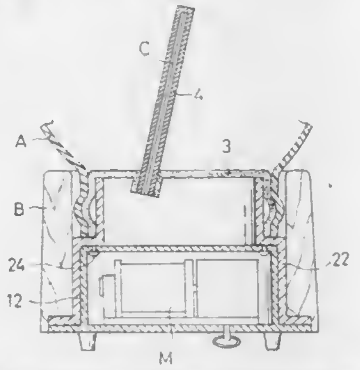
5,853,824
CRYSTAL BALL STRUCTURE WITH CHANGEABLE BALL APPEARANCE

Jack Liu, No. 3, Alley 202, Kao-Fon Rd., Hsin-Chu City, Taiwan

Filed Jul. 15, 1996, Ser. No. 678,604

Int. Cl.^{6} G09F *19/00*

U.S. Cl. 428—11 **9 Claims**



1. A crystal ball structure having a changeable ball appearance, said crystal ball structure comprising:

a base including
  a bottom plate,
  a cylindrical body fixed to said bottom plate, said cylindrical body having an upper portion, and
  a plate surface covering the upper portion of said cylindrical body, said plate surface having a coupling hole passing therethrough;
a fixing base fitting over said base, said fixing base including
  a nose portion on an inside of said fixing base, said nose portion extending through said coupling hole and engaging said plate surface;
  a fixed portion fitting over said cylindrical body of said base,
  a sectional difference portion extending inward from said fixed portion, and
  a neck portion extending up from said sectional difference portion;
a rubber plug base fitting around said neck portion of said fixing base, said rubber plug base having an assembly hole passing therethrough;
a transparent box in communication with said assembly hole of said rubber plug base, said transparent box having an open end passing therethrough;
a support means in said transparent box for supporting a decorative plate within said transparent box; and
a globe joined with said rubber plug base to form a liquid tight seal, whereby said transparent box and said support means extend from said rubber plug base into said globe.

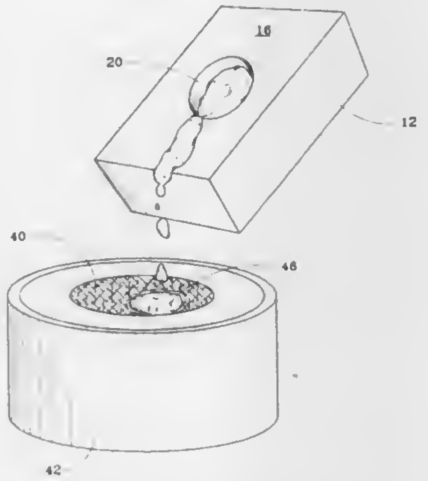
5,853,825
FREE FORM NUGGET AND METHOD OF CASTING

Donald Homer Parsons, 1003 NE. Lybarger, Olympia, Wash. 98501

Filed May 8, 1996, Ser. No. 646,942

Int. Cl.^{6} B22D *25/02;29/00*

U.S. Cl. 428—15 **17 Claims**



1. A method for casting free-form metal nuggets comprising:
a. placing rock salt inside an open cannister;
b. forming a depression in an upper surface of the rock salt;
c. pouring molten metal into the depression;
d. permitting the metal to cool to form a solid metal nugget;
e. removing the nugget from the cannister; and
f. washing the rock salt away from the surface of the nugget.

5,853,826
METHOD OF IMPROVING THE COLOR OF TRANSPARENT MATERIALS

Steven F. Starcke; Ronald H. Kearnes; Keven E. Bennet, and David A. Edmonson, all of Rochester, Minn., assignors to Azotic Coating Technology, Inc., Rochester, Minn.

Filed Aug. 29, 1996, Ser. No. 704,992

Int. Cl.^{6} A44C *17/00*

U.S. Cl. 428—15 **16 Claims**

1. A method for enhancing optical properties of a decorative object being composed primarily of a transparent or translucent substrate comprising the step of vapor-coat a part of the surface of the substrate with a first layer of a first coating material at a low temperature, wherein the color of light reflected from the decorative object to a viewer changes with an angle of observation.

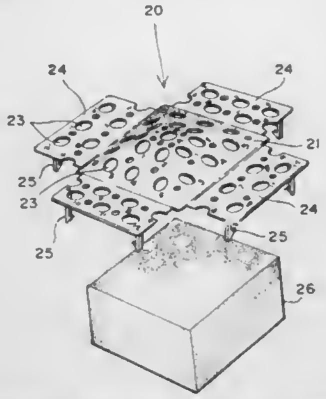
5,853,827
ARRANGER, CROWN, AND PATTERN FOR ARRANGEMENTS OF DECORATIVE ITEMS

Joanne T. Wise, Chicago, and Carolsue Peyton, Downers Grove, both of Ill., assignors to N.E. Good Idea, Inc., Oakbrook Terrace, Ill.

Filed Apr. 9, 1996, Ser. No. 631,693

Int. Cl.^{6} A01G *5/04;* **A47G** *7/00*

U.S. Cl. 428—23 **10 Claims**



1. A crown for use in a display of decorative elements, including flowers, in any combination, said crown comprising:
a central dome having lateral edges;
a plurality of skirts depending from the lateral edges of the central dome;
said central dome having an upper portion with a plurality of primary guides predeterminely positioned as apertures;
code indicia identifying each of said apertures; and,
all of said apertures being positioned and oriented for the reception of the decorative elements, including flowers, in any combination, in a penetrable medium positioned beneath the crown.

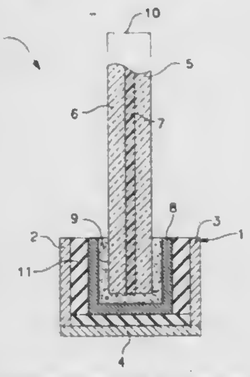
5,853,828
SAFETY GLASS STRUCTURE RESISTANT TO EXTREME WIND AND IMPACT

Julia C. Schimmelpenningh, North Brookfield, and John C. Hoagland, Longmeadow, both of Mass., assignors to Solutia Inc., St. Louis, Mo.

Filed Dec. 24, 1996, Ser. No. 772,919

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—34 **12 Claims**



1. A safety glass structure resistant to extreme wind- and impact-conditions, comprising:

(a) a frame forming an opening and defining an outer rigid channel;

(b) a laminated glass panel within the opening comprising first and second glass layers bonded to an interlayer of plasticized polyvinyl butyral;

(c) an inner rigid channel within the frame circumscribing the periphery of and bonded to said laminated glass panel by a self-sealing adhesive which permits no or minimal relative movement between the border area of the panel and said inner rigid channel; and

(d) said inner rigid channel being mounted in and bonded to the outer rigid channel with a resilient material which permits the panel to flex within its border when exposed to said extreme wind- and impact-conditions.

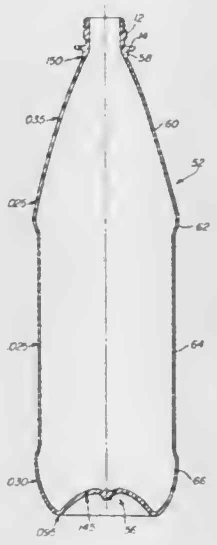
5,853,829
REFILLABLE POLYESTER CONTAINER AND PREFORM FOR FORMING THE SAME

Suppayan M. Krishnakumar, Nashua; Wayne N. Collette, Merrimack, and Thomas E. Nahill, Amherst, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Continuation of Ser. No. 312,890, Sep. 27, 1994, Pat. No. 5,599,496, which is a continuation of Ser. No. 55,860, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 758,801, Sep. 12, 1991, abandoned, which is a division of Ser. No. 488,247, Mar. 5, 1990, Pat. No. 5,066,528. This application Jan. 29, 1997, Ser. No. 790,571

Int. Cl.^{6} B29C *49/06;* **B29D** *23/00*

U.S. Cl. 428—35.7 **16 Claims**



1. A preform for use in blow molding a container suitable for refilling, the preform being an injection molded polyester member having:
a closed bottom end and an open top end;
a neck finish at the open top end;
a body-forming portion which on blow molding will form a body of the container;
a shoulder-forming portion disposed between the neck finish and the body-forming portion and which on blow molding will form a shoulder of the container; and
a base-forming portion which on blow molding will form a base of the container, the base-forming portion having a generally hemispherical outer surface at the closed bottom end and a thickened portion between the bottom end and the body forming portion, the thickened portion having an increased wall thickness as compared to the wall thickness of the body-forming portion;
characterized in that the base-forming portion has a generally hemispherical inner surface at the bottom end and the thickened portiom has an upper cylindrical portion of the increased wall thickness and a lower tapered portion which gradually reduces in wall thickness towards the bottom end.

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5,853,830

TRANSPARENT BARRIER COATINGS EXHIBITING REDUCED THIN FILM INTERFERENCE

James A. McCaulley, Clinton, and Michael A. Hubbard, Somerset, both of N.J., assignors to Hoechst Trespaphan GmbH, Germany

Continuation-in-part of Ser. No. 662,839, Jun. 12, 1996, abandoned. This application Jun. 6, 1997, Ser. No. 870,575

Int. Cl.⁶ B32B *9/04*

U.S. Cl. 428—35.7 **25 Claims**

1. A barrier-coated polymeric article comprising a polymeric substrate coated with an inorganic barrier layer, said barrier layer formed by drying on the surface of said article a coating solution comprising a metal polysilicate solution and nanocrystalline titanium dioxide, wherein said coated article is characterized by impermeability to gases, vapors, and aromas, and reduced interference between light reflected from the surface of said barrier layer and the interface between said barrier layer and the polymeric substrate.

5,853,831

VIBRATION WELDED HOLLOW MOLDINGS OF POLYAMIDE RESIN COMPOSITION

Hiroshi Urabe; Hajime Oyama, and Tatsuya Hitomi, all of Hiratsuka, Japan, assignors to Mitsubishi Engineering-Plastics Corporation, Japan

Filed Jul. 21, 1997, Ser. No. 897,316

Claims priority, application Japan, Jul. 30, 1996, 8-215921

Int. Cl.⁶ B29D *22/00*

U.S. Cl. 428—35.7 **13 Claims**

1. A vibration-molded hollow product comprising a polyamide resin composition which comprises

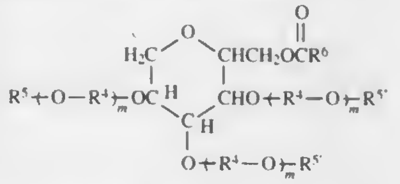
(a) 40 to 89.97% by weight of the resin composition of a polyamide resin,

(b) 10 to 59.97% by weight of the resin composition of a glass fiber, and

(c) 0.03 to 10% by weight of the resin composition of a compound represented by the following formula (1) or formula (2):

$$R^2-O\left(R^1-O\right)_n R^3 \qquad (1)$$

where R^1 represents $—CH_2—$, $—CH_2—CH_2—$ or $—CH(CH_3)—CH_2—$; R^2 represents an alkyl group, an alkenyl group, an alkylcarbonyl group, an alkenylcarbonyl group or a phenyl group; R^3 represents a hydrogen atom, an alkyl group, an alkenyl group or a phenyl group, and R^2 and R^3 do not represent a phenyl group simultaneously; and n is an integer of 1 to 200.



(2)

where R^4 represents $—CH_2—$, $—CH_2—CH_2—$ or $—CH(CH_3)—CH_2—$; R^5, $R^{5'}$, $R^{5''}$ represent independently a hydrogen atom, an alkyl group, an alkenyl group, or a phenyl group; R^6 represents an alkyl group, an alkenyl group or a phenyl group; and m is an integer of 1 to 200.

5,853,832

OIL APPLICATION ROLL FOR ELECTROPHOTOGRAPH FIXATION AND METHOD OF FABRICATING THE SAME

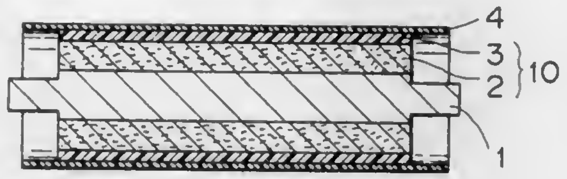
Youichi Ishikawa, Tokyo, Japan, assignor to Nitto Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 774,817

Claims priority, application Japan, Dec. 28, 1995, 7-342452

Int. Cl.⁶ G03G *15/20*

U.S. Cl. 428—36.2 **6 Claims**



1. An oil application roll for electrophotograph fixation, comprising:

a roll base;

an oil holder provided on said roll base; and

a porous fluororesin surface layer provided on said oil holder, wherein said porous fluororesin surface layer has a maximum pore diameter of 0.1 μm or less, an air permeability of 500 to 6000 s/100 cc, and a surface roughness of Ra 0.5 μm or less for ensuring to supply a suitable oil quantity over a long period of time without toner blinding and for realizing a long serviceable life without image fouling due to toner adhesion.

5,853,833

SANITARY CONTAINER AND PRODUCTION PROCESS THEREOF

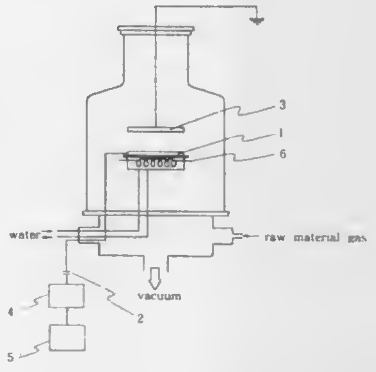
Morihiro Sudo, and Yasushi Kawachi, both of Tokyo, Japan, assignors to Daikyo Seiko, Ltd., Tokyo, Japan

Filed Feb. 14, 1997, Ser. No. 801,112

Claims priority, application Japan, May 20, 1996, 8-147837

Int. Cl.⁶ C08L *65/00*

U.S. Cl. 428—36.6 **6 Claims**



1. A sanitary container comprising:

a base container made of a ring-opened homopolymer of a cyclic olefin monomer or a hydrogenation product thereof; and

an inorganic coating formed on a surface of said base container, wherein said inorganic coating is a diamond-like carbon coating, a modified carbon coating, a titanium oxide coating, a silicon oxide coating, a silicon carbide coating, or a silicon nitride coating and has a thickness in a range of 0.1 to 1 μm.

5,853,834

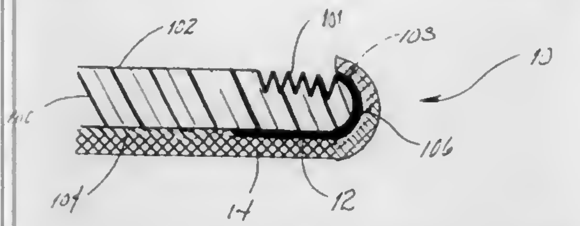
METALLIZED LAYER CORROSION PROTECTION SYSTEM FOR PIPE OR TUBING

Al Siegmund, Houston, Tex., assignor to ICO, Inc., Houston, Tex.

Continuation of Ser. No. 508,488, Jul. 28, 1995, abandoned. This application Sep. 3, 1997, Ser. No. 922,738

Int. Cl.⁶ C23C *4/08;* **B29D** *22/00*

U.S. Cl. 428—36.9 **3 Claims**



1. A system for increasing the serviceability of a primarily internally coated section of metal pipe or tubing to be used with oil and gas wells once a break caused by mechanical contact or rough handling has occurred in that portion of said internal coating which is present on the interior and partially along the exterior of the end portion of said primarily internally coated section of metal pipe or tubing, said system comprising:

a hollow metal cylinder having an internal diameter, and further including an end portion said end portion, including an interior wall, an end wall, and a chamfer; said hollow metal cylinder having a first protective organic coating along said internal diameter and over said end portion;

a second continuous, non-corrosive metallized layer having a porosity of about 1% under that area of the coating formed on said end portion of said primarily internally coated hollow metal cylinder;

said continuous, non-corrosive metallized layer extending:

inwardly along said interior wall of said hollow metal cylinder from said end wall for a length equal to about one internal diameter,

over said end wall, and

over said chamfer;

said continuous, non-corrosive metallized layer being applied by a high-velocity, oxygen-feed, metal spray system using a metal selected from a group including stainless steel, nickel-chromium alloy, or non-corrosive metals.

5,853,835

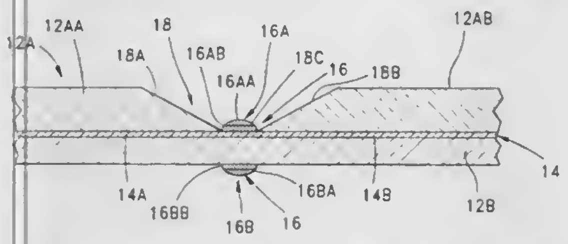
LAMINATED AND BEVELED SAFETY GLASS PANEL

Scott J. Leniton, 12046 Bethwood Ave., New Port Richey, Fla. 34668

Continuation-in-part of Ser. No. 598,964, Feb. 9, 1996, abandoned. This application Oct. 6, 1997, Ser. No. 944,724

Int. Cl.⁶ B44F *1/06*

U.S. Cl. 428—38 **3 Claims**



1. A laminated and beveled glass panel, offering resistance to hurricane force winds, comprising a first tempered glass panel and a second annealed glass panel with an intermediate layer of resin therebetween, at least a first beveled groove in said second annealed glass panel in communication with said layer of resin,

a first adhesive backed lead strip in said first beveled groove in contact with said layer of resin and at least a portion of the respective beveled sides of said grooves, and

a second adhesive backed lead strip vertically aligned with said first adhesive backed lead strip along the outer surface of said first tempered glass panel.

5,853,836

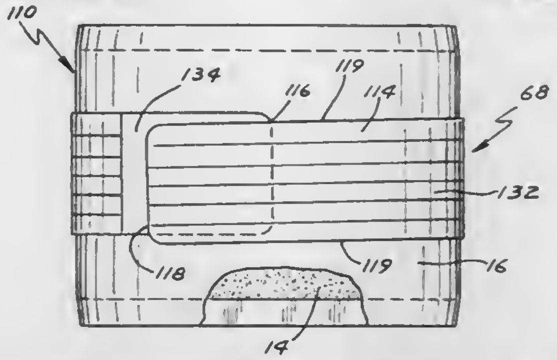
LABEL FOR A ROLLED FOOD ITEM

Robert A. Zoss, Plymouth, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jul. 7, 1997, Ser. No. 888,803

Int. Cl.⁶ A23L *1/00*

U.S. Cl. 428—40.1 **19 Claims**



1. Rolled food item comprising, in combination: a strip of material rolled into a roll including a periphery having a length, with the strip of material located on the outside of the roll and including a trailing edge located on the periphery of the roll: and a label including an inner surface; an outer surface; a leading end: a trailing end; at least first and second side edges: first means adjacent the leading end for adhering the inner surface to the strip of material, with the inner surface extending over the trailing edge of the strip of material; second means adjacent the trailing end for adhering the inner surface to either the strip of material or the outer surface, with the first and second means each having adhesive properties which are equal; and third means located intermediate the first and second means for adhering the inner surface to either the strip of material or the outer surface but with lesser adhesive properties than the first and second means, with the third means extending over the trailing edge of the strip of material.

5,853,837

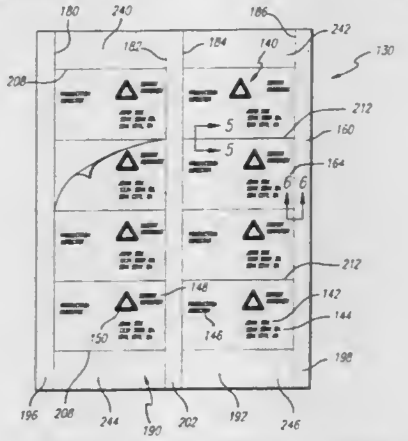
LASER OR INK JET PRINTABLE BUSINESS CARD SYSTEM

Ghanshyam H. Popat, Alta Loma, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 641,332, Apr. 30, 1996. This application Dec. 10, 1996, Ser. No. 764,713

Int. Cl.⁶ B32B *3/00*

U.S. Cl. 428—43 **49 Claims**



1. A sheet assembly for passing through a printer or copier and separating out into individual printed cards, comprising:

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a sheet;

first and second substantial-cut lines extending substantially the thickness of said sheet and extending the length or width of said sheet; and

parallel and spaced weakened separation lines extending perpendicular to and between said substantial-cut lines on said sheet;

wherein said separation lines and said substantial-cut lines define a column or row of card blanks; and

wherein said sheet is adapted to be passed through a printer or copier and desired indicia printed on said card blanks, which can then be separated from one another along said separation lines and said substantial-cut lines.

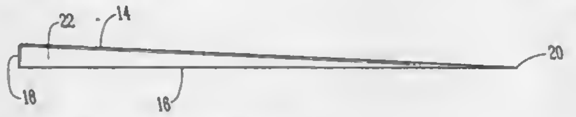
5,853,838
SHIM

Stanley J. Siems, Ackley; Jerry L. O'Donnell, and Robert J. Connell, both of Waterloo, all of Iowa, assignors to Doc's Prodocts L.C., Waterloo, Iowa

Filed May 23, 1997, Ser. No. 862,514

Int. Cl.^{6} B32B *31/18*

U.S. Cl. 428—43 **23 Claims**



1. An improved shim comprising:

a solid wedge-shaped body having opposite ends, top and bottom surfaces, and opposite sides, the top and bottom surfaces diverging between opposite ends; and

the body being made one-piece and of a moldable synthetic material that deters splintering, splitting and compression.

5,853,839
COMPOSITE DISK

Reinhold Schmeisser, Selb, Germany, assignor to Hoechst Ceramtec Aktiengesellschaft, Selb, Germany

Filed Mar. 19, 1996, Ser. No. 617,407

Claims priority, application Germany, Mar. 21, 1995, 195 10 204.5

Int. Cl.^{6} B32B *3/02*

U.S. Cl. 428—64.1 **20 Claims**

1. A composite disk useful as an inlet or regulating disk comprising:

a support disk that has a thickness of at least 0.6 mm, and

at least one hard material disk having a functional surface opposite the support disk, the hard material disk being joined by one or more of bonding, frictional fastening, forcelocking, formlocking, mechanical interlocking, and retention by self substance to the support disk, wherein the hard material disk has a thickness of from 0.05 to 2.5 mm and comprises a material having a Vickers microhardness of at least 1300 HV 0.5.

5,853,840
DUMMY WAFER

Kazuo Saito; Yasushi Mochizuki, and Seiji Yamamoto, all of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Jun. 20, 1997, Ser. No. 879,192

Claims priority, application Japan, Jun. 25, 1996, 8-185581

Int. Cl.^{6} B32B *18/00*

U.S. Cl. 428—64.1 **6 Claims**

1. A dummy wafer for use in a process for thin film formation on a wafer, said dummy wafer being made of a silicon carbide obtained by reacting a glassy carbon with silicon or with a silicon-containing gas.

5,853,841
FASTENER ASSEMBLY FOR A HIGH-STRENGTH CONNECTION TO A SUBSTRUCTURE

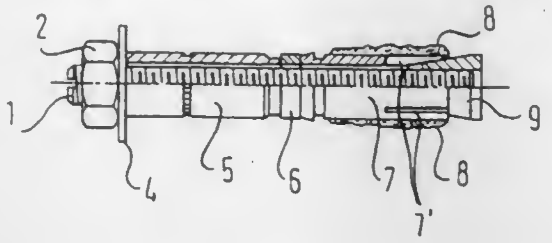
Jürgen Castor, Oberhausen; Harald Kollmann, Iserlohn, and Knut Jansen, Mülheim/Ruhr, all of Germany, assignors to ITW Befestigungssysteme GmbH, Germany

Filed Jan. 21, 1997, Ser. No. 785,677

Claims priority, application Germany, Jan. 20, 1996, 296 00 973 U

Int. Cl.^{6} F16B *13/06*

U.S. Cl. 428—99 **15 Claims**



1. An expandible dowel for insertion into a hole drilled within a substructure, comprising:

a body member;

a radially expandible member disposed upon said body member;

means operatively connected to said body member and movable relative to said body member and said radially expandible member for causing said radially expandible member to be radially expanded into contact with interior wall portions of a substructure, which define a hole into which said expandible dowel is to be inserted, when said means is moved relative to said body member and said radially expandible member; and

coating means comprising a curable adhesive disposed upon an outer peripheral surface portion of said radially expandible member for adhesively bonding said expandible dowel within a hole defined within a substructure into which said expandible dowel is to be inserted.

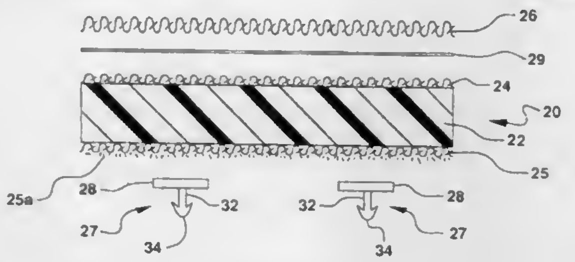
5,853,842
PROCESS FOR THE PRODUCTION OF A MULTI-LAYER COMPOSITE ARTICLE HAVING FASTENERS AFFIXED TO A SURFACE THEREOF AND THE ARTICLE PRODUCED THEREBY

Michael Gallagher, Hampton, N.H., and Steven Souders, Plymouth, Mich., assignors to Davidson Textron, Inc., Dover, N.H.

Division of Ser. No. 576,252, Dec. 21, 1995, Pat. No. 5,725,704. This application Jun. 25, 1997, Ser. No. 881,698

Int. Cl.^{6} A44B *18/00*

U.S. Cl. 428—99 **14 Claims**



1. A composite panel adapted to be affixed to a supporting structure comprising:

a base material;

a layer of a plurality of reinforcing fibers affixed to a surface of said base material by means of a thermosetting binder, said thermosetting binder permeating only a portion of said layer of reinforcing fibers but leaving another portion of said layer of reinforcing fibers free of said thermosetting binder; and

one or more fastening means formed of a thermoplastic resin affixed to said layer of reinforcing fibers with a portion of the thermoplastic resin of said fastening means dispersed among the portion of said layer of reinforcing fibers free of said thermosetting binder.

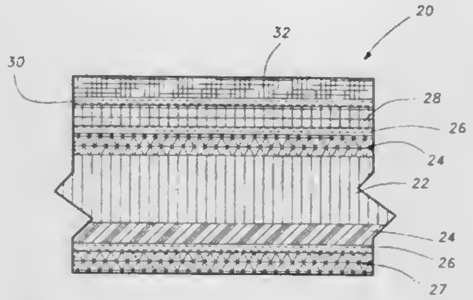
5,853,843
RECYCLABLE HEADLINER MATERIAL

Tushar M. Patel, Macomb Township; Stuart G. Boyd, North Street; Mark J. Brow, Allen Park, and Philip L. Guthrie, Farmington Hills, all of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Mar. 8, 1996, Ser. No. 614,827

Int. Cl.^{6} B32B *3/12*

U.S. Cl. 428—116 **17 Claims**



1. A vehicle headliner trim panel comprising:

a central honeycomb core formed of a moldable plastic material, said honeycomb core having two opposed outer faces;

pad layers disposed on each of said outer faces to create an I-beam combination with said core, each said pad layer being non-woven and formed of a combination of low melt and high melt fiber pieces, said low melt pieces will melt upon application of heat;

a decorative trim layer placed on a face of one of said pad layers spaced from said core; and

said core, said pad layers and said trim layer being shaped into a non-planar configuration.

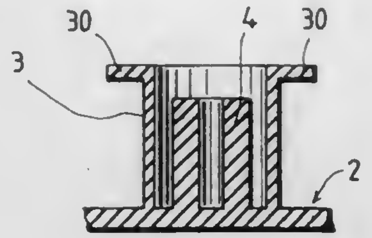
5,853,844
RUBBER PAD CONSTRUCTION WITH RESILIENT PROTRUSIONS

Keith Wen, 8F, No. 156-2, Sec. 1, Chuang-Ching Rd., Tao-Yuan City, Taiwan

Filed May 23, 1997, Ser. No. 862,622

Int. Cl.^{6} B32B *3/30*

U.S. Cl. 428—119 **3 Claims**



1. A rubber pad construction for a shoe, comprising a one-piece molded rubber substrate having a plurality of pairs of concentrically arranged outer taller and inner shorter protrusions which are formed unitarily with said substrate at intervals, said taller and shorter protrusions in each pair having tubular walls which extend substantially perpendicularly from said substrate and which are spaced apart radially from one another in all radial directions, thereby enabling said taller tubular protrusions to deform independently of said shorter tubular protrusions.

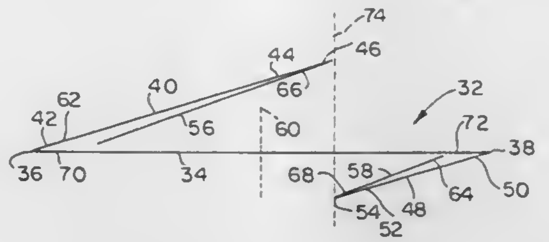
5,853,845
METHOD OF DISPENSING A FOLDED ABSORBENT PAPER PRODUCT

Wesley James McConnell, Glen Mills, Pa., and John Anthony Bound, Leigh-on Sea, United Kingdom, assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 397,398, Mar. 2, 1995, Pat. No. 5,565,258. This application Oct. 15, 1996, Ser. No. 732,569

Int. Cl.^{6} B32B *3/02*

U.S. Cl. 428—126 **2 Claims**



1. A method of dispensing a folded absorbent paper product, comprising:

(a) loading an improved folded absorbent paper product into a dispenser, the improved absorbent paper product including a first, central panel; a second panel, unitary with said first panel and folded over a first side of said panel; a third panel, unitary with said first panel, and folded over a second side of said first panel; said third panel not overlapping said second panel when said paper product lies flat such that said paper product is a constant thickness when flattened; a fourth panel, unitary with said second panel, and folded so as to be positioned between said first and second panels; and a fifth panel, unitary with said third panel, and folded so as to be positioned between said first and third panels; and

(b) removing said paper product from an opening of the dispenser by grasping said paper product at one of said second and fourth panels.

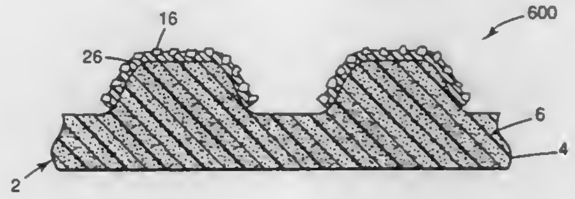
5,853,846
CONFORMABLE MAGNETIC ARTICLES UNDERLAID BENEATH TRAFFIC-BEARING SURFACES

Gary W. Clark, Lakeville; Thomas J. Dahlin, St. Louis Park; Richard E. Fayling, White Bear Lake; Bernard A. Gonzalez, St. Paul; David M. Hopstock, Roseville; Gregory F. Jacobs, Woodbury, and Robert L. Keech, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 15, 1996, Ser. No. 732,795

Int. Cl.^{6} E01F *11/00;* **B32B** *3/24*

U.S. Cl. 428—131 **16 Claims**



1. A conformable magnetic article for underlayment beneath a traffic-bearing surface to send a magnetic signal to a sensor traveling over the traffic-bearing surface, said magnetic article comprising at least one conformable magnetic layer comprising a binder and a sufficient amount of magnetic particles within the binder to provide the magnetic signal, the conformable layer being sufficiently conformable to meet the inelastic deformation test, wherein said article is perforated along its length.

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5,853,847
MAGNETIC RECORDING MEDIUM AND ITS MANUFACTURE

Migaku Takahashi, 20-2, Hitokida 2-chome, Taihaku-ku, Sendai-shi, Miyagi-ken 980, Japan

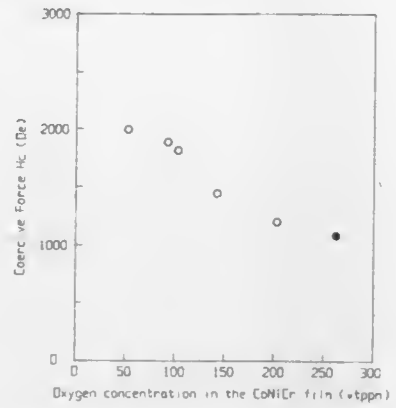
PCT No. PCT/JP94/01184, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/03603, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 19, 1994, Ser. No. 591,624

Claims priority, application Japan, Jul. 21, 1993, 5-201044; Jan. 24, 1994, 6-023326

Int. Cl.⁶ G11B *5/66*

U.S. Cl. 428—141 **34 Claims**



1. A magnetic recording medium wherein a ferromagnetic metallic layer is formed on a surface of a base body with a metallic base layer in between, which employs reversal of magnetization, characterized in that an oxygen concentration within crystal grains of said ferromagnetic layer is 100 wtppm or less.

5,853,848
BIODEGRADABLE FOAMED PRODUCT FROM A STARCH GRAFT COPOLYMER

Donald L. Fisk, Cuba, Ill., assignor to Uni-Star Industries, Ltd., Marion, Ark.

Continuation of Ser. No. 216,414, Mar. 23, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,449

Int. Cl.⁶ B32B *3/00;* **C08J** *9/06*

U.S. Cl. 428—143 **26 Claims**

1. A biodegradable foamed product consisting essentially of an expanded starch craft copolymer having a closed cell structure, said starch graft copolymer prior to expansion being a granular starch onto which has been grafted a thermoplastic polymer selected from the group consisting of poly(methyl acrylate), poly(butyl acrylate), poly(styrene), poly(methyl methacrylate), and blends thereof wherein the thermoplastic polymer is present in an amount of about 5 to about 60 weight percent by weight of copolymer, said foamed product having a closed cell structure making said product suitable as a packaging material.

5,853,849
BELT FOR FRICTIONALLY CONVEYING ARTICLES

Hiroyuki Nishio, and Kazutoshi Ishida, both of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Filed Sep. 18, 1996, Ser. No. 716,595

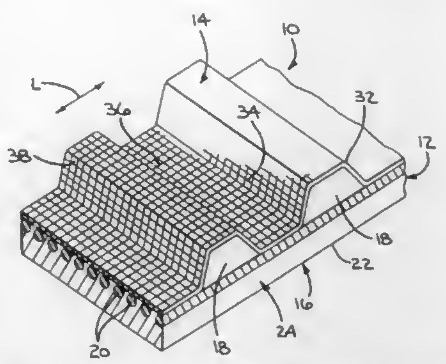
Claims priority, application Japan, Sep. 20, 1995, 7-267801; Aug. 9, 1996, 8-227464

Int. Cl.⁶ D06N *7/04;* **F16H** *7/00;* **F16G** *1/00*

U.S. Cl. 428—143 **46 Claims**

1. A belt for conveying articles, said belt comprising:

a body having a surface against which articles are placed to be frictionally held and thereby conveyed as the belt is advanced in operation,



said belt body surface comprising rubber and a porous filler in the rubber,

said porous filler comprises an inorganic porous powder selected from diatomaceous earth, zeolite, activated carbon or silica gel,

wherein said belt body surface is formed by grinding.

5,853,850
LUBRICANT FILM COATED STEEL SHEET WITH EXCELLENT PHOSPHATABILITY AND METHOD FOR PRODUCING SAME

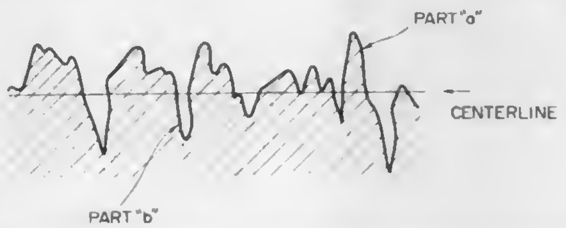
Masatoshi Iwai, and Hiroaki Nakano, both of Kakogawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 8, 1996, Ser. No. 745,923

Claims priority, application Japan, Nov. 13, 1995, 7-294555; Feb. 23, 1996, 8-036711; Jul. 16, 1996, 8-186231

Int. Cl.⁶ B32B *3/00;9/00;* **B05D** *3/02*

U.S. Cl. 428—148 **16 Claims**



1. A lubricant film coated steel sheet having excellent phosphatability, produced by forming a coating containing silicic acid or silicate on a steel sheet or a plated steel sheet, having micro-fine recesses and protrusions on the surface thereof,

wherein the surface roughness of the steel sheet or the plated steel sheet, prior to coating, is 0.5 to 1.5 μm as the centerline-average roughness RA and the total number of peaks of a size above 1.25 μm per 1-cm length PPI thereof is 75 to 300; and the content of silicic acid or silicate in the coating is 1 to 200 mg/m² as corrected into dried SiO_2 weight or the covered ratio of the coating is 1 to 60%.

5,853,851
PAVEMENT MARKING TAPE COMPRISING ACID-RESISTANT MICROSPHERES

Geoffrey P. Morris, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 704,171, Aug. 28, 1996, Pat. No. 5,716,706, which is a continuation of Ser. No. 423,890, Apr. 18, 1995, abandoned. This application Nov. 6, 1997, Ser. No. 965,337

Int. Cl.⁶ B32B *5/02*

U.S. Cl. 428—149 **19 Claims**

1. A pavement marking tape comprising a backing and a layer of acid-resistant glass microspheres carried on the backing, said microspheres comprising, on a theoretical oxide basis:

(a) about 25–45 wt-% SiO_2;

(b) about 20–35 wt-% TiO_2;

(c) less than about 5 wt-% B_2O_3;

(d) about 15–40 wt-% of an alkaline earth modifier selected from the group consisting of BaO, SrO, and mixtures thereof; and

(e) no greater than about 25 wt-% of an alkali metal oxide selected from the group consisting of Na_2O, K_2O, and mixtures thereof;

wherein the ratio of amount of SiO_2 to the total amount of alkaline earth modifier plus alkali metal oxide is greater than about 0.7.

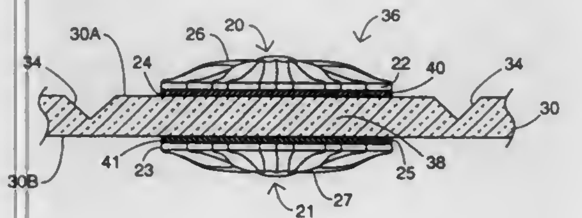
5,853,852
DECORATIVE GLASS SHEET WITH APPLIQUES

Keith L. Eichhorn, High Point, N.C., assignor to Glass Unlimited of High Point, Inc., High Point, N.C.

Filed May 9, 1996, Ser. No. 645,004

Int. Cl.⁶ B32B *3/28;* **B05D** *3/12;* **E06B** *3/66*

U.S. Cl. 428—167 **40 Claims**



1. A decorative glass sheet, comprising:

a) a glass panel having an upper surface and a lower surface;

b) an applique overlying a portion of said upper surface of said glass panel and having a periphery, an upper surface and a lower surface;

c) an adhesive coupler interposed between said upper surface of said glass panel and said lower surface of said applique, whereby said applique is secured to said glass panel by said adhesive coupler; and

d) at least one groove formed in said upper surface of said glass panel adjacent said periphery of said applique.

5,853,853
FLAT FILAMENTS PROVIDED WITH RIBS AND RAW FIBERS FOR PILE FABRICS

Yoshihiro Nishihara, Hiroshima; Hideo Masaoka, Osaka; Fumio Takemoto, Hiroshima; Seizo Oishi, Hiroshima, and Hiroshi Hosokawa, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Filed Apr. 25, 1997, Ser. No. 843,120

Int. Cl.⁶ B32B *3/28;* **D02G** *3/00*

U.S. Cl. 428—167 **15 Claims**

1. A flat filament having a substantially rectangular transverse cross-section, wherein said filament includes:

a flatness ratio (A/B) of 7 to 25, wherein A is a length of a longer side of said substantially rectangular, transverse cross-section, and B is a length of a shorter side of said substantially rectangular, transverse cross section;

a fineness of 0.5 to 40 denier;

at least one rib formed on said longer side, said at least one rib continuously extending in a longitudinal direction of said filament; and

each of said at least one rib having a width W and a height H, the number of said ribs on each longer side ranging from 1 to A/2W, said width W ranging from B/2 to 3B, and said height H ranging from B/2 to 2B.

5,853,854
RUGGED SHAPED SHEET AND PROCESS FOR MANUFACTURING SAME

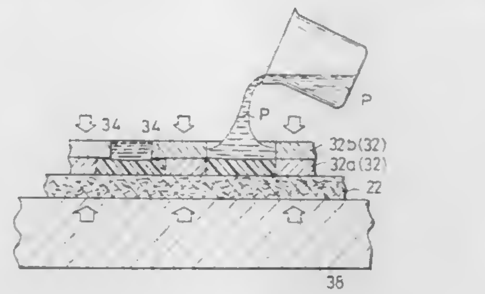
Motoyasu Nakanishi, Fuji, and Akira Takayama, Shimizu, both of Japan, assignors to Suzuki Sogyo Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 328,458, Oct. 25, 1994, abandoned, which is a division of Ser. No. 79,376, Jun. 21, 1993, Pat. No. 5,389,176. This application Oct. 20, 1997, Ser. No. 954,095

Claims priority, application Japan, Jun. 19, 1992, 4-185923; Oct. 21, 1992, 4-307574; Dec. 9, 1992, 4-351902; Feb. 26, 1993, 5-62843; Jun. 11, 1993, 5-166110

Int. Cl.⁶ B32B *3/00;* **A43B** *13/12*

U.S. Cl. 428—172 **16 Claims**



1. A rugged shaped sheet comprising:

a base sheet member; and

a rugged pattern of a predetermined shape adhered to said base sheet member;

said rugged pattern comprising at least two projections;

each of said projections comprising at least two solid cured elastomer pattern elements laminated to each other in such a manner that said pattern elements, at the same distance from said base sheet member, are comprised of the same material, and wherein said pattern elements are formed so as to be different in at least one of size, configuration, color, hardness, elasticity, shock absorbing capability, luster and satinizing from each other, said pattern elements being formed by using at least two perforated plates including perforations and repeatedly carrying out a set of steps comprising arranging one of said perforated plates, pouring an elastomer liquid material into said perforations and semicuring said elastomer liquid material; and thereafter completely curing the elastomer material.

5,853,855
BELLOWS

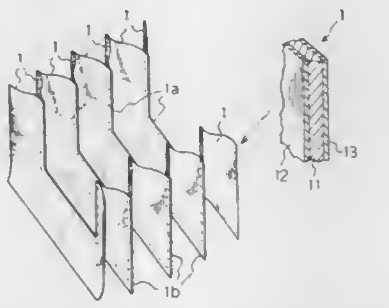
Takeshi Nemoto, and Teruko Nemoto, both of 4-32, Jyomyoji 1-chome, Kamakura 248, Japan

Filed Apr. 26, 1996, Ser. No. 638,194

Claims priority, application Japan, Aug. 10, 1995, 7-225741

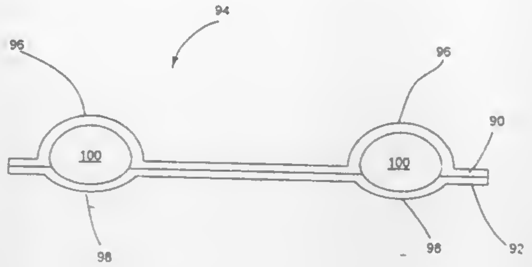
Int. Cl.⁶ G12B *1/04*

U.S. Cl. 428—176 **2 Claims**



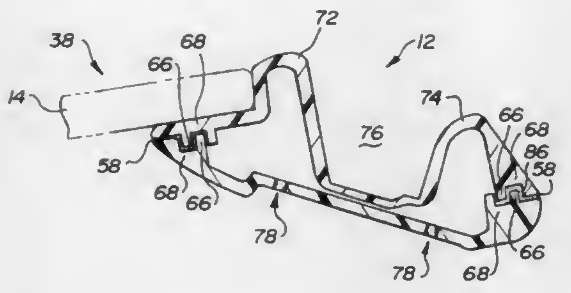
1. A bellows formed from a material sheet which is constituted of a core member fabricated by impregnating a synthetic mica into a matrix of a glass fiber cloth, and fluorine resin film adhered over entire surfaces at both sides of said core member.

5,853,856
PROCESS FOR FORMING BUBBLE-PACK
Boaz Kristal, Netanya, Israel, assignor to Tirod Industrial Packaging Ltd., Netanya, Israel
Filed Dec. 13, 1996, Ser. No. 764,909
Int. Cl.^{6} B32B *3/12;* **A63B** *39/00*
U.S. Cl. 428—178 **30 Claims**



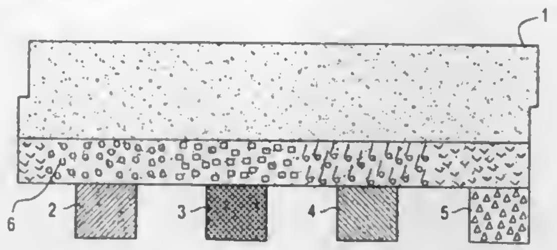
1. An article of manufacture comprising a first sheet and a second sheet joined along facing surfaces thereof, said first sheet including only a material selected from the group consisting of HDPE and PET, said first sheet having a plurality of bulges concave towards said second sheet, said second sheet and each of said bulges of said first sheet forming between them a sealed bubble.

5,853,857
WINDSHIELD FRAME
Mohammed Mahmood, Troy; Michael M. Shinedling, Lake Orion; Saad M. Abouzahr, Highland; Stuart A. Ehrhardt, Davisburg, and Dennis G. Karolski, Rochester Hills, all of Mich., assignors to The Budd Company, Troy, and Chrysler Corporation, Auburn Hills, both of Mich.
Filed Feb. 20, 1997, Ser. No. 803,223
Int. Cl.^{6} B32B *1/00;* **B29L** *47/00;* **B28B** *5/00*
U.S. Cl. 428—178 **30 Claims**



1. A windshield frame comprising:
- a U-shaped, single piece molded upper frame having an upper windshield receiving portion and side windshield receiving portions, said upper frame including at least two laterally spaced apart mating surfaces including a tongue and groove structure thereon; and
- a U-shaped, single piece molded lower frame having at least two laterally spaced apart mating surfaces including a tongue and groove structure thereon complimentary of said tongue and groove structure of said upper frame, said lower frame being bonded to said molded upper frame by interconnecting said tongue and groove structures and applying a layer of adhesive therebetween such that said upper and lower frames form a channel therebetween.

5,853,858
MULTIHUED SHINGLE SHEET
Alfredo A. Bondoc, Somerset, N.J., assignor to Building Materials Corporation of America, Wayne, N.J.
Filed Jan. 22, 1997, Ser. No. 785,942
Int. Cl.^{6} E04D *1/26*
U.S. Cl. 428—195 **14 Claims**



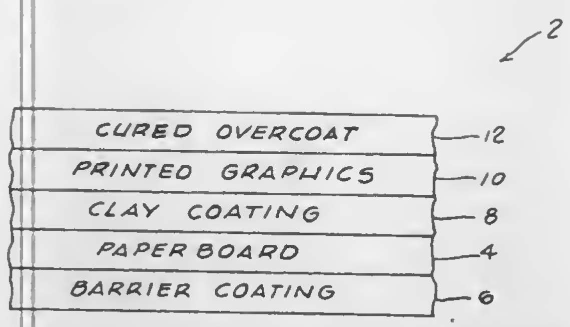
1. A unitary shingle sheet comprising (a) an undivided top section having an unexposable upper portion and a lower portion carrying a partially exposable horizontal band of distinguishable colors or color patterns in discrete areas thereof, which band extends along the lower marginal boundary of section (a) and (b) exposable spaced tabs in a bottom butt section depending from the lower boundary of said band of section (a) and having an average height approximately equal to the width of said band, wherein the color or color pattern of each tab is distinguished from the others and from the color or color pattern in the adjoining color area of the band immediately above from which the tab depends and wherein the width of the unexposable upper portion of section (a) is approximately equal to the width of said band plus y wherein y has a value of from about 1 to about 5 inches.

5,853,859
ROOM TEMPERATURE LATEX PRINTING
Ruth Lisa Levy, Sugar Hill, and Robert Emil Weber, Marietta, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Jul. 7, 1995, Ser. No. 499,802
Int. Cl.^{6} B05D *5/06;* **B32B** *3/00*
U.S. Cl. 428—196 **24 Claims**

1. A printed substrate formed by the process comprising:
- forming a printing composition comprising an aqueous mixture having a pre-cure pH adjusted to above 8 using a fugitive alkali, a room temperature crosslinkable latex polymer, a pigment, and a cure promoter;
- applying said printing composition to a substrate wherein said substrate comprises a nonwoven web of thermoplastic polyolefin polymer fibers; and
- lowering the pH of said printing composition wherein crosslinking occurs forming said printing and wherein said printing adheres to said nonwoven web substrate and retains a colorfastness above 3 when measured by AATCC test method 8 using 30 strokes when exposed to liquids with a pH between about 2 and about 13.

5,853,860
LID HAVING A CURED OVERPRINT VARNISH
Barry Gene Calvert, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.
Continuation of Ser. No. 420,775, Apr. 12, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 688,639
Int. Cl.^{6} B32B *5/02;19/06;21/12;27/16*
U.S. Cl. 428—204 **4 Claims**

1. A composite lid having an overprint varnish, which is used to cover a food-containing tray, wherein said composite lid is comprised of:
- a paperboard substrate having first and second sides;
- a coating of particulate minerals located exterior to said first side of said substrate;



- a layer of printed graphics located exterior to said coating of particulate minerals;
- a coating of a radiation-cured, heat resistant varnish located exterior to said layer of printed graphics, wherein said radiation-cured varnish is mass stable above 325° F. and said varnish substantially prevents said layer of printed graphics from being distorted during a pressure platen heat sealing of said composite lid to a vessel and said varnish does not substantially adhere to said platen during said heat sealing wherein said pressure is at or around 60 psig; and
- a layer of a heat sealable barrier material located exterior to said second side of said substrate.

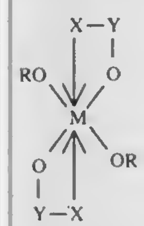
5,853,861
INK JET PRINTING OF TEXTILES
Robert Paul Held, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 30, 1997, Ser. No. 941,808
Int. Cl.^{6} B32B *7/10;27/06;37/34*
U.S. Cl. 428—207 **10 Claims**

1. An ink jet ink/textile combination comprising:

a) an ink jet ink containing an aqueous carrier medium, a pigment and a polymer, wherein the polymer has functional moieties selected from the group consisting of acid, base, epoxy and hydroxy moieties; and

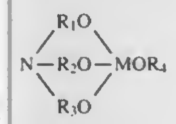
b) a textile containing moieties selected from the group consisting of hydroxyl, amine, amido, carboxyl moieties and mixtures thereof, said textile having been treated with a solution consisting of a cross-linking compound selected from the group consisting of:

i) an organometallic compound represented by the general formula:



wherein
- X is a functional group containing oxygen or nitrogen, e.g., ketone, ester, acid salt, etc.;
- Y is alkyl of 1 to 6 carbon atoms or arylalkyl wherein aryl is 6 to 10 carbon atoms and alkyl is 1 to 6 carbon atoms;
- M is Ti, Al, Zn or Zr; and
- R is hydrogen, alkyl of 1 to 6 carbon atoms, or hydroxy substituted alkyl of 1 to 6 carbon atoms;

ii) an organometallic compound represented by the general formula:



wherein
- R_1, R_2 or R_3 can be the same or different, and are alkyl of 1 to 4 carbon atoms;
- R_4 is alkyl of 1 to 6 carbon atoms;
- M is Ti, Al, Zn or Zr; and

iii) an isocyanate having the general formula:

$$R\text{—}(CNO)_a$$

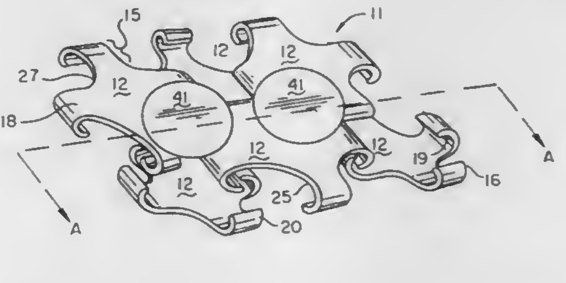
wherein
- R is a hydrocarbon, aromatic hydrocarbon, aliphatic aromatic hydrocarbon, etc.
- a is 1 or 2;

wherein upon exposure to an external energy source, the crosslinking compound reacts with the textile and the polymer in the ink.

5,853,862
BARRIER COMPOSITE FILMS AND METHOD OF PRODUCING THE SAME
Takaaki Murai, Otake, and Ryuta Miyake, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan
PCT No. PCT/JP96/00990, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO96/32253, PCT Pub. Date Oct. 17, 1996
PCT Filed Apr. 11, 1996, Ser. No. 737,557
Claims priority, application Japan, Apr. 11, 1995, 7-111297
Int. Cl.^{6} B32B *15/08*
U.S. Cl. 428—215 **20 Claims**

1. A barrier composite film comprising a base film layer, a coat layer formed on at least one side of said base film layer, and an inorganic layer having a thickness of 100 to 5,000 Å formed on said coat layer, wherein said coat layer comprises 100 parts by weight of (A) a noncrystalline thermoplastic chlorine-containing resin having a glass transition temperature of 25° to 60° C. and an acid value of 0 to 30 mg KOH/g, 10 to 500 parts by weight of (B) a polyisocyanate compound having at least two isocyanate groups per molecule with a molecular weight of 150 to 1,000, and 1 to 50 parts by weight of (C) a noncrystalline saturated polyester resin having a glass transition temperature of −10° to 20° C., a number average molecular weight of 1×10^4 to 5×10^4, a hydroxyl value of 0 to 15 mg KOH/g or an acid value of 0 to 10 mg KOH/g and being substantially unreactive to the polyisocyanate compound.

5,853,863
PUNCTURE, PIERCE, AND CUT RESISTANT FABRIC
Young Hwa Kim, Woodbury, Minn., assignor to Higher Dimension Research, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 675,146, Jul. 3, 1996. This application Jan. 2, 1997, Ser. No. 778,372
Int. Cl.^{6} B32B *7/08*
U.S. Cl. 428—223 **63 Claims**



1. A sheet comprised of a plurality of interconnected platelets spatially and geometrically retained by each other in the absence of attachment to each other.

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5,853,864
COMPOSITE ARTICLE RESISTANT TO MOISTURE-INDUCED DEBONDING

William L. Bunnelle, Ham Lake, Minn., assignor to H. B. Fuller Licensing & Financing Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 667,251, Mar. 8, 1991, abandoned, which is a continuation of Ser. No. 213,789, Jun. 30, 1988, abandoned. This application Jun. 21, 1995, Ser. No. 492,950

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 428—261 **14 Claims**

1. An article resistant to moisture-induced debonding comprising a substrate joined with a second layer by a sprayed-on adhesive, said adhesive comprising:

(a) about 10–40 parts by weight of a thermoplastic block copolymer selected from the group consisting of an A-B-A block copolymer, an A-(B-A)$_n$-B-A block copolymer, wherein n is an integer of about 1 or more, and a radial block copolymer, each A comprising a polystyrene block and each B comprising a rubbery block;

(b) about 30 to 75 parts by weight of a tackifying resin selected from the group consisting of a rosin derived tackifying resin, an aliphatic tackifying resin, a mixed aromatic-aliphatic tackifying resin, and mixtures thereof; and

(c) about 5 to 40 part by weight of a cyclohexane dimethanol dibenzoate plasticizer compound; and wherein, after the adhesive is sprayed on and cooled to ambient temperature, the adhesive retains sufficient liquidity for a sufficient time to wet or to penetrate the substrate or the second layer to form a moisture-resistant bond.

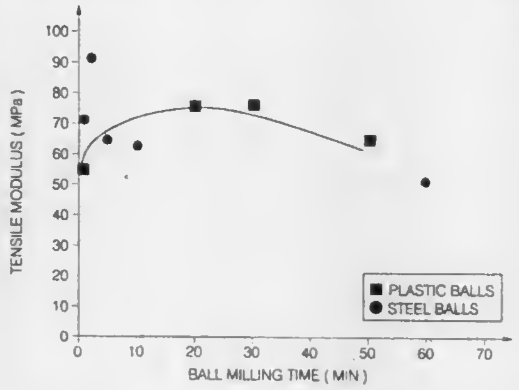
5,853,865
TREATMENT OF VAPOR-GROWN CARBON FIBERS FOR FIBER-POLYMER MATRIX COMPOSITES

John Joseph McHugh, Wilmington, Del., and Gary George Tibbetts, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1997, Ser. No. 897,425

Int. Cl.^{6} B32B *5/06*

U.S. Cl. 428—297.4 **5 Claims**



1. A method of treating carbon fibers for incorporation into a molten polymer for molding into a composite comprising said fibers within a matrix of said polymer, said fibers having been produced by iron base particle catalyzed vapor phase pyrolysis of natural gas or methane such that the product fibers are contained in multi-fiber globular clumps up to several centimeters in diameter, said fibers further being characterized by typical individual fiber lengths in the range of about one-half micrometer to about 50 micrometers and typical individual fiber diameters in the range of about 0.1 to about 0.3 micrometers, said clumps being resistant to infiltration by said molten polymer for the molding of a said composite, said method comprising

mechanically breaking up said clumps to a diameter of about and generally not exceeding 300 micrometers and thereafter infiltrating said clumps with said molten polymer.

5,853,866
MULTI-FUNCTIONAL MATERIAL WITH PHOTOCALYTIC FUNCTIONS AND METHOD OF MANUFACTURING SAME

Toshiya Watanabe; Eiichi Kojima; Keiichiro Norimoto; Tamon Kimura; Mitsuyoshi Machida; Makoto Hayakawa; Atsushi Kitamura; Makoto Chikuni; Yoshimitsu Saeki; Tatsuhiko Kuga, and Yasushi Nakashima, all of Fukuoka, Japan, assignors to Toto Ltd., Fukuoka, Japan

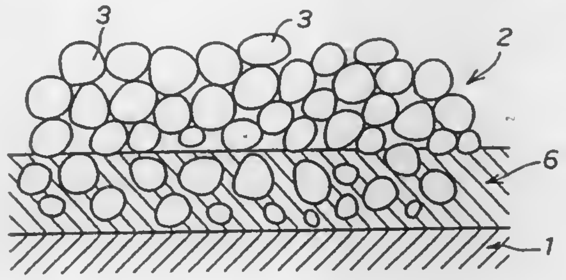
PCT No. PCT/JP94/02077, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO95/15816, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 9, 1994, Ser. No. 501,110

Claims priority, application Japan, Dec. 10, 1993, 5-310165; Dec. 14, 1993, 5-313061; Dec. 14, 1993, 5-313062; Dec. 24, 1993, 5-348073; Jun. 24, 1994, 6-143473; Sep. 22, 1994, 6-254242; Sep. 29, 1994, 6-271912; Sep. 30, 1994, 6-274165; Oct. 11, 1994, 6-282382; Oct. 24, 1994, 6-297760; Nov. 4, 1994, 6-271499; Nov. 4, 1994, 6-307173; Nov. 9, 1994, 6-311398; Nov. 11, 1994, 6-313967; Dec. 14, 1994, 6-310896

Int. Cl.^{6} B01J *35/02;21/06;23/00;* **C04B** *41/85*

U.S. Cl. 428—312.8 **10 Claims**



1. A multi-functional material exhibiting a photocatalytic function, comprising: a base and a photocatalytic layer having a photocatalytic function and disposed on a surface of said base; said photocatalytic layer including at least a surface layer exposed outwardly; said surface layer comprising fine photocatalytic particles intimately joined together in abutting relationship such that pores are defined therebetween at a predetermined porosity;

said photocatalytic layer being disposed on the surface of said base through a binder layer interposed therebetween; said photocatalytic layer including a surface layer exposed outwardly and a lower layer embedded in said binder layer;

said multi-functional material being a multi-functional glass;

said base being made of soda glass; and

said binder layer containing a smaller quantity of alkali-metal component than said base.

5,853,867
ABSORBENT COMPOSITE, METHOD FOR PRODUCTION THEREOF, AND ABSORBENT ARTICLE

Nobuyuki Harada, Osaka; Yoshihiro Motono, Hyogo; Shigeru Sakamoto, Osaka, and Toshimasa Kitayama, Hyogo, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 13, 1996, Ser. No. 713,866

Claims priority, application Japan, Sep. 14, 1995, 7-237358; Jul. 12, 1996, 8-183816

Int. Cl.^{6} A61F *13/15*

U.S. Cl. 428—317.9 **26 Claims**

1. An absorbent composite comprising a supporting member a cross-linked cationic absorbent polymer fixed to said supporting member and cross-linked anionic absorbent polymer particles fixed to said cross-linked cationic absorbent polymer through an ionic bond.

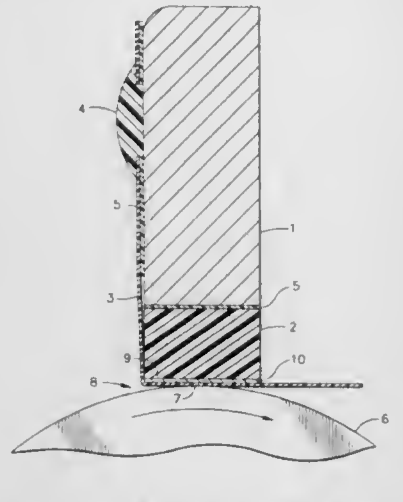
5,853,868
ELECTRICAL CONTACT MATERIAL FOR FLEXIBLE DOCTOR BLADE

Peter W. Bracken; Jeffery R. Brener; Martin V. DiGirolamo; Sam E. Mullinix, Jr.; Donald W. Stafford, and Peter E. Wallin, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Continuation of Ser. No. 623,362, Mar. 28, 1996, abandoned. This application Sep. 2, 1997, Ser. No. 923,773

Int. Cl.^{6} G03F *15/08*

U.S. Cl. 428—323 **26 Claims**



1. An electrically energized doctor blade for metering charged electrophotographic toner held on a developer roller by physically contacting a sector of said roller with a surface of said blade which is electrically charged, said blade comprising

a flexible backing member,

a support bar to position said blade adjacent to said roller, and

a layer on said flexible backing member comprising means for conducting electrical charge from said layer to said support bar and a solid binder having grit particles dispersed throughout said solid binder,

said layer being attached and electrically connected to said support bar by a conducting paste comprising

from about 70% to about 96% of an elastomer which has a hardness of less than about 50 Shore A when dry, and

from about 4% to about 30% of a particulate electrically conductive material dispersed in said elastomer,

said flexible backing member being bendable to extend under said support bar to contact said layer with grit particles and said means for conducting with said sector of said developer roller during use.

5,853,869
TRANSPARENT CONDUCTOR FILM FOR ELECTRIC FIELD SHIELDING

Kenji Adachi, Chiba; Atsushi Yamanaka; Atsushi Toufuku, both of Ichikawa City; Sadahiro Iida, Narashino City; Masaya Yukinobu, Niihama City; Keiichi Orita, Oyama City; Hiroko Inage, Inzai-machi, and Hiromitsu Takeda, Ichikawa City, all of Japan, assignors to Sumitomo Metal Mining Co., Ltd., and Tohoku Chemical Industries, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 518,468, Aug. 23, 1995, abandoned. This application Jul. 14, 1997, Ser. No. 892,155

Int. Cl.^{6} B32B *18/00*

U.S. Cl. 428—325 **9 Claims**

1. A combination of a glass substrate and a transparent conductive film for electric field shielding formed on said glass substrate, said transparent conductive film comprising a first layer of an ITO dispersed silicate containing between 0.1 and 25% by weight of fine particles of a high-conductivity oxide selected from the group consisting of ruthenium oxide and ruthenium pyrochlore, and a second layer of transparent silicate glass, said first layer being located between said glass substrate and said second layer.

5,853,870
BOTH-SIDE COATED PAPER COMPRISING KAOLIN FOR USE OF PRINTING

Shunichi Uchimura; Hideyuki Suzuki, and Terunobu Fukui, all of Amagasaki, Japan, assignors to Oji Paper Co., Ltd., Japan

Filed Jun. 24, 1997, Ser. No. 881,358

Claims priority, application Japan, Jun. 27, 1996, 8-167745

Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—329 **2 Claims**

1. In the both-side coated paper for use of printing made by coating the coating material containing pigments and binders as the main ingredients on the surface of a base paper, drying the applied coating material, and then passing the coated base paper through a high-temperature calender heated above 100° C., a both-side coated paper for use of printing characterized by that the density measured after the finish pursuant to JIS P8118 is 1.15–1.35 g/cm^3, the gloss of coated paper surface measured after the finish pursuant to JIS P8142 is higher than 75%, the smoothness measured by the SMOOSTER under J. TAPPI paper and pulp test method, No. 5A is lower than 20 mmHg, and the mean value L of Clark free protruding lengths in the machine and cross directions measured pursuant to JIS P8143 A can satisfy the following equation (1) below:

$$L > 1.28X + 45, \tag{1}$$

where

L=Mean value of Clark free protruding lengths in the machine and cross directions (mm), and

X=Product basis weight (g/m^2);

wherein the outermost coating layer on both sides of said coated paper contains the kaolin as a pigment whose average particle diameter is 0.5–1.0 μm, and content ratio is 50–80 wt % for the particles smaller than 1 μm in diameter and 5% or less than 5% for the particles larger than 3 μm in diameter, in an amount of 40–90 wt % of the total pigment used, and the copolymer latex with a Tg of 25°–50° C. as the binder, in an amount of 5–30 wt % in terms of solid matter of the total pigment contained; and

wherein the coating weight per surface is 15–30 g/m^2 after the coating material is dried.

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5,853,871
MAGNETIC RECORDING MEDIUM

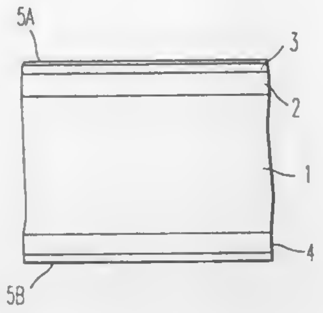
Noriyuki Kitaori; Osamu Yoshida; Katsumi Sasaki; Junko Ishikawa, and Katsumi Endo, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 19, 1996, Ser. No. 718,184

Claims priority, application Japan, Sep. 27, 1995, 7-249048

Int. Cl.^{6} G11B *5/66*

U.S. Cl. 428—332 **20 Claims**



1. A magnetic recording medium comprising a substrate, a magnetic layer, a protective layer and a lubricant layer, wherein:
said magnetic layer is coated on said substrate,
said protective layer is coated on said magnetic layer,
said lubricant layer is coated on said protective layer,
said magnetic layer is an Fe—C—O metal magnetic layer containing Fe, C and O,
said protective layer is a diamond-like carbon layer, and
said lubricant is a fluorine-contained lubricant.

5,853,872
MAGNETO-OPTICAL RECORDING MEDIUM

Takumi Shimamori, Machida; Yoko Ikeda, Yokohama; Yoshinori Seki, Kawasaki, and Takeshi Kuriwada, Machida, all of Japan, assignors to Mitsubishi Chemical Corporation, Japan

Continuation of Ser. No. 479,604, Jun. 7, 1995, abandoned, which is a division of Ser. No. 151,372, Nov. 12, 1993, abandoned. This application Dec. 17, 1996, Ser. No. 768,867

Claims priority, application Japan, Nov. 17, 1992, 4-307089; Feb. 19, 1993, 5-030766; Feb. 19, 1993, 5-030767; Feb. 19, 1993, 5-030768; Feb. 19, 1993, 5-030769; Jun. 21, 1993, 5-149265; Jun. 21, 1993, 5-149266; Jun. 21, 1993, 5-149267

Int. Cl.^{6} G11B *5/64;5/66;5/70;11/00*

U.S. Cl. 428—332 **9 Claims**

1. A magneto-optical recording medium having a figure of merit, which is the product of the square root of a reflectivity and an actual magnetic Kerr rotation angle, of not less than 3.8 at a wavelength of less than 600 nm and a magnetic Kerr rotation angle of not less than 1.2 degree at a wavelength of less than 600 nm, said magneto-optical recording medium comprising:
a substrate,
a magneto-optical recording layer of 10 to 30 nm thick comprising a Tb—Fe—Co amorphous alloy in which the Co content is 15 to 60 atom % based on the total amount of the Co content and Fe content or a Nd—Tb—Fe—Co amorphous alloy in which the Co content is 20 to 60 atom % based on the total amount of the Co content and Fe content, and having a Curie temperature of not less than 220° C.; and
a reflective layer of 30 to 100 nm thick containing not less than 70 atom % Ag and having a refractive index of not more than 0.5 at a wavelength of less than 600 nm,
the reflective layer being disposed on the magneto-optical recording layer which is disposed on the substrate.

5,853,873
HARD COMPOSITE MATERIAL FOR TOOLS

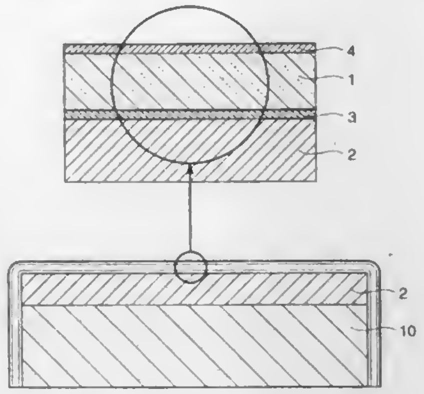
Satoru Kukino; Mitsuhiro Goto; Tetsuo Nakai; Makoto Setoyama, and Takashi Yoshioka, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd, Osaka, Japan

Filed Oct. 27, 1995, Ser. No. 549,168

Claims priority, application Japan, Oct. 27, 1994, 6-287374

Int. Cl.^{6} B24D *3/00*

U.S. Cl. 428—336 **22 Claims**



1. Hard composite material for cutting tools, comprising a substrate and at least one layer of hard heat-resisting film on cutting portions of said substrate, wherein said substrate is one of:
(a) a cubic boron nitride sintered body containing more than 20% by volume of cubic boron nitride, and
(b) a diamond sintered body containing more than 40% by volume of diamond,
and wherein said hard heat-resisting film consists mainly of Ti, Al and at least one element selected from a group comprising C, N and O.

5,853,874
LOW VISCOSITY HOT MELT PRESSURE SENSITIVE ASHESIVE COMPOSITIONS

Lutz Erich Jacob, Tervuren, Belgium, assignor to Exxon Chemical Patents, Inc., Houston, Tex.

Continuation of Ser. No. 748,521, Nov. 8, 1996, abandoned, which is a continuation of Ser. No. 345,103, Nov. 28, 1994, abandoned. This application Jul. 22, 1997, Ser. No. 898,018

Int. Cl.^{6} C08L *9/06;* C09U *7/02*

U.S. Cl. 428—343 **15 Claims**

1. A hot melt pressure sensitive adhesive composition comprising a mixture of:
a) 100 parts by weight of a thermoplastic elastomer having the structure $(S\text{-}I)_{n-1}$ S, wherein S is a polystyrene block, I is a polyisoprene block and n is an integer of from 2 to 10 and wherein the content of polystyrene in said thermoplastic elastomer ranges from about 10 to 20% by weight and wherein the number average molecular weight of said thermoplastic elastomer ranges from about 50,000 to about 175,000, said thermoplastic elastomer containing less than 0.1 weight percent diblock S-I;
b) from about 70 to about 150 parts by weight of a petroleum resin tackifier having a softening point in the range of from about 8.5° C. to about 105° C., said resin being a Friedel Crafts copolymer comprising:
i) a petroleum feed comprising C_5 olefins and diolefins or a mixture of C_5 and C_6 olefins and diolefins, said feed being obtained from the cracking of petroleum feedstock, copolymerized with
ii) from about 5 to 15% by weight, based on component (b) of one or a mixture of monovinyl aromatic compounds having 8–9 carbon atoms;
said composition characterized as having a melt viscosity at 175° C. of from about 35,000 to less than about 100,000 mPa.s as measured by ASTM-D3236.

5,853,875
LIGHT-TRANSMITTING RECORDING MATERIAL FOR ELECTROPHOTOGRAPHY, AND HEAT FIXING METHOD

Yomishi Toshida, Yokohama; Naoki Kushida, Hachiohji; Takehiko Ooi, Yokohama, and Hiroyuki Ogino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1997, Ser. No. 827,468

Claims priority, application Japan, Mar. 29, 1996, 8-076530; Feb. 28, 1997, 9-045659

Int. Cl.^{6} B32B *7/12;* G03G *13/20*.

U.S. Cl. 428—349 **34 Claims**

1. A light-transmitting recording material for electrophotography comprising:
a base material, a conductive undercoat layer formed on said base material, and a toner acceptable layer formed on said conductive undercoat layer; wherein
surface resistivity of said conductive undercoat layer ranges from $1\times10^7\Omega$ to $1\times10^{10}\Omega$ at 20° C. and 60% relative humidity, and said conductive undercoat layer contains a metallic conductive or semiconductive material;
said toner acceptable layer comprises a wax as a releasing agent and a thermoplastic resin; said toner acceptable layer has a thickness of 2 to 15 μm; and
said light-transmitting recording material has a surface resistivity of $1\times10^8\Omega$ to $1\times10^{13}\Omega$ at 20° C. and 60% relative humidity, and a total light ray transmittance of 80% or more and a haze value of 10 or less.

5,853,876
BIODEGRADABLE ADHESIVE TAPE AND BIODEGRADABLE ADHESIVE LABEL

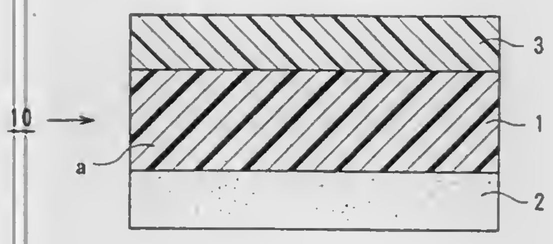
Akihiko Takano, Urawa; Sadakazu Morio, Kumagaya; Masao Kogure, Kitaadachi-gun, and Takanori Saitoh, Misato, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Continuation of Ser. No. 280,318, Jul. 26, 1994, Pat. No. 5,658,646. This application Apr. 15, 1997, Ser. No. 834,234

Claims priority, application Japan, Jul. 28, 1993, 5-186472; Jul. 28, 1993, 5-186473; Jul. 28, 1993, 5-186474; Jul. 28, 1993, 5-186475

Int. Cl.^{6} B32B *7/00*

U.S. Cl. 428—352 **5 Claims**



1. A biodegradable adhesive tape comprising:
an adhesive tape substrate which comprises a biodegradable polymer layer formed from at least one member selected from the group consisting of (i) a linear polyester of 3-hydroxybutyric acid and 3-hydroxyvaleric acid and (ii) a polymer alloy of starch and denatured polyvinyl alcohol;
a release agent layer formed on one surface of said substrate; and
an adhesive layer formed on the other surface of said substrate, wherein said adhesive layer comprises a mixture of a natural rubber and at least one tackifier resin selected from the group consisting of rosin, derivatives of rosin, terpene and derivatives of terpene.

5,853,877
METHOD FOR DISENTANGLING HOLLOW CARBON MICROFIBERS, ELECTRICALLY CONDUCTIVE TRANSPARENT CARBON MICROFIBERS AGGREGATION FILM AMD COATING FOR FORMING SUCH FILM

Daisuke Shibuta, Omiya, Japan, assignor to Hyperion Catalysis International, Inc., Cambridge, Mass., and Mitsubishi Materials Corp. Tokyo, Chiyoda, Japan

Filed May 31, 1996, Ser. No. 656,067

Int. Cl.^{6} D02C *3/00*

U.S. Cl. 478—357 **20 Claims**

1. An electrically conductive transparent carbon microfibers aggregation film comprising hollow carbon microfibers, said microfibers being treated with a strong acid containing sulfur and an oxidizing agent, wherein said carbon microfibers have an outer diameter of 100 nm or less and said film has a total light transmittance of about 60% or more.

5,853,878
ELASTIC FIBER, PROCESS FOR THE SAME AND POLYESTER ELASTOMER USED THEREOF

Toyoaki Ishiwata, and Jiro Sadanobu, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP96/00729, § 371 Date Sep. 12, 1996, § 102(e) Date Sep. 12, 1996, PCT Pub. No. WO96/30427, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 21, 1996, Ser. No. 704,539

Claims priority, application Japan, Mar. 24, 1995, 7-066086; Mar. 27, 1995, 7-067519

Int. Cl.^{6} D07G *3/00;* C08F *20/00;* C08G *63/00;63/02*

U.S. Cl. 428—364 **23 Claims**

1. An elastic fiber of polyester elastomer wherein: said elastic fiber mainly comprises a polyester elastomer comprising an aromatic polyester component as a hard segment and a poly(alkyleneoxide)glycol component having a number-average molecular weight of 500 to 5000 as a soft segment and, a residual elongation of the elastic fiber does not exceed 100 percent after 400 percent stretching.

5,853,879
HIGH MOISTURE-ABSORBING AND RELEASING FIBERS AND PROCESSES FOR THEIR PRODUCTION

Hiroyuki Takamiya; Yohko Yamamoto, and Masao Ieno, all of Okayama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

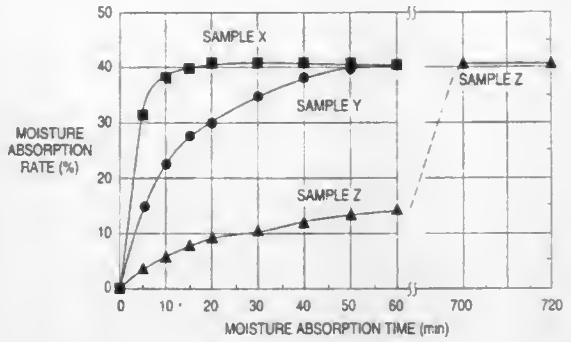
Filed Nov. 27, 1996, Ser. No. 753,637

Claims priority, application Japan, Nov. 29, 1995, 7-310605

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—364 **9 Claims**

1. An improved high moisture-absorbing and releasing fiber comprising a crosslinked acrylic fiber having 1.0% to 10.0% by weight increase in nitrogen content, 1.0 to 10.0 meq/g of carboxyl groups in salt form, and optionally at least one carboxyl group in acid form and amino group,
said high moisture-absorbing and releasing fiber having tensile strength not lower than 1 g/d, an oxygen index not less than



24, a sterilization rate not less than 90%, realizing 130 to 800 cal/g dry fiber upon moisture absorption under standard conditions of 20° C. and 65% RH, and whiteness corresponding to not less than 8 of brightness and not more than 5 of chroma,

whereby said high moisture-absorbing and releasing fiber is obtained by a crosslinking reaction with a hydrazine compound followed by acid treatment and alkali treatment, respectively.

5,853,880
MELAMINE-CONTAINING FABRICS WITH IMPROVED COMFORT

George M. Kent, Arden, N.C., and Karl Ott, Plankstadt, Germany, assignors to BASF Corporation, Mt. Olive, N.J.

Filed Oct. 1, 1997, Ser. No. 941,989

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—365 **6 Claims**

1. A fabric which includes a yarn containing melamine fibers having a twist multiplier value of less than 4.0, and wherein at least 90% of the melamine fibers have a staple fiber length of between about 1.0 to about 5.0 inches and a diameter of between about 0.3 to about 4.0 d/f.

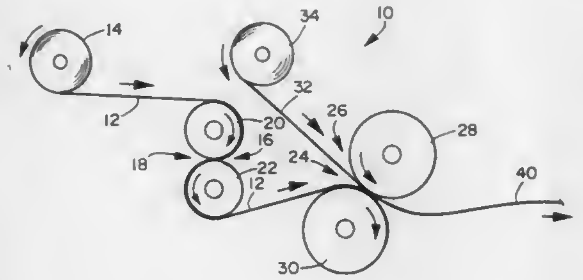
5,853,881
ELASTIC LAMINATES WITH IMPROVED HYSTERESIS

Paul Windsor Estey, Cumming; William Bela Haffner, Kennesaw; Jon Edward Tinsley; Susan Elaine Shawver, both of Roswell, and Stephen Clark Smith, Atlanta, all of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Oct. 11, 1996, Ser. No. 728,712

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—373 **20 Claims**



1. A composite elastic material laminate having improved hysteresis comprising a layer of an elastic material bonded to a layer of nonelastic material on at least one side, wherein said elastic material layer comprises a blend of a narrow polydispersity number polymer and a conventional elastomer and wherein said blend is essentially free of low molecular weight polyethylene processing aids.

5,853,882
COMPOSITIVE PREPREG PLY HAVING TAILORED ELECTRICAL PROPERTIES AND METHOD OF FABRICATION THEREOF

Anne E. Cenedella, University City, and Richard E. Sharp, Weldon Springs, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 26, 1997, Ser. No. 917,484

Int. Cl.^{6} B32B *15/00;4/00*

U.S. Cl. 428—379 **30 Claims**

1. A composite prepreg ply comprising:

(i) a low dielectric cloth substrate having a metal layer adherent on both sides thereon, the metal having been selectively removed from at least one portion of at least one side of said cloth, such that there is at least one area of cloth without any metal adherent thereon;

(ii) a layer of encapsulant resin material adherent on the metal layer;

(iii) a resistive resin layer comprising a filler material dispersed in a carrier resin, said resistive resin layer adherent on desired area of said cloth without any metal adherent thereon, and

(iv) an impregnating resin covering outermost surfaces of said encapsulant resin material and said resistive resin layer.

5,853,883
POLYOLEFIN FIBERS CONTAINING ANTIMICROBIAL SILOXANE QUATERNARY AMMONIUM SALTS

Ronald Sinclair Nohr, Roswell, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 686,228, Jul. 23, 1996, Pat. No. 5,777,010, which is a division of Ser. No. 450,451, May 25, 1995, Pat. No. 5,569,732, which is a division of Ser. No. 249,788, May 26, 1994, Pat. No. 5,567,372, which is a continuation-in-part of Ser. No. 76,529, Jun. 11, 1993, abandoned. This application Apr. 20, 1998, Ser. No. 63,086

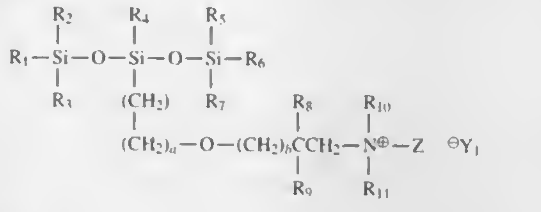
Int. Cl.^{6} B28B *3/20*

U.S. Cl. 428—391 **10 Claims**

1. A fiber having antimicrobial properties made from a melt-extrudable composition of which comprises:

at least one thermoplastic polyolefin adapted to be shaped into a product by melt extrusion; and

at least one additive which is adapted to surface segregate upon extrusion of said composition to impart antimicrobial properties to a surface of said product, wherein said additive has either the general formula A,



$$R_1-\underset{R_3}{\overset{R_2}{Si}}-O-\underset{(CH_2)}{\overset{R_4}{Si}}-O-\underset{R_7}{\overset{R_5}{Si}}-R_6$$

$$(CH_2)_a-O-(CH_2)_b\underset{R_9}{\overset{R_8}{C}}CH_2-\underset{R_{11}}{\overset{R_{10}}{N^{\oplus}}}-Z\quad {}^{\ominus}Y_1$$

wherein:

(1) each of R_1–R_7 is independently selected from the group consisting of monovalent C_1–C_{20} alkyl, phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;

(2) each of R_8 and R_9 is a monovalent group independently selected from the group consisting of (a) hydrogen and (b) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_8 and R_9 cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_8 and R_9 represent a carbonyl group;

(3) each of R_{10} and R_{11} is a methyl group;

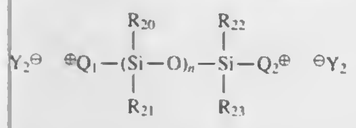
(4) a represents an integer from 1 to about 20;

(5) b represents an integer from 1 to about 20;

(6) Z is a monovalent group having from about 8 to about 30 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, and heterocyclic groups, and combinations thereof, wherein Z is terminated by an alkyl moiety which includes at least about 8 carbon atoms in a single continuous chain;

(7) Y_1 is an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and

(8) said additive has a molecular weight of from about 600 to about 1,700; or the general formula B,



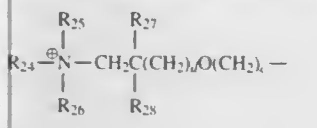
$$Y_2^{\ominus}\quad {}^{\oplus}Q_1-(\underset{R_{21}}{\overset{R_{20}}{Si}}-O)_n-\underset{R_{23}}{\overset{R_{22}}{Si}}-Q_2^{\oplus}\quad {}^{\ominus}Y_2$$

wherein:

(1) each of R_{20}–R_{23} is independently selected from the group consisting of monovalent C_1–C_{20} alkyl, phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;

(2) n represents an integer of from 1 to about 19;

(3) each of Q_1 and Q_2 represents an independently selected quaternary ammonium group having the general formula,



$$R_{24}-\underset{R_{26}}{\overset{R_{25}}{\overset{\oplus}{N}}}-CH_2\underset{R_{28}}{\overset{R_{27}}{C}}(CH_2)_dO(CH_2)_c-$$

in which:

(a) R_{24} is a monovalent alkyl group having from about 8 to about 30 carbon atoms, at least about 8 carbon atoms of which make up a single continuous chain:

(b) R_{25} and R_{26} are methyl groups;

(c) each of R_{27} and R_{28} is a monovalent group independently selected from the group consisting of (i) hydrogen and (ii) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_{27} and R_{28} cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_{27} and R_{28} represent a carbonyl group.

(d) c represents an integer of from 2 to about 20; and

(e) d represents an integer of from 2 to about 20;

(4) Y_2 represents an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and

(5) said additive has a polydispersity of up to about 3.0 and a weight-average molecular weight of from about 800 to about 2,000;

wherein said additive is present in said melt-extrudable composition in an amount sufficient to impart antimicrobial activity to the surfaces of a shaped article prepared therefrom by a melt-extrusion process.

5,853,884
METHOD FOR PRODUCING UNSUPPORTED FIBER BUNDLES FOR HME AND OTHER FILTRATION APPLICATIONS

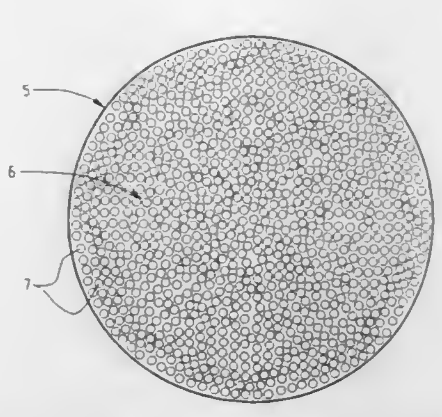
Randall W. Nichols, Westlake, and James C. Davis, Hudson, both of Ohio, assignors to Whatman, Inc., Mass.

Filed Mar. 26, 1997, Ser. No. 825,165

Int. Cl.^{6} D02G *3/00;* **B29C** *65/00;* **A62B** *18/08*

U.S. Cl. 428—398 **15 Claims**

7. A coated hollow fiber bundle unit for insertion into an assisted breathing device comprising a multiplicity of hollow fibers collected into a hollow fiber bundle, the walls of the hollow fibers being filled with an humectant composition and the exterior surfaces of the hollow fibers and of the hollow fiber bundle being coated with a coating solution comprising an adhesive material.



5,853,885
CUT RESISTANT YARN AND FABRIC

Larry John Prickett, Richmond, Va., assignor to E. I. du Pont de Nemours And Company, Wilmington, Del.

Filed Dec. 19, 1996, Ser. No. 770,190

Int. Cl.^{6} D02G *03/00*

U.S. Cl. 428—401 **4 Claims**

1. A yarn having a linear density of 150 to 5900 dtex and a twist factor of less than 26 wherein the yarn includes para-aramid staple fibers having a linear density of 3 to 6 dtex and a length of 2.5 to 15.2 centimeters.

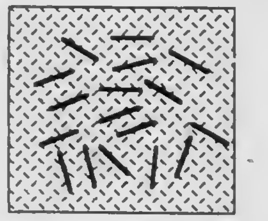
5,853,886
HYBRID NANOCOMPOSITES COMPRISING LAYERED INORGANIC MATERIAL AND METHODS OF PREPARATION

Thomas J. Pinnavaia, and Tie Lan, both of East Lansing, Mich., assignors to Claytec, Inc., East Lansing, Mich.

Filed Jun. 17, 1996, Ser. No. 665,518

Int. Cl.^{6} B32B *5/16;* **C08K** *9/00*

U.S. Cl. 428—403 **22 Claims**



Disordered nanocomposite, containing exfoliated silicate nanolayers

1. A particulate composition used to prepare a cured polymer and layered inorganic composition composite which comprises:

a polymer polymerizing component which has been intercalated into the particles of a layered inorganic composition with nanolayers and with galleries between the nanolayers wherein:

(1) the layered inorganic composition has at least 10% of cation exchange sites occupied by protons as H^+ prior to being intercalated a remainder being occupied by inorganic ions other than the protons; and

(2) the polymer polymerizing component contains at least one basic group for reaction with the protons of the layered inorganic composition, wherein in use of the particulate composition the nanolayers are separated by a polymer precursor or polymer melt which is introduced into the galleries of the inorganic layered composition and reacts with the polymer polymerizing component and wherein the weight ratio of the

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polymer polymerizing component to layered inorganic composition is between about 1:100 and 100:1.

5,853,887

WHITE CONDUCTIVE POWDER, A PROCESS FOR ITS PRODUCTION AND A RESIN COMPOSITION CONTAINING THE POWDER

Akihiro Yoshimoto; Toshihiro Yoshinaga; Shigeru Nagaoka, and Masayasu Morishita, all of Ube, Japan, assignors to Titan Kogo Kabushiki Kaisha, Yamaguchi-Ken, Japan

Continuation of Ser. No. 264,574, Jun. 23, 1994, abandoned.
This application Jul. 23, 1996, Ser. No. 681,484
Claims priority, application Japan, Jun. 23, 1993, 5-152227
Int. Cl.^{6} B32B *5/16*

U.S. Cl. 428—404 **15 Claims**

1. A white conductive powder comprising white inorganic pigment particles the surfaces of which are coated with an electrically conductive coating consisting of a lower layer and an upper layer wherein said lower layer consists essentially of tin dioxide and accounts for 0.5–50 wt % on the basis of the pigment, and wherein said upper layer contains 0.1–20 wt % of tin dioxide on the basis of In_2O_3, with the balance consisting essentially of indium oxide, and accounts for 5–200 wt % on the basis of the pigment.

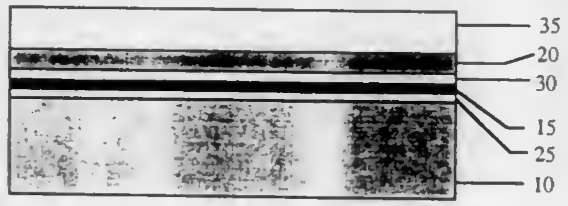
5,853,888

SURFACE MODIFICATION OF SYNTHETIC DIAMOND FOR PRODUCING ADHERENT THICK AND THIN FILM METALLIZATIONS FOR ELECTRONIC PACKAGING

Indranath Dutta, Marina, and Sarath K. Menon, Monterey, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1997, Ser. No. 845,581
Int. Cl.^{6} B32B *18/00*

U.S. Cl. 428—408 **2 Claims**



1. An article of surface modified synthetic diamond for electronic packaging applications, comprising:
  a clean diamond substrate;
  a layer of a carbide-forming transition metal on the clean diamond substrate;
  a thin metal-carbide layer between the transition metal and the diamond substrate to form a chemical bond between the diamond and metal layers;
  an adherent crystalline alumina layer deposited on the transition metal layer to serve as a dielectric; and
  an interdiffusion zone between the transition metal and alumina layers resulting in strong chemical bonding between the alumina and the transition metal layers, so as to make diamond metallizable by conventional thin and thick film techniques, and to decrease the through-thickness thermal conductivity of diamond by less than 5%, whereby the article is capable of being used as a highly thermally conductive metallized diamond substrate for electronic packaging.

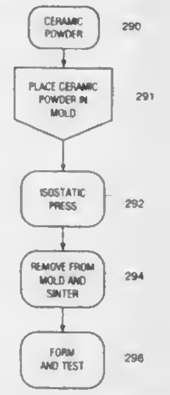
5,853,889

MATERIALS FOR ELECTROMAGNETIC WAVE ABSORPTION PANELS

Vikram Joshi, Colorado Springs, Colo.; Kenichi Kimura, Los Angeles, Calif.; Carlos A. Paz de Araujo, Colorado Springs, Colo., and Hiroshi Kiyokawa, Yokohama, Japan, assignors to Symetrix Corporation, Colorado Springs, Colo., and Fujita Corporation, Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,938
Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—411.1 **19 Claims**



1. An electromagnetic wave absorption panel for use in building construction, said absorption panel comprising:
  a building support element; and
  an absorber element supported by said support element, said absorber element comprising a high dielectric constant material, said high dielectric constant material selected from the group consisting of layered superlattice materials and signet magnetics.

5,853,890

WATER-BASED COATING COMPOSITION

Taketoshi Odawa, and Toshihiro Okai, both of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 360,024, Dec. 20, 1994, Pat. No. 5,578,669. This application Jun. 5, 1996, Ser. No. 659,674
Claims priority, application Japan, Dec. 24, 1993, 5-347701; Feb. 17, 1994, 6-45050; Oct. 20, 1994, 6-282631
Int. Cl.^{6} B32B *27/40;15/08*

U.S. Cl. 428—412 **10 Claims**

1. A coated article characterized in that it has a coating film formed by the coating film forming method of applying a water-based coating composition which comprises:
  (i) 100 parts by weight, on the solid content basis, of a composition comprising 100 parts by weight, on the solid content basis, of a self-emulsifying polycarbonate-based polyurethane resin emulsion and 5 to 100 parts by weight, on the solid content basis, of an aqueous resol phenol resin and the water-based coating composition has a pH of 7.0 to 10.0, and further comprising at least one member selected from the group consisting of oxazoline compounds having a glass transition temperature of not lower than 40° C. and containing a styrenic polymer or a styrene-acrylic copolymer, and melamine resins having a curing initiation temperature of not higher than 140° C., the total amount, on the solid content basis, of said member and the aqueous phenol resin being 10 to 200 parts by weight, and
  (ii) 0.5 to 5 parts by weight, on the solid content basis, of at least one acidic catalyst selected from the group consisting of dodecylbenzensulfonic acid, amine salts and ammonium salts thereof, dinonylnaphthalensulfonic acid, amine salts and ammonium salts thereof, acidic amine salts and ammonium salts of phosphoric acid, aminotri(methylenephosphonic acid), 1-hydroxyethylidene-1,1-diphosphonic acid, ethylenediaminetetra(methylenephosphonic acid), and amine salts and ammonium salts thereof to a target article and drying the coat at 60° to 180° C. for 7 to 60 seconds, said coating film having a glass transition temperature of not lower than 40° C. and an elongation percentage of 2 to 6%.

5,853,891

Patent Not Issued For This Number

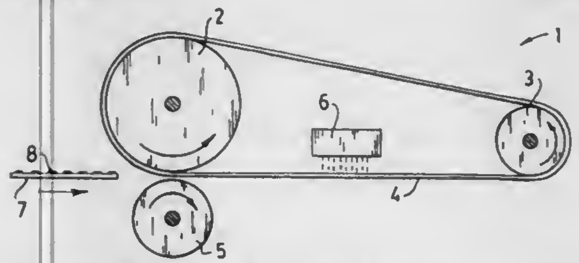
5,853,892

AMORPHOUS FLUOROPOLYMER COATED FUSING BELT

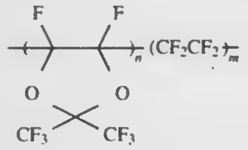
Jiann Hsing Chen, Fairport; Lawrence Paul Demejo, Rochester; Gary Frederick Roberts, Macedon, and Muhammed Aslam, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1996, Ser. No. 672,250
Int. Cl.^{6} B32B *15/08;27/08;27/34;27/36*

U.S. Cl. 428—421 **3 Claims**



1. A fuser belt having an amorphous flouropolymer outer layer for fusing a thermoplastic resin toner image to a substrate wherein the amorphous fluoropolymer has the structure:



in which m is 20 mole percent or 35 mole percent and n is 65 mole percent or 80 mole percent.

5,853,893

TONER FUSER MEMBER HAVING A METAL OXIDE FILLED FLUOROELASTOMER OUTER LAYER WITH IMPROVED TONER RELEASE

Jiann H. Chen, Fairport; Tonya D. Binga, Rochester, and William J. Staudenmayer, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1997, Ser. No. 806,569
Int. Cl.^{6} B32B *27/00*

U.S. Cl. 428—421 **25 Claims**

1. A toner fuser member having improved toner release properties, said fuser member comprising:
  a substrate;
  an outermost layer comprising 100 parts by weight of a cured fluoroelastomer that includes at least about 21 mole percent of hexafluoropropylene (HTP) and at least 10 parts by weight of a metal oxide selected from the group consisting of cupric oxide, plumbous oxide, and mixtures thereof.

5,853,894

LABORATORY VESSEL HAVING HYDROPHOBIC COATING AND PROCESS FOR MANUFACTURING SAME

James F. Brown, Clifton, Va., assignor to Cytonix Corporation, Beltsville, Md.

Filed Feb. 3, 1997, Ser. No. 795,316
Int. Cl.^{6} B01L *3/00;* **B05D** *7/22;1/38;* **C08F** *114/18*

U.S. Cl. 428—422 **37 Claims**

1. A laboratory vessel, said vessel comprising a vessel material having a surface intended to contact a liquid and a coating applied to at least a portion of the surface, wherein said coating comprises the polymerization product of at least one substantially non-branched fluorinated monomer, said fluorinated monomer having from about 3 to about 20 carbon atoms and at least one terminal trifluoromethyl group, said coating comprising a coating surface having a surface area populated with 30% by area or more trifluoromethyl groups and a surface energy of about 22 dynes/cm or lower at 20° C.

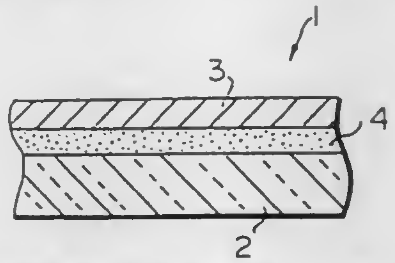
5,853,895

BONDED VEHICULAR GLASS ASSEMBLIES UTILIZING TWO-COMPONENT URETHANES, AND RELATED METHODS OF BONDING

Jeffrey A. Lewno, Hudsonville, Mich., assignor to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 420,233, Apr. 11, 1995, abandoned.
This application Aug. 22, 1997, Ser. No. 924,405
Int. Cl.^{6} B32B *27/00;27/40;* **B60J** *1/00;* **E06B** *3/00*

U.S. Cl. 425—425.6 **125 Claims**



1. A vehicular window assembly suitable for use in a vehicle, said window assembly comprising:
  a glass panel having a first surface and an opposing second surface;
  a load-bearing attachment member selected from the group consisting of mounting members, hinges, clevises, latches, lift brackets, division bars, positionable members, guide tracks, handles, guide pins, strut-mounting hardware, strikers, struts, power-mounting hardware, track members, rails, latch members, antennas, wiper mounts, sealing members, cosmetic articles, pin components, and hinge members; and
  said glass panel and said load-bearinig attachment member joined by an adhesive layer;
  said adhesive layer consisting essentially of a layer of a rapid set, rapid cure, two-component urethane adhesive disposed between said first surface of said glass panel and said attachment member, said layer of adhesive cured to form a joint suitable for use on the vehicle;
  wherein said rapid set characteristic is such that said adhesive achieves a set within a time period of about 3 minutes or less from the time of initial disposition of said adhesive between said glass panel and said attachment member, and wherein

said rapid cure characteristic is such that said adhesive cures in a time period of less than about 60 minutes from the time of adhesive set;

said layer of cured adhesive bonding said load bearing attachment member to said first surface of said glass panel prior to installation of said assembly in the vehicle and without exposure of said bonded load bearing attachment member on said second surface of said panel.

5,853,896

WATER REPELLENT AGENT FOR GLASS

Hidetoshi Kondo, and Atsushi Sakuma, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1997, Ser. No. 819,245

Claims priority, application Japan, Mar. 29, 1996, 8-104264

Int. Cl.^{6} B32B *17/10;* C03C *17/30*

U.S. Cl. 428—429 **19 Claims**

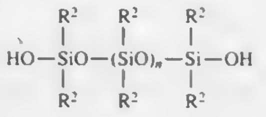
13. A glass article having at least one surface, wherein at least a portion of said surface is treated with a blend consisting essentially of a mixture of:

(A) 100 parts by weight of an organosilane having the formula

$$R^1_aSiX_{(4-a)}$$

wherein R^1 is a monovalent hydrocarbon group having 3 to 20 carbon atoms, X is a hydrolyzable group and a is an integer having a value of 1 to 3; and

(B) 10 to 1,000 parts by weight of a diorganopolysiloxane having a viscosity of 0.65 to 500 centistokes at 25° C. and having the formula



$$\begin{array}{c} \quad\ R^2 \qquad R^2 \qquad\ R^2 \\ \quad\ | \qquad\quad | \qquad\quad\ | \\ HO-SiO-(SiO)_n-Si-OH \\ \quad\ | \qquad\quad | \qquad\quad\ | \\ \quad\ R^2 \qquad R^2 \qquad\ R^2 \end{array}$$

wherein R^2 is a monovalent hydrocarbon group having 1 to 6 carbon atoms and n is an integer having a value greater than 0, said blend being free of acid having an acid dissociation index (pKa) below 5.0 and being essentially free of a condensation catalyst.

5,853,897

SUBSTRATE COATED WITH HIGHLY DIFFUSIVE METAL SURFACE LAYER

Darell E Engelhaupt, St. Cloud, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 206,371, Mar. 4, 1994, which is a division of Ser. No. 844,969, Feb. 29, 1992, Pat. No. 5,326,454, which is a continuation of Ser. No. 092,738, Aug. 26, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 471,450

Int. Cl.^{6} B32B *15/04*

U.S. Cl. 428—457 **6 Claims**

1. An article comprising:

a substrate; and

a highly diffusive metal surface coating on said substrate, said coating including a surface area having a microgeometric ratio greater than about 1000:1, wherein said coating is characterized by a redundant dendritic crystal growth pattern.

5,853,898

THERMAL INK-TRANSFER RECORDING MATERIAL

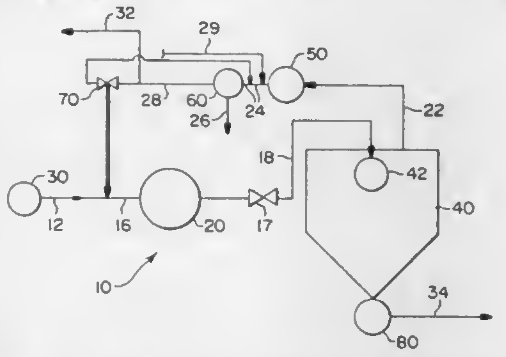
Yuji Obara, and Tetsuya Abe, both of Kanuma, Japan, assignors to Sony Chemicals Corp., Tokyo, Japan

Filed Dec. 13, 1996, Ser. No. 766,671

Claims priority, application Japan, Dec. 14, 1995, 7-347959

Int. Cl.^{6} B41M *5/40*

U.S. Cl. 428—488.4 **8 Claims**



1. A thermal ink-transfer recording material comprising:

a base material having a surface;

a release layer disposed on the surface; and

a thermally transferable ink layer disposed on the release layer, said release layer comprising from about 70% to about 95% by weight of a wax, from about 1% to about 20% by weight of a rubber elastomer and from about 5% to about 25% by weight of a caprolactone oligomer, based upon the weight of said release layer.

5,853,899

AQUEOUS INK RECEPTIVE INK JET RECEIVING MEDIUM YIELDING A WATER RESISTANT INK JET PRINT

Brian L. Anderson, Chicopee, Mass., and Brenda M. Warren, South Hadley, Mass., assignors to Rexam Graphics Inc., South Hadley, Mass.

Filed Nov. 4, 1996, Ser. No. 743,370

Int. Cl.^{6} B23B *23/08*

U.S. Cl. 428—507 **9 Claims**

1. An ink jet receiving medium having an ink receptive coating on a substrate with the coating being comprised of a blend of an ethylene vinylacetate copolymer and a fully hydrolyzed polyvinyl alcohol.

5,853,900

ALKENYLNITRILE-CONTAINING BINDERS FOR PAPER COATING SLIPS

Bernhard Schuler, Mannheim; Elmar Schwarzenbach, Römerberg; Jürgen Hartmann, Frankenthal, and Chung-Ji Tschang, Bad Dürkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 563,625, Nov. 28, 1995, abandoned. This application Mar. 27, 1997, Ser. No. 835,027

Claims priority, application Germany, Dec. 1, 1994, 44 42 729.8

Int. Cl.^{6} D21H *19/58;* C08L *51/00;* C08F *265/00*

U.S. Cl. 428—514 **9 Claims**

1. A paper coated with a dried coating of an aqueous coating slip composition containing pigments and an emulsion copolymer as binder for said pigments, said copolymer comprising

from 0 to 6% by weight of vinyl aromatic,

from 40 to 95% by weight of a C_1–C_{10}-alkyl(meth)acrylate,

from 5 to 40% by weight of an alkenylnitrile,

from 0 to 10% by weight of an ethylenically unsaturated acid and

from 0 to 20% by weight of further monomers;

said binder comprising an emulsion copolymer prepared in at least two stages; at least one of said stages being the outer stage and comprising from 10 to 75% by weight of the polymer content of said binder said at least one outer stage containing at least 90% by weight of the total amount of the alkenylnitrile monomer contained in the monomer composition of said binder; said slip composition containing the claimed emulsion copolymer in an amount of from 1 to 20% by weight, based on the pigment content of the paper coating slip composition.

5,853,901

LIGHTWEIGHT DECORATIVE PAPER PRODUCTS FOR PRESSURE LAMINATES AND METHOD FOR FORMING THE SAME

Frank L. Cessna, 4412 Riverview Ave., Middletown, Ohio 45042

Filed Dec. 19, 1996, Ser. No. 772,067

Int. Cl.^{6} B32B *21/08;27/04*

U.S. Cl. 428—537.5 **35 Claims**

1. A lightweight paper face sheet for laminated decorative paper products, said face sheet comprising a ream weight of 50 pounds or less and formed from a furnish substantially free of dye, pigments and rutile titanium, and having at least one finished surface receptive to the application of a post-paper making decorative layer for selective decorative presentation.

5,853,902

METAL HONEYCOMB CORE BODY

Masayoshi Usui, Shizukoa, Japan, assignor to Usui Kokusai Sangyo Kaisha, Ltd., Shizuoka, Japan

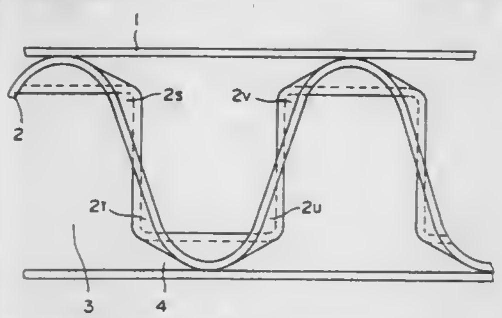
PCT No. PCT/JP95/02455, § 371 Date Jun. 2, 1997, § 102(e) Date Jun. 2, 1997, PCT Pub. No. WO96/16735, PCT Pub. Date Jun. 6, 1996

PCT Filed Dec. 1, 1995, Ser. No. 849,481

Claims priority, application Japan, Dec. 2, 1994, 6-324022

Int. Cl.^{6} B21D *39/00;* B23B *15/00;* B21C *37/00;* B01J *21/04*

U.S. Cl. 428—593 **19 Claims**



1. A metal honeycomb core body comprising:

a planar sheet made of a heat resistant metal; and

a corrugated sheet made of heat-resistant metal disposed against said planar sheet, said planar sheet and said corrugated sheet being arranged in a manner to form said metal honeycomb core body and to conduct a flow of exhaust gas in an axial direction through said metal honeycomb body from an inlet end to an outlet end thereof;

a first essentially sinusoidal wave-shaped portion of the corrugated sheet which has a wave height selected to contact a first portion of said planar sheet proximate one of the inlet end and the outlet end, and

a second rectangular wave-shaped portion of the corrugated sheet which has a wave height less than that of said first essentially sinusoidal wave-shaped portion, and which has a non-contact relationship with said planar sheet, said second rectangular wave-shaped portion having four corners that respectively form four projection portions which project out beyond a sinusoidal wave form of said first sinusoidal wave-shaped portion to project into and disturb the gas flow passing from the inlet end to the outlet end of said metal honeycomb core body and to increase the contact efficiency between the gas and at least one of said planar sheet and said corrugated sheet.

5,853,903

STEEL SHEET FOR EXCELLENT PANEL APPEARANCE AND DENT RESISTANCE AFTER PANEL-FORMING

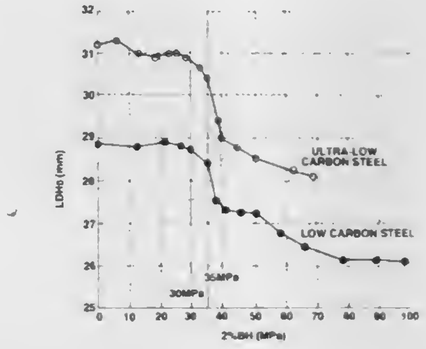
Yoshihiro Hosoya; Fusato Kitano, both of Fukuyama, Japan, and Yasunobu Nagataki, Evanston, Ill., assignors to NKK Corporation, Tokyo, Japan

Filed Apr. 28, 1997, Ser. No. 847,896

Claims priority, application Japan, May 7, 1996, 8-137651

Int. Cl.^{6} B32B *15/01*

U.S. Cl. 428—669 **11 Claims**



1. A cold-rolled steel sheet for excellent panel appearance and dent resistance after panel-forming, comprising a steel composition containing 0.0010 to 0.01 wt % of C, 0 to 0.2 wt % of Si, 0.1 to 1.5 wt % of Mn, 0 to 0.05 wt % of P, 0 to 0.02 wt % of S, 0.03 to 0.10 wt % of sol. Al, and 0 to 0.0040 wt % of N, and further containing one or both of 0.005 to 0.08 wt % of Nb and 0.01 to 0.07 wt % of Ti in the ranges given by the following formulae (1) and (2):

$$\{(12/93)Nb+(12/48)Ti^*\}\geqq 0.0005 \tag{1}$$

$$0\leqq C-\{(12/93)Nb+(12/48)Ti^*\}\leqq 0.0015 \tag{2}$$

wherein $Ti^*=Ti-\{(48/32)S+(48/14)N\}$

said cold-rolled steel sheet having a bake hardenability BH of 10 to 35 MPa obtained by a 2% tensile prestrain and 170° C.×20 min heat treatment;

said bake hardenability BH (MPa) and a yield strength YP (MPa) of said steel sheet satisfying the following formulae (3*a*) and (4*a*)

$$BH\geqq \exp(-0.115\cdot YP+23.0) \tag{3a}$$

$$0.67\cdot BH+160\leqq YP\leqq -0.8\cdot BH+280 \tag{4a}$$

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5,853,904

HIGH TEMPERATURE ARTICLES

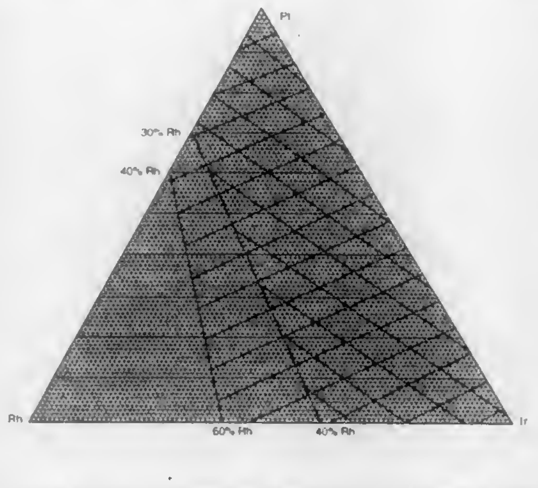
William G. Hall, Warborough, and David C. Power, Linton, both of United Kingdom, assignors to Johnson Matthey Public Limited Company, London, United Kingdom

Continuation of Ser. No. 529,102, Sep. 15, 1995, abandoned. This application Apr. 17, 1997, Ser. No. 840,903

Claims priority, application United Kingdom, Sep. 16, 1994, 9418705

Int. Cl.^{6} F02K *9/97;* C22C *5/00*

U.S. Cl. 428—670 **3 Claims**



1. A rocket nozzle consisting essentially of a binary alloy of from 0.5 to 10 wt % rhodium and the remainder being iridium, said alloy being characterized by its ability to withstand the combination of high temperatures in excess of 1150° C. and structural loads.

5,853,905

EFFICIENT SINGLE LAYER ELECTROLUMINESCENT DEVICE

Franky So, Tempe; Chan-Long Shieh, Paradise Valley, both of Ariz.; Hsing-Chung Lee, Calabasas, Calif., and Song Q. Shi, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 8, 1997, Ser. No. 925,375

Int. Cl.^{6} B32B *9/00;* H05B *33/14*

U.S. Cl. 428—690 **34 Claims**

1. An electroluminescent device comprising:

a body of small molecule organic material(s) sandwiched between a first electrode and a second electrode;

a layer of first insulative material placed between the body of small molecule organic material and the first electrode, and a layer of second insulative material placed between the body of small molecule organic material and the second electrode;

the body of organic material having a bandgap between 1.5 and 3.5 eV;

the layer of first insulative material having a thickness which allows first carriers from the first electrode to tunnel therethrough and the second insulative material having a thickness which allows second carriers from the second electrode to tunnel therethrough; and

the layer of first insulative material providing a barrier to the second carriers and the layer of second insulative material providing a barrier to the first carriers.

5,853,906

CONDUCTIVE POLYMER COMPOSITIONS AND PROCESSES THEREOF

Bing R. Hsieh, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1997, Ser. No. 950,303

Int. Cl.^{6} B32B *9/00*

U.S. Cl. 428—690 **7 Claims**

1. A conductive coating comprising an oxidized oligomer salt, a charge transport component, and a polymer binder, wherein the oxidized oligomer salt is selected from the group consisting of oxidized oligo-arylamine salts, oxidized oligo-thiophene salts, oxidized oligo-aniline salts, oxidized porphyrin salts, oxidized tetrathiotetracene salts oxidized tetraselenotetracene salts, oxidized mono and oligo-tetrathiafulvalene salts, oligo-tetraselenafulvalene salts, oxidized oligo-metallocene salts, and mixtures thereof.

5,853,907

AROMATIC POLYAMIDE FILM, METHOD FOR PRODUCING THE SAME, AND MAGNETIC RECORDING MEDIUM AND SOLAR CELL USING THE SAME

Takashi Yamada, and Masayuki Nakatani, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/01642, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/06128, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 18, 1995, Ser. No. 793,074

Claims priority, application Japan, Aug. 19, 1994, 6-195484

Int. Cl.^{6} B32B *27/34*

U.S. Cl. 428—694 SG **22 Claims**

1. An aromatic polyamide film containing micro-particles in an amount in a range from 0.001 to 10% by weight, characterized in that, at least on one film surface, a distribution density of projections having a height in a range from 0.01 μm to 0.05 μm is in a range from 10^2 to 10^7/mm^2; that of projections having a height in a range from 0.06 μm to 0.26 μm is in a range from 3 ^{4} to 5×10^3/mm^2; that of projections having a height in a range from 0.27 μm to less than 0.54 μm is in a range from 0 to 5/cm^2; that of projections having a height in a range from 0.54 μm to less than 0.81 μm is in a range from 0 to 2/10 cm^2; and that of projections having a height of 0.81 μm or more is in a range from 0 to 0.5/100 cm^2.

5,853,908

PROTECTIVE DEVICE FOR SECONDARY BATTERIES

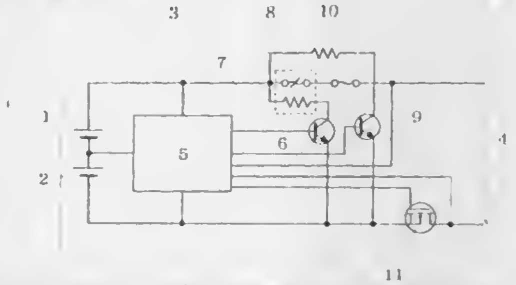
Tadashi Okutoh, Kawasaki, Japan, assignor to Nippon Moli Energy Corp., Kanagawa, Japan

Filed Oct. 29, 1997, Ser. No. 960,376

Claims priority, application Japan, Oct. 29, 1996, 8-286757

Int. Cl.^{6} H01M *14/00*

U.S. Cl. 429—7 **4 Claims**



1. A protective device for secondary batteries using a non-aqueous electrolyte, which includes a current-conducting circuit comprising a voltage-detecting means for detecting voltages of a plurality of batteries during charging, a heat-generating resistance which conducts a current when one of detected voltages is higher than a preset voltage, and a temperature fuse thermally coupled to said heat-generating resistance, so that when a state where the detected battery voltage is higher than a preset value continues longer than a preset time, said temperature fuse is fused down to cut off a charging circuit for said batteries and an output circuit from said batteries, and further includes a battery-discharging means actuated upon detection of the fusing-down of said temperature fuse to place said battery in a dischargeable state.

5,853,909

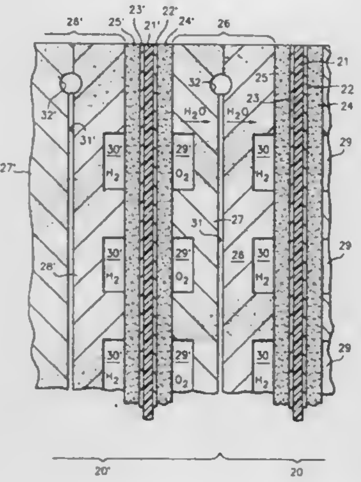
ION EXCHANGE MEMBRANE FUEL CELL POWER PLANT WITH WATER MANAGEMENT PRESSURE DIFFERENTIALS

Carl Reiser, Glastonbury, Conn., assignor to International Fuel Cells, LLC, S. Windsor, Conn.

Continuation of Ser. No. 494,132, Jun. 23, 1995, Pat. No. 5,700,595. This application Oct. 22, 1997, Ser. No. 956,120

Int. Cl.^{6} H01M *8/04;8/10*

U.S. Cl. 429—13 **6 Claims**



1. A method for operating a solid polymer electrolyte membrane fuel cell power plant, said method comprising the steps of:

a) providing oxidant and fuel reactant gas streams on opposite cathode and anode sides of the solid polymer electrolyte membrane;

b) providing a circulating water coolant stream in communication with said cathode side and anode side of the electrolyte membrane;

c) providing fine pore plates between said oxidant gas stream and said circulating water coolant stream and between said fuel gas stream and said circulating water coolant stream

d) setting said oxidant reactant gas stream at a first predetermined pressure;

e) setting said water coolant stream at a second predetermined pressure which is less than said first predetermined pressure so as to create a positive target pressure differential (ΔP) between said oxidant reactant gas stream and said water coolant stream, which ΔP is operative to pump water appearing on the cathode side of the electrolyte membrane through one of said fine pore plates and into said circulating water coolant stream; and

f) setting said fuel gas stream at a predetermined pressure relative to the coolant stream pressure which will allow coolant water to be delivered to or removed from the anode side of the membrane.

5,853,910

FUEL CELL POWER GENERATING APPARATUS AND OPERATION METHOD THEREFOR

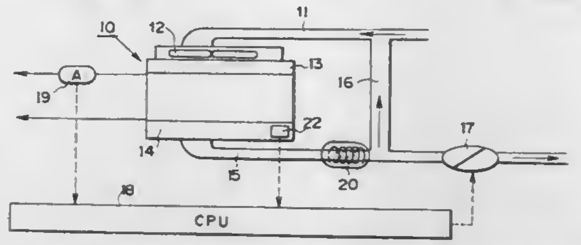
Norihiro Tomioka, Sapporo; Hiroehi Nakashima, Nagoya; Masataka Ueno; Koichi Shiraishi, both of Sapporo, and Saki Izumisawa, Hiyama-gun, all of Japan, assignors to Kabushikikaisha Equos Research, Tokyo-to, Japan

Filed Mar. 27, 1997, Ser. No. 827,172

Claims priority, application Japan, Mar. 29, 1996, 8-103883

Int. Cl.^{6} H01M *8/04*

U.S. Cl. 429—17 **15 Claims**



1. A fuel cell power generating apparatus using a fuel cell having a structure such that a cathode and an anode are disposed on opposite sides of a polymer electrolyte membrane, comprising: an air introduction passage for introducing air to the cathode; an air discharge passage for discharging to the outside of the system discharge gas containing reactant water generated at the cathode; a circulation passage connected between said air discharge passage and said air introduction passage in order to again introduce at least a portion of the discharge gas flowing through said air discharge passage to said air introduction passage and thus to the cathode; a valve provided along at least one of said air introduction and air discharge passages; a temperature sensor for measuring the temperature of the discharge gas from the cathode; an ampere meter for measuring the level of an electric current output from the fuel cell; and a control unit for controlling the degree of opening of said valve in accordance with the temperature of the discharge gas and the output level of the electric current measured respectively by said temperature sensor and said ampere meter.

5,853,911

ELECTROCHEMICAL CELL

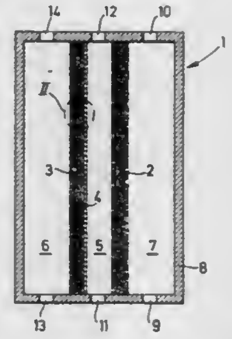
Karl-Heinz Tetzlaff; Rüdiger Walz, both of Kelkheim, and Freddy Helmer-Metzmann, Mainz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 432,990, May 2, 1995, Pat. No. 5,656,389. This application Mar. 13, 1997, Ser. No. 816,263

Claims priority, application Germany, May 4, 1994, P 44 15 678.2

Int. Cl.^{6} H01M *4/88;4/86*

U.S. Cl. 429—41 **3 Claims**



1. An electrochemical cell comprising a housing in which two diffusion electrodes are arranged which contain active catalyst particles, a compartment for a liquid electrolyte is provided between the diffusion electrodes and at least one ion exchanger membrane is arranged between the diffusion electrodes directly in front of one of the diffusion electrodes, and a contiguous compartment for a gas is provided on a rear side of the gas diffusion electrodes opposite from the ion exchanger membrane, wherein the

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electrolyte is alkaline which has an alkali concentration greater than or equal to approximately 30% by weight, and the ion exchanger membrane is an anion exchanger membrane, wherein the ion exchanger membrane used is a sulfonated polyetherketone.

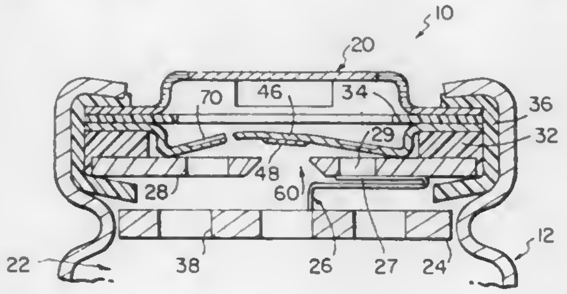
5,853,912
LITHIUM ION ELECTROCHEMICAL CELL WITH SAFETY VALVE ELECTRICAL DISCONNECT

Htun S. Naing, Cockeysville, Md., and David Shapiro, Valdese, N.C., assignors to SAFT America, Inc., Valdosta, Calif.

Filed Jul. 10, 1996, Ser. No. 677,961

Int. Cl.^{6} H01M *2/00*

U.S. Cl. 429—61 **13 Claims**



1. In a compact electrochemical cell comprising:

a can housing internally a generator unit including an anode, a cathode, a separator separating said anode and cathode, an electrolyte, an explosion-proof valve, electrical disconnect assembly including an explosion-proof vent valve contact disk sealing said can, electrical circuit means including said vent valve contact disk and a juxtaposed stripper contact disk welded thereto at a weld point by a weld nugget electrically connecting one of said anode and said cathode to said vent valve contact disk, and wherein said explosion-proof vent valve contact disk is deformable upon an increase of internal pressure within said can to cause initially electrical separation of the vent valve contact disk from said stripper contact disk at said weld connection to break said electrical circuit prior to rupturing of the valve vent contact disk at a further increased pressurization internally of said sealed can,

the improvement wherein:

said vent valve contact disk at said weld point includes a thinned, localized weakened portion within said stripper contact disk for facilitating rupture of said stripper contact disk at said weld point between the weld weakened portion and the center of said juxtaposed stripper contact disk such that said weakened portion of said stripper contact disk separates from the stripper contact disk to open said circuit means.

5,853,913
RE-FILLING AND FUME-DISCHARGING DEVICE FOR ELECTRIC ACCUMULATOR BATTERIES

Olimpio Stocchiero, Via Kennedy 5, 36050 Montorso Vicentino, Italy

PCT No. PCT/EP95/03915, § 371 Date Mar. 27, 1997, § 102(e) Date Mar. 27, 1997, PCT Pub. No. WO96/10846, PCT Pub. Date Apr. 11, 1996

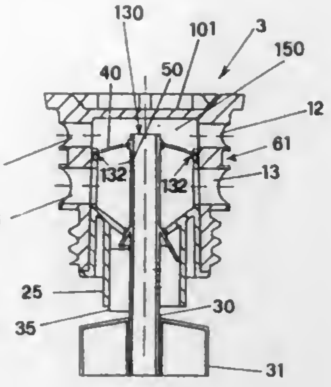
PCT Filed Oct. 4, 1995, Ser. No. 809,776

Claims priority, application Italy, Oct. 4, 1994, VI94A0139

Int. Cl.^{6} H01M *2/36*

U.S. Cl. 429—63 **20 Claims**

1. An automatic filling device for introducing electrolyte refill liquid into an electric accumulator, said device adapted to be inserted into a hole formed in the lid of an electric accumulator having at least one first duct for fume discharge and at least one second duct for refill liquid, comprising:



a body sealingly insertable into the hole having a cavity and top, said body having at least one first hole for fume discharge, communicating with the corresponding first duct for the discharge of the fumes and at least one second hole for refill, communicating with the corresponding second duct for the inlet of the re-fill liquid:

a tubular element including an outer tubular section having a side wall portion sized for matching said cavity in said body having at least one through-opening for communicating with said at least one second hole; and a cylindrical guiding element co-axial with said outer tubular section;

a transversal surface formed within the tubular element having a central throughhole:

a tubular stick having an open upper end, said stick being slidingly secured in said hole and passing through said transversal surface;

a float formed at a lower end of the stick co-operating with the liquid within the accumulator to produce an upward pushing force on the float;

a flexible membrane having a central opening and an outer edge, being connected with said tubular stick at the upper end;

first sealing locking means for securing the stick in the opening of the central membrane, and second sealing locking means for connecting the outer edge of the flexible membrane to the side wall of the tubular section; said tubular stick further including closing means located intermediate the ends thereof for engaging with said hole in said transversal surface to seal it, to selectively permit and prevent passage of re-fill liquid flowing from said at least one second hole, said flexible membrane defining on one side thereof within said tubular member an exhaust chamber communicating with said at least one first hole and with the open end of said tubular stick and, on an opposite side, a build-up chamber for allowing build-up of the refill liquid, communicating with said at least one second hole and within which pressure of said built-up refill liquid contained therein causes the deformation of said membrane, to produce on said tubular stick a force which increases the pushing force provided by said float.

5,853,914
RECHARGEABLE LITHIUM BATTERY HAVING A SPECIFIC PRESSURE MEANS COMPRISING A POLYMER GEL MATERIAL

Soichiro Kawakami, Nara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

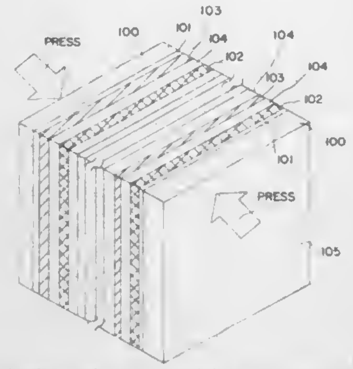
Filed Sep. 6, 1996, Ser. No. 709,448

Claims priority, application Japan, Sep. 6, 1995, 7-252068

Int. Cl.^{6} H01M *2/10*

U.S. Cl. 429—66 **29 Claims**

1. A rechargeable lithium battery comprising at least an anode, a separator, a cathode, and an electrolyte or electrolyte solution integrated in a battery housing, said rechargeable lithium battery being provided with a sheet comprising a polymer gel that presses said anode and cathode.



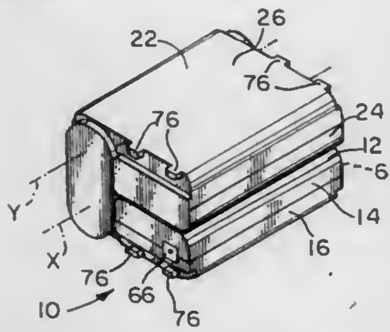
5,853,915
FOLDABLE MULTI-CONFIGURATION BATTERY PACK

Shohei Suto, Tokyo, Japan, assignor to Mattel, Inc., El Segundo, Calif.

Filed Aug. 19, 1997, Ser. No. 914,505

Int. Cl.^{6} H01M *2/10*

U.S. Cl. 429—99 **13 Claims**



1. A foldable, multi-configuration battery pack comprising:

at least a pair of casings, each casing housing at least a pair of battery cells;

a first rigid link having opposing ends, each end of the first link being pivotally coupled with a first end of a separate one of the pair of casings such that the pair of casings pivot with respect to one another and with respect to the first link about separate and laterally spaced apart axes transverse to the first link; and

an electrical circuit connecting together all of the battery cells in at least the pair of casings.

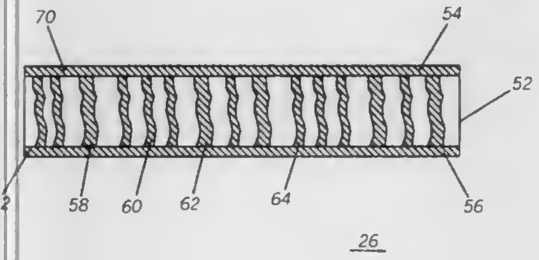
5,853,916
MULTI-LAYERED POLYMERIC GEL ELECTROLYTE AND ELECTROCHEMICAL CELL USING SAME

Ganesh Venugopal, Duluth, and Anaba A. Anani, Lawrenceville, both of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 28, 1996, Ser. No. 739,229

Int. Cl.^{6} H01M *10/40*

U.S. Cl. 429—190 **58 Claims**



1. An electrolyte system for an electrochemical cell, comprising:

a discrete, first electrolyte polymeric carrier layer which comprises a plurality of sublayers, is non-gelling, and having first and second major surfaces:

a discrete second electrolyte polymeric carrier layer which is substantially gelling, and is disposed on at least one of said first and second major surfaces of said first electrolyte carrier layer; and

an electrolyte active species dispersed throughout at least said discrete second electrolyte layer wherein the gelling layer is not present in the non-gelling layer.

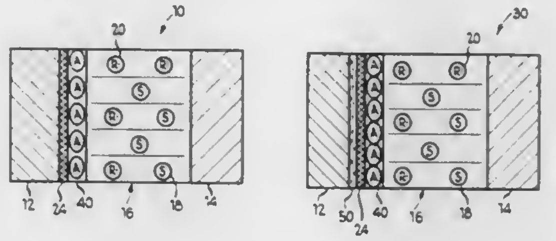
5,853,917
ELECTROLYTIC CELL HAVING A CONTROLLED ELECTRODE SURFACE INTERFACE

Denis G. Fauteux, Acton, and Jie Shi, Arlington, both of Mass., assignors to Mitsubishi Chemical Corporation, Japan

Filed Mar. 6, 1997, Ser. No. 812,021

Int. Cl.^{6} H01M *6/14*

U.S. Cl. 429—194 **15 Claims**



1. An electrochemical cell having a controlled electrode surface comprising:

a first electrode and a second electrode wherein at least one of the first and second electrodes includes a surface with carbon:

an electrolyte associated with at least the surface of a respective electrode having the carbon, wherein the electrolyte includes at least one solvent;

passivating means associated with the carbon surface for precluding the at least one solvent from contact and, in turn, chemical interaction with the carbon surface so as preclude the otherwise generation of gas from decomposition of the solvent upon interaction with the carbon.

an additive associated with at least one of the electrolyte or at least one of the first and second electrodes, wherein the additive includes means for precluding gas formation within the electrochemical cell as a result of decomposition of the additive at the electrode with the carbon surface during cell cycling and storage.

5,853,918
LITHIUM SECONDARY BATTERY CONTAINING GRAPHITIZED CARBON ACTIVE MATERIAL

Satoshi Tanno, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Aug. 23, 1996, Ser. No. 701,329

Claims priority, application Japan, Aug. 25, 1995, 7-240803; Aug. 8, 1996, 8-226039

Int. Cl.^{6} H01M *4/58*

U.S. Cl. 429—218 **3 Claims**

1. A lithium secondary battery comprising a negative electrode comprising graphitized carbon material in a chrysanthemum flower appearance as is shown in FIG. 1 and composed of a layer

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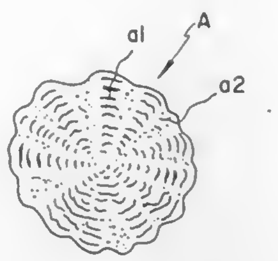


structure and a turbostratic structure obtained by subjecting fluid coke to a graphitization treatment.

5,853,919

HYDROGEN-ABSORBING ALLOY, ELECTRODE AND ALKALINE SECONDARY BATTERY

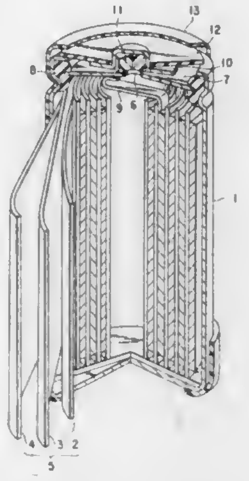
Tatsuoki Kohno, Kawasaki; Motoya Kanda, and Shinji Tsuruta, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 17, 1997, Ser. No. 877,200

Claims priority, application Japan, Jun. 19, 1996, 8-158376

Int. Cl.^{6} H01M *4/38;4/46*

U.S. Cl. 429—223 **29 Claims**



1. A hydrogen-absorbing alloy which comprises:

a first region comprising 50 to 75 mole % of Mg, and not more than 50 mole % of Ni; and

at least two regions selected from the group consisting of a second region comprising less than 50 mole % (including 0 mole %) of Mg and less than 75 mole % of Ni, a third region comprising not less than 75 mole % of Mg, and a fourth region comprising not less than 75 mole % of Ni.

5,853,920

METHOD OF MANUFACTURING ZINC-TITANIUM MOTHER ALLOY AND MANGANESE DRY BATTERY

Hajime Murakami, Fujisawa; Ryohei Ashihara, Neyagawa; Kohei Kubota, Okegawa, and Koichi Sato, Akishima, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Osaka-fu, and Matsushita Electric Industrial Co., Ltd., Tokyo, both of Japan

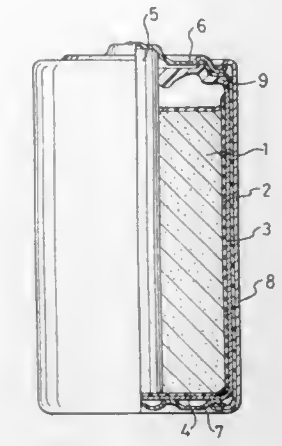
Filed Mar. 5, 1997, Ser. No. 811,910

Claims priority, application Japan, Mar. 14, 1996, 8-057226; Oct. 7, 1996, 8-266201

Int. Cl.^{6} H01M *4/42;* **C22C** *18/00*

U.S. Cl. 429—229 **20 Claims**

12. An anode zinc can for a manganese dry battery, said anode zinc can having a bottomed cylindrical shape and being composed



of a zinc-titanium alloy that is free from intermetallic compounds Zn_2Ti, ZnTi, and $ZnTi_2$ as well as a metallic Ti phase.

5,853,921

METHODS OF FABRICATING PHASE SHIFT MASKS BY CONTROLLING EXPOSURE DOSES

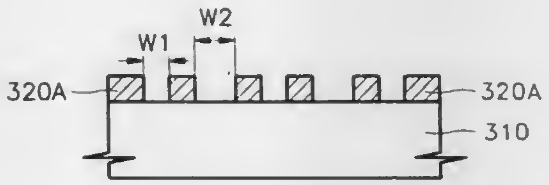
Seong-yong Moon, Kyungki-do; In-kyun Shin, Seoul, and Ho-young Kang, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 28, 1997, Ser. No. 905,792

Claims priority, application Rep. of Korea, Sep. 10, 1996, 96-39148

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **20 Claims**



1. A method of fabricating a phase shift mask having wider phase shifting trenches than non-phase shifting openings, comprising the steps of:

forming a radiation-blocking layer on a phase shift mask substrate;

forming a photoresist layer on the radiation-blocking layer;

exposing first portions of the photoresist layer at a first exposure dose, and second portions of the photoresist layer at a second exposure dose that is greater than the first exposure dose such that the second portions of the photoresist layer are wider than the first portions of the photoresist layer;

etching the radiation blocking layer using the photoresist layer as an etch mask, to thereby produce first apertures in the radiation blocking layer beneath the first portions of the photoresist layer and second apertures in the radiation blocking layer which are wider than the first apertures, beneath the second portions of the photoresist layer, the first apertures forming non-phase shifting openings on the phase shift mask substrate; and

etching the phase shift mask substrate beneath the second apertures, to thereby produce phase shifting trenches in the phase shift mask substrate that are wider than the non-phase shifting openings in the phase shift mask substrate.

5,853,922

PHASE SHIFTING MASK, MANUFACTURING METHOD THEREOF, AND EXPOSURE METHOD USING SUCH A PHASE SHIFTING MASK

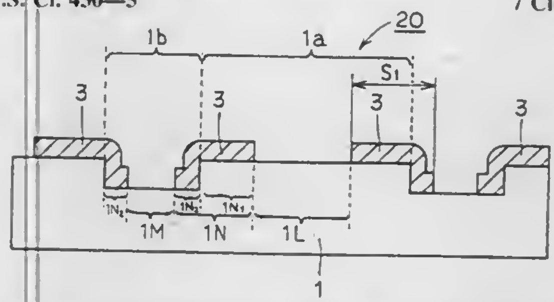
Shuji Nakao, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 644,755, May 10, 1996, Pat. No. 5,698,348, which is a division of Ser. No. 298,098, Aug. 30, 1994, Pat. No. 5,536,602. This application Sep. 9, 1997, Ser. No. 925,909

Claims priority, application Japan, Oct. 18, 1993, 5-260034; Mar. 9, 1994, 6-038725

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **7 Claims**



1. A method of manufacturing a phase shifting mask, comprising the steps of:

forming a substrate including a first light transmitting portion which transmits exposure light and a second light transmitting portion which is adjacent to said first light transmitting portion and transmits exposure light to have a different phase from that of the exposure light transmitted through said first light transmitting portion; and

forming a semi-light shielding film which is located at an interface between said adjacent first and second light transmitting portions and extends in a part of said first and second light transmitting portions,

whereby said first light transmitting portion includes a first transmitting region and a first attenuated transmitting region in which said semi-light shielding film is formed, light intensity of the exposure light transmitted through said first transmitting region being greater than that of the exposure light transmitted through said first attenuated transmitting region, said second light transmitting portion includes a second transmitting region and a second attenuated transmitting region in which the semi-light shielding film is formed, light intensity of the exposure light transmitted through said second transmitting region being greater than that of the exposure light transmitted through said second attenuated transmitting region, and

said semi-light shielding film is formed to have transmittance of at least 3% and not more than 30%.

5,853,923

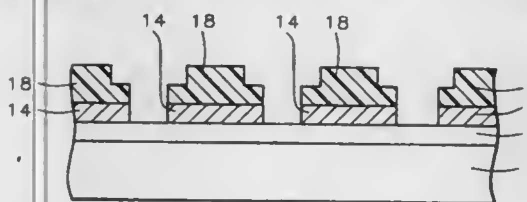
DOUBLE LAYER METHOD FOR FABRICATING A RIM TYPE ATTENUATING PHASE SHIFTING MASK

San-De Tzu, Taipei, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Oct. 23, 1997, Ser. No. 956,971

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—5 **27 Claims**



1. A method of forming a photomask, comprising the steps of:

providing a transparent mask substrate having a layer of first mask material formed on said transparent mask substrate and a layer of second mask material formed on said layer of first mask material;

forming a layer of resist material having a top portion and a bottom portion on said layer of second mask material;

exposing a first pattern in said top portion and said bottom portion of said layer of resist material using a first exposure dosage;

exposing a second pattern in said top portion of said layer of resist material using a second exposure dosage, wherein said second exposure dosage is such that said second pattern is not exposed in said bottom portion of said layer of resist material;

developing said layer of resist material, thereby forming said second pattern in said top portion of said layer of resist material and said first pattern in said bottom portion of said layer of resist material;

etching said first pattern into said layer of second mask material using a first etching method and said first pattern formed in said bottom portion of said layer of resist material as a mask;

etching said first pattern into said layer of first mask material using a second etching method and said first pattern formed in said bottom portion of said layer of resist material as a mask;

etching away part of said layer of resist material using a third etching method, thereby forming said second pattern in the remaining part of said layer of resist material;

etching said second pattern in said layer of second mask material, using a fourth etching method and said second pattern formed in said remaining part of said layer of resist material as a mask; and

removing said remaining part of said layer of resist material.

5,853,924

METHOD OF MANUFACTURING COLOR FILTERS

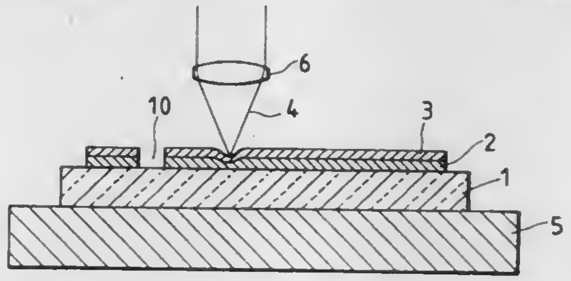
Katsutoshi Uwami; Toshiyuki Teshirogi; Hideharu Watanabe, and Tatsuya Moriike, all of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 575,274, Dec. 20, 1995, abandoned. This application Jun. 4, 1997, Ser. No. 868,656

Claims priority, application Japan, Dec. 26, 1994, 6-322437; Oct. 25, 1995, 7-277983

Int. Cl.^{6} G02B *5/20;* **G02F** *1/1335*

U.S. Cl. 430—7 **5 Claims**



1. A method of manufacturing color filters, comprising the steps of:

forming a plurality of parallel strips of color filter material on transparent electrodes, said transparent electrodes being disposed on a transparent board at a predetermined interval, a first group of said parallel strips being a first color, a second group of said parallel strips being a second color, and a third group of said parallel strips being a third color, wherein each of the first, second and third groups has a light transmittance defined by a unique light transmittance function which varies with respect to a wavelength of incident light;

intermittently moving said transparent board over a plurality of fixed pitch intervals while scanning a laser light along an exposed surface of the transparent board in a direction perpendicular to the parallel strips of color filter material wherein said intermittent movement of said transparent board is synchronized with said scanning of said laser light, wherein after each of the intermittent movements, the laser light having a

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wavelength produces a light transmittance of 10% or less through the first, second and third groups of parallel strips of color filter material such that portions of the color filter material having a uniform width are removed, thereby forming a plurality of color filters arranged in a matrix on the transparent board; and

forming a light-shield film on the transparent board between the plurality of color filters.

5,853,925

LATERAL DIFFUSION CONFIRMING PATTERN AND A METHOD OF MEASURING A LATERAL DIFFUSION

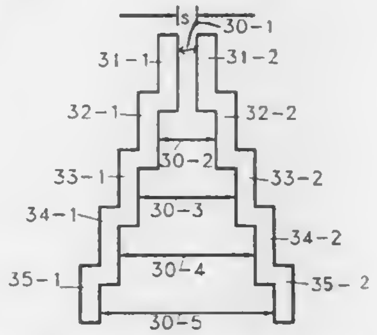
Hoon Huh, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-go, Rep. of Korea

Filed Feb. 20, 1997, Ser. No. 803,243

Claims priority, application Rep. of Korea, May 2, 1996, 96-14164

Int. Cl.^{6} G03F *7/00*

U.S. Cl. 430—11 **12 Claims**



1. A diffusion confirming pattern for measuring a diffusion distance of an etch-resistant component during a transfer process of a semiconductor device, said pattern comprising:

a first photoresist pattern formed on a substrate according to a first mask pattern; and

a second photoresist pattern formed on the substrate according to a second mask pattern, said first mask pattern being separated from said second mask pattern by a predetermined interval, said second photoresist pattern being separated from said first photoresist pattern by an interval, wherein the predetermined interval is compared with the interval between said first and second photoresist patterns to determine the diffusion distance of the etch-resistant component.

5,853,926

PRE-COATED, FUSED PLASTIC PARTICLES AS A PROTECTIVE OVERCOAT FOR COLOR PHOTOGRAPHIC PRINTS

Anne E. Bohan, Pittsford; Vito A. DePalma, Rochester; William K. Goebel, Rochester; Amy E. Jasek, Rochester, and Thomas H. Whitesides, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1997, Ser. No. 898,987

Int. Cl.^{6} G03C *1/76;11/08*

U.S. Cl. 430—14 **13 Claims**

1. An imaged photographic element having a protective overcoat thereon, the protective overcoat formed by the steps comprising:

providing a photographic element having at least one silver halide light-sensitive emulsion layer;

applying an aqueous coating comprising polymer particles having an average size of 0.1 to 50 microns at a weight percent of 5 to 50 percent, and a polymer latex binder at a weight percent of 1 to 3 percent, over the at least one silver halide light-sensitive emulsion layer;

developing the at least one silver halide light sensitive emulsion layer to provide an imaged photographic element; and

fusing the polymer particles to form a protective overcoat.

5,853,927

METHOD OF ALIGNING A MASK IN PHOTOLITHOGRAPHIC PROCESS

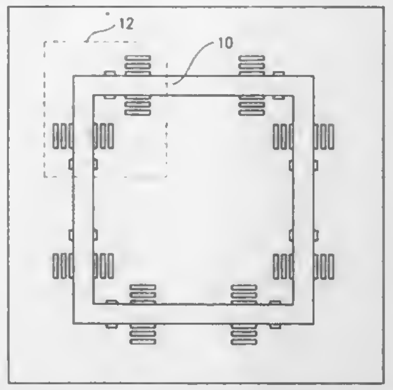
Chien Chao Huang, Kaohsiung, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Apr. 24, 1997, Ser. No. 842,352

Claims priority, application Taiwan, Mar. 24, 1997, 86103718

Int. Cl.^{6} G03F *9/00*

U.S. Cl. 430—22 **20 Claims**



1. A method for aligning a mask in a photolithographic process, comprising the steps of:

(1) providing the mask with an opaque frame having four corners;

(2) forming a plurality of alignment patterns on a platform where the mask is to be placed, wherein the alignment patterns include longitudinally adjacent first and second bars being oriented in a first direction, and longitudinally adjacent third and fourth bars oriented in a second direction perpendicular to the first direction; and

(3) performing an alignment of the mask by visually checking for misalignment of the mask with reference to the alignment patterns on the platform.

5,853,928

METHOD FOR FORMING BRAUN TUBE'S FLUORESCENT LAYER

Min-Ho Kim, Suwon, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 573,746

Claims priority, application Rep. of Korea, Dec. 26, 1994, 94-36915

Int. Cl.^{6} G03F *7/26;7/012;7/021;* G03G *15/045*

U.S. Cl. 430—28 **14 Claims**

1. A method for forming a Braun tube's fluorescent layer comprising the steps of

(a) electrophotographically coating conductive and photoconductive layers on an internal surface of a Braun tube's panel with a photoconductive material for said photoconductive layer comprising:

a water soluble polyacetone acrylamide as a binder;

a balance of water as a solvent for said binder;

4-diazo diphenylamine ½ zincchloride formaldehyde as a dye; and

4-4'-diazido stilbene 2,2'-disulfonic acid sodium salt as a solvent for said dye;

wherein said photoconductive material comprises 10 wt % of polyacetone acrylamide as said binder, a balance of water as said solvent for said binder, said dye of 0.1 wt % of 4-diazo diphenylamine ½ zincchloride formaldehyde, and 0.3 wt % of 4-4'diazido stilbene 2,2'-disulfonic acid sodium salt as said solvent for said dye;

(b) selectively exposing at least a part of said photoconductive layer to a visible ray; and

(c) developing said photoconductive material to form said fluorescent layer.

2. A method for forming a Braun tube's fluorescent layer comprising the steps of

(a) electrophotographically coating conductive and photoconductive layers on an internal surface of a Braun tube's panel with a photoconductive material for said photoconductive layer comprising:

a water soluble polyacetone acrylamide as a binder;

a balance of water as a solvent for said binder;

4-diazo diphenylamine ½ zincchloride formaldehyde as a dye; and

4-4'-diazido stilbene 2,2'-disulfonic acid sodium salt as a solvent for said dye;

wherein said photoconductive material comprises 10 wt % of polyacetone acrylamide as said binder, balance of water as said solvent for said binder, said dye of 0.2 wt % of 4-diazo diphenylamine ½ zincchloride formaldehyde, and 0.2 wt % of 4-4'diazido stilbene 2,2'-disulfonic acid sodium salt as said solvent for said dye;

(b) selectively exposing at least a part of said photoconductive layer to a visible ray; and

(c) developing said photoconductive material to form said fluorescent layer.

5,853,929

TRICHROMATIC SET OF COLORED TONERS

James Stanley Campbell, Manchester, United Kingdom, assignor to Zeneca Limited, London, England

Continuation of Ser. No. 571,964, Dec. 28, 1995, abandoned.

This application Jul. 9, 1997, Ser. No. 890,530

Claims priority, application United Kingdom, Jun. 28, 1993, 9313274

Int. Cl.^{6} G03G *9/09*

U.S. Cl. 430—45 **11 Claims**

1. A trichromatic set of coloured toners comprising a blue toner containing a metal phthalocyanine, a red toner containing a benzodifuranone dyestuff and a yellow toner containing an azopyridone dyestuff wherein the phthalocyanine is of formula 1

$$\text{M Pc}\text{———}(\text{—SO}_2\text{NHR})_y$$

wherein

M is copper or nickel;

Pc is a phthalocyanine radical;

R is C_{4-20}-alkyl; and

y is 3 or 4.

5,853,930

ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS USING BISAZO COMPOUNDS

Akihiro Kondoh, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

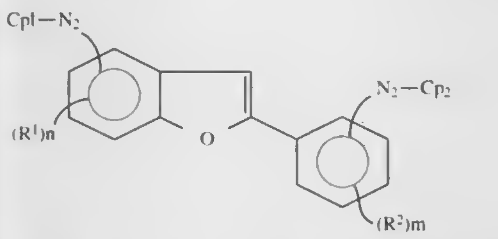
Filed Dec. 17, 1996, Ser. No. 768,233

Claims priority, application Japan, Dec. 22, 1995, 7-335307

Int. Cl.^{6} G03G *5/06*

U.S. Cl. 430—58 **9 Claims**

1. An electrophotographic photoconductor comprising as a charge carrier generating substance a bisazo compound of the general formula (I):



(I)

wherein R^1 and R^2 are the same or different, each representing a hydrogen atom, a halogen atom, a lower alkyl group optionally substituted with a fluorine atom, an aralkyl group optionally having a substituent, a lower alkoxy group, or a di-(lower alkyl)amino group; n is an integer from 1 to 3; m is an integer from 1 to 4; and Cp1 and Cp2 are the same or different, each representing an aromatic condensed heterocyclic or aromatic condensed hydrocarbon residue having at least one phenolic hydroxyl group and optionally having a substituted carbamoyl group or a heterocyclic group.

5,853,931

PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY

Shinya Yamamoto, Niigata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 22, 1997, Ser. No. 861,660

Claims priority, application Japan, May 22, 1996, 8-126934

Int. Cl.^{6} G03G *5/147*

U.S. Cl. 430—58 **11 Claims**

1. A photoreceptor for electrophotography comprising a substrate and at least one photoconductive (OPC) layer formed on said substrate and having a charge-generation function and a charge-transport function, said at least one OPC layer including a top layer containing a surfactant in an amount between 0.01% and 1% by weight of solid ingredient in said top layer, said surfactant having a perfluoroalkyl radical, and said surfactant having been exuded to a surface of said top layer of said at least one OPC layer.

5,853,932

LAYERED PHOTORECEPTOR STRUCTURES WITH OVERCOATINGS CONTAINING AN ALKALINE POLYMER

Damodar M. Pai, Fairport; John F. Yanus, Webster; Paul J. DeFeo, Sodus Point, and Dale S. Renfer, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1996, Ser. No. 720,121

Int. Cl.^{6} G03G *5/147*

U.S. Cl. 430—54 **12 Claims**

1. An electrophotographic imaging member comprising a substrate, a charge generating layer, a charge transport layer and an overcoat layer comprising an alkaline polymer.

5,853,933

PHOTOCONDUCTIVE MEMBER AND PERYLENE PROCESSES

James M. Duff; Ah-Mee Hor, both of Mississauga, and C. Geoffrey Allen, Waterdown, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1997, Ser. No. 867,595

Int. Cl.^{6} G03G *5/047*

U.S. Cl. 430—59 **19 Claims**

19. A photoconductive imaging member comprised of a photogenerating layer comprised of a perylene bisamide obtained from a perylene tetracarboxylic acid dianhydride, and which dianhydride is prepared by the dissolution of said acid dianhydride in an aqueous alkali metal hydroxide solution; filtration of the resultant solution through a fine porosity filter with a pore size of from about 0.1 to about 1 micron; converting the alkali metal salt formed to 3,4,9,10-perylene tetracarboxylic acid, and thereafter heating the resulting suspension to form 3,4,9,10-perylene tetracarboxylic acid dianhydride.

5,853,934
ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Kazumasa Watanabe; Shingo Fujimoto; Naoto Abe, all of Hino; Hideo Yoshizawa, Hachioji; Tsuyoshi Shimoda, Hachioji, and Yohko Kitahara, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

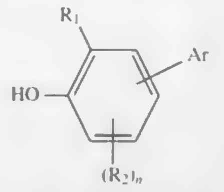
Filed Jul. 18, 1997, Ser. No. 896,846

Claims priority, application Japan, Jul. 24, 1996, 8-194674

Int. Cl.^{6} G03G *5/043*

U.S. Cl. 430—59 **14 Claims**

1. An electrophotographic photoreceptor comprising a substrate and provided thereon, a photosensitive layer comprising a charge generation material, a triarylamine charge transport material, and a compound represented by Formula 1:



Formula 1

wherein R_1 represents a secondary or tertiary alkyl group; R_2 represents a halogen atom, an alkyl group, an aryl group or an alkoxyl group; n represents an integer of 0 to 3, and Ar represents an aryl group.

5,853,935
ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

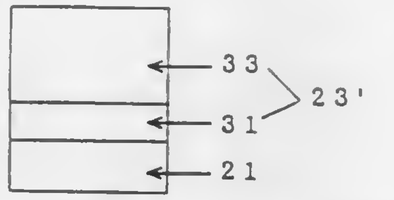
Tetsuro Suzuki; Tatsuya Niimi, and Tomoyuki Shimada, all of Shizuoka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1998, Ser. No. 41,040

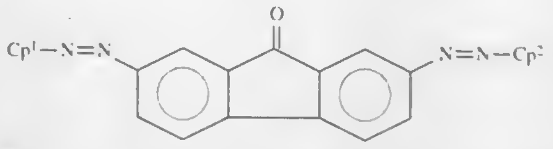
Claims priority, application Japan, Mar. 12, 1997, 9-074639; Mar. 12, 1997, 9-074645; Mar. 11, 1998, 10-76436; Mar. 11, 1998, 10-76437

Int. Cl.^{6} G03G *5/047;5/09*

U.S. Cl. 430—859 **16 Claims**

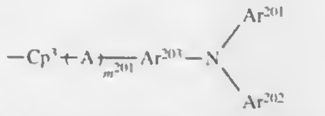


1. An electrophotographic photoconductor comprising an electroconductive support, and a photoconductive layer formed thereon which comprises a polycarbonate resin comprising a triarylamine structure on the main chain and/or side chain thereof, and at least one charge generation material selected from the group consisting of an azo compound represented by formula (1):



(1)

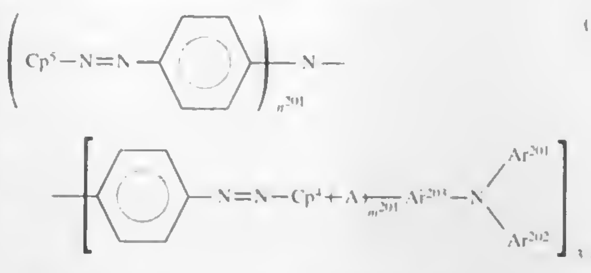
wherein Cp^1 and Cp^2 are each a coupler radical which may be the same or different, provided that at least Cp^1 or Cp^2 is a coupler radical component represented by formula (1-a);



$$-\mathrm{Cp}^3\!\left(\mathrm{A}\right)_{m^{201}}\mathrm{Ar}^{203}-\mathrm{N}\begin{matrix}\mathrm{Ar}^{201}\\ \mathrm{Ar}^{202}\end{matrix} \tag{1-a}$$

in which Cp^3 is a bivalent coupler radical; Ar^{201} and Ar^{202} are each an aryl group which may have a substituent; Ar^{203} is an arylene group which may have a substituent; A is ethylene group, vinylene group, oxygen atom or sulfur atom; and m^{201} is an integer of 0 to 2; and

an azo compound represented by formula (2):



(2)

wherein Cp^4 is a bivalent coupler radical; Cp^5 is a monovalent coupler radical; Ar^{201}, Ar^{202}, Ar^{203}, A and m^{201} are the same as those as previously defined in formula (1-a); and n^{201} is an integer of 0 to 2.

4. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generation layer comprising said charge generation material selected from the group consisting of said azo compound of formula (1) and said azo compound of formula (2), and a charge transport layer comprising said polycarbonate resin, said charge transport layer being overlaid on said charge generation layer.

5,853,936
LIGHT RECEIVING MEMBER, SUBSTRATE FOR SAID LIGHT RECEIVING MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS HAVING SAID LIGHT RECEIVING MEMBER

Yoshio Segi; Hiroyuki Katagiri; Yasuyoshi Takai; Hideaki Matsuoka, all of Nara, and Toshiyuki Ehara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1997, Ser. No. 814,588

Claims priority, application Japan, Mar. 8, 1996, 8-051715; Feb. 28, 1997, 9-045829

Int. Cl.^{6} G03G *5/10*

U.S. Cl. 430—69 **82 Claims**

1. An electrophotographic light receiving member comprising a substrate in a cylindrical form and a light receiving layer formed on said substrate, wherein said substrate has (i) a portion with an enlarged bore at least on the side of an end portion of said substrate and (ii) a portion in a tapered form situated next to and outside said portion (i).

5,853,937
TWO-COMPONENT MAGNETIC DEVELOPER FOR PRINTING CHARACTERS FOR MAGNETIC INK CHARACTER RECOGNITION

Masumi Asanae, Kumagaya, and Fumio Kimura, Isesaki, both of Japan, assignors to Hitachi Metals Ltd., Tokyo, Japan

Continuation of Ser. No. 714,817, Sep. 17, 1996, abandoned. This application Aug. 6, 1997, Ser. No. 906,804

Claims priority, application Japan, Sep. 22, 1995, 7-244181

Int. Cl.^{6} G03G *9/083*

U.S. Cl. 430—106.6 **10 Claims**

1. A two-component magnetic developer for printing magnetic characters for magnetic ink character recognition, the developer comprising:

a magnetic toner containing a binder resin and a magnetic powder, the magnetic toner having magnetic powder of 30 to 60 percent by weight, a residual magnetization (σ_r) of 4 to 16 emu/g, and an average particle diameter of 5 to 15 μm; and

a magnetic carrier of binder particles with magnetic powder dispersed in a resin binder, the magnetic powder and the resin binder being mechanically blended and pulverized to form a mixture with an average particle diameter of 5 to 60 μm.

wherein the magnetic toner is 20 to 80 percent by weight of the developer and the magnetic carrier is the balance and wherein the magnetic carrier of binder particles with magnetic powder dispersed in a resin binder has the triboelectric charge of the opposite polarity to that of the toner and the average particle diameter of 0.5 to 2 times that of the toner.

5,853,938
TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Akihiko Nakazawa, Kanagawa, and Kenji Okado, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 819,062, Jan. 10, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,782

Claims priority, application Japan, Jan. 11, 1991, 3-012522; Jan. 29, 1991, 3-026698; Nov. 26, 1991, 3-310826

Int. Cl.^{6} G03G *9/097*

U.S. Cl. 430—110 **16 Claims**

1. A negatively chargeable toner for developing an electrostatic image comprising non-magnetic colorant-containing resin particles having a weight average particle diameter from 4 μm to 10 μm and amorphous fine titanium oxide particles having been subjected to hydrophobic treatment in a carrier gas to provide hydrophobicity of 10 to 80%;

said colorant-containing resin particles containing a binder resin, a colorant and a negative charge control agent;

said amorphous fine titanium oxide particles being externally added in an amount of 0.01 to 5% by weight based on the weight of the colorant-containing resin particles;

wherein said amorphous fine titanium oxide particles comprise primary particles having an average particle diameter from 1 mμ to 40 mμ and having an average particle diameter from 5 mμ to 80 mμ for those present on said colorant-containing resin particles,

wherein said toner has a bulk density from 0.35 g/cm^3 to 0.5 g/cm^3.

5,853,939
TONER FOR ELECTROSTATIC IMAGE DEVELOPMENT

Akihiko Yanagibori, Chigasaki; Hitoshi Ono, and Noriaki Takahashi, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 19, 1996, Ser. No. 684,479

Claims priority, application Japan, Jul. 21, 1995, 7-185455; Jul. 21, 1995, 7-185457; Aug. 21, 1995, 7-211761

Int. Cl.^{6} G03G *9/00*

U.S. Cl. 430—110 **13 Claims**

12. A toner for electrostatic image development comprising:

a lubricant,

a binder resin, and

a coloring agent,

wherein said lubricant has a DSC determined endothermic peak at 50°–130° C., with the half value width of said endothermic peak being not more than 15° C., and is selected from the group consisting of di-n-decyl ketone, di-n-dodecyl ketone, di-n-stearyl ketone, di-n-icosyl ketone, di-n-behenyl ketone, di-n-tetracosyl ketone, distearyl sebacate, dibehenyl sebacate, stearyl laurate, behenyl laurate, stearyl stearate, behenyl stearate, myricyl stearate, stearyl behenate, behenyl behenate, myricyl behenate, stearyl lignocerate, behenyl lignocerate, and myricyl lignocerate; and

said binder resin comprises a resin which contains 30% or more by weight of structure units of styrene or styrene derivatives, tetrahydrofuran soluble matter of said resin has the weight-average molecular weight of not less than 50,000, and has one or more peaks of molecular weight in both the range of not more than 5×10^4, and the range of 1×10^5 to 1×10^7, respectively, on the gel permeation chromatogram.

5,853,940
TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Kenichi Kido; Tetsuo Sano; Yoshitaka Sekiguchi, all of Amagasaki, and Hiroyuki Fukuda, Kobe, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Division of Ser. No. 948,415, Oct. 9, 1997, Pat. No. 5,776,647. This application Apr. 27, 1998, Ser. No. 66,737

Claims priority, application Japan, Mar. 4, 1919, 9-049120; Mar. 4, 1997, 9-049121; Mar. 4, 1997, 9-049123

Int. Cl.^{6} G03G *9/087;9/097*

U.S. Cl. 430—110 **13 Claims**

1. A toner for developing electrostatic latent images comprising:

a binder resin comprising a first resin and a second resin; and a colorant;

said first resin having a softening point of 95° to 120° C. and a glass transition point of 50° to 75° C., said second resin having a softening point of 130° to 160° C. and a glass transition point of 50° to 75° C., said first resin comprising a linear polyester resin obtained by a bivalent alcohol component and a bivalent carboxylic acid component, said second resin obtained by a raw monomer of the polyester resin, a raw monomer of the vinyl resin and a dual-reactive monomer, and said dual-reactive monomer being a raw monomer that is able to use dual reactions of a condensation polymerization and a radical polymerization.

7. The toner of claim **1**, comprising a polyethylene wax and a polypropylene wax, said polyethylene wax having a melt viscosity of 1,000 to 8,000 cps at 160° C. and a softening point of 130° to 150° C., and said polypropylene wax having a melt viscosity of 50 to 300 cps at 160° C., a softening point of 130° to 160° C. and an acid value of 1 to 20 KOHmg/g.

5,853,941
ELIMINATING TRIBOELECTRICALLY GENERATED BACKGROUND IN AN ELECTROPHOTOGRAPHICALLY PRODUCED IMAGE

Donald Saul Rimai, Webster, and Salvatore Leone, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 11, 1996, Ser. No. 762,680

Int. Cl.^{6} G03G *13/09*

U.S. Cl. 430—122 **32 Claims**

1. A method of reducing triboelectrically generated background development on a photoconductive image member bearing an electrostatic latent image pattern including background portions, the method comprising:

(a) moving said image member through a development zone, the image member including a photoconductive element and a thin protective overcoat layer, the overcoat layer being between about 0.1 μm and about 15 μm in thickness and having between about 0.1% and about 10% by weight a substance that is an ionic conducting substance containing an electronegative group, and the overcoat including a material selected from the group consisting of a sol-gel, a ceramer and a doped glass wherein the glass is doped with said ionic conducting substance, the latent electrostatic image pattern being formed on said overcoat layer;

(b) transporting electrographic developer in a development station, the developer including hard magnetic carrier particles and electrically insulative toner particles, through said development zone in contacting developing relation with the electrostatic latent image pattern to develop the latent image pattern, the developer being transported through said zone in response to rotation of a series of alternating polarity magnets formed in a core which effects tumbling of said carrier in said development zone, the toner particles being tribocharged so that substantially all of the particles are negatively charged and the toner particles having a volume weighted diameter of less than 9 μm; and

wherein the electrostatic latent image pattern is negatively charged and in step (b) the toner particles tribocharge the

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photoconductive image member to increase negative voltages on the image member by between –5 volts and –100 volts.

5,853,942
TUNER PROCESSES

Pinyen Lin, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1997, Ser. No. 922,431
Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—137 **27 Claims**

1. A process for the preparation of toner which comprises mixing with a first toner resin a second resin incompatible with said first resin thereof, and thereafter adding colorant, wax, compatibilizer, and optional charge additive.

5,853,943
TONER PROCESSES

Chieh-Min Cheng, Rochester, and Grazyna E. Kmiecik-Lawrynowicz, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 9, 1998, Ser. No. 5,420
Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—137 **12 Claims**

1. A process for the preparation of toner
(i) providing an initial liquid composition comprising water, from about 10 to about 95 percent by weight, and diphenyloxide disulfonate, from about 50 to about 95 percent by weight;
(ii) conducting a pre-reaction monomer emulsification which comprises emulsification of the polymerization reagents of monomer, chain transfer agent, said composition of (i), and an optional initiator, and wherein said emulsification is accomplished at a low temperature, from about 5 C. to about 40 C.;
(iii) preparing a seed particle latex by aqueous emulsion polymerization of a mixture comprised of part of said monomer emulsion of (ii), from about 0.5 to about 50 percent by weight, and an free radical initiator, from about 0.5 to about 100 percent by weight, at a temperature of from about 35 C. to about 125 C., wherein the reaction of the free radical initiator and monomer produces a seed resin latex;
(iv) heating and feed adding to the seed particles the remaining monomer emulsion of (ii), from about 50 to about 99.5 percent by weight, and an optional free radical initiator, from about 0 to about 99.5 percent by weight, at a temperature of from about 35 C. to about 125 C.; and
(v) retaining the above contents in the reactor at the temperature of from about 35 C. to about 125 C., followed by cooling;
(vi) aggregating a colorant dispersion with the contents of (v);
(vii) coalescing or fusing the aggregates generated; and optionally
(viii) isolating, washing, and drying the toner.

5,853,944
TONER PROCESSES

Daniel A. Foucher, Toronto; Raj D. Patel; Guerino G. Sacripante, both of Oakville, and Walter Mychajlowskij, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 13, 1998, Ser. No. 6,612
Int. Cl.^{6} G03G *9/087*

U.S. Cl. 430—137 **30 Claims**

1. A process for the preparation of toner, which process comprises a first aggregation of submicron sulfonated polyester in the presence of an alkali halide, and thereafter a second aggregation with a colorant dispersion and an alkali halide.

5,853,945
HIGH-CONTRAST SILVER HALIDE PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC IMAGE FORMING SYSTEM USING THE SAME

Katsutoshi Yamane, and Nobuyuki Iwasaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Jun. 2, 1997, Ser. No. 867,419
Claims priority, application Japan, Jun. 3, 1996, 8-140245; Aug. 22, 1996, 8-221396; Aug. 22, 1996, 8-238646
Int. Cl.^{6} G03C *5/16; 1/46;* C09K *11/84*

U.S. Cl. 430—139 **11 Claims**

1. A silver halide photographic material for photographing soft tissues using low-energy X-rays generated at a tube voltage of not more than 40 kV,
which comprises a support having on one side thereof at least two light-sensitive emulsion layers, said at least two light-sensitive emulsion layers each having silver halide emulsions different in sensitivity, wherein the uppermost light-sensitive emulsion layer is less sensitive than the lower light-sensitive emulsion layer,
wherein the total silver coat amount of all of said at least two light-sensitive emulsion layers is from 2.0 to 5.5 g/m^2, and said silver halide photographic material exhibits an average contrast of from 3.6 to 4.8 and a sensitivity of from 0.03 to 0.07 lux.sec. when developed with a developer (G) having the following formulation at 35° C. for 25 seconds.
Formulation of Developer (G):

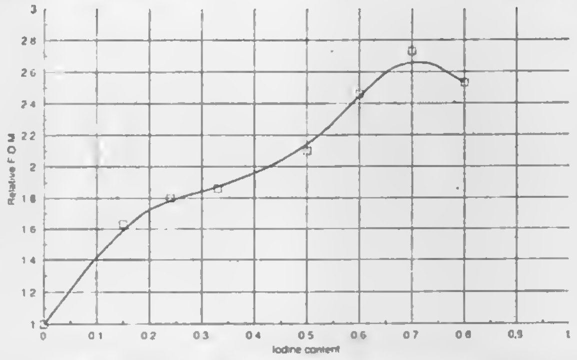
Potassium hydroxide	21	g
Potassium sulfite	63	g
Boric acid	10	g
Hydroquinone	25	g
Triethylene glycol	20	g
5-Nitroindazole	0.2	g
Glacial acetic acid	10	g
1-Phenyl-3-pyrazolidone	1.2	g
5-Methylbenzotriazole	0.05	g
Glutaraldehyde	5	g
Potassium bromide	4	g
Water to make	1	l
pH adjusted to	10.2.	

5,853,946
PHOTOSTIMULABLE PHOSPHOR

Paul Leblans, Kontich, and Paul Lardon, Wijnegem, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 17, 1997, Ser. No. 932,584
Claims priority, application European Pat. Off., Oct. 10, 1996, 96202816
Int. Cl.^{6} G03C *5/17*

U.S. Cl. 430—139 **4 Claims**



1. A radiation image recording and reproducing method comprising the steps of:
i. causing a radiation image storage panel containing a photostimulable phosphor to absorb radiation having passed through an object or having been radiated from an object,

ii. exposing said image storage panel to stimulating rays to release the radiation energy stored therein as light emission, the stimulating rays being electromagnetic waves having a wavelength within the range of 600–900 nm
iii. detecting the emitted light, wherein said photostimulable phosphor corresponds to formula (I):

$$Ba_{1-x-y-p-3q}Sr_xM_y^{2+}M_{2p}^{1+}M_{2q}^{3+}F_{2-a-b}Br_aI_b:zEu$$

wherein:
M^{1+} is at least one alkali metal selected from the group consisting of Li, Na, K, Rb and Cs;
M^{2+} is at least one divalent metal selected from the group consisting of Ca Mg and Pb;
M^{3+} is at least one trivalent metal selected from the group consisting of Al, Ga, In, Tl, Sb, Bi, Y, La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu;
$0 \leqq x \leqq 0.30$, $0 \leqq y \leqq 0.10$, $0 \leqq p \leqq 0.3$, $0 \leqq q \leqq 0.1$, $0.05 \leqq a \leqq 0.76$, $0.20 \leqq b \leqq 0.90$, $a+b<1.00$ and $10^{-6} \leqq z \leqq 0.2$.

5,853,947
QUINONEDIAZIDE POSITIVE PHOTORESIST UTILIZING MIXED SOLVENT CONSISTING ESSENTIALLY OF 3-METHYL-3-METHOXY BUTANOL AND PROPYLENE GLYCOL ALKYL ETHER ACETATE

Stanley F. Wanat, Scotch Plains; M. Dalil Rahman; Dinesh N. Khanna, both of Flemington, all of N.J.; Daniel P. Aubin, Voluntown, Conn., and Sunit S. Dixit, Flemington, N.J., assignors to Clariant Finance (BVI) Limited, Virgin Islands (Br.)

Filed Dec. 21, 1995, Ser. No. 576,748
Int. Cl.^{6} G03F *7/023;* G03C *1/61*

U.S. Cl. 430—165 **12 Claims**

1. A photosensitive positive working photoresist composition, which consists essentially of an admixture of from about 15% to about 99% based on the weight of the solids portion of said composition of at least one water insoluble, aqueous alkali soluble film forming novolak resin; from about 1% to about 85% based on the weight of the solids portion of said composition of at least one o-diazonaphthoquinone photosensitizer, and from about 40% to about 90% based on the weight of the overall photosensitive composition of a photoresist solvent composition consisting essentially of a propylene glycol alkyl ether acetate and 3-methyl-3-methoxy butanol, wherein the solvent consists essentially of from about 40% to about 60% by weight of 3-methyl-3 -methoxybutanol and from about 60% to about 40% by weight of propylene glycol alkyl ether acetate.

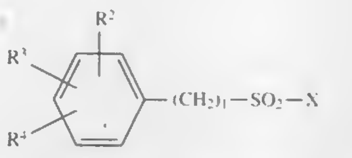
5,853,948
POSITIVE PHOTORESIST COMPOSITIONS AND MULTILAYER RESIST MATERIALS USING THE SAME

Atsushi Sawano; Junichi Mizuta; Kousuke Doi; Hidekatsu Kohara, and Toshimasa Nakayama, all of Kanagawa-ken, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa-Ken, Japan

Filed Oct. 29, 1997, Ser. No. 960,621
Claims priority, application Japan, Oct. 31, 1996, 8-305873
Int. Cl.^{6} G03F *7/023*

U.S. Cl. 430—166 **10 Claims**

1. A positive photoresist composition comprising:
(A) an alkali-soluble resin;
(B) a quinonediazido group containing compound; and
(C) at least one sulfonyl halide represented by the following general formula (II):



(II)

where R^2–R^4 are each independently a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or a SO$_2$X group where X is a halogen atom; l is either 0 or an integer of 1–3.

9. A multilayer resist material comprising a substrate overlaid with an anti-reflective coating which, In turn, is overlaid with a positive photoresist layer, said positive photoresist layer being formed of the positive photoresist composition according to claim 1.

5,853,949
METHOD OF SYNTHESIZING POLYPHENOL COMPOUND AND POSITIVE WORKING PHOTORESIST COMPOSITION COMPRISING POLYPHENOL COMPOUND

Kunihiko Kodama, and Makoto Momota, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1996, Ser. No. 657,773
Claims priority, application Japan, Jun. 2, 1995, 7-136535
Int. Cl.^{6} G03F *7/023*

U.S. Cl. 430—191 **2 Claims**

1. A positive working photoresist composition comprising an alkali-soluble resin and 1,2-naphthoquinonediazido- 5- and/or -4-sulfonic acid ester of the polyphenol product obtained by a method of synthesizing a polyphenol product, comprising
(i) introducing at least one —CHRNR'R" group onto aromatic ring(s) of a phenol compound having from one to ten aromatic ring(s), wherein R represents a hydrogen atom, an alkyl group which may contain a hetero atom, a cycloalkyl group which may contain a hetero atom, an aralkyl group which may contain a hetero atom, or an aryl group, and R' and R", which may be the same or different, each represents an alkyl group which may contain a hetero atom, a cycloalkyl group which may contain a hetero atom, an aralkyl group which may contain a hetero atom, or an aryl group, and R' and R" may combine with each other to form a ring,
(ii) converting the —CHRNR'R" group into a —CHRA group via one to three steps, wherein A represents a hydroxyl group, an alkoxy group, an acyloxy group, a halogen atom, a quaternary ammonium salt or a sulfonyloxy group, and
(iii) condensing the thus converted phenol compound and a phenol compound.

2. A positive working photoresist composition comprising an alkali-soluble resin and a naphthoquinonediazide compound, further comprising the polyphenol product obtained by a method of synthesizing a polyphenol product, comprising (i) introducing at least one —CHRNR'R" group onto aromatic ring(s) of a phenol compound having from one to ten aromatic ring(s), wherein R represents a hydrogen atom, an alkyl group which may contain a hetero atom, a cycloalkyl group which may contain a hetero atom, an aralkyl group which may contain a hetero atom, or an aryl group, and R' and R", which may be the same or different, each represents an alkyl group which may contain a hetero atom, a cycloalkyl group which may contain a hetero atom, an aralkyl group which may contain a hetero atom, or an aryl group, and R' and R" may combine with each other to form a ring,
(ii) converting the —CHRNR'R" group into a —CHRA group via one to three steps, wherein A represents a hydroxyl group, an alkoxy group, an acyloxy group, a halogen atom, a quaternary ammonium salt or a sulfonyloxy group, and
(iii) condensing the thus converted phenol compound and a phenol compound.

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5,853,950
PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE

Toshiro Kondo; Makiko Oko; Yutaka Araki, and Hajime Fujioka, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Sep. 26, 1997, Ser. No. 939,004

Claims priority, application Japan, Oct. 31, 1996, 8-263209; Apr. 8, 1997, 9-089448; Jul. 31, 1997, 9-206301

Int. Cl.^{6} G03F *7/07;* **G03C** *8/06;8/36*

U.S. Cl. 430—204 **8 Claims**

1. A process for making a lithographic printing plate by subjecting a lithographic printing material having physical development nuclei between an aluminum support and a silver halide emulsion layer to exposure and then processing the lithographic printing material at least with a developing solution, a water washing solution for removing the silver halide emulsion layer in this order, which comprises:

performing the processing(s) with the developing solution and/or the water washing solution by using the developing solution and/or the water washing solution containing an organic compound which coagulates gelatin.

5,853,951
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Shoji Yasuda; Tadashi Ito; Takahiro Goto; Hirotomo Sasaki, and Seiichi Yamamoto, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., LTD., Kanagawa, Japan

Filed Oct. 3, 1996, Ser. No. 725,237

Claims priority, application Japan, Oct. 5, 1995, 7-282418; Oct. 6, 1995, 7-284338; Oct. 11, 1995, 7-288104; Nov. 27, 1995, 7-307186

Int. Cl.^{6} G03C *1/09;1/34*

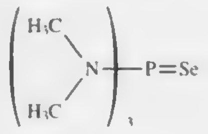
U.S. Cl. 430—264 **10 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein:

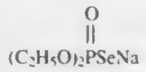
said silver halide emulsion layer comprises a silver halide comprising silver chloride or silver chlorobromide having a silver chloride content of not less than 95 mol %;

said silver halide emulsion comprises at least one transition metal selected from the group consisting of elements belonging to the groups V to VIII of the periodic table, said transition metal having only one nitrosyl, thionitrosyl or aquo ligand per molecule; and

said silver halide is chemically sensitized with a selenium compound selected from compounds represented by one of the following formulae SE-1 to SE-8:

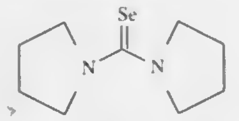


SE-1

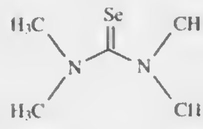


$(C_2H_5O)_2\overset{O}{\overset{\|}{P}}SeNa$

SE-2



SE-3



SE-4

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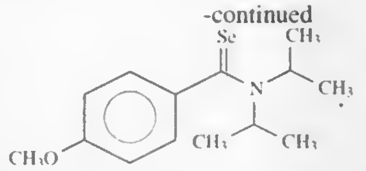
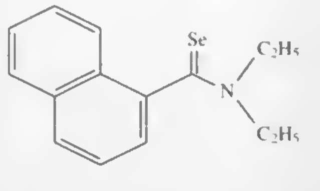
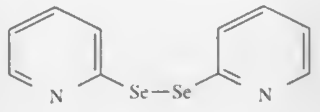


SE-5



SE-6



SE-7

$(^{n}\text{-}C_4H_9O)_3P{=}Se$

SE-8

5,853,952
COLOR DEVELOPING ORGANIC MATERIAL, COLOR DEVELOPING RESIN COMPOSITION AND COLORED THIN FILM PATTERN

Toru Ushirogouchi, Yokohama; Makoto Nakase, Tokyo; Akira Yoshizumi, Yokohama; Naoko Kihara, Matsudo; Takuya Naito, Tokyo; Naomi Shida, and Koji Asakawa, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 29, 1996, Ser. No. 705,265

Claims priority, application Japan, Aug. 30, 1995, 7-222347

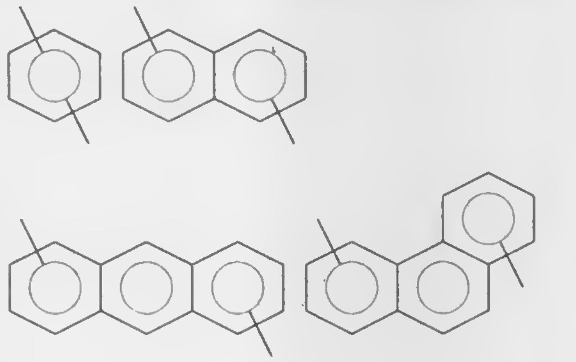
Int. Cl.^{6} G03C *1/73;* **C08G** *12/06*

U.S. Cl. 430—270.1 **5 Claims**

1. A color developing resin composition comprising a base polymer, a compound which produces an acid by light irradiating or heating and a compound having an azomethine bond formed by a condensation reaction between a dialdehyde and a diamine, wherein the compound having an azomethine bond is an oligomer or polymer having repeating units represented by the following chemical formula:

$$(-R^{1'}-C{=}N-R^{2'}-N{=}C-)_n$$

wherein $R^{1'}$ and $R^{2'}$ are each, independently, selected from the group consisting of aliphatic groups and aromatic groups having a formula selected from the group consisting of:



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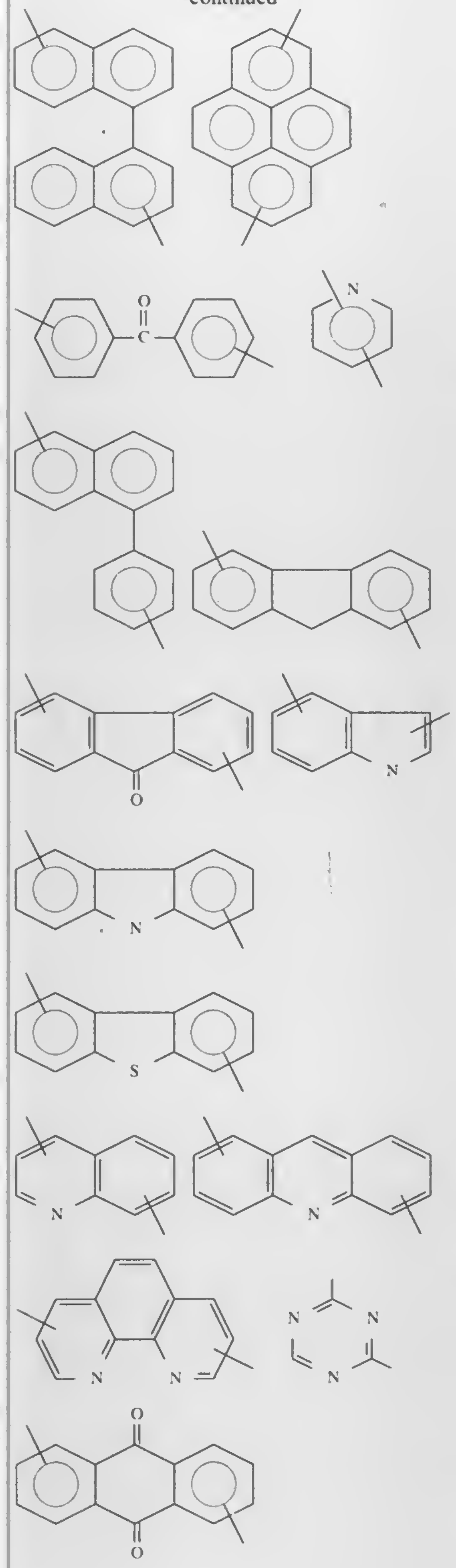

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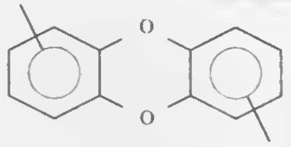


wherein one or more hydrogen atoms on the aromatic group may be substituted by a hydroxyl group or an alkyl group, and wherein n is at most 50.

5,853,953
POLYMERS AND PHOTORESIST COMPOSITIONS COMPRISING SAME

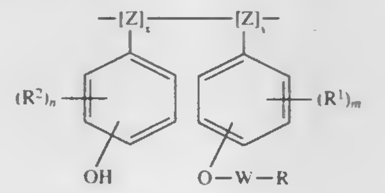
Jacque H. Georger, Jr., Holden, Mass., assignor to Shipley Company, L.L.C., Marlborough, Mass.

Filed Sep. 6, 1996, Ser. No. 706,646

Int. Cl.^{6} G03F *7/004;7/023*

U.S. Cl. 430—270.1 **6 Claims**

1. A photoresist comprising a photoactive compound and a polymer binder, said binder having the following structure:



where

W is a linker;

each R is independently either 1) a single ring aromatic group with one or more unsaturated ring substituents, or 2) a substituted or unsubstituted polycyclic aromatic group containing 2 or more rings and from about 3 to 8 rings members in each ring;

each Z is a bridge group; and

each R^1 and R^2 group independently is halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkylthio, cyano, or nitro, amino or hydroxyl, or two R^1 groups or two R^2 groups may be taken together to form one or more fused aromatic or alicyclic rings having from 4 to about 8 ring members per ring; m and n each is independently an integer of from 0 to 4; and x and y are in the range of from about 5 to 90 mole percent.

5,853,954
FRACTIONATED NOVOLAK RESIN AND PHOTORESIST COMPOSITION THEREFROM

M. Dalil Rahman, Flemington, and Ping-Hung Lu, Bridgewater, both of N.J., assignors to Clariant Finance (BVI) Limited, Virgin Islands (Br.)

Filed Dec. 18, 1996, Ser. No. 768,539

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—270.1 **8 Claims**

1. A method for producing a positive photoresist composition having superior lithographic performance comprising:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of an acid catalyst and thereby producing a novolak resin polymeric condensation product;

b) adding a water soluble organic polar solvent and water to the novolak resin reaction mixture, thereby precipitating the novolak resin polymeric condensation product, and then removing the remaining solution;

c) adding a water soluble organic polar solvent and water to the precipitate of step b), and thereby again precipitating the novolak resin condensation product, and removing the remaining solution of step c);

d) dissolving the novolak resin polymeric condensation product in a photoresist solvent and thereby forming a solution, then removing any remaining water and water soluble organic polar solvent, thereby producing a film forming, fractionated novolak resin solution; and

e) providing an admixture of: 1) a photosensitive component in an amount sufficient to photosensitive a photoresist composition; 2) the film forming novolak resin from step d); and 3) additional photoresist solvent, and thereby forming a photoresist composition.

5. A method for producing a semiconductor device by producing a photo-image on a substrate by coating a suitable substrate with a positive working photoresist composition comprising:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of an acid catalyst, and thereby producing a novolak resin polymeric condensation product;

b) adding a water soluble organic polar solvent and water to the novolak resin reaction mixture, thereby precipitating the novolak resin polymeric condensation product, and then removing the remaining solution;

c) adding a water soluble organic polar solvent and water to the precipitate of step b), and then removing the remaining solution of step c);

d) dissolving the novolak resin polymeric condensation product precipitate of step c) in a photoresist solvent, then removing any remaining water and water soluble organic polar solvent, and thereby producing a film forming, fractionated novolak resin solution;

e) providing an admixture of: 1) a photosensitive component in an amount sufficient to photosensitize a photoresist composition; 2) the film forming novolak resin solution from step d); and 3) additional photoresist solvent, and thereby forming a photoresist composition;

f) coating a suitable substrate with the photoresist composition of step e);

g) heat treating the coated substrate of step f) until substantially all of the photoresist solvent is removed; image-wise exposing the photosensitive composition and removing the image-wise exposed areas of such composition with a suitable developer.

5,853,955

SUBSTRATES AND METHODS FOR LASER MARKING SAME

Foad Towfiq, Oceanside, Calif., assignor to McDonnell Douglas Corp., Long Beach, Calif.

Filed Dec. 11, 1995, Ser. No. 570,634

Int. Cl.^{6} G02B *6/44*

U.S. Cl. 430—270.12 **1 Claim**

1. A substrate suitable for being marked by light energy from a laser comprising:

a base substrate component; and

a filler pigment component coupled to said base substrate component and including a white metal oxide component coated with a colored glass forming component effective to produce a colored glass-like pigment component in combination with said white metal oxide component and being selected from the group consisting of metal tungstates, metal phosphates, metal phosphosilicates, metal molybdosilicates, metal tungtosilicates metal borates, metal vanadates and mixtures thereof, said filler pigment component being present in an amount effective to, as a result of exposing said substrate to light energy from a laser, produce the colored glass-like pigment component coupled to said base substrate component having a contrasting color relative to said filler pigment component.

5,853,956

PROCESSING METHOD OF SILVER HALIDE LIGHT SENSITIVE PHOTOGRAPHIC MATERIAL

Masaaki Taguchi, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Aug. 19, 1997, Ser. No. 914,742

Claims priority, application Japan, Aug. 23, 1996, 8-222293

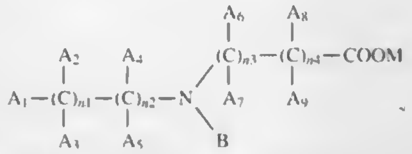
Int. Cl.^{6} G03C *5/29*

U.S. Cl. 430—491 **6 Claims**

1. A method for processing a silver halide light sensitive photographic material comprising a support having on at least one side of the support hydrophilic colloid layers including a silver halide emulsion layer, comprising

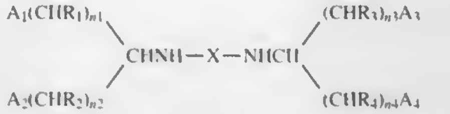
exposing the photographic material and

developing the exposed photographic material with a developer wherein said silver halide emulsion layer contains tabular silver halide grains having an average chloride content of 20 mol % or more and an aspect ratio of 2 or more; and a coating weight ratio of silver to gelatin of said hydrophilic colloid layers is 0.6 or more; said photographic material being developed in the presence of a compound represented by the following formula (I) or (II):



formula (I)

wherein B represents a hydrogen atom, OH of CH_2COOM; when B is a hydrogen atom, A_1 through A_9 each independently represent a hydrogen atom, OH, C_nH_{2n}, or $(CH_2)_mX$, in which n is an integer of 1 to 3, m is an integer of 0 to 3 and X represents COOM, NH_2 or OH, n_1, and n_2 are each 1, n_3 and n_4 are each an integer and n_3 plus n_4 is 1 to 4 provided that all of A_1 to A_5 are not hydrogen atoms at the same time; when B is OH or CH_2COOM, n_1 and n_2 are each an integer including 0 and n_1 plus n_2 is 2, n_3 is 0 and n_4 is 1, A_1, A_8 and A_9 each represent a hydrogen atom, A_2 to A_5 each independently represent a hydrogen atom, OH, COOM, $PO_3(M)_2$, CH_2COOM, CH_2OH or an a lower alkyl group, provided that at least one of A_2 to A_5 represents CH_2COOM, COOM or $PO_3(M)_2$; M represents a hydrogen atom, an alkali metal or an ammonium group.



formula (II)

wherein A_1 through A_4 each independently represent COOM or OH; n_1 through n_4 each represent an integer of 0 to 2; R_1 through R_4 each independently represent a hydrogen atom, OH or a lower alkyl group; X represents an alkylene group having 2 to 6 carbon atoms or $—(B_1O)_m—B_2—$, in which B_1 and B_2 each represent an alkylene group having 1 to 5 carbon atoms and m is an integer of 1 to 5; M represents a hydrogen atom, an alkali metal or an ammonium group.

5,853,957

PHOTOSENSITIVE RESIN COMPOSITIONS, CURED FILMS THEREOF, AND CIRCUIT BOARDS

Makoto Yanagawa; Rinzo Tachibana; Hiroshi Yamamoto, all of Saitama; Tetsuji Ishikawa, Kanagawa; Tetsuo Kurokawa, Kanagawa, and Kohichi Ishida, Kanagawa, all of Japan, assignors to Tamura Kaken Co., Ltd, Japan

Filed May 8, 1996, Ser. No. 646,464

Claims priority, application Japan, May 8, 1995, 7-132618

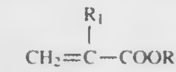
Int. Cl.^{6} G03F *7/038*

U.S. Cl. 430—280.1 **12 Claims**

1. A photosensitive resin composition comprising a photopolymerizable and photosensitive resin having at least one of a carboxyl group and an onium-containing group, a photopolymerizable reactive diluent, a photopolymerization initiator, a thermal setting component and an inorganic powder having an average particle size of 2 μm to 20 μm.

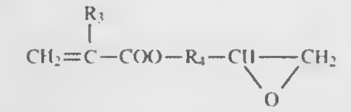
3. The composition as recited in claim 1, wherein the photopolymerizable and photosensitive resin having a carboxyl group is a prepolymer that is a reaction product of an epoxy resin-α,β-unsaturated carboxylate and 0.2 to 1.0 mole of a polybasic acid and/or its anhydride per epoxy equivalent of said epoxy resin, said epoxy resin.α,β-unsaturated carboxylate being a reaction product of an epoxy resin and 0.3 to 1.2 moles of an α,β-unsaturated carboxylic acid per epoxy equivalent of said epoxy resin.

4. The composition as recited in claim 3, wherein the epoxy resin is an epoxy resin having at least two terminal epoxy groups or a copolymer comprising a plurality of monomers containing a monomer represented by the following general formula (1):



$$CH_2{=}\overset{\displaystyle R_1}{\overset{|}{C}}{-}COOR_2 \qquad (1)$$

where R_1 is a hydrogen atom or a methyl group, and R_2 is an aliphatic hydrocarbon group having 1 to 6 carbon atoms, and a monomer represented by the following general formula (2):



(2)

where R_3 is a hydrogen atom or a methyl group, and R_4 is a C_{1-12} aliphatic hydrocarbon group or an aromatic hydrocarbon group.

5. The composition as recited in claim 1, wherein the photopolymerizable and photosensitive resin containing an onium group is an onium group-containing prepolymer comprising a copolymer having an acryloyl or methacryloyl group introduced into a portion of an epoxy group thereof and an onium group introduced in another portion, said copolymer comprising at least one monomer selected from an alkyl acrylate and an alkyl methacrylate and at least one monomer selected from an epoxy group-containing acrylate and an epoxy group-containing methacrylate.

6. The composition as recited in claim 5, wherein the molar ratio between said at least one monomer selected from an alkyl acrylate and an alkyl methacrylate and said at least one monomer selected from an epoxy group-containing acrylate and an epoxy group-containing methacrylate is in the range of 40:60 to 60:20.

5,853,958

LITHOGRAPHIC PLATE WITH DISPERSE PARTICULATE RUBBER ADDITIVE

Chieh-Min Cheng, Arlington; Anthony C. Giudice, Wakefield; Rong-Chang Liang, Newton; William C. Schwarzel, Billerica, and Leonard C. Wan, Chestnut Hill, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 531,486, Sep. 21, 1995, Pat. No. 5,616,449, which is a continuation-in-part of Ser. No. 146,479, Nov. 1, 1993, abandoned. This application Oct. 17, 1996, Ser. No. 732,899

Int. Cl.^{6} G03F *7/033;7/038*

U.S. Cl. 430—286.1 **9 Claims**

1. A photoresist composition suitable for use as a photoresist in an on-press developable lithographic printing plate, the photoresist composition comprising in an organic solvent

a photopolymerizable ethylenically unsaturated monomer having at least one terminal ethylenic group capable of forming a high polymer by free radical initiated, chain-propagated addition polymerization;

a free-radical generating, addition polymerization-initiating system activatable by actinic radiation;

a hydrophobic macromolecular organic binder;

a particulate rubber incorporated into the photoresist composition as a stable dispersion; and

a surfactant having a concentration and an HLB value effective for stably dispersing the particulate rubber.

9. The photoresist composition of claim 1, wherein said hydrophobic macromolecular organic binder is a photoreactive acrylic binder.

5,853,959

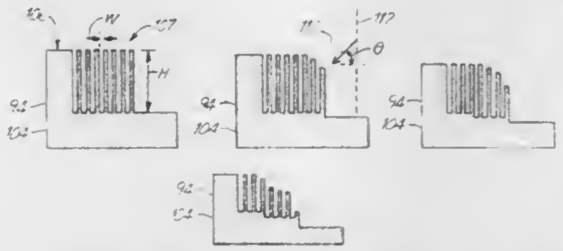
METHOD OF FABRICATING A CONTOURED SLIDER SURFACE FEATURE WITH A SINGLE MASK

John L. Brand, Burnsville, and Daniel P. Burbank, Minneapolis, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Aug. 9, 1996, Ser. No. 695,374

Int. Cl.^{6} G03C *5/00*

U.S. Cl. 430—320 **26 Claims**



1. A method of fabricating a multiple depth feature on a surface of a hydrodynamic bearing slider, the method comprising:

applying a lithographic resist layer to the slider surface;

forming a single mask having a mask pattern which includes a masked area, an unmasked area and an intermediate area between the masked area and the unmasked area;

exposing the lithographic resist layer through a single mask;

removing the lithographic resist layer as a function of exposure to form a patterned resist layer and to thereby uncover portions of the slider surface within the patterned resist layer;

etching the uncovered portions of the slider surface and the patterned resist layer, with the uncovered portions being etched to a first depth below the slider surface; and

wherein the step of forming the single mask includes providing the intermediate area with a geometry that is unresolvable by one of the steps of exposing and etching such that an area of the slider surface corresponding to the intermediate mask area is etched to a second depth below the slider surface which is less than the first depth.

5,853,960

METHOD FOR PRODUCING A MICRO OPTICAL SEMICONDUCTOR LENS

Dean Tran, Westminster; Eric R. Anderson, Redondo Beach; Ronald L. Strijek, Vista, and Edward A. Rezek, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 18, 1998, Ser. No. 40,636

Int. Cl.^{6} H01L *27/14;31/0304*

U.S. Cl. 430—321 **53 Claims**

1. A method for producing a III–V semiconductor micro-optical lens for hybrid integration to a micro-optical device, said method comprising the steps of:

coating a layer of photoresist material over an entire surface of a side of a substrate wafer;

baking the substrate wafer;

providing a mask where a pattern of the mask determines the quantity and shape of a lens formed on the substrate wafer;

selectively aligning the mask to the substrate wafer on the side of the substrate wafer coated with the layer of photoresist material;

exposing the side of the substrate wafer coated with the layer of photoresist material to a light source to form a photoresist mask;

developing the side of the substrate wafer containing the photoresist mask;

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- selectively etching the side of the substrate wafer coated with the layer of photoresist material in the areas surrounding the photoresist mask;
- removing the photoresist mask and cleaning the surface of the substrate wafer;
- selectively etching the entire surface of the side of the substrate wafer to form the lens;
- coating the entire surface of the side of the substrate wafer with an antireflectivity coating; and
- fabricating a lens arm from a surface of a side of the substrate wafer opposite the side of the substrate wafer where the lens has been formed.

5,853,961

METHOD OF PROCESSING SUBSTRATE AND APPARATUS FOR PROCESSING SUBSTRATE

Mitsuhiro Sakai, Kumamoto-ken, and Kiyohisa Tateyama, Kumamoto, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 635,874

Claims priority, application Japan, Apr. 19, 1995, 7-119328

Int. Cl.^{6} G03C *5/00;* G03D *5/00*

U.S. Cl. 430—325 **8 Claims**

1. A method of processing a large-sized substrate, used to form a liquid crystal display, utilizing a treatment liquid including a developing solution or a rinsing solution, comprising the steps of:

- (a) loading a substrate onto a support;
- (b) mounting a cover on the substrate in such a manner that a clearance is formed from at least either surface of the substrate placed on said support;
- (c) introducing the treatment liquid into said clearance through either side of said cover and discharging the treatment liquid from said clearance to another side of said cover to cause the treatment liquid to flow in said clearance while forming a laminar flow parallel to at least either surface of the substrate, thereby bringing at least said either surface of the substrate into contact with the flowing treatment liquid;
- (d) removing said cover from the substrate; and
- (e) unloading the substrate from said support.

5,853,962

PHOTORESIST AND REDEPOSITION REMOVAL USING CARBON DIOXIDE JET SPRAY

Charles W. Bowers, Torrance, Calif., assignor to Eco-Snow Systems, Inc., Livermore, Calif.

Filed Oct. 4, 1996, Ser. No. 814,792

Int. Cl.^{6} G03C *5/00;* B08B *3/00*

U.S. Cl. 430—331 **4 Claims**

1. A method of removing photoresist or material redeposited from photoresist removal from a surface of a substrate, said method comprising the steps of:

- disposing a substrate having photoresist or material redeposited from photoresist removal deposited on its surface in an environmental process enclosure;
- coupling a carbon dioxide jet spray cleaning system to the environmental process enclosure that has a nozzle and orifice assembly that is oriented towards the photoresist material;
- generating a carbon dioxide jet spray using the nozzle and orifice assembly;
- directing the carbon dioxide jet spray onto the surface of the substrate and the photoresist or material redeposited from photoresist removal;
- cooling the photoresist or material redeposited from photoresist removal and the substrate using the carbon dioxide jet spray to cause differential expansion of the photoresist or material redeposited from photoresist removal relative to the substrate and debonding of the photoresist or material redeposited from photoresist removal from the surface of the substrate without erosion of the substrate;
- collecting the photoresist or material redeposited from photoresist removal; and
- removing the photoresist or material redeposited from photoresist removal.

5,853,963

LIFE EXTENSION OF PHOTORESIST DEVELOPER SOLUTIONS

Rajwant Singh, Brea, and Gerald A. Krulik, San Clemente, both of Calif., assignors to Applied Chemical Technologies, Inc., Santa Ana, Calif.

Filed Aug. 11, 1997, Ser. No. 909,168

Int. Cl.^{6} G03C *5/31*

U.S. Cl. 430—399 **6 Claims**

1. A method for maintaining the activity of aqueous carbonate based photoresist developer solutions for use in printed circuit boards manufacturing, by controlled additions of aqueous hydroxide or hydroxide plus carbonate solutions, to maintain a given pH or pH range.

5,853,964

WEAKLY ALKALINE ASCORBIC ACID DEVELOPING COMPOSITION, PROCESSING KIT AND METHOD USING SAME

Robert John Opitz, and Silvia Zawadzki, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 863,830, May 27, 1997, Pat. No. 5,756,271, which is a division of Ser. No. 674,497, Jun. 28, 1996, Pat. No. 5,702,875. This application Dec. 17, 1997, Ser. No. 992,741

Int. Cl.^{6} G03C *5/29*

U.S. Cl. 430—440 **13 Claims**

1. A method of providing a black-and-white photographic image comprising:

- processing an imagewise exposed black-and-white silver halide photographic material with a black-and-white developing composition that is free of dihydroxybenzene developing agents, said developing composition having a pH of from 7 but less than 9, and comprising:
- an ascorbic acid developing agent,
- an auxiliary super-additive developing agent,
- borate as the sole buffer in an amount of at least 0.001 mol/l, and a preservative,
- provided the molar ratio of said ascorbic acid developing agent to said auxiliary super-additive developing agent is at least 10:1.

5,853,965

PHOTOGRAPHIC ELEMENT WITH BONDING LAYER ON ORIENTED SHEET

Douglas N. Haydock, Webster; Thaddeus S. Gula, Rochester; Peter T. Aylward, Hilton, and Robert P. Bourdelais, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1997, Ser. No. 862,901

Int. Cl.^{6} G03C *1/79*

U.S. Cl. 430—496 **14 Claims**

1. A photographic element comprising a paper base, at least one photosensitive silver halide layer, and a layer of biaxially oriented polyolefin sheet between the top of said paper base and said at least one silver halide layer wherein said biaxially oriented polyolefin sheet comprises a top layer of polyethylene polymer that bonds to gelatin.

5,853,966

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masahiko Murayama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 24, 1996, Ser. No. 685,617

Claims priority, application Japan, Jul. 28, 1995, 7-211303

Int. Cl.^{6} G03C *11/06;1/95*

U.S. Cl. 430—501 **11 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein the photographic material contains a monodispersed polymer in an amount of from 2 to 300 mg/m^2 and having a number average grain size of from 0.3 to 10 μm and a variation coefficient thereof of 0.30 or less and containing from 5 to 15 mol % of an acid monomer, wherein at least one entirely transparent magnetic recording layer is provided on the surface of the support opposite to the side on which the silver halide emulsion layer is provided.

5,853,967

RADIOGRAPHIC ELEMENTS FOR MAMMOGRAPHIC MEDICAL DIAGNOSTIC IMAGING

Robert E. Dickerson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 909,315, Aug. 14, 1997, abandoned. This application May 21, 1998, Ser. No. 82,952

Int. Cl.^{6} G03C *1/005;5/16;1/035*

U.S. Cl. 430—502 **8 Claims**

1. A medical diagnostic radiographic element comprised of

- a film support having first and second major surfaces capable of transmitting radiation to which the radiographic element is responsive and, coated on each of the major surfaces,
- processing solution permeable hydrophilic colloid layers which are fully forehardened including
  - at least one emulsion comprised of silver halide grains,
  - a spectral sensitizing dye adsorbed by the silver halide grains, and
  - a particulate dye (a) capable of absorbing radiation to which the silver halide grains are responsive, (b) present in an amount sufficient to reduce crossover to less than 15 percent, and (c) capable of being substantially decolorized during processing,
- WHEREIN, to facilitate mammographic imaging as well as rapid processing with low wet pressure sensitivity,
  - said silver halide grains are coated at a coverage capable of providing an overall radiographic element maximum density on processing of greater than 3.6,
  - less than 35 mg/dm^2 of hydrophilic colloid is coated on each of the major surfaces of the support,
  - first and second of the hydrophilic colloid layers each containing a tabular grain emulsion are coated on each major surface of the support with the first layers located nearer the support than the second layers,
  - the second layers contain (a) silver halide grains accounting for from 30 to 70 percent of the total weight of the second layers and accounting for greater than 50 percent of total grain projected area within the second layers, and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element,
  - the first layers contain (a) the dye particles and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element,
  - the dye particles and the silver halide grains together account for from 30 to 70 percent of the total weight of each of the first layers, and
  - radiation-sensitive silver halide grains within the first and second hydrophilic colloid layers exhibit a coefficient of variation of grain equivalent circular diameter of less than 15 percent and contain rhodium in a normalized molar concentration of less than 1×10^{-7} based on silver to provide a mid-scale contrast of greater than 3.0 and a lower scale contrast of greater than 2.2, where mid-scale contrast is the slope of a line drawn between characteristic curve points at densities of 0.25 and 2.0 above minimum density and lower scale contrast is the slope of a line drawn between a first reference point on the characteristic curve at a density of 0.85 above minimum density and a second, lower exposure reference point on the characteristic curve separated from the first reference by an exposure difference of 0.3 log E, where log E is the log of exposure in lux-seconds.

5,853,968

MULTILAYER COLOR PHOTOGRAPHIC ELEMENT

Daniel R. English, Pittsford; Steven G. Link, and Hans G. Ling, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

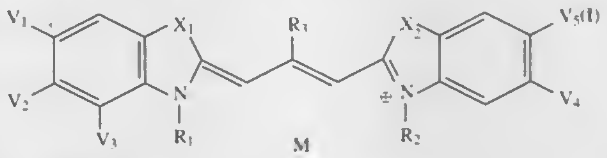
Filed Nov. 27, 1996, Ser. No. 753,648

Int. Cl.^{6} G03C *1/46*

U.S. Cl. 430—506 **28 Claims**

1. A color negative photographic element comprising a transparent support bearing at least two light sensitive silver halide emulsion layers sensitive to blue light, at least two such layers sensitive to green light, and at least two such layers sensitive to red light, wherein at least one of the red sensitive emulsion layers is spectrally sensitized with both of the following dyes:

(A) a sensitizing dye of the formula (I):

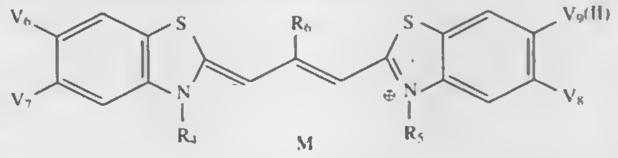


wherein:

- either V_1 and V_2 or V_2 and V_3 are joined to form a fused ring and the remaining member of V_1, V_2, and V_3 is hydrogen;
- V_4 and V_5 are independently selected from the group consisting of hydrogen, methyl, ethyl, methoxy, ethoxy, halogen, phenyl groups, heteroaromatic 5- or 6-membered ring groups, cyano, and acetamido;
- R_1 and R_2 are independently 2 to 6 carbon alkyl groups at least one of which is substituted by a carboxyl or sulfonic acid anion;
- R_3 is an alkyl group of 1 to 4 carbon atoms;
- X_1 and X_2 are either oxygen or sulfur but are not the same; and
- M is a counter ion to balance the charge on (I);

and

(B) a sensitizing dye of the formula (II):



wherein

- V_6, V_7, V_8 and V_9 are independently any of the groups as described for V_4 in formula (I);
- R_4 and R_5 are independently any of the groups described for R_1 in formula (I);
- R_6 may be any of the groups as described for R_3 in formula (I); and
- M is a counter ion to balance the charge of (II).

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5,853,969

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING INFRARED ABSORBING COLORANT

Toru Harada; Keiichi Suzuki; Shigeru Ohno; Koji Wariishi, and Yoshiharu Yabuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 532,880, Sep. 22, 1995, Pat. No. 5,714,307. This application Nov. 28, 1997, Ser. No. 980,304

Claims priority, application Japan, Sep. 22, 1994, 6-227983

Int. Cl.⁶ G03C *1/815;1/825*

U.S. Cl. 430—510 **9 Claims**

1. A silver halide photographic material comprising a support, at least one silver halide emulsion layer and at least one non-light-sensitive hydrophilic colloidal layer, said silver halide emulsion layer or said hydrophilic colloidal layer containing a colorant having an absorption maximum wavelength within the infrared region of 700 to 1,100 nm, said colorant being in the form of solid particles dispersed in the silver halide emulsion layer or in the hydrophilic colloidal layer, and said colorant being substantially irremovable in a processing solution of the silver halide photographic material.

5,853,970

METHOD FOR IMPROVING THE CONSERVATION OF A PHOTOGRAPHIC PRODUCT WITH A CELLULOSE ESTER TYPE SUPPORT

Olivier J. Poncelet; Jeannine Rigola, both of Chalon sur Saone, and Boualem Mekki, Lyons, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1997, Ser. No. 842,753

Claims priority, application France, Apr. 29, 1996, 96 05591

Int. Cl.⁶ G03C *1/775;1/93*

U.S. Cl. 430—536 **3 Claims**

1. A photographic element comprising

a cellulose ester support;

at least one silver halide light-sensitive layer superposed on said support;

a transparent top layer superposed on said light-sensitive layer comprising a fibrous alumino-silicate polymer of the formula $Al_xSi_yO_z$ wherein x is between 1 and 3, y is between 1 and 3 and z is between 2 and 6 and a water-soluble binder selected from the group consisting of proteinaceous hydrophilic polymers, cellulose derivatives, polyalkylene glycols and polyvinyl alcohols.

5,853,971

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Peter Bell, Köln; Hans-Ulrich Borst, Elsdorf; Ralf Büscher, Lohmar; Johannes Willsau, and Jörg Siegel, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert AG, Germany

Filed Apr. 15, 1997, Ser. No. 838,084

Claims priority, application Germany, Apr. 25, 1996, 196 16 497.4

Int. Cl.⁶ G03C *1/83*

U.S. Cl. 430—555 **11 Claims**

1. A color photographic silver halide material which comprises on a support at least one red-sensitive, cyan-coupling, at least one green-sensitive, magenta-coupling and at least one blue-sensitive,yellow-coupling silver halide emulsion layer together with interlayers between layers of different color sensitivity, wherein at least one of the stated interlayers contains at least one masking coupler, and said masking coupler has a reaction rate constant for the coupling reaction with the developer oxidation product of>5000 $lmol^{-1}$ S-1.

5,853,972

SILVER HALIDE EMULSION, SILVER HALIDE PHOTOGRAPHIC MATERIAL AND ITS PROCESSING, AND METHODS FORMING IMAGES

Takayoshi Oyamada, and Seiji Yamashita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 382,207, Feb. 1, 1995, abandoned. This application Jun. 14, 1996, Ser. No. 662,680

Claims priority, application Japan, Feb. 10, 1994, 6-036313

Int. Cl.⁶ G03C *1/035;1/015;1/09*

U.S. Cl. 430—569 **7 Claims**

1. A method for preparing a tabular silver halide emulsion having a Cl content of from 40 to 100 mol %, said method comprising adding fine silver halide grains in an amount corresponding to from 50 to 87% of the total silver amount under the condition of pH 5.5 or more and pCl 1.6 or more during the course of growth of crystals after nucleation, and subjecting the crystals to physical ripening to allow the crystals to grow, wherein the emulsion comprises tabular silver halide grains each having a (100) plane as a principal plane, and wherein the Cl content of said fine silver halide grains is from 50 to 100%.

5,853,973

STRUCTURE BASED DESIGNED HERBICIDE RESISTANT PRODUCTS

Genichi Kakefuda, Yardley, Pa.; Karl-Heinz Ott, Lawrenceville, N.J.; Jae-Gyu Kwagh, Fairless Hills, and Gerald W. Stockton, Yardley, both of Pa., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 20, 1995, Ser. No. 426,125

Int. Cl.⁶ C12Q *1/00*

U.S. Cl. 435—4 **10 Claims**

1. A structure-based modelling method for identifying potential herbicide resistant acetohydroxy acid synthase (AHAS) variant proteins, said method comprising:

(a) modelling a target AHAS protein on a template selected from the group consisting of pyruvate oxidase, transketolase, carboligase, and pyruvate decarboxylase, wherein said modelling comprises (i) aligning the primary sequence of said target AHAS protein on the sequence of said template by pair-wise sequence alignment to achieve a maximal homology score followed by repositioning gaps to conserve continuous regular secondary structures; (ii) transposing said aligned sequence to the three-dimensional struture of said template to derive the three-dimensional struture of said target AHAS protein; (iii) subjecting the structure obtained in step (ii) to energy miniza-tion; and (iv) localizing an herbicide binding pocket in said three-dimensional structure;

(b) positioning and herbicide into the three-dimensional structure of said target AHAS protein using interactive molecular graphics wherein said herbicide is selected from the group consisting of imidazolinones, sulfonylureas, triazolopyrimidine sulfonamides, pyrimidyl-oxy-benzoic acids, sulfmoylureas, and sulfonylcarboximides;

(c) selecting as a target for a mutation, an amino acid position in said target AHAS protein, wherein the amino acid at said position is predicted, based on the structure obtained in (a), to participate directly or indirectly in herbicide binding;

(d) mutating DNA encoding said target AHAS protein to produce a mutated DNA encoding a variant AHAS containing said tergeted mutation at said position;

(e) expressing said mutated DNA in a first cell, under conditions in which said variant AHAS containing said mutation at said position is produced;

(f) expressing DNA encoding wild-type AHAS in parallel in a second cell;

(g) purifying said wild-type and said variant AHAS proteins from said cells;

(h) assaying said wild-type and said variant AHAS proteins for catalytic activity in the conversion of pyruvate to acetolactate or in the condensation of pyravate and 2-ketobutyrate to form acetohydroxybutyrate, in the absence and in the presence of at least one of said herbicides;

(i) obtaining a three-dimensional structure of said variant AHAS by (i) introducing the mutation produced in step (d) into the target AHAS structure obtained in step (a); (ii) subjecting the resulting structure to energy minimization; and (iii) localizing the herbicide-binding pocket in the resulting three-dimensional structure;

(j) repeating steps (c)–(i), wherein said variant is used as the target AHAS in step (c) and other mutations are made until an herbicide resistant AHAS variant protein is identified having;

(1) in the absence of an herbicide,

(A) a catalytic activity alone sufficient to maintain the viability of a cell in which it is expressed; or

(B) catalytic activity in combination with any herbicide resistant AHAS variant protein also expressed in said cell, which may be the same as or different than said first AHAS variant protein, sufficient to maintain the viability of a cell in which it is expressed;

wherein said cell requires AHAS activity for viability; and

(2) catalytic activity that is more resistant to at least one herbicide than is wild type AHAS.

5,853,974

ENHANCEMENT OF ALKALINE PHOSPHATASE WITH SDS IN CHEMILUMINESCENT SUBSTRATES

Patrick J. Sheridan, San Leandro, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 472,756, Jun. 7, 1995. This application Mar. 5, 1996, Ser. No. 610,955

Int. Cl.⁶ C12Q *1/00;1/68;1/42;* **C12N** *9/00*

U.S. Cl. 435—4 **24 Claims**

1. A method for enhancing the chemiluminescence from a molecule that is triggerable to generate a chemiluminescent signal, which comprises:

(a) providing a molecule that is triggerable to generate a chemiluminescent signal, a dicationic surfactant, and a hydrophobic anionic enhancer having the formula $R^1X^-A^+$, wherein R^1 is a hydrophobic group that may be a substituted or unsubstituted hydrocarbon moiety selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkynyl, aryl and aralkyl, X^- is an anionic moiety covalently attached to the R^1 moiety, and A^+ is a countercation; and

(b) activating the triggerable molecule to generate a chemiluminescent signal.

5,853,975

METHODS FOR IDENTIFYING COMPOSITIONS FOR THE TREATMENT OF BODY WEIGHT DISORDERS, INCLUDING OBESITY

Louis Anthony Tartaglia, Watertown, Mass., assignor to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 518,878, Aug. 23, 1995, Pat. No. 5,702,902, which is a continuation-in-part of Ser. No. 470,868, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 294,522, Aug. 23, 1994, Pat. No. 5,741,666. This application Feb. 26, 1997, Ser. No. 807,861

Int. Cl.⁶ C12Q *1/02;1/25*

U.S. Cl. 435—4 **7 Claims**

1. A method for identifying a compound that modulates C5 protein uncoupling activity, comprising:

(a) contacting a test compound to a C5 protein or a cell expressing a C5 protein;

(b) measuring the level of C5 protein uncoupling activity: and

(c) comparing the level obtained in (b) to the C5 gene protein uncoupling activity level obtained in the absence of test compound:

such that if the level obtained in (b) differs from that obtained in the absence of test compound, a compound that modulates C5 protein uncoupling activity has been identified.

5,853,976

RECOMBINANT PROTEINASE FROM *CLOSTRIDIUM HISTOLYTICUM* AND ITS USE FOR ISOLATING CELLS AND GROUPS OF CELLS

Friederike Hesse; Dorothee Ambrosius, both of München, and Helmut Burtscher, Habach, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP95/05054, § 371 Date Aug. 26, 1997, § 102(e) Date Aug. 26, 1997, PCT Pub. No. WO96/19583, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 20, 1995, Ser. No. 849,536

Claims priority, application Germany, Dec. 22, 1994, 44 45 891

Int. Cl.⁶ C12Q *1/00;* **C12P** *21/06;* **C07H** *17/00;* **C12N** *9/00*

U.S. Cl. 435—4 **17 Claims**

1. An isolated nucleic acid selected from the group consisting of

a) a DNA of nucleotides 1027–1965 of SE ID NO:3 or a DNA which is complementary thereto,

b) a nucleic acid which hybridizes under low stringency conditions with a DNA of nucleotides 1027–1965 of SEQ ID NO:3,

c) a nucleic acid which encodes for the same amino acid sequence as depicted in SEQ ID NO:5;

wherein the nucleic acid codes for a protein with the activity of neutral protease from *Clostridium histolyticum*.

5,853,977

MAMMALIAN TNF-α CONVERTASES

Barbara Dalie, Annandale; Xuedong Fan, Union; Daniel Lundell, Flemigton; Charles A. Lunn, Somerville; Jimmy C. Tan, Edison, and Paul J. Zavodny, Mountainside, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jul. 10, 1997, Ser. No. 889,909

Int. Cl.⁶ C12Q *1/00;* **C12N** *9/64;9/48;9/50*

U.S. Cl. 435—4 **9 Claims**

1. An isolated bovine TNF-α convertase characterized by:

(a) an amino acid sequence comprising a sequence defined by SEQ ID NO: 2,

(b) an apparent molecular weight in SDS-PAGE of about 65 kDa, and

(c) an ability to cleave human proTNF-α to produce soluble, mature human TNF-α.

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5,853,978

MOLECULARLY CLONED ACQUIRED IMMUNODEFICIENCY SYNDROME POLYPEPTIDES AND METHODS OF USE

Phillip W. Berman, Burlingame; Daniel J. Capon, San Mateo, and Laurence A. Lasky, San Francisco, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 129,009, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 979,391, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 227,568, Aug. 2, 1988, abandoned, which is a division of Ser. No. 861,016, May 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 805,069, Dec. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 685,272, Dec. 24, 1987, abandoned. This application Jul. 29, 1994, Ser. No. 282,857

Int. Cl.^{6} C12Q *1/70;* **C12P** *21/06;21/04;* **C07K** *1/00*

U.S. Cl. 435—5 14 Claims

1. A fusion polypeptide comprising (a) a first polypeptide sequence of an AIDS associated E', env, or gag polypeptide, that specifically binds complementary antibody and (b) a second polypeptide sequence which is not an AIDS associated virus polypeptide.

5,853,979

METHOD AND SYSTEM FOR DNA SEQUENCE DETERMINATION AND MUTATION DETECTION WITH REFERENCE TO A STANDARD

Ronald J. Green, Toronto; Vrijmoed Chi, Mississauga; Rodney D. Gilchrist, Oakville; Gregory Dee, and John K. Stevens, both of Toronto, all of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Jun. 30, 1995, Ser. No. 497,202

Int. Cl.^{6} C12Q *1/70;1/68;* **G01N** *33/48;* **G06K** *9/00*

U.S. Cl. 435—5 33 Claims

31. A method for normalization of an experimental data trace representing the separation of polynucleotide fragments within an electrophoresis gel, wherein the experimental data trace has a putatively known shape, comprising the steps of:

(a) comparing the experimental data trace to a standard data trace of the known shape and determining normalization coefficients which when applied to the experimental data trace produce a normalized data trace having a high degree of correlation with the standard data trace; and
(b) applying the normalization coefficients to the experimental data trace.

5,853,980

BLACK CREEK CANAL HANTAVIRUS AND RELATED METHODS

Pierre E. Rollin, Lilburn; Luanne Elliott, Atlanta; Thomas G. Kslazek, Lilburn; Stuart T. Nichol, Atlanta; Sergey Morzunov, Atlanta, and Eugeny Ravkov, Atlanta, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and National Institutes of Health Office of Technology Transfer, Bethesda, Md.

Continuation of Ser. No. 390,361, Feb. 17, 1995, abandoned. This application Feb. 3, 1997, Ser. No. 792,055

Int. Cl.^{6} C12Q *1/70;1/68;* **A61K** *39/12;* **C07H** *21/04*

U.S. Cl. 435—5 4 Claims

1. A method of detecting a current or previous infection by Black Creek Canal hantavirus in a subject comprising the steps of:

(a) contacting an antibody-containing sample from the subject with an antigen which is specific to Black Creek Canal hantavirus; and
(b) detecting any binding of said antibody with said antigen, wherein binding of said antibody with said antigen indicates a current or previous infection with Black Creek Canal hantavirus, wherein said antigen is the polypeptide encoded by the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO: 1, the polypeptide encoded by the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:2, or the polypeptide encoded by the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:3.

5,853,981

OLIGONUCLEOTIDES, METHODS AND KITS FOR AMPLIFYING AND DETECTING A NUCLEIC ACID OF CYTOMEGALOVIRUS (CMV) USING NUCLEIC ACID SEQUENCE β2.7

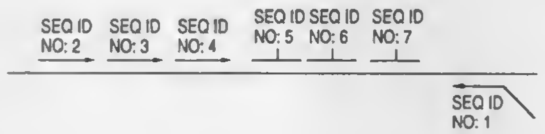
Motohiro Kondo; Toshiya Aono; Masaya Segawa, all of Ohtu; Koichi Yamanishi; Kazuhiro Kondo, both of Osaka, and Keiko Taya, Suita, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1997, Ser. No. 839,306

Claims priority, application Japan, Apr. 26, 1996, 8-107789

Int. Cl.^{6} C12Q *1/70*

U.S. Cl. 435—5 32 Claims



1. An oligonucleotide for amplifying a nucleic acid of cytomegalovirus (CMV) utilizing a nucleic acid sequence (β2.7), said oligonucleotide containing a nucleic acid sequence consisting of at least fifteen continuous bases selected from the nucleic acid sequence of SEQ ID NO:1.

5,853,982

METHOD OF ISOLATING STRAINS OF THE *LYMANTRIA DISPAR* NUCLEAR POLYHEDROSIS VIRUS

James M. Slavicek, Dublin, Ohio, assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 3, 1997, Ser. No. 943,785

Int. Cl.^{6} C12Q *1/70;* **C12N** *7/00;7/02*

U.S. Cl. 435—5 12 Claims

1. A method for isolating a LdMNPV strain that maintains normal levels of virion occlusion when produced in an insect cell line, comprising the steps of:

(a) infecting gypsy moth larvae with a strain of LdMNPV,
(b) harvesting the larvae to collect budded virus within the insect hemolymph,
(c) infecting an insect cell line and propagating the cell line in a bioreactor with the budded virus preparation,
(d) harvesting virus from the insect cell line,
(e) repeating the infection cycle of steps (a)–(d) until one has enriched for a LdMNPV strain with normal levels of occlusion, and
(f) confirming that the strain has at least normal levels of occlusion.

5,853,983

Patent Not Issued For This Number

5,853,984

USE OF NUCLEIC ACID LIGANDS IN FLOW CYTOMETRY

Ken Davis, Los Altos, Calif.; Sumedha Jayasena, and Larry Gold, both of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938, Ser. No. 199,507, Feb. 22, 1994, Pat. No. 5,472,841, Ser. No. 234,997, Apr. 28, 1994, Pat. No. 5,683,867, and Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 479,729

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/566;* **C07H** *21/02;19/04*

U.S. Cl. 435—6 14 Claims

1. A method for detecting the presence of a target compound in a substance which may contain said target compound, wherein said target compound or said substance is particulate, comprising:

a) identifying a nucleic acid ligand from a candidate mixture of nucleic acids, said nucleic acid ligand being a ligand of said target compound, by the method comprising:
  i) contacting the candidate mixture with said target compound, wherein nucleic acids having an increased affinity to said target compound relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;
  ii) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture;
  iii) amplifying the increased affinity nucleic acids to yield a ligand-enriched mixture of nucleic acids; and
  iv) identifying said nucleic acid ligand;
b) attaching said nucleic acid ligand with a fluorophore to form a fluorophore-labelled nucleic acid ligand;
c) mixing said fluorophore-labelled nucleic acid ligand with a substance which may contain said target compound under conditions suitable for binding of the fluorophore-labelled nucleic acid ligand to said target compound; and
d) analyzing said mixture by flow cytometry to detect whether said fluorophore-labelled nucleic acid ligand bound to said target compound in said substance, whereby the presence of a target compound in a substance can be detected.

5,853,985

PROMOTER OF THE GENE FOR THE HUMAN PRECURSOR OF THE ALZHEIMER'S DISEASE AND ITS USE

Johannes Michael Hermann Salbaum, Waldkirchen, Germany; Colin Louis Masters, Darlington, Australia, and Konrad Traugott Beyreuter, Heidelberg, Germany, assignors to Bayer Aktiegsesellschaft, Leverkusen, Germany

Continuation of Ser. No. 325,745, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 153,546, Nov. 16, 1993, abandoned, which is a continuation of Ser. No. 901,330, Jun. 19, 1992, abandoned, which is a division of Ser. No. 393,360, Aug. 14, 1989, Pat. No. 5,151,508, which is a continuation-in-part of Ser. No. 385,758, Jul. 26, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 483,488

Claims priority, application United Kingdom, Aug. 30, 1988, 8820450

Int. Cl.^{6} C12Q *1/68;* **C12P** *21/00*

U.S. Cl. 435—6 2 Claims

1. A method for screening for a drug that regulates gene expression from the promoter of the gene for the human precursor of Alzheimer's Disease A4 amyloid protein comprising the steps of:

(a) providing a vector comprising said promoter operably linked to a DNA sequence encoding a reporter protein,
(b) transfecting a host cell line with the vector of step (a),
(c) exposing the transfected host cell line to a drug, and
(d) measuring the expression of the reporter gene, whereby a change in the expression of the reporter protein identifies a drug that regulates expression from the promoter of the gene for the human precursor of Alzheimer's Disease A4 amyloid protein.

5,853,986

CHEMICAL PROMOTION OF NUCLEIC ACID HYBRIDIZATION

Charles Robert Petrie, III, Woodinville, Wash.; Lisa Marie Rutledge, Brea, Calif., and Jerold Randall Morgan, Renton, Wash., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 140,694, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 503,441, Apr. 2, 1990, abandoned. This application Jun. 13, 1995, Ser. No. 490,036

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 8 Claims

1. A method for conducting a nucleic acid hybridization assay in a hybridization medium containing complementary nucleic acid sequences, comprising:

adding polystyrene sulfonic acid to the hybridization medium in an amount to lower non-specific hybridization by at least 15%; and
detecting the presence of hybridized nucleic acid.

5,853,987

DECORIN BINDING PROTEIN COMPOSITIONS AND METHODS OF USE

Betty Guo, and Magnus Höök, both of Houston, Tex., assignors to The Texas A & M University System, College Station, Tex.

Continuation-in-part of Ser. No. 427,023, Apr. 24, 1995, abandoned. This application Jan. 22, 1996, Ser. No. 589,711

Int. Cl.^{6} C07H *21/04;21/02;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 68 Claims

1. An isolated nucleic acid encoding a decorin binding protein, wherein said decorin binding protein comprises a contiguous amino acid sequence of at least about 5 amino acids from SEQ ID NO:2.

5,853,988

DIAGNOSIS OF RETINOBLASTOMA

Thaddeus P. Dryja, Milton; Stephen Friend, Somerville, and David W. Yandell, Waltham, all of Mass., assignors to Massachusetts Eye and Ear Infirmary, Boston, and Whitehead Institute, Cambridge, both of Mass.

Division of Ser. No. 951,342, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 728,756, Jul. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 300,667, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 146,525, Jan. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 895,163, Aug. 11, 1986, abandoned. This application Oct. 8, 1992, Ser. No. 958,290

Int. Cl.^{6} C07H *21/02;21/04;* **C12Q** *1/68*

U.S. Cl. 536—23.1 55 Claims

1. Purified nucleic acid comprising a human retinoblastoma gene, or a fragment thereof, wherein said fragment is selected from the group consisting of:

(a) a fragment comprising at least 20 base pairs in length, and
(b) a nucleic acid probe comprising 15 or more bases that hybridizes specifically to said retinoblastoma gene under hybridizing conditions.

5,853,989

METHOD OF CHARACTERISATION OF GENOMIC DNA

Alec John Jeffreys, Leicester; Stephen Little, Chester; Richard Mark Ferrie, and Jannine Brownle, both of Cheshire, all of Great Britain, assignors to Zeneca Limited, London, United Kingdom

Continuation-in-part of Ser. No. 418,859, Apr. 5, 1995, which is a continuation of Ser. No. 935,107, Aug. 26, 1992, abandoned. This application May 6, 1996, Ser. No. 643,181

Claims priority, application United Kingdom, Aug. 27, 1991, 9118371; Sep. 6, 1991, 9119089; Nov. 20, 1991, 9124636; Apr. 3, 1992, 9207379; Jun. 15, 1992, 9212627; Jun. 17, 1992, 9212881

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **17 Claims**

1. A method for detecting the presence or absence of at least one diagnostic base sequence in one or more nucleic acids contained in a sample, which method comprises contacting the sample with a diagnostic primer for each diagnostic base sequence, the nucleotide sequence of each diagnostic primer being such that it is substantially complementary to the corresponding diagnostic base sequence, under hybridising conditions and in the presence of appropriate nucleoside triphosphates and an agent for polymerisation thereof, such that an extension product of a diagnostic primer is synthesised when the corresponding diagnostic base sequence is present in the sample, no extension product being synthesised when the corresponding diagnostic base sequence is not present in the sample and any extension product of a diagnostic primer acts as template for extension of a further primer which hybridises to a locus at a distance from the relevant diagnostic base sequence, and wherein at least one of the diagnostic primer(s) further comprises a tail sequence which does not hybridise to a diagnostic base sequence or a region adjacent thereto, and contacting the above mixture with a tail specific primer which hybridises to the complement of the tail sequence in an extension product of the further primer and is extended in the presence of appropriate nucleoside triphosphates and an agent for polymerisation thereof to amplify the further primer amplification products whereby the presence or absence of the diagnostic base sequence(s) is detected from the presence or absence of tail specific primer extension product.

5,853,990

REAL TIME HOMOGENEOUS NUCLEOTIDE ASSAY

Edward E. Winger, 470A Cola Ballena, Alameda, Calif. 94501; Donald J. Kessler, Redwood Shores, and David E. Hargrove, Livermore, both of Calif., assignors to Edward E. Winger, Alameda, Calif.

Filed Jul. 26, 1996, Ser. No. 687,662

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;21/00*

U.S. Cl. 435—6 **7 Claims**

1. A method for the detection of a target DNA sequence in a sample comprising the steps of:

a) contacting and annealing a probe comprising a ribo-oligonucleotide attached to a first label with a sample containing a target single-stranded DNA sequence having a region complementary to the probe;

b) cleaving at least one of the ribonucleotides of the annealed probe with a ribo-nucleic acid nuclease capable of hydrolyzing ribonucleotides in a double stranded RNA:DNA duplex to release labeled ribo-oligonucleotide fragments; and

c) generating a signal from the released labeled ribo-oligonucleotide fragments that kinetically characterizes the target DNA sequence; wherein steps a)–c) are performed in a single reaction mixture.

5,853,991

PCR-BASED CDNA SUBTRACTIVE CLONING METHOD

Xun Wang, Urbandale; Jonathan P. Duvick, and Steven P. Briggs, both of Des Moines, all of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Division of Ser. No. 481,687, Jun. 7, 1995, abandoned. This application May 23, 1997, Ser. No. 863,028

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C12N** *15/00;* **C07H** *21/04*

U.S. Cl. 435—6 **4 Claims**

1. A method of comparing two cDNA libraries with anchored ends to isolate cDNA that is unique to one of said libraries, comprising the steps of

(A) preparing a first cDNA library and a second cDNA library with anchored ends, wherein said first cDNA contains said unique cDNA which is to be isolated, and wherein said second cDNA library incorporates biotin-labelled deoxynucleotides, and

(B) digesting said first cDNA library with a restriction enzyme for which a recognition sequence is found due to the inclusion of said restriction site in the sequence of the primers used to amplify said cDNA libraries, to produce, at the ends of cDNAs in said first library, single stranded DNA tails,

C) preparing multiple sets of double-stranded adapter DNA molecules, each set comprising a first and a second oligonucleotide of such sequence that:

(1) the 3' end of the first oligonucleotide complements the 5' end of the second oligonucleotide of the same set, and

(2) the 5' end of said first oligonucleotide complements the single-strand DNA produced by a restriction enzyme digest at the anchored ends of the first DNA library

(D) manipulating said libraries by mixing them; subjecting them to DNA-melting conditions; allowing for reannealing of DNA strands in said libraries; purifying said unique cDNA by trapping on streptavidin beads DNA that incorporates said biotin-labeled deoxynucleotides, whereby a cDNA fraction enriched for said unique cDNA is obtained; producing blunt-ended DNA by filling-in said unique cDNA ends with Klenow enzyme reactions; and subjecting said cDNA fraction to PCR amplification of said unique DNA via oligonucleotide primers that comprise an adapter molecule used in step (D),

(E) digesting said unique cDNA with said restriction enzyme and ligating an adapter set from said multiple sets to said anchored ends of said first library, and then

(F) repeating steps (D) and (E), each time ligating a new set of adapter DNA molecules from said multiple sets to said cDNA fraction, until said unique cDNA is essentially free of non-unique cDNA from said first library.

5,853,992

CYANINE DYES WITH HIGH-ABSORBANCE CROSS SECTION AS DONOR CHROMOPHORES IN ENERGY TRANSFER LABELS

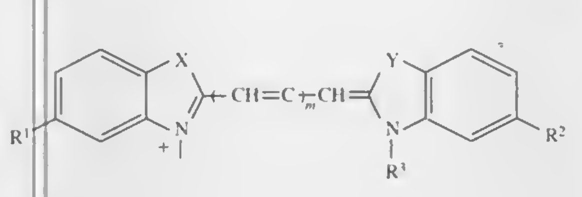
Alexander N. Glazer, Orinda; Richard A. Mathies, Moraga; Su-Chun Hung, Richmond, and Jingyue Ju, Redwood City, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 4, 1996, Ser. No. 726,178

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **27 Claims**

1. A fluorescent label comprising two fluorophores bonded to a backbone in energy transfer relationship whereby one of said fluorophores is a donor fluorophore and the other is an acceptor fluorophore, said donor fluorophore being a cyanine dye characterized by a quantum yield of between about 0.01 and about 0.25 and has the formula



in which:

X is O or S;

Y is O or S;

R^1 is a member selected from the group consisting of H, halo, and C_1–C_6 alkyl;

R^2 is a member selected from the group consisting of H, halo, and C_1–C_6 alkyl;

R^3 is C_1–C_6 alkyl; and

m is zero to 3;

and said acceptor fluorophore having a quantum yield of at least about 0.3.

5,853,993

SIGNAL ENHANCEMENT METHOD AND KIT

Douglas J. Dellinger, Sunnyvale; SueAnn C. Dahm, and Mark A. Troll, both of Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 21, 1996, Ser. No. 735,381

Int. Cl.^{6} C12Q *1/68;* **C12N** *15/00;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **16 Claims**

1. A signal amplification method for detecting a target nucleic acid analyte having a homopolymeric region and a target sequence, wherein said homopolymeric region is poly A at the 3' terminus of said target nucleic acid analyte comprising the steps of:

(a) contacting said analyte under hybridizing conditions with a multiplicity of reporter probes to form a triple helix, said probes comprising:

(i) a signal region; and

(ii) an oligonucleotide sequence, wherein said oligonucleotide sequence is complementary to said analyte homopolymeric region for forming a stable hybrid therewith, and

wherein said reporter probes hybridize with said analyte homopolymeric region to form a triple helix and wherein the hybridization of multiple reporter probes to said analyte homopolymeric region provides for amplification of the detection signal and:

(b) forming an analyte:capture probe hybrid by contacting said analyte target sequence with a capture probe under hybridizing conditions.

5,853,994

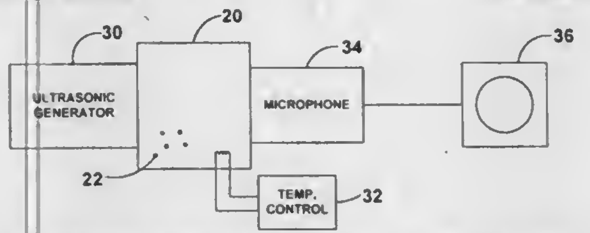
PARTICLE AGGLUTINATION ASSAY SYSTEM

Gopal Gopinathan, Cary, N.C.; Edmund F. Becker, Lexington, Mass.; William Wong, Milton, Mass.; Qiang Xue, Salem, Mass.; Carl M. Good, III, Groton, Mass.; John Fallon, Andover, Mass., and Xue-Song Li, Lexington, Mass., assignors to Analogic Corporation, Peabody, Mass.

Continuation-in-part of Ser. No. 350,882, Nov. 29, 1994, abandoned. This application Dec. 5, 1996, Ser. No. 761.739

Int. Cl.^{6} G01N *33/546*

U.S. Cl. 435—6 **36 Claims**



1. Apparatus for assaying a fluid sample for an analyte, said apparatus comprising, in combination

a first reagent including at least a first class of minute initial particles dimensioned within a predeterminedly narrow range of particle diameters and being coated with a reactant capable of entering into a reaction involving said analyte so as to generate resultant particles from said initial particles and of different dimensions than said initial particles, said resultant particles having characteristic acoustic scattering cross sections;

at least a second class of minute, substantially spheroidal particles within a predeterminedly narrow range of substantially larger particle diameters than the diameters of said particles of said first class, the particles of said second class being coated with said reactant; and

means for forming a mixture of the reactant coated particles of said first and second classes with said sample so as to initiate said reaction and form said resultant particles from said first and second classes of particles by said reaction with analyte present in said sample, said means for forming a mixture comprising a hollow flow cell having a chamber of capillary cross-section with inlet and outlet conduits thereto for respectively introducing and removing the mixture of reagent and sample to and from said chamber;

means for irradiating the mixture of said reagent and sample with compressional waves in a predetermined frequency range at which said resultant particles will cause a reduction in forward energy of said waves within a wavelength band determined in accordance with the scattering cross-sections of said resultant particles;

a sonic delay line disposed between said source and said mixture so as to delay the propagation of said waves irradiating said mixture;

acoustic reflector means positioned for reflecting said waves back toward said source after having traversed said mixture;

sensor means for detecting said reduction of said forward energy by said resultant particles, said sensor means comprising means for generating electrical signals in accordance with the detected reduction in said forward energy; and

means for determining from the frequency and amplitude of said electrical signals an assay of said analyte in said sample.

5,853,995

LARGE SCALE GENOTYPING OF DISEASES AND A DIAGNOSTIC TEST FOR SPINOCEREBELLAR ATAXIA TYPE 6

Cheng-Chi Lee, Houston, Tex., assignor to Research Development Foundation, Carson City, Nev.

Filed Jan. 7, 1997, Ser. No. 779,801

Int. Cl.^{6} C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **3 Claims**

1. A method of screening individuals at risk for developing autosomal dominant spinocerebellar ataxia type 6 caused by a trinucleotide CAG repeat sequence instability, comprising the steps of:

labeling at least one oligonucleotide primer for amplifying CAG repeat sequences in a genomic DNA sample;

amplifying genomic DNA CAG repeat sequence by polymerase chain reaction using said labeled oligonucleotide primer to produce amplified sample genomic DNA fragments;

electrophoresing said amplified sample genomic DNA fragments to produce a sample electrophoresis pattern;

amplifying a control genomic DNA CAG repeat sequence by polymerase chain reaction using said labeled oligonucleotide primer to produce amplified control genomic DNA fragments;

electrophoresing said amplified control genomic DNA fragments to produce a control electrophoresis pattern;

comparing said sample electrophoresis pattern to said control electrophoresis pattern; and

determining whether said individual to be tested may be at risk for developing autosomal dominant spinocerebellar ataxia type 6 caused by CAG repeat sequence instability, wherein if said sample genomic DNA electrophoresis pattern contains labeled fragments larger than labeled fragments from said

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control genomic DNA electrophoresis pattern, said individual may be at risk for developing autosomal dominant spinocerebellar ataxia type 6 caused by trinucleotide repeat sequence instability.

5,853,996
DETECTION OF CHRONIC FATIGUE SYNDROME BY INCREASED APOPTOSIS AND CELL CYCLE ARREST OF PERIPHERAL BLOOD MONONUCLEAR CELLS

Eli Mordechai, and Aristo Vojdani, both of Los Angeles, Calif., assignors to Immunosciences Lab, Inc., Beverly Hills, Calif.

Division of Ser. No. 766,677, Dec. 13, 1996. This application Apr. 17, 1997, Ser. No. 843,951

Int. Cl.^{6} C12N *1/68;* G01N *33/53*

U.S. Cl. 435—6 **3 Claims**

1. A method of detecting chronic fatigue syndrome (CFS) in an individual, comprising the steps of:

isolating peripheral blood mononuclear cells (PBMCs) from said individual;

determining the number of apoptotic PBMCs present in PBMCs from said individual by fluorescently or radioactively labeling DNA strand breaks in said PBMCs and detecting said labeled strand breaks by flow cytometry; and

comparing said number of apoptotic PBMCs present in PBMCs from said individual to an expected amount of apoptotic PBMCs from a control individual known not to have CFS, wherein an increase in said number of apoptotic PBMCs in said individual compared to said amount of apoptotic PBMCs from said control individual indicates the presence of CFS.

2. A method of detecting chronic fatigue syndrome (CFS) in an individual, comprising the steps of:

isolating peripheral blood mononuclear cells (PBMCs) from said individual;

determining the number of PBMCs from said individual arrested in the late S and G_2/M stages of the cell cycle; and

comparing said number of arrested PBMCs from said individual to an expected number of arrested PBMCs from an individual known not to have CFS, wherein an increase in said number of arrested PBMCs in said individual compared to said number of arrested PBMCs from said control individual indicates the presence of CFS.

5,853,997
HUMAN PROTEIN PHOSPHATASE

Olga Bandman, Mountain View; Surya K. Goli; Preeti Lal, both of Sunnyvale; Neil C. Corley, Mountain View, and Hong Zhang, Pleasant Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 11, 1997, Ser. No. 873,093

Int. Cl.^{6} C12N *9/16;1/20;* C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **11 Claims**

1. An isolated and purified polynucleotide sequence encoding a humane protien phosphatase comprising the amino acid sequence of SEQ ID NO: 1 or enzymatically active fragments thereof.

5,853,998
PROBE FOR DIAGNOSING *ENTEROCOCCUS FAECALIS*

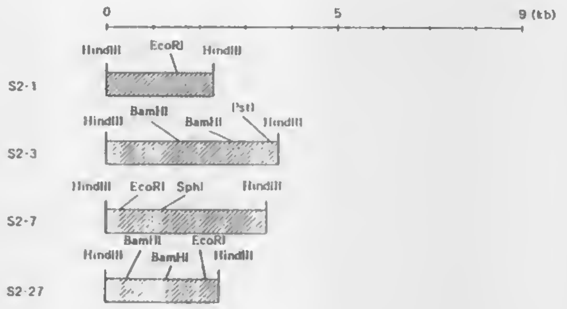
Tsuneya Ohno, 15-16, Kita-Aoyama 3 chome, Minato-ku, Tokyo 107, Japan; Akio Matsuhisa, Nara, Japan; Hirotsugu Uehara, Kobe, Japan, and Soji Eda, Osaka, Japan, assignors to Tsuneya Ohno, Tokyo, and Fuso Pharmaceutical Industries, Ltd., Osaka, both of Japan

Division of Ser. No. 362,577, Mar. 27, 1995. This application Aug. 29, 1997, Ser. No. 920,828

Claims priority, application Japan, Jul. 7, 1992, 4-179719

Int. Cl.^{6} C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 **2 Claims**



1. A probe composition for detecting *Enterococcus faecalis* wherein the probe composition consists essentially of

(a) the DNA of any one of SEQ ID NOS:9 through 12, or

(b) the complement of (a).

2. A method for detecting the presence of *Enterococcus faecalis* in a sample comprising the steps of contacting nucleic acid from said sample with the probe composition of claim 1 and detecting hybridization of the nucleic acid from said sample with DNA in said probe composition as an indication of the presence of *Enterococcus faecalis.*

5,853,999
METHODS OF SCREENING FOR AGENTS THAT INHIBIT INTERACTION BETWEEN MHC CLASS I ANTIGENS AND A CELL SURFACE RECEPTOR

Lennart Olsson, Orinda; Robert S. Goodenow, Coto de Casa, and Avram Goldstein, Standford, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 105,416, Aug. 12, 1993, Pat. No. 5,639,458, which is a continuation-in-part of Ser. No. 57,184, May 3, 1993, Pat. No. 5,385,888, which is a continuation of Ser. No. 649,471, Feb. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 323,565, Mar. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 28,241, Mar. 20, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 473,656

Int. Cl.^{6} G01N *33/53;* C07K *5/10;7/06;14/00*

U.S. Cl. 435—7.1 **38 Claims**

1. A method of screening for drugs capable of inhibiting interaction between a major histocompatibility Class I antigen and a cell surface receptor, thereby modulating cell surface expression of said receptor, said method comprising the steps of:

binding to an insoluble support a peptide having activity in modulating of cell surface expression of said receptor, wherein said peptide is from 8 to 40 amino acids derived from an α_1 or α_2 domain of said major histocompatiblity Class I antigen and has, as the C-terminal sequence, a continuous sequence contained within a sequence selected from the group consisting of: G-N-aa^{71}-Q-aa_1^{73}-F-R-aa_1^{76}-aa_1^{77}-aa^{78}-R-T-aa^{81}-L-R-Y-X (SEQ ID NO.32), and W-aa^{61}-R-aa^{63}-T-aa^{65}-aa^{66}-aa^{67}-K-aa^{69}-aa^{70}-aa^{71}-Q-aa_2^{73}-F-R-aa_2^{76}-aa_2^{77}L-R-T-L-aa^{82}-aa^{83}-Y-aa^{85}(SEQ ID NO.34)

where:

aa^{61}, if present, is D or E;

aa^{63}, if present, is E, I, or N;

aa^{65}, if present, is Q, or R;

aa^{66}, if present, is I, N, or K;

aa^{67}, if present, is A, S, C, or M;

aa^{69}, if present, is G, A, T, or P;

aa^{70}, if present, is N, Q, K, R, S, or T;

aa^{71}, if present, is G, A, S, T, D, or E;

aa_1^{73}, if present, is S, T, F, Y, X or W;

aa_2^{73}, if present, is S, T, or W;

aa_1^{76}, if present, is an aliphatic amino acid other than basic of from 4 to 6 carbon atoms or alanine;

aa_2^{76}, if present, is V, or E;

aa^{77}, if present, is a polar aliphatic amino acid of from 3 to 6 carbon atoms, or alanine;

aa_2^{77}, if present, is N, S, or D;

aa^{78} is a non-polar aliphatic amino acid of from 3 to 6 carbon atoms;

aa^{81} is G, L, I, or V; and

aa^{82} is L, or R;

aa^{83} is G, or R;

aa^{85} is Y, or A, and aa85 is the terminal amino acid;

X is an amino group to provide an amide terminal group, or the amino acids alanine or tyrosine terminating in a carboxy group;

adding to said bound peptide, a drug candidate and a labeled antibody or peptide in amounts varying relative to one another, said antibody or peptide having binding specificity to said bound peptide; and

detecting an amount of said labeled antibody or peptide bound in the presence and in the absence of said drug candidate;

wherein if said detected amount of labeled antibody or peptide is less in the presence of said drug candidate relative to the amount of labeled antibody or peptide detected in the absence of said drug candidate, said drug candidate is capable mediating modulation of said cell surface expression of said receptor.

5,854,000
METHODS FOR MEASUREMENT PREDICATED ON THE PRESENCE OF ADVANCED GLYCOSYLATION ENDPRODUCTS IN TOBACCO AND ITS COMBUSTION BYPRODUCTS

Richard J. Bucala, Cos Cob, Conn.; Helen Vlassara, Shelter Island; Anthony Ceraml, New York, both of N.Y., and Henry W. Founds, Mendham, N.J., assignors to Alteon Inc., Ramsey, N.J., and The Picnwer Institute For Medical Research, Manhasset, N.Y.

Continuation-in-part of Ser. No. 613,234, Mar. 8, 1996. This application Mar. 18, 1996, Ser. No. 617,349

Int. Cl.^{6} G01N *33/53;33/542;33/537;33/543;30/02;30/90;33/566, 33/551*

U.S. Cl. 435—7.1 **11 Claims**

1. A method for measuring the history of tobacco smoking, if any, in a human subject, comprising measuring the serum levels of advanced glycosylation endproducts (AGEs) or substances exhibiting immunoreactivity of AGEs in said subject, and comparing the results of said measurements to a pooled standard taken from non-smoking individuals of similar medical history.

5,854,001
HEPATITIS C VIRUS FUSION PROTEINS

James M. Casey; Suzanne L. Bode, both of Zion; Billy J. Zeck, Gurnee; Julie Yamaguchi, Chicago; Donald E. Frail; Suresh M. Desai, both of Libertyville, and Sushil G. Devare, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 417,478, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 144,099, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 830,024, Jan. 31, 1992, abandoned. This application Sep. 18, 1996, Ser. No. 710,637

Int. Cl.^{6} G01N *33/53;* A61K *38/00;* C07K *2/00*

U.S. Cl. 435—7.1 **3 Claims**

1. An isolated APP-HCV-E2 fusion protein expressed by a mammalian expression vector pHCV-162.

5,854,002
METHOD OF IDENTIFYING COMPOUNDS THAT BIND TO THE INSECT GABA RECEPTOR

Michael D. Tomalski, Raleigh, and Daniel B. Gant, Durham, both of N.C., assignors to Rhone Poulenc, Inc., Research Triangle Park, N.C.

Filed Dec. 17, 1996, Ser. No. 768,301

Int. Cl.^{6} G01N *33/566;* C07K *14/435;* C12N *5/10;15/63*

U.S. Cl. 435—7.2 **26 Claims**

20. A method of measuring the ability of a compound to bind to the GABA recognition site of an insect GABA receptor by determining the GABA receptor-binding activity of said compound, wherein said insect GABA receptor comprises Grd and LCCH3 subunits, comprising the steps of:

incubating, in aqueous solution, a known amount of host cells or membranes obtained from said host cells, wherein said host cells comprise a subunit LCCH3 having the amino acid sequence of SEQ. ID. NO:2; wherein said first nucleic acid is operably linked to a first promoter, and a second expression vector comprising a second nucleic acid encoding the insect GABA receptor Grd having the amino acid sequence of SEQ ID: NO: 4: wherein said second nucleic acid is operably linked to a second promotor, wherein said first and second nucleic acid are coexpressed in said host cell to from a GABA receptor that binds muscimol, and -muscimol in known amount that binds to said known amount of host cells or membranes, and varied known amounts of a compound to be tested for its ability to bind to said GABA recognition site for a time and under conditions suitable for a portion of said -muscimol to bind to said host cells or membranes;

separating the cells or membranes from the -muscimol that is not bound to the cells or membranes; and

determining the GABA receptor binding activity of said compound.

5,854,003
SCREENING METHOD FOR AGENTS THAT MODULATE HUMAN NIK ACTIVITY

Mike Rothe, San Mateo, and Lin Wu, South San Francisco, both of Calif., assignors to Tularik Inc., South San Francisco, Calif.

Division of Ser. No. 887,518, Jul. 3, 1997. This application Feb. 26, 1998, Ser. No. 32,475

Int. Cl.^{6} G01N *33/566*

U.S. Cl. 435—7.8 **9 Claims**

1. A method of screening for an agent which modulates the interaction of a nuclear factor-κB-inducing kinase (NIK) polypeptide with a NIK binding target, said method comprising the steps of:

incubating a mixture comprising:

an isolated polypeptide comprising at least 10 consecutive amino acid residues of the amino acid sequence set forth as

SEQ ID NO:2, which consecutive amino acid residues comprise the amino acid residue 25 of SEQ ID NO:2,
a binding target of said isolated polypeptide, and
a candidate agent,
under conditions whereby, but for the presence of said candidate agent, said isolated polypeptide specifically binds said binding target of said isolated polypeptide at a reference affinity and
detecting the binding affinity of said isolated polypeptide to said binding target of said isolated polypeptide to determine an agent-biased affinity,
wherein a difference between the agent-biased affinity and the reference affinity indicates that said candidate agent is an agent that modulates the interaction of said NIK polypeptide with said NIK binding target.

5,854,004

PROCESS FOR SCREENING SUBSTANCES CAPABLE OF MODULATING A RECEPTOR-DEPENDENT CELLULAR SIGNAL TRANSMISSION PATH

Armin Peter Czernilofsky; Adolf Himmler; Christian Stratowa; Ulrike Weyer, all of Vienna; Herbert Lamche, Alland, and Renate Schafer, Vienna, all of Austria, assignors to Boehringer Ingleheim GmbH, Ingelheim am Rhein, Germany

PCT No. PCT/EP92/02718, § 371 Date May 25, 1994, § 102(e) Date May 25, 1994, PCT Pub. No. WO93/11257, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 25, 1992, Ser. No. 244,434

Claims priority, application Germany, Nov. 25, 1991, 41 38 621.3

Int. Cl.^{6} C12Q *1/68;* **G01N** *33/566*

U.S. Cl. 435—7.21 **19 Claims**

1. A process for screening a test substance for the ability of the test substance to modulate a receptor-dependent signal transduction pathway in a human or animal cell, wherein said modulation affects the activity of a phospholipase or a mechanism which precedes or succeeds phospholipase activation in the signal transduction pathway initiated by a receptor coupled to the signal transduction pathway, comprising

1) incubating test mammalian cells with the test substance, wherein said test mammalian cells are:
   (a) transformed with a recombinant DNA molecule comprising a reporter gene operably linked to a DNA molecule having a regulatory sequence which responds to a change in concentration of inositol- 1,4,5-triphosphate (IP_3) and diacylglycerol (DAG) brought about by the modulation of phospholipase activity in said mammalian cell, whereby the expression of the reporter gene in said mammalian cell is modulated by a change in concentration of IP_3/DAG; and
   (b) transformed with a recombinant DNA molecule comprising a sequence which codes for a receptor protein which is coupled functionally to the phospholipase effector system and wherein said mammalian cells express the receptor protein encoded by the recombinant DNA molecule, with the proviso that said receptor protein is not an ion channel protein;
2) incubating control mammalian cells with said test substance, wherein said control cells are transformed with a recombinant DNA molecule comprising said reporter gene operably linked to a DNA molecule having a regulatory sequence which responds to a change in concentration of IP_3/DAG, wherein said change in concentration is brought about by the modulation of phospholipase activity, wherein the same reporter gene and operably controlled regulatory sequence is used in both test and control cells;
3) measuring the concentration of said reporter gene product in said control cells and in said test cells; and
4) comparing the concentration of said reporter gene product in said control cells to the concentration of said reporter gene product in said test cells.

5,854,005

PLATELET BLOCKADE ASSAY

Barry S. Coller, New York, N.Y., assignor to Mount Sinai School of Medicine, New York, N.Y.

Continuation-in-part of Ser. No. 315,026, Sep. 29, 1994, Pat. No. 5,763,199. This application Nov. 20, 1996, Ser. No. 754,773

Int. Cl.^{6} G01N *33/546;33/552*

U.S. Cl. 435—7.21 **35 Claims**

1. A method of determining whether an individual has reduced ability to form platelet thrombi, comprising the steps of:

a) obtaining a blood sample from the individual being assessed;
b) mixing the blood sample with 1) an anticoagulant; 2) sufficient buffer to maintain the pH and salt concentration of the anticoagulated blood within a range suitable for platelet aggregation; 3) a platelet GPIIb/IIIa receptor ligand immobilized on a solid surface and 4) a platelet aggregation activator;
c) agitating the mixture formed in b) for a period of time sufficient for unblocked platelet GPIIb/IIIa receptors to bind with the platelet GPIIb/IIIa receptor ligands on said solid surface; and
d) assessing platelet-mediated agglutination in the agitated mixture, wherein the absence of agglutination indicates that the individual has reduced ability to form platelet thrombi.

5,854,006

GAMMA-GLUTAMYL TRANSPEPTIDASE-SPECIFIC ANTIBODY, PRODRUGS FOR THE TREATMENT OF GAMMA-GLUTAMYL TRANSPEPTIDASE-EXPRESSING TUMORS, AND METHODS OF ADMINISTRATION THEREOF

Marie Hanigan, and Timothy MacDonald, both of Charlottesville, Va., assignors to The University of Virginia, Charlottesville, Va.

Filed Mar. 28, 1997, Ser. No. 825,349

Int. Cl.^{6} G01N *33/53;* **C07K** *16/00*

U.S. Cl. 435—7.21 **4 Claims**

1. A method of assaying a tissue culture sample for the presence of gamma-glutamyl transpeptidase (GGT) expression, comprising combining an isolated antibody specific for a peptide having SEQ. ID. NO:1 with said tissue sample under conditions which permit antibody binding, and inspecting said sample to determine whether binding of said antibody has occurred, wherein any such binding is indicative of the presence of GGT expressing tissue.

5,854,007

PROCESS FOR PRODUCING GM1 SPECIFIC ANTIBODIES

Gerd Ritter, and Lloyd J. Old, both of New York, N.Y., assignors to Ludwig Institute For Cancer Research, New York, N.Y.

Division of Ser. No. 491,310, Jun. 16, 1995, abandoned. This application Apr. 24, 1997, Ser. No. 847,369

Int. Cl.^{6} G01N *33/574;33/53*

U.S. Cl. 435—7.23 **11 Claims**

11. A process for making an antibody which binds to monosialoganglioside GM1, comprising:

(i) immunizing a subject animal with a purified lipopolysaccharide obtained from a gram negative bacteria which comprises the structure:
Gal β1-3GalNAcβ1-4Galβ (II3neuAc) in an amount sufficient to provoke production of antibody by said animal, and
(ii) isolating the antibodies produced by said animal.

5,854,008

EUROPIUM AND TERBIUM CHELATORS FOR THE TIME-RESOLVED FLUOROMETRIC ASSAYS

Eleftherios P. Diamandis, Toronto, Canada, assignor to Nordion International, Inc., Ontario, Canada

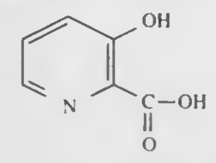
PCT No. PCT/CA93/00153, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO93/20054, PCT Pub. Date Oct. 14, 1993

Continuation-in-part of Ser. No. 863,746, Apr. 6, 1992, Pat. No. 5,312,922. This PCT application Apr. 6, 1993, Ser. No. 313,300

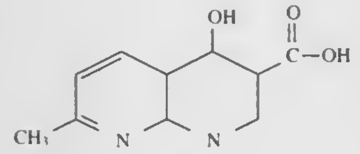
Int. Cl.^{6} G01N *33/535;33/78;33/545*

U.S. Cl. 435—7.91 **11 Claims**

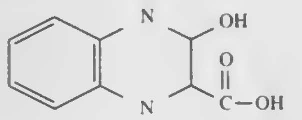
4. In a time-resolved fluorometric assay, comprising the steps of: enzymatically treating a substrate to form a lanthanide metal chelate in the presence of a lanthanide metal ion and detecting the fluorescence emitted, the improvement comprising the use of a substrate from the group consisting of those with the following formulae II, IV, V, VI, VII, VIII, IX, and X:



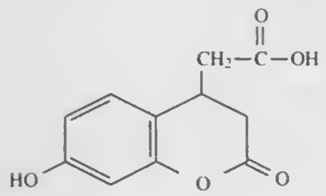
II



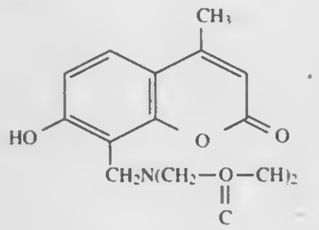
IV



V



VI



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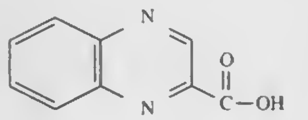
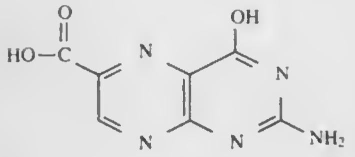


VIII



IX

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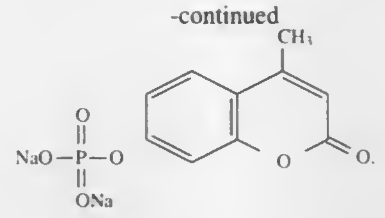

X

5,854,009

METHOD OF DETECTING ESTROGEN-SENSITIVE PATHOLOGIES

Thomas L. Klug, West Chester, Pa., assignor to Immuna Care Corporation, Bethlehem, Pa.

Filed Sep. 18, 1996, Ser. No. 715,406

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 435—7.93 **56 Claims**

1. A method of screening for a pathology affecting estrogen-sensitive tissues of a human wherein an altered level of a metabolite of estrone and its respective 3-glucuronide is indicative of the pathology, or a susceptibility thereto, in said human which comprises:

A. obtaining a urine, serum or tissue sample from said human in which said pathology is suspected;
B. detecting the level of a particular metabolite of estrone and its respective 3-glucuronide from said sample;
C. comparing this said level with the level derived from the testing of healthy humans to detect differences therefrom of said particular metabolite of estrone and its respective 3-glucuronide.

41. A test kit for the screening of a pathology wherein an altered level of a metabolite of estrone and its respective 3-glucuronide is indicative of the pathology or a susceptibility thereto, using the serum, tissue or body fluid medium of a human under test, comprising:

(a) a predetermined amount of at least one detectably labeled immunochemically reactive estrone metabolite and its 3-glucoronide, or an antibody binding epitope thereof and;
(b) directions for use of said kit.

5,854,010

BIOASSAY FOR DETECTING 2,3,7,8-TETRACHLORODIBENZO-PARA-DIOXIN AND TCDD-LIKE COMPOUNDS AND NOVEL RECOMBINANT CELL LINE USEFUL THEREFOR

Michael S. Denison, 1520 Rehrmann Dr., Dixon, Calif. 95620; Abraham Brouwer, Diedenweg 24, 6703 GX Wageningen, Netherlands, and George C. Clark, 310 Alcona Ave., Durham, N.C. 27703

Filed Mar. 10, 1997, Ser. No. 813,321

Int. Cl.^{6} C12Q *1/66;* **C12N** *5/18;* **C07O** *319/02*

U.S. Cl. 435—8 **31 Claims**

1. A recombinant cell line deposited at the American Type Culture Collection under ATCC accession number CRL-12286 and known as the mouse H1L1.1c2 cell line, which will respond to selected polyaromatic hydrocarbon compounds with expression of luciferase activity.

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5,854,011

METHOD AND COMPONENTS FOR THE DETECTION OF YEASTS AND/OR MOLDS IN A SAMPLE

Chun-Ming Chen, Falmouth, and Haoyi Gu, Portland, both of Me., assignors to Idexx Laboratories Incorporated, Westbrook, Me.

Filed Dec. 19, 1996, Ser. No. 769,512

Int. Cl.^{6} C12Q *1/37;1/24;* C12N *9/99;9/50*

U.S. Cl. 435—24 **22 Claims**

1. A composition for use in a medium for detecting yeasts and molds in a test sample comprising:

a) a substrate for an aminopeptidase, wherein a signal moiety is linked to the substrate and said moiety is capable of providing a detectable signal when cleaved by said aminopeptidase in yeasts or molds:

b) an antibiotic capable of inhibiting the growth of bacteria in said sample; and

c) an inhibitor of aminopeptidase endogenous to the test sample in an amount effective to suppress endogenous aminopeptidase activity in said sample suspected of containing yeasts or molds.

5,854,012

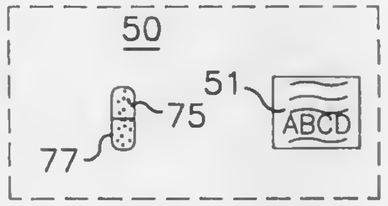
COMPOSITION, METHOD AND APPARATUS FOR SAFE DISPOSAL OF OIL CONTAMINATED FILTER

William M. Lasky, Charlotte, and James H. Cornwell, Wilmington, both of N.C., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 17, 1997, Ser. No. 992,510

Int. Cl.^{6} C12Q *1/02;* G01N *33/53*

U.S. Cl. 435—29 **8 Claims**



1. A kit for treating filtration components with petroleum and/or petro-chemical based compounds entrained therein which comprises:

a) a written protocol which

  i) identifies at least one filtration component for which the kit is suitable for treatment,

  ii) identifies a bio-oxidizing medium to be added to a filtration component identified in the written protocol,

  iii) specifies an amount of water to be added to a filtration component with the bio-oxidizing medium added thereto and

  iv) indicates a filtration component with water and bio-oxidizing medium added thereto is to be sealed in a manner which prevents the escape of petroleum, petro-chemical based compounds, bio-oxidizing medium and water therein into the environment; and

b) a dormant bio-oxidizing medium identified within the written protocol comprising freeze-dried microorganisms on a freeze-dried substrate wherein said freeze-dried microorganisms are capable of digesting the petroleum and petro-chemical based compounds entrained within a filtration component upon rehydration.

5,854,013

METHOD OF DETERMINING THE PRESENCE OR ABSENCE OF A NONPARAFFINOPHILIC MICROORGANISM IN A SPECIMEN

Robert-A. Ollar, Milford, and Mitchell S. Felder, Hermitage, both of Pa., assignors to Infectech, Inc., Sharon, Pa.

Continuation-in-part of Ser. No. 528,189, Sep. 14, 1995, Pat. No. 5,721,112. This application May 19, 1997, Ser. No. 858,350

Int. Cl.^{6} C12Q *1/04*

U.S. Cl. 435—34 **36 Claims**

1. A method of determining the presence or absence of a nonparaffinophilic microorganism in a specimen taken from a patient, said method comprising:

providing a receptacle containing an aqueous solution that does not contain a carbon source;

inoculating said aqueous solution with said specimen;

placing into said receptacle a slide having bound thereto a carbon source; and

analyzing said slide after placing said slide into said receptacle to determine the presence or absence of said nonparaffinophilic microorganism.

5,854,014

APPARATUS FOR TESTING PARAFFINOPHILIC MICROORGANISMS FOR ANTIMICROBIAL SENSITIVITY

Robert-A. Ollar, Milford, Pa., assignor to Infectech, Inc., Sharon, Pa.

Division of Ser. No. 538,899, Oct. 4, 1995, Pat. No. 5,698,414, which is a continuation-in-part of Ser. No. 900,275, Jun. 18, 1992, Pat. No. 5,569,592, which is a division of Ser. No. 841,937, Feb. 25, 1992, Pat. No. 5,316,918, which is a continuation-in-part of Ser. No. 426,573, Oct. 24, 1989, Pat. No. 5,153,119. This application Jul. 21, 1997, Ser. No. 897,813

Int. Cl.^{6} C12Q *1/04;* C12M *1/00*

U.S. Cl. 435—34 **2 Claims**

1. An apparatus for determining antimicrobial agent sensitivity of a paraffinophilic microorganism from a specimen obtained from a patient comprising:

a receptacle containing an aqueous solution, an amount of antimicrobial agent to be tested and said specimen; and

a paraffin coated slide placed in said receptacle.

5,854,015

METHOD OF MAKING PURE 3R-3'R STEREOISOMER OF ZEAXANTHIN FOR HUMAN INGESTION

Kevin M. Garnett, St. Louis; Dennis L. Gierhart, High Ridge, and Luis H. Guerra-Santos, Ballwin, all of Mo., assignors to Applied Food Biotechnology, Inc., O'Fallon, Mo.

Filed Oct. 31, 1995, Ser. No. 551,166

Int. Cl.^{6} C12P *23/00*

U.S. Cl. 435—67 **13 Claims**

1. A method of making a composition containing zeaxanthin for human ingestion, comprising the following steps:

a. culturing, in a liquid nutrient medium under conditions which promote zeaxanthin synthesis, cells which synthesize a 3R-3'R stereoisomer of zeaxanthin as a heavily dominant carotenoid constituting at least 90 percent of all carotenoid molecules synthesized by the cells;

b. adding a stabilizing agent suitable for human ingestion;

c. removing a sufficient quantity of the liquid nutrient medium from the cells to generate a cell paste;

d. extracting a partially purified fluid which contains the 3R-3'R stereoisomer of zeaxanthin from the cell paste; and,

e. packaging the zeaxanthin-containing fluid in a form that is intended and suitable for oral ingestion by humans.

5,854,016

CREBA ISOFORM

Kathleen S. Keegan, Mercer Island, Wash., assignor to ICOS Corporation, Bothell, Wash.

Filed Sep. 27, 1996, Ser. No. 721,684

Int. Cl.^{6} C07H *21/04;* C12P *1/21;15/21;15/63*

U.S. Cl. 435—69.1 **9 Claims**

1. A polynucleotide encoding a polypeptide comprising the mCREBa amino acid sequence set forth in SEQ. ID. NO: 2.

5,854,017

Patent Not Issued For This Number

5,854,018

EXPRESSION OF POLYPEPTIDES IN YEAST

Ronald A. Hitzeman, Pacifica; Franklin E. Hagie IV, Foster City, both of Calif.; Benjamin D. Hall, Bellevue, and Gustav Ammerer, Seattle, both of Wash., assignors to Washington Research Foundation, Seattle, Wash., and Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 383,668, Feb. 3, 1995, abandoned, which is a continuation of Ser. No. 198,535, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 089,419, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 708,828, May 29, 1991, abandoned, which is a continuation of Ser. No. 349,918, May 9, 1989, abandoned, which is a continuation of Ser. No. 284,774, Dec. 12, 1988, abandoned, which is a continuation of Ser. No. 173,008, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 764,145, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 237,913, Feb. 25, 1981, abandoned. This application Jun. 6, 1995, Ser. No. 465,937

Int. Cl.^{6} C12P *21/00*

U.S. Cl. 435—69.1 **38 Claims**

1. A process of forming a transformant of a yeast strain capable of expressing a polypeptide ordinarily exogenous to yeast and not required for growth of said strain, comprising transforming said yeast strain with a DNA transfer vector that comprises:

(a) bacterial and yeast origins of replication and genes for phenotypic selection of both bacterial and yeast moieties transformed with said vector;

(b) a DNA fragment comprising a structural gene encoding said polypeptide:

(c) a yeast promoter genetically distinct from said structural gene obtained from the about 1500 bp DNA sequence 5' flanking the start signal of a yeast structural gene: and

(d) translation start and stop signals for said structural gene encoding said polypeptide that are positioned so that said structural gene encoding said polypeptide is under the control of said promoter while maintaining said origins of replications and genes for phenotypic selection.

5,854,019

CELL-SPECIFIC GENE THERAPY USING AS PROMOTER NOVEL PROMOTERS FOR TISSUE INHIBITORS OF METALLOPROTEINASE-3

Hans-Harald Sedlacek, Marburg; Marisa Wick, Deutschland, and Rolf Müller, Marburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 12, 1996, Ser. No. 679,217

Claims priority, application Germany, Jul. 12, 1995, 195 24 720.5

Int. Cl.^{6} C12N *1/21*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated promoter for the gene of a tissue inhibitor of metalloproteinase-3, comprising promoter-active DNA fragments located in the 5'-flanking region of the human TIMP-3 gene and which are sufficient for transcriptional control of said TIMP-3 gene.

5,854,020

TCSTS POLYNUCLEOTIDES

John Edward Hodgson, Malvern, and Nicola Gail Wallis, Wayne, both of Pa., assignors to SmithKline Beecham p.l.c., Brentford, United Kingdom

Filed Dec. 20, 1996, Ser. No. 771,455

Claims priority, application United Kingdom, Dec. 22, 1995, 9526356

Int. Cl.^{6} C12N *15/00;* C07K *14/00*

U.S. Cl. 435—69.1 **13 Claims**

1. An isolated polynucleotide comprising a polynucleotide sequence encoding a response regulator polypeptide having the amino acid sequence set forth in SEQ ID NO: 2.

5,854,021

ENHANCE PROTEIN PRODUCTION METHOD

Myung-Sam Cho, Pinole, and Van-Mai Tran, Orinda, both of Calif., assignors to Bayer Corporation, Berkeley, Calif.

Filed Feb. 28, 1997, Ser. No. 807,415

Int. Cl.^{6} C12N *15/11;15/63;15/68;15/86*

U.S. Cl. 435—69.1 **13 Claims**

1. An expression vector comprising

a) a promoter,

b) a coding sequence of a heterologous protein, the coding sequence being operably linked to the promoter, and

c) a MIS sequence, the MIS sequence being downstream of the promoter and upstream of the coding sequence.

5,854,022

POLYNUCLEOTIDES ENCODING A CD53-LIKE TRANSMEMBRANE PROTEIN

Jennifer L. Hillman, San Jose; Olga Bandman, Mountain View; Surya K. Goli, Sunnyvale, and Karl J. Guegler, Menlo Park, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed May 13, 1997, Ser. No. 855,140

Int. Cl.^{6} C07H *21/04;* C12N *15/12*

U.S. Cl. 435—69.1 **9 Claims**

1. An isolated and purified polynucleotide comprising SEQ ID NO:2.

2. An isolated and purified polynucleotide encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,854,023

POLYNUCLEOTIDES ENCODING HUMAN S-ADENOSYL-5-HOMOCYSTEINE HYDROLASE DERIVED FROM BLADDER

Jennifer L. Hillman; Neil C. Corley, both of Mountain View; Preeti Lal, Santa Clara, and Purvi Shah, Sunnyvale, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jul. 17, 1997, Ser. No. 896,005

Int. Cl.^{6} C12P *21/06;* C12N *9/14;5/00;* C07H *17/00*

U.S. Cl. 435—69.1 **10 Claims**

1. An isolated and purified polynucleotide sequence encoding human S-adenosyl-5-homocysteine hydrolase comprising the amino acid sequence of SEQ ID NO:1 or fragments of SEQ ID NO:1 having hydrolase activity.

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5,854,024

HEPATITUS B VACCINE

Howard Christopher Thomas, and William Frederick Carman, both of London, England, assignors to Imperial College of Science Technology and Medicine, London, England

Continuation of Ser. No. 339,281, Nov. 7, 1994, Pat. No. 5,639,637, which is a continuation of Ser. No. 927,489, Nov. 16, 1992. This application Mar. 10, 1997, Ser. No. 811,369

Claims priority, application United Kingdom, Mar. 29, 1990, 9007024

Int. Cl.^{6} C12P *21/02;* **C12N** *15/51;* **C07H** *21/04*

U.S. Cl. 435—69.3 **10 Claims**

1. A composition comprising a DNA sequence encoding a variant hepatitis BS (vHBsAg) protein or fragment thereof, said vHBsAg protein comprising a modified 'a' determinant of an S (HBs) protein in which the amino acid at position 145 of the HBs protein is arginine, said vHBsAg displaying an antigenicity different from that of wild-type S (HBsAg) protein, said DNA being in admixture with a suitable carrier or diluent.

5,854,025

IGF-II ANALOGUES

Richard Mark Edwards, and Lindsay Bawden, both of Oxford, England, assignors to British Biotech Pharmaceutical Limited, Oxford, England

Continuation of Ser. No. 190,029, Feb. 28, 1994. This application Jun. 5, 1995, Ser. No. 462,695

Claims priority, application United Kingdom, Jul. 29, 1991, 9116325; Feb. 5, 1992, 9202401

Int. Cl.^{6} C12N *1/21;5/10;15/18;15/70*

U.S. Cl. 435—69.4 **13 Claims**

1. An isolated nucleic acid molecule coding for an Insulin-like Growth Factor II (IGF-II) analogue, wherein at least one of R37 and R38 of SEQ. ID NO: 1 is replaced with another amino acid residue, wherein R37 represents the natural arginine residue at position 37 and R38 represents the natural arginine residue at position 38.

5,854,026

HUMAN GROWTH HORMONE VARIANT HAVING ENHANCED AFFINITY FOR HUMAN GROWTH HORMONE RECEPTOR AT SITE 1

Brian C. Cunningham, Piedmont, and James A. Wells, Burlingame, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 67,160, May 25, 1993, Pat. No. 5,534,617, which is a continuation-in-part of Ser. No. 960,227, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 875,204, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 428,066, Oct. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 264,611, Oct. 28, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 487,110

Int. Cl.^{6} C12N *15/18;15/63;* **C07K** *14/61*

U.S. Cl. 435—69.4 **6 Claims**

1. An isolated variant of a naturally occurring human growth hormone having a greater affinity for human growth hormone receptor at site 1 than said naturally occurring human growth hormone, said variant comprising the following set of amino acid substitutions:

H18A, Q22A, F25A, D26A, Q29A, E65A, K168A, E174A.

5,854,027

PROCESS FOR IMPROVING THE STABILITY OF ANTIBODIES

Boris Steipe, Gauting, and Stefan Steinbacher, Lenggries, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP95/02626, § 371 Date Jan. 14, 1997, § 102(e) Date Jan. 14, 1997, PCT Pub. No. WO96/02574, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 5, 1995, Ser. No. 765,179

Claims priority, application Germany, Jul. 15, 1994, 44 25 115.7

Int. Cl.^{6} A61K *39/395*

U.S. Cl. 435—69.6 **21 Claims**

1. A process for producing a modified variable domain by improving the stability of an initial variable domain, said process comprising,

(a) providing an initial gene encoding an amino acid sequence of an initial variable domain to be modified, wherein the initial variable domain is from an initial antibody,

(b) comparing the amino acid sequence encoded by the initial gene with one of consensus tables 1–6, wherein

(i) where the initial gene encodes the variable domain of a heavy chain of a human antibody, the amino acid sequence is compared with consensus table 1, SEQ ID NOS: 1–4,

(ii) where the initial gene encodes the variable domain of a heavy chain of a mouse antibody, the amino acid sequence is compared with consensus table 2, SEQ ID NOS: 5–8,

(iii) where the initial gene encodes the variable domain of a kappa light chain of a human antibody, the amino acid sequence is compared with consensus table 3, SEQ ID NOS: 9–12,

(iv) where the initial gene encodes the variable domain of a kappa light chain of a mouse antibody, the amino acid sequence is compared with consensus table 4, SEQ ID NOS: 13–16,

(v) where the initial gene encodes the variable domain of a lambda light chain of a human antibody, the amino acid sequence is compared with consensus table 5, SEQ ID NOS: 17–20,

(vi) where the initial gene encodes the variable domain of a lambda light chain of a mouse antibody, the amino acid sequence is compared with consensus table 6, SEQ ID NOS: 21–24;

(c) thereafter producing a modified gene which encodes a modified variable domain by modifying

(1) at least one codon of each pair of codons in the initial gene, which pair together code for disulfide bridge-forming cysteines, so that all disulfide bridges present in the initial variable domain produced in a eukaryotic cell are absent from the modified variable domain as produced in said method, and

(2) at least one additional codon in the initial gene which codes for an amino acid other than a disulfide bridge-forming cysteine, using the consensus table selected in step (b) as a guide, wherein each codon to be modified codes for an initial amino acid at a selected position, and wherein, for a given modification,

(i) the codon coding for the initial amino acid is modified by substituting a codon coding for a substitute amino acid which is listed in the consensus table at a position corresponding to the selected position, when the initial amino acid is unlisted in the selected consensus table at the position corresponding to the selected position, or

(ii) the codon coding for the initial amino acid is modified by substituting a codon coding for a substitute amino acid having higher frequency in the consensus table at a position corresponding to the selected position, when the initial amino acid is listed at a given frequency in the consensus table at the position corresponding to the selected table, the higher frequency being compared to the given frequency;

(d) transforming a prokaryotic microorganism with the modified gene encoding a modified variable domain; and

(e) expressing in the transformed prokaryotic microorganism the modified variable domain, wherein the modified variable domain expressed by the prokaryotic microorganism has improved stability when compared to the stability of the initial variable domain expressed by a eukaryotic microorganism.

5,854,028

COMPOSITIONS COMPRISING IL-11 AND METHODS OF MAKING AND USING IL-11

Yu-Chung Yang, Indianapolis, Ind.; Frances K. Bennett, Melrose, and Stephan R. Paul, Boston, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 949,516, Nov. 19, 1992, Pat. No. 5,700,664, which is a continuation-in-part of Ser. No. 526,474, May 21, 1990, Pat. No. 5,215,895, which is a continuation-in-part of Ser. No. 441,100, Nov. 22, 1989, abandoned. This application Mar. 10, 1997, Ser. No. 814,459

Int. Cl.^{6} C12N *15/63;* **C07K** *14/54;* **A61K** *38/20*

U.S. Cl. 435—69.52 **24 Claims**

1. An IL-11 produced by a method comprising the steps of:

(a) culturing a host cell transformed with a DNA molecule which hybridizes under stringent wash conditions of 0.1×SSC at 65° C. to a complement of the DNA encoding an IL-11 having an amino acid sequence comprising amino acids 22 through 199 of SEQ ID NO:2; and

(b) recovering said IL-11.

5,854,029

METHOD FOR PREPARING ANTIHYPERTENSIVE AGENT

Naoyuki Yamamoto, Sagamihara, Japan, assignor to Calpis Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1997, Ser. No. 900,899

Claims priority, application Japan, Aug. 2, 1996, 8-204665

Int. Cl.^{6} C12P *21/02;* **A61K** *38/05;* **C07K** *5/06*

U.S. Cl. 435—71.2 **6 Claims**

1. A method for preparing an antihypertensive agent containing an effective amount of peptides selected from the group consisting of a dipeptide Tyr-Pro, a pharmaceutically acceptable salt of the dipeptide Tyr-Pro, and mixtures thereof, wherein the method comprises culturing lactic acid bacteria of the genus Lactobacillus in a medium containing a peptide and/or protein comprising an amino acid sequence Tyr-Pro, to obtain a cultured liquid containing the dipeptide Tyr-Pro, wherein said effective amount of peptide ranges from 0.05 to 10 mg/kg body weight/day.

5,854,030

SUGAR-BASED POLYMERS

Jonathan S. Dordick; David G. Rethwisch, both of Iowa City; Damodar R. Patil, Coralville; Brett D. Martin, and Robert J. Linhardt, both of Iowa City, all of Iowa, assignors to University of Iowa Research Foundation, Oakdale, Iowa

Continuation of Ser. No. 192,795, Feb. 7, 1994, Pat. No. 5,474,915, which is a continuation of Ser. No. 995,748, Dec. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 706,929, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,076, May 8, 1990, abandoned. This application Dec. 11, 1995, Ser. No. 570,101

Int. Cl.^{6} C12P *19/00;* **C08F** *2/00;18/04;* **C07H** *13/00*

U.S. Cl. 435—72 **20 Claims**

1. A chemoenzymatic method for making a poly(sugar acrylate) comprising the steps of:

(a) in the presence of hydrolytic enzyme selected from the group consisting of alkaline protease, aminoacylase fungal amylase, bacterial protease, lipase, subtilisin, and mixtures thereof, reacting vinyl acrylate with a non-reducing sugar selected from the group consisting of α- or β-alkyl or α- or β-haloglucosides, α- or β-alkyl or α- or β-halo-galactosides, α- or β-alkyl- or α- or β-halo-mannosides, sucrose, fructose, mannose, trehalose, raffinose and mixtures thereof, to form an acryloyl ester of the sugar;

(b) heating the acroyloyl ester of the sugar so that it autopolymerizes to form a poly(sugar acrylate); and

(c) isolating the resulting poly(sugar acrylate).

5,854,031

MANNOSE-1-PHOSPHATE TRANSFERASE GENE FROM YEAST AND ITS USE FOR PRODUCING PHOSPHATE-CONTAINING ACIDIC SUGARS

Yoshifumi Jigami, Ushiku; Ken-ichi Nakayama, Tsukuba; Yoh-ichi Shimma, Tsukuba, and Xiao-hui Wang, Tsukuba, all of Japan, assignors to Director—General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 14, 1996, Ser. No. 748,947

Claims priority, application Japan, Nov. 17, 1995, 7-299509

Int. Cl.^{6} C12P *19/04;9/10;15/63;* **C07H** *21/04*

U.S. Cl. 435—72 **4 Claims**

1. An isolated nucleic acid from *Saccharomyces cerevisiae* represented by the nucleotide sequence of SEQ ID NO:1.

5,854,032

BIOLOGICAL PRODUCTION OF HUMIC ACID AND CLEAN FUELS FROM COAL

Kailash Chandra Srivastava, Centreville, and Daman S. Walia, Woodbridge, both of Va., assignors to Arctech, Inc., Chantilly, Va.

Division of Ser. No. 483,261, Jun. 7, 1995, Pat. No. 5,670,345. This application Sep. 24, 1996, Ser. No. 719,415

Int. Cl.^{6} C12P *19/60;39/00;7/44*

U.S. Cl. 435—75 **4 Claims**

1. A method for producing humic acid from coal comprising introducing coal into a medium containing a thermophilic aerobic culture ATCC 202096 at a temperature of about 60° C. for a minimum period of time to convert said coal to humic acid.

5,854,033

ROLLING CIRCLE REPLICATION REPORTER SYSTEMS

Paul M. Lizardi, Ranchos Cortes, Mexico, assignor to Yale University, New Haven, Conn.

Filed Nov. 21, 1995, Ser. No. 563,912

Int. Cl.^{6} C12P *19/34;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—91.2 **11 Claims**

1. A method of amplifying nucleic acid sequences, the method comprising,

(a) mixing a rolling circle replication primer with one or more amplification target circles(ATC), to produce a primer-ATC mixture, and incubating the primer-ATC mixture under conditions that promote hybridization between the amplification target circles and the rolling circle replication primer in the primer-ATC mixture,

wherein the amplification target circles each comprise a single-stranded, circular DNA molecule comprising a primer complement portion, and wherein the primer complement portion is complementary to the rolling circle replication primer,

wherein at least one of the amplification target circles is tethered to a specific binding molecule so that the amplification target circle can rotate freely,

(b) mixing DNA polymerase with the primer-ATC mixture, to produce a polymerase-ATC mixture, and incubating the polymerase-ATC mixture under conditions that promote replication of the amplification target circles.

wherein relication of the amplification target circles results in the formation of tandem sequence DNA, and,

simultaneous with, or following, step (b).

(c) mixing RNA polymerase with the polymerase-ATC mixture, and incubating the polymerase-ATC mixture under conditions that promote transcription of the tandem sequence DNA,

wherein transcription of the tandem sequence DNA results in the formation of transcript RNA.

5,854,034

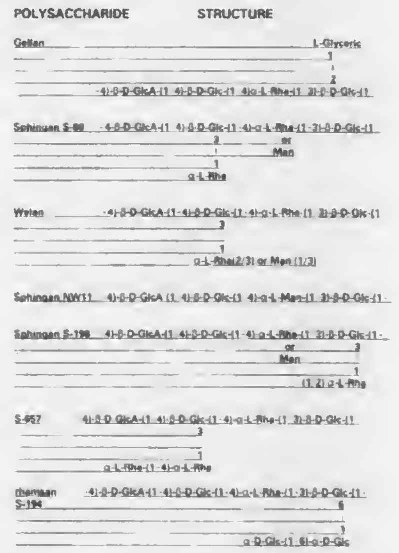
DNA SEGMENTS AND METHODS FOR INCREASING POLYSACCHARIDE PRODUCTION

Thomas J. Pollock; Motohide Yamazaki, both of San Diego; Linda Thorne, Palomar; Marcia Mikolajczak, Encinitas, and Richard W. Armentrout, La Jolla, all of Calif., assignors to Shin-Etsu Cio, Inc., San Diego, Calif., and Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

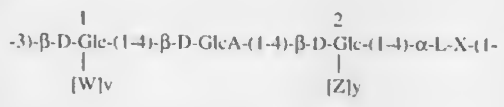
Continuation-in-part of Ser. No. 377,440, Jan. 24, 1995. This application Jan. 24, 1996, Ser. No. 592,874

Int. Cl.^{6} C12P *19/04;19/06;1/21;21/04;* **C12N** *1/21;* **C07N** *21/04*

U.S. Cl. 435—101 31 Claims



1. An isolated DNA sequence isolated from DNA of sphingan-producing bacteria selected from the group consisting of Sphingomonas sp., with the exception of ATCC 31461 ATCC 31554 and ATCC 53272, said DNA sequence when incorporated into a recipient Sphingomonas sp. bacterium in multiple copies produces a hyperproducer of sphingan polysaccharide relative to said recipient bacterium wherein said sphingan polysaccharide has the general formula:



$$\text{-3)-}\underset{[W]_v}{\overset{1}{\beta\text{-D-Glc}}}\text{-(1-4)-}\beta\text{-D-GlcA-(1-4)-}\underset{[Z]_y}{\overset{2}{\beta\text{-D-Glc}}}\text{-(1-4)-}\alpha\text{-L-X-(1-}$$

wherein Glc is glucose; GlcA is glucuronic acid; Rha is rhamnose; Man is mannose; X is Rha or Man; Z is attached to Glc residue 2 and is selected from the group consisting of α-L-Rha-(1–6-α-L-Rha, α-L-Man and α-L-Rha; W is at5ached to Glc residue number 1 and is β-D-Glc-(1–6)-α-D-Glc or α-L-Rha; subscripts v and y may be 0, 0.33, 0.5, 0.67 or 1: and wherein the reducing end of the polymer is toward the X residue of the backbone, such that the backbone excludes W and Z when v and y are equal to 0.

5,854,035

ENZYME WITH LEUDH ACTIVITY, NUCLEOTIDE SEQUENCE CODING THEREFOR AND PROCESS FOR THE PREPARTION OF THE ENZYME

Tanja Stoyan, Aachen, and Maria-Regina Kula, Niederzier, both of Germany, assignors to Degussa AG, Germany

Filed Feb. 21, 1997, Ser. No. 804,699

Claims priority, application Germany, Feb. 22, 1996, 196 06 494.5

Int. Cl.^{6} C12P *13/06;13/04;* **C12N** *1/00;* **C07H** *21/04*

U.S. Cl. 435—116 11 Claims

1. A *Bacillus cereus* DNA sequence which codes for an enzyme with leucine dehydrogenase (LeuDH) activity and comprises

(a) the nucleotide sequence shown in SEQ ID NO:1, or

(b) a nucleotide sequence corresponding to SEQ ID NO:1 within the degeneracy of the genetic code.

5,854,036

SEQUITETERPENIC DERVATIVES

Stefania Stefanelli, Legnano; Federica Sponga, Saronno; Khalid Islam, Como, all of Italy; Maurizio Denaro, Del Mar, Calif., and Pietro Ferrari, Garbagnate, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

PCT No. PCT/EP95/01045, § 371 Date Sep. 10, 1996, § 102(e) Date Sep. 10, 1996, PCT Pub. No. WO95/26344, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 21, 1995, Ser. No. 716,259

Claims priority, application European Pat. Off., Mar. 25, 1994, 94104783

Int. Cl.^{6} C12D *17/04;* **A16K** *31/34;* **C07D** *307/94*

U.S. Cl. 435—126 12 Claims

1. A Sesquiterpenic compound having the following physico-chemical characteristics:

A)Ultraviolet absorption spectrum:

Solvent	Lambda max (nm)
MeOH	222, 284
0.1 M KOH	231, 291, 334

B) Positive ion FAB spectrum on a Finnigan TSQ 700 triple stage quadrupole mass spectrometer; saddle field atom gun with Xe gas at 8 kV voltage and 0.23 mA current; glycerol/water matrix:

Major FAB/MS peak determined at 387 (MH+)

C) R_f value of 0.48 in the following TLC system: hexane:acetone, 6:4 (v/v) on silica gel

D) NMR spectra recorded in $CDCl_3$ with a Bruker AM 500 instrument, using TMS as internal standard (δ,ppm=0). (s=singlet; d=doublet; br s=broad singlet; m=multiplet):

1H-NHR recorded at 500 MHz, (δ,ppm): 10.65 s, 10.40 s, 6.94 s, 3.41 br s, 3.19 d, 2.84 d, 2.00–1.72 m, 1.70–1.40 m, 1.02 2 m,0.89 s, 0.77 s;

^{13}C-NMR recorded at 125.76 MHz, (δ,ppm): 193.5, 188.6, 167.6, 157.5, 138.1, 119.5, 111.5, 109.1, 100.7, 75.7, 42.3, 40.1, 37.6, 37.1, 31.2, 30.7, 28.3, 24.7, 24.2, 22.3, 21.0, 16.1, 15.5.

5,854,037

RECOMBINANT NEGATIVE STRAND RNA VIRUS EXPRESSION SYSTEMS AND VACCINES

Peter Palese, Leonia, N.J., and Adolfo Garcia-Sastre, New York, N.Y., assignors to The Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 190,698, Feb. 1, 1994, abandoned, which is a continuation of Ser. No. 925,061, Aug. 4, 1992, abandoned, which is a division of Ser. No. 527,237, May 22, 1990, Pat. No. 5,166,057, which is a continuation-in-part of Ser. No. 440,053, Nov. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 399,728, Aug. 28, 1989, abandoned. This application Jun. 1, 1994, Ser. No. 252,508

Int. Cl.^{6} C12N *15/64;7/01;15/44;14/11*

U.S. Cl. 435—172.3 34 Claims

1. A recombinant RNA molecule comprising a binding site specific for an RNA-directed RNA polymerase of a negative strand RNA virus, operatively linked to a heterologous RNA sequence comprising the reverse complement of a bicistronic mRNA coding sequence containing an internal sequence that mediates internal initiation of translation.

5,854,038

LOCALIZATION OF A THERAPEUTIC AGENT IN A CELL IN VITRO

Bruce Alan Sullenger, Westminster, and Thomas Robert Cech, Boulder, both of Colo., assignors to University Research Corporation, Boulder, Colo.

Continuation of Ser. No. 77,745, Jan. 22, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 324,362

Int. Cl.^{6} C12N *15/86;15/11;5/00;5/10*

U.S. Cl. 435—172.3 13 Claims

1. A method for enhancing the effect of a viral therapeutic agent in a cell in vitro on the viral target of said agent, comprising the step of:

tethering a localization signal to said therapeutic agent wherein said localization signal causes said therapeutic agent to be localized with said viral target in a cellular or viral compartment of said cell.

5,854,039

TRANSFORMATION OF *PICHIA METHANOLICA*

Christopher K. Raymond; Susan D. Holderman, and Erica Vanaja, all of Seattle, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Filed Jul. 14, 1997, Ser. No. 914,066

Int. Cl.^{6} C12N *15/63*

U.S. Cl. 435—172.3 20 Claims

1. A method for introducing DNA into a *Pichia methanolica* (*P. methanolica*) cell, comprising exposing said *Pichia methanolica* cell, in the presence of a linear DNA molecule, to an exponentially decaying, pulsed electric field having a field strength of from 2.5 to 4.5 kV/cm and a time constant of from 15 to 40 milliseconds, whereby said linear DNA molecule is introduced into said cell.

5,854,040

PROCESS FOR PRODUCING TRANS-4-HYDROXY-L-PROLINE

Akio Ozaki; Hideo Mori; Takeshi Shibasaki; Katsuhiko Ando, all of Machida, and Shigeru Chiba, Kawasaki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 482,554, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 301,653, Sep. 7, 1994, abandoned. This application Sep. 9, 1996, Ser. No. 709,874

Claims priority, application Japan, Sep. 7, 1993, 5-221940; Dec. 27, 1993, 5-332561

Int. Cl.^{6} C12N *9/02*

U.S. Cl. 435—189 4 Claims

1. An isolated and purified L-proline-4-hydroxylase having the following physicochemical properties:

(1) Action and Substrate Specificity:

It catalyzes hydroxylation of L-proline at the 4-position of L-proline in the presence of 2-ketoglutaric acid and a divalent iron ion to produce trans-4-hydroxy-L-proline

(2) Optimum pH Range:

The enzyme has an optimum pH range of 6.0 to 7.0 for its reaction at 30° C. for 20 minutes,

(3) Stable pH Range:

The enzyme is stable at pH values of 6.5 to 10.0. when it is allowed to stand 40° for 24 hours,

(4) Optimum Temperature Range:

The optimum temperature range is 30° to 40° C. when it is allowed to stand at pH 6.5 for 15 minutes.

(5) Stable Temperature Range:

The enzyme is inactivated. when it is allowed to stand at pH 9.0 and at 500 for 30 minutes,

(6) Inhibitors:

The enzyme is inhibited by metal ions of Zn^{++} and Cu^{++} and ethylenediaminetetraacetic acid, and not inhibited by 2-ketoglutaric acid,

(7) Activation:

The enzyme does not need any cofactor for its activation. L-ascorbic acid accelerates the reaction and catalase does not accelerate the reaction.

(8) Km Value:

Km value is 0.27 mM for L-proline when determined in a 80 mM 2-(N-morpholino)ethanesulfonic acid (MES) buffer (pH 6.5) containing 8 mM 2-ketoglutaric acid, 4 mM L-ascorbic acid, 2 mM ferrous sulfate and a predetermined amount of the enzyme at 30° C. for 20 minutes,

Km value is 0.55 mM for 2-ketoglutaric acid, when determined in a 80 mM 2-(N-morpholino)ethanesulfonic acid (MES) buffer (pH 6.5) containing 4 mM L-proline, 4 mM L-ascorbic acid, 2 mM ferrous sulfate and a predetermined amount of the enzyme at 30° C. for 20 minutes,

(9) Molecular Weight:

The enzyme has a molecular weight of 32,000±5,000 daltons by sodium dodecylsulfate-polyacrylamide gel electrophoresis and of 43,800±5,000 daltons by gel filtration,

(10) N-terminal Amino Acid Sequence:

The enzyme has an N-terminal amino acid sequence as in Sequence No. 1.

Sequence No. 1:		
(N-terminal)	1	MetLeuthrProThrGluLeuLysGlnTyr
	11	ArgGluAlaGlyTyrLeuLeuIleGluAsp
	21	GlyLeuGlyProArgGluVal.

5,854,041

MYOGLOBIN WITH PEROXIDASE ACTIVITY

Gary D. Brayer, Richmond; Hung Lee, Guelph; A. Grant Mauk, Vancouver; Michael Smith, Vancouver; Harry Tong, Vancouver, and Lianglu Wan, Vancouver, all of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Sep. 16, 1996, Ser. No. 710,330

Int. Cl.^{6} C07K *14/805;* C12N *9/08*

U.S. Cl. 435—192 **8 Claims**

1. A method of catalysing a reaction with myoglobin in which a substrate is oxidized with a peroxide wherein, a reaction mixture is provided comprising substrate, peroxide and myoglobin, characterized in that the myoglobin has peroxidase activity greater than wild-type and a modified amino acid sequence in which one or more of the following amino acids are substituted: Thr 39, Lys/Arg 45, Phe 46, His 97 and He 107.

5,854,042

SUGAR-CHAIN SYNTHETASE AND PROCESS FOR PRODUCING THE SAME

Shuichi Tsuji; Nobuyuki Kurosawa; Toshiro Hamamoto; Young-Choon Lee; Takashi Nakaoka, and Naoya Kojima, all of Saitama, Japan, assignors to The Institute of Physical and Chemical Research, Saitama, Japan

PCT No. PCT/JP94/02182, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/18217, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 22, 1994, Ser. No. 666,367

Claims priority, application Japan, Dec. 24, 1993, 5-348260; Mar. 28, 1994, 6-057369; Apr. 28, 1994, 6-091507

Int. Cl.^{6} C12N *9/10*

U.S. Cl. 435—193 **18 Claims**

1. An extracellularly releasable recombinant fusion protein comprising the active domain of a GalNAc α 2,6-sialyltransferase and a signal peptide.

5,854,043

MEKK-RELATED SIGNAL TRANSDUCTION KINASES

Gary L. Johnson, Boulder, Colo., assignor to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Continuation-in-part of Ser. No. 49,254, Apr. 15, 1993, Pat. No. 5,405,941. This application Oct. 14, 1994, Ser. No. 323,460

Int. Cl.^{6} C07K *14/435;* C12N *9/12*

U.S. Cl. 435—194 **11 Claims**

1. An isolated MEKK protein comprising the amino acid sequence of SEQ ID NO:4.

5,854,044

RECOMBINANT PSEUDOMONAS EXOTOXIN WITH INCREASED ACTIVITY

Ira H. Pastan, Potomac, and David J. Fitzgerald, Silver Springs, both of Md., assignors to National Institutes of Health, Bethesda, Md.

Division of Ser. No. 405,615, Mar. 15, 1995, Pat. No. 5,602,095, which is a continuation of Ser. No. 901,709, Jun. 18, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,480

Int. Cl.^{6} C07K *19/00;* C12N *9/12*

U.S. Cl. 435—194 **13 Claims**

1. An isolated and purified recombinant Pseudomonas exotoxin (PE) fusion protein wherein a ligand binding agent is fused to a PE molecule in which domain Ia is deleted and from 1 to 28 amino acids from the amino terminal end of domain II are deleted.

5,854,045

TRANSMEMBRANE TYROSINE PHOSPHATASE AND METHODS OF USE THEREOF

Kathy S. Fang, Berkeley, Calif., and Hidesaburo Hanafusa, New York, N.Y., assignors to The Rockefeller University

Division of Ser. No. 241,853, May 12, 1994, Pat. No. 5,693,488. This application May 2, 1997, Ser. No. 850,917

Int. Cl.^{6} C12N *9/16;* C07K *14/00;14/705*

U.S. Cl. 435—196 **5 Claims**

1. An isolated protein that has an amino acid sequence consisting of amino acid 1 to 1237 of SEQ ID NO:2, or an amino acid sequence that differs from amino acid 1 to 1237 of SEQ ID NO:2 by only having conservative substitutions.

5,854,046

HUMAN HYALURONIDASE

Janice Au-Young, Berkeley; Phillip R. Hawkins, Mountain View, and Jennifer L. Hillman, San Jose, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Division of Ser. No. 675,507, Jul. 3, 1996, abandoned. This application Jan. 20, 1998, Ser. No. 8,962

Int. Cl.^{6} C12N *9/26*

U.S. Cl. 435—201 **2 Claims**

1. A substantially purified polypeptide comprising the amino acid sequence of SEQ ID NO:1.

5,854,047

MANNANASE ENZYMES, GENES CODING FOR THEM AND A METHOD FOR ISOLATING THE GENES, AS WELL AS A PROCESS FOR BLEACHING OF LIGNOCELLULOSIC PULP

Johanna Buchert, Espoo; Matti Siika-aho, Helsinki; Liisa Viikari, Helsinki; Merja Penttilä , Helsinki; Anu Saloheimo, Helsinki, and Marjatta Ranua, Lohja, all of Finland, assignors to Röhm Enzyme Finland OY, Rajamäki, Finland

Continuation of Ser. No. 341,568, Nov. 22, 1994, Pat. No. 5,661,021. This application Aug. 13, 1997, Ser. No. 911,020

Claims priority, application Finland, May 22, 1992, 922373; Mar. 17, 1993, 931193

Int. Cl.^{6} C12N *9/42;1/20;1/14;1/16*

U.S. Cl. 435—209 **9 Claims**

1. A culture medium comprising an elevated level of one or more mannanase enzymes endogenous to *T. reesei* and produced by one or more microorganisms, wherein said one or more mannanase enzymes is present at a level which is higher than the level produced under the same growth conditions by a wild-type form of themicroorganism which produced the mannanase.

5,854,048

METHOD FOR TREATING THROMBOEMBOLIC CONDITIONS USING THROMBOLYTICALLY ACTIVE PROTEINS

Ulrich Martin, Mannheim, and Stephan Fischer, Polling, both of Germany, assignors to Boehringer Mannheim,GmbH, Mannheim, Germany

Division of Ser. No. 217,617, Mar. 25, 1994, Pat. No. 5,676,947, which is a continuation-in-part of Ser. No. 165,577, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 892,629, Jun. 2, 1992, abandoned, which is a continuation of Ser. No. 527,498, May 23, 1990, abandoned, said Ser. No. 217,617 is a continuation-in-part of Ser. No. 130,005, Sep. 30, 1993, abandoned, which is a division of Ser. No. 968,171, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 585,129, Sep. 28, 1990, Pat. No. 5,223,256. This application Feb. 12, 1996, Ser. No. 600,396

Claims priority, application Germany, Feb. 7, 1989, 39 03 581.6

Int. Cl.^{6} C12N *9/48*

U.S. Cl. 435—212 **10 Claims**

1. Process for production of a thrombolytically active protein which consists of amino acid sequence:

1	SYQGNSDCYF	GNGSAYRGTH	SLTHSGASCL
		PWNSMILIGK	VYTAQNPSAQ
51	ALGLGKHNYC	RNPDGDAKPW	CHVLKNRRLT
		WEYCDVPSCS	TQGLRQYSQP
101	QFRIKGGLFA	DIASHPWQAA	IFAKHRRSPG
		ERFLCGGILI	SSCWILSAAH
151	CFQERFPPHH	LTVILGRTYR	VVPGEEEQKF
		EVEKYIVHKE	FDDDTYDNDI
201	ALLQLKSDSS	RCAQESSVVR	TVCLPPADLQ
		LPDWTECELS	GYGKHEALSP
251	FYSERLKFAH	VRLYPSSRCT	SQHLLNRYVT
		DNMLCAGDTR	SGGPQANLHD
301	ACQGDSGGPL	VCLNDGRMTL	VGHSWGLGC
		GQKDVPGVYT	XVTNYLDWIR
351	DNMRP		

comprising transforming a host cell with a plasmid which comprises a nucleic acid molecule which encodes said thrombolytically active protein. culturing said host cell to produce said thrombolytically active protein, and isolating said thrombolytically active protein following its production.

5,854,049

PLASMIN-RESISTANT STREPTOKINASE

Guy L. Reed, Winchester, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 9, 1995, Ser. No. 488,940

Int. Cl.^{6} C12N *9/70;* C12P *21/04;* A61K *35/14;* C07K *1/00*

U.S. Cl. 435—216 **8 Claims**

1. A plasminogen-binding fragment of streptokinase, wherein

(a) said fragment lacks 1 to 24 amino-terminal amino acids;

(b) said fragment is catalytically active; and

(c) the rate of in vitro degradation of said fragment in the presence of human plasminogen is at least 2 times slower compared to the rate of degradation of native streptokinase in the presence of human plasminogen, wherein the rate of degradation is measured by the appearance of plasmin cleavage products as detected by immunoblotting using anti-streptokinase antibodies, and

(d) wherein said fragment further comprises at least one mutation in a potential plasmin cleavage site which renders said cleavage site resistant to cleavage by plasmin.

5,854,050

ENZYME WITH PROTEASE ACTIVITY

Henrik Dalbøge, Virum; Stephan Christgau, Gentofte; Lene Nonboe Andersen, Birkerød: Lene Venke Kofod, Ugerløse; Markus Sakari Kauppinen, Copenhagen N; Jack Bech Nielsen, Hellerup, and Claus Dambmann, Søborg, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK94/00274, § 371 Date Feb. 1, 1996, § 102(e) Date Feb. 1, 1996, PCT Pub. No. WO95/02044, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 5, 1994, Ser. No. 578,551

Claims priority, application Denmark, Jul. 6, 1993, 0811/93

Int. Cl.^{6} C12N *9/62;* C07H *21/04*

U.S. Cl. 435—219 **18 Claims**

1. An isolated and purified DNA sequence encoding an enzyme having the same activity as an enzyme having a pH optimum between 4 and 7, exhibits protease activity in 5% hydrogen peroxide, is obtainable from filamentous fungus, and is encoded by a DNA sequence depicted in SEQ ID NO: 1 or 2.

5,854,051

PARASITIC HELMINTH ASPARAGINASE PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

Ramaswamy Chandrashekar, and Naotoshi Tsuji, both of Fort Collins, Colo., assignors to Heska Corporation, and Colorado State University Research Foundation, both of Fort Collins, Colo.

Filed Sep. 15, 1997, Ser. No. 929,501

Int. Cl.^{6} C12N *9/82;1/20;* C07H *21/04*

U.S. Cl. 435—227 **9 Claims**

1. An isolated nucleic acid molecule comprising a nucleic acid sequence encoding a *Dirofilaria immitis* asparaginase protein, or its complementary sequence.

5,854,052

Patent Not Issued For This Number

5,854,053

BACILLUS THURINGIENSIS BACTERIA

William P. Donovan, Levittown, Pa., and José M. González, Jr., Trenton, N.J., assignors to Ecogen, Inc., Langhorne, Pa.

Division of Ser. No. 474,038, Jun. 7, 1995, Pat. No. 5,679,343, which is a division of Ser. No. 176,865, Dec. 30, 1993, Pat. No. 5,616,319, which is a division of Ser. No. 100,709, Jul. 29, 1993, Pat. No. 5,322,687. This application Jan. 6, 1997, Ser. No. 779,046

Int. Cl.^{6} C12N *1/20;* A01N *63/00*

U.S. Cl. 435—252.5 **2 Claims**

2. A biologically pure culture of a *Bacillus thuringiensis* bacterium deposited with the NRRL having accession number NRRL B-21125 and being designated as strain EG10368.

5,854,054

RATHAYIBACTER BIOPURESIS PRODUCES CEPHALOSPORIN HALOPEROXIDASE

Bing L. Wong, Durham, N.H.; Yong-Qiang Shen, Revere, Mass., and Yung-Pin Chen, Columbia, S.C., assignors to Biopure Corporation, Cambridge, Mass.

Division of Ser. No. 360,149, Dec. 20, 1994, Pat. No. 5,589,354. This application Dec. 30, 1996, Ser. No. 777,541

Int. Cl.^{6} C12N *1/20*

U.S. Cl. 435—252.32 **6 Claims**

1. A biologically pure culture of a microorganism which produces an enzyme preparation with cephalosporin haloperoxidase

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activity which catalyzes the replacement reaction at the three position of the cephalosporin β-lactam ring system with a halogen.

5,854,055

RECOMBINANT MYCOBACTERIA

Barry R. Bloom, Hastings on Hudson; William R. Jacobs, Jr., Bronx, both of N.Y.; Ronald W. Davis, Palo Alto, Calif.; Richard A. Young, Winchester, Mass., and Robert N. Husson, Takoma Park, Md., assignors to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 361,944, Jun. 5, 1989, Pat. No. 5,504,005, which is a continuation-in-part of Ser. No. 223,089, Jul. 22, 1988, abandoned, and Ser. No. 216,390, Jul. 7, 1988, abandoned, said Ser. No. 361,944 Ser. No. 223,089, and Ser. No. 216,390, is a continuation-in-part of Ser. No. 163,546, Mar. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 020,451, Mar. 2, 1987, abandoned. This application Jun. 5, 1995, Ser. No. 463,942

Int. Cl.^{6} C12N *15/64;15/66;15/74*

U.S. Cl. 435—253.1 **19 Claims**

1. A recombinant mycobacterium capable of expressing DNA encoding a selectable marker incorporated therein, wherein the DNA encoding the selectable marker is stably integrated into genomic DNA of the recombinant mycobacterium.

5,854,056

FUNGAL CELL WALL PRODUCTION AND UTILIZATION AS A RAW RESOURCE FOR TEXTILES

William J. A. Dschida, 1807 Columbus Ave., McKinleyville, Calif. 95519

Filed Nov. 28, 1997, Ser. No. 980,441

Int. Cl.^{6} C12N *1/14*

U.S. Cl. 435—254.1 **19 Claims**

1. A method for producing fungal pulp, comprising the steps of:

a) producing spores from a filamentous fungus;

b) producing mycelia from the spores;

c) growing the mycelia into a flat sheet,

wherein the mycelia are grown into a flat sheet by:

  i) placing the mycelia into a shallow trough containing nutrient broth and

  ii) allowing the mycelia to grow until filaments from adjacent mycelia intermesh; and

d) recovering the fungal pulp.

5,854,057

PANIFICATION FERMENT CONTAINING *SACCHAROMYCES CEREVISIAE STEINERI* DSM 9211

Aloyse Ehret, Blotzheim, France, assignor to Agrano AG, Allschwil, Switzerland

Division of Ser. No. 440,767, May 15, 1995, Pat. No. 5,702,943. This application Oct. 10, 1997, Ser. No. 948,727

Claims priority, application European Pat. Off., May 27, 1994, 94810307

Int. Cl.^{6} A01N *63/00;63/04;* **C12N** *1/14;1/16*

U.S. Cl. 435—255.2 **1 Claim**

1. A panification ferment containing a biologically pure culture of *Saccharomyces cerevisiae steineri DSM* 9211.

5,854,058

METHOD OF DECOMPOSING HARD TYPE RUBBER PRODUCTS

Akio Tsuchii, Ibaraki; Kiyoshi Takeda, Aomori, and Yutaka Tokiwa, Ibaraki, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 23, 1997, Ser. No. 789,331

Claims priority, application Japan, Jan. 23, 1996, 8-008807

Int. Cl.^{6} C12S *13/00*

U.S. Cl. 435—262 **1 Claim**

1. A method of decomposing tires, which comprises contacting tires with a culture of Nocardia NR-35A in the presence of a natural or synthetic isoprene-based rubber product.

5,854,059

BIODEGRADATION OF AN ORGANIC COMPOUND AND PROCESS FOR UPGRADING THE ENVIRONMENT BY REMOVING THE AFORESAID COMPOUND

Shinya Kozaki, Sakurashin-machi; Tetsuya Yano; Chieko Mihara, both of Isehara, and Takeshi Imamura, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1997, Ser. No. 835,741

Claims priority, application Japan, Apr. 11, 1996, 8-089605

Int. Cl.^{6} C12S *13/00*

U.S. Cl. 435—262 **29 Claims**

1. A process for the biodegradation of an organic compound using JM1 (FERM BP5352), which process comprises the steps of:

contacting the JM1 with the organic compound; and

culturing the JM1 in a medium which includes a source of conjugated carbon which comprises citric acid or a salt thereof and malic acid or a salt thereof.

5,854,060

DETERMINING BIODEGRADABILITY OF ASPARTIC ACID DERIVATIVES, DEGRADABLE CHELANTS, USES AND COMPOSITIONS

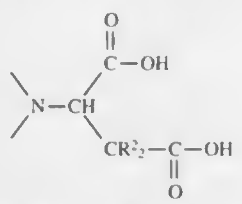
Alan D. Strickland, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 607,253, Mar. 4, 1996, Pat. No. 5,776,763, which is a continuation of Ser. No. 281,060, Jul. 27, 1994, abandoned. This application Sep. 18, 1997, Ser. No. 932,972

Int. Cl.^{6} C07C *00/00;* **B09B** *3/00*

U.S. Cl. 435—262 **10 Claims**

1. A method of chelating a metal ion to form a chelate and biodegrading the chelate comprising step (a) contacting the metal ion with at least one compound having a moiety of the formula



Formula Ia

wherein each of R^2 is independently hydrogen or an unsubstituted or inertly substituted alkyl aryl, alkaryl, or aralkyl group and wherein the distance between the carboxyl carbon atoms is designated "Distance A", the distance between carboxyl double bonded oxygen atoms is designated "Distance B", and the distance between carboxyl hydroxy oxygen groups is designated "Distance C" and wherein Distance A is at least about 3.81×10^{-10} m but less than or equal to about 3.86×10^{-10} m; Distance B is at least about 5.13×10^{-10} m but less than or equal to about 5.52×10^{-10} and Distance C is at least about 5.28×10^{-10} m but less than or equal to about 6.09×10^{-10} m and having the lowest unoccupied molecular orbital, hereinafter referred to as LUMO, is on at least one carboxyl carbon atom of the aspartic acid group, such compounds hereinafter referred to as compounds of Formula 2, to form a chelate and (b) contacting the resultant chelate or chelant with microbes of the type specified in ASTM 2667-89, ISO 5815 or effective enzymes thereof under conditions and for a time sufficient for biodegradation wherein either (i) the chelate formed in step (a) is formed in a process of cleaning or washing; removing deposits, scale, or rust; controlling metal initiated or catalyzed oxidation or deterioration including spoilage, discoloration, or rancidification; textile treatment; paper making; stabilization of polymers or phosphates; or petroleum drilling, production or recovery; or (ii) the chelate formed in step (a) is before step (b) used as a redox catalyst, in a process of photographic bleaching, bleach-fixing or developing; in electroless deposition or plating; in removing acid or oxide gases including H_2S, NO_X, SO_X, CO and CO_2; or in providing agricultural nutrients.

5,854,061

METHOD FOR ACCELERATED CHEMICAL AND/OR BIOLOGICAL REMEDIATION AND METHOD OF USING AN APPARATUS THEREFOR

Terry Dean Horn, White Salmon; Ronald Dean Horn, Vancouver, both of Wash.; Bradley S. Glaze, Lyons, and Kenneth R. Warner, Gladstone, both of Oreg., assignors to H&H Eco Systems, Inc., Stevenson, Wash.

Continuation-in-part of Ser. No. 685,116, Jul. 23, 1996, which is a continuation-in-part of Ser. No. 223,523, Apr. 5, 1994, Pat. No. 5,593,888, which is a continuation-in-part of Ser. No. 43,666, Apr. 6, 1993, abandoned, which is a division of Ser. No. 918,528, Jul. 21, 1992, abandoned. This application Jan. 14, 1997, Ser. No. 782,410

Int. Cl.^{6} A62D *3/00;* **B01F** *7/00;15/00;15/02*

U.S. Cl. 435—262.5 **73 Claims**

1. A method of using an apparatus in the accelerated remediation or bioremediation of a contaminated material which comprises the steps of

(a) generating an air stream from said apparatus at a velocity sufficient for entraining the contaminated material therein;

(b) entraining the contaminated material in said air stream:

(c) microenfractionating the contaminated material with said apparatus to form a microenfractionated contaminated material; and

(d) treating said microenfractionated contaminated material with at least one chemical amendment and/or one biological amendment by discharging said chemical amendment and/or one biological amendment from said apparatus thereby facilitating said accelerated remediation or bioremediation.

5,854,062

CATALYZED ENANTIOMERIC SELECTION OF 1,2-DIOLS AND THEIR CYCLIZATION TO PRODUCE OXIRANES

Andrew John Blacker, Leeds; Andrew George Brewster; Robert Jeffrey Copeland, both of Macclesfield, and Robert Antuny Holt, Northallerton, all of United Kingdom, assignors to Zeneca Limited, London, United Kingdom, and Mochida Pharmaceuticals Co., Ltd., Tokyo, Japan

PCT No. PCT/GB94/00793, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO94/24305, PCT Pub. Date Oct. 27, 1994

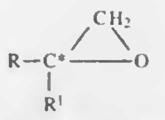
PCT Filed Apr. 15, 1994, Ser. No. 535,134

Claims priority, application United Kingdom, Apr. 16, 1993, 9307924

Int. Cl.^{6} C12P *41/00*

U.S. Cl. 435—280 **18 Claims**

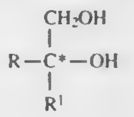
1. A method of preparing an optically active compound of formula (I):



(I)

wherein R and R^1 are independently cycloalkyl, aryl, aralkyl, a heterocyclic group or a C_1–C_4 alkyl-heterocycle, each being optionally substituted, provided that R and R^1 are not identical and * is an optically active chiral centre; the method comprising

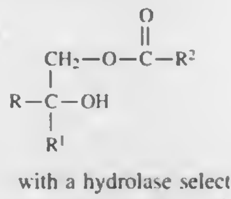
(1) preparing an optically active diol of the formula



$$R-\overset{\displaystyle CH_2OH}{\underset{\displaystyle R^1}{C^*}}-OH$$

wherein R, R^1 and * are as defined above, by the steps of:

(a) asymmetrically hydrolysing a racemic ester compound of formula (II)

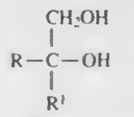


(II)

$$R-\overset{\displaystyle CH_2-O-\overset{O}{\overset{\|}{C}}-R^2}{\underset{\displaystyle R^1}{C}}-OH$$

with a hydrolase selected from the group consisting of pig pancreatic lipase or lipase from *Chromobacterium viscosum*, wherein R and R^1 are as previously defined and R^2 is alkyl, aryl, or aralkyl, each optionally substituted, and de-esterifying the resulting optically active ester to form said optically active diol; or

(b) asymmetrically transesterifying a racemic diol compound of formula (III)



(III)

$$R-\overset{\displaystyle CH_2OH}{\underset{\displaystyle R^1}{C}}-OH$$

with said hydrolase and an acyl donor, wherein R and R^1 are as previously defined, resulting in said optically active diol; and

(2) cyclising said optically active diol to form the optically active epoxide of formula (I).

5,854,063

METHOD AND APPARATUS FOR SPECTROPHOTOMETRIC OBSERVATION OF PLANTS

Ning Li, and Larry S. Daley, both of Corvallis, Oreg., assignors to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Corvallis, Oreg.

Filed Oct. 29, 1996, Ser. No. 739,380

Int. Cl.^{6} G01J *3/30;3/42;* **C12M** *1/00;* **G01N** *21/00*

U.S. Cl. 435—287.1 **7 Claims**

1. An apparatus for analyzing radiation emitted by a sample of plant material and radiation transmitted by the sample of plant material, the apparatus comprising:

a first source of monochromatic electromagnetic radiation, which first source (a) is positioned to supply radiation incident on a sample of plant material which contains photosynthetic components, which sample is positioned at a predetermined location and (b) provides radiation of a wavelength which excites fluorescence from the sample;

a second source of monochromatic electromagnetic radiation, which second source (a) is positioned to direct radiation to pass through the sample while the sample is at the predetermined location and (b) provides radiation of a wavelength suitable for spectral imaging of the sample;

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a switching mechanism for alternately supplying radiation to the sample at the predetermined location from the first and second sources of monochromatic electromagnetic radiation;

an imaging device adapted (a) to detect fluorescence which is excited from the sample by exposure to radiation from the first source while the sample is at the predetermined location, (b) to detect radiation which is transmitted through the sample from the second source while the sample is at the predetermined location, and (c) to transmit data signals that indicate the intensity of radiation detected as a function of time;

a computer which (a) is connected to the imaging device to receive the data signals that indicate the intensity of the fluorescence detected by the imaging device, (b) is programmed to note which of the data signals indicates the highest value of the fluorescence measured, and (c) is programmed then to identify information about the intensity of fluorescence that is indicated by a data signal corresponding to a fluorescence measurement which occurred at a predetermined time after the time of the noted data signal which indicated the highest value of the fluorescence; and

at least one emission filter for limiting the intensity and wavelength of radiation incident on the imaging device as a result of illumination by the first source.

5,854,064

METHODS FOR FRACTIONATION OF BIOLOGICALLY-DERIVED MATERIALS

Trevor P. Castor, Arlington; Hemant M. Chikarmane, Reading; Glenn T. Hong, Westborough, and Christopher Shallice, Southborough, all of Mass., assignors to Aphios Corporation, Woburn, Mass.

Filed Jul. 31, 1996, Ser. No. 690,626

Int. Cl.^{6} C12C *1/00;* **C07B** *17/00*

U.S. Cl. 435—308.1 8 Claims

1. A method of extracting one or more fractions from a biomass containing one or more cells, comprising the steps of:

a) contacting said biomass with a first critical fluid, said first critical fluid entering said biomass and solvating one or more compounds;

b) separating said first critical fluid containing said one or more compounds from said biomass to form a first extraction fraction;

c) decompressing said biomass to form a disrupted biomass;

d) forming a second extraction fraction by the following steps:

 i.) contacting said disrupted biomass with a second critical fluid having the same or different solvation properties as said first critical fluid, said second critical fluid entering said disrupted biomass and solvating one or more compounds;

 ii.) separating the second fluid with said one or more compounds from said disrupted biomass to form a second extraction fraction;

e) forming one or more subsequent extraction fractions by repeating the following steps:

 i.) contacting said disrupted biomass with a subsequent critical fluid having the same or different solvation properties as said first and second critical fluids, said subsequent critical fluid entering said disrupted biomass and solvating one or more compounds;

 ii.) separating the subsequent critical fluid with said one or more compounds from said disrupted biomass to form a subsequent extraction fraction.

5,854,065

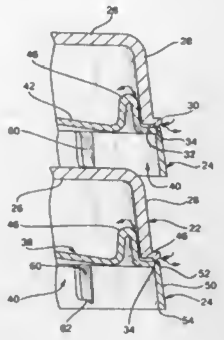
MICROORGANISM SAMPLING DEVICE

Dwight Livingston, Fallston, Md.; Seibert Lowe, Loganville, and Frederic J. Marsik, New Freedom, both of Pa., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 6, 1997, Ser. No. 944,173

Int. Cl.^{6} C12M *3/00*

U.S. Cl. 435—309.4 14 Claims



1. A device for use in sampling a surface for the presence of microorganisms, comprising:

a base member including

 a media supporting surface that is adapted to support a sampling media,

 a continuous wall surrounding said media supporting surface and projecting generally away from said surface in a first direction,

 a peripheral support surface extending generally outward from said continuous wall such that said continuous wall is between said peripheral support surface and said media supporting surface,

 a lip portion extending away from said peripheral support surface in a second direction that is generally opposite from said first direction; and

a lid member including

 a generally planar lid surface,

 a continuous sidewall having an inside facing surface and outside facing surface, said sidewall extending away from a first side of said lid surface,

 a flange extending generally outward from said outside facing surface of said sidewall distal from said lid surface, and

 a plurality of lugs protruding from said flange in said second direction such that said lugs bear against said peripheral support surface and said flange is spaced from said peripheral support surface when said lid member is placed on said base member.

5,854,066

METHOD FOR PRODUCING POTATO MICROTUBERS

Ichiro Oka, Shizuoka, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

PCT No. PCT/JP96/00243, § 371 Date Dec. 2, 1996, § 102(e) Date Dec. 2, 1996, PCT Pub. No. WO96/31114, PCT Pub. Date Oct. 10, 1996

PCT Filed Feb. 6, 1996, Ser. No. 750,177

Claims priority, application Japan, Apr. 3, 1995, 7-99481

Int. Cl.^{6} C12N *5/00;* **A01C** *1/00;* **A01G** *1/00*

U.S. Cl. 435—429 16 Claims

1. In a method for producing potato microtubers, comprising a first step of shoot propagation wherein virus-free potato plantlets are cultured in a medium with a relatively low sugar concentration under a relatively large quantity of light irradiation per day, and a second step of tuber formation wherein the resultant potato plants are cultured in a medium with a relatively high sugar concentration under a relatively small quantity of light irradiation per day, the improvement comprising the culturing in the first step being carried out in the presence of an effective shoot-propagating amount of exogenous ethylene supplied by an ethylene-generating agent, and the culturing in the second step being carried out in the absence of exogenous ethylene.

5,854,067

HEXOKINASE INHIBITORS

Christopher B. Newgard, Dallas; He-Ping Han, Arlington, and Karl D. Normington, Dallas, all of Tex., assignors to Board of Regents, Austin, Tex., and The University of Texas System and Betagene, Inc., Dallas, Tex.

Filed Jan. 19, 1996, Ser. No. 588,983

Int. Cl.^{6} C12N *15/85;15/00;15/63;* **C12Q** *1/68*

U.S. Cl. 435—366 64 Claims

1. A mammalian host cell comprising an inhibitor of a low K_m hexokinase, the inhibitor selected from:

(a) a trehalose-6-phosphate synthase enzyme that stimulates the production of trehalose-6-phosphate; or

(b) a ribozyme specific for an RNA transcript of a low K_m hexokinase gene;

wherein said inhibitor is present in an amount effective to reduce the low K_m hexokinase activity of said cell.

5,854,068

Patent Not Issued For This Number

5,854,069

GD2 ANTI-IDIOTYPIC ANTIBODIES AND USES THEREOF

Dorothee Herlyn, Wynnewood, Pa., assignor to The Wistar Institute of Anatomy & Biology, Philadelphia, Pa.

Filed Apr. 18, 1997, Ser. No. 844,073

Int. Cl.^{6} A61K *39/395;* **C07K** *16/42;* **C12N** *5/12*

U.S. Cl. 435—327 19 Claims

9. An immunogenic composition that elicits a CD4-mediated cellular immune response, said composition comprising a pharmaceutically acceptable carrier and an anti-idiotype antibody selected from the group consisting of (a) TA17A Cl2, (b) TA412G Cl1, (c) TB310B Cl1, and (d) a recombinant antibody comprising a functional fragment containing the antigen binding site of anti-idiotypic antibody (a), (b), or (c).

5,854,070

MURINE AND HUMANIZER 23F2G ANTIBODIES AND CELL LINES EXPRESSING SAID ANTIBODIES

Lynn M. Rose, Seattle, Wash., assignor to ICOS Corporation, Bothell, and Board of Regents of the University of Washington, Seattle, both of Wash.

Continuation of Ser. No. 396,089, Feb. 28, 1995, abandoned, which is a continuation of Ser. No. 94,535, Jul. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 60,699, May 10, 1993, abandoned, which is a continuation of Ser. No. 915,068, Jul. 16, 1992, abandoned. This application Jan. 21, 1997, Ser. No. 785,571

Int. Cl.^{6} C07K *16/18;16/28;* **C12N** *5/12*

U.S. Cl. 435—343.2 6 Claims

1. Hybridoma cell line 23F2G, A.T.C.C.: HB 11801.

5,854,071

OP-3- INDUCED MORPHONGENESIS

Hermann Oppermann, Medway; Engin Ozkaynak, Milford; Thangavel Kuberasampath, Medway; David C. Rueger, Hopkinton, all of Mass.; Roy H. L. Pang, Etna, N.H., and Charles M. Cohen, Medway, Mass., assignors to Creative BioMolecules, Inc., Boston, Mass.

Division of Ser. No. 479,666, Jun. 7, 1995, Pat. No. 5,652,337, which is a division of Ser. No. 971,091, Nov. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 922,813, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,964, Sep. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 923,780, Jul. 31, 1992, abandened, which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, and a continuation-in-part of Ser. No. 752,857, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 946,238, Sep. 16, 1992, abandoned, and a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 938,336, Aug. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 938,337, Aug. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 753,059, Sep. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, and a continuation of Ser. No. 938,021, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,861, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 667,274, Mar. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 945,285, Sep. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 945,286, Sep. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,764, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 946,235, Sep. 16, 1992, abandoned. This application Jul. 28, 1997, Ser. No. 901,200

Int. Cl.^{6} C12N *5/06;5/08;* **C07K** *14/00;14/51*

U.S. Cl. 435—353 8 Claims

1. An in vitro or ex vivo composition comprising a progenitor cell population isolated from a renewable or conditionally renewable tissue and at least a fragment of OP-3, wherein said fragment induces endochondral bone formation in an in vivo assay.

5,854,072

METHOD AND APPARATUS FOR DETERMINING PRODUCT-SPECIFIC QUALITY PARAMETERS OF A LIQUID

Stephan Dittrich, Zur Tahlmühle 22, 61237 Wehrheim, Germany; Hubert Koukol, Röntgenstrasse 34, 63454 Hanau, Germany, and Robert Koukol, Rückertstrasse 14, 63452 Hanau, Germany

Filed Aug. 6, 1996, Ser. No. 692,366

Claims priority, application Germany, Aug. 7, 1995, 19528950.1

Int. Cl.^{6} G01N *33/14*

U.S. Cl. 436—24 11 Claims

1. A method for determining at least one parameter of a liquid held in a closed container under pressure, comprising the steps of:

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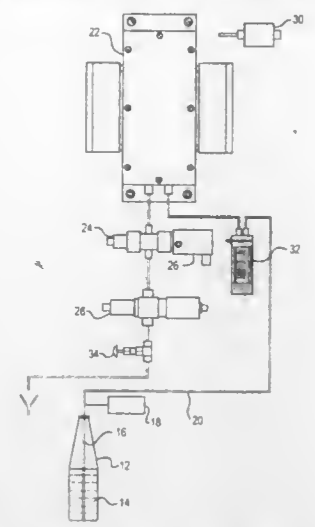
inserting into the container a gas injection line and a liquid removal line, without opening the container to atmosphere;



injecting into the container, through the gas injection line, a gas which is inert to the liquid, the injecting causing liquid to flow through the liquid removal line under pressure equivalent to the pressure in the container;

determining the temperature of a sensor for determining said at least one parameter, and adjusting the liquid in the liquid removal line to said determined temperature; and

passing the liquid at said determined temperature to the sensor to determine said at least one parameter.

5,854,073
STABILIZATION OF BILIRUBIN IN CONTROL SERA AND CALIBRATORS

Geoffrey Burns, Marple, Great Britain, and Martina Junius-Comer, Tutzing, Germany, assignors to Bohringer Mannheim GmbH, Mannheim, Germany

Filed Mar. 21, 1997, Ser. No. 822,950

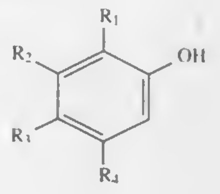
Claims priority, application Germany, Mar. 22, 1996, 196 11 458.6; Jun. 15, 1996, 196 23 955.9

Int. Cl.^{6} G01N *31/00*

U.S. Cl. 436—12 **13 Claims**

1. Control serum or calibration serum comprising bilirubin and a stabilizer comprising at least one compound selected from the group consisting of:

a compound of formula (I):



wherein

R_1 is H, OH, C_{1-8} alkyl, $COOR_5$ or SO_3R_5;

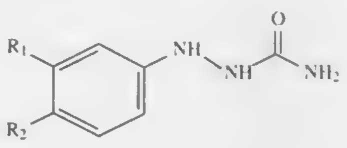
R_2 is H, OH, C_{1-8} alkyl, $COOR_5$ or SO_3R_5;

$R_3$is H or OH;

R_4 is H, $COOR_5$, COR_5 or SO_3R_5

R_5 is H or C_{1-6} alkyl;

and a compound of formula (II)



wherein

R_1 is H, Halogen or C_{1-6} alkyl;

R2is H, C_6 alkyl, or C_{1-6} alkoxy.

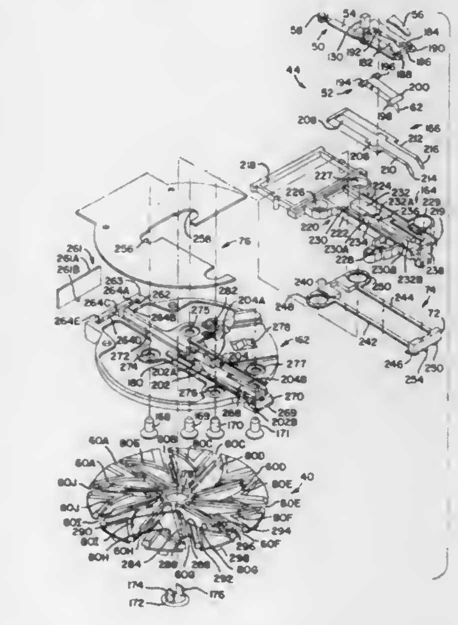
5,854,074
DISPENSING INSTRUMENT FOR FLUID MONITORING SENSORS

Steven C. Charlton, Osceola, Ind.; Anne T. Miller, Cambridge, United Kingdom; Joseph L. Moulton, Mishawaka, Ind.; Matthew A. Schumann, Cambridge, United Kingdom; Dennis Slomski, South Bend, and Frank W. Wogoman, Granger, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Division of Ser. No. 404,303, Mar. 14, 1995, Pat. No. 5,630,986. This application Jan. 17, 1997, Ser. No. 785,185

Int. Cl.^{6} G01N *37/00*

U.S. Cl. 436—46 **2 Claims**



1. A method of handling a plurality of fluid sensors comprising:

installing a sensor pack on an indexing mechanism disposed in a housing of a sensor dispensing instrument such that one of a plurality of sensor retainers that is enclosed by an enclosure and that accommodates one of said plurality of fluid sensors is in a feed position;

actuating a feed actuator from an actuator standby position, said feed actuator being associated with said indexing mechanism and is adapted to advance a driver that is pivotable with respect to said sensor pack, said driver piercing a portion of said enclosure and engaging said sensor disposed within said sensor retainer so that said sensor in said sensor retainer is advanced out of said sensor retainer into a testing position as said feed actuator is advancing from said actuator standby position; and

returning said feed actuator to said actuator standby position so as to return said driver to a driver standby position, said driver being pivoted away from said sensor pack as said feed actuator is so returned to said actuator standby position and said indexing mechanism being simultaneously advanced as said actuator is being returned to said actuator standby position such that another one of said plurality of sensor retainers is moved into said feed position as said feed actuator is being returned to said actuator standby position.

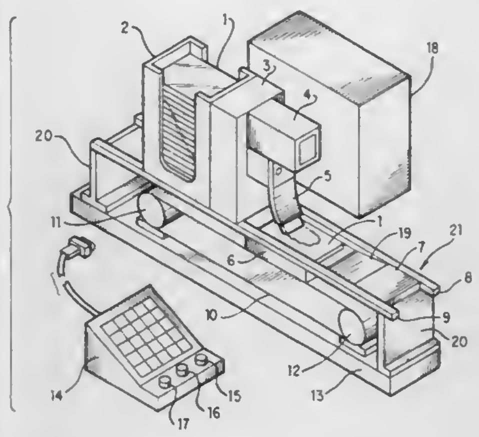
5,854,075
AUTOMATIC BLOOD FILM PREPARATION METHOD

Marshall S. Levine; Daniel S. Levine, and David E. Levine, all of Wayne, Pa., assignors to Alpha Scientific Instruments, Inc., Southeastern, Pa.

Division of Ser. No. 477,980, Jun. 7, 1995, Pat. No. 5,676,910. This application Sep. 3, 1997, Ser. No. 922,324

Int. Cl.^{6} G01N *35/00*

U.S. Cl. 436—46 **9 Claims**



1. A method of automatically making a blood smear on a slide, the method comprising the steps of:

a) dispensing a blank slide onto a carriage that is movable back and forth along a stationary frame, the frame being attached to an elastically bendable spreader which touches the slide when the carriage moves into a vicinity of the spreader.

b) placing a drop of blood on the slide.

c) moving the carriage until the drop of blood contacts the spreader.

d) further moving the carriage until the spreader has spread the blood along the slide, and

e) removing the slide from the carriage and lifting the slide onto a platform,

wherein the spreader includes a spreader blade having front and rear sides and an end, wherein the spreader blade is cleaned by the steps of advancing the carriage so that the spreader blade is drawn along a cleaning pad located on the carriage, and reversing a direction of movement of the carriage so that both the front and rear sides and the end of the spreader blade are drawn along the cleaning pad at different times.

5,854,076
METHOD FOR TESTING COAGULATION OF BLOOD THROUGH BIOACTIVE POROUS PARTITION MEMBERS

Sourav K. Kundu, Cooper City, Fla., and Ted S. Geiselman, Bolton, Mass., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 450,936, May 23, 1995, abandoned, which is a division of Ser. No. 269,185, Jun. 30, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 660,771

Int. Cl.^{6} G01N *33/86*

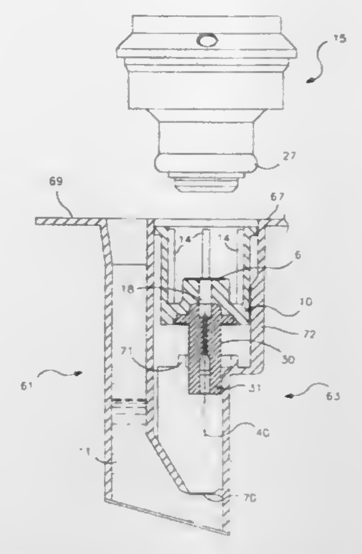
U.S. Cl. 436—69 **8 Claims**

1. A method of testing a coagulation function of blood which comprises passing blood through a device comprising a porous partition member, wherein the porous partition member has an opening and has dried therein at least one agent capable of initiating the blood coagulation process, wherein the method comprises the steps of:

(i) providing a sample comprising blood or blood plasma to the device;

(ii) reconstituting the agent;

(iii) causing the sample to flow through the opening in the partition member;



(iv) measuring the amount of time it takes for the formation of a clot at the opening in the porous partition member thereby stopping the flow of blood; and

(v) correlating the time measured in step (iv) with a predetermined normal range, wherein the agent is reconstituted by providing an aqueous solution to the partition member prior to causing the sample to flow through the opening in the partition member or wherein steps (ii) and (iii) are combined and the agent is reconstituted by causing the sample to flow through the opening in the partition member.

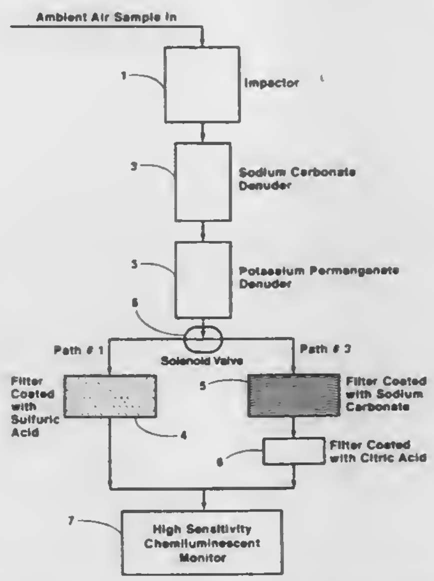
5,854,077
CONTINUOUS MEASUREMENT OF PARTICULATE NITRATE

Jack Mikhail Wolfson, Jamaica Plain, and Petros Koutrakis, Wellesley, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 4, 1996, Ser. No. 658,141

Int. Cl.^{6} G01N *33/00;* **B01D** *46/00*

U.S. Cl. 436—110 **8 Claims**


Ambient Air Sample In
1
Impactor
3
Sodium Carbonate Denuder
3
Potassium Permanganate Denuder
8
Path # 1
Solenoid Valve
Path # 2
Filter Coated with Sulfuric Acid
4
5
Filter Coated with Sodium Carbonate
6
Filter Coated with Citric Acid
7
High Sensitivity Chemiluminescent Monitor

1. Method for continuously measuring particulate nitrate in a gas sample, comprising the steps of:

passing said gas sample through an inertial impactor with a 50% cut-off at 2.5 microns,

removing ambient pollutant gases from said gas with diffusion denuders,

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passing said gas through a first path so as to contact said gas with a coated filter so as to convert particulate nitrate to nitric acid vapor or passing said gas through a second path so as to contact said gas with coated filters to trap particulate nitrate and ammonia, and

measuring nitric acid vapor and residual ambient pollutant gases produced from said first path and residual ambient pollutant gases produced from said second path with a chemiluminescent monitor, the difference in the signal produced from the gases from the two paths being a measurement of the particulate nitrate in said gas sample.

5,854,078

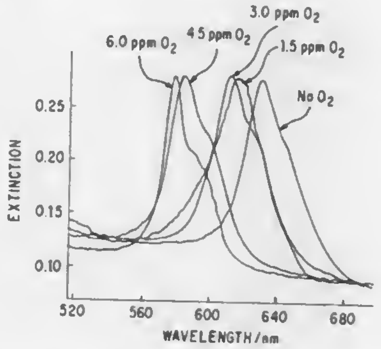
POLYMERIZED CRYSTALLINE COLLOIDAL ARRAY SENSOR METHODS

Sanford A. Asher, and John H. Holtz, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 743,816, Nov. 6, 1996. This application Mar. 17, 1997, Ser. No. 819,240

Int. Cl.^{6} G01N *33/00*

U.S. Cl. 436—133 **33 Claims**



1. A method for detecting the concentration of a gas in a solution comprising:

preparing a sensor device comprising a crystalline colloidal array polymerized in a hydrogel that undergoes a volume change in response to said gas, said crystalline colloidal array having a lattice spacing that changes when said volume of said hydrogel changes, thereby causing the diffracted wavelength of the crystalline colloidal array to change;

measuring the diffracted wavelength of said crystalline colloidal array polymerized in said hydrogel;

contacting said polymerized crystalline colloidal array with said solution;

measuring the diffracted wavelength of said crystalline colloidal array following exposure to said solution; and

comparing the change in diffracted wavelength measurements to determine the concentration of said gas.

5,854,079

METHOD FOR DETECTION OF PERFORMANCE REDUCTION OF EXHAUST GAS PURIFICATION CATALYST

Nobuhide Kato, Ama-gun, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Dec. 4, 1996, Ser. No. 760,402

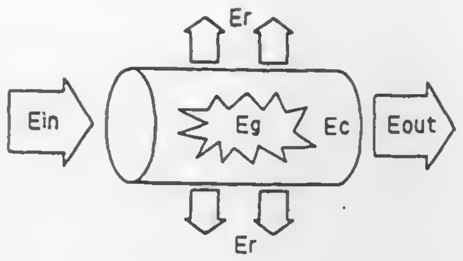
Claims priority, application Japan, Dec. 15, 1995, 7-326959

Int. Cl.^{6} G01N *27/00;* **B01J** *8/02*

U.S. Cl. 436—152 **11 Claims**

1. A method for detection of the performance reduction of an exhaust gas purification catalyst, comprising;

providing an exhaust gas purification catalyst used for reducing (a) the concentration of combustible components or (b) the concentrations of combustible component and nitrogen oxides all present in an exhaust gas, and



beginning at an initial stage of engine operation soon after an engine starts detecting a decrease in catalyst efficiency which is measured by the heat amount E_g generated from a unit volume of the exhaust gas in a unit time by the reaction of the exhaust gas catalyzed by said catalyst.

5,854,080

PROCESS FOR SEPARATING TRITIATED WATER

James Travis Harvey, Naperville, Ill., assignor to Eichrom Industries, Inc., Darien, Ill.

Continuation of Ser. No. 483,846, Jun. 7, 1995, abandoned. This application Jun. 26, 1997, Ser. No. 883,288

Int. Cl.^{6} B01D *15/04;* **G01N** *1/34*

U.S. Cl. 436—178 **11 Claims**

1. A process for separating tritium as HTO or T_2O from an aqueous solution that contains one or more additional dissolved radionuclides that comprises the steps of:

(A) serially contacting a liquid phase that is an aqueous solution containing tritium and one or more additional dissolved radionuclides present as inorganic anions or cations and may contain radioactive or non-radioactive organic compounds with each of three solid phase, water-insoluble particulate layers such that the liquid phase after each said contacting is contacted with another of said three layers until each said layer has been contacted, said three layers comprising:

(i) a first layer of particles having a plurality of pendent methylene diphosphonate cation exchange groups;

(ii) a second layer comprising strongly basic anion exchange particles; and

(iii) a third layer of polymer particles free of ionically charged groups;

(B) separately maintaining each of said contacts for a time sufficient for dissolved (i) cations to exchange or be bound by said methylene diphosphonate groups, (ii) anions present to be exchanged by said strongly basic anion exchange particles, or (iii) for organic compounds to bind to said polymer particles that are free of ionically charged groups, wherein each of said maintenance steps removes the respective cations, anions or organic compounds originally present in said liquid phase; and

(C) collecting the liquid phase after the third maintenance step to provide an aqueous solution containing HTO or T_2O.

5,854,081

STABLE EXPRESSION OF HUMAN A_{2B} ADENOSINE RECEPTORS, AND ASSAYS EMPLOYING THE SAME

Joel Linden; Heidi Taylor; Anna Roheva, all of Charlottesville; Robin Woodard, Palmyra, and Xiaowei Jin, Charlottsville, all of Va., assignors to The University of Patent Foundation, Charlottesville, Va.

Filed Jun. 20, 1996, Ser. No. 670,175

Int. Cl.^{6} G01N *33/566*

U.S. Cl. 436—501 **7 Claims**

1. A method of detecting binding of [^{3}H]1,3-diethyl-8-phenyl-xanthine to a human A_{2B} adenosine receptor, comprising contacting said receptor, which is present in an amount of at least about 5 pmol/mg of protein, with said [^{3}H]1,3-diethyl-8-phenyl-xanthine under conditions which permit binding of said [^{3}H]1,3-diethyl-8-phenyl-xanthine to said A_{2B} adenosine receptor to occur, washing said adenosine receptor to remove any unbound material, and inspecting the resulting sample to determine the presence of said [^{3}H]1,3-diethyl-8-phenyl-xanthine, wherein the presence and amount of said [^{3}H]1,3-diethyl 8-phenyl-xanthine correlates with the presence and amount of binding of said [3H]1,3 -diethyl-8-phenyl-xanthine to said A_{2B} adenosine receptor.

5,854,082

PROCESS FOR MEASURING COMPLEMENT ACTIVITY AND REAGENT USED THEREFOR

Kazuhisa Kubotsu; Sachiko Yamamoto, and Masaaki Kida, all of Amagasaki, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 300,318, Sep. 2, 1994, abandoned. This application Nov. 26, 1996, Ser. No. 756,363

Claims priority, application Japan, Sep. 7, 1993, 5-246332; Nov. 17, 1993, 5-311229

Int. Cl.^{6} G01N *33/53*

U.S. Cl. 436—518 **8 Claims**

1. A reagent composition for measuring human complement activity consisting essentially of:

(a) liposomes having a size within the range of 100 to 500 nm, wherein the size is determined by a mean particle size in nm plus twice the standard deviation, said mean particle size and said standard deviation being obtained and calculated from a particle size distribution measured by a dynamic light scattering method, an encapsulated marker therein which is liberated and measured when the liposomes are ruptured by the action of a complement against an antigen-antibody complex formed on membranes of the liposomes, and a hapten immobilized on surfaces of liposome membranes which can react with an antibody to said hapten; and

(b) an unbound antibody which reacts with said hapten immobilized on the surface of the liposome;

wherein said liposomes and said antibody are stored in different containers.

5,854,083

POST SYNTHESIS CHEMICAL MODIFICATION OF PARTICLE REAGENTS

Victor Pichai Chu, Hockessin, and Alan Robert Craig, Wilmington, both of Del., assignors to Dade Behring Inc., Deerfield, Ill.

Filed Aug. 3, 1995, Ser. No. 510,687

Int. Cl.^{6} G01N *33/546*

U.S. Cl. 436—523 **16 Claims**

1. A method for increasing the activity and the stability of a particle reagent wherein the reagent comprises a polymer particle having surface active functional groups on an outer layer thereof capable of reacting with a complementary functional group of a compound of biological interest, and which is covalently bound to the compound of biological interest, the method comprising:

the step of incubating said particle reagent at a predetermined pH and temperature with a modifying agent comprising an anionic nucleophile selected from the group consisting of β-mercaptoacetic acid and thiosulfate capable of placing a negative charge and reducing unreacted functional groups on the outer layer of the polymer particle.

5,854,084

ENHANCED CHROMATOGRAPHY USING MULTIPHOTON DETECTION

Andrzej K. Drukier, Burke, Va., and Roman Bielski, Coopersburg, Pa., assignors to BioTraces, Inc., Fairfax, Va.

Filed Jul. 12, 1996, Ser. No. 679,671

Int. Cl.^{6} G01N *33/533*

U.S. Cl. 436—541 **44 Claims**

1. A method for detecting an analyte of interest present in a mixture at an ultralow concentration, comprising the steps of:

selecting a radioactive derivatizing agent comprising a bound multiphoton-emitting radioisotope and a moiety reactive with a functional group of the analyte of interest, the radioisotope being bound to the derivatizing agent by a bond that is stable under the conditions employed in the other steps of the method;

derivatizing the analyte of interest with the derivatizing agent to form a derivative by allowing the moeity reactive with the functional group of the analyte of interest to form a covalent chemical bond with the functional group of the analyte of interest;

without regard to order as to the derivatizing step, separating the mixture into fractions by chromatography; and

detecting the derivatized analyte of interest in at least one of the fractions using multiphoton detection.

5,854,085

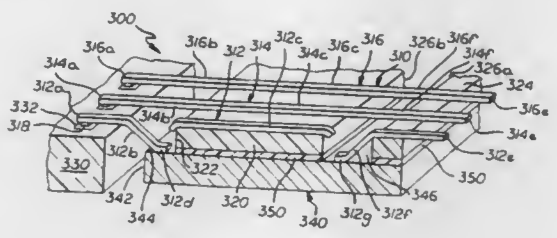
MULTI-LAYER TAB TAPE HAVING DISTINCT SIGNAL, POWER AND GROUND PLANES, SEMICONDUCTOR DEVICE ASSEMBLY EMPLOYING SAME, APPARATUS FOR AND METHOD OF ASSEMBLING SAME

Kurt Raymond Raab, San Jose, and John McCormick, Redwood City, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 299,022, Aug. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 894,031, Jun. 4, 1992, abandoned. This application Apr. 24, 1996, Ser. No. 638,898

Int. Cl.^{6} H01L *21/60*

U.S. Cl. 437—211 **12 Claims**



1. A method for attaching collapsible solder balls to a tape ball grid array (TBGA) using solder flux and photoimageable solder resist definition, comprising the steps of:

creating tape automated bonding (TAB) tape solder ball pads in a conductive layer;

applying photoimageable solder resist over the solder ball pads;

developing the applied photoimageable solder resist to create openings in the resist over the underlying pads, thereby exposing only a desired surface in the patterned resist openings;

plating the exposed surfaces of the solder ball pads;

applying solder flux to the plated exposed surfaces of the solder ball pads;

placing solder balls onto the plated exposed surface, wherein the solder flux holds the solder balls in place;

heating the solder balls so as to electro-mechanically connect them to the plated exposed surfaces of the solder pads; and

removing any remaining solder flux.

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5,854,086

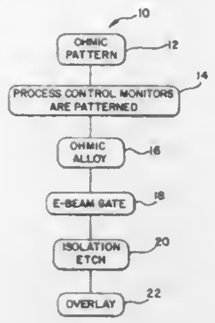
METHOD FOR MANUFACTURING PLANAR FIELD EFFECT TRANSISTORS AND PLANAR HIGH ELECTRON MOBILITY TRANSISTORS

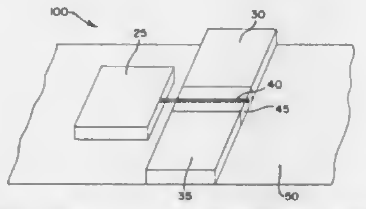
Mehran Matloubian, Encino, and Jeffrey B. Shealy, Thousand Oaks, both of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Aug. 21, 1996, Ser. No. 697,231

Int. Cl.^{6} H01L *21/66;21/28;21/44;* **G01R** *31/26*

U.S. Cl. 438—18 **7 Claims**





1. A method of processing a semiconductor material device comprising:

providing a semiconductor substrate having a first surface;

patterning an ohmic metalization on said first surface of said semiconductor substrate;

lifting-off of said ohmic metalization;

isolating a plurality of process control monitors on said semiconductor surface;

alloying said ohmic metalization, said alloyed ohmic metalization defining planar metallic contacts;

writing a gate on said semiconductor surface; and

isolating said semiconductor device after said step of writing said gate.

5,854,087

METHOD OF MANUFACTURING AN OPTICAL SEMICONDUCTOR DEVICE

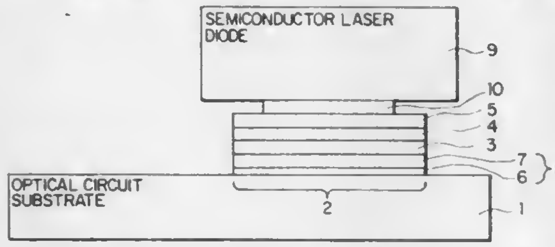
Kazuhiko Kurata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 233,941, Apr. 28, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 638,873

Claims priority, application Japan, Apr. 27, 1993, 125114

Int. Cl.^{6} H01L *21/283;21/58*

U.S. Cl. 438—26 **20 Claims**



1. A method of manufacturing an optical semiconductor device, consisting essentially of the steps of:

forming a junction portion on an optical circuit substrate, wherein said junction portion comprises:

(a) a first Au layer on said optical circuit substrate,

(b) an Sn layer on said first Au layer, and

(c) a second Au layer having a thickness of 0.4 μm on said Sn layer,

wherein the junction portion has a weight % ratio of Au to Sn of at least 80%:20% after the junction portion is formed;

making a junction portion of an optical semiconductor element contact with the junction portion of said optical circuit substrate;

pressing said optical semiconductor element to said optical circuit substrate;

heating said optical circuit substrate; and

cooling said optical circuit substrate.

5,854,088

METHOD OF MANUFACTURING A SURFACE-EMITTING LASER

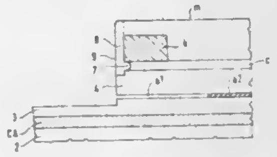
Antonina Plais, Paris; Paul Salet, Clamart; Joël Jacquet, Limours; Francis Poingt, Ste Genevieve des Bois, and Estelle Derouin, Verrieres le Buisson, all of France, assignors to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

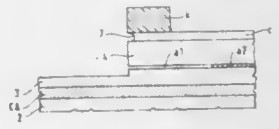
Filed Jun. 30, 1997, Ser. No. 885,843

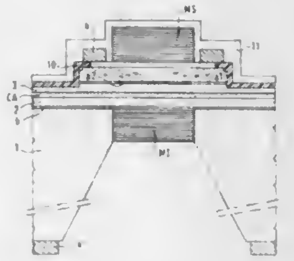
Claims priority, application France, Jul. 4, 1996, 96 08338

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—39 **8 Claims**







1. A method of fabricating a surface-emitting semiconductor laser component having an operating wavelength and comprising a vertical resonant cavity formed on a substrate of III–V elements, said cavity containing an electrical current injection layer provided with a horizontal electrical confinement layer disposed between a horizontal active layer and a mirror defining said cavity, the formation of said current injection layer comprising the following steps:

growing over said active layer an undercut layer transparent at the operating wavelength of said component,

at least one step of growing doped III–V elements on said undercut layer,

forming a mesa centered relative to a location for said mirror such that lateral walls of said mesa are located over said undercut layer, and

laterally etching said undercut layer to form said electrical confinement layer.

5,854,089

SEMICONDUCTOR DEVICE BY SELECTIVELY CONTROLLING GROWTH OF AN EPITAXIAL LAYER WITHOUT A MASK

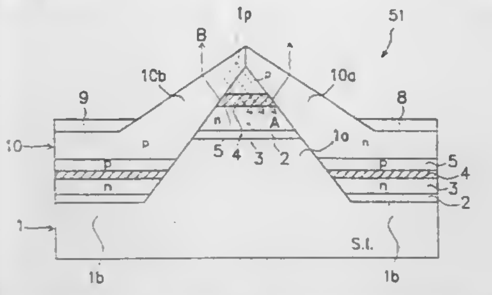
Hiroshi Nakatsu, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 281,834, Jul. 28, 1994, Pat. No. 5,581,116. This application Jun. 28, 1996, Ser. No. 673,263

Claims priority, application Japan, Jul. 30, 1993, 5-190497

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 438—41 **9 Claims**



1. A method for fabricating a semiconductor structure comprising the steps of:

forming a projecting portion on a main surface of a substrate; and

substantially simultaneously depositing a first semiconductor layer on a region of the substrate which is irradiated by light and a second semiconductor layer on a region of the substrate which is shaded by the projecting portion, using the projecting portion as a mask by radiating the light at an angle with respect to the projecting portion, the first semiconductor layer having a different conductivity type from that of the second semiconductor layer.

5,854,090

METHOD OF MANUFACTURING WAFER BONDED SEMICONDUCTOR LASER DEVICE

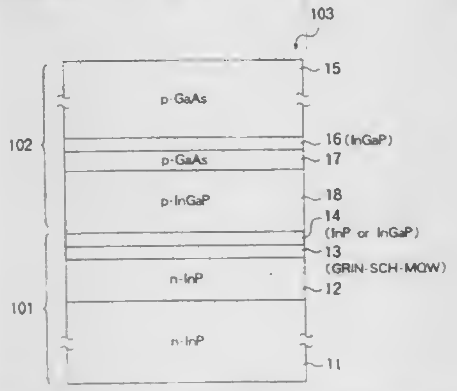
Norihiro Iwai, and Akihiko Kasukawa, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1996, Ser. No. 768,575

Claims priority, application Japan, Dec. 15, 1995, 7-326962

Int. Cl.^{6} H01L *21/20;21/306*

U.S. Cl. 438—47 **9 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

consecutively forming an n-InP cladding layer, a semiconductor active layer and an InP or InGaP adhesive layer on the top of an n-InP substrate to thereby overlay a first wafer;

consecutively forming an InGaP etch-stop layer, a p-GaAs contact layer and a p-InGaP or p-AlAs cladding layer on a GaAs substrate to thereby overlay a second wafer;

bonding said first and second wafers by setting said adhesive layer and said p-InGaP cladding layer coming in contact and by subsequent heat treatment to thereby form a united wafer;

consecutively removing said GaAs substrate and InGaP etch-stop layer from said united wafer;

selectively removing a region of said p-GaAs contact layer and a top portion of said p-InGaP cladding layer excluding a strip region to form a mesa stripe; and

forming a p-electrode on at least said p-GaAs contact layer of said mesa stripe-and an n-electrode on a bottom surface of said n-InP substrate.

5,854,091

METHOD FOR FABRICATING COLOR SOLID-STATE IMAGE SENSOR

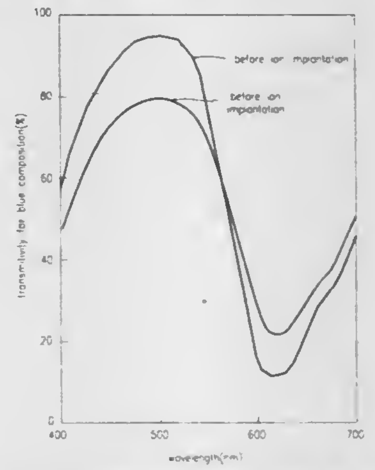
Euy Hyeon Back, Chungcheongbuk-do, and Sam Yeoul Kim, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Jun. 27, 1997, Ser. No. 883,146

Claims priority, application Rep. of Korea, Dec. 28, 1996, 1996 75480

Int. Cl.^{6} G03C *1/84*

U.S. Cl. 438—70 **15 Claims**



1. A method for fabricating a color solid-state image sensor including a plurality of photoelectric conversion regions comprising the steps of:

forming a magenta color filter layer, a yellow color filter layer, and a cyan color filter layer over respective photoelectric conversion regions of the plurality of photoelectric conversion regions; and

implanting ions into the magenta and cyan color filter layers to reduce the transmittivity of blue composition of light passing through the magenta and cyan color filter layers.

5,854,092

METHOD FOR SPRAY-COOLING A TUNABLE SEMICONDUCTOR DEVICE

Loren F. Root, McHenry, and Kevin J. McDunn, Lake in the Hills, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 729,130, Oct. 11, 1996, Pat. No. 5,777,384. This application Nov. 12, 1997, Ser. No. 968,000

Int. Cl.^{6} H01L *21/44;21/48;21/50*

U.S. Cl. 438—106 **3 Claims**

1. A method for spray-cooling an electronic device, comprising the steps of:

providing a substrate having a semiconductor die thereon, the semiconductor die having a major surface;

disposing an input region, an active region and a conductive region on the major surface, the conductive region electrically coupling, the input region and the active region;

providing an inductive metal region in communication with the input region, the inductive metal region sized to allow real-time iterative tuning of the electronic device; and

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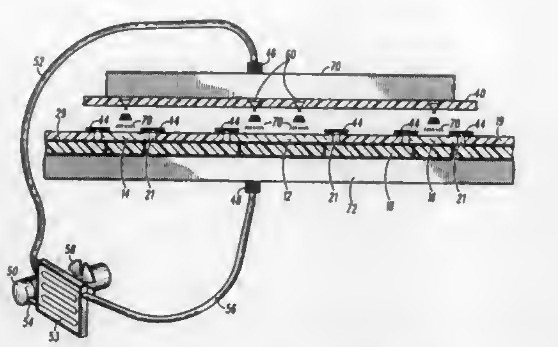


receiving a fluid by a nozzle, the nozzle atomizing the fluid and discharging the fluid onto the major surface.

5,854,093

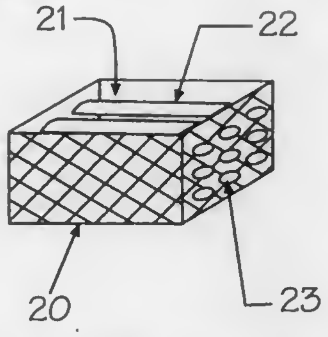
DIRECT ATTACHMENT OF SILICON CHIP TO CIRCUIT CARRIER

Donald G. McBride, 2058 Cheshire Rd., Binghamton, N.Y. 13903

Division of Ser. No. 531,814, Sep. 21, 1995. This application Nov. 24, 1997, Ser. No. 976,685

Int. Cl.^{6} H01L *21/44;21/48;21/50;21/302*

U.S. Cl. 438—106 **5 Claims**



1. A method of connecting a chip to a substrate, comprising the steps of:

- a) molding a block of dissolvable material about a plurality of wires to embed the wires therein with a connection pattern;
- b) slicing said block into wafers, each having a chip connection face and a substrate connection face;
- c) attaching said chip connection face of said wafer to a chip, using a first solder that is thermally compatible with said chip;
- d) attaching said substrate connection face of said wafer to said substrate, using a second solder that is thermally compatible with said substrate; and
- e) dissolving said dissolvable material to form a chip-and-substrate connection with said plurality of wires.

5,854,094

PROCESS FOR MANUFACTURING METAL PLANE SUPPORT FOR MULTI-LAYER LEAD FRAMES

Hirofumi Fujii; Yoshiki Takeda, and Mitsuharu Shimizu, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan, and Intel Corporation, Santa Clara, Calif.

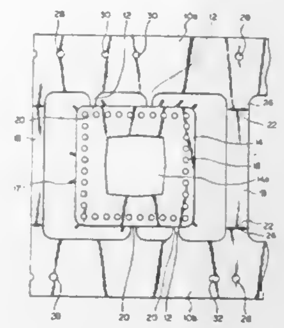
Continuation of Ser. No. 372,363, Jan. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 95,516, Jul. 26, 1993, Pat. No. 5,410,180. This application Oct. 1, 1996, Ser. No. 724,429

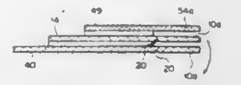
Claims priority, application Japan, Jul. 28, 1992, 4-221942

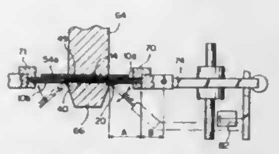
Int. Cl.^{6} H01L *21/48;21/71*

U.S. Cl. 438—111 **6 Claims**

1. A process for making a multi-layer lead frame for semiconductor devices, comprising the steps of:







- a) preparing a lead-frame support made of a single thin metal strip having a plurality of lead frames continuously arranged in a longitudinal direction, and including a metal plane support made of a single thin metal strip and including a plurality of metal planes continuously arranged in the longitudinal direction corresponding to the plurality of lead frames, a pair of side rails extending co-planar with the metal planes in the longitudinal direction, for supporting the plurality of metal planes therebetween, first connectors between the metal planes and the side rails, and second connectors between the side rails and bars extending between the side rails, the first and second connectors including breakable portions;
- b) laminating the metal plane support to the lead frame support utilizing insulating adhesive tapes;
- c) gripping the side rails;
- d) bending the side rails at the breakable portions within an arc including a first gripping position co-planar with the metal planes and a second position non-planar with the metal planes to break the breakable portions; and
- e) removing the side rails from the metal planes and bars.

5,854,095

DUAL SOURCE GAS METHODS FOR FORMING INTEGRATED CIRCUIT CAPACITOR ELECTRODES

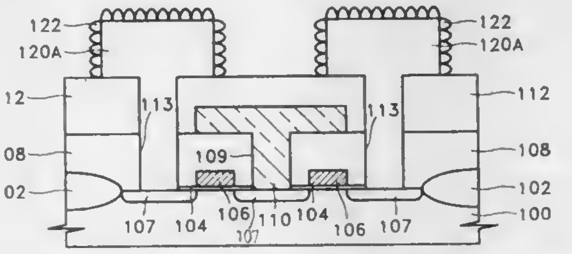
Man-sug Kang; Hyun-bo Shin; Seung-joon Ahn, and Byung-chul Ahn, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 2, 1997, Ser. No. 778,049

Claims priority, application Rep. of Korea, Aug. 28, 1996, 96-36138

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—255 **28 Claims**



1. A method for forming an integrated circuit memory device, said method comprising the steps of:

forming a memory cell access transistor on an integrated circuit substrate wherein said memory cell access transistor comprises doped source/drain regions of said substrate;

forming an insulating layer on said integrated circuit substrate and on said memory cell access transistor wherein said insulating layer has a contact hole therein exposing a portion of one of said doped source/drain regions of said substrate;

forming a first amorphous silicon layer on said insulating layer opposite said substrate using a first source gas comprising silane wherein said first amorphous silicon layer fills said contact hole and contacts said exposed source/drain region;

forming a second amorphous silicon layer on said first amorphous silicon layer using a second source gas different from said first source gas wherein said second source gas comprises disilane; and

patterning said first and second amorphous silicon layers to provide a storage electrode comprising said first and second patterned amorphous silicon layers connected to said exposed source/drain region through said contact hole;

forming a dielectric layer on said exposed portions of said storage electrode; and

forming a conductive layer on said dielectric layer opposite said storage electrode;

wherein said step of forming said dielectric layer is preceded by the step of:

forming hemispherical grain polysilicon on exposed portions of said storage electrode made up of said first and second patterned amorphous silicon layers.

5,854,096

PROCESS FOR FABRICATING SEMICONDUCTOR DEVICE

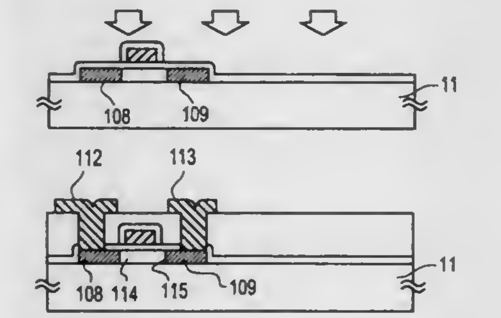
Hisashi Ohtani; Takeshi Fukunaga, and Akiharu Miyanaga, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Jun. 1, 1995, Ser. No. 456,667

Claims priority, application Japan, Jun. 2, 1994, 6-145575; Jun. 23, 1994, 6-165930; Apr. 28, 1995, 7-128921

Int. Cl.^{6} H01L *21/336;21/324*

U.S. Cl. 438—166 **6 Claims**



1. A process for fabricating a semiconductor device comprising the steps of:

maintaining, in contact with an amorphous semiconductor film comprising silicon, a catalytic element which accelerates the crystallization of the amorphous semiconductor film or a compound containing said catalytic element;

applying heat treatment to the amorphous semiconductor film to crystallize the amorphous semiconductor film while maintaining the elemental catalyst or the compound thereof in contact with the amorphous semiconductor film:

irradiating a laser beam or an intense light to the crystalline semiconductor film to further improve the crystallinity;

heat treating the irradiated semiconductor film to reduce the number of dangling bonds in the crystalline semiconductor film and then

heat treating the semiconductor film in a hydrogen containing atmosphere to effect hydrogenation of the semiconductor film.

5,854,097

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

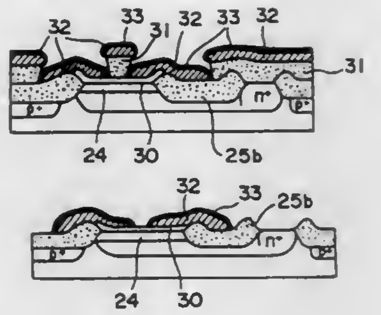
Tadahiro Ohmi, and Mamoru Miyawaki, both of Sendai, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 304,219, Sep. 12, 1994, Pat. No. 5,541,444, which is a continuation of Ser. No. 678,325, Mar. 19, 1992, abandoned. This application May 15, 1995, Ser. No. 440,917

Claims priority, application Japan, Sep. 9, 1989, 1-233929

Int. Cl.^{6} H01L *21/338*

U.S. Cl. 438—182 **25 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

providing an inorganic mask on a section on a substrate;

providing, on a surface of the substrate not covered by the mask, a conductive material different from a material constituting the surface of the substrate, the conductive material comprising aluminum;

treating a surface of the conductive material with a gas to form an insulative compound film of a material different from the mask, the insulative compound film comprising aluminum fluoride;

removing the mask from the section; and

forming, on a section from which the mask is removed, a semiconductor layer, a conductive layer or an insulative layer.

5,854,098

Patent Not Issued For This Number

5,854,099

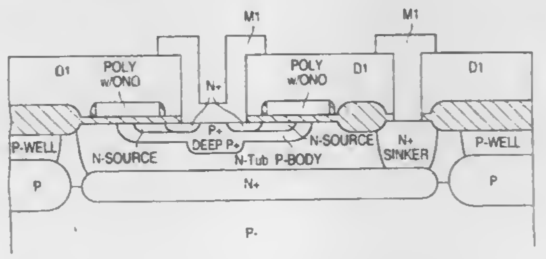
DMOS PROCESS MODULE APPLICABLE TO AN E^2 CMOS CORE PROCESS

Douglas R. Farrenkopf, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 6, 1997, Ser. No. 870,920

Int. Cl.^{6} H01L *21/8247*

U.S. Cl. 438—201 **3 Claims**



1. A method of fabricating a DMOS transistor structure, the DMOS transistor structure including an active semiconductor substrate region having a tub of N-type conductivity formed therein, the N-type tub being formed over an N^+ buried region, the N-type

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tub having an N^+ sinker region formed therein at an edge of the N-type tub, the N^+ sinker region extending from a surface of the N-type tub to the N^+ buried region, the method comprising:

forming a pad oxide layer on the N-tub and on the N^+ sinker region;

forming a composite mask on the silicon nitride layer, the composite mask including etched openings such that the surface of the periphery of the N-type tub is exposed and the interface between the N-type tub and the N^+ sinker region is exposed;

utilizing the composite mask to form field oxide isolation regions in the semiconductor substrate region at the periphery of the N-type tub and at the interface between the N-type tub and the N^+ sinker region;

removing the composite mask;

forming a P-body mask on the nitride layer, the P-body mask including an etched opening formed therein to expose a surface area of the nitride layer overlying the N-type tub;

etching the nitride layer to remove nitride underlying the exposed nitride surface area to expose underlying pad oxide;

implanting dopant of P-type conductivity into the N-type tub in the area beneath the exposed portion of the pad oxide to form a P-body region in the N-type tub;

removing the P-body mask;

forming a deep P^+ mask over the active semiconductor substrate region, the deep P^+ mask having an opening formed therein over a central portion of the P-body region;

implanting dopant of P-type conductivity into the P-body region to form a deep P^+ region within the P-body region;

removing the deep P^+ mask;

performing a P-body thermal drive-in step that results in the growth of oxide over the P-body region such that the P-body region is not reached during a subsequent composite nitride strip step;

utilizing the composite nitride to perform a self-aligned ion implant of dopant of N-type conductivity to form an N-source region in the P-body region, the composite nitride layer being thick enough to block the N-source implant at the periphery of the P-body region;

stripping the composite nitride and pad oxide;

forming a layer of gate oxide over the N-type tub, including over the P-body region and the N-source region;

forming a layer of polysilicon over the gate oxide layer, etching the polysilicon layer to define polysilicon gate regions on the gate oxide layer, the polysilicon gate regions overlapping the interface between the N-source region and the P-body region and also overlapping the interface between the P-body region and the N-type tub;

forming oxide sidewall spacers on the sidewalls of the polysilicon gate regions;

utilizing the oxide spacers to perform a self-aligned implant of N-type dopant into the N-source region;

forming a P^+ mask over the structure resulting from the above-defined steps, the P^+ mask including an opening formed over the N^+ implant region in the N-source region;

performing an implant of P-type dopant in a central portion of the N^+ region to thereby create a region of P-type conductivity at a surface of the P-body region, thereby defining first and second spaced-apart N-type source/drain regions of the DMOS transistor structure;

forming a layer of dielectric material over the structure resulting from the above-defined steps;

forming contact openings in the dielectric layer to expose the P-body region and the N^+ sinker region; and

forming a metal layer over the structure resulting from the above-defined steps to form metal contacts to the P-body region and the N^+ sinker region.

5,854,100

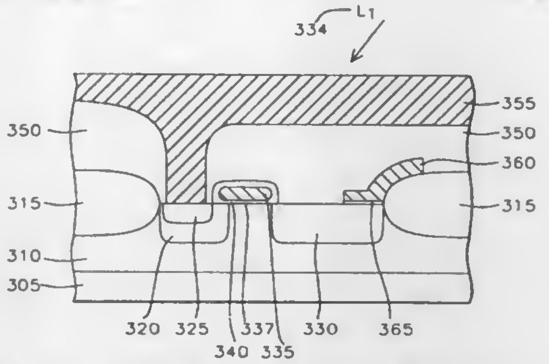
METHOD OF FORMING A NEW BIPOLAR/CMOS PIXEL FOR HIGH RESOLUTION IMAGERS

Min-Hwa Chi, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Nov. 17, 1997, Ser. No. 968,155

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 438—202 **5 Claims**



1. A method to fabricate on a semiconductor substrate having an impurity of a first conductivity of type, an active pixel sensor that will receive a quantum of light energy and convert said quantum to an electronic signal, comprising the steps of:

a) forming a well within said semiconductor substrate by masking areas of said semiconductor substrate and implanting an impurity second conductivity type into said semiconductor substrate;

b) defining an area for said active pixel sensor by growing an field oxide external to said area;

c) forming a photodiode within said well by masking said semiconductor substrate and implanting an impurity of the first conductivity type to form an anode of said photodiode, and whereby said well will be a cathode of said photodiode;

d) forming a bipolar transistor by:

masking said semiconductor substrate and implanting the impurity of the first conductivity type to form a base,

masking said semiconductor substrate and implanting the impurity of the second conductivity type to form an emitter, and

whereby said bipolar transistor has collector that is said well; and;

e) forming a MOS transistor by:

depositing a gate oxide in a channel region between the anode, which will be the drain of said MOS transistor, and the base, which will be source of said MOS transistor, and

depositing a first polysilicon material to form a gate on said gate oxide.

5,854,101

LOW MASK COUNT CMOS PROCESS WITH INVERSE-T GATE LDD STRUCTURE

Shye-Lin Wu, Hsinchu, Taiwan, assignor to Powerchip Semiconductor Corporation, Hsinchu, Taiwan

Filed Apr. 4, 1997, Ser. No. 825,720

Int. Cl.^{6} H01L *21/8238*

U.S. Cl. 438—231 **35 Claims**

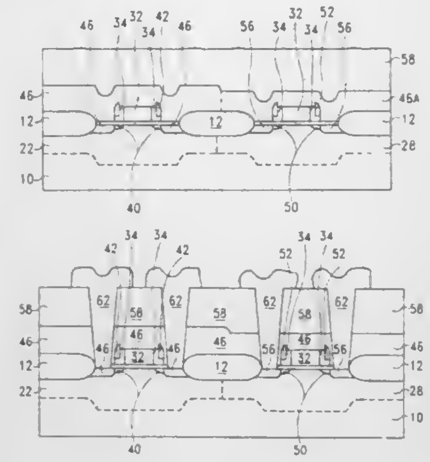
1. A method for fabricating a complementary metal-oxide-semiconductor CMOS device with an inverse-T gate LDD structure, the method comprising:

forming a first photoresist-mask over a substrate, wherein said first photoresist-mask leaves uncovered portions of said substrate defining a first field oxide (FOX) region, a second FOX region and a third FOX region;

forming said first field oxide (FOX) region, said second FOX region and said third FOX region in and on said portions of said substrate left uncovered by said first photoresist-mask

removing said first photoresist-mask;

forming a first oxide layer on said substrate and between said field oxide regions;



forming a first dielectric layer over said first gate oxide layer and on said field oxide regions;

forming a second photoresist-mask over said substrate, wherein said second photoresist-mask covers a portion of said substrate between said second and third FOX regions and does not cover a portion of said substrate between said first and second FOX regions;

forming a first conductivity-well region in said portion of said substrate left uncovered by said second photoresist-mask;

forming a second dielectric layer over said portion of said substrate left uncovered by said second photoresist-mask;

removing said second photoresist-mask while leaving said second dielectric layer intact;

forming a second conductivity-well region in a portion of said substrate left uncovered by said second dielectric layer;

removing said second dielectric layer;

removing said first dielectric layer;

removing said first oxide layer;

forming a second oxide layer on said substrate and between said field oxide regions;

forming a first conductive layer over said second oxide layer;

forming a third photoresist-mask over said first conductive layer, wherein said third photoresist-mask covers portions of said first conductive layer defining a first gate-structure over said first conductivity-well region and a second gate-structure over said second conductivity-well region;

removing portions of said first conductive layer uncovered by said third photoresist-mask;

conformally forming a second conductive layer on said first and second gate-structures, wherein portions of said second conductive layer are on sidewalls of said first and second gate-structures;

forming a fourth photoresist-mask over said second conductive layer, wherein said fourth photoresist-mask covers said second conductivity-well region;

forming second conductivity-lightly-doped source/drain regions in portions of said first conductivity-well region that are not covered by said first gate-structure, said portions of said second conductive layer on said sidewalls of said first gate-structure, and said first and second FOX regions;

forming a third dielectric layer over said second conductive layer;

removing portions of said third dielectric layer and said second conductive layer to form first spacers on said sidewalls of said first gate-structure;

forming second conductivity heavily-doped source/drain regions in portions of said first conductivity-well region that are not covered by said first gate-structure, said first spacers and said first and second FOX regions;

forming a fourth dielectric layer over a portion of said substrate not covered by said fourth photoresist-mask, wherein said first conductivity-well region is covered by said fourth dielectric layer;

removing said fourth photoresist-mask while leaving said fourth dielectric layer intact;

forming first conductivity-lightly-doped source/drain regions in portions of said second conductivity-well region that are not covered by said second gate-structure, said portions of said second conductive layer on said sidewalls of said second gate-structure, and said second and third FOX regions;

forming a fifth dielectric layer over a portion of said second conductive layer covering said second gate-structure;

removing portions of said fifth dielectric layer and said second conductive layer to form second spacers on said sidewalls of said second gate-structure;

forming first conductivity heavily-doped source/drain regions in portions of said second conductivity-well region that are not covered by said second gate-structure, said second spacers and said second and third FOX regions;

forming a sixth dielectric layer on a portion of said substrate not covered by said fourth dielectric layer, wherein said second conductivity-well region is covered by said sixth dielectric layer;

forming a seventh dielectric layer on said sixth dielectric layer and said fourth dielectric layer;

planarizing said seventh dielectric layer;

forming a fifth photoresist-mask over said seventh dielectric layer, wherein portions of said seventh dielectric layer left uncovered by said fifth photoresist-mask define contact windows;

removing portions of said second oxide layer, said fourth dielectric layer, said sixth dielectric layer and said seventh dielectric layer not covered by said fifth photoresist-mask to form contact holes;

forming a third conductive layer on said seventh dielectric layer and in said contact holes;

forming a sixth photoresist-mask over said third conductive layer, wherein portions of said third conductive layer covered by said sixth photoresist-mask define contacts; and

removing portions of said third conductive layer not covered by said sixth photoresist-mask.

5,854,102

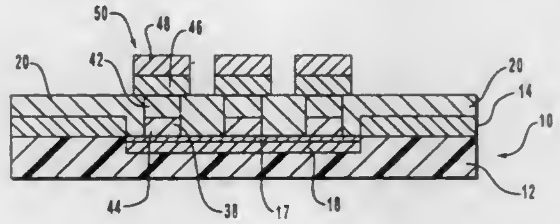
VERTICAL DIODE STRUCTURES WITH LOW SERIES RESISTANCE

Fernando Gonzalez; Tyler A. Lowrey; Trung Tri Doan; Raymond A. Turi, and Graham R. Wolstenholme, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 609,505, Mar. 1, 1996, abandoned. This application Sep. 5, 1997, Ser. No. 932,791

Int. Cl.^{6} H01L *21/8234*

U.S. Cl. 438—237 **19 Claims**



1. A method for forming a diode on a silicon wafer, the silicon wafer having an exposed surface and being doped with a first conductivity type dopant, the method comprising the steps of:

(a) highly doping a portion of the exposed surface of the silicon wafer with a second conductivity type dopant to form an active region;

(b) disposing a first refractory metal silicide layer over said active region;

(c) forming a layer of insulation material over said first refractory metal silicide layer;

(d) etching a diode opening through said layer of insulation material to expose a portion of said first refractory metal silicide layer, said diode opening being defined by an interior surface;

- (e) filling said diode opening with an amorphous silicon to form a silicon plug, said silicon plug comprising a bottom portion contacting said active region and a top portion separated from said active region by said bottom portion;
- (f) lightly doping said amorphous silicon with said second conductivity type of dopant;
- (g) heating said amorphous silicon to convert said amorphous silicon to large grain polysilicon;
- (h) highly doping said top portion of said silicon plug with said first conductivity type of dopant; and
- (i) securing a metal contact onto said top portion of said silicon plug.

5,854,103

MANUFACTURING METHOD OF SELF-ALIGNED SILICIDE LOAD FOR STATIC RANDOM ACCESS MEMORY

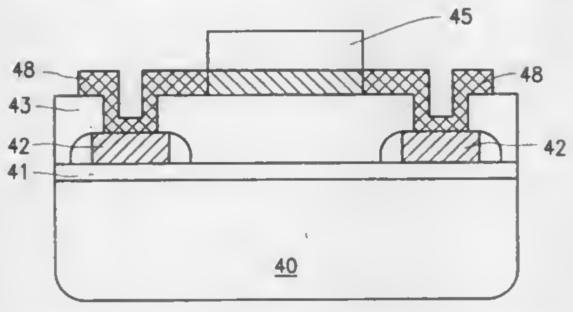
Kuei-Chang Liang, Taipei Hsien, Taiwan, assignor to Winbond Electronics Corporation, Taiwan

Filed Sep. 30, 1997, Ser. No. 941,081

Claims priority, application Taiwan, Aug. 16, 1997, 86111797

Int. Cl.⁶ H01L *21/8244*

U.S. Cl. 438—238 **15 Claims**



1. A method for forming a self-aligned silicide static random access memory load, comprising the steps of:

- Providing a semiconductor substrate having a device layer already formed thereon;
- Forming a first insulating layer over the device layer;
- Etching away portions of the first insulating layer to form an opening exposing portions of the device layer;
- Forming a polysilicon layer over the first insulating layer and the opening;
- Forming a second insulating layer over the polysilicon layer;
- Forming a patterned photoresist layer over the second insulating layer using microlithographic processes;
- Patterning a connector using the patterned photoresist layer;
- Anisotropically etching away portions of the second insulating layer to expose portions of the polysilicon layer;
- Removing the photoresist layer;
- Performing an ion implantation process to dope impurities into the exposed polysilicon layer;
- Forming a metallic layer over the exposed portions of the polysilicon layer and the second insulating layer;
- Forming a metal silicide layer by heating to make the metallic layer react with the polysilicon layer below; and
- Removing any residual metallic layer and the second insulating layer.

5,854,104

PROCESS FOR FABRICATING NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING A FERROELECTRIC CAPACITOR

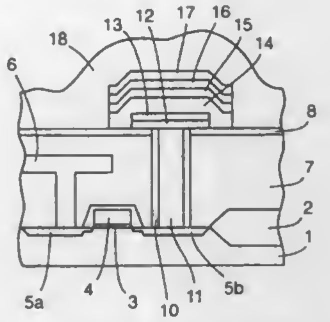
Shigeo Onishi, Nara; Takao Kinoshita, Osaka, and Jun Kudo, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 30, 1997, Ser. No. 791,406

Claims priority, application Japan, Apr. 25, 1996, 8-105421

Int. Cl.⁶ H01L *21/00;21/8242;21/20*

U.S. Cl. 438—240 **12 Claims**



1. A process for fabricating a nonvolatile semiconductor memory device having one transistor and one ferroelectric capacitor electrically connected to each other by a contact plug, which comprising forming a transistor; forming an inter-layer insulating film, at least an upper surface portion thereof being a titanium oxide film; forming a capacitor lower electrode; and forming a capacitor insulating film and a capacitor upper electrode,

wherein the lower electrode forming step comprises:

- depositing a titanium nitride film and a platinum film on the titanium oxide film;
- etching the platinum film with a first etching gas adapted to suppress deposition of substances including platinum; and
- etching the titanium nitride film with a second etching gas having a high etching selectivity to the titanium oxide film.

5,854,105

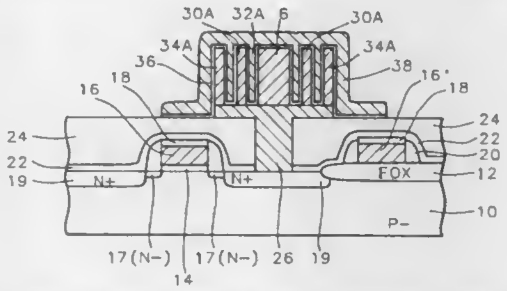
METHOD FOR MAKING DYNAMIC RANDOM ACCESS MEMORY CELLS HAVING DOUBLE-CROWN STACKED CAPACITORS WITH CENTER POSTS

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Nov. 5, 1997, Ser. No. 964,809

Int. Cl.⁶ H01L *21/8242*

U.S. Cl. 438—253 **28 Claims**



1. A method for fabricating a dynamic random access memory (DRAM) device having stacked capacitors comprising the steps of:

- forming field oxide areas on a semiconductor substrate while leaving device areas for fabrication of semiconductor devices;
- forming device structures in and on said device areas of said semiconductor substrate;
- depositing a first insulating layer over said device areas and said field oxide areas;
- depositing a second insulating layer on said first insulating layer;
- planarizing said second insulating layer;

- forming contact openings in said first and second insulating layers to said device areas where electrical contacts are desired for said stacked capacitors; and forming said stacked capacitors by,
- depositing a first polysilicon layer over said device areas and said field oxide areas, said first polysilicon layer filling said contact openings and making contact to said device areas;
- depositing a disposable third insulating layer on said first polysilicon layer;
- patterning by anisotropic plasma etching said third insulating layer to said first polysilicon layer leaving portions of said third insulating layer having vertical sidewalls over said contact openings;
- depositing a second polysilicon layer;
- anisotropically etching back said second polysilicon layer and forming first polysilicon spacers on said sidewalls of said third insulating layer;
- removing selectively said portions of said third insulating layer leaving said first polysilicon spacers on said first polysilicon layer;
- depositing a disposable fourth insulating layer over said first polysilicon spacers and on said first polysilicon layer;
- anisotropically plasma etching back said fourth insulating layer to form inner and outer insulating sidewall spacers on said first polysilicon spacers;
- depositing a third polysilicon layer on said inner and outer insulating sidewall spacers and on said first polysilicon layer;
- anisotropically plasma etching back said third polysilicon layer and said first polysilicon layer, thereby forming second polysilicon spacers on said outer insulating sidewall spacers while retaining said third polysilicon layer between said inner insulating sidewall spacers to form a center post, and further, said etching of said first polysilicon layer electrically isolating from each other bottom electrodes for said stacked capacitors;
- removing selectively said inner and outer insulating sidewall spacers to form said bottom electrodes having said center post;
- forming a capacitor dielectric layer on said bottom electrodes;
- depositing and patterning a fourth polysilicon layer to form top electrodes thereby completing said DRAM device with said stacked capacitors.

5,854,106

METHOD OF FORMING A DATA STORAGE CAPACITOR WITH A WIDE ELECTRODE AREA FOR DYNAMIC RANDOM ACCESS MEMORY

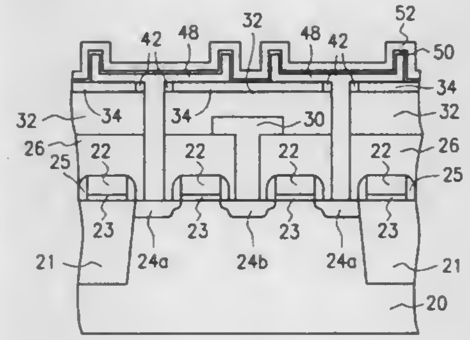
Der-Yuan Wu, Hsinchu, Taiwan, assignor to United Microelectronics, Corp., Hsin-Chu, Taiwan

Filed Jan. 12, 1998, Ser. No. 6,225

Claims priority, application Taiwan, Nov. 25, 1997, 86117700

Int. Cl.⁶ H01L *21/8242*

U.S. Cl. 438—253 **17 Claims**



1. A method of forming a data storage capacitor in a DRAM device, comprising:

- providing a semiconductor substrate; then forming at least one transfer transistor on the substrate, the transfer transistor including a gate and a pair of source/drain regions; and then forming a first sidewall spacer on the sidewall of the gate;
- forming a first oxide layer on the transfer transistor, and then forming a first contact window in the first oxide layer to expose the source of the transfer transistor;
- forming a bit line in the first contact window, which is electrically connected to the source of the transfer transistor;
- forming a second oxide layer which covers both the bit line and the first oxide layer;
- forming a layer of silicon nitride over the second oxide layer;
- forming a third oxide layer over the silicon nitride layer;
- removing selected portions of the third oxide layer and the silicon nitride layer to thereby form an opening which exposes the second oxide layer;
- forming a second sidewall spacer on the sidewall of the opening, which exposes the second oxide layer in the opening;
- forming a photoresist layer which exposes selected portions of the third oxide layer;
- performing an etching process through the photoresist layer until the unmasked portions of the silicon nitride layer, the second oxide layer, and the first oxide layer are removed to thereby form a second contact window which exposes the drain of the transfer transistor;
- removing the photoresist layer;
- forming a polysilicon layer which covers both the silicon nitride layer and the third oxide layer and fills up the second contact window and comes into contact with the drain of the transfer transistor;
- removing those portions of the polysilicon layer that are laid directly over the third oxide layer, allowing the remaining portions of the polysilicon layer to serve as a bottom electrode for the data storage capacitor of the DRAM device;
- removing the third oxide layer until the silicon nitride layer is exposed;
- forming a dielectric layer over the bottom electrode; and
- forming a conductive layer over the dielectric layer, which serves as an upper electrode opposing the bottom electrode for the data storage capacitor of the DRAM device.

5,854,107

METHOD FOR FORMING CAPACITOR OF SEMICONDUCTOR DEVICE

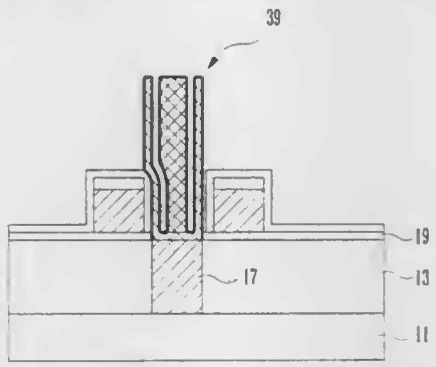
Cheol Soo Park, and Dae Young Kim, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichon-shi, Rep. of Korea

Filed Sep. 5, 1997, Ser. No. 924,843

Claims priority, application Rep. of Korea, Sep. 9, 1996, 1996 38863

Int. Cl.⁶ H01L *21/8242*

U.S. Cl. 438—254 **15 Claims**



1. A method for forming a capacitor of a semiconductor device, comprising the steps of:

- planarizing a structure formed on a semiconductor substrate;
- forming a first storage electrode contact hole through which a region of the semiconductor substrate is exposed and a bit line contact hole, at once;
- burying the first storage electrode contact hole and bit line contact hole with a first conductive layer, to form a contact plug;

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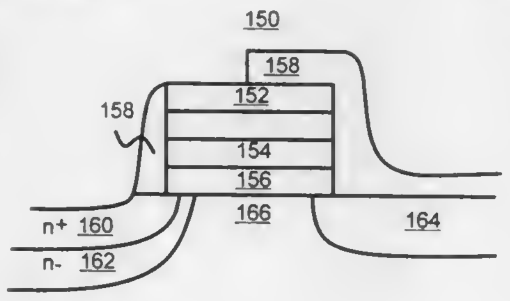
laying a first insulating film at a thickness entirely on the resulting structure from the previous step and forming a bit line over the first insulating film;
forming a second insulating film at a thickness entirely over the resulting structure from the previous step;
depositing a blanket of a third insulating film to planarize the second insulating film;
executing a self alignment contact etch process to form a second storage electrode contact hole through which the contact plug of the first storage electrode contact hole is exposed;
forming a second conductive layer at a thickness entirely over the resulting structure from the previous step;
forming a spacer of a fourth insulating film at a side wall of the second storage electrode contact hole;
burying the second storage electrode contact hole with a third conductive layer;
subjecting the second and the third conductive layers and the fourth insulating film to planarization etch until the third insulating film is exposed; and
eliminating the third insulating film and the fourth insulating film present within the second storage electrode contact hole, to create a storage electrode with a great surface area.

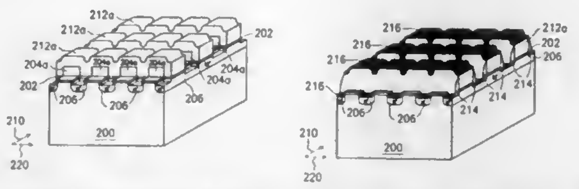
5,854,108
METHOD AND SYSTEM FOR PROVIDING A DOUBLE DIFFUSE IMPLANT JUNCTION IN A FLASH DEVICE
James Hsu, Saratoga; Jian Chen, and Yuan Tang, both of San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 4, 1996, Ser. No. 658,038
Int. Cl.^{6} H01L *21/336*
U.S. Cl. 438—257 **27 Claims**



1. A method for providing a memory cell having a channel comprising the sequential steps of:
(a) providing a junction implant to the memory cell proximate to the channel;
(b) providing a spacer to the memory cell proximate to the junction implant; and
(c) providing a double diffuse implant to the memory cell proximate to the junction implant and the channel, wherein an effective channel length is not substantially reduced.

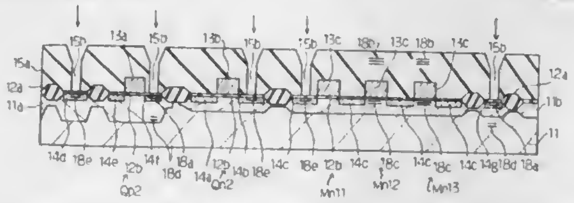
5,854,109
SILICIDE PROCESS FOR MANUFACTURING A MASK ROM
Yi-Chung Sheng, Hsinchu, and Cheng-Hui Chung, Hsinchu Hsien, both of Taiwan, assignors to United Microelectronics Corp., Taiwan
Filed May 27, 1997, Ser. No. 863,626
Claims priority, application Taiwan, Apr. 7, 1997, 86104371
Int. Cl.^{6} H01L *21/8234*
U.S. Cl. 438—275 **10 Claims**

1. A self-aligned silicide process for forming a mask ROM, comprising:
forming a gate oxide layer and a first polysilicon layer, respectively, above a silicon substrate;



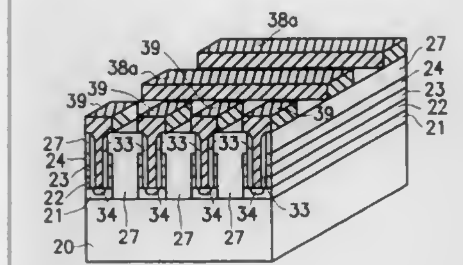
using a photolithographic process to define a pattern on the silicon substrate;
after said using a photolithographic process, implanting ions into the silicon substrate to form a plurality of bit lines on the surface of the silicon substrate, the bit lines extending in a first direction;
etching the first polysilicon layer to form a plurality of polysilicon strips extending in the first direction;
forming a second polysilicon layer above the silicon substrate, and covering both the polysilicon strips and the bit lines;
using photolithographic and etching processes to pattern the second polysilicon layer and the polysilicon strips, and forming a plurality of word lines extending in a second direction that is perpendicular to the first direction;
forming spacers on respective sidewalls of the word lines;
forming a metallic layer above the silicon substrate; and
after said forming a metallic layer, using a high temperature and wet etching technique to form a salicide layer above the bit lines and the word lines.

5,854,110
PROCESS FABRICATING SEMICONDUCTOR DEVICE HAVING TWO ION-IMPLANTATIONS CARRIED OUT BY USING A SHARED PHOTO-RESIST MASK
Masao Kunitou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 28, 1997, Ser. No. 864,429
Claims priority, application Japan, May 28, 1996, 8-156050
Int. Cl.^{6} H01L *21/8234*
U.S. Cl. 438—275 **6 Claims**



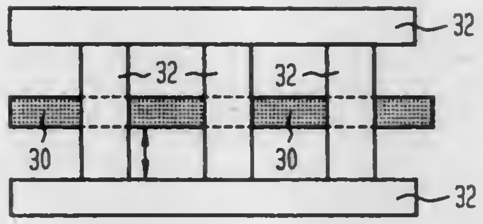
1. A process of fabricating a semiconductor device, comprising the steps of:
a) preparing a semiconductor substrate including
a first impurity region of a first conductivity type formed in a first surface portion thereof,
a second impurity region of a second conductivity type opposite to said first conductivity type formed in a second surface portion of thereof,
a third impurity region of said second conductivity type formed in a third surface portion thereof and
an insulating layer covering said first, second and third impurity regions and having first and second contact holes to which said first and second impurity regions are exposed, respectively;
b) forming an ion-implantation mask on said insulating layer and having first and second openings over said second and third impurity regions, respectively;
c) implanting a first dopant impurity through said first opening and said second contact hole into said second impurity region under a first acceleration energy too small to cause said first dopant impurity to reach said third impurity region so as to form a fourth impurity region of said second conductivity type nested in said second impurity region;
d) implanting a second dopant impurity through said second opening and said insulating layer into said third impurity region under a second acceleration energy too large to cause said second dopant impurity to stop in said second impurity region so as to form a fifth impurity region of said first conductivity type nested in said third impurity region;
e) removing said ion-implantation mask; and
f) implanting a third dopant impurity through said first contact hole into said first impurity region at dose too small to change said fourth impurity region from said second conductivity type to said first conductivity type so as to form a sixth impurity region of said first conductivity type nested in said first impurity region.

5,854,111
ROM DEVICE USING A SCHUCKLY DIODE
Jemmy Wen, Hsinchu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan
Filed Aug. 5, 1997, Ser. No. 906,313
Claims priority, application Taiwan, Mar. 27, 1997, 86103968
Int. Cl.^{6} H01L *21/8234*
U.S. Cl. 438—275 **18 Claims**



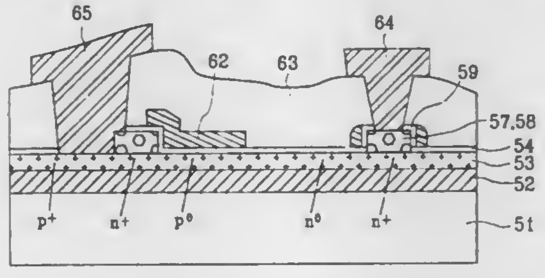
1. A ROM device, comprising:
a plate;
plural bit lines, formed in a first direction on the plate, including a heavily doped layer with a second conductivity type dopant, a lightly doped layer with a first conductivity type dopant, a lightly doped layer with the second conductivity type dopant, and a heavily doped layer with the first conductivity type dopant formed on the plate in order;
a first insulating layer formed on a surface of the plate and the bit lines;
plural first contact windows formed in the bit lines such that the heavily doped layer witn the second conductivity type dopant is exposed at a bottom of the first contact windows;
plural spaced walls formed on side walls of the first contact windows;
plural diffusion regions with the second conductivity type dopant formed in the heavily doped layer with the second conductivity type dopant at the bottom of the first contact windows;
plural second contact windows formed in the first insulating layer such that the heavily doped layer with the first conductivity type dopant is partly exposed at a bottom of the second contact windows;
plural conducting regions formed on the first contact windows, wherein the conducting regions fill the first contact windows and are coupled to the heavily doped layer with the second conductivity type dopant; and
plural word lines, formed in a second direction on a surface of the first insulating layer and filling the second contact windows, wherein the word lines intersect with the bit lines to form plural memory cells and wherein memory cells including filled-in second contact windows are turned-on memory cells and memory cells excluding filled-in second contact windows are turned-off memory cells.

5,854,112
TRANSISTOR ISOLATION PROCESS
Wolfgang H. Krautschneider, Ottobrunn, and Werner M. Klingenstein, Kirchheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Continuation of Ser. No. 408,091, Mar. 21, 1995, abandoned, which is a continuation of Ser. No. 40,319, Mar. 30, 1993, abandoned. This application Nov. 21, 1995, Ser. No. 563,882
Int. Cl.^{6} H01L *21/76*
U.S. Cl. 438—294 **7 Claims**



7. A process for minimizing space requirements for an array of semiconductor devices on a substrate, each semiconductor device including a source, a drain and a gate stack therebetween comprising
sequentially depositing a polysilicon layer, a silicide layer and a protective layer over said substrate,
forming an array of gate stacks by etching said sequential layers,
forming a spacer layer on the sidewalls of each of said gate stacks,
forming first isolation regions between adjacent devices, and
forming second isolation regions between rows of devices, said second isolation regions aligned with said sidewall spacers.

5,854,113
METHOD FOR FABRICATING POWER TRANSISTOR USING SILICON-ON-INSULATOR (SOI) WAFER
Wong-Gu Kang; Jong-Son Lyu, and Sung-Weon Kang, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea
Filed Nov. 1, 1996, Ser. No. 742,157
Int. Cl.^{6} H01L *21/336;21/26*
U.S. Cl. 438—294 **9 Claims**



1. A method for fabricating a power transistor using a silicon-on-insulator (SOI) wafer, said method comprising the steps of:
a first step of forming an SOI layer having a first oxide film and a single crystalline Si thin film by implanting an oxygen ion on the single crystalline substrate and heat-treating the same;
a second step of forming source and drain electrodes of a first poly-crystalline Si film encircled by a third oxide film on the SOI layer;
a third step of forming a shallow junction by ion-implanting with respect to the source and drain electrodes of the first poly-crystalline Si film;
a fourth step of forming a second poly-crystalline Si film by a reactive ion etching method with respect to the third oxide film so as to form a gate electrode; and
a fifth step of ion-implanting a p-type dopant ion using a photoresistive film as a mask so as to supply a voltage to the lower portion of the SOI layer beneath a channel portion.

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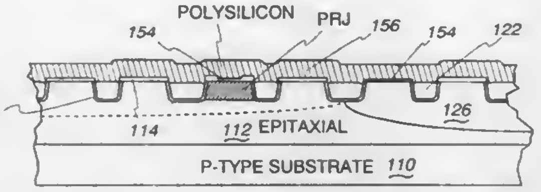
5,854,114
DATA RETENTION OF EEPROM CELL WITH SHALLOW TRENCH ISOLATION USING THICKER LINER OXIDE

Xiao-Yu Li, San Jose; Radu Barsan, Saratoga, and Sunil D. Mehta, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 9, 1997, Ser. No. 947,888
Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—296 **14 Claims**



1. A method for fabricating shallow trench isolation structures for use with non-volatile memory devices to maintain sufficient data retention thereof, comprising the steps of:

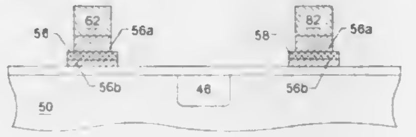
providing a semiconductor substrate;
forming an epitaxial layer on a top surface of said semiconductor substrate;
forming a barrier oxide layer on a top surface of said epitaxial layer;
depositing a nitride layer on a top surface of said barrier oxide layer;
forming trenches through said epitaxial layer and said barrier oxide layer to a depth greater than 4000 Å below the top surface of said epitaxial layer so as to create isolation regions in order to electrically isolate active regions in said epitaxial layer;
forming a liner oxide layer on sidewalls and bottom of said trenches to a thickness between 750 Å to 1500 Å;
filling completely said trenches with a TEOS oxide layer;
removing said TEOS layer down to the top surface of said nitride layer;
planarizing said TEOS oxide layer;
removing said nitride layer; and
forming a non-volatile memory device having a programming junction implant in one of said active regions in said epitaxial layer.

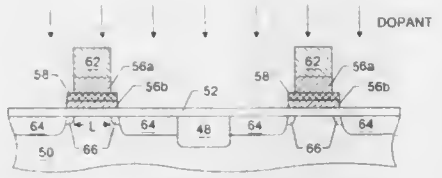
5,854,115
FORMATION OF AN ETCH STOP LAYER WITHIN A TRANSISTOR GATE CONDUCTOR TO PROVIDE FOR REDUCTION OF CHANNEL LENGTH

Mark I. Gardner, Cedar Creek; Daniel Kadosh, and Michael P. Duane, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Filed Nov. 26, 1997, Ser. No. 979,042
Int. Cl.^{6} H01L *21/336*

U.S. Cl. 438—305 **12 Claims**





1. A method for forming a transistor, comprising:

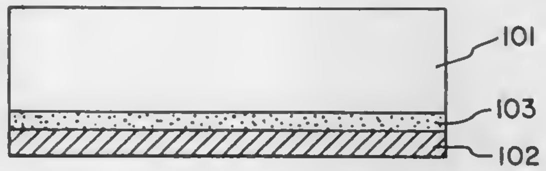
implanting atoms into a region of a gate conductor spaced below an upper surface of the gate conductor, thereby forming an etch stop within said gate conductor;
patterning a masking layer above a select portion of said gate conductor to define a first pair of opposed sidewalls of said masking layer;
removing said gate conductor exclusive of said select portion such that said gate conductor is arranged exclusively underneath said masking layer;
etching said masking layer to define a second pair of opposed sidewalls of said masking layer; and
removing portions of said gate conductor arranged above said etch stop and uncovered by said masking layer.

5,854,116
SEMICONDUCTOR APPARATUS

Tadahiro Ohmi, 1-17-301 Komegabukuro, 2-chome, Sendai-shi, Miyagi-ken 980, Japan; Tadashi Shibata, 19-1393, Aza-Koshizi, Nagamachi, Sendai-shi, Miyagi-ken 980, Japan, and Masaru Umeda, 2-16, Nihonbashi-Muromachi, 4-chome, Chuo-ku, Tokyo 103, Japan

Continuation of Ser. No. 110,329, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 781,077, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 391,560, Jul. 25, 1989, abandoned. This application Apr. 14, 1995, Ser. No. 422,640
Claims priority, application Japan, Jan. 20, 1987, 62-2001
Int. Cl.^{6} H01L *21/20*

U.S. Cl. 438—330 **15 Claims**



1. A method of forming a semiconductor device, comprising the steps of:

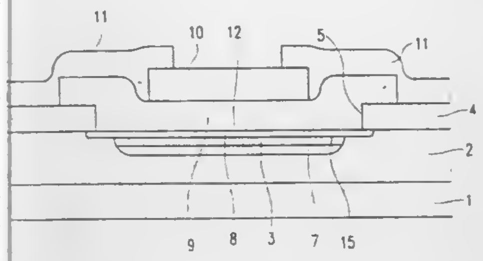
forming a high concentration impurity layer on a first surface of a wafer, wherein the impurity concentration of the impurity layer is higher than that of the wafer;
forming a low resistance layer on a surface of the high concentration impurity layer opposite the wafer;
placing the wafer on a wafer holder such that the low resistance layer contacts the wafer holder and a secure ohmic contact is established between the wafer and the wafer holder; and
forming a thin film on a second surface of the wafer opposite the low resistance layer.

5,854,117
METHOD OF MANUFACTURING A VARICAP DIODE, A VARICAP DIODE, A RECEIVER DEVICE, AND A TV RECEIVER SET

Frederikus R. J. Huisman; Oscar J. A. Buyk, both of Eindhoven, Netherlands, and Wolfgang Bindke, Buchholz, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1996, Ser. No. 715,059
Claims priority, application European Pat. Off., Sep. 18, 1995, 95202519
Int. Cl.^{6} H01L *21/20;21/425*

U.S. Cl. 438—379 **6 Claims**



1. A method of manufacturing a varicap diode comprising providing a silicon substrate with an epitaxial layer of a first conductivity type with a first zone by providing dopant atoms of a first conductivity type in the epitaxial layer and with a second zone adjoining a surface of the epitaxial layer by providing dopant atoms of a second conductivity type opposed to the first in the epitaxial layer, forming a pn junction between the second zone and the first zone, characterized in that the second zone is provided by providing a layer of polycrystalline silicon having dopant atoms of the second conductivity type on the surface, and diffusing the dopant atoms from this layer into the epitaxial layer to form a pn junction at a distance of less than 0.3 μm from the polycrystalline silicon.

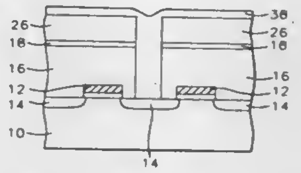
5,854,118
Patent Not Issued For This Number

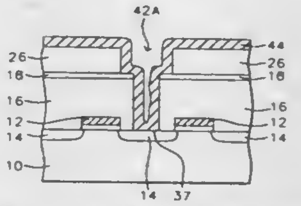
5,854,119
ROBUST METHOD OF FORMING A CYLINDER CAPACITOR FOR DRAM CIRCUITS

James Wu, Tze-Kuan; Yu-Hua Lee, Hsinchu, and Jenn Ming Huang, Hsin-chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Apr. 13, 1998, Ser. No. 58,794
Int. Cl.^{6} H01L *21/20*

U.S. Cl. 438—396 **20 Claims**





1. A method of forming capacitors, comprising the steps of:

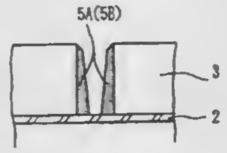
providing a substrate having a contact region;
forming a layer of first dielectric on said substrate;
forming a layer of second dielectric on said layer of first dielectric;
forming a layer of third dielectric on said layer of second dielectric;
etching a first hole having sidewalls in said layer of first dielectric, said layer of second dielectric, and said layer of third dielectric thereby exposing said contact region;
filling said first hole with a protective material;
etching a second hole having sidewalls in said layer of third dielectric, wherein said first hole lies within the periphery of said second hole;
removing the remaining said protective material thereby exposing said contact region;
forming a layer of conductive material on said layer of third dielectric, said sidewalls of said second hole, said sidewalls of said first hole, and said contact region; and
patterning said layer of conductive material thereby forming a first capacitor plate.

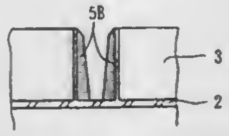
5,854,120
SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Yuichi Urano; Masato Nishizawa; Yoshiyuki Sakai; Naoki Ito, and Shinichi Hashimoto, all of Nagano, Japan, assignors to Fuji Electric Co., Japan

Filed Dec. 17, 1996, Ser. No. 769,031
Claims priority, application Japan, Dec. 18, 1995, 7-328461
Int. Cl.^{6} H01L *21/76*

U.S. Cl. 438—404 **9 Claims**





6. A semiconductor device manufacturing method, comprising the steps of:

forming a first insulating film on a silicon element substrate in an SOI substrate by thermal oxidation of said silicon element substrate, wherein said SOI substrate includes a support substrate, said silicon element substrate, and a separating insulating film between said silicon element substrate and said support substrate;

etching said silicon element substrate to form a trench, said trench having a bottom formed by a portion of said separating insulating film, and at least one side wall formed by at least one portion of said silicon element substrate;

depositing a first polysilicon film upon a surface of said bottom, a surface of each of said at least one side wall of said trench, and said first insulating film;

etching said first polysilicon film on said first insulating film and on said bottom of said trench, using an anisotropic etching technique, to expose said first insulating film and a portion of said bottom, and to leave a portion of said first polysilicon film remaining on said at least one side wall of said trench;

etching and removing said exposed first insulating film; and

oxidizing said portion of said first polysilicon film remaining on said at least one side wall of said trench, to allow growth of a second insulating film isolating said silicon element substrate.

5,854,121

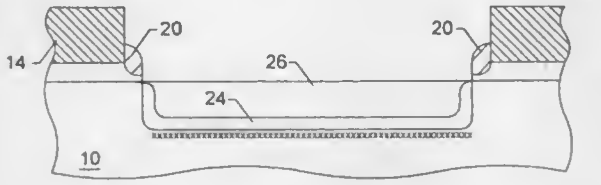
SEMICONDUCTOR FABRICATION EMPLOYING BARRIER ATOMS INCORPORATED AT THE EDGES OF A TRENCH ISOLATION STRUCTURE

Mark I. Gardner, Cedar Creek; H. Jim Fulford, and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Filed Sep. 4, 1997, Ser. No. 923,184

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 438—425 **13 Claims**



1. A method for forming a trench isolation region, comprising:

providing a semiconductor topography comprising a masking layer disposed above a semiconductor substrate, wherein an opening is formed vertically through said masking layer;

forming first and second dielectric spacers laterally adjacent to opposed sidewall surfaces of said opening;

etching a trench within said substrate between said first and second dielectric spacers;

forming dielectric material within said trench and said opening;

removing portions of said dielectric material and said first and second dielectric spacers such that an upper surface of said dielectric material is approximately commensurate with an upper surface of said substrate; and

incorporating barrier atoms in areas of said substrate directly beneath said first and second spacers and laterally adjacent to sidewalls of said trench.

5,854,122

EPITAXIAL LAYER FOR DISSOLVED WAFER MICROMACHINING PROCESS

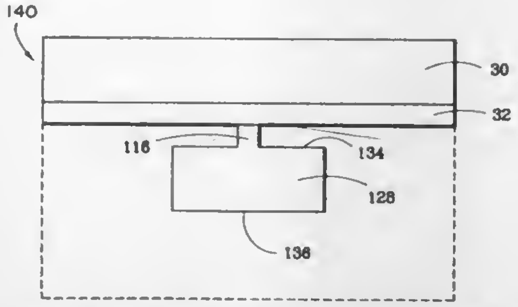
Kenneth Maxwell Hays, Anaheim, Calif.; Bradley Leonard Halleck, Salem, Oreg., and Eugene Coleman Whitcomb, Mission Viejo, Calif., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 13, 1997, Ser. No. 816,651

Int. Cl.^{6} H01L *21/30;21/46*

U.S. Cl. 438—459 **18 Claims**

1. A process comprising the steps of:



(a) creating a doped layer, of a desired thickness and dopant profile, on a surface of a first substrate, the surface having a desired planarity;

(b) etching a fully raised portion on a large patterned structure portion on the doped layer, the remainder of the doped layer being etched away;

(c) bonding the fully raised portion to a second substrate; and

(d) dissolving the first substrate in a process which does not dissolve the doped layer or the second substrate;

the large patterned structure portion thereby forming a patterned layer of desired thickness and dopant profile, the large patterned structure portion thereby being bonded to the second substrate by the fully raised portion, and the large patterned structure portion having a surface of desired planarity.

5,854,123

METHOD FOR PRODUCING SEMICONDUCTOR SUBSTRATE

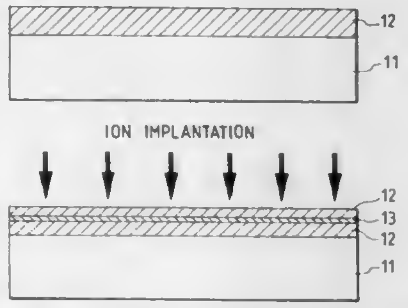
Nobuhiko Sato, Yokohama; Takao Yonehara, Atsugi, and Kiyofumi Sakaguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1996, Ser. No. 729,722

Claims priority, application Japan, Oct. 6, 1995, 7-260100; Oct. 4, 1996, 8-264386

Int. Cl.^{6} H01L *21/76*

U.S. Cl. 438—507 **36 Claims**



1. A semiconductor substrate producing method comprising:

forming a first porous Si layer on at least one surface of a Si substrate; and

forming a second layer having a larger porosity than the first porous Si layer at a constant depth from a surface of said porous Si in said first porous Si layer.

5,854,124

METHOD FOR OPENING CONTACTS OF DIFFERENT DEPTHS IN A SEMICONDUCTOR WAFER

Benjamin Szu-Min Lin, Chia-Yi, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

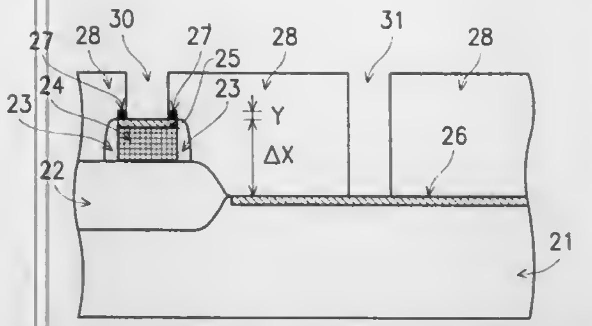
Filed Jun. 24, 1997, Ser. No. 881,775

Claims priority, application Taiwan, Feb. 4, 1997, 86101355

Int. Cl.^{6} H01L *21/4763*

U.S. Cl. 438—620 **14 Claims**

1. A method for opening contacts of different depths in a semiconductor wafer after salicide processing, comprising the steps of:



forming a sacrificial layer over said semiconductor wafer wherein said semiconductor wafer further includes a first silicide layer and a second silicide layer formed thereon;

selectively removing said sacrificial layer such that only a portion of said sacrificial layer remains on said first silicide layer;

forming an interlayer dielectric layer over said semiconductor wafer;

planing said interlayer dielectric layer;

patterning contact windows; and

opening contacts to reveal said first silicide layer and said second silicide layer as contacts;

wherein a first position where said first silicide layer is formed is higher than a second position where said second silicide layer is formed.

5,854,125

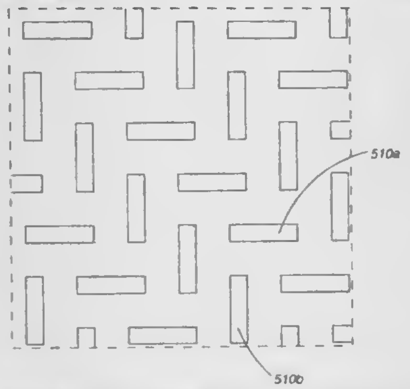
DUMMY FILL PATTERNS TO IMPROVE INTERCONNECT PLANARITY

Jerry L. Harvey, San Antonio, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 24, 1997, Ser. No. 803,809

Int. Cl.^{6} H01L *21/463*

U.S. Cl. 438—626 **20 Claims**



1. In the manufacture of integrated circuits, a method of processing a semiconductor wafer having at least one integrated circuit, the method comprising the steps of:

forming a multiplicity of active conductive traces on a substrate of the wafer, the active conductive traces each being arranged to electrically couple associated elements of an associated integrated circuit on the wafer, there being gaps exceeding a threshold distance between at least some adjacent ones of the traces;

forming a multiplicity of dummy surfaces on the substrate in the gaps, wherein the dummy surfaces are not arranged to electrically couple any elements in the integrated circuit, the dummy surfaces being arranged in a micro-pattern configured to inhibit a flow of a spin-on glass;

depositing a dielectric layer over the active conductive traces to electrically insulate the active conductive traces;

spinning a layer of glass over the dielectric layer to provide a planar surface on the wafer, the glass layer being superimposed over the active conductive traces and the dummy surfaces, wherein the dummy surfaces that are arranged in the micro-pattern inhibit the flow of the layer of glass to provide an even coating of the glass layer over the dielectric layer so as to provide the planar surface on the wafer; and

etching the glass layer to expose at least portions of the dielectric layer.

5,854,126

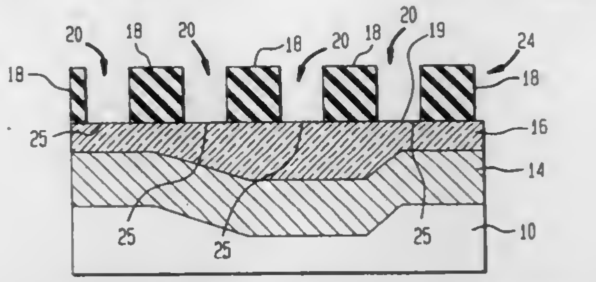
METHOD FOR FORMING METALLIZATION IN SEMICONDUCTOR DEVICES WITH A SELF-PLANARIZING MATERIAL

Dirk Tobben, Fishkill; Bruno Spuler, Wappingers Falls; Martin Gutsche, Poughkeepsie, all of N.Y., and Peter Weigand, Unterhaching, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 31, 1997, Ser. No. 829,257

Int. Cl.^{6} H01L *21/469;21/312*

U.S. Cl. 438—626 **3 Claims**



1. A method for forming a plurality of electrically conductive wires on a substrate, comprising the steps of:

forming a relatively non-planar metal layer over a surface of the substrate;

depositing a self-planarizing material over the surface of the metal layer to form a planarization layer having a surface relatively planar compared to the relative non-planar metal layer, said planarization layer being formed by spinning on the self-planarizing material which comprises hydrogensilseguioxane;

depositing a photoresist layer over the surface of the planarization layer; patterning the photoresist layer, the patterned photoresist layer forming a mask to selectively expose portions of the planarization layer;

etching grooves into the exposed portion of the planarization layer and portions of the non-planar metal layer underneath the exposed portions of the planarization layer to form the plurality of electrically conductive wires, wherein the wires are separated by the grooves.

5,854,127

METHOD OF FORMING A CONTACT LANDING PAD

Pai-Hung Pan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 13, 1997, Ser. No. 816,645

Int. Cl.^{6} H01L *21/8242*

U.S. Cl. 438—629 **1 Claim**

1. A method of forming a self-aligned contact landing pad, comprising:

providing a substrate having a plurality of gates with top and sidewall surfaces;

insulating the top and sidewall surfaces of the gates, and wherein a nitride cap having an outwardly facing surface is provided atop the top surface of each of the gates;

forming a dielectric layer outwardly of the substrate and over the insulated top and sidewall surfaces of each of the gates;

etching a contact opening between an adjacent pair of gates through the dielectric layer to the substrate, the etching effectively exposing the insulated sidewall surfaces of the adjoining pair of gates;

forming a layer of polysilicon in the contact opening, the layer of polysilicon substantially filling the entire contact opening

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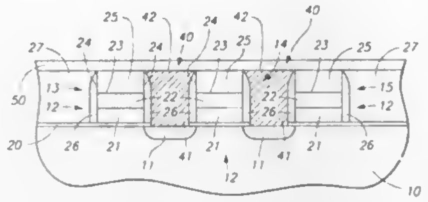
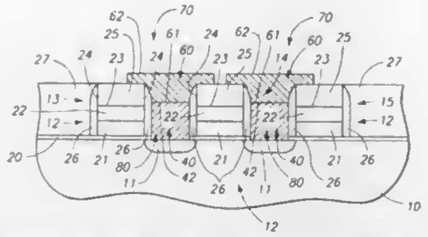




and having an outer surface which is substantially coplanar with the outwardly facing surface of the nitride cap which is provided atop each of the gates, and wherein the polysilicon layer spans between the pair of adjacent gates, and is in immediate contact therewith, and wherein the layer of polysilicon spanning between the adjoining gates has a given surface area;

forming a metal layer over the layer of polysilicon, and the adjoining pair of gates, the metal layer laying in immediate contact with the nitride caps provided atop each of the gates;

providing conditions effective to react the metal layer and the polysilicon layer to form a silicide layer, and wherein the silicide layer grows laterally outwardly and is disposed in partial covering relation relative to the nitride caps which are positioned on each of the adjoining gates, and further grows into the contact opening in a fashion wherein the silicide layer is located elevationally inwardly relative to the outwardly facing surface of the nitride caps; and

after providing the silicide layer, removing any unreacted metal layer material from the substrate to form discrete landing pads which have a given surface area, and wherein the surface area of the respective landing pads are greater than the surface area of the polysilicon spanning between the adjacent gates.

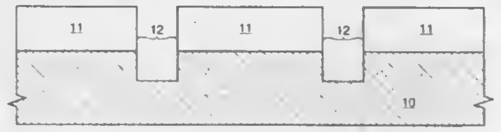
5,854,128
METHOD FOR REDUCING CAPACITIVE COUPLING BETWEEN CONDUCTIVE LINES

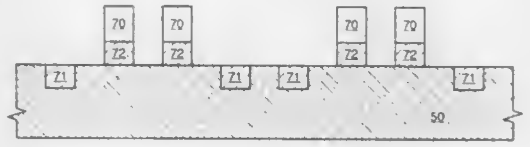
Kin F. Ma, and Eric T. Stubbs, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 29, 1996, Ser. No. 641,154

Int. Cl.⁶ H01L ***21/4763***

U.S. Cl. 438—631 **15 Claims**





1. A method for forming a plurality of conductive lines for a semiconductor device, said process comprising the steps of:

forming a planar insulating layer;

forming a plurality of trenches in said planar insulating layer, each trench having a height defined by sidewalls and a width spanning said sidewalls;

forming a conductive layer over the surface of said planar insulating layer and thereby filling said trenches;

removing sections of said conductive layer to simultaneously form a first set of conductive lines and a second set of conductive lines, said first set of conductive lines formed from a plurality of individual conductive lines, each conductive line residing at least partially in and making contact to the sidewalls of a corresponding trench, said second set of conductive lines formed from a plurality of individual conductive lines residing on the surface of said planar insulating layer, said first and second sets of conductive lines being patterned in a repeating alternating pattern such that said second set of conductive lines are completely vertically offset from said first set of conductive lines and wherein the bottom surfaces of said second set of conductive lines are no lower than the top surfaces of said first set of conductive lines.

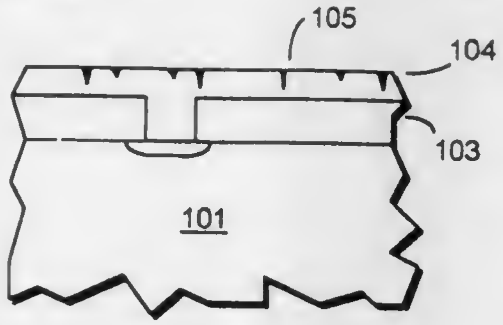
5,854,129
LOW SCRATCH DENSITY CHEMICAL MECHANICAL PLANARIZATION PROCESS

Gurtej S. Sandhu, and Sujit Sharan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 474,311, Jun. 7, 1995, abandoned. This application Jun. 13, 1997, Ser. No. 874,779

Int. Cl.⁶ A01L ***21/304***

U.S. Cl. 438—633 **15 Claims**



1. A chemical mechanical planarization (CMP) process comprising the steps of:

providing a substrate having one or more layers to be polished;

initially polishing the one or more layers at a first polishing rate for a first period of time; and

finally polishing the one or more layers at a second polishing rate, which is different from the first polishing rate, for a second period of time wherein the first period of time is approximately three minutes and the second period of time is greater than two minutes.

5,854,130
METHOD OF FORMING MULTILEVEL INTERCONNECTS IN SEMICONDUCTOR DEVICES

Fu-Liang Yang, Tai Nan, and Yin Chen, Hsinchu, both of Taiwan, assignors to Vanguard International Semiconductor Corp., Taiwan

Filed May 28, 1997, Ser. No. 864,073

Claims priority, application Taiwan, Nov. 20, 1996, 85114292

Int. Cl.⁶ H01L ***21/4763***

U.S. Cl. 438—637 **7 Claims**

1. A method for forming multilevel interconnects in a semiconductor IC device, comprising the steps of:

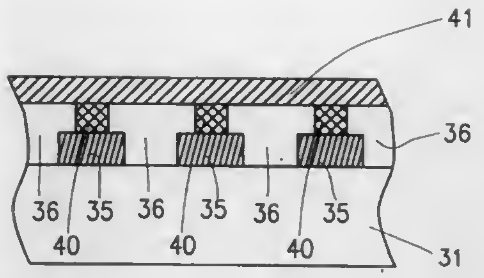
(1) preparing a substrate, and then forming an insulating layer over the substrate;

(2) forming a first conductive layer over the insulating layer;

(3) selectively removing part of the first conductive layer so as to form a plurality of conductive interconnects;

(4) forming a dielectric layer over the conductive interconnects;

(5) forming a photoresist layer over the dielectric layer, the areas uncovered by the photoresist layer being the locations where a plurality of via holes are to be formed;



(6) conducting an etching process on the photoresist layer and the dielectric layer until the photoresist layer is completely removed, the removed portions of the dielectric layer forming the via holes;

(7) depositing a second conductive layer in the via holes to form a plurality of via plugs; and

(8) forming a third conductive layer over the wafer.

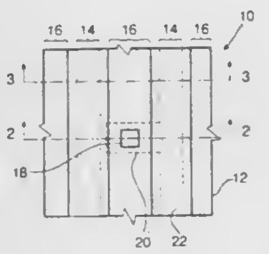
5,854,131
INTEGRATED CIRCUIT HAVING HORIZONTALLY AND VERTICALLY OFFSET INTERCONNECT LINES

Robert Dawson, Austin; Mark W. Michael, Cedar Park; Basab Bandyopadhyay, Austin; H. Jim Fulford Jr., Austin; Fred N. Hause, Austin, and William S. Brennan, Austin, all of Tex., assignors to Advanced Micro Devices, Inc.

Filed Jun. 5, 1996, Ser. No. 655,245

Int. Cl.⁶ H01L ***21/44***

U.S. Cl. 438—666 **10 Claims**



1. A method for forming a multilevel interconnect structure, comprising:

forming a first conductor upon a semiconductor topography, wherein said first conductor comprises an elongated portion and a pad portion extending coplanar with the elongated portion along an axis perpendicular to the elongated portion;

spin on depositing an organic material upon said first conductor and thereafter curing said organic material to form a first dielectric having a dielectric constant less than 3.5;

depositing a silane or TEOS based material upon said first dielectric to form a second dielectric;

etching through select regions of said first and second dielectrics to only said pad portion of the first conductor to form a via;

filling said via with a metallic material to form a contact having an upper surface commensurate with an upper surface of said second dielectric; and

forming a second conductor in a region directly above said pad portion in electrical communication with said contact.

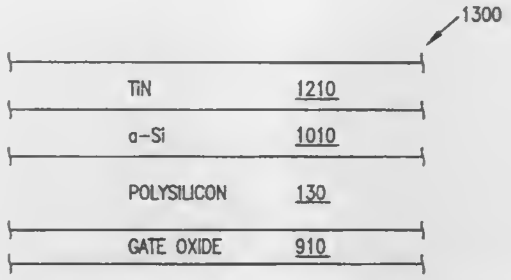
5,854,132
METHOD FOR EXPOSING PHOTORESIST

Shekhar Pramanick, Fremont; Scott Luning, Menlo Park, and Jonathon Fewkes, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 29, 1994, Ser. No. 346,041

Int. Cl.⁶ H01L ***21/465***

U.S. Cl. 438—669 **4 Claims**



1. A method for patterning a polysilicon layer using a photoresist layer above said polysilicon layer, said method comprising the steps of:

providing a layer of amorphous silicon on the surface of said polysilicon layer;

providing a layer of antireflective material over said layer of amorphous silicon; and

providing said photoresist layer on said layer of antireflective material,

wherein said step of providing said layer of antireflective material comprises the step of providing a titanium nitride layer.

5,854,133
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

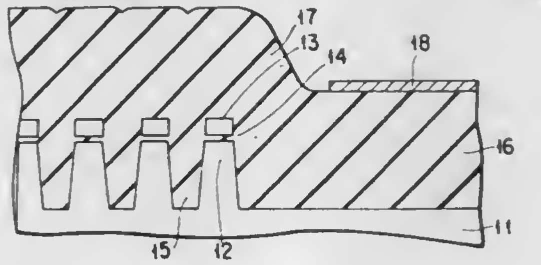
Takayo Hachiya, Yokohama; Moto Yabuki, Tokyo, and Hiroyuki Kamijou, Yokkaichi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 15, 1996, Ser. No. 698,200

Claims priority, application Japan, Aug. 30, 1995, 7-222149

Int. Cl.⁶ H01L ***21/463;21/302***

U.S. Cl. 438—692 **9 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

preparing a semiconductor substrate having a projection at a first part;

forming an intermediate film on the surface of the substrate;

forming a first protection film on a top surface of said projection on said intermediate film;

forming a buried insulation film covering said substrate and said first protection film;

forming a second protection film at a level higher than a top surface of said first protection film and on that part of said buried insulation film which is located above a part of said substrate which is other than said first part;

polishing said buried insulation film by chemical mechanical polishing using said second protection film as a stopper, thereby easing irregularities of a polished surface of said buried insulation film;

removing said second protection film;

polishing said buried insulation film by chemical mechanical polishing using said first protection film as a stopper, thereby flattening a polished surface of said buried insulation film.

5,854,134

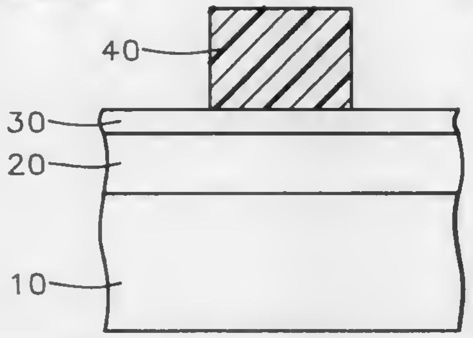
PASSIVATION LAYER FOR A METAL FILM TO PREVENT METAL CORROSION

Chao-Yi Lan; Shean-Ren Horng, both of Hsinchu; Yun-Hung Shen, and Hung-Jen Tsai, both of Taipei, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed May 5, 1997, Ser. No. 851,399

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 438—695 **22 Claims**



1. A method of fabricating corrosion free metal lines comprising:
a) forming a metal layer over a semiconductor structure; said metal layer having an exposed surface and a bottom surface over said semiconductor structure;
b) before forming any other layers or performing any intervening operations to said metal layer; treating said metal layer with a F-containing plasma forming a passivation layer on the entire exposed surface of said metal layer; whereby said passivation layer prevents corrosion of said metal layer while in storage or before a metal etch.

5,854,135

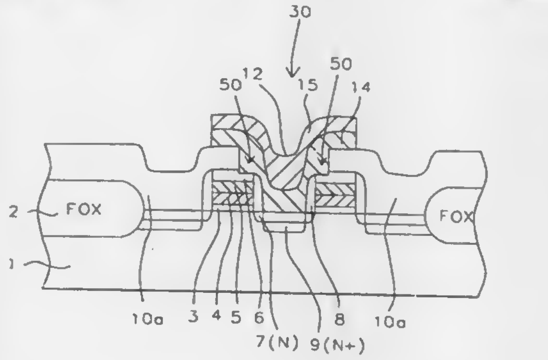
OPTIMIZED DRY ETCHING PROCEDURE, USING AN OXYGEN CONTAINING AMBIENT, FOR SMALL DIAMETER CONTACT HOLES

Jun-Cheng Ko, Taichung, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Apr. 9, 1997, Ser. No. 835,579

Int. Cl.^{6} H01L *21/302;21/461*

U.S. Cl. 438—712 **10 Claims**



1. A method for fabricating a MOSFET device, on a semiconductor substrate, using a small diameter SAC opening in an insulator layer, in a first region of said semiconductor substrate, to expose a source and drain region of said MOSFET device, with said small diameter SAC opening created via a RIE procedure, using oxygen as part of the RIE ambient, and monitoring the RIE end point of said small diameter SAC opening, using optical ellipsometry procedures, performed on a large area test site, in a second region of said semiconductor substrate, comprising the steps of:
forming field oxide regions in said semiconductor substrate;
growing a gate insulator layer on said semiconductor substrate;
depositing an in situ doped, first polysilicon layer, on said gate insulator layer;
depositing a first tungsten silicide layer, on said first polysilicon layer;
depositing a first silicon oxide layer on said first tungsten silicide layer;
patterning of said first silicon oxide layer, of said first tungsten silicide layer, and of said first polysilicon layer, to from polycide gate structures on underlying, said gate insulator layer in said first region of said semiconductor substrate;
ion implanting a first conductivity imparting dopant into said first region of said semiconductor substrate, not covered by said polycide gate structures, to form a lightly doped source and drain region;
depositing a second silicon oxide layer;
anisotropic etching of said second silicon oxide layer to form silicon oxide spacers on the sides of said polycide gate structures;
ion implanting a second conductivity imparting dopant into said first region of said semiconductor substrate, not covered by said polycide gate structures, and not covered by said silicon oxide spacers, to form said heavily doped source and drain region in region between said polycide gate structures;
depositing a third silicon oxide layer;
forming a photoresist shape on said third silicon oxide layer, comprised of a first opening, with a diameter between about 0.4 to 0.6 uM, exposing a region of said third silicon oxide layer, residing in said first region of said semiconductor substrate, and comprised of a second opening, with a diameter between about 40 to 50 uM, exposing a region of said third silicon oxide layer, residing in said second region of said semiconductor substrate:
performing an initial phase of a reactive ion etching procedure, using C_4F_8—CO—Ar, with the addition of between about 1 to 20 sccm of oxygen, resulting in a first polymer layer, comprised of carbon and fluorine, deposited on said third silicon oxide layer, exposed in said first opening, in said photoresist shape, and depositing a second polymer layer, comprised of carbon and fluorine, on said third silicon oxide layer, exposed in said second opening, in said photoresist shape, with the thickness of said second polymer layer, equal to the thickness of said first polymer layer;
performing a final phase of said reactive ion procedure, using C_4F_8—CO—Ar, with the addition of between about 1 to 20 sccm of oxygen, to simultaneously remove said first polymer layer, and said third silicon oxide layer, exposed in said first opening, in said photoresist shape, creating said small diameter SAC opening, between about 0.4 to 0.6 uM in diameter, in said first region of said semiconductor substrate, exposing said heavily doped source and drain region, and removing said second polymer layer, and said third silicon oxide layer, exposed in said second opening in said photoresist shape, creating a large opening between about 40 to 50 uM in diameter, in said second region of said semiconductor substrate, used for ellipsometric measurements to determine said RIE endpoint;
removal of said photoresist shape;
depositing a second polysilicon layer, including deposition on said heavily doped source and drain region, exposed in said small diameter SAC opening;
deposition of a second tungsten silicide layer on said second polysilicon layer; and
patterning of said second tungsten silicide layer, and of said second polysilicon layer, to create a polycide, self-aligned contact, (SAC), structure, completely overlying said small diameter SAC opening, and with said polycide SAC structure partially overlying a portion of said polysilicon gate structures, in regions where said polycide gate structures are adjacent to said small diameter, SAC opening.

5,854,136

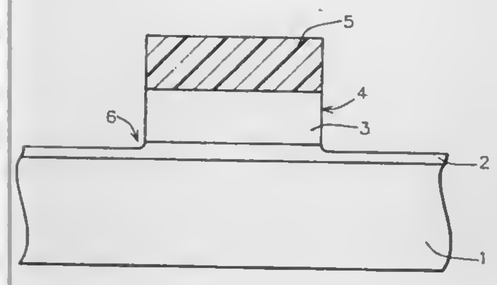
THREE-STEP NITRIDE ETCHING PROCESS FOR BETTER CRITICAL DIMENSION AND BETTER VERTICAL SIDEWALL PROFILE

Shih Chang Huang; Yuh Da Fan, and Yung-Jung Chang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Mar. 25, 1996, Ser. No. 620,732

Int. Cl.^{6} B44C *1/22*

U.S. Cl. 438—714 **20 Claims**



1. A three-step method of etching silicon nitride layers over pad oxides in semiconductor integrated circuits, comprising the steps of:
a first step of a main etch (ME1) using a reactive gas mixture of SF_6, CHF_3 and He, to remove 80% to 90% of the silicon nitride layer;
a second step of a main etch (ME2) using a reactive gas mixture of HBr, SF_6 and He to remove the remainder, except for any remaining residues, of the silicon nitride layer: and
a third step of an over-etch (OE), to remove any of the remaining residues of silicon nitride.

5,854,137

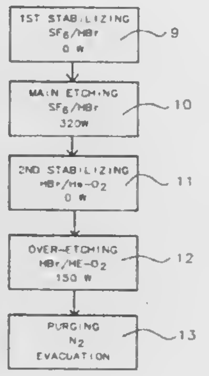
METHOD FOR REDUCTION OF POLYCIDE RESIDUES

So Wein Kuo, Hsin-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-chu, Taiwan

Filed Apr. 29, 1996, Ser. No. 638,666

Int. Cl.^{6} H01L *21/3065*

U.S. Cl. 438—714 **18 Claims**


1ST STABILIZING SF6/HBr 0 W
9
MAIN ETCHING SF6/HBr 320W
10
2ND STABILIZING HBr/He-O2 0 W
11
OVER-ETCHING HBr/HE-O2 150 W
12
PURGING N2 EVACUATION
13

1. A method of etching polycide layers on a semiconductor substrate comprising:
introducing reactive gases into a reactor chamber in which said substrate is located:
sustaining an electrical plasma therein by RF power input and a magnetic field:
subtractively etching said polycide layers: and
then purging said reactor chamber with a non-reactive gas, wherein the flow rate of the non-reactive gas is between about 50 and 150 sccm.

5,854,138

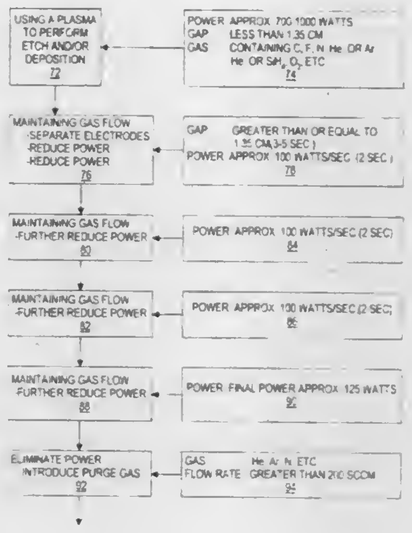
REDUCED-PARTICLE METHOD OF PROCESSING A SEMICONDUCTOR AND/OR INTEGRATED CIRCUIT

Peter Roth, and Hector A. Molinar, both of Austin, Tex., assignors to Cypress Semiconductor Corp.

Filed Jul. 29, 1997, Ser. No. 902,574

Int. Cl.^{6} H01L *21/00;* B44C *1/22*

U.S. Cl. 438—714 **17 Claims**


USING A PLASMA TO PERFORM ETCH AND/OR DEPOSITION 72
POWER APPROX 700-1000 WATTS
GAP LESS THAN 1.35 CM
GAS CONTAINING C, F, N, He, OR Ar He OR SiH4, O2 ETC
74
MAINTAINING GAS FLOW -SEPARATE ELECTRODES -REDUCE POWER -REDUCE POWER 76
GAP GREATER THAN OR EQUAL TO 1.35 CM(3-5 SEC)
POWER APPROX 100 WATTS/SEC (2 SEC)
78
MAINTAINING GAS FLOW -FURTHER REDUCE POWER 80
POWER APPROX 100 WATTS/SEC (2 SEC) 84
MAINTAINING GAS FLOW -FURTHER REDUCE POWER 82
POWER APPROX 100 WATTS/SEC (2 SEC) 86
MAINTAINING GAS FLOW -FURTHER REDUCE POWER 88
POWER FINAL POWER APPROX 125 WATTS 90
ELIMINATE POWER INTRODUCE PURGE GAS 92
GAS He Ar N ETC
FLOW RATE GREATER THAN 200 SCCM
94

1. A method for reducing particulates derived from within a processing tool, comprising:
providing a processing tool comprising a pair of biased electrodes;
removing a first amount of power from said electrodes while separating said electrodes; and
removing a second amount of power from said electrodes.

5,854,139

ORGANIC FIELD-EFFECT TRANSISTOR AND PRODUCTION THEREOF

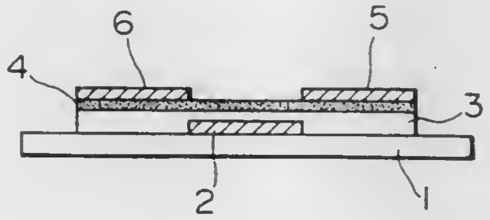
Sukekazu Aratani, Hitachi; Katsumi Kondo, Hitachinaka, and Shuichi Ohara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 495,700, Jun. 27, 1995, Pat. No. 5,705,826. This application Sep. 10, 1997, Ser. No. 926,498

Claims priority, application Japan, Jun. 28, 1994, 6-146004

Int. Cl.^{6} H01L *21/31*

U.S. Cl. 438—780 **8 Claims**



8. A process for producing a field-effect transistor comprising patterning a semiconductor layer constituted of a conjugated oligomer having an ionization potential of 4.8 eV or above through a partial conversion of the semiconductor layer to an insulating material by the method of ultraviolet irradiation.

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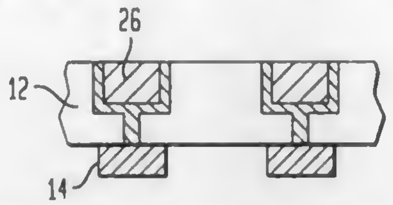
5,854,140
METHOD OF MAKING AN ALUMINUM CONTACT

Mark A. Jaso, Yorktown Heights, N.Y.; Herbert Palm, Hehenkirchen-Siegertsbrunn, and Hans Werner Poetzlberger, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1996, Ser. No. 764,382

Int. Cl.^{6} H01L *21/302*

U.S. Cl. 438—740 **11 Claims**



1. A method of forming aluminum contacts in an integrated circuit comprising:
- a) providing a silicon dioxide layer over a portion of the surface of a semiconductive substrate;
- b) forming vias in the silicon dioxide layer;
- c) depositing a photoresist layer on the silicon dioxide layer and patterning the photoresist layer to form openings above the vias and larger than the vias;
- d) partially etching through the silicon dioxide layer to form openings in the silicon dioxide layer larger than the vias and removing the photoresist layer;
- e) depositing a metal stop layer over the silicon dioxide layer and at least part of the sidewalls of the vias and openings, said metal being one that will selectively resist chemical-mechanical polishing that will erode silicon dioxide and aluminum;
- f) depositing a layer of aluminum over the metal stop layer so that vias and openings are filled;
- g) chemical-mechanical polishing the aluminum layer down to the metal stop layer; and
- h) removing said metal stop layer where not covered by the aluminum layer.

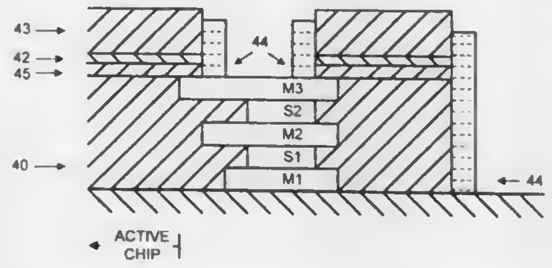
5,854,141
INORGANIC SEAL FOR ENCAPSULATION OF AN ORGANIC LAYER AND METHOD FOR MAKING THE SAME

John Edward Cronin, Milton, Vt., and Barbara Jean Luther, Cold Spring, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 724,877, Oct. 3, 1996. This application Sep. 30, 1997, Ser. No. 941,447

Int. Cl.^{6} H01L *21/31;21/469*

U.S. Cl. 438—763 **9 Claims**



1. A method for passivation of an integrated circuit device, the method steps comprising:
- providing a first layer of an inorganic insulator;
- depositing a layer of an organic insulator over said first layer of said inorganic insulator to form an insulating layer;
- depositing a second layer of an inorganic layer on said layer of an organic insulator;
- etching openings in said first inorganic insulator layer and said organic insulator layer;
- depositing a third layer of an inorganic layer over said etched layers;
- etching said third layer thereby forming an inorganic-to-inorganic seal to seal said organic layer.

5,854,142
LAMINATED PLATE MATERIAL AND LOOM HARNESS FRAME MANUFACTURED THEREFROM

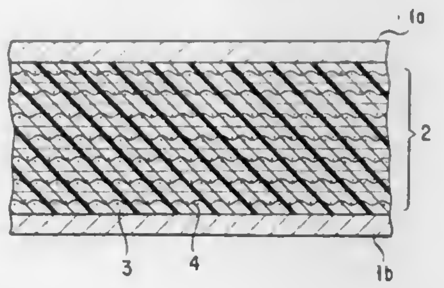
Hirokazu Inoguchi; Mikiya Fujii, both of Fukushima; Haruo Matsushima, Kurobe; Yoshinori Masuda, and Yoshiharu Tanaka, both of Toyama-ken, all of Japan, assignors to YKK Corporation, Tokyo, Japan

Filed May 16, 1996, Ser. No. 649,076

Claims priority, application Japan, May 17, 1995, 7-141376

Int. Cl.^{6} D03C *9/06*

U.S. Cl. 442—233 **7 Claims**



1. A harness frame for a loom, comprising a harness frame body defined by a laminated plate material, said laminated plate material comprising (a) a composite material layer having opposed major surfaces and (b) metallic layers superposed on each of said opposed major surfaces, said composite material layer comprising a resin matrix selected from the group consisting of polyamides, polycarbonates, polypropylene, polyphenylene sulfide, polyphenylene oxide and polyesters; and from about 30 to about 75% by weight, based on the weight of the composite material layer of a plurality of reinforcing sheet layers, each sheet layer comprising reticularly woven reinforcing fibers, the reinforcing sheet layers being embedded in the resin matrix substantially parallel to each other.

5,854,143
MATERIAL FOR ANTIBALLISTIC PROTECTIVE CLOTHING

Dieter Hans Peter Schuster, and Achim Gustav Fels, both of Wuppertal, Germany, assignors to Akzo Nobel NV, Arnhem, Netherlands

Continuation of Ser. No. 347,112, Nov. 23, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 794,540

Claims priority, application Germany, Nov. 25, 1993, 43 40 172.4

Int. Cl.^{6} B32B *7/00;3/26*

U.S. Cl. 442—135 **10 Claims**

1. A material for protective clothing comprising a plurality of layers integrated into said protective clothing in a form of a package or a laminate, wherein at least one layer of said plurality of layers consists of a flat structure having dilatant properties and the flat structure consists of:
- at least one organic compound which imparts the dilatant properties to the flat structure and
- a member selected from the group consisting of a textile member and a non-textile member,
- wherein the member is saturated or charged with the at least one organic compound.

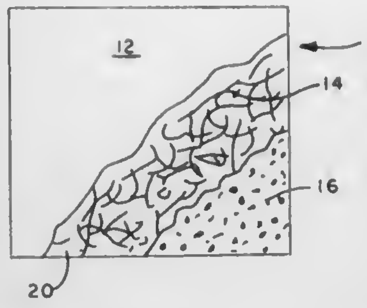
5,854,144
CUSHIONED LINER LAMINATE

James K. Hawley, Sheffield Village, Ohio, assignor to Munco, Inc., Avon, Ohio

Filed Nov. 10, 1997, Ser. No. 964,194

Int. Cl.^{6} B32B *5/18;5/24*

U.S. Cl. 442—56 **9 Claims**



1. A nonslip, nonadhesive multilayer sheet material for covering household surfaces comprising:
- a thin continuous non-woven fiber sheet having a top face and a bottom face;
- a continuous uniform foam plastic layer permanently fixed to said non-woven fiber sheet bottom face; and,
- a thin continuous sheet top layer adhesively bound to said non-woven fiber sheet top surface.

5,854,145
CORROSION INHIBITOR SOLUTION APPLICATOR

Christophe Chandler, Woodbury; Margarita Kharshan, Little Canada; Dan L. Dusing, Moundsview, and Paul Jaeger, St. Paul, all of Minn., assignors to Cortec Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 855,920, May 14, 1997, abandoned. This application Jun. 9, 1997, Ser. No. 871,113

Int. Cl.^{6} D03D *03/00*

U.S. Cl. 442—59 **12 Claims**

1. A package for facilitating the protection of metallic surfaces against corrosion and comprising, in combination:
- (a) a formulation which includes;
  - (i) corrosion inhibitor component in liquid state;
  - (ii) a surface-conditioning component selected from the group consisting of degreasers, descalers, anti-static, surface wax components, and mixtures thereof; and
- (b) a container receptacle having a bottom and side walls, and an open top and retaining said formulation;
- (c) substrate means disposed within said container receptacle in contact with said formulation for retention of said formulation in a wipe for simultaneous and direct application to the surface of the article being protected; and
- (d) said corrosion inhibitor component is selected from the group consisting of amine salts of carboxylic acids, alkali metal salts of aldonic acids, and alkanol amine salts of fatty acids.

5,854,146
SEBUM ABSORBING CELLULOSE FABRIC AND MANUFACTURING METHOD THEREOF

Koki Itoyama, and Kiyohisa Takahashi, both of Shizuoka-ken, Japan, assignors to Fuji Spinning Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1997, Ser. No. 816,777

Claims priority, application Japan, Mar. 25, 1996, 8-094833

Int. Cl.^{6} B05D *3/02*

U.S. Cl. 442—121 **7 Claims**

1. A sebum absorbing cellulose fabric in which a compound having a nonionic surface activity is fixed to a cellulose fabric, which compound is (i) formed by reacting a nonionic surfactant and a cross-linking agent having glycidyl ether groups together or (ii) a glycidyl ether having nonionic surface activity in a molecule thereof.

5,854,147
NON-WOVEN WEB CONTAINING ANTIMICROBIAL SILOXANE QUATERNARY AMMONIUM SALTS

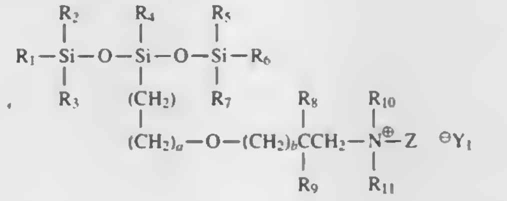
Ronald Sinclair Nohr, Roswell, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 686,228, Jul. 23, 1996, Pat. No. 5,777,010, which is a division of Ser. No. 450,451, May 25, 1995, Pat. No. 5,569,732, which is a division of Ser. No. 249,788, May 26, 1994, Pat. No. 5,567,372, which is a continuation-in-part of Ser. No. 76,529, Jun. 11, 1993, abandoned. This application Apr. 20, 1998, Ser. No. 62,965

Int. Cl.^{6} D04H *3/00;* **D01R** *1/10*

U.S. Cl. 442—123 **10 Claims**

1. A nonwoven web having antimicrobial properties made from a melt-extrudable composition of which comprises:
- at least one thermoplastic Polyolefin adapted to be shaped into a Product by melt extrusion; and
- at least one additive which is adapted to surface segregate upon extrusion of said composition to impart antimicrobial properties to a surface of said product, wherein said additive has either the general formula A,

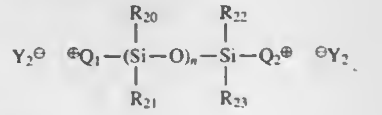


$$R_1-\underset{\underset{R_3}{|}}{\overset{\overset{R_2}{|}}{Si}}-O-\underset{\underset{(CH_2)}{|}}{\overset{\overset{R_4}{|}}{Si}}-O-\underset{\underset{R_7}{|}}{\overset{\overset{R_5}{|}}{Si}}-R_6$$

$$(CH_2)_a-O-(CH_2)_b\underset{\underset{R_9}{|}}{\overset{\overset{R_8}{|}}{C}}CH_2-\underset{\underset{R_{11}}{|}}{\overset{\overset{R_{10}}{|}}{N^{\oplus}}}-Z\quad {}^{\ominus}Y_1$$

wherein:
- (1) each of R_1–R_7 is independently selected from the group consisting of monovalent C_1–C_{20} alkyl, phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;
- (2) each of R_8 and R_9 is a monovalent group independently selected from the group consisting of (a) hydrogen and (b) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_8 and R_9 cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_8 and R_9 represent a carbonyl group;
- (3) each of R_{10} and R_{11} is a methyl group;
- (4) a represents an integer from 1 to about 20;
- (5) b represents an integer from 1 to about 20;
- (6) Z is a monovalent group having from about 8 to about 30 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, and heterocyclic groups, and combinations thereof, wherein Z is terminated by an alkyl moiety which includes at least about 8 carbon atoms in a single continuous chain;
- (7) Y_1 is an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and
- (8) said additive has a molecular weight of from about 600 to about 1,700;

or the general formula B,



$$Y_2^{\ominus}\quad {}^{\oplus}Q_1-(\underset{\underset{R_{21}}{|}}{\overset{\overset{R_{20}}{|}}{Si}}-O)_n-\underset{\underset{R_{23}}{|}}{\overset{\overset{R_{22}}{|}}{Si}}-Q_2^{\oplus}\quad {}^{\ominus}Y_2$$

wherein:

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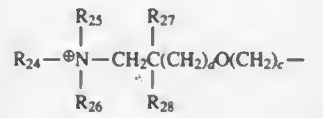
(1) each of R_{20}–R_{23} is independently selected from the group consisting of monovalent C_1–C_{20} alkyl, phenyl, and phenyl-substituted C_1–C_{20} alkyl groups, in which each phenyl can be substituted or unsubstituted;
(2) n represents an integer of from 1 to about 19;
(3) each of Q_1 and Q_2 represents an independently selected quaternary ammonium group having the general formula,

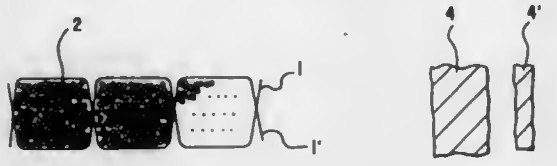


$$R_{24}-{}^{\oplus}N(R_{25})(R_{26})-CH_2C(R_{27})(R_{28})(CH_2)_dO(CH_2)_c-$$

in which:
(a) R_{24} is a monovalent alkyl group having from about 8 to about 30 carbon atoms, at least about 8 carbon atoms of which make up a single continuous chain;
(b) R_{25} and R_{26} are methyl groups;
(c) each of R_{27} and R_{28} is a monovalent group independently selected from the group consisting of (i) hydrogen and (ii) monovalent alkyl, cycloalkyl, aryl, and heterocyclic groups and combinations thereof having up to about 30 carbon atoms, except that both R_{27} and R_{28} cannot be hydrogen; or, when taken together in combination with the carbon atom to which they are attached, R_{27} and R_{28}, represent a carbonyl group;
(d) c represents an integer of from 2 to about 20; and
(e) d represents an integer of from 2 to about 20;
(4) Y_2 represents an anion which does not cause the thermal instability of the additive to be more than about 35 weight percent decomposition during melt extrusion; and
(5) said additive has a polydispersity of up to about 3.0 and a weight-average molecular weight of from about 800 to about 2.000;

wherein said additive is present in said melt-extrudable composition in an amount sufficient to impart antimicrobial activity to the surfaces of a shaped article prepared therefrom by a melt-extrusion process.

5,854,148
OPTICALLY READABLE MARK RECORDED CLOTH AND A PRODUCTION PROCESS THEREOF
Hiroyoshi Asada, Kawasaki; Shiro Imai, Kyoto, and Miyoshi Okamoto, Takatsuki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
PCT No. PCT/JP91/01073, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO93/04230, PCT Pub. Date Mar. 4, 1993
Continuation of Ser. No. 603,183, Feb. 20, 1996, abandoned, which is a continuation of Ser. No. 30,304, Jun. 8, 1993, abandoned. This PCT application Aug. 12, 1991, Ser. No. 976,954
Int. Cl.^{6} D0 *11/00;* **B32B** *3/00*
U.S. Cl. 442—203 **6 Claims**

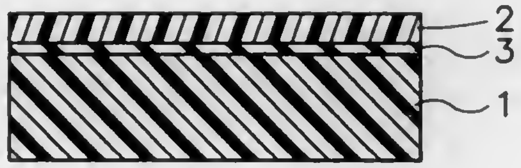


1. Optically readable mark printed cloth, comprising:

woven or knitted cloth, wherein said woven or knitted cloth is comprised of very fine fibers of between 1 and 0.00001 denier, wherein a product of the number of warps and the number of wefts is at least 1,000 threads/cm^2 and a product of the number of warp fibers and the number of weft fibers is at least 5,000,000 fibers/cm^2; and

an optically readable recorded identification mark on said cloth, wherein said cloth is a water jet punched and fibers of said cloth are three-dimensionally intertwined.

5,854,149
PAPER-MADE STAMPABLE SHEET, LIGHT-WEIGHT STAMPABLE SHEET SHAPED BODY AND METHOD OF PRODUCING LIGHT-WEIGHT STAMPABLE SHAPED BODY
Katsuhiro Nagayama; Masami Fujimaki; Shigeru Takano; Taiji Matsumoto; Tomoshige Ono; Yukio Nagashima, all of Chiba; Syohei Masui, Kyoto; Satoru Funakoshi, Osaka; Yuji Kobayashi, Chiba; Hiroyuki Yoshitake, Chiba, and Mitsuaki Sunada, Chiba, all of Japan, assignors to Kawasaki Steel Corporation Sumitomo Chemical Co., Ltd., and K-Plasheet Corporation, both of Japan
PCT No. PCT/JP96/00507, § 371 Date Nov. 15, 1996, § 102(e) Date Nov. 15, 1996, PCT Pub. No. WO96/26822, PCT Pub. Date Sep. 6, 1996
PCT Filed Mar. 1, 1996, Ser. No. 737,016
Claims priority, application Japan, Mar. 1, 1995, 7-041549; Mar. 1, 1995, 7-041550; Mar. 7, 1995, 7-046786; Mar. 7, 1995, 7-046787; Sep. 7, 1995, 7-229930; Oct. 17, 1995, 7-268098
Int. Cl.^{6} B32B *27/04;* **B29B** *11/16;* **B29C** *51/12*
U.S. Cl. 442—394 **34 Claims**



1. A stampable sheet formed by a process comprising the steps of:

paper-making a mixture of a thermoplastic resin and reinforcing fibers to obtain a sheet-like web;

piling a multilayer film on at least one surface of said web, wherein said multilayer film is comprised of a layer of a thermoplastic resin film having a melt viscosity during compression shaping under heating larger than that of the thermoplastic resin constituting the web and at least one layer of a thermoplastic resin film having excellent non-permeability and adhesiveness;

compressing them under a temperature above the melting point of said thermoplastic resin; and

cooling and solidifying in a compressed state.

5,854,150
Patent Not Issued For This Number

5,854,151
GLASS BODY WITH DISTRIBUTION COMPOSITION
Morinao Fukuoka, Hachiooji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Continuation of Ser. No. 484,327, Jun. 7, 1995, abandoned. This application Jul. 2, 1997, Ser. No. 887,330
Claims priority, application Japan, Jun. 8, 1994, 6-126576
Int. Cl.^{6} C03C *3/083*
U.S. Cl. 501—68 **10 Claims**

1. A glass body with distributed composition containing Si oxide, Al oxide and an oxide of a first metal species other than Si and Al in respective molar ratios based on the glass body, in which the molar ratio of the oxide of the first metal species changes in the glass body,

wherein there applies the relationship:

$$-0.12 \leqq (\Delta C_{Al}/\Delta C_{Ml})/C_{Si} \leqq 0.12$$

in which

C_{Si} represents the molar ratio of SiO_2 at a position of the glass body where the molar ratio of the oxide of the first metal species is the largest;

ΔC_{Al} represents a normalized difference between maximum and minimum values of the molar ratio of Al_2O_3 contained in the glass body, said normalized difference being obtained by dividing the maximum minimum value difference by C_{Si} and

ΔC_{Ml} represents a normalized difference between maximum and minimum values of the molar ratio of the oxide of the first metal species contained in the glass body, said normalized difference being obtained by dividing the maximum minimum value difference of the molar ratio of the oxide of said first metal species by C_{Si}.

5,854,152
GLASSES FOR DISPLAY PANELS
Jeffrey T. Kohli, Corning, N.Y., and Pascale Laborde, La Grande Paroisse, France, assignors to Corning Incorporated, Corning, N.Y.
Filed Dec. 10, 1997, Ser. No. 988,104
Int. Cl.^{6} C03C *3/087;3/091;3/093*
U.S. Cl. 501—70 **19 Claims**

1. A substrate for a flat panel display device wherein said substrate is comprised of a flat, transparent glass exhibiting a linear coefficient of thermal expansion over the temperature range 25°–300° C. between 60–90×10^{-7}/°C. and a strain point higher than 600° C., said glass consisting essentially of, expressed in terms of weight percent on an oxide basis, 38–56 SiO_2, 16.1–28 Al_2O_3, 4–18 CaO, more than 10 and less than or equal to about 24 SrO, 0–5 MgO, 0–5 ZrO_2, 0–5 BaO, 0–5 B_2O_3, 0–4 Li_2O, 0–6 Na_2O, 0–15 K_2O, said glass further consisting essentially in total amount of Na_2O+K_2O between about 5 and 18 weight percent.

5,854,153
GLASSES FOR DISPLAY PANELS
Jeffrey T. Kohli, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Dec. 17, 1997, Ser. No. 992,403
Int. Cl.^{6} C03C *3/087;3/091;3/093*
U.S. Cl. 501—70 **24 Claims**

1. A glass substrate for an electronic display device, wherein said substrate is comprised of a flat, transparent glass exhibiting a linear coefficient of thermal expansion over the temperature range 25°–300° C. between 60°–90°×10^{-7}/° C. and a strain point higher than 615° C., said glass consisting essentially of, expressed in terms of weight percent on an oxide basis, 42–62 SiO_2, 16.5–28 Al_2O_3, 0–4 B_2O_3, 3–10 Na_2O, 1–11 K_2O, 0–6 MgO, 9.5–24 CaO, 0.2–8 SrO, 0–16 BaO, 0–4 ZrO_2, and $Li_2O+Na_2O+K_2O$ in total amount of 4–16 weight percent.

5,854,154
PROCESS OF MAKING OXIDE CERAMIC COMPOSITES
Kenneth Charles Radford, North Huntingdon, and Jay Edgar Lane, New Alexandria, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 573,054, Dec. 15, 1995, abandoned. This application May 1, 1997, Ser. No. 847,248
Int. Cl.^{6} C04B *35/80*
U.S. Cl. 501—95.2 **9 Claims**

1. A method of fabricating an oxide ceramic composite comprising the steps of:

providing a fiber preform defining a volume;

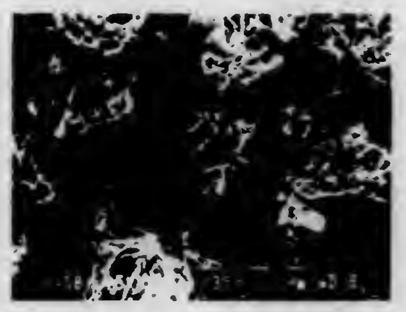
dispersing metal particles throughout at least a portion of the volume;

infiltrating at least a portion of the volume with a sol-gel matrix precursor material to fabricate an infiltrated preform;

sintering the infiltrated preform; and

oxidizing at least a portion of the dispersed metal particles.

5,854,155
HEXAGONAL SYSTEM BORON NITRIDE POWDER
Takashi Kawasaki; Yukio Kuroda; Hiroshi Nishikawa, and Hiroyuki Hara, all of Omuta, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 15, 1997, Ser. No. 782,296
Claims priority, application Japan, Jan. 24, 1996, 8-28768
Int. Cl.^{6} C04B *35/5833*
U.S. Cl. 501—96.4 **6 Claims**



1. Hexagonal system boron nitride particles each consisting essentially of scaly primary particles of hexagonal system boron nitride which are aggregated to one another without orientation.

5,854,156
GRANULATED POWDER FOR PRODUCING SILICON NITRIDE SINTERED BODY
Toshihiko Honda, and Hisayoshi Nonaka, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Division of Ser. No. 678,076, Jul. 10, 1996, abandoned. This application Mar. 14, 1997, Ser. No. 818,384
Claims priority, application Japan, Jul. 11, 1995, 7-174608
Int. Cl.^{6} C04B *35/584*
U.S. Cl. 501—97.1 **1 Claim**

1. Granular particles for preparing a sintered body having a strength at room temperature of 950 Mpa or more and consisting essentially of silicon nitride and sintering additives of Sr, Ce, and Mg compounds, said particles having a standard deviation of strength/average strength of compressive strength of granular particles of 0.23 or less, and being obtained by spray drying a mixture

consisting essentially of silicon nitride and Sr, Ce, and Mg compounds, said mixture being free of an organic binder.

5,854,157
CERAMIC COMPOSITE

Hae Jin Hwang; Masaki Yasuoka; Mutsuo Sando; Toru Nagai, all of Aichi, and Koichi Niihara, Osaka, all of Japan, assignors to Agency of Industrial Science and Technology, and Fine Ceramics Research Association, both of Tokyo, Japan

Filed Apr. 29, 1997, Ser. No. 848,250

Claims priority, application Japan, Apr. 30, 1996, 8-134342

Int. Cl.^{6} C04B *35/10;35/48;35/04*

U.S. Cl. 501—104 **8 Claims**

1. A ceramic composite comprising a ceramic matrix and an oxide dispersed in the ceramic matrix, wherein

the oxide has a perovskite structure, and

the oxide comprises at least one element selected from the group consisting of lead and an alkaline earth metal.

5,854,158
ZRO_2 BASED CERAMIC MATERIAL AND METHOD OF PRODUCING THE SAME

Masahiro Nawa, Katano; Shoichi Nakamoto, Neyagawa; Koichi Niihara, Suita, and Tohru Sekino, Toyonaka, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 11, 1997, Ser. No. 873,244

Claims priority, application Japan, Nov. 10, 1996, 8-281464

Int. Cl.^{6} C04B *35/482;35/488;35/49*

U.S. Cl. 501—104 **21 Claims**

1. A ZrO_2 based ceramic material comprising:

a first phase of ZrO_2 grains containing CeO_2 as a stabilizer and having an average grain size of 5 μm or less, at least 90 vol % of said first phase composed of tetragonal ZrO_2;

a second phase of Al_2O_3 grains having an average grain size of 2 μm or less;

a third phase of elongated crystals of a complex oxide of Al, Ce, and one of Mg and Ca;

an aluminum content in said ceramic material being determined such that when aluminum of said complex oxide is converted to Al_2O_3, a total amount of Al_2O_3 in said ceramic material is within a range of 0.5 to 50 vol %;

a content of said third phase in said ceramic material being determined within a range of 0.5 to 5 by area %.

8. A method of producing said ZrO_2 based ceramic material of claim 1 comprising the steps of:

mixing a first constituent corresponding to a composition of 8 to 12 mol % of CeO_2, 0.01 to 0.1 mol % of one of MgO and CaO, and the balance of ZrO_2 with a second constituent for forming Al_2O_3, to obtain a mixed powder;

molding said mixed power to a green compact having a desired shape; and

sintering said green compact in an oxidative atmosphere at a temperature between 1400° C. and 1600° C. under an atmospheric pressure, said third phase of said ceramic material being formed by a reaction of Ce and one of Mg and Ca supplied from said first constituent with Al supplied from said second constituent in said oxidative atmosphere during the sintering.

5,854,159
ALUMINA SINTERED BODIES AND METHOD FOR PRODUCING THE SAME

Shigeki Kato, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Mar. 27, 1997, Ser. No. 824,957

Claims priority, application Japan, Mar. 26, 1996, 8-076943

Int. Cl.^{6} C04B *35/10*

U.S. Cl. 501—127 **4 Claims**

1. An alumina shaped sintered body for a semiconductor-producing apparatus, said body having a relative density of not less than 98.2% and comprising alumina and impurities, said impurities comprising sodium oxide, potassium oxide, silicon oxide, calcium oxide, ferric oxide and titanium oxide in a range from 100 to 10000 ppm, and a total amount of the sodium oxide and potassium oxide based on a total amount of said impurities is not more than 4% by weight.

5,854,160
LOW TEMPERATURE SINTERING MICROWAVE DIELECTRIC COMPOSITION

Ki Hyun Yoon, Kyungki-Do; Woo Sup Kim, and Jae Beom Kim, both of Seoul, all of Rep. of Korea, assignors to LG Electro-Components, Ltd., Rep. of Korea

Filed Jun. 10, 1997, Ser. No. 872,411

Claims priority, application Rep. of Korea, Jul. 2, 1996, 1996/26754

Int. Cl.^{6} C04B *35/465*

U.S. Cl. 501—136 **2 Claims**

1. A low temperature sintering high frequency dielectric composition, comprising a composition of $xLiO_{1/2}$—$yCaO$—$SmO_{3/2}$—$wTiO_2$— $qBO_{3/2}$ where $13.00 \leqq x \leqq 16.00$, $11.00 \leqq y \leqq 13.00$, $18.00 < z \leqq 21.00$, $45.00 \leqq w51.00$ and $0 \leqq q \leqq 12.0$ wherein the numeric values are based on mol % with respect to the entire composition.

5,854,161
PROCESS FOR THE REGENERATION OF A CATALYST

Tatsumi Ichiki, Kanagawa; Nagato Hamashima; Teiji Nakamura, both of Tokyo; Masayuki Asami, Saitama; Sadakatsu Suzuki, Saitama, and Hiroshi Ueno, Saitama, all of Japan, assignors to ABB Lummus Global Inc., Bloomfield, N.J.; Lonza Societa Per Azioni, Milan, Italy, and Tonen Chemical Corporation, Tokyo, Japan

PCT No. PCT/US96/05688, § 371 Date Oct. 10, 1997, § 102(e) Date Oct. 10, 1997, PCT Pub. No. WO96/33804, PCT Pub. Date Oct. 31, 1996

PCT Filed Apr. 24, 1996, Ser. No. 973,942

Int. Cl.^{6} B01J *20/34;38/04;38/30*

U.S. Cl. 502—41 **6 Claims**

1. A process for the regeneration of a used catalyst in a process for the preparation of maleic anhydride by oxidizing a hydrocarbon

having four carbon atoms in a fluidized bed reactor, wherein said used catalyst comprises particles of vanadium-phosphorus oxide compounds having a deteriorated outer layer of said vanadium-phosphorus oxide, said process comprising the steps of removing at least a portion of said used catalyst particles from said reactor, subjecting said removed used catalyst particles to impact whereby said deteriorated outer layer of said vanadium-phosphorus oxide is peeled away leaving regenerated catalyst particles, separating said peeled away deteriorated outer layer of said vanadium-phosphorus oxide from said regenerated catalyst particles and returning said regenerated catalyst particles to said reactor.

5,854,162
OFFSITE REGENERATION PROCESS FOR A CATALYST CONTAINING AT LEAST ONE PRECIOUS METAL

Pierre Dufresne, Valence, and Nilanjan Brahma, La Voulte Sur Rhone, both of France, assignors to Europeenne de Retraitement de Catalyseurs Eurecat, France

Continuation of Ser. No. 551,798, Nov. 7, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 949,683

Claims priority, application France, Nov. 7, 1994, 94 13431

Int. Cl.^{6} B01J *20/34;38/12;38/18;38/22*

U.S. Cl. 502—45 **14 Claims**

1. A process for the regeneration of a used hydrocarbon treatment catalyst containing at least one precious metal selected from the group consisting of silver, gold, ruthenium, rhodium, palladium, osmium, iridium and platinum, and at least one porous support, said process comprising:

conducting at least one combustion step (1) for the coke present on said catalyst in the presence of an oxygen-containing gas, at a temperature in the range of 300° C. to 680° C. for a time in the range of 0.3 to 7 hours, and

conducting at least one oxychlorination step (2) in a controlled air atmosphere, at a temperature in the range of 300° C. to 650° C., for a time in the range of 0.3 to 3 hours and in the presence of a chlorinated compound such that the chlorine content in the catalyst after step (2) is more than 1.3% by weight

wherein said combustion step (1) is carried out offsite in a moving bed furnace and said oxychlorination in step (2) is carried out offsite in a sealed rotating furnace which avoids the onset of gas channeling by the treatment gas.

5,854,163
PROCESS FOR PREPARING PHOSPHORUS-DOPED SILVER CATALYSTS

Rainer Diercks, and Günther Schönaich, both of Neuhofen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP96/00901, § 371 Date Sep. 15, 1997, § 102(e) Date Sep. 15, 1997, PCT Pub. No. WO96/28249, PCT Pub. Date Sep. 19, 1997

PCT Filed Mar. 4, 1996, Ser. No. 913,106

Claims priority, application Germany, Mar. 15, 1995, 195 09 359.3

Int. Cl.^{6} C01J *20/34;38/02;27/14;23/50*

U.S. Cl. 502—56 **10 Claims**

1. A process for preparing phosphorus-doped silver catalysts from silver contaminated with phosphorus compounds, which comprises

a) heating said silver which is contaminated with phosphorus compounds to temperatures at which said silver is liquid and subsequently cooling to temperatures below the melting point,

b) preparing silver crystals from the silver obtained in stage a) by anodically oxidizing it to silver ions in an electrolysis cell with an aqueous electrolyte, and cathodically reducing the silver ions again to elemental silver, and

c) contacting the silver crystals with a finely divided phosphorus compound (P), wherein said compound (P) has a melting point or decomposition temperature above 500° C.

5,854,164
METHOD FOR PREPARING CATALYST COMPONENT FOR OLEFIN POLYMERIZATION, CATALYST FOR OLEFIN POLYMERIZATION AND PROCESS FOR PRODUCING OLEFIN POLYMER WITH THE CATALYST

Hiroyuki Shiraishi; Eiji Nakaishi, both of Ichihara; Takahiro Hino, Ibaraki, and Akio Imai, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 15, 1996, Ser. No. 731,439

Claims priority, application Japan, Oct. 16, 1995, 7-267036; Oct. 16, 1995, 7-267037

Int. Cl.^{6} C08F *4/653;4/654;10/00*

U.S. Cl. 502—109 **13 Claims**

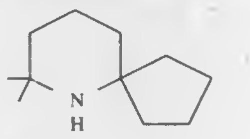
1. A method for preparing a solid catalyst component for olefin polymerization consisting of reacting a solid catalyst component precursor (D) containing Mg, Ti and OR group (wherein R represents a hydrocarbon group having 1 to 20 carbon atoms) with:

a mixture of a cyclic organic nitrogen compound (C) and a titanium compound (E) having at least one Ti-halogen bond;

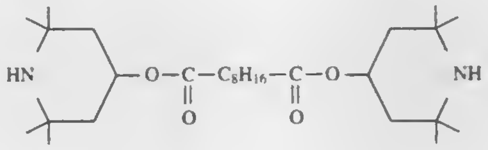
a mixture of a cyclic organic nitrogen compound (C), a titanium compound (E) having at least one Ti-halogen bond and an electron donative compound;

a cyclic organic nitrogen compound (C) and a titanium compound (E) having at least one Ti-halogen bond successively; or

a cyclic organic nitrogen compound (C) and a mixture of a titanium compound (E) having at least one Ti-halogen bond and an electron donative compound successively, wherein the cyclic organic nitrogen compound (C) is selected from the group consisting of piperidine, N-methylpiperidine, 2,6-dimethylpiperidine, 3,5-dimethylpiperidine, N-methyl-2,6-dimethylpiperidine, N-methyl-3,5-dimethylpiperidine, 2,2,6-trimethylpiperidine, 2,2,6,6-tetramethylpiperidine, N-methyl-2,2,6,6-tetramethylpiperidine, 2,2,4,6,6-pentamethylpiperidine, 4-acetyloxy-2,2,6,6-tetramethylpiperidine and compounds represented by the following formulae



and



5,854,165
TRANSITION METAL COMPOUND, CATALYST FOR OLEFIN POLYMERIZATION, PROCESS FOR PREPARING OLEFIN POLYMER BY USE OF CATALYST

Nobuhiro Yabunouchi; Kiyohiko Yokota; Masami Watanabe; Takuji Okamoto, and Noriyuki Tani, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01626, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/09172, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 30, 1994, Ser. No. 619,513

Claims priority, application Japan, Sep. 30, 1993, 5-245129; Dec. 22, 1993, 5-324208; Jul. 8, 1994, 6-156948

Int. Cl.^{6} C08F *4/64*

U.S. Cl. 502—117 **44 Claims**

1. A catalyst for olefin polymerization which comprises a transition metal compound represented by the general formula (I) below and an activation cocatalyst, wherein the general formula (I) is

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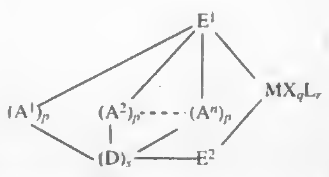


(I)

wherein M is Ti, Zr or Hf, E^1 and E^2 are each a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group or substituted indenyl group, and they form a crosslinking structure via $(A^1)_p$, $(A^2)_p$, . . . $(A^n)_p$ and $(D)_s$, and they may be the same or different; X is a σ-bonding ligand, and when a plurality of Xs are present, these plural Xs may be the same or different and each X may cross-link with E^1, E^2 or L; L is a Lewis base, and when a plurality of Ls are present, these plural Ls may be the same or different, and each L may cross-link with E^1, E^2 or X; A^1, A^2, . . . A^n are each a crosslinking group consisting of at least one element which is C, H, Si, O, N, S, or P and they may be the same or different, but at least one of them comprises a crosslink consisting of carbon alone; D is a crosslinking group consisting of at least one element which is C, H, Si, O, N or P, and when a plurality of Ds are present, these plural Ds may be the same or different; n is an integer of 2 to 4; p is an integer of 1 to 4, and the respective ps may be the same or different; q is an integer of 1 to 5 and is (the valence of M)–2; r is an integer of 0 to 3; and s is an integer of 0 to 4, and when s is 0, $(A^1)_p$, $(A^2)_p$, . . . $(A^n)_p$ and E^2 form a direct bond.

5,854,166

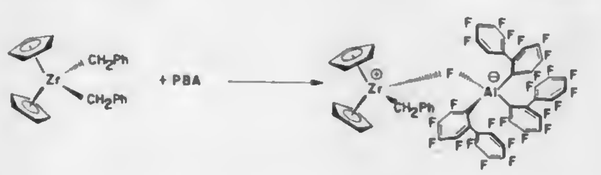
SYNTHESIS AND USE OF (PERFLUOROARYL) FLUORO-ALUMINATE ANION

Tobin J. Marks, Evanston, and You-Xian Chen, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Aug. 18, 1997, Ser. No. 912,617

Int. Cl.⁶ B01J *31/00;* **C07F** *5/00;17/00;* **C08F** *4/44*

U.S. Cl. 502—153 **11 Claims**



1. A catalytic complex of the formula: $(CpCp'MR)^+AR'R''R'''F^-$ where

Cp and Cp' is each a group containing a cyclopentadienyl ligand
M is Ti, Zr, Hf, Th, or U
R is an alkyl or aryl group (C≦20), or hydride
A is Al, Ga, or In
R', R", and R'" is each a fluorinated phenyl, fluorinated biphenyl or fluorinated polycyclic fused ring group.

5,854,167

ETHYLENE OXIDE CATALYST

Nabil Rizkalla, Rivervale; Rita Klein, Westwood, and Stephen Bruce Milne, Wayne, all of N.J., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Filed Sep. 2, 1997, Ser. No. 922,043

Int. Cl.⁶ B01J *27/02;27/055*

U.S. Cl. 502—216 **5 Claims**

1. A rhenium and transition metal free catalyst for the oxidation of ethylene to ethylene oxide comprised of silver on a solid support and containing a promoter combination consisting essentially of (1) an alkali metal component in amount not greater than 1000 ppm based on the weight of the catalyst, (2) a sulfur component in amount of 5–300 ppm based on the weight of the catalyst, (3) a [illegible] component in amount of 10–1000 ppm based on the weight of the catalyst, and (4) a [illegible] component [illegible] based on the weight of the catalyst.

5,854,168

CATALYST COMPOSITION FOR METHANOL SYNTHESIS

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06831

Filed Nov. 13, 1997, Ser. No. 970,021

Int. Cl.⁶ B01J *27/122;23/70;* **C07C** *27/00*

U.S. Cl. 502—225 **3 Claims**

1. A catalytic process for the conversion of methyl chloride, perchloroethylene, hydrogen chloride and oxygen to methyl alcohol and hexachloroethane, said process incorporating a catalyst comprising cupric oxyhalide which contains a halogen selected from the group consisting of iodine and bromine.

5,854,169

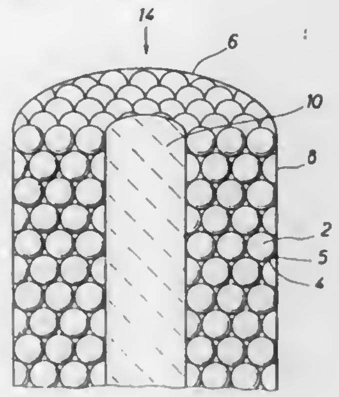
PHOTOCATALYST-BINDER COMPOSITIONS

Adam Heller; Michael V. Pishko, both of Austin, Tex., and Ephraim Heller, Oakland, Calif., assignors to E. Heller & Company, Alameda, Calif.

Continuation of Ser. No. 700,911, Aug. 21, 1996, which is a division of Ser. No. 327,016, Oct. 21, 1994, Pat. No. 5,616,532, which is a continuation-in-part of Ser. No. 216,731, Mar. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 143,301, Oct. 26, 1993, abandoned, and Ser. No. 143,286, Oct. 26, 1993, abandoned. This application May 9, 1997, Ser. No. 853,431

Int. Cl.⁶ B01J *21/06;21/08*

U.S. Cl. 502—242 **32 Claims**



1. A composition comprising:

particles of a photocatalyst activated by light, said particles having a diameter of about 1–100 nm and a surface area of at least 30 m^2/g; said photocatalyst capable of catalyzing oxidation or reduction reactions;

a binder for adhering said particles to a surface, said binder consisting essentially of a substantially non-oxidizable polymer having a backbone sequence of 12 or more atoms, where no more than one in six backbone atoms is carbon, the binder consisting of less than 20 wt % oxidizable carbon and hydrogen atoms

wherein the particles are dispersed throughout said binder and wherein the composition forms an abrasion resistant, thermostable and adherent film when applied to a surface, the binder transmitting a substantial portion of activating light to reach the photocatalyst particles;

said composition, when applied to a surface and in contact with [illegible] in the presence of activating light, [illegible]

5,854,170

METHOD FOR PREPARING A MODIFIED SOLID OXIDE

Clarence D. Chang, Princeton; Frank T. DiGuiseppi, Bordentown; Scott Han, Lawrenceville, all of N.J.; Jose G. Santiesteban, Yardley, Pa., and David L. Stern, Princeton, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 509,715, Jul. 31, 1995, abandoned, which is a continuation-in-part of Ser. No. 143,716, Nov. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 95,884, Jul. 22, 1993, abandoned. This application Sep. 30, 1997, Ser. No. 940,316

Int. Cl.⁶ B01J *23/28;23/30;23/56*

U.S. Cl. 502—308 **21 Claims**

1. A method for preparing an acidic solid catalyst comprising a Group IVB metal oxide modified with an oxyanion of a Group VIB metal, said method comprising the steps of:

(a) contacting a hydroxide or hydrated oxide of a Group IVB metal with an aqueous solution comprising an oxyanion of a Group VIB metal under conditions sufficient to form a solid material comprising oxygen, Group IVB metal and Group VIB metal; and

(b) contacting said solid material of step (a) with H_2 to obtain said acidic solid catalyst.

5,854,171

HONEYCOMB CATALYST FOR VINYL ACETATE SYNTHESIS

Ioan Nicolau; Philip M. Colling, and Leland R. Johnson, all of Corpus Christi, Tex., assignors to Celanese International Corporation, Dallas, Tex.

Division of Ser. No. 627,960, Apr. 2, 1996, Pat. No. 5,705,679. This application Sep. 19, 1997, Ser. No. 933,649

Int. Cl.⁶ B01J *37/03*

U.S. Cl. 502—330 **20 Claims**

1. A catalyst for producing vinyl esters comprising a ceramic honeycomb carrier having cells extending the entire length of the carrier, the carrier being provided with a silica coat within at least the cells, the catalyst further comprising palladium metal and gold metal distributed throughout the silica coat.

5,854,172

PREPARATION OF VANADIUM ANTIMONATE BASED CATALYSTS USING $SNO_2·XH_2O$

James Frank Brazdil, Jr., and Joseph Peter Bartek, both of Highland Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 17, 1997, Ser. No. 785,543

Int. Cl.⁶ B01J *23/00;21/08;* **C07C** *253/00*

U.S. Cl. 502—349 **7 Claims**

1. A method of making a vanadium antimony oxide catalyst containing tin in the oxide state comprising making an aqueous slurry of a mixture of source batch materials comprising compounds of the elements to be included in the final catalyst, drying the mixture, and calcining the mixture to form an active catalyst wherein the source batch material for the tin is a solution which comprises $SnO_2·xH_2O$ wherein x [illegible] dispersed in tetraalkyl ammonium hydroxide, wherein the tetraalkyl ammonium hydroxide is defined by the following formula:

[illegible]

[illegible]

5,854,173

FLAKE SHAPED SORBENT PARTICLE FOR REMOVING VAPOR PHASE CONTAMINANTS FROM A GAS STREAM AND METHOD FOR MANUFACTURING SAME

Ramsay Chang, Los Altos, Calif., and Massoud Rostam-Abadi, Champaign, Ill., assignors to Elertric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 31, 1996, Ser. No. 657,818

Int. Cl.⁶ B01J *20/02*

U.S. Cl. 502—417 **9 Claims**

1. A sorbent particle for injection into a gas stream to remove vapor phase contaminants from the gas stream prior to collection in a downstream particle collector comprising a support particle having an outer surface and a size for permitting the support particle to be suspended for travel in the gas stream to the downstream particle collector, the support particle having the shape of a flake and an outer surface area to volume ratio ranging from 10 to 10,000 times greater than the outer surface area to volume ratio of a spherical particle having the same volume as the support particle and a layer of sorbent material disposed on the outer surface of the support particle for reacting with the vapor phase contaminants whereby the support particle is suspended for travel in the gas stream to react with and remove vapor phase contaminants in the gas stream prior to collection in the downstream particle collector and whereby such support particle having the shape of a flake and such outer surface area to volume ratio provides an increased mass transfer area so as to permit high percentages of vapor phase contaminants to be removed from the gas stream.

8. A method for manufacture of a sorbent particle for injection into a gas stream to remove vapor phase contaminants from the gas stream prior to collection in a downstream particle collector comprising the steps of selecting a support particle having an outer surface and a size for permitting the support particle to be suspended for travel in the gas stream to the downstream particle collector and forming a layer of sorbent material on the outer surface of the support particle for reacting with and removing vapor phase contaminants in the gas stream prior to collection in the downstream particle collector, the forming step including pyrolyzing hydrocarbons on the outer surface of the support particle.

5,854,174

SUBSTANTIALLY NON-PHOTOSENSITIVE THERMOGRAPHIC RECORDING MATERIAL WITH IMPROVED STABILITY AND IMAGE-TONE

Bartholomeus Horsten, Rumst; Johan Loccufier, Zwijnaarde; Geert Defieuw, Bonheiden, and Luc Leenders, Herentals, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Filed May 14, 1997, Ser. No. 856,099

Claims priority, application European Pat. Off., May 21, 1996, 96201375

Int. Cl.⁶ B41M *5/30*

U.S. Cl. 503—209 **7 Claims**

6. A thermal image recording process comprising the steps of: (1) providing a substantially non-photosensitive recording material comprising a thermosensitive element comprising a substantially light insensitive organic silver salt, an organic reducing agent therefor in thermal working relationship therewith, a compound with an unsaturated 5-membered heterocyclic ring consisting of nitrogen and carbon atoms with at least one of said nitrogen atoms having a hydrogen atom and none of said carbon atoms being part of a thione group, said ring not being annulated with an aromatic ring system and said compound being exclusive of 1,2,4-triazole and substituted 1,2,4-triazole compounds, in reactive association with said substantially light insensitive organic silver salt and said organic reducing agent and a binder on a support; (ii) bringing an outermost layer of said recording material into proximity with a heat source; (iii) applying heat from a heat source [illegible] to said recording material [illegible] and heat [illegible]

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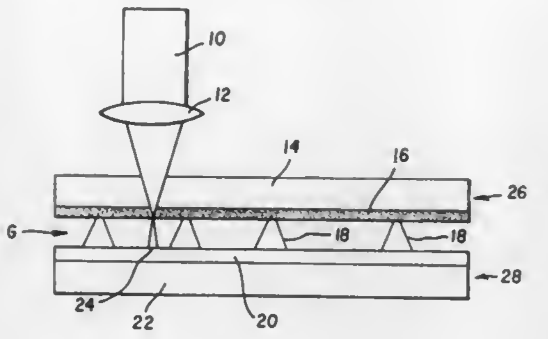
5,854,175
EMBOSSED COMPACT DISC SURFACES FOR LASER THERMAL LABELING

Charles D. DeBoer, Palmyra; Xin Wen, Rochester, and Lee W. Tutt, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 9, 1997, Ser. No. 833,749

Int. Cl.^{6} B41M *5/035;5/38*

U.S. Cl. 503—227 **14 Claims**



1. A method for transferring colorant from a donor element to a dye receiving layer to form a desired label, comprising the steps of:

a) providing an embossed surface on the dye receiving layer having desired spacing to minimize mottling;

b) positioning the embossed surface of the dye receiving layer in the focal plane of a focused laser beam with a colorant donor element being positioned in transferable relationship with the dye receiving element;

c) focusing a laser beam on the colorant donor element to heat the donor element to a sufficient temperature to transfer colorant to the dye receiving element to thereby effect the transfer of colorant from the donor element to the dye receiving layer; and

d) providing relative movement between the dye receiving layer and the laser beam and modulating the laser beam in correspondence with a data record, thereby effecting laser thermal colorant transfer to the embossed surface on the dye receiving layer from the donor element in correspondence with a desired label so that the embossed spacing provides a high quality mottle free label.

5,854,176
CONDITIONING OF HERBICIDAL CHLOROACETAMIDES

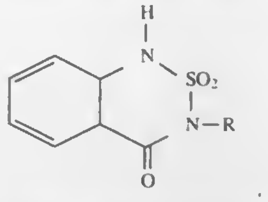
John M. Foster, Fort Collins, Colo., assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 491,180, Jun. 16, 1995, abandoned. This application Mar. 7, 1997, Ser. No. 813,095

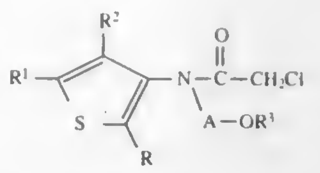
Int. Cl.^{6} A01N *25/32;43/00;43/10;43/72*

U.S. Cl. 504—105 **16 Claims**

1. A method for reducing the phytotoxicity of a herbicidally effective amount of a thiopheneamide compound on a crop plant comprising co-applying to the crop plant or locus where herbicidal control is desired a non-phytotoxic, conditioning-effective amount of a conditioner compound having the formula (B)



wherein R is C_{1-6}alkyl and a herbicidally active thiopheneamide of formula A



wherein R and R^2 are independently H, Cl, Br, F, C_{1-4}alkoxy; R^1 is H, Cl, Br, Cl, or C_{1-4}alkoxy; R^3 is C_{1-8}alkyl; and A is CH_2, CH_2—CH_2 or a monomethylated derivative thereof, wherein the weight ratio of the thiopheneamide compound to the conditioner compound is in the range of 0.1:1.0 to 30:1 and the thiopheneamide compound is applied at a range of 0.01 to 8.0 kg/ha and the conditioner is applied at a range of 0.01 to 10.0 kg/ha.

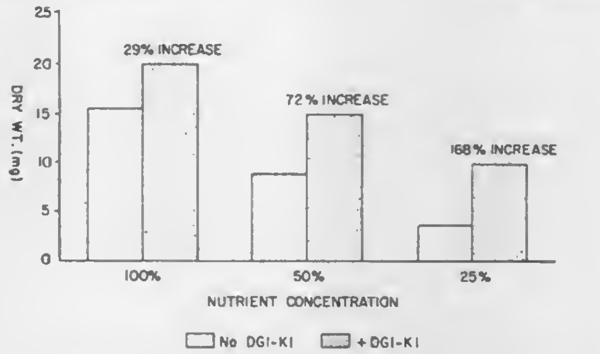
5,854,177
METHOD FOR ENHANCED HYDROPONIC PLANT PRODUCTIVITY WITH POLYMERIC ACIDS

Larry P. Koskan, Orland Park; Abdul Rehman Y. Meah, Justice; J. Larry Sanders, Lockport, and Robert J. Ross, Elmhurst, all of Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Continuation-in-part of Ser. No. 313,436, Sep. 27, 1994, Pat. No. 5,593,947, which is a continuation-in-part of Ser. No. 972,375, Nov. 5, 1992, Pat. No. 5,350,735. This application Jan. 10, 1997, Ser. No. 781,413

Int. Cl.^{6} A01N *37/06*

U.S. Cl. 504—320 **16 Claims**



1. A method for enhancing plant productivity which comprises supplying to a plant in a hydroponic medium a productivity enhancing amount of a substantially water-soluble, non-biodegradable non-peptidal polymeric acid, the polymeric acid having a molecular size larger than about 1,500 Daltons.

5,854,178
BIOACTIVE COMPOUNDS

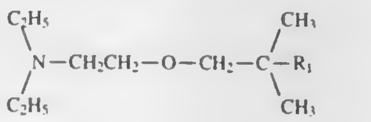
Henry Yokoyama, Pasadena, Calif., and Harold W. Gausman, Amarillo, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 606,791, Feb. 27, 1996, Pat. No. 5,710,099. This application Jul. 3, 1997, Ser. No. 887,679

Int. Cl.^{6} A01N *43/20;* **C07C** *217/08*

U.S. Cl. 504—326 **11 Claims**

1. A compound selected from the group having the structure

(a)


$$\overset{C_2H_5}{\underset{C_2H_5}{N}}-CH_2CH_2-O-CH_2-\overset{CH_3}{\underset{CH_3}{C}}-R_1$$

wherein R_1 is hydrogen or methyl; and

(b) an acid addition salt thereof.

5,854,179
SULFUR-SUBSTITUTED PHENYLSULFONYLUREAS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULATORS

Gerhard Schnabel, Grosswallstadt; Lothar Willms, Hofheim; Klaus Bauer, Hanau; Hermann Bieringer, Eppstein, and Christopher Rosinger, Hofheim, all of Germany, assignors to Hoechst Schering AgroEvo GmbH, Berlin, Germany

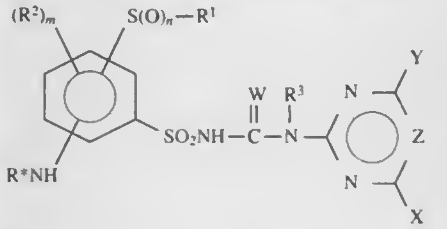
Filed Nov. 3, 1995, Ser. No. 552,670

Claims priority, application Germany, Nov. 7, 1994, 44 39 676.7

Int. Cl.^{6} C07D *403/12;* **A01N** *43/54*

U.S. Cl. 504—214 **6 Claims**

1. A compound of the formula (I) or a salt thereof


(I)

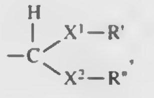
in which

W is an oxygen atom or a sulfur atom,

m is 0, 1, 2 or 3,

n is 0, 1 or 2,

R* is a radical of the formula —CHO, —CH=N—R or



$$-\overset{H}{C}\begin{matrix}X^1-R' \\ X^2-R''\end{matrix},$$

R is H, OH, $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, $(C_1–C_6)$ alkoxy, $(C_2–C_6)$alkenyloxy or $(C_2–C_6)$alkynyloxy, where each of the last 6 radicals mentioned is unsubstituted or substituted, or is phenyl, which is unsubstituted or substituted, or acyl, amino or mono- or disubstituted amino,

X^1 is O, S, NH or —N($(C_1–C_6)$alkyl)-[—N(alkyl)-],

X^2 is O, S, NH or —N($(C_1–C_6)$alkyl)-[—N(alkyl)-],

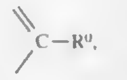
R' and R" independently of one another are hydrogen, $(C_1–C_6)$alkyl, $(C_2–C_6)$alkenyl or $(C_2–C_6)$alkynyl, where each of the last 3 radicals mentioned is unsubstituted or substituted by alkoxy, alkylthio or halogen, or together are $(C_2–C_4)$alkylene or $(C_2–C_4)$alkenylene,

R^1 is hydroxyl, amino, mono- or disubstituted amino, hydroxylamino, substituted hydroxylamino, hydrazino, substituted hydrazino, a substituted or unsubstituted $(C_1–C_{12})$aliphatic hydrocarbon or hydrocarbonoxy radical or substituted or unsubstituted aryl or aryloxy from the group consisting of phenyl, naphthyl, tetrahydronaphthyl, indenyl, indanyl, pentalenyl, and fluorenyl, or substituted or unsubstituted heteroaryl or heteroaryloxy from the group consisting of pyridyl, pyrimidyl, pyridazinyl, pyrazinyl, thienyl, thiazolyl, oxazolyl, furyl, pyrrolyl, pyrazolyl and imidazolyl,

R^2 is halogen, CN, NO_2, amino, mono- or disubstituted amino, alkyl or alkoxy, where each of the last two radicals mentioned is unsubstituted or substituted,

R^3 is hydrogen, hydroxyl, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_2–C_4)$alkenyl or $(C_2–C_4)$alkynyl, where each of the last 4 radicals mentioned is unsubstituted or substituted by halogen,

X and Y independently of one another are hydrogen, hydroxyl, amino, mono- or disubstituted amino, $(C_1–C_6)$alkyl, $(C_3–C_7)$cycloalkyl, $(C_2–C_6)$alkenyl, $(C_2–C_6)$alkynyl, $(C_1–C_6)$alkoxy, $(C_2–C_6)$alkenyloxy, $(C_2–C_6)$alkynyloxy, $C_3–C_7$)cycloalkoxy or $(C_1–C_6)$alkylthio, where each of the last 9 radicals mentioned is unsubstituted or substituted, and is CH or



in which R^o is halogen, cyano, $(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy, $(C_1–C_6)$haloalkyl or $(C_1–C_6)$haloalkoxy,

wherein heterocyclyl means a heterocyclic radical having 3 to 7 ring atoms and containing one hetero unit from the group consisting of N, O, S, SO and SO_2, or a heterocyclic radical from the group consisting of pyrimidinyl, pyridazinyl, pyrazinyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, dioxolanyl, morpholinyl, and piperazinyl and

wherein substituted, if not further specified, means substituted with one or more substituents selected from the group consisting of halogen, alkoxy, haloalkoxy, alkylthiohyroxyl, amino, nitro, carboxyl, cyano, azido, alkoxycarbonyl, alkylcarbonyl, formyl, carbamoyl, mono- and dialkylaminocarbonyl, acylamino, mono-, dialkylamino, alkylsulfinyl, aloalkylsulfinyl, alkylsulfonyl, haloalkysulfonyl, and in case of cyclic radicals, alkyl, haloalkyl, alkenyl, alkynyl, alkenyloxy, and alkynyloxy,

wherein radicals with carbon atoms have 1 to 4 carbon atoms, and

wherein acylradical means a radical of a carboxylic acid, carboxylic acid of a thiocarboxylic acid, an optionally N-substituted iminocarboxylic acid, the radical of a carbonic acid monoester, an optionally N-substituted carbamic acid, a sulfonic acid, a sulfinic acid, phosphonic acid or a phosphinic acid,

wherein radicals with carbon atoms have 1 to 12 carbon atoms, and

wherein substituted amino, hydroxylamino or hydrazino means amino radicals which are N-substituted by one or two identical or different radicals from the group consisting of $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, acyl and substituted or unsubstituted phenyl.

5,854,180
ENVIRONMENTALLY IMPROVED ACID CORROSION INHIBITOR

Gary A. Scherubel, St. Louis, Mo.; Robert Reid, Alton, Ill.; Allen R. Fauke, and Kevin Schwartz, both of St. Louis, Mo., assignors to Clearwater, Inc., Pittsburgh, Pa.

Filed Mar. 24, 1998, Ser. No. 47,208

Int. Cl.^{6} C23F *11/10;* **C09K** *15/04;* **E21B** *41/02*

U.S. Cl. 507—203 **13 Claims**

1. Composition useful for inhibiting corrosion of ferrous metals by acidic solutions comprising, by weight, (a) about 10% to about 30% cinnamaldehyde or substituted cinnamaldehyde, (b) about 20% to about 50% ethylene glycol (c) about 5% to about 20% C_{8-12} ethoxylated alcohols, and (d) about 1% to about 15% of a composition comprising about 10% to about 40% isopropanol and a reaction product (based on the total composition in this section (d)) of

about 10% to about 40% of a ketone having 3–9 carbon atoms,

about 1% to about 10% urea, thiourea or an alkyl-substituted thiourea,

about 25% to about 50% benzaldehyde or formaldehyde calculated as a 37% solution,

about 1% to about 10% HCl, said reaction being conducted in the presence of about 5% to about 20% ethylene glycol by warming the reactants in a vessel equipped with a reflux condenser, at a temperature slightly below that at which formaldehyede or benzaldehyde would collect in the condenser, and then refluxing the reaction mixture for at least six hours.

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5,854,181

AUTOMATIC TRANSMISSION OIL COMPOSITION

Gee Sik Na, Cheonju-si, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

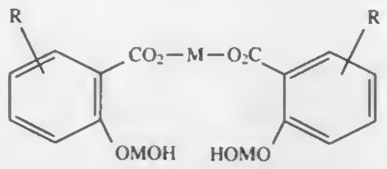
Filed Nov. 26, 1997, Ser. No. 979,166

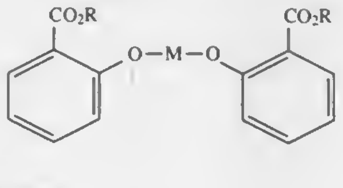
Claims priority, application Rep. of Korea, Nov. 29, 1996, 1996-59965

Int. Cl.^{6} C10M *125/10;141/02*

U.S. Cl. 508—180 **4 Claims**

1. Automatic transmission oil composition comprising the addition of an antioxidant, detergent dispersant, antiabrasive agent, anticorrosive agent, agent for adjusting a friction index, defoaming agent, viscosity index improver and colorant to a common lubricant oil, wherein one or more compounds selected from the following formula 1 and 2 as the antiabrasive agent is/are mixed with a compound expressed by formula 3 and the content ratio in the range of 0.01~5.0 wt %.


(1)


(2)

$MCO_3M(OH)_2$ (3)

Wherein,

R is a saturated or unsaturated C_8~C_{100} aliphatic group;

M is a calcium, barium or magnesium atom.

5,854,182

METHOD FOR PRODUCING MAGNESIUM BORATE OVERBASED METALLIC DETERGENT AND TO A HYDROCARBON COMPOSITION CONTAINING SAID DETERGENT

Krishan Kumar Swami; Anurag Ateet Gupta, both of Faridabad; Shanti Parkash, Gurgaon; Madan Mohan Rai, and Akhilesh Kumar Bhatnagar, both of Faridabad, all of India, assignors to Indian Oil Corporation Ltd., Mumbai, India

Filed Oct. 9, 1996, Ser. No. 728,052

Int. Cl.^{6} C10M *159/24*

U.S. Cl. 508—186 **10 Claims**

1. A process for preparing magnesium borate overbased metallic detergent additives comprising in the steps of:

i) preparing magnesium alkoxide by reacting a mixture containing a metal consisting only of magnesium under anhydrous conditions;

ii) reacting said magnesium alkoxide with a boron source in the presence of soluble neutral sulphonate of an alkaline earth metal and a diluent therefor to obtain said magnesium borate over based metallic detergent additive;

iii) removing the solvent by the step of distillation.

5,854,183

GREASE COMPOSITION FOR CONSTANT-VELOCITY JOINTS

Yukio Hasegawa; Shinichi Takabe, both of Iwata; Hirotsugu Kinoshita, Yokohama; Souichi Nomura, Yokohama, and Fumihiro Itano, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, and NTN Corporation, Osaka, both of Japan

Filed Apr. 23, 1997, Ser. No. 844,952

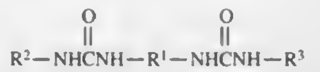
Claims priority, application Japan, Apr. 26, 1996, 8-131426

Int. Cl.^{6} C10M *115/08;141/10;141/12;141/06*

U.S. Cl. 508—316 **10 Claims**

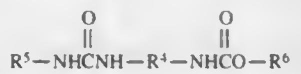
1. A grease composition for constant-velocity joints which is prepared by blending a lube base oil with (A) a urea-urethane thickening agent comprising a mixture of

(a) 20 to 95 mole % of a diurea compound represented by the following formula (1):



$$\mathrm{R^2-NH\overset{\overset{O}{\|}}{C}NH-R^1-NH\overset{\overset{O}{\|}}{C}NH-R^3} \quad (1)$$

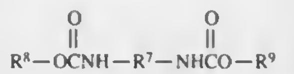
(b) 4 to 50 mole % of a urea-urethane compound represented by the following formula (2):



$$\mathrm{R^5-NH\overset{\overset{O}{\|}}{C}NH-R^4-NH\overset{\overset{O}{\|}}{C}O-R^6} \quad (2)$$

and

(c) 1 to 50 mole % of a diurethane compound represented by the following formula (3):



$$\mathrm{R^8-O\overset{\overset{O}{\|}}{C}NH-R^7-NH\overset{\overset{O}{\|}}{C}O-R^9} \quad (3)$$

with each mole percentage being based on the total amount of the components (a) to (c), wherein in the formulae (1) to (3), R^1, R^4 and R^7 are each independently a divalent aromatic hydrocarbon group having 6 to 15 carbon atoms; and R^2, R^3, R^5, R^6, R^8 and R^9 are each independently cyclohexyl group, a cyclohexyl derivative group having 7 to 12 carbon atoms, or an alkyl or alkenyl group having 8 to 20 carbon atoms, and wherein in said mixture a ratio of the number of amino groups (i.e., the total number of R^2—NH—, R^3—NH— and R^5—NH— groups) to the number of alkoxy groups (i.e., the total number of R^6—O—, R^8 —O— and R^9—O— groups) lies between 40:60 and 95:5,

(B) at least one compound selected from the group consisting of oxidized paraffins, diphenyl hydrogenphosphite and hexamethylphosphoric triamide, and

(C) at least one organomolybdenum compound selected from the group consisting of molybdenum dithiophosphate and molybdenum dithiocarbamate.

5,854,184

COLLOIDAL PRODUCTS, THEIR PREPARATION AND THEIR USES

Burno Delfort, Paris; Thierry Lacome, Rueil Malmaison, and Maurice Born, Nantierra, all of France, assignors to Institut Francais du Petrole, France

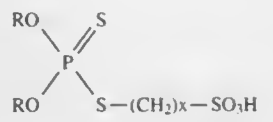
Filed Apr. 24, 1997, Ser. No. 842,326

Claims priority, application France, Apr. 25, 1996, 96 05403

Int. Cl.^{6} C10M *135/10*

U.S. Cl. 508—405 **13 Claims**

1. An overbased colloidal product comprising in a micellized form within an oily hydrocarbon-containing medium, a core of alkali metal or alkaline-earth metal carbonate, surrounded by a ring of at least one dihydrocarbyl-dithiophosphoryl-alkane-sulfonic acid surfactant of the formula:



in which R represents a monovalent radical that contains hydrocarbon with 1 to 30 carbon atoms which can be aliphatic, cycloaliphatic or aromatic and x has a value of 3 to 6, and their alkali metal or alkaline-earth metal salts.

5,854,185

LUBRICANT MIXTURES AND GREASE COMPOSITIONS BASED THEREON

Robert John Gordon Roth, and Georgina Ann Winterburn, both of Ontario, Canada, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 692,562, Aug. 6, 1996, abandoned, which is a continuation of Ser. No. 413,143, Mar. 29, 1995, abandoned. This application Nov. 25, 1997, Ser. No. 977,970

Claims priority, application European Pat. Off., Mar. 31, 1994, 943023721

Int. Cl.^{6} C10M *105/32;111/04*

U.S. Cl. 508—492 **15 Claims**

1. A lubricant mixture suitable for use as base fluid in bearing grease, the mixture comprising from about 25 to about 90 percent w/w of a liquid ester having a viscosity at 40° C. in the range of about 100 mm^2/s to about 200 mm^2/s and from about 75 percent to about 10 percent w/w of a liquid poly-α-olefin having a viscosity at 100° C. in the range of about 2 mm^2/s to about 10 mm^2/s.

5,854,186

LUBRICATING OIL DISPERSANTS DERIVED FROM HEAVY POLYAMINE

Joseph V. Cusumano, Watchung; David C. Dankworth, Whitehouse Station; William D. Diana, Belle Mead; William B. Eckstrom, Fanwood, all of N.J.; Jacob I. Emert, Brooklyn, N.Y.; Keith R. Gorda, Little York, N.J.; Antonio Gutierrez, Mercerville, N.J.; Jon E. Stanat, Westfield, N.J.; Warren A. Thaler, Flemington, N.J., and Stephen Zushma, Clinton, N.J., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Division of Ser. No. 261,554, Jun. 17, 1994. This application Mar. 18, 1997, Ser. No. 820,250

Int. Cl.^{6} C10M *159/12;149/14;133/52*

U.S. Cl. 508—554 **10 Claims**

1. A process for producing a hydrocarbon having functional groups of the formula —CO—Y—R^3 wherein each Y is independently O or S, and each R^3 is independently H, hydrocarbyl, substituted hydrocarbyl, aryl, or substituted aryl, derivatized with a heavy polyamine, said process comprising the steps of reacting —

(a) at least one hydrocarbon;

(b) carbon monoxide;

(c) at least one acid catalyst having a Hammett acidity of less than −7; and

(d) a nucleophilic trapping agent selected from the group consisting of water, hydroxy-containing compounds and thiol-containing compounds, the reaction being conducted in the absence of reliance on transition metal as catalyst; optionally wherein the nucleophilic trapping agent has a pKa of less than 12, to form a functionalized hydrocarbon; and

derivatizing said functionalized hydrocarbon with a heavy polyamine comprising a mixture of polyamines having 6 to 12 nitrogens per molecule, an average of 7 or more nitrogens per molecule, a nitrogen content of at least 28 wt. % and an equivalent weight of about 120 to about 160 grams per equivalent of primary amine.

5,854,187

MICROEMULSION DILUTABLE CLEANER

Robert L. Blum, Concord; Michael H. Robbins, Walnut Creek; Lynn M. Hearn, and Shona L. Nelson, both of Livermore, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Aug. 9, 1996, Ser. No. 695,384

Int. Cl.^{6} C11D *77/04;17/00*

U.S. Cl. 510—197 **18 Claims**

1. A concentrated, dilutable cleaning composition which comprises a microemulsion comprising a nonionic surfactant oil phase, a predominant, aqueous continuous phase, a polar organic solvent coupling agent, and a combination of surfactants different from the surfactant oil phase as the dispersing agent facilitating formation of said microemulsion, said cleaning composition characterized by exhibiting the feature of blooming upon dilution with water in the absence of a lipophilic oil other than a nonionic surfactant.

5,854,188

WATER IN OIL EMULSIONS CONTAINING PYRROLE

John Distaso, Orange, and Azucena G. De Guzman, Cerritos, both of Calif., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Feb. 25, 1997, Ser. No. 804,649

Int. Cl.^{6} C09D *9/00;9/04;* **B08B** *3/08*

U.S. Cl. 510—206 **10 Claims**

1. In an alkaline paint stripper formulation which contains a water-in-oil emulsion having a water phase and a continuous benzyl alcohol phase, but which does not contain an organic amine activator, the improvement comprising incorporating pyrrole and at least one of d-limonene or anisole in the benzyl alcohol phase in an amount effective to increase the rate of stripping.

5,854,189

PROCESS FOR THE PRODUCTION OF BREAK-RESISTANT, STORABLE MULTIFUNCTIONAL DETERGENT TABLETS

Hans Kruse, Am Hallenbad 44, 41352 Korschenbroich; Jochen Jacobs, Teschensudberg 50, 42349 Wuppertal, and Peter Jeschke, Macherscheider Str. 137, 41468 Neuss, all of Germany

PCT No. PCT/EP95/00821, § 371 Date Sep. 13, 1996, § 102(e) Date Sep. 13, 1996, PCT Pub. No. WO95/25161, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 6, 1995, Ser. No. 716,220

Claims priority, application Germany, Mar. 15, 1994, 44 08 718.7

Int. Cl.^{6} C11D *11/00*

U.S. Cl. 510—224 **4 Claims**

1. A water free process of producing break-resistant and storage-stable detergent tablets consisting of coating powdered detergent components selected from the group consisting of builders, bleaching agents, enzymes and 0.2 to 4%/wt of nonionic surfactants, each component present being in anhydrous form with 1 to 5% by weight of a hydrophobicizing agent selected from the group consisting of paraffin oils and solid paraffins having a melting point of from 30° C. to 60° C., based on the weight of said tablets; optionally adding nonionic surfactants or perfume oil to said hydrophobicizing agent before spraying; or applying said nonionic surfactants or perfume oil to the powdered detergent components before coating with said hydrophobicizing agent; and tabletting the resulting mixture under pressure to produce tablets having a breaking strength of at least 150N.

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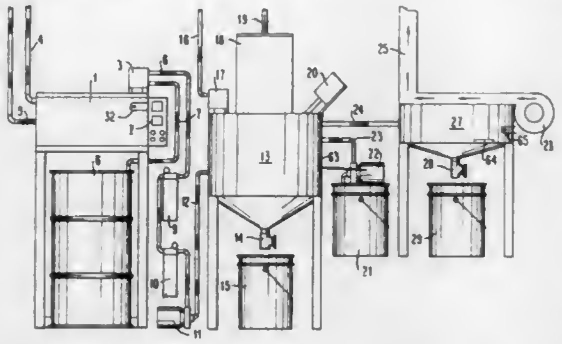
5,854,190
WATER-BASED FLUSHING FOR PAINTS AND OTHER COATINGS

Richard E. Knipe, Jr., Montebello, N.Y.; Savarimuthu M. Jacob, Edison, and Thomas Mancini, Lincoln Park, both of N.J., assignors to DALCO Industries, Ltd., Spring Valley, N.Y.

Division of Ser. No. 784,315, Jan. 16, 1997, Pat. No. 5,701,922. This application Oct. 15, 1997, Ser. No. 950,615

Int. Cl.⁶ C11D *1/66;3/08*

U.S. Cl. 510—241 **7 Claims**



1. A purge concentrate for purging coating equipment, comprising:

about 75%–85% by weight water;
about 1%–20% by weight sodium silicate;
about 0.01%–7% by weight modified ethoxylated surfactant; and further comprising potassium hydroxide and a sodium salt of glucoheptonic acid.

5,854,191
GRAFT COPOLYMERS OF UNSATURATED MONOMERS AND SUGARS, A PROCESS FOR THE PRODUCTION AND THE USE THEREOF

Frank Krause, Kleve, and Helmut Klimmek, Krefeld, both of Germany, assignors to Stockhausen GmbH & Co. KG, Krefeld, Germany

Division of Ser. No. 362,436, Dec. 29, 1994, Pat. No. 5,580,941. This application Sep. 13, 1996, Ser. No. 713,538

Claims priority, application Germany, Jul. 2, 1992, 42 21 381.9

Int. Cl.⁶ D06P *5/00*

U.S. Cl. 510—276 **13 Claims**

1. In a method of treating a textile material selected from raw fiber materials, fibers and textiles, comprising contacting said textile material with a treatment solution, the improvement comprising incorporating in said treatment solution an amount of a graft copolymer effective to enhance a textile treatment selected from the group consisting of textile finishing, raw fiber pretreatment, boiling off, kier scouring, bleaching, dyeing, textile printing, reactive print washing, vat color washing, and desizing, said graft copolymer obtained by radical graft copolymerization of from 40 to 95 parts by weight of a monomer mixture in the presence of from 5 to 60 parts by weight of a saccharide component selected from the group consisting of monosaccharides, disaccharides, oligosaccharides, saccharide derivatives, and mixtures thereof; said saccharide derivatives being selected from the group consisting of sorbitol, mannitol, gluconic acid, glucuronic acid, alkyl glycosides, and alkyl-, hydroxyalkyl- and carboxyalkyl- ethers of saccharides; said monomer mixture comprising the following components:

A) 36.95 to 96%-wt. of at least one monoethylenically unsaturated C3–C10 monocarboxylic acid, or salt thereof with a monovalent cation;
B) 4 to 55%-wt. of at least one monoethylenically unsaturated monomer comprising a monosulfonic acid group, monoethylenically unsaturated sulfuric acid ester, vinylphosphonic acid or a salt thereof with a monovalent cation;
C) 0 to 30%-wt. of at least one water-soluble, monoethylenically unsaturated polyalkyleneglycol ether of (meth)allyl alcohol or polyalkyleneglycol ester of (meth)acrylic acid, containing 2 to 50 moles of alkylene oxide units per mole of (meth) allyl alcohol or (meth)acrylic acid;
D) 0 to 45%-wt. of at least one further, water-soluble, radically polymerizable monomer or a monomer which comprises at least two ethylenically unsaturated double-bonds, or an ethylenically unsaturated double-bond and a cross-linkable functional group other than an ethylenically unsaturated double-bond, and
E) 0 to 30%-wt. other radically polymerizable monomers which are slightly soluble or insoluble in water selected from the group consisting of C_1 to C18 alkyl(meth)acrylic acid esters, hydroxyalkyl(meth)acrylic acid esters, mono- and dialkyl esters of maleic acid, N-alkyl and N,N-dialkyl(meth)acrylamides and vinyl carboxylic acid esters,

the sum of components A to E being 100%-wt.

5,854,192
PARTICULATE ZERO-PHOSPHATE ALUMINOSILICATE-BUILT DETERGENT COMPOSITIONS COMPRISING SILICATE/CARBONATE COGRANULES

Jelles Vincent Boskamp, Vlaardingen, Netherlands, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed May 7, 1997, Ser. No. 852,617

Claims priority, application United Kingdom, May 9, 1996, 9609699

Int. Cl.⁶ C11D *3/10;3/08;3/12;3/39*

U.S. Cl. 510—315 **12 Claims**

1. A particulate zero-phosphate laundry detergent composition comprising:

(i) from 30 to 80 wt % of a granular base powder comprising
  (a) from 5 to 60 wt %, based on the composition, of organic surfactant, and
  (b) from 10 to 80 wt %, based on the composition, of alkali metal aluminosilicate detergency builder,
(ii) from 1 to 5 wt % of sodium silicate not within the granular base powder, all of said sodium silicate being present in the form of separate cogranules consisting essentially of sodium silicate and sodium carbonate in a weight ratio within the range of from 3:1 to 1:3, said composition containing from 2 to 10 wt % of said cogranules and said composition being free of postdosed sodium silicate other than that contained in said cogranules,
(iii) from 2 to 10 wt % of postdosed granules of sodium carbonate,
(iv) from 10 to 35 wt % of postdosed granules of a peroxy bleach compound; and
(v) optionally other detergent ingredients to 100 wt %,

whereby the tendency of the composition to form granules having a particle size of 2000 μm or larger on storage is less than if the sodium silicate (ii) were present in the form of separate granules of sodium disilicate.

12. A process for reducing the tendency of a particulate zero-phosphate zeolite-built detergent composition to form granules having a particle size of 2000 μm or above on storage, the composition comprising from 30 to 80 wt % of a granular base powder comprising

(a) from 5 to 60 wt %, based on the composition, of organic surfactant, and
(b) from 10 to 80 wt %, based on the composition, of alkali metal aluminosilicate detergency builder,

optionally from 10 to 35 wt % of postdosed granules of a peroxy bleach compound, and optionally other detergent ingredients to 100 wt %,

which process comprises incorporating in said composition from 2 to 10 wt % of postdosed cogranules consisting essentially of sodium silicate and sodium carbonate in a weight ratio within the range of from 3:1 to 1:3, said cogranules containing from 1 to 5 wt %, based on the composition, of sodium silicate, said composition being otherwise free of postdosed sodium silicate, and which process further comprises incorporating in said composition from 1 to 50 wt %, based on the composition, of postdosed sodium carbonate granules.

5,854,193
MICROEMULSION/ALL PURPOSE LIQUID CLEANING COMPOSITION BASED ON EO-PO NONIONIC SURFACTANT

Myriam Mondin, Seraing; Nicole Andries, Voroux-Lex-Liers, and Jean Massaux, Olne, all of Belgium, assignors to Colgate Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 529,485, Sep. 18, 1995, Pat. No. 5,716,925, which is a continuation-in-part of Ser. No. 336,934, Nov. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 288,638, Aug. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,317, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,314, Aug. 4, 1993, abandoned. This application Aug. 20, 1997, Ser. No. 914,943

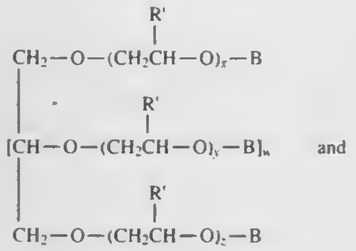
Int. Cl.⁶ C11D *1/722;1/74;1/83;17/00*

U.S. Cl. 510—365 **9 Claims**

1. A microemulsion cleaning composition consisting of:

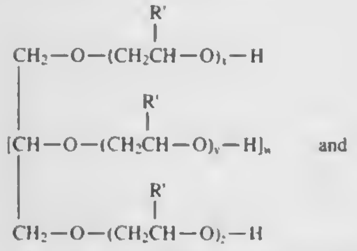
(a) 0.1 to 10 wt. % of an ethoxylated/propoxylated nonionic surfactant;
(b) 0.1 wt. % to 20 wt. % of an anionic surfactant selected from the group consisting of sulfonated surfactant and sulfated surfactants;
(c) 0.94 to 10 wt. % of a mixture of:

(I)



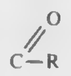
$$\begin{array}{l} CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_x-B \\ | \\ [CH-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_y-B]_w \qquad \text{and} \\ | \\ CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_z-B \end{array}$$

(II)

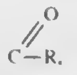


$$\begin{array}{l} CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_x-H \\ | \\ [CH-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_y-H]_w \qquad \text{and} \\ | \\ CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_z-H \end{array}$$

wherein w equals one, and B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



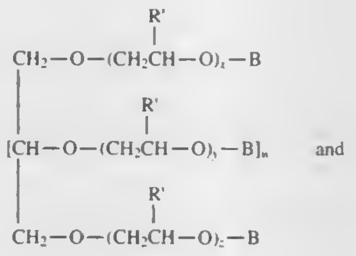
R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 40 to 90/5 to 35/1 to 20, wherein the weight ratio of Formula (I) and Formula (II) is a value between 3 and 0.02;

(d) 0.1% to 15% of a glycol ether cosurfactant;
(e) 0.05% to 2% of a fatty acid;
(f) 0.1 to 10 wt. % of a water insoluble hydrocarbon, essential oil or a perfume;
(g) optionally, a salt of a multivalent metal cation in an amount sufficient to provide from 0.5 to 1.5 equivalents of said cation per equivalent of said anionic surfactant; and
(h) the balance being water.

6. An all purpose cleaning composition consisting of:

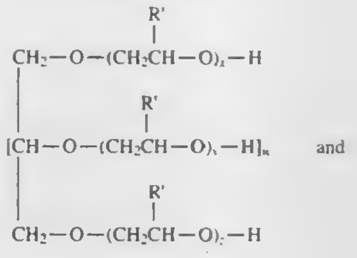
(a) 0.1 to 10 wt. % of an ethoxylated/propoxylated nonionic surfactant;
(b) 0.1 wt. % to 20 wt. % of an anionic surfactant selected from the group consisting of sulfonated surfactant and sulfated surfactants;
(c) 0.94 to 10 wt. % of a mixture of:

(I)



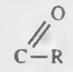
$$\begin{array}{l} CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_x-B \\ | \\ [CH-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_y-B]_w \qquad \text{and} \\ | \\ CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_z-B \end{array}$$

(II)

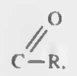


$$\begin{array}{l} CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_x-H \\ | \\ [CH-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_y-H]_w \qquad \text{and} \\ | \\ CH_2-O-(CH_2\overset{R'}{\overset{|}{C}H}-O)_z-H \end{array}$$

wherein w equals one, and B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 40 to 90/5 to 35/1 to 20, wherein the weight ratio of Formula (I) and Formula (II) is a value between 3 and 0.02;

(d) 0.05% to 2% of a fatty acid;
(e) 0 to 10 wt. % of a water insoluble hydrocarbon, essential oil or a perfume;
(f) optionally, a salt of a multivalent metal cation in an amount sufficient to provide from 0.5 to 1.5 equivalents of said cation per equivalent of said anionic surfactant; and
(g) the balance being water.

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5,854,194

CHEMICAL LINKER COMPOSITIONS

Michele Davister, Vise; Guy Broze, Grace-Hollogne; Patrick Durbut, Verviers; Hoai-Chau Cao, Liege, all of Belgium; Thomas Connors, Piscataway, N.J.; John Labows, Horsham, Pa., and Anne-Marie Misselyn, Villers-l'eveque, Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Dec. 12, 1996, Ser. No. 764,342

Int. Cl.^{6} C11D *10/02;17/00;* **A01N** *25/24*

U.S. Cl. 510—422 **2 Claims**

1. A composition consisting essentially of approximately by weight:

(a) 0.1% to 10% of an organic chemical having a chemical group having a dipole moment of at least 1.5 Debyes, said organic chemical being selected from the group consisting of perfumes containing alcohol and aldehyde compounds, N-lower alkyl neoalkanol amide, tridosan, proteins and benzyl benzoate;

(b) 0.1% to 20% of a chemical linker selected from the group consisting of carboxylic acids having 4 to 6 carbon atoms, an ethoxylated polyhydric alcohol, a polyvinyl pyrrolidone polymer and a polyethylene glycol having a molecular weight of about 600 to about 10,000, wherein the molar ratio of the chemical linker to the organic chemical is about 4:1 to 1:4, said chemical linker being complexed with said organic chemical;

(c) 0 to 30% of at least one anionic surfactant having a carboxylate, sulfate or sulfonate group;

(d) 0 to 15% of a second surfactant selected from the group consisting of amine oxide surfactants, zwitterionic surfactants and alkylene carbonate surfactants; and

(e) 50% to 99.8% of water.

5,854,195

LIGHT DUTY LIQUID CLEANING COMPOSITIONS

Gary Jakubicki, Robbinsville, and Leonard Zyzyck, Skillman, both of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 681,651, Jul. 29, 1996, abandoned. This application Oct. 21, 1997, Ser. No. 955,832

Int. Cl.^{6} C11D *1/12*

U.S. Cl. 510—426 **4 Claims**

1. A clear light duty liquid cleaning composition which consisting of approximately by weight:

(a) 0.5% to 22% of an alkali metal or ammonium salt of a C_{8-18} ethoxylated alkyl ether sulfate;

(b) 0.5% to 10% of a sodium salt of a C_{10}–C_{16} alkyl benzene sulfonate surfactant;

(c) 2% to 16% of a magnesium salt of a C_{10}–C_{16} alkyl benzene sulfonate surfactant;

(d) 1 to 12% of at least one solubilizing agent;

(e) 2% to 16% of an alkyl polyglucoside surfactant;

(f) 1% to 6% of a C_{12}–C_{14} alkyl monoalkanol amide;

(g) the balance being water. wherein said composition does not contain a nonionic surfactant which is an aliphatic ethoxylate or an ethylene and/or propylene oxide condensate with an alkanol and the composition has a minimum foam height of 110 mls after 55 rotation at 40° C., wherein the composition does not contain a mono C_1-C_6 alkyl ether or ester of an ethlene glycol or propylene glycol having the structural formulas $R(X)_nOH$ and $R_1(X)_nOH$ wherein R is a C_1–C_6 alkyl group. R_1 is a C_2–C_4 acyl group. X is (OCH_2CH_2) or $(OCH_2(CH_3)CH)$ and n is a number from 1 to 4 and the composition is not a microemulsion.

5,854,196

DETERGENT COMPOSITIONS

Gerard Marcel Baillely, Newcastle upon Tyne; Barry Thomas Ingram, Tyne & Wear, and Christian Leo Marie Vermote, Newscastle upon Tyne, all of Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/09585, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/06149, PCT Pub. Date Feb. 29, 1996

PCT Filed Jul. 28, 1995, Ser. No. 793,223

Claims priority, application European Pat. Off., Aug. 23, 1994, 94306212

Int. Cl.^{6} C11D *1/29;1/37*

U.S. Cl. 510—427 **20 Claims**

1. A detergent composition, comprising (a) from 1% to 90% of an anionic surfactant comprising at least 30% of alkyl alkoxylated sulphate having an average degree of alkoxylation of from 0.1 to 3, and a balance of anionic surfactant other than alkyl alkoxylated sulphate, wherein the ratio of the combined weight of alkyl monoalkoxylated sulphate and alkyl dialkoxylated sulphate to the total weight of the anionic surfactant is from 0.2 to 1, and the ratio of the combined weight of the alkyl monoalkoxylated sulphate and the alkyl dialkoxylated sulphate to the total weight of alkyl alkoxylated sulphate having 3 or more alkoxy groups per alkyl group is at least 1, and (b) at least one builder or chelant, or a mixture thereof.

5,854,197

CLEANING COMPOSITIONS CONTAINING LIME-SOAP DISPERSANT AND METHOD OF PREPARATION

Yves Duccini, Beauvais, France; Andrea Claudette Keenan, Plymouth Meeting, and Jan Edward Shulman, Newtown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 30, 1996, Ser. No. 720,497

Claims priority, application France, Oct. 13, 1995, 95 12038

Int. Cl.^{6} C11D *3/37;3/12*

U.S. Cl. 510—434 **11 Claims**

1. A method for preparing a liquid cleaning composition comprising combining:

(a) from 0.05 to 10 percent, based on total cleaning composition weight, of a lime-soap dispersant polymer comprising as polymerized units from 20 to 90 percent, based on total polymer weight, of maleic acid monomer selected from one or more of maleic acid, maleic anhydride and water-soluble salts thereof, and from 10 to 80 percent, based on total polymer weight, of a hydrophobe containing from 4 to 20 carbon atoms and selected from one or more of alkenes, dienes, alkynes and aromatic compounds;

(b) from 0.5 to 30 percent, based on total cleaning composition weight, of soap selected from one or more water-soluble salts of saturated and unsaturated (C_8–C_{24})aliphatic carboxylic acids;

(c) from 0.1 to 60 percent, based on total cleaning composition weight, of auxiliary additives selected from one or more stabilizers, builders, and water-soluble anionic and non-ionic surfactants; and

(d) water; adjusting the pH of the liquid cleaning composition to 5 to 11.5; maintaining the ratio of the lime-soap dispersant polymer to the soap from 1/1 to 1/200 by weight; and selecting the relative proportions of the lime-soap dispersant polymer, the soap, the auxiliary additives and the water in steps (a) through (d) such that the liquid cleaning composition is stable, and wherein the soap combined with the non-ionic and anionic surfactants is from 15 to 50 percent, based on total cleaning composition weight.

5,854,198

PARTICULATE ALUMINOSILICATE-BUILT DETERGENT COMPOSITIONS COMPRISING COGRANULES OF ZEOLITE MAP AND ALKALI METAL SILICATE

Peter Willem Appel, Rotterdam; Theodorus Johannes Arts, Maastricht; Jelles Vincent Boskamp, Vlaardingen, all of Netherlands; Andrew Paul Chapple, Wrexham, United Kingdom; Fredericus Cornelis Dobbe, Oegstgeest, Netherlands; Christophe Michel Joyeux, Montluel, France; Carolyn Angela Lanceley, Chester, United Kingdom; Edwin Leo Lempers, Maassluis, and Theo Jan Osinga, Cadier en Keer, both of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 14, 1997, Ser. No. 818,191

Claims priority, application United Kingdom, Mar. 15, 1996, 9605534

Int. Cl.^{6} C11D *3/08;17/00;3/395*

U.S. Cl. 510—444 **11 Claims**

1. A particulate detergent composition having a bulk density of at least 650 g/liter, comprising

(a) a granular non-spray-dried base powder comprising one or more organic surfactants and one or more detergency builders including zeolite P having a silicon:aluminium ratio not exceeding 1.33 (zeolite MAP),

(b) optionally one or more separate particulate components,

(c) a water-soluble alkali metal silicate in an amount of from 1 to 20 wt % based on the zeolite MAP on an anhydrous basis, wherein the zeolite MAP and alkali metal silicate together form cogranules having an average particle size of from 1 to 10 μm in which the alkali metal silicate is deposited on the zeolite MAP particles.

11. A process for increasing the storage stability of sodium percarbonate in a particulate detergent composition having a bulk density of at least 650 g/liter, said composition comprising

(a) a granular non-spray-dried base powder comprising one or more organic surfactants and one or more detergency builders including zeolite P having a silicon:aluminium ratio not exceeding 1.33 (zeolite MAP),

(b) sodium percarbonate as a separate particulate component,

which process comprises incorporating in said granular non-spray-dried base powder a water-soluble alkali metal silicate in an amount of from 1 to 20 wt % based on the zeolite MAP on an anhydrous basis, wherein the zeolite MAP and alkali metal silicate together form cogranules having an average particle size of from 1 to 10 μm in which the alkali metal silicate is deposited on the zeolite MAP particles.

5,854,199

CLEANING COMPOSITIONS CONTAINING ACYLATED DIPEPTIDES AND ACYLATED AMINO ACIDS

Eiko Oshimura; Hideki Yoshihara; Kazutami Sakamoto, all of Kawasaki, and Tatsuya Hattori, Yokkaichi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 2, 1997, Ser. No. 921,518

Claims priority, application Japan, Aug. 30, 1996, 8-230698

Int. Cl.^{6} C11D *1/37;1/88;* **C07C** *237/52*

U.S. Cl. 510—501 **17 Claims**

1. A cleansing composition, comprising:

(A) an N-long-chain-acylated dipeptide represented by formula (1):

$$R^1—CO—(X—Y)—OM^1 \qquad (1),$$

wherein

X and Y are each, independently, an acidic amino acid residue,

R^1 is a linear or branched alkyl or alkenyl group having from 7 to 21 carbon atoms, and

M^1 is a hydrogen atom, an alkali metal ion, an ammonium ion, an alkylammonium ion, an alkanolammonium ion or a protonated basic amino acid; and

(B) a N-long-chain-acylated acidic amino acid or a salt thereof.

5,854,200

RINSE ADDED FABRIC SOFTENER COMPOSITIONS CONTAINING ANTIOXIDANTS FOR SUN-FADE PROTECTION FOR FABRICS

John Cort Severns, West Chester; Mark Robert Sivik, Fairfield; Ellen Schmidt Baker, and Frederick Anthony Hartman, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

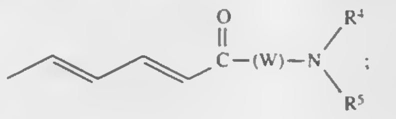
Division of Ser. No. 596,787, Feb. 5, 1996, Pat. No. 5,723,435, which is a continuation of Ser. No. 280,689, Jul. 26, 1994, abandoned. This application Feb. 20, 1998, Ser. No. 27,884

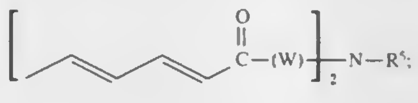
Int. Cl.^{6} C11D *3/20;3/30;3/32*

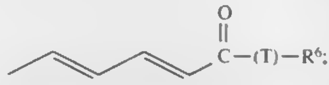
U.S. Cl. 510—501 **17 Claims**

1. A rinse-added fabric softener composition comprising:

A. from about 1% to about 25%, by weight of the composition, of a non-fabric staining, light stable antioxidant compound selected from the group consisting of:


(IV)


(V)


(VI)

and mixtures thereof (VII);

wherein

each R^4 is a saturated or unsaturated C_1 to C_{22} alkyl group or hydrogen;

each R^5 is a saturated or unsaturated C_1 to C_{22} alkyl group which can contain ethoxylated or propoxylated groups;

each R^6 is a branched or straight chained, saturated or unsaturated, C_8 to C_{22} alkyl group;

each T is O or

$$\overset{Z}{\overset{|}{N}};$$

each W is

$$\overset{Y}{\overset{|}{(OCHCH_2)_n}} \quad \text{or} \quad \overset{Z}{\overset{|}{N}}-(CH_2)_q;$$

wherein Y is hydrogen or a C_1 to C_5 alkyl group;

wherein Z is hydrogen, a C_1 to C_3 alkyl group, which may be interrupted by an ester, amide, or ether group, or a C_1 to C_{30} alkoxy group, which may be interrupted by an ester, amide, or ether group;

each n is from 1 to 50;

each q is from 1 to 10; and

wherein the antioxidant compound can also comprise quaternary ammonium compounds of (III), (IV), and (V); and

B. from about 3% to 50% by weight of the composition of a fabric softening composition selected from the group consisting of:

1. compounds having the formula:

$$[(R^7)_{4-p}—N^+—[(CH_2)_{q^2}—(Y')—R^8]_p]\ X^- \qquad (1)$$

wherein

each Y' is —O—(O)C—, or —C(O)—O—;

p is 2 or 3;

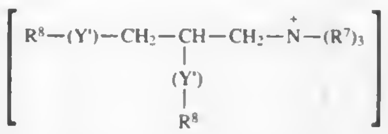
each q^2 is 1 to 5;

each R^7 substituent is selected from short chain C_1 to C_6 alkyl or hydroxyalkyl group, benzyl group and mixtures thereof;

each R^8 is a long chain C_{11} to C_{21} hydrocarbyl, or substituted hydrocarbyl substituent;

and counterion, X^-, is any softener-compatible anion;

2. compounds having the formula:

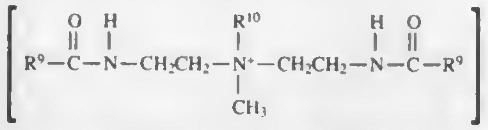


$$\left[R^8-(Y')-CH_2-\underset{\substack{|\\(Y')\\|\\R^8}}{CH}-CH_2-\overset{+}{N}-(R^7)_3\right]X^-$$

(2)

wherein each Y', R^7, R^8, and X– have the same meaning as before for fabric softener formula (1);

3. compounds having the formula:

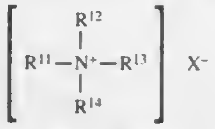


$$\left[R^9-\overset{\substack{O\\ \|}}{C}-\overset{\substack{H\\|}}{N}-CH_2CH_2-\overset{\substack{R^{10}\\|}}{\underset{\substack{|\\CH_3}}{N^+}}-CH_2CH_2-\overset{\substack{H\\|}}{N}-\overset{\substack{O\\ \|}}{C}-R^9\right]X^-$$

(3)

wherein each R^9 is a C_8 to C_{20} alkyl or alkenyl group; R^{10} is a hydrogen methyl, ethyl, or $(C_rH_{2r}O)_sH$, wherein r is from 1 to 5, wherein s is from 1 to 5; and X^- has the same meaning as before for fabric softener formula (1);

4. compounds having the formula:

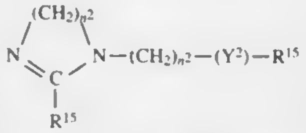


$$\left[R^{11}-\overset{\substack{R^{12}\\|}}{\underset{\substack{|\\R^{14}}}{N^+}}-R^{13}\right]X^-$$

(4)

wherein each R^{11} and R^{12} is a C_8 to C_{24} alkyl or alkenyl group; each R^{13} and R^{14} is a C_1 to C_6 alkyl group; X^- is any anion as discussed hereinbefore for fabric softener formula (1);

5. compounds having the formula:

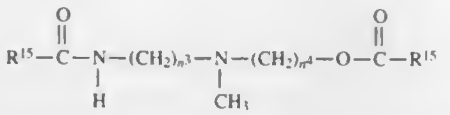


(5)

wherein each Y^2 is either: —$N(R^{16})C(O)$—, in which each R^{16} is selected from the group consisting of a C_1 to C_6 alkyl, alkenyl, or hydroxy alkyl group, or hydrogen; —OC(O)—; or a single covalent bond;

wherein each R^{15} is independently, a hydrocarbyl group containing from about 11 to about 31 carbon atoms, and wherein each n^2 independently is from 2 to 4;

6. compounds having the formula:



$$R^{15}-\overset{\substack{O\\ \|}}{C}-\underset{\substack{|\\H}}{N}-(CH_2)_{n^3}-\underset{\substack{|\\CH_3}}{N}-(CH_2)_{n^4}-O-\overset{\substack{O\\ \|}}{C}-R^{15}$$

(6)

wherein each R^{15} is independently, a hydrocarbyl group containing from about 11 to about 31 carbon atoms;

n^3 is 1 to 5;

n^4 is 1 to 5; and

7. mixtures thereof; and

C. from about 25% to about 95% by weight of the composition of a carrier material; and

wherein the composition optionally includes a non-fabric staining, light stable sunscreen compound; wherein said antioxidant compound is a solid having a melting point of less than about 80° C., or a liquid at a temperature of less than about 40° C.; and wherein said optional sunscreen compound absorbs light at a wavelength of from about 290 nm to about 450 nm and is a solid compound having a melting point of from about 25° C. to about 90° C., or a viscous liquid at a temperature of less than about 40° C.

5,854,201

TEXTILE SOFTENERS CONCENTRATES BASED ON PENTAERYTHRITOL OR ESTERS THEREOF CONTAINING QUATERNARY AND NONIONIC EMULSIFIERS

Ansgar Behler, Bottrop; Guenther Uphues, Monhelm; Bernd Wahle, Kaarst; Peter Waltenberger, Breltscheld, and Almud Folge, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/03969, § 371 Date Jul. 10, 1997, § 102(e) Date Jul. 10, 1997, PCT Pub. No. WO96/12002, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 9, 1995, Ser. No. 817,584

Int. Cl.^{6} C11D *1/62;1/74;1/835*

U.S. Cl. 510—515 **13 Claims**

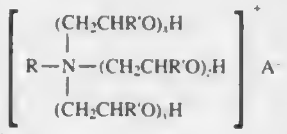
1. A textile softener concentrate having improved dispersibility in cold water comprising

a) 70% to 95% by weight of pentaerythritol fatty acid partial ester or dipentaerythritol fatty acid partial ester, and

b) 5% to 30% by weight of an emulsifier component comprising a mixture of

b1) a quaternary nitrogen compound selected from the group consisting of

b1i) quaternized alkoxylated alkylamines corresponding to formula (I): Preliminary Amendment of U.S. National Stage for International Application



$$\left[R-\overset{\substack{(CH_2CHR'O)_xH\\|}}{\underset{\substack{|\\(CH_2CHR'O)_zH}}{N}}-(CH_2CHR'O)_yH\right]^+A^-$$

(I)

in which

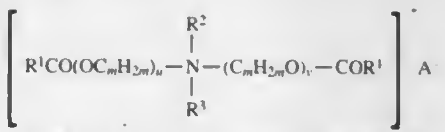
R is an aliphatic hydrocarbon radical containing 6 to 22 carbon atoms,

R' is H or CH_3,

x, y, and z independently of one another represent a number of 1 to 20, the sum of x+y+z being≧3,

A^- is an anion, and

b1ii) quaternized fatty acid alkanolamine esters corresponding to formula (II):



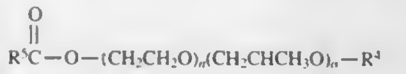
$$\left[R^1CO(OC_mH_{2m})_u-\overset{\substack{R^2\\|}}{\underset{\substack{|\\R^3}}{N}}-(C_mH_{2m}O)_v-COR^1\right]^+A^-$$

(II)

in which R^1CO is a saturated or unsaturated acyl group containing 12 to 22 carbon atoms, $R^2$is a group $R^1CO(OC_mH_{2m})_w$, an alkyl group containing 1 to 4 carbon atoms or a hydroxyalkyl group containing 2 to 4 carbon atoms and R^3 is an alkyl group containing 1 to 4 carbon atoms or a hydroxyalkyl group containing 2 to 4 carbon atoms, m is the number 2 or 3, u, v and w are each a number of 1 to 4 and A- is an anion, and

b2) a nonionic emulsifier selected from the group consisting of

b2i) ethoxylated or propoxylated fatty acids or fatty acid esters corresponding to formula (III):



$$R^5\overset{\substack{O\\ \|}}{C}-O-(CH_2CH_2O)_n(CH_2CHCH_3O)_o-R^4$$

(III)

in which

R^5CO is an aliphatic acyl radical containing 6 to 22 carbon atoms,

n and o independently of one another represent a number of 0 to 20, the sum of n+o being≧1,

R^4 is H or an aliphatic hydrocarbon radical containing 1 to 12 carbon atoms, and

b2ii) end-capped fatty alcohol polyglycol ethers corresponding to formula (IV):

$$R^7-(CH_2CH_2O)_p(CH_2CHCH_3O)_q-R^6 \qquad \text{(IV)}$$

in which

R^7 is an aliphatic hydrocarbon radical containing 6 to 22 carbon atoms,

p and q independently of one another are numbers of 0 to 20, the sum of p+q being≧2, and

R^6 is an aliphatic hydrocarbon radical containing 1 to 12 carbon atoms.

5,854,202

PEPTIDE FRAGMENTS OF CALRETICULIN, PEPTIDE MIMETICS THEREOF AND PHARMACEUTICAL COMPOSTIONS COMPRISING SAME

Shoukat Dedhar, 59 Drumern Crescent, Richmond Hill, Ontario, Canada, L4C 5H9

Filed Jan. 24, 1995, Ser. No. 377,432

Int. Cl.^{6} C07K *7/00;* **A61K** *38/04*

U.S. Cl. 514—2 **11 Claims**

1. An isolated and purified peptide of 6 amino acids having the amino acid sequence $KXFFX^1R$ (SEQ ID NO.:1), wherein X is G, A or V and wherein X^1 is K or R and wherein the peptide binds calreticulin.

5,854,203

TUMOR REJECTION ANTIGEN PRECURSOR PROCESSED TO AT LEAST ONE TUMOR REJECTION ANTIGEN PRESENTED BY HLA-A2

Vincent Brichard; Aline Van Pel, both of Brussels, Belgium; Catia Traversari, Milan, Italy; Thomas Wölfel, Mainz, Germany; Thierry Boon-Falleur, and Etienne De Plaen, both of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Division of Ser. No. 32,978, Mar. 18, 1993, Pat. No. 5,620,886.

This application Mar. 3, 1995, Ser. No. 398,409

Int. Cl.^{6} A01N *37/18;* **C07K** *1/00;* **C07H** *21/02;* **G01N** *33/574*

U.S. Cl. 514—2 **2 Claims**

1. An isolated tumor rejection antigen precursor molecule which is not a tyrosinase, and which comprises an amino acid sequence corresponding to a peptide which forms a complex with HLA-A2 molecule, said isolated tumor rejection antigen precursor molecule having an amino acid sequence encoded by the nucleotide sequence set forth in SEQ ID NO: 1.

5,854,204

A-β PEPTIDES THAT MODULATE β-AMYLOID AGGREGATION

Mark A. Findeis, Cambridge; Howard Benjamin, Lexington; Marc B. Garnick, Brookline; Malcolm L. Gefter, Lincoln; Arvind Hundal, Brighton, all of Mass.; Laura Kasman, Athens, Ga.; Gary Musso, Hopkinton, Mass.; Ethan R. Signer, Cambridge, Mass.; James Wakefield, Brookline, Mass.; Michael Reed, Marietta, Ga.; Susan Molineaux, Brookline, Mass.; William Kubasek, Belmont, Mass.; Joseph Chin, Salem, Mass.; Jung-Ja Lee, Wayland, Mass., and Michael Kelley, Arlington, Mass., assignors to Praecis Pharmaceuticals, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 404,831, Mar. 14, 1995, and a continuation-in-part of Ser. No. 475,579, Jun. 7, 1995, and a continuation-in-part of Ser. No. 548,998, Oct. 27, 1995. This application Mar. 14, 1996, Ser. No. 612,785

Int. Cl.^{6} C07K *14/435;7/08*

U.S. Cl. 514—2 **10 Claims**

5. A β-amyloid peptide compound having a structure: $A\beta_{6-40}$ (SEQ ID NO:36).

5,854,205

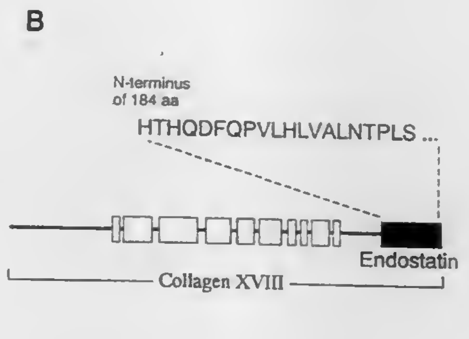
THERAPEUTIC ANTIANGIOGENIC COMPOSITIONS AND METHODS

Michael S. O'Reilly, Winchester, and M. Judah Folkman, Brookline, both of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Filed Oct. 22, 1996, Ser. No. 740,168

Int. Cl.^{6} A01N *61/00;* **A61K** *38/00;* **C12P** *21/06;* **G01N** *33/574*

U.S. Cl. 514—2 **34 Claims**



1. Isolated endostatin protein having a molecular weight of approximately 18 kDa as determined by non-reducing gel electrophoresis, or approximately 20 kDa as determined by reducing gel electrophoresis, wherein the protein has an amino acid sequence of a fragment of a collagen type XVIII, a collasen type XV, or BOVMPE 1 pregastric esterase and wherein the protein is further characterized by its ability to specifically inhibit proliferating cultured endothelial cells.

8. A composition comprising,

angiostatin protein combined with endostatin protein having a molecular weight of approximately 18 kDa as determined by non-reducing gel electrophoresis, or approximately 20 kDa as determined by reducing gel electrophoresis, wherein the protein has an amino acid sequence of a fragment of a collagen type XVIII, a collagen type XV, or BOVMPE 1 pregastric esterase and wherein the protein is further characterized by its ability to specifically inhibit proliferating cultured endothelial cells,

wherein the angiostatin protein and the endostatin protein are provided in amounts such that the composition is capable of effectively regressing the mass of an angiogenesis-dependent tumor.

5,854,206

COMPOUNDS AND METHODS FOR TREATMENT AND DIAGNOSIS OF PROSTATE CANCER

Daniel R. Twardzik, Winshow, and Thomas S. Vedvick, Federal Way, both of Wash., assignors to Corixa Corporation, Seattle, Wash.

Filed Aug. 25, 1995, Ser. No. 519,196

Int. Cl.^{6} A61K *39/00;38/04;* **C07K** *1/00;* **A23J** *1/00*

U.S. Cl. 514—12 **2 Claims**

1. A polypeptide comprising a portion of a prostate cell-associated antigen having the N-terminal sequence Ala-Glu-Pro-Ala-Thr-Gln-Ala-Pro-Ala-Ser-Xaa-Lys (SEQ ID NO:6), or a variant of said protein that differs only in conservative substitutions and/or modifications, wherein Xaa may be any amino acid, and wherein:

(a) said portion demonstrates immunoreactivity with sera and/or T-cells derived from an individual with prostate cancer; and/or

(b) antibodies raised against said portion are capable of detecting at least 30% of primary or metastatic human prostate tumors.

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5,854,207

COMPOSITIONS AND THERAPEUTIC METHODS USING MORPHOGENIC PROTEINS AND STIMULATORY FACTORS

John C. Lee, and Lee-Chuan C. Yeh, both of San Antonio, Tex., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of Ser. No. 570,752, Dec. 12, 1995. This application Feb. 23, 1998, Ser. No. 27,873

Int. Cl.^{6} A01N *37/18;38/00*

U.S. Cl. 514—2 **28 Claims**

1. A pharmaceutical composition for inducing tissue formation in a mammal, comprising:

a) a morphogenic protein capable of inducing tissue formation when accessible to a progenitor cell in the mammal;

b) a morphogenic protein stimulatory factor selected from the group consisting of hormones, cytokines, peptides and growth factors, said factor capable of stimulating the ability of the morphogenic protein to induce tissue formation from the progenitor cell; and

c) a pharmaceutically acceptable carrier;

with the proviso that when the progenitor cell is an osteoblast stimulated to form bone and the morphogenic protein is a BMP homodimer, TGF-β or activin, the MPSF may not be estrogen or calcitonin;

when the progenitor cell is an osteoblast stimulated to form bone and the morphogenic protein is a BMP homodimer or TGF-β, the MPSF may not be FGF, IGF-II, PDGF or vitamin D; and

when the progenitor cell is an osteoblast stimulated to form bone and the morphogenic protein is a homodimer of BMP-2 or BMP-3, the MPSF may not be parathyroid hormone.

5,854,208

HEPATOSELECTIVE PHARMACEUTICAL ACTIVES

Richard Henry Jones; Fariba Shojaee-Moradi; Peter Henri Sonksen, all of London, United Kingdom; Dietrich Brandenburg; Achim Schuttler, both of Aachen, Germany, and Heike Eckey, Holzminden-Silberborn, all of Germany, assignors to Deutsches Wollforschungsinstitut, Aachen, Germany, and Kings College, London, United Kingdom

PCT No. PCT/GB94/01784, § 371 Date Feb. 13, 1996, § 102(e) Date Feb. 13, 1996, PCT Pub. No. WO95/05187, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 15, 1994, Ser. No. 596,285

Claims priority, application United Kingdom, Aug. 13, 1993, 9316895

Int. Cl.^{6} A61K *38/28;31/24*

U.S. Cl. 514—3 **12 Claims**

1. A hepatoselective insulin which is formed of insulin or a functional equivalent of insulin covalently bound to a molecule having an affinity for one or more binding proteins naturally present in the circulation of a human or an animal.

5,854,209

METHOD FOR OXYGENATING TISSUE HAVING REDUCED RED BLOOD CELL FLOW

Edward E. Jacobs, Jr., Lexington, and Carl W. Rausch, Medford, both of Mass., assignors to Biopure Corporation, Cambridge, Mass.

Filed Mar. 23, 1995, Ser. No. 409,337

Int. Cl.^{6} A61K *37/14;* **C07K** *3/02;3/22*

U.S. Cl. 514—6 **32 Claims**

1. A method for increasing tissue oxygenation in tissue of a vertebrate, while the tissue has reduced oxygen deliver due to at least one partial obstruction of a blood vessel within the circulatory system of the vertebrate, and wherein the vertebrate has a normovolemic blood volume and at least a normal systemic vascular resistance, comprising introducing into the circulatory system of the vertebrate at least one dose of hemoglobin.

5,854,210

USE OF CROSS-LINKED HEMOGLOBIN IN TREATING SUBARACHNOID HEMORRHAGE

Kenneth E. Burhop, Mundelein, Ill., and Daniel J. Cole, Redlands, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 419,209, Apr. 10, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 747,941

Int. Cl.^{6} A61K *38/16*

U.S. Cl. 514—6 **42 Claims**

1. A method of reducing neuronal damage in subarachnoid hemorrhage comprising administering a hypervolemic, therapeutically effective amount of a diaspirin-crosslinked hemoglobin preparation to a mammal after the onset of subarachnoid hemorrhage in the mammal to reduce neuronal damage.

5,854,211

COMPOUNDS WITH GROWTH HORMONE RELEASING PROPERTIES

Nils Langeland Johansen, København ø; Jesper Lau, Farum; Kjeld Madsen, Værløse; Behrend Friedrich Lundt, Kokkedal; Henning Thøgersen, Farum, and Birgit Sehested Hansen, StenLøse, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK94/00486, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO95/17422, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 22, 1994, Ser. No. 464,679

Claims priority, application Denmark, Dec. 23, 1993, 1438/93; Jan. 17, 1994, 0075/94; Jun. 30, 1994, 0781/94; Oct. 7, 1994, 1165/94

Int. Cl.^{6} A61K *38/07;38/08;38/14;* **C07K** *7/02*

U.S. Cl. 514—8 **15 Claims**

1. A compound of general formula I

$$A—B—C—D—E\ (—F)_p$$

wherein

p is 0 or 1;

A is imidazolyl-C_{1-6}alkanoic acid, imidazolyl-C_{1-6}alkenoic acid, amino-C_{1-6}alkanoic acid or amino-C_{1-6}alkenoic acid or a L- or D- α-amino acid selected from the group consisting of H-His, H-Ala, H-D-Ala, H-β-alanine, H-amino-isobutyric acid, sarcosine and Gly;

B is D-Trp, D-2Nal or D-Phe;

C is Ala, Ser or Gly;

D is Trp, Phe, β-(2-Thienyl)-alanine or N-aralkyl glycine;

E, when p is 1, is D-Phe, or, when p is 0, E is $—NH—CH(CH_2—R^3)—CO—R^4$ or $—NH—CH(CH_2—R^3)—CH_2—R^4$, wherein

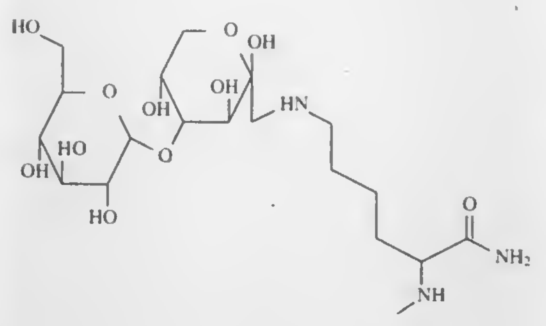
R^3 is phenyl,

and R^4 is piperazino, morpholino, piperidino, —OH or $—N(R^5)R^6$, wherein each of R^5 and R^6 is independently hydrogen or lower alkyl;

F, when p is 1, is $—NH—CH(R^{10})—(CH_2)R^7$, wherein

v is 0 or an integer between 1 and 8, and

R^7 is imidazolyl, piperazino, morpholino, piperidino or $—N(R^8)—R^9$, wherein each of R^8 and R^9 is independently hydrogen or lower alkyl, or the Amadori rearrangement product from an amino group and a hexapyranose or a hexapyranosyl-hexapyranose,



and

R^{10} is —H, —COOH, $—CO—R^{11}$, $CH_2—R^{11}$ or $—CH_2—OH$, wherein R^{11} is piperazino, morpholino, piperidino or $—N(R^{12})—R^{13}$, wherein each of R^{12} and R^{13} is independently hydrogen or lower alkyl;

with the proviso that at least one amide bond between A and B, B and C, C and D, D and E or, when p is 1, E and F, is substituted by aminomethylene or that, when p is 0, E is $—NH—CH(CH_2—R^3)—CH—R^4$ or that, when p is 1, R^{10} is $CH_2—R^{11}$;

or a pharmaceutically acceptable salt thereof.

5,854,212

CYCLOHEXAPEPTIDYL BISAMINE COMPOUND, COMPOSITIONS CONTAINING SAID COMPOUND AND METHODS OF USE

James M. Balkovec, North Plainfield; Frances A. Bouffard, Scotch Plains, and James F. Dropinski, Piscataway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

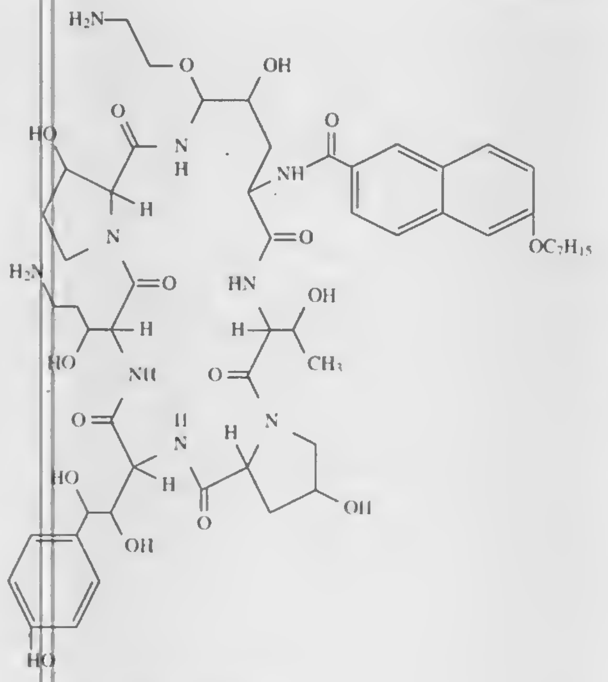
Filed Oct. 23, 1996, Ser. No. 738,489

Int. Cl.^{6} A61K *38/12;* **C07K** *7/64*

U.S. Cl. 514—11 **18 Claims**

1. A compound of the formula

(I) SEQ ID No. 1



or an acid addition salt thereof.

5,854,213

ANTIFUNGAL CYCLOHEXAPEPTIDES

Frances A. Bouffard, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

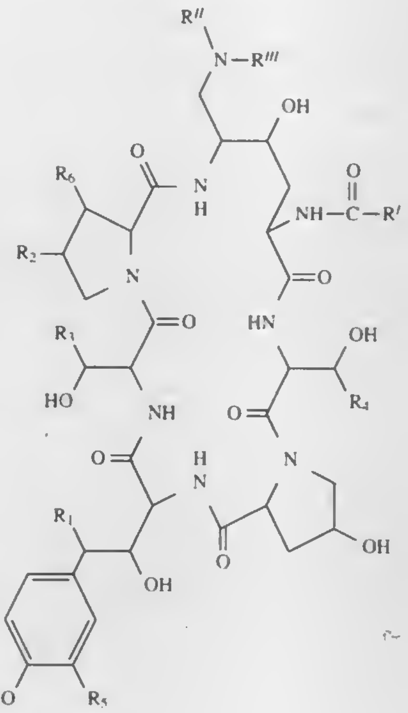
Continuation of Ser. No. 378,687, Jan. 26, 1995, abandoned. This application Jun. 6, 1997, Ser. No. 870,744

Int. Cl.^{6} A61K *38/12;* **C07K** *67/64*

U.S. Cl. 514—11 **19 Claims**

1. A compound having the formula

(I)
(SEQ ID NOS. 1-6)



wherein

R_1 is OH;

R_2 is H;

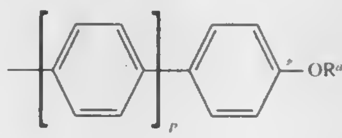
R_3 is CH_2CONH_2, CH_2CN or $CH_2CH_2NR''R'''$;

R_4 is CH_3;

R_5 is H;

R_6 is OH;

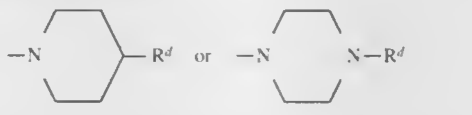
R' is C_9–C_{21} alkyl, C_9–C_{21} alkenyl, C_1–C_{10} alkoxyphenyl, C_1–C_{10} alkoxynaphthyl, or



wherein

R^a is C_1–C_{10} alkyl; or $(CH_2)_qNR^bR^c$ wherein R^b and R^c are independently H, C_1–C_{10} alkyl or R^b and R^c taken together with

the nitrogen atom are



wherein

R^d is C_1–C_{16} alkyl, cyclohexylmethyl, phenyl or benzyl;

p is 1 or 2; and

q is 2, 3 or 4;

R'', is H, C_1–C_4 alkyl, $(CH_2)_{2-4}OH$, $C{=}NH(R^{VII})$, $(CH_2)_{2-4}NR^VR^{VI}$, $(CH_2)_{2-4}N(R^{IV})_3{}^+X^-$, $(CH_2)_{2-4}NH(C{=}NH)R^{VII}$,

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$(CH_2)_{1-4}CH(NR^VR^{VI})(CH_2)_{1-4}NR^VR^{VI}$, $(CH_2)_{2-4}NR^V(CH_2)_{2-4}NR^VR^{VI}$, $CO(CH_2)_{1-4}NR^VR^{VI}$, $COCH(NR^VR^{VI})(CH_2)_{1-4}NR^VR^{VI}$;
R^{III} is H, C_1–C_4 alkyl, $(CH_2)_{2-4}NR^VR^{VI}$, $(CH_2)_{2-4}N(R^{IV})_3{}^+X^-$, $(CH_2)_{2-4}NH(C{=}NH)R^{VII}$, $(CH_2)_{1-4}CH(NR^VR^{VI})(CH_2)_{1-4}NR^VR^{VI}$, $(CH_2)_{2-4}NR^V(CH_2)_{2-4}NR^VR^{VI}$; or
R^{II} and R^{III} taken together are $—(CH_2)_4—$, $—(CH_2)_5—$, $—(CH_2)_2O(CH_2)_2—$, or $—(CH_2)_2NH(CH_2)_2—$;
R^{IV} is C_1–C_4 alkyl;
R^V is H or C_1–C_4 alkyl;
R^{VI} is H or C_1–C_4 alkyl;
R^{VII} is H, C_1–C_4 alkyl or NH_2;
X is Cl, Br or I; or
a pharmaceutically acceptable salt thereof.

5,854,214
THERAPEUTIC USES OF BACTERICIDAL/PERMEABILITY INCREASING PROTEIN PRODUCTS

Roger G. Little, II, Benicia, Calif., assignor to XOMA Corporation, Berkeley, Calif.

Continuation of Ser. No. 415,158, Mar. 31, 1995, Pat. No. 5,639,727, which is a continuation-in-part of Ser. No. 30,644, Mar. 12, 1993, Pat. No. 5,348,942. This application Jun. 6, 1995, Ser. No. 466,826

Int. Cl.⁶ A61K *38/18*

U.S. Cl. 514—12 **2 Claims**

1. A method for neutralizing the anti-coagulant effect of heparin in a fluid sample comprising contacting said sample with an effective amount of heparin binding bactericidal/permeability-increasing (BPI) protein product.

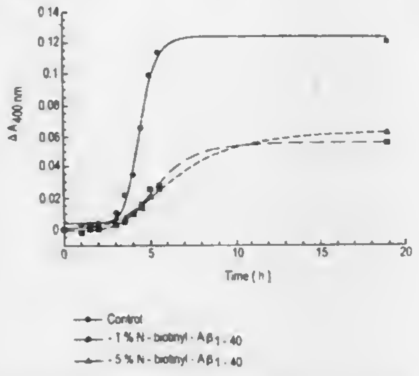
5,854,215
MODULATORS OF β-AMYLOID PEPTIDE AGGREGATION

Mark A. Findeis, Cambridge; Howard Benjamin, Lexington; Marc B. Garnick, Brookline; Malcolm L. Gefter, Lincoln; Arvind Hundal, Brighton, all of Mass.; Laura Kasman, Athens, Ga.; Gary Musso, Hopkinton, Mass.; Ethan R. Signer, Cambridge, Mass.; James Wakefield, Brookline, Mass., and Michael J. Reed, Oak Ridge, Tenn., assignors to Praecis Pharmaceuticals Incorporated, Cambridge, Mass.

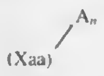
Continuation-in-part of Ser. No. 404,831, Mar. 14, 1995. This application Jun. 7, 1995, Ser. No. 475,579

Int. Cl.⁶ A61K *38/17;* **C07K** *1/113;14/47*

U.S. Cl. 514—12 **38 Claims**



1. A method for inhibiting aggregation of natural β-amyloid peptides, comprising contacting the natural β-amyloid peptides with a compound such that aggregation of the natural β-amyloid peptides is inhibited, said compound having a formula:



$$(Xaa)—A_n$$

wherein Xaa is a β-amyloid peptide, A is a cyclic or heterocyclic modulating group attached to the β-amyloid peptide of the compound such that the compound inhibits aggregation of natural β-amyloid peptides when contacted with the natural β-amyloid peptides, and n is an integer selected such that the compound inhibits aggregation of natural β-amyloid peptides when contacted with the natural β-amyloid peptides.

5,854,216
MARKER FOR GROWTH HORMONE-RELEASING FACTOR RECEPTORS

Pierrette Gaudreau, Brossard, Canada, assignor to Universite de Montreal, Montreal, Canada

Continuation-in-part of Ser. No. 312,244, Sep. 23, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 685,357

Int. Cl.⁶ A61K *38/25;* **C07K** *14/60*

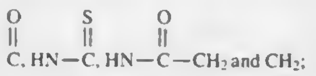
U.S. Cl. 514—12 **4 Claims**

3. A method for the treatment of hypothalamic pituitary dwarfism, burns, osteoporosis, renal failure, non-union bone-fracture, acute/chronic debilitating illness or infection, wound healing, reduction of the incidence of post-surgical problems, lactation failure, infertility in women, cachexia in cancer patients, anabolic and/or catabolic problems, T-cell immunodeficiencies, neurodegenerative conditions, or GRF receptor-dependent tumors, which comprises administering to a patient a compound having the formula:

Ra—X—Rb 1

or a pharmaceutically acceptable salt thereof,

X is selected from the group consisting of



$$\overset{O}{\overset{\|}{C}},\ HN—\overset{S}{\overset{\|}{C}},\ HN—\overset{O}{\overset{\|}{C}}—CH_2 \text{ and } CH_2;$$

Ra is a fluorophore selected from the group consisting of fluorescein, rhodamine, Texas red, any BODIPY™, CASCADE BLUE™, coumarin, phycoerithryn, eosin and rosamine;

Rb is a polypeptide selected from the group consisting of:

Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_5
20 25 (SEQ ID NO:3);

npa Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 30 (SEQ ID NO:15);

npa Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr npa Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala npa Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp npa Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

-continued

Tyr Ala Asp Ala npa Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp Ala Ile npa Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp Ala Ile Phe npa Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp Ala Ile Phe Thr npa Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp Ala Ile Phe Thr Asn npa Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

Tyr Ala Asp Ala Ile Phe Thr Asn Ser npa Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:6);

hpa Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 30 (SEQ ID NO:15);

Tyr Ala Asp bpa Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:7);

Tyr Ala Asp Ala Ile Phe Thr Asn bpa Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:7);

Tyr Ala Asp Ala Ile Phe Thr Asn Ser bpa Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:7);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu D-Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu D-Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr Ala Asp Ala Ile Phe Thr Ala Ser Tyr Arg Lys Val Leu Ala Gln
1 5 10 15

-continued

Leu Ser Ala Arg Lys Lys Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:9);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr D-Ala Asp Ala Ile Phe Thr Asn Ser D-Tyr Arg Lys Val Leu D-Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr Ala Asp Ala Ile Phe Thr D-Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8);

Tyr Ala Asp Ala Ile Phe Thr Ala Ser Tyr Arg Lys Val Leu Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Ala Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:9);

Tyr Ala Asp Ala Ile Phe Thr Ala Ala Tyr Arg Lys Val Leu Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Ala Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:10);

Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg Xaa-NH_2
20 25 30
(SEQ ID NO:11);

His Ala Asp Ala Ile Phe Thr Asn bpa Tyr Arg Lys Val Leu Gly Gln
1 5 10 15

LeU Ser Ala Arg Lys Leu Leu Gln Asp Ile Nle Ser Arg-NH_2
20 25 (SEQ ID NO:7);

Tyr D-Ala Asp Ala Ile Phe Thr Ala Ser Tyr Arg Lys Val Leu Ala Gln
1 5 10 15

Leu Ser Ala Arg Lys Lys Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8); and

Tyr D-Ala Asp Ala Ile Phe Thr Ala Ser D-Tyr Arg Lys Val Leu Ala
1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg-NH_2
20 25 (SEQ ID NO:8).

5,854,217
ALLOSTERIC MODULATORS OF THE NMDA RECEPTOR AND THEIR USE IN THE TREATMENT OF CNS DISORDERS AND ENHANCEMENT OF CNS FUNCTION

Maria-Luisa Maccecchini, West Chester, Pa., assignor to Bearsden Bio, Inc., Aston, Pa.

Continuation-in-part of Ser. No. 323,436, Oct. 14, 1994, which is a continuation-in-part of Ser. No. 952,818, Sep. 28, 1992, abandoned. This application Mar. 30, 1995, Ser. No. 413,490

Int. Cl.⁶ A61K *38/10;38/07;* **C07K** *5/10;7/00*

U.S. Cl. 514—13 **8 Claims**

1. A composition comprising a compound selected from the group consisting of partial agonists, agonists and antagonists binding to the NMDA receptor in combination with a pharmaceutical carrier wherein the compound has a formula selected from the group consisting of:

Asn Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:14);

Phe Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:16);
t-BuTyr Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:20);
Ser Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:21);
Gly Glu Ser Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2, wherein the serine at position 3 is phosphorylated (SEQ. ID NO:24);
Gly Glu Ala Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:22);
Gly Glu Gla Gla Leu Gln Tyr Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:31);
Gly Glu Gla Gla Leu Gln Ala Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:32);
Gly Glu Gla Gla Leu Gln Ser Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:33);
Gly Glu Gla Gla Leu Gln Ser Asn Gln Gla Leu Ile Arg Gla Lys Ser Asn-NH_2 wherein the first serine is phosphorylated (SEQ. ID NO:34);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Ala Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:35);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Ser Leu Ile Arg Gla Lys Ser Asn-NH_2 (SEQ. ID NO:36);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Ser Leu Ile Arg Gla Lys Ser Asn-NH_2, wherein the first serine is phosphorylated (SEQ. ID NO:37);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Ala Lys Ser Asn-NH_2 (SEQ. ID NO:38);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Ser Lys Ser Asn-NH_2 (SEQ. ID NO:39);
Gly Glu Gla Gla Leu Gln Gla Asn Gln Gla Leu Ile Arg Ser Lys Ser Asn-NH_2, wherein the first serine is phosphorylated (SEQ. ID NO:40);
Gly Glu Gla Gla Leu Gln Ala Asn Gln Ala Leu Ile Arg Ala Lys Ser Asn-NH_2, (SEQ. ID NO:42); and Gla Lys Ser Asn-NH2 (SEQ. ID NO:49).

5,854,218

SIALYL LE^X ANALOGUES AS INHIBITORS OF CELLULAR ADHESION

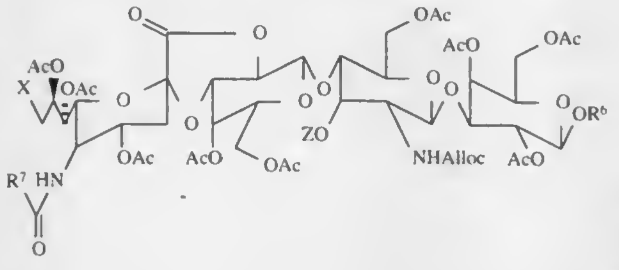
Shawn A. DeFrees, San Marcos, Calif., assignor to Cytel Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 485,453, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 345,072, Nov. 28, 1994, Pat. No. 5,604,207, which is a continuation-in-part of Ser. No. 241,645, May 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 62,120, May 14, 1993, abandoned. This application Oct. 15, 1996, Ser. No. 730,553

Int. Cl.^{6} A61K *31/70;* **C07H** *15/00*

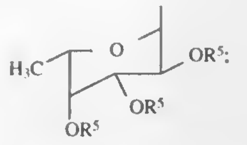
U.S. Cl. 514—25 **5 Claims**

1. A compound having the formula



wherein:

Z is



R^5 is selected from the group consisting of hydrogen, benzyl, methoxybenzyl, dimethoxybenzyl and C_1–C_6 acyl;

R^6 is selected from the group consisting of hydrogen, a linking group for a lipid, a lipid, a linking group with attached lipid, C_1–C_{18} straight chain, branched chain or cyclic hydrocarbyl, C_1–C_6 alkyl C_1–C_5 alkylene ω-carboxylate and ω-tri(C_1–C_4 alkyl/phenyl)silyl C_2–C_4 alkylene, or OR^6 together form a C_1–C_{18} straight chain, branched chain or cyclic hydrocarbyl carbamate;

R^7 is methyl or hydroxymethyl; and

X is selected from the group consisting of C_1–C_6 acyloxy, C_2–C_6 hydroxylacyloxy, hydroxy, halo and azido.

5,854,219

9-N-ETHENYL DERIVATIVES OF 9(S)-ERYTHROMYCYLAMINE

Nedjeljko Kujundžić; Dina Pavlović; Gabrijela Kobrehel; Gorjana Lazarevski, and Željko Kelnerić, all of Zagreb, Croatia, assignors to PLIVA, farmaceutska, kemijska, prehrambena i kozmeticka industrija, dionicko drustvo, Zagreb, Croatia

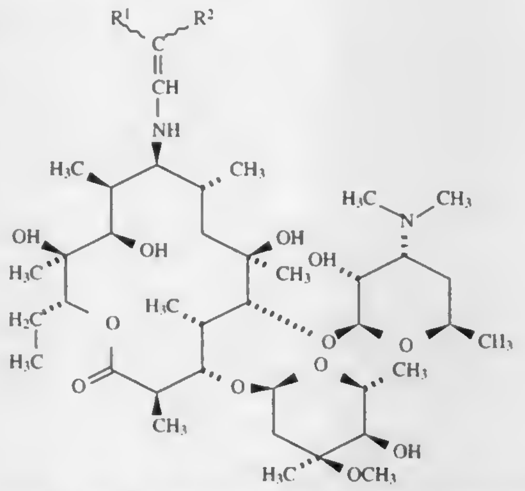
Filed Oct. 23, 1997, Ser. No. 956,352

Claims priority, application Croatia, Oct. 28, 1996, P960497A

Int. Cl.^{6} A61K *31/70;* **C07H** *17/08;* **C07G** *11/00;* **C07D** *315/00*

U.S. Cl. 514—29 **18 Claims**

1. 9-N-Ethenyl derivatives of 9(S)-erythromycylamine of the general formula (1)



(1)

wherein R^1 and R^2 are the same or different and represent nitryl, a carboxyl group of the formula $COOR^3$, wherein R^3 represents a C_1–C_4 alkyl group, or a keto group of the formula COR^4, wherein R^4 represents a C_1–C_4 alkyl group, and pharmaceutically acceptable addition salts thereof with inorganic or organic acids.

5,854,220

GLIAL MITOGENIC FACTORS, THEIR PREPARATION AND USE

Andrew Goodearl, Chorleywood; Paul Stroobant, London, both of United Kingdom; Luisa Minghetti, Bagnacavallo, Italy; Michael Waterfield, Newbury, United Kingdom; Mark Marchioni; Mario Su Chen, both of Arlington, Mass., and Ian Hiles, London, England, assignors to Cambridge NeuroScience, Inc., Cambridge, Mass., and Ludwig Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 470,335, Jun. 6, 1995, which is a division of Ser. No. 36,555, Mar. 24, 1993, Pat. No. 5,530,109, which is a continuation-in-part of Ser. No. 965,173, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 940,389, Sep. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 907,138, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 863,703, Apr. 3, 1992, abandoned. This application Oct. 22, 1996, Ser. No. 734,591

Claims priority, application United Kingdom, Apr. 10, 1991, 91 07566.3

Int. Cl.^{6} A61K *38/00*

U.S. Cl. 514—12 **3 Claims**

1. A composition comprising a recombinant polypeptide, said polypeptide comprising an epidermal growth factor-like domain, said polypeptide having an amino acid sequence which is identical to that of a naturally occurring polypeptide encoded by a human GGF/p185 erb B2 ligand gene, wherein said polypeptide is not Neu differentiation factor (NDF), Heregulin-α, Heregulin-β1, Heregulin-β2 or Heregulin-β03.

5,854,221

ENDOTHELIAL CELL PROLIFERATION INHIBITOR AND METHOD OF USE

Yihai Cao, Stockholm, Sweden; M. Judah Folkman, Brookline, and Michael S. O'Reilly, Winchester, both of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Filed Dec. 12, 1996, Ser. No. 763,528

Int. Cl.^{6} A61K *38/00;* **C07K** *14/00*

U.S. Cl. 514—12 **25 Claims**

1. A method of inhibiting endothelial cell proliferation in vitro, comprising administering to an endothelial cell an effective amount of a protein having an amino acid sequence of a Kringle 5 peptide of a plasminogen molecule.

5,854,222

CHARACTERIZED BRCA1 AND BRCA2 PROTEINS AND SCREENING AND THERAPEUTIC METHODS BASED ON CHARACTERIZED BRCA1 AND BRCA2 PROTEINS

Jeffrey T. Holt, Brentwood; Roy A. Jensen, Franklin, both of Tenn.; Mary-Claire King, Seattle, Wash.; David L. Page, Nashville, Tenn.; Csilla I. Szabo, Seattle, Wash.; Thomas L. Jetton, Kingston Springs, Tenn.; Cheryl L. Robinson-Benion, and Marilyn E. Thompson, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn., and University of Washington, Seattle, Wash.

Filed Feb. 20, 1996, Ser. No. 603,753

Int. Cl.^{6} A61K *48/00*

U.S. Cl. 514—44 **2 Claims**

1. A method to reduce the growth of an epithelial ovarian tumor in a mammal, comprising: injecting into the intraperitoneal cavity of said mammal, at the site of said epithelial ovarian tumor, a retroviral construct comprising BRCA1 cDNA encoding a functionally active BRCA1 polypeptide operably linked to a promoter, wherein said BRCA1 polypeptide is expressed in said epithelial ovarian tumor at a level and for a period of time sufficient to reduce the growth of said epithelial ovarian tumor.

BRCA1 Antigens

C-19 (19 C-terminal amino acids): [Seq ID No: 5]
Tyr Gln Cys Gln Glu Leu Asp Thr Tyr Leu Ile Pro Gln Ile Pro His Ser His Tyr

C-20 (20 C-terminal amino acids): [Seq ID No: 6]
Leu Tyr Gln Cys Gln Glu Leu Asp Thr Tyr Leu Ile Pro Gln Ile Pro His Ser His Tyr

D-20 (20 N-terminal amino acids): [Seq ID No: 7]
Met Asp Leu Ser Ala Leu Arg Val Glu Glu Val Gln Asn Val Ile Asn Ala Met Gln Lys

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5,854,223

S-DC28 AS AN ANTIRESTENOSIS AGENT AFTER BALLOON INJURY

Cy Stein, New City, and LeRoy Rabbani, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 11, 1996, Ser. No. 678,234

Int. Cl.^{6} A61K *48/00*

U.S. Cl. 514—44 **15 Claims**

1. A method of inhibiting neointimal formation after balloon injury in a subject which comprises administering to the subject an amount of a phosphorothioate oligonucleotide moiety effective to inhibit neointimal formation, wherein the phosphorothioate oligonucleotide moiety lacks a contiguous G-guartet residue.

5,854,224

COMPOSITION AND METHOD FOR DELIVERY OF NUCLEIC ACIDS

Trevor John Lockett, Denistone; Robert George Whittaker, West Pymble; Fiona Helen Cameron, Lindfield; Minoo Jalili Moghaddam, Killara, and Simon MacEwan Carroll, Heidelberg, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

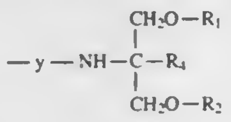
Filed Sep. 25, 1996, Ser. No. 720,200

Claims priority, application Australia, Jan. 5, 1996, PN 7416

Int. Cl.^{6} A01N *43/04;* **C07C** *69/52;53/00;* **C07F** *9/02;* **C12Q** *1/68*

U.S. Cl. 514—44 **62 Claims**

1. A method for introducing nucleic acid into a cell comprising exposing the cell to a compound having the formula:



$$w\ldots x - y - NH - \begin{array}{c} CH_2O-R_1 \\ | \\ C \\ | \\ CH_2O-R_2 \end{array} - R_4$$

in which:

w is a nucleic acid

x is a non-amino acid or non-peptide binding group

y is a spacer having a chain length equivalent to 1–30 carbon-carbon single covalent bonds or is absent

R_4 is H or halogen or CH_2O—R_3; and R_1, R_2 and R_3 are the same or different and are either hydrogen, methyl, ethyl, alkyl, alkenyl, hydroxylated alkyl, hydroxylated alkenyl groups or ether containing alkyl, alkenyl, hydroxylated alkyl or hydroxylated alkenyl groups, optionally being an acyl group derived from a fatty acid having a carbon chain length

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equivalent to 3–24 carbon atoms saturated or unsaturated, with the proviso that at least one of R_1, R_2 or R_3 includes a group having a carbon chain of 3–24 carbon atoms saturated or unsaturated.

5,854,225
COMPOUNDS DERIVED FROM CYCLODEXTRIN

Herve Richard, Villepinte, and Madeleine Leduc, Paris, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 12, 1996, Ser. No. 747,334

Claims priority, application France, Nov. 13, 1995, 95 13413

Int. Cl.^{6} C08B *37/16;* **A61K** *31/715*

U.S. Cl. 514—58 **19 Claims**

1. A compound corresponding to the following general formula (I):

$$CD(OH)_l(O\text{-}C(O)\text{-}R_1)_m(OR_2)_n \qquad (I)$$

in which

CD denotes a cyclodextrin base skeleton without the hydroxyl groups, wherein said cyclodextrin is α-, β- or γ-cyclodextrin,

O-C(O)-R_1 denotes a radical bonded to said cyclodextrin base skeleton, in which each R_1 independently denotes a radical selected from C_{11}–C_{24} linear or branched alkyl radicals and C_{11}–C_{24} linear or branched alkenyl radicals,

OR_2 denotes a radical bonded to said cyclodextrin base skeleton, in which each R_2 independently denotes a radical selected from C_{1-C4} linear or branched alkyl radicals and C_{2-C4} hydroxyalkyl radicals, wherein the hydrogen of the hydroxyl radical of said hydroxyalkyl radical is optionally replaced with a radical comprising at least one radical selected from C_{2-C4} hydroxyalkyl radicals and -COR_1 radicals,

m denotes the number of O-C(O)R_1 radicals directly bonded to said cyclodextrin base skeleton and is a statistical value other than 0,

n denotes the number of OR_2 radicals directly bonded to said cyclodextrin base skeleton and is a statistical value other than 0, and

l denotes the number of hydroxyl groups bonded directly to said cyclodextrin base skeleton and is a statistical value, including 0, such that (l+m+n) is equal to 18, 21 or 24, according to whether said cyclodextrin of said base skeleton is α-, β- or γ-cyclodextrin, respectively, and further wherein the degree of substitution of cyclodextrin by radicals R_1 ranges from 0.2 to 1.

5,854,226
PHARMACEUTICAL COMPOSITION

Lawrence J. Penkler; Lueta Glintenkamp; Douglas G M Nicholson, all of Port Elizabeth, and Michiel C B Van Oudtshoorn, Pretoria, all of South Africa, assignors to Farmarc Nederland BV, Amsterdam, Netherlands

PCT No. PCT/GB95/02679, § 371 Date May 15, 1997, § 102(e) Date May 15, 1997, PCT Pub. No. WO96/14839, PCT Pub. Date May 23, 1996

PCT Filed Nov. 14, 1995, Ser. No. 849,059

Claims priority, application South Africa, Nov. 15, 1994, 94/9055

Int. Cl.^{6} A61K *31/715;31/19*

U.S. Cl. 514—58 **12 Claims**

1. A pharmaceutical composition for oral administration in solid oral dosage form comprising an inclusion complex of a non-steriodal anti-inflammatory drug selected from the group consisting of diclofenac, indomethacin, naproxen, ibuprofen, mefenamic acid, piroxicam, tenoxicam, lornoxicam, or a pharmaceutically acceptable salt thereof and a cyclodextrin, the mass ratio of the non-steriodal anti-inflammatory drug to cyclodextrin in the inclusion complex being between 1:0.85 and 1:5 inclusive, and a physiologically acceptable alkali agent selected from the group consisting of alkali and alkaline earth metal carbonates, bicarbonates and phosphates, and water soluble amines, in an amount equivalent to between 15 and 30 molar equivalents inclusive of the non-steriodal anti-inflammatory drug, the alkali agent being present in sufficient amount to form an alkaline diffusion layer around the composition in the gastrointestinal tract and the composition being free from any added acid agent which will form an acid-base couple with the alkali agent so as to render the alkali agent incapable of forming said alkaline diffusion layer and wherein said dosage form is either a tablet or a capsule.

5,854,227
THERAPEUTIC DERIVATIVES OF DIPHOSPHONATES

John F. Hartmann, 1 Woodmeadow La., Princeton Junction, N.J. 08550, and Dan Farcasiu, 4729 Bayard St., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 206,113, Mar. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,787

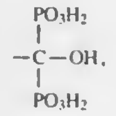
Int. Cl.^{6} A61K *31/43;31/545;31/495;* **C07F** *9/02*

U.S. Cl. 514—79 **20 Claims**

1. A method for preparing a compound of the formula A—(V)$_m$—(R)$_n$—Z, wherein A is the residue of a pharmaceutically active antibiotic chemical entity, V is O, S, NR', CONR', CO—O, O—CO, O—CO—O, CO—S, S—CO, S—CO—S, NR'—CO, OCO—NR', NR'—CO—O, NR'—CO—NR", CO—NR", CO—NR'—NR", NR'—NR"—CO, NR'—C(=NH)—NR" or NR'—C(=NH)—NH—C(=NH)—NR" wherein R, R' and R" are H or an organic or heteroorganic group, and m and n are each 1, or one of m and n is 0,

comprising reacting a pharmaceutically active antibiotic entity of the formula A—V' wherein V' is halogen, OH, SH, NR'R", COOR', CO—X wherein X is halogen or azido, O—CO—X wherein X is halogen, O—CO—OR', CO—SR', S—CO—X, NR'—CO—X, NR'—NHR", NR'—CN, NR'—C(=NH)—NH—CN, or metal (covalently bound or ionic),

with a diphosphonate compound of the formula V'—R—Z wherein V' and R have the previous meanings and Z is



$$\begin{array}{c} PO_3H_2 \\ | \\ -C-OH, \\ | \\ PO_3H_2 \end{array}$$

which optionally may be protected,

the composition of V' in the pharmaceutically active chemical entity of formula A—V' and in the diphosphonate compound of formula V'—R—Z being different and being selected to permit a condensation reaction therebetween.

5,854,228
ANTIVIRAL PHOSPHONOMETHOXYALKYLENE PURINE AND PYRIMIDINE DERIVATIVES

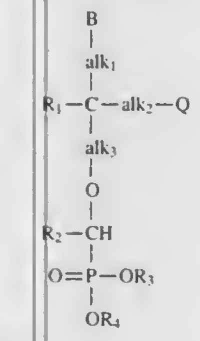
Robert W. Webb, II, Guilford; Joanne J. Bronson, Madison, and John C. Martin, Cheshire, all of Conn., assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Czech Rep., and Rega Stichting v.z.w., Belgium

Continuation of Ser. No. 829,784, Jan. 31, 1992, Pat. No. 5,650,510, which is a continuation of Ser. No. 249,809, Sep. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,340, Nov. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,112, Nov. 18, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 473,826

Int. Cl.^{6} A61K *31/675;* **C07F** *9/6512*

U.S. Cl. 514—81 **12 Claims**

1. The compound of Formula 1



1

$$\begin{array}{c} B \\ | \\ alk_1 \\ | \\ R_1-C-alk_2-Q \\ | \\ alk_3 \\ | \\ O \\ | \\ R_2-CH \\ | \\ O=P-OR_3 \\ | \\ OR_4 \end{array}$$

wherein

B is guanine;

alk_1 is C_{1-4} alkylene;

alk2 is independently selected from a chemical bond and C_{1-4} alkylene;

alk_3 is a chemical bond;

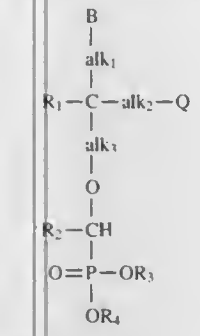
Q and R_2 are hydrogen;

R_1 is independently selected from hydrogen and C_{1-4} alkyl and wherein one of R_1 or alk_2 are C_{1-4} alkyl or C_{1-4} alkylene respectively;

R_3 and R_4 are independently selected from hydrogen, C_{1-6} alkyl, phenyl, and phenyl –C_{1-4}—alkylene;

and the corresponding salts, and solvates thereof.

2. The compound of Formula 1



1

$$\begin{array}{c} B \\ | \\ alk_1 \\ | \\ R_1-C-alk_2-Q \\ | \\ alk_3 \\ | \\ O \\ | \\ R_2-CH \\ | \\ O=P-OR_3 \\ | \\ OR_4 \end{array}$$

wherein

B is adenine,

alk_1, alk_2 and alk_3 are independently selected from a chemical bond and C_{1-4} alkylene;

Q is hydrogen or hydroxyl;

R_1 is R_2 is hydrogen independently selected from hydrogen and C_{1-4} alkyl;

R_3 is alkyl, phenyl;

R^4 is H, phenyl;

and the corresponding salts, and solvates thereof.

5,854,229
THERAPEUTIC METHODS AND DELIVERY SYSTEMS UTILIZING SEX STEROID PRECURSORS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Quebec, Canada

Division of Ser. No. 180,361, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 5,619, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,173

Int. Cl.^{6} A61K *31/56*

U.S. Cl. 514—169 **4 Claims**

1. A pharmaceutical composition comprising a sex steroid precursor selected from the group consisting of DHEA, DHEA-S, and compounds converted in vivo to either, and a supplemental agent which is selected from the group consisting of an estrogen and a progestin and which in vivo will provide a serum concentration between about 4 to 13 micrograms per liter.

5,854,230
ANTIANDROGENIC AGENTS AND RELATED PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

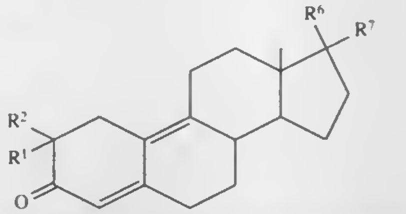
Masato Tanabe, Palo Alto; Wan-Ru Chao, Sunnyvale; Wesley K. M. Chong, Encinitas, and David F. Crowe, Fresno, all of Calif., assignors to SRI International, Menlo Park, Calif.

Division of Ser. No. 177,899, Jan. 6, 1994, abandoned. This application Mar. 11, 1997, Ser. No. 815,485

Int. Cl.^{6} A61K *31/58*

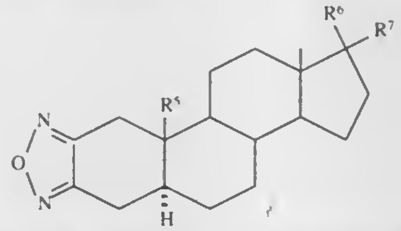
U.S. Cl. 514—173 **13 Claims**

1. A method for treating a clinical condition that is androgen-responsive, or is associated with androgen excess, or is both, in a mammal, comprising administering to said mammal an effective antiandrogenic amount of a compound selected from the group consisting of:



(I)

wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and lower alkyl, and wherein one of R^6 and R^7 is hydroxyl and the other is n-propyl, or R^6 and R^7 are linked to provide a cycloalkyl group containing 3 to 6 carbon atoms; and



(II)

wherein R^5 is hydrogen or lower alkyl, and wherein R^6 and R^7 are linked to provide a cycloalkyl or cyclooxyalkyl ring containing 3 to 6 carbon atoms.

5,854,231
PHARMACEUTICAL COMPOSITION FOR INHIBITING THE GROWTH OF CANCERS

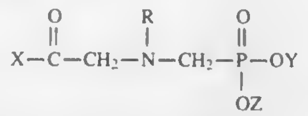
James Berger Camden, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 420,940, Apr. 12, 1995, Pat. No. 5,665,713. This application Jul. 15, 1996, Ser. No. 680,469

Int. Cl.^{6} A61K *31/66*

U.S. Cl. 514—76 **24 Claims**

1. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a safe and effective amount of a chemotherapeutic agent and a safe and effective amount of N-phosphonoglycine of the formula:



$$X{-}\overset{\overset{O}{\|}}{C}{-}CH_2{-}\overset{\overset{R}{|}}{N}{-}CH_2{-}\underset{\underset{OZ}{|}}{\overset{\overset{O}{\|}}{P}}{-}OY$$

wherein X is selected from the group consisting of hydroxyl, alkoxy or chloroxyl up to 12 carbon atoms or lower alkenoxy; Y and Z each independently are selected from the group consisting of hydrogen and lower alkyl; and R is selected from the group consisting of hydrogen, formyl and acetyl; or pharmaceutically acceptable acid addition salts of said N-phosphonoglycine, which salts are selected from the group consisting of the Group I and II metals having an atomic number of up to 30, hydrochloride, acetate, salicylate, pyridine, ammonium, lower aliphatic hydrocarbon amine, lower alkanol amine and aniline.

5,854,232
ACYCLIC ANC CYCLIC AMIDES AS NEUROTRANSMITTER RELEASE ENHANCERS

Robert A. Volkmann, Mystic; Vytautas J Jasys, Griswold; Gene M Bright, Groton; Anabella Villalobos, Niantic, and Patricia A Seymour, Uncasville, all of Conn., assignors to Pfizer Inc., New York, N.Y.

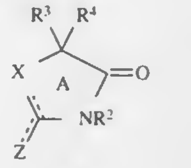
PCT No. PCT/IB95/00189, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO95/29909, PCT Pub. Date Nov. 9, 1995

PCT Filed Mar. 20, 1995, Ser. No. 737,376

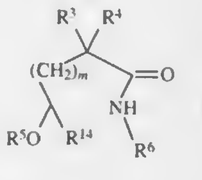
Int. Cl.^{6} C07D *401/06;239/26;* **A61K** *31/44;31/415*

U.S. Cl. 514—210 **43 Claims**

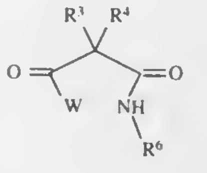
1. A compound of the formula



IA



IB



IC

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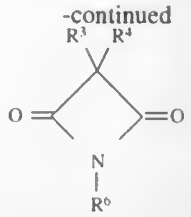


ID

wherein both dotted lines represent optional double bonds;

m is an integer from zero to four;

Z is oxygen or sulfur when it is double bonded to ring A and Z is hydroxy, $(C_1\text{-}C_{10})$ alkyl-S-,adamant-2-yl-S-, benzyl-S-, phenyl-$C(=O)CH_2$-S-, $(C_{1\text{-}C6})$alkyl—O—$C(=O)CH_2$—S—or (H, H) when Z is single bonded to ring A;

X is CH_2CH_2, NR^1, CHR^1 or a direct link between the carbon to which Z is attached and the carbon to which R^3 and R^4 are attached;

R^2 and R^6 are independently selected from naphthyl, phenyl, $(C_1\text{–}C_6)$alkylphenyl, 1-adamantyl, 2-adamantyl, $(C_1\text{–}C_8)$ straight or branched alkyl, $(C_3\text{–}C_{10})$ cycloalkyl and $(C_8\text{–}C_{30})$bicyclic or tricyclic alkyl; wherein said $(C_3\text{–}C_{10})$cycloalkyl and said $(C_8\text{–}C_{30})$ bicyclic or tricyclic alkyl may optionally be substituted with a hydroxy group; and wherein said adamantyl groups may optionally be substituted with from one to three substituents independently selected from $(C_1\text{–}C_6)$alkyl, halo and hydroxy;

R^3 and R^4 are independently selected from benzyl, wherein the phenyl moiety of said benzyl may optionally be substituted with an amino or nitro group; hydrogen, phenyl, $(N{\equiv}C)$-$(C_1\text{–}C_6)$alkyl, $(C_1\text{–}C_6)$alkyl—O—$C(=O)$-$(C_1\ \text{–}C_6)$alkyl and Het-CH_2,wherein Het is selected from 2-, 3- or 4-pyridinyl, furyl, tetrahydrofuryl, pyrimidyl, pyrazinyl, pyrazolyl, isoxazolyl, thiophenyl and triazolyl;

R^5 is hydrogen, phenyl-$(C_1\text{–}C_6)$alkyl, $(C_1\text{–}C_{10})$alkyl or $(C_1\text{–}C_6)$alkyl—$C(=O)$—;

W is hydrogen, OR^7, hydroxy, R^{11} or $NR^{12}R^{13}$;

each of R^7 and R^{11} is independently selected from $(C_1\text{–}C_3)$alkyl;

each of R^{12} and R^{13} is independently selected from $(C_1\text{–}C_3)$alkyl; and

R^{14} is hydrogen, $(C_1\text{–}C_4)$alkyl, benzyl or phenyl;

with the proviso that (a) no more than one of the two dotted lines in formula IA can represent a double bond in any one compound, (b) when Z is (H, H), X is CH_2 or CH_2CH_2, (c) when Z is oxygen or (H, H) and X is CHR^1, R^1 must be hydrogen, (d) when Z is sulfur and X is NR^1, R^1 must be hydrogen, and (e) one of R^3 and R^4 must be Het-CH_2;

or a pharmaceutically acceptable salf of such compound.

5,854,233
METHOD OF TREATING LIVER DISEASE AND LIKE INDICATIONS WITH VASODILATING AGENTS

Allan Joseph McLean, South Melbourne, Australia, assignor to Pharmacy and Therapeutic Advisory Consultancy Ltd., London, England

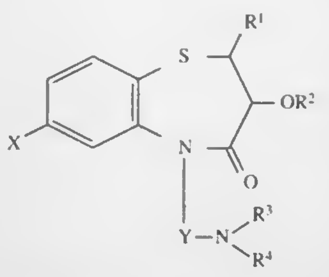
Continuation-in-part of Ser. No. 612,286, Mar. 7, 1996, abandoned. This application Jun. 20, 1996, Ser. No. 667,147

Claims priority, application Australia, Sep. 8, 1993, PM 11104

Int. Cl.^{6} A61K *51/55*

U.S. Cl. 514—211 **13 Claims**

1. A method for the treatment of liver disease selected from the group consisting of cirrhosis of the liver, toxic and medicamentary liver damage, a liver parenchymic disorder or hepatitis, which method comprises administering to a human or animal subject in need thereof a therapeutically active or prophylactically effective low dose amount of approximately 2.5 to 60 mg per day of a vasodilating agent which selectively increases the supply of oxygenated blood to the liver by increasing hepatic arterial inflow, wherein said vasodilating agent is selected from benzothiazepine compounds of the formula



wherein R^1 is a phenyl group substituted or not with 1 to 3 lower alkyl groups, lower alkoxy groups or halogen atoms, R^2 is a hydrogen atom or a lower alkanoyl group, R^3 and R^4 are each a lower alkyl group and may be the same or different, X is a hydrogen atom or a halogen atom and Y is an alkylene group of 2 or 3 carbon atoms, or its non-toxic acid-addition salt.

5,854,234
AMIDINO DERVATIVES USEFUL AS NITRIC OXIDE SYNTHASE INHIBITORS

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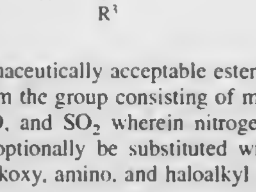
PCT No. PCT/US94/11832, § 371 Date Jun. 6, 1998, § 102(e) Date Jun. 6, 1998, PCT Pub. No. WO95/11231, PCT Pub. Date Apr. 27, 1995

Continuation-in-part of Ser. No. 141,168, Oct. 21, 1993, abandoned. This PCT application Oct. 20, 1994, Ser. No. 448,473

Int. Cl.^{6} C07D *267/06;281/02*

U.S. Cl. 514—212 **23 Claims**

1. A pharmaceutical composition comprising a compound having the formula:



and salts and pharmaceutically acceptable esters thereof, wherein:

X is selected from the group consisting of methylene, nitrogen, oxygen, S, SO, and SO_2 wherein nitrogen and lower alkyl radicals may optionally be substituted with hydroxy, lower alkyl, lower alkoxy, amino, and haloalkyl groups;

n is 3;

R^1 and R^2, are independently selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower thioalkoxy, halogen, nitro, amino, carboxyl, cyano, sulfonyl, haloalkyl, carboalkoxy, carboaryloxy, carboalkylaryloxy, alicyclic hydrocarbon, heterocycly, aromatic hydrocarbon, —$CONR^5R^6$, — $SO_2NR^5R^6$, —COR^5, —SO_2R^5, alkyl sulfoxide, aryl sulfoxide, alkyl sulfone, aryl sulfone, alkyl sulfate, aryl sulfate, and sulfonamide, wherein all said radicals can be optionally substituted with one or more of the following:

hydroxy, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower thioalkoxy, halogen, nitro, amino, carboxyl, cyano, sulfonyl, carboalkoxy, carboaryloxy, carboxyalkylaryloxy, haloalkyl, —$SO_2NR^5R^6$ and —SO_2R^5 wherein all said substitutions may be optionally substituted with one or more of the following: amino, carboxyl, carboalkoxy, carboaryloxy, carboxyalkylaryloxy and lower alkoxy;

R^3, R^4 are independently selected from the group consisting of hydrogen, hydroxy, and alkyloxy;

R^5 and R^6 are independently selected from the group consisting of hydrogen, lower alkyl, and aryl; and

together with at least one non-toxic pharmaceutical acceptable carrier.

5,854,235
17-SPIROMETHYLENE STEROIDS

Johannes Antonius Maria Hamersma; Everardus Otto Maria Orlemans, and Johannes Bernardus Maria Rewinkel, all of Oss, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

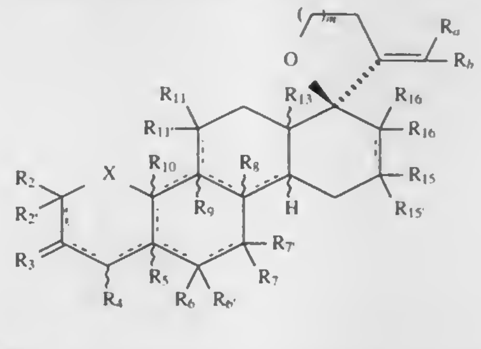
Division of Ser. No. 98,665, Jul. 28, 1993, Pat. No. 5,712,264. This application Nov. 3, 1997, Ser. No. 962,798

Claims priority, application European Pat. Off., Jul. 29, 1992, 92202339; Jun. 10, 1993, 93201657

Int. Cl.^{6} A61K *31/58;* **A01N** *43/80;* **C07J** *21/00;71/00*

U.S. Cl. 514—173 **4 Claims**

1. A compound having the formula:



wherein:

R_a and R_b, are independently selected from the group consisting of hydrogen, methyl, and halogen;

m is 1 or 2;

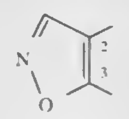
X is CHR_1 or a bond;

R_1 is H, CH_3, CN, OH, Oacyl, F, spirocyclopropyl; or together with R_2 or R_{10} is CH_2, CF_2, or $OC(CH_3)_2O$; or together with R_{11} is CH_2O;

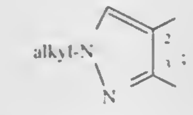
R_2 is H, alkyl, CH_2OH, CN, OH, Oacyl, F, or spirocyclopropyl; or together with R_1 or R_3 is a group indicated in the definitions of R_1 and R_3, respectively; or together with R_{10} is CH_2; or together with $R_{2'}$ is $=CH{-}R$, wherein R is H, OH, oalkyl, or Oacyl;

R_2 is H, alkyl, or CN; or together with R_2 is a group indicated in the definition of R_2;

R_3 is H_2, O, NOH, NOalkyl, NOacyl, (H,OH), (H,Oacyl), (O,Oalkyl), (H,Ocycloalkyl), or 1-pyrrolidinyl; or (O,alkynyl) when X is a bond; or R_2 and R_3 together with C2 and C3 of the steroid skeleton form an oxazole:



or a diazole:



R_4 is H, alkyl, halogen, CN, N_3, OH, phenylmethyl, phenylthiomethyl, methylthio, or alkylcarbonylthio;

R_5 is H or OH;

One of R_6 and R_7 is H, alkyl, CF_3, CH_2F, OH, halogen, CN, Oalkyl, Oacyl, Sacyl, CH_2OH, NO_2, COOalkyl, OSO_2alkyl,

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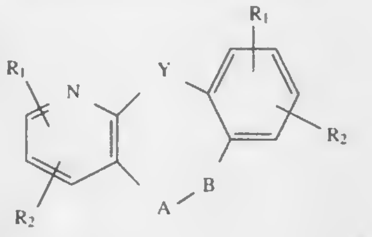
or spirocyclopropyl, and the other is H; or R_6 together with R_7 is CH_2, CF_2, O, or CHClCHCl; or R_6 together with R6' is CH_2 when R_7 is H; or R_7 together with $R_{7'}$ is CH_2 or CF_2 when R_6 is H;
$R_{6'}$ is H; or H or alkyl when R_6 is alkyl; or H or halogen when R_6 is halogen; or together with R_6 is a group indicated in the definition of R_6; or H or F when R_6 and R_7 together are CF_2;
$R_{7'}$ is H; or H or alkyl when R_7 is alkyl; or H or halogen when R_7 is halogen; or together with R_7 is a group indicated in the definition of R_7;
R_8 is H or CH_3;
R_9 is H, halogen, OH, or methyl; or together with R_{10} is CH_2 or O;
R_{10} is H, alkyl, halogen-substituted alkyl, alkenyl, alkynyl, halogen, OH, OOH, OOacyl, Oalkyl, Oalkynyl, amino, alkyl-substituted amino, NHacyl, aminomethyl, alkyl-substituted aminomethyl, CHO. COOH, COOalkyl, CH_2OH, CH_2Oacyl, or CH_2CH_2OH; or together with R_1, R_9, or R_{11}, is a group indicated in the definition of R_1, R_9, or R_{11} respectively; or together with C10, C9, C11 of the compound skeleton and R_{11} is a 6-membered ring when R_{11} is an aryl or heteroaryl;
R_{11} is H, alkyl, cycloalkyl, alkenyl, alkynyl, phenylethyl, arylethynyl, heteroarylethynyl, halogen-substituted alkyl, alkyl-substituted aminoalkyl, halogen, CH_2OCH_3, OH, OOH, Oalkyl, Oacyl, SH, Salkyl, N_3, $Si(CH_3)_2$, aryl, or heteroaryl; or R_{11} together with $R_{11'}$ is CH_2, CF_2, or CHF; or together with R_{10} is OC=O or OCHF; or together with R_1 is OCH_2; or together with R_{13} is OCH_2 or $CH_2CH_2CH_2$;
$R_{11'}$ is H, alkyl, cycloalkyl, alkenyl, alkynyl, phenylethyl, arylethynyl, heteroarylethynyl, halogen-substituted alkyl, alkyl-substituted aminoalkyl, halogen, CH_2OCH_3, OH, OOH, Oalkyl, Oacyl, SH, Salkyl, N_3, $Si(CH_3)_2$, aryl, or heteroaryl; or $R_{11'}$ together with $_{11}$ is a group indicated in the definition of R_{11}; or together with R_{13} is $CH_2CH_2CH_2$ when R_{11} is H;
R_{13} is H, alkyl, alkenyl, alkynyl, fluoro-substituted alkyl, phenyl, or cycloalkyl; or R_{13} together with R_{11}, $R_{11'}$, or R_{16} is $CH_2CH_2CH_2$;
One of R_{15} and R_{16} is H, OH, Oalkyl, Oacyl, halogen, alkyl, or spirocyclopropyl, and the other is H; or R_{15} together with R_{16} is CH_2 or CClF;
$R_{15'}$ is H; or together with R_{15} is CH_2 or F_2 when R_{16} is H;
$R_{16'}$ is H; or together with R_{16} is CH_2 or F_2 when R_{15} is H;
and wherein the twitched lines represent an α or β bond; and the dotted lines represent up to four optional non-adjacent bonds; or pharmaceutically acceptable salts thereof.

5,854,236
TRICYCLIC BENZAZEPINE VASOPRESSIN ANTAGONISTS

Jay Donald Albright, Nanuet, and Xuemei Du, Valley Cottage, both of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 637,908, Apr. 25, 1996, Pat. No. 5,686,445, which is a continuation-in-part of Ser. No. 254,823, Jun. 13, 1994, Pat. No. 5,512,563, which is a continuation-in-part of Ser. No. 100,003, Jul. 29, 1993, abandoned. This application Apr. 1, 1997, Ser. No. 834,706
Int. Cl.^{6} C07D *243/00;243/10;* **A61K** *31/55*
U.S. Cl. 514—220 **21 Claims**

1. A compound selected from Formula I:

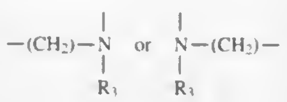


Formula I

wherein;

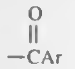
Y is NH, $NCOCH_3$, N-lower alkyl (C_1–C_3);

A-B is



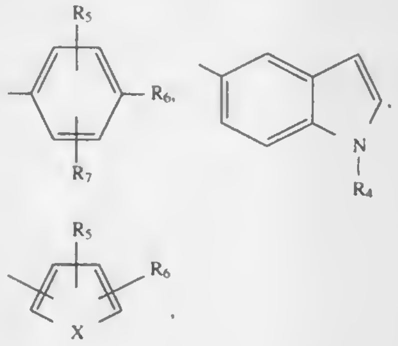
$$-(CH_2)-\underset{R_3}{N} \quad \text{or} \quad \underset{R_3}{N}-(CH_2)-$$

R_1 is H, chlorine, fluorine, bromine, iodine, OH, —S—(C_1–C_3) alkyl, —SH, —SO(C_1–C_3) alkyl, —SO_2 (C_1–C_3) alkyl, —CO(C_1–C_3)alkyl, —CF_3, (C_1–C_3) alkyl, —O (C_1–C_3)alkyl, —NO_2, —NH_2, —NHCO(C_1–C_3)alkyl, —N—[(C_1–C_3)alkyl]$_2$, SO_2NH_2, —SO_2NH (C_1–C_3)alkyl, or —SO_2N—[(C_1–C_3)alkyl]$_2$;
R_2 is H, Cl, Br, I, F, —OH, (C_1–C_3) alkyl, —O—(C_1–C_3)alkyl); or
R_1 and R_2 taken together are methylenedioxy or ethylenedioxy;
R_3 is the moiety

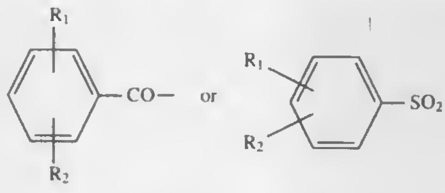


$$-\overset{O}{\overset{\|}{C}}Ar$$

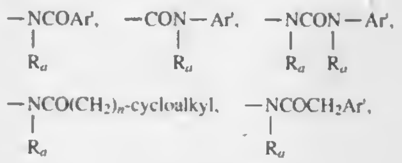
wherein Ar is a moiety selected from the group



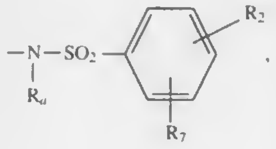
and X is selected from O, S, —NCH_3, or —N—$COCH_3$;
R_4 is selected from H, (C_1–C_3) alkyl, —CO—(C_1–C_3)alkyl, SO_2(C_1–C_3)alkyl, and the moieties of the formulae:



R_5 is H, —CH_3, —C_2H_5, Cl, Br, F, —O—CH_3, or —O—C_2H_5;
R_6 is selected from:
(a) moieties of the formula:



$$-\underset{R_a}{N}COAr', \quad -CO\underset{R_a}{N}-Ar', \quad -\underset{R_a}{N}CO\underset{R_a}{N}-Ar',$$
$$-\underset{R_a}{N}CO(CH_2)_n\text{-cycloalkyl}, \quad -\underset{R_a}{N}COCH_2Ar',$$



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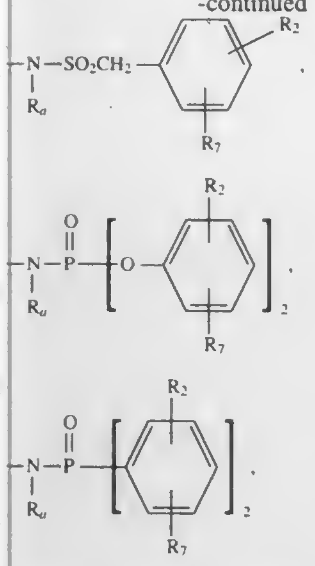
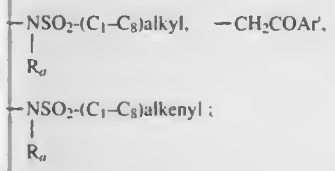
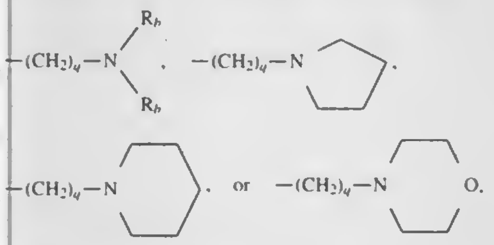


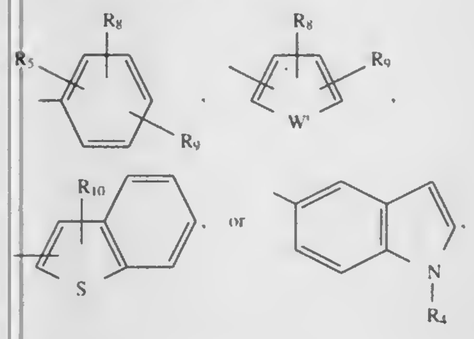


$$-\underset{R_a}{N}SO_2\text{-}(C_1\text{–}C_8)\text{alkyl}, \quad -CH_2COAr', \quad \text{or}$$
$$-\underset{R_a}{N}SO_2\text{-}(C_1\text{–}C_8)\text{alkenyl};$$

wherein
cycloalkyl is defined as C_3–C_6 cycloalkyl, cyclohexenyl or cyclopentenyl;
R_2 is as hereinbefore defined;
n is 0–2;
R_7 is H, —CH_3, —CH_2H_5, Cl, Br, F, —OCH_3, —OC_2H_5, or —CF_3;
R_a is hydrogen, CH_3, C_2H_5, moieties of the formulae:

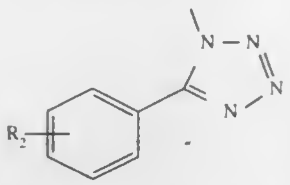


—(CH_2)$_2$—O—(C_1–C_3)alkyl or —CH_2CH_2OH;
q is one or two;
R_b is hydrogen, —CH_3 or —C_2H_5;
Ar' is selected from the group:

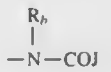


wherein
R_4, R_5 are as hereinbefore defined;
R_8 and R_9 are independently hydrogen, (C_1–C_3)alkyl, O—(C_1–C_3) alkyl, S—(C_1–C_3) alkyl, —CF_3, —CN, —OH, —SCF_3, —OCF_3, halogen, NO_2, amino, or —NH—(C_1–C_3)alkyl;
R_{10} is selected from halogen, hydrogen, or (C_1–C_3) alkyl;

W' is selected from O, S, NH, N—(C_1–C_3)alkyl, —NCO—(C_1–C_3) alkyl, or NSO_2—(C_1–C_3) alkyl; and
(b) a moiety of the formula:

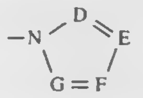


where R_2 is as hereinbefore defined;
(c) a moiety of the formula:

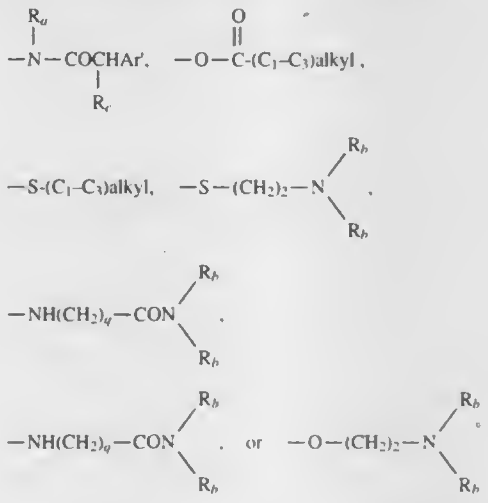


$$-\overset{R_b}{N}-COJ$$

wherein J is R_a, (C_1–C_8)alkyl branched or unbranched, (C_2–C_8) alkenyl branched or unbranched, —O—(C_1–C_8) alkyl branched or unbranched, —O—(C_2–C_8) alkenyl branched or unbranched, tetrahydrofuran, tetrahydrothiophene, or —CH_2—K wherein K is halogen, —OH, tetrahydrofuran, tetrahydrothiophene or the heterocyclic ring moiety:

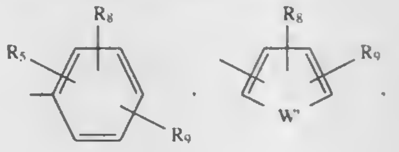


wherein D, E, F and G are selected from carbon or nitrogen and wherein the carbon atoms may be optionally substituted with halogen, (C_1–C_3) alkyl, hydroxy, —CO—(C_1–C_3)alkyl, CHO, (C_1–C_3) alkoxy, or —CO_2—(C_1–C_3) alkyl, and R_a and R_b are as hereinbefore defined;
(d) a moiety selected from those of the formulae:



$$-\overset{R_a}{N}-CO\underset{R_c}{C}HAr', \quad -O-\overset{O}{\overset{\|}{C}}\text{-}(C_1\text{–}C_3)\text{alkyl},$$
$$-S\text{-}(C_1\text{–}C_3)\text{alkyl}, \quad -S-(CH_2)_2-N(R_b)_2,$$
$$-NH(CH_2)_q-CON(R_b)_2,$$
$$-NH(CH_2)_q-CON(R_b)_2, \quad \text{or} \quad -O-(CH_2)_2-N(R_b)_2$$

wherein
R_c is selected from halogen, (C_1–C_3) alkyl, —O—(C_1–C_3) alkyl or OH;
R_b is as hereinbefore defined;
q is 1 or 2;
wherein Ar' is selected from the group:



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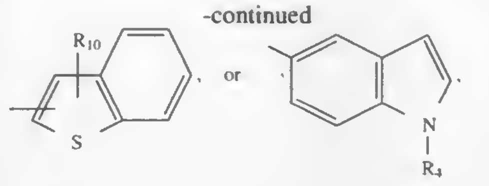


R_7 is hydrogen, —CH_3, —C_2H_5, Cl, Br, F, —OCH_3, —OC_2H_5, or —CF_3;

R_8 and R_9 are independently hydrogen, (C_1–C_3) alkyl, O—(C_1–C_3) alkyl, S—(C_1–C_3) alkyl, —CF_3, —CN, —OH, —SCF_3, —OCF_3, halogen, NO_2, amino, or —NH—(C_1–C_3) alkyl;

R_{10} is selected from the group of halogen, hydrogen, or (C_1–C_3) alkyl;

W' is selected from O, S, NH, N—(C_1–C_3) alkyl, —NCO—(C_1–C_3) alkyl, or NSO_2—(C_1–C_3) alkyl;

or a pharmaceutically acceptable salt, ester or prodrug thereof.

5,854,237

TRICYCLIC DIAZEPINE VASOPRESSIN ANTAGONISTS AND OXYTOCIN ANTAGONISTS

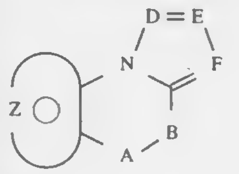
Jay Donald Albright, Nanuet; Marvin Fred Reich, Suffern; Fuk-Wah Sum, Pomona, and Efren Guillermo Delos Santos, Nanuet, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 646,582, May 8, 1996, Pat. No. 5,733,905, which is a continuation-in-part of Ser. No. 468,737, Jun. 6, 1995, Pat. No. 5,624,923, which is a division of Ser. No. 254,822, Jun. 13, 1994, Pat. No. 5,516,774, which is a continuation-in-part of Ser. No. 100,004, Jul. 29, 1993, abandoned. This application Jun. 17, 1997, Ser. No. 877,314

Int. Cl.^{6} A61K *31/55;31/535;* **C07D** *487/12;* **C07F** *9/02*

U.S. Cl. 514—220 **39 Claims**

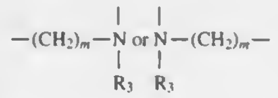
1. A compound selected from Formula I:



Formula I

wherein;

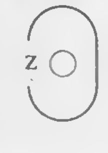
A-B is



$$-(CH_2)_m-\underset{R_3}{\overset{|}{N}}\text{ or }\underset{R_3}{\overset{|}{N}}-(CH_2)_m-$$

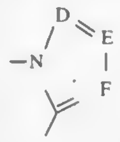
wherein m is one or two;

the moiety

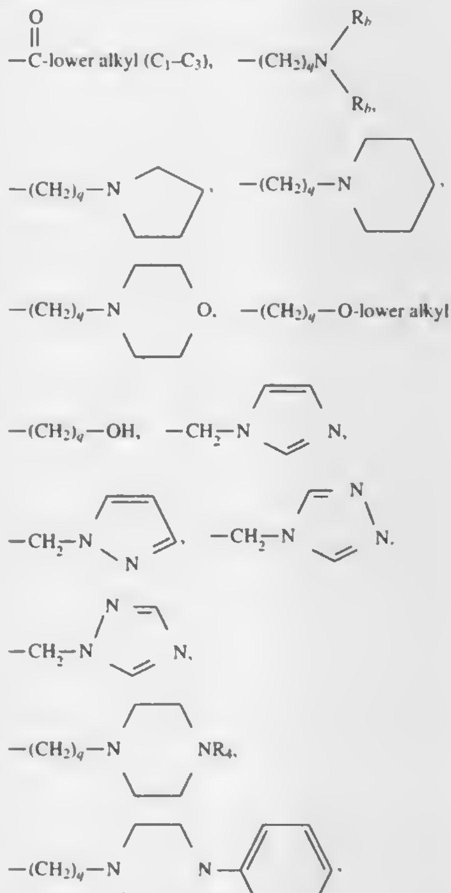


represents a fused phenyl or fused substituted phenyl optionally substituted by one or two substituents selected from (C_1–C_3) lower alkyl, halogen, amino, (C_1–C_3) lower alkoxy, or (C_1–C_3) lower alkylamino;

the moiety:



is a five-membered aromatic (unsaturated) fused nitrogen-containing heterocyclic ring wherein D is nitrogen, and E, and F are carbon and wherein the carbon atoms may be optionally substituted by a substituent selected from halogen, (C_1–C_3) lower alkyl, hydroxy, $COCCl_3$, $COCF_3$,

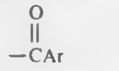


—CHO, amino, (C_1–C_3) lower alkoxy, (C_1–C_3) lower alkylamino , CONH (C_1–C_3) lower alkyl, or —CON[lower alkyl (C_1–C_3)]$_2$,

R_b is independently selected from H, —CH_3, or —C_2H_5;

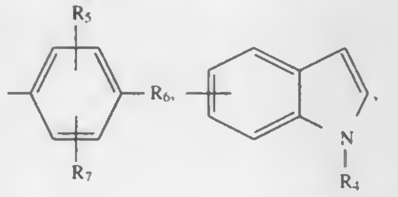
q is 1 or 2;

R_3 is the moiety



$$-\overset{\overset{O}{\|}}{C}Ar$$

wherein Ar is a moiety selected from the group



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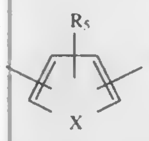
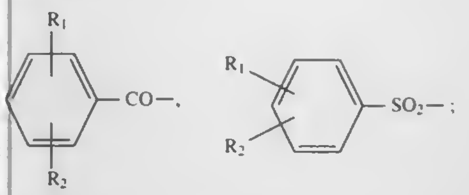


and X is selected from O, S, NH, —NCH_3, or —N—$COCH_3$;

R_4 is selected from H, lower alkyl (C_1–C_3), —CO-lower alkyl (C_1–C_3), SO_2 lower alkyl (C_1–C_3), or the moieties of the formulae:

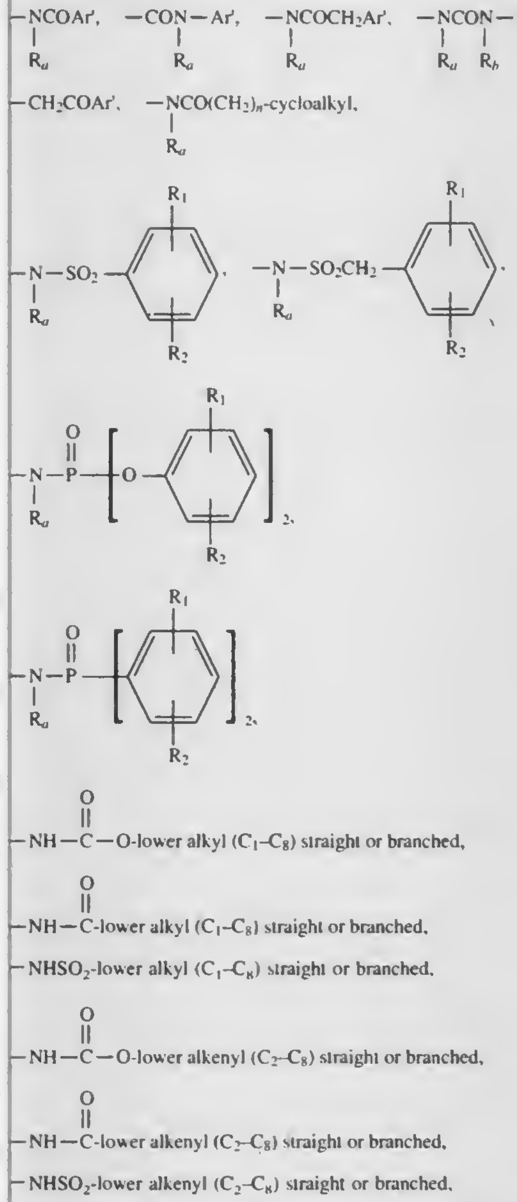


R_1 and R_2 are, independently, H, (C_1–C_3) lower alkyl, (C_1–C_3) lower alkoxy, or halogen;

R_5 is H, (C_1–C_3) lower alkyl, (C_1–C_3) lower alkoxy or halogen;

R_6 is selected from:

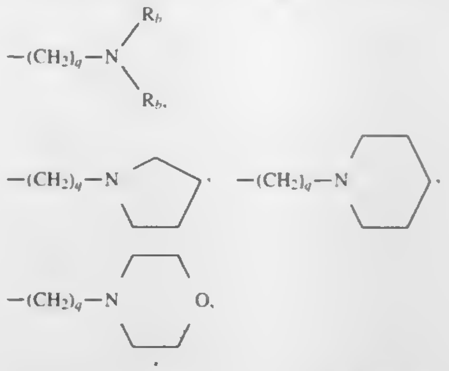
(a) moieties of the formula:


—NCOAr',
Ra
—CON—Ar',
Ra
—NCOCH2Ar',
Ra
—NCON—Ar',
Ra Rb
—CH2COAr',
—NCO(CH2)n-cycloalkyl,
Ra
R1
—N—SO2
Ra
R2
—N—SO2CH2
Ra
R1
R2
O
—N—P
Ra
O
R1
R2
2,
O
—N—P
Ra
R1
R2
2,
O
—NH—C—O-lower alkyl (C1–C8) straight or branched,
O
—NH—C-lower alkyl (C1–C8) straight or branched,
—NHSO2-lower alkyl (C1–C8) straight or branched,
O
—NH—C—O-lower alkenyl (C2–C8) straight or branched,
O
—NH—C-lower alkenyl (C2–C8) straight or branched,
—NHSO2-lower alkenyl (C2–C8) straight or branched,

wherein cycloalkyl is defined as C_3 to C_6 cycloalkyl, cyclohexenyl or cyclopentenyl;

n is 0–2;

R_a is independently selected from H, —CH_3, —C_2H_5,

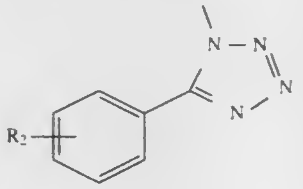


—$(CH_2)_q$—O-lower alkyl (C_1–C_3), or —CH_2CH_2OH;

R_b is as hereinbefore defined;

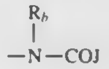
q is 1 or 2;

(b) a moiety of the formula:



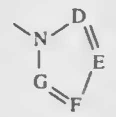
where R_2 is as hereinbefore defined;

(c) a moiety of the formula:



$$\underset{}{-\overset{\overset{R_b}{|}}{N}-COJ}$$

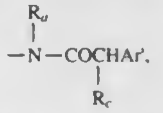
wherein J is R_a, lower alkyl (C_1–C_8) branched or unbranched, lower alkenyl (C_2–C_8) branched or unbranched, —O-lower alkyl (C_{1-8}) branched or unbranched, —O-lower alkenyl (C_2–C_8) branched or unbranched, tetrahydrofuran, tetrahydrothiophene, or —CH_2—K wherein K is halogen, (C_1–C_3) lower alkoxy, tetrahydrofuran, tetrahydrothiophene or the heterocyclic ring moiety:



wherein D, E, F and G are selected from carbon or nitrogen and wherein the carbon atoms may be optionally substituted with halogen, (C_1–C_3)lower alkyl, hydroxy, —CO-lower alkyl (C_1–C_3), CHO, (C_1–C_3)lower alkoxy, or —CO2-lower alkyl (C_1–C_3); and

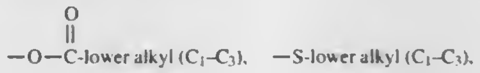
- R_a and R_b are as hereinbefore defined;

(d) a moiety selected from those of the formulae:

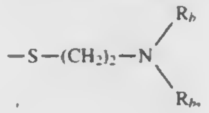


$$-\overset{\overset{R_a}{|}}{N}-CO\underset{\underset{R_c}{|}}{C}HAr',$$

wherein R_c is selected from halogen, (C_1–C_3)lower alkyl, —O-lower alkyl (C_1–C_3), OH



$$-O-\overset{\overset{O}{\|}}{C}\text{-lower alkyl }(C_1–C_3),\quad -S\text{-lower alkyl }(C_1–C_3),$$



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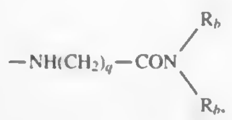
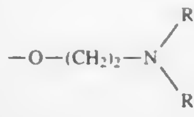


$$-NH(CH_2)_q-CON\begin{matrix}R_b\\ R_{b'}\end{matrix}$$

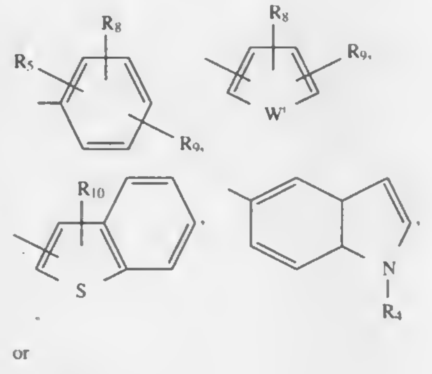
or



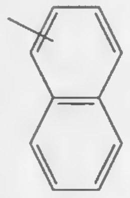
$$-O-(CH_2)_2-N\begin{matrix}R_b\\ R_{b'}\end{matrix}$$

q is 1 or 2;

R_a and R_b are as hereinbefore defined;
wherein Ar' is selected from the group:



or



wherein

W' is selected from 0, S, NH, N-lower alkyl (C_1-C_3), —NHCO-lower alkyl (C_1-C_3), or NSO_2-lower alkyl (C_1-C_3);

R^7 is selected from H, lower alkyl (C_1-C_3), halogen, —O-lower alkyl (C_1-C_3), or CF_3;

R^8 and R^9 are independently selected from hydrogen, lower alkyl (C_1-C_3), S-lower alkyl (C_1-C_3), halogen, —NH—lower alkyl (C_1-C_3), $—OCF_3$, —CN, —OH, $—S—CF_3$, $—NO_2$, NH_2, or —O-lower alkyl (C_1-C_3);

R^{10} is H, halogen, or lower alkyl-(C_1-C_3); and the pharmaceutically acceptable salts, esters and pro-drug forms thereof.

5,854,238

USE OF A THIENOTRIAZOLODIAZEPHINE TO INCREASE APOLIPOPROTEIN A-I LEVELS

Herman Kempen, Allschwil, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

PCT No. PCT/EP96/03814, § 371 Date Feb. 23, 1998, § 102(e) Date Feb. 23, 1998, PCT Pub. No. WO97/09048, PCT Pub. Date Mar. 13, 1997

PCT Filed Aug. 30, 1996, Ser. No. 11,819

Claims priority, application European Pat. Off., Sep. 9, 1995, 95114163

Int. Cl.^{6} A61K *31/505*

U.S. Cl. 514—220 **16 Claims**

1. A method for preventing coronary artery disease which comprises administering an effective amount of the compound 9-methyl-4-phenyl-6H-thieno[3,2-f]-s-triazolo[4,3-a][1,4] diazepine to an individual not afflicted with coronary artery disease.

5,854,239

DIAZABICYCLIC NEUOKININ ANTAGONISTS

Harry R. Howard, Bristol, and Kevin D. Shenk, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

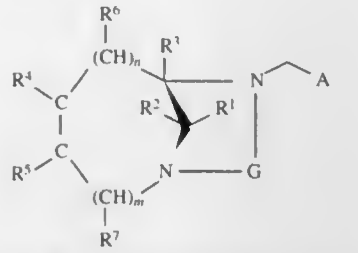
PCT No. PCT/IB94/00352, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO95/18129, PCT Pub. Date Jul. 6, 1995

Continuation of Ser. No. 175,034, Dec. 29, 1993, abandoned. This PCT application Nov. 14, 1994, Ser. No. 669,283

Int. Cl.^{6} C07D *471/08;487/08;* **A61K** *31/435;31/495*

U.S. Cl. 514—221 **17 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable salt thereof wherein R^1 is phenyl, thienyl or benzhydryl wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl and wherein said phenyl, thienyl and benzhydryl may be substituted with one or more substituents independently selected from halo, nitro, (C_1-C_6)alkyl optionally substituted with from one to three fluorine atoms, (C_1-C_6)alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy(C_1-C_6)alkyl, $(C_1- C_6)$alkoxy(C_1-C_6)alkyl, (C_1-C_6)-alkylamino, (C_1-C_6)alkyl—O—CO—, (C_1-C_6)alkyl—CO—O—, (C_1-C_6)alkyl—CO—, (C_1-C_6)alkyl—O—, (C_1-C_6)alkyl—CO—(C_1-C_6)alkyl-, di-(C_1-C_6)alkylamino, —CONH—$(C_1- C_6)$alkyl, (C_1-C_6)-alkyl—CO—NH—(C_1-C_6)alkyl, —NHCOH and —NHCO—(C_1-C_6)alkyl;

R^2 is hydrogen or (C_1-C_6)alkyl, or R^1 and R^2, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms;

A is phenyl, thienyl, benzothiazolyl or naphthyl wherein said phenyl, thienyl, benzothiazolyl and naphthyl may be substituted with one or more substituents independently selected from halo, nitro, (C_1-C_6)alkyl optionally substituted with from one to three fluorine atoms, (C_1-C_6)alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy(C_1-C_6)alkyl, (C_1-C_6)alkoxy(C_1-C_6)alkyl, (C_1-C_6)-alkylamino, (C_1-C_6)alkyl—O—CO—, (C_1-C_6)alkyl—CO—O—, (C_1-C_6)alkyl—CO—, (C_1-C_6)alkyl—O—, (C_1-C_6)alkyl—CO—$(C_1- C_6)$alkyl-, di-(C_1-C_6)alkylamino, —CONH—(C_1-C_6)alkyl, (C_1-C_6)-alkyl—CO—NH—(C_1-C_6)alkyl, —NHCOH and —NHCO—(C_1-C_6)alkyl;

n is 0, or 1;

m is 0, or 1;

the sum of n and m is 1;

R^3 is hydrogen or (C_1-C_6)alkyl optionally substituted with one to three fluorine atoms;

R^4 and R^5 are hydrogen, or R^4 and R^5, together with the carbons to which they are attached, form an aromatic or non-aromatic carbocyclic or heterocyclic ring;

R^6 and R^7 are hydrogen, or R^3 together with R^4, R^5, R^6 or R^7, along with the carbon to which they are attached, form a saturated carbocyclic group having from 3 to 6 carbons;

G is $(CR^8R^9)_p$, wherein p is 1, and R^8 and R^9 are each independently selected from hydrogen, $(C_1- C_6)$alkyl, phenyl, naphthyl or heteroaryl wherein said alkyl may be substituted by one to three fluorine atoms.

5,854,240

METHYLENE BLUE FOR THE TREATMENT OR PROPHYLAXIS OF ENCEPHALOPATHY CAUSED BY IFOSFAMIDE

Adrian Kupfer, Herzogenbuchsee, and Thomas Cerny, Bern, both of Switzerland, assignors to Newcastle University Ventures Limited, Newcastle, United Kingdom

PCT No. PCT/GB94/02494, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/13079, PCT Pub. Date May 18, 1995

PCT Filed Nov. 14, 1994, Ser. No. 646,292

Claims priority, application United Kingdom, Nov. 12, 1993, 9323399

Int. Cl.^{6} A61K *31/54;31/66*

U.S. Cl. 514—224.8 **7 Claims**

1. A method of treating or preventing toxicity caused by ifosfamide, the method comprising administering to a subject in need thereof an effective amount of a compound which is able to oxidize a reduced flavin moiety, wherein the compound is methylene blue.

5,854,241

PYRIDO[3,2,1-I,J][3,1]BENZOXAZINE DERIVATIVES

Werner Hallenbach, Monheim; Thomas Himmler, Odenthal; Thomas Jaetsch, Köln; Burkhard Mielke, Leverkusen; Klaus Dieter Bremm, Recklinghausen; Rainer Endermann, Wuppertal; Franz Pirro, Langenfeld, all of Germany; Michael Stegemann, Shawnee Mission, Kans., and Heinz-Georg Wetzstein, Köln, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/02510, § 371 Date Jan. 3, 1997, § 102(e) Date Jan. 3, 1997, PCT Pub. No. WO96/01829, PCT Pub. Date Jan. 25, 1996

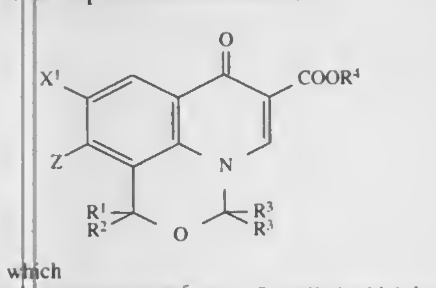
PCT Filed Jun. 28, 1995, Ser. No. 765,212

Claims priority, application Germany, Jul. 11, 1994, 44 24 369.3

Int. Cl.^{6} C07D *498/06;265/00;221/00;* **A61K** *31/535*

U.S. Cl. 514—230.2 **7 Claims**

1. A compound of the formula (I):



(I)

in which

R^1 represents hydrogen or C_{1-4}-alkyl which is optionally substituted by hydroxyl or halogen;

R^2 represents hydrogen or methyl;

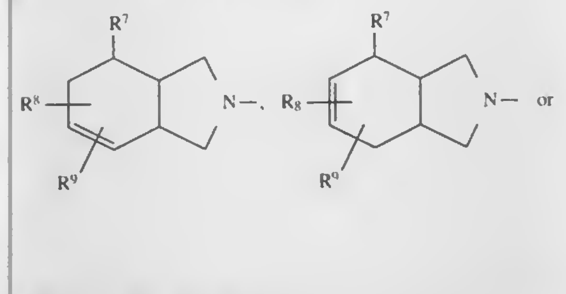
R^3 represents hydrogen or C_{1-4}-alkyl;

$R^{3'}$ represents hydrogen or methyl;

R^4 represents hydrogen, C_{1-4}-alkyl which is optionally substituted by hydroxyl, methoxy, amino, methylamino or dimethylamino, or represents (5-methyl-2-oxo-1,3-dioxol-4-yl)methyl;

X^1 represents hydrogen or halogen;

Z represents a radical of the formula:



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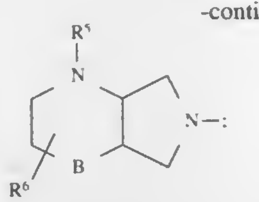


in which

R^7 represents hydrogen, hydroxyl, $—NR^{10}R^{11}$, hydroxymethyl, $—CH_2—NR^{10}R^{11}$, carboxyl, inethoxycarbonyl or ethoxycarbonyl;

in which

R^{10} represents hydrogen, C_{1-3}-alkyl which is optionally substituted by hydroxyl, or represents C_{1-4}-alkoxycarbonyl or C_{1-3}-acyl- and

R^{11} represents hydrogen or methyl;

R^8 represents hydrogen, straight-chain or branched C_{1-3}-alkyl, or cyclopropyl;

R^9 represents hydrogen or methyl;

R^6 represents hydrogen or methyl;

R^5 represents hydrogen, methyl, $—CH=CH—CO_2R^{5'}$, $—CH_2—CH_2—CO_2R^{5'}$, $—CH_2—CO—CH_3$ or $—CH_2—CH_2—CN$;

in which

$R^{5'}$ represents methyl or ethyl;

B represents $—CH_2—$, —O— or a direct bond;

optionally in the form a racemic mixture or a pure enantiomer thereof, and/or of a pharmaceutically utilizable hydrate or acid addition salt, alkali metal salt, alkaline earth metal salt, silver salt or guanidinium salt thereof.

5,854,242

BENZOXAZINE ANTIMICROBIAL AGENTS

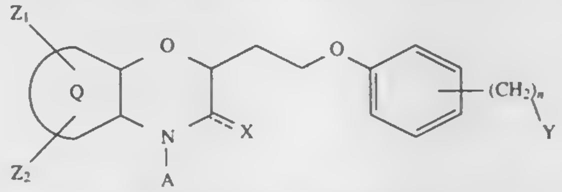
Roger Frechette, and Michele Ann Weidner-Wells, both of Somerville, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 553,188, Nov. 7, 1995, Pat. No. 5,696,117. This application Jul. 23, 1997, Ser. No. 899,235

Int. Cl.^{6} A61K *31/535;* **C07D** *265/36*

U.S. Cl. 514—230.5 **9 Claims**

1. A compound selected from those of Formula 1:



1

wherein the moiety Q is a fused pyridyl moiety;

Z_1 is hydrogen, halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, phenyl, hydroxy, amino, nitro, sulfonylamino or trifluoromethyl;

Z_2 is hydrogen or a halogen;

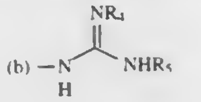
X is hydrogen or oxygen;

A is C_1-C_5 alkyl, $—CH_2$phenyl, $—CH_2$thienyl, $—CH_2$pyridyl, $—CH_2$furyl, or -ethyl piperidine; wherein said phenyl, thienyl, pyridyl, furyl or piperidine moiety is optionally substituted with (C_1-C_6)alkyl, benzyl, oxybenzyl, phenoxy, hydroxy, alkoxy, halogen, dihalogen, nitro, amino, carboxyl or carbomethoxy;

n is an integer from 0–3;

Y is a moiety selected from:

(a) $—NHR_1R_2$,$—N^+R_1R_2R_3$;



$$(b)\ -\underset{H}{N}-C(=NR_4)-NHR_5$$

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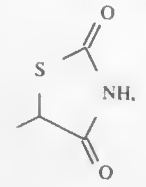
(c) —CO_2H, —CHO;

(d) —$CH(R_6)CO_2H$, —$CH(R_6)CO_2CH_3$, —$CH{=}CHR_7$, —$CH{=}C(CO_2H)_2$;

(e) a moiety of the formula:



(f) 5-tetrazolyl;

wherein

R_1, R_2 and R_3 are independently hydrogen, C_1–C_6 alkyl, or t-butoxycarbonyl;

R_4 and R_5 are independently t-butoxycarbonyl or hydrogen or R_4 and R_5 may be joined together to form an imnidazoline, imidazolyl or pyrimidine ring;

R_6 is hydrogen, hydroxy or chloro;

R_7 is CO_2H or $C(O)NH(CH_2)_pOH$ wherein p is an integer from 1–4; and the pharmaceutically acceptable salts, esters and pro-drug forms thereof.

5,854,243

3-HETEROARYL-1-PYRROLIDINEALKYLTHIOLS AND DERIVATIVES THEREOF AND THEIR THERAPEUTIC UTILITY

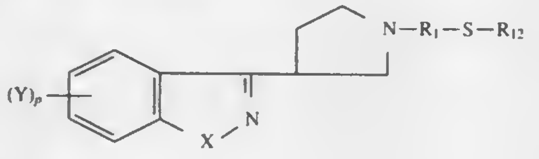
Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station; Joseph T. Strupczewski, Flemington, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, Pat. No. 5,776,963, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,715

Int. Cl.^{6} A61K *31/415;31/42;31/495;* **C07D** *413/14*

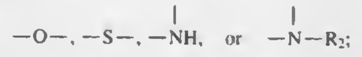
U.S. Cl. 514—233.8 **57 Claims**

1. A compound having the formula:



wherein,

X is



$$-O-,\ -S-,\ -\overset{|}{N}H,\ \text{or}\ -\overset{|}{N}-R_2;$$

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, and phenylsulfonyl groups, wherein aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy or halogen when p is 2 and X is —O—;

in which (R_1) is R_{20}, R_{21} or R_{22}, wherein:

R_{20} is —$(CH_2)_n$—, where n is 2, 3, 4 or 5;

R_{21} is

—CH_2—$CH{=}CH$—CH_2—,

—CH_2—$C{\equiv}C$—CH_2—,

—CH_2—$CH{=}CH$—CH_2—CH_2,

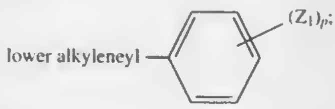
—CH_2—CH_2—$CH{=}CH$—CH_2—,

—CH_2—$C{\equiv}C$—CH_2—CH_2—, or

—CH_2—CH_2—$C{\equiv}C$—CH_2—,

the —$CH{=}CH$— bond being cis or trans;

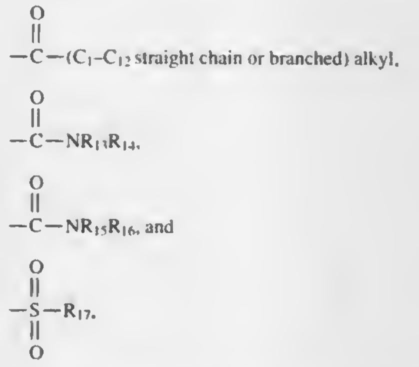
R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1–C_6 linear alkyl group, phenyl group or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2 or halogen;

where R_{12} is selected from the group consisting of:

hydrogen,



$$-\overset{O}{\overset{\|}{C}}-(C_1\text{–}C_{12}\ \text{straight chain or branched) alkyl},$$

$$-\overset{O}{\overset{\|}{C}}-NR_{13}R_{14},$$

$$-\overset{O}{\overset{\|}{C}}-NR_{15}R_{16},\ \text{and}$$

$$-\overset{O}{\overset{\|}{\underset{\underset{O}{\|}}{S}}}-R_{17},$$

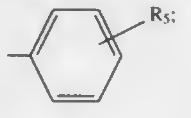
where R_{13} is selected from the group consisting of hydrogen and (C_1–C_{12}) alkyl groups;

where R_{14} is selected from the group consisting of hydrogen and (C_1–C_{12}) alkyl groups;

where $NR_{15}R_{16}$ taken together form a ring structure selected from the group consisting of piperidinyl, morpholinyl and piperazinyl;

where R_{17} is selected from the group consisting of lower alkyl and aryl groups;

in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,854,244

MELAMINE DERIVATIVES FOR USE IN THE TREATMENT OF CANCER

Michael Jarman, and Helen Mary Coley, both of Surrey, Great Britain, assignors to Cancer Research Campaign Technology Limited, Regent's Park, United Kingdom

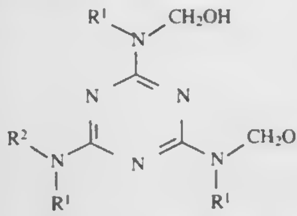
Continuation of Ser. No. 313,071, Oct. 20, 1994, Pat. No. 5,534,625. This application Apr. 2, 1996, Ser. No. 631,659

Claims priority, application United Kingdom, Mar. 27, 1992, 9206768; WIPO, Mar. 26, 1993, PCT/GB93/00625

Int. Cl.^{6} C07D *251/70;* **A61K** *31/53*

U.S. Cl. 514—245 **8 Claims**

1. A compound of the formula:



(I)

wherein each R^1, which may be the same or different, is hydrogen, $C_{1\text{-}4}$ alkyl or an electron withdrawing group selected from the group consisting of CF_3CH_2 or $CH_2C{\equiv}CH$, R^2 is hydrogen, $C_{1\text{-}4}$ alkyl or an electron withdrawing organic group selected from the group consisting of CF_3CH_2 or $CH_2C{\equiv}CH$, with the provisos that:

a) when each R^1 is hydrogen R^2 is not hydrogen, and

b) when each R^1 is methyl R^2 is not hydrogen.

5,854,245

FIBRINOGEN RECEPTOR ANTAGONISTS

Mark E. Duggan, Schwenksville; Melissa S. Egbertson, Ambler; George D. Hartman; Steven D. Young, both of Lansdale, all of Pa., and Nathan C. Ihle, Seattle, Wash., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1997, Ser. No. 883,108

Int. Cl.^{6} A61K *31/495;31/435;* **C07D** *241/38;241/04*

U.S. Cl. 514—250 **10 Claims**

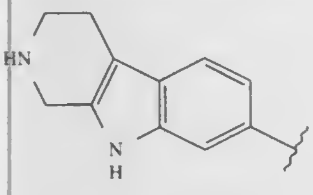
1. A compound having the formula

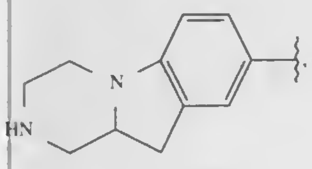
X—Y—Z—A—B

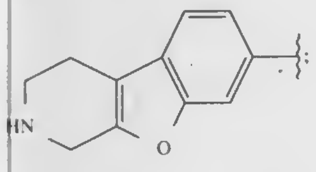
or a pharmaceutically acceptable salt,

wherein

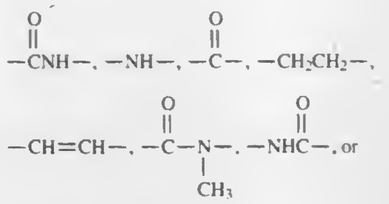
X and Y form the fused ring systems:







z is

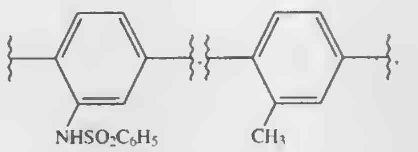


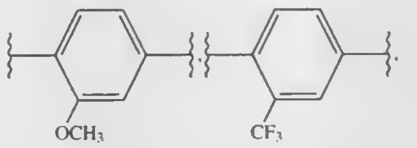
$$-\overset{O}{\overset{\|}{C}}NH-,\ -NH-,\ -\overset{O}{\overset{\|}{C}}-,\ -CH_2CH_2-,$$

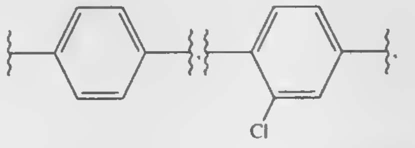
$$-CH{=}CH-,\ -\overset{O}{\overset{\|}{C}}-\underset{\underset{CH_3}{|}}{N}-,\ -NH\overset{O}{\overset{\|}{C}}-,\ \text{or}$$

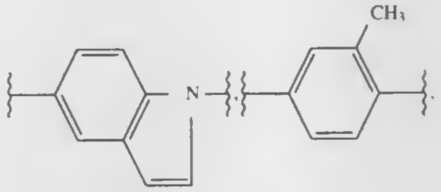
Z represents a bond;

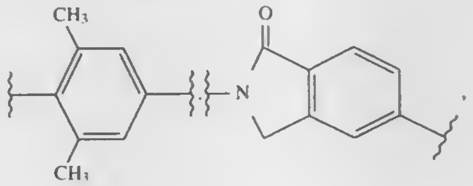
A is

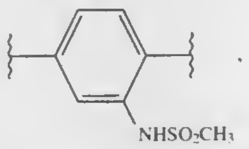


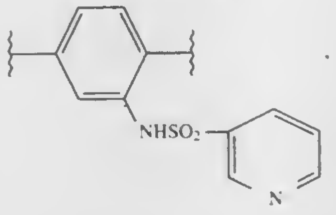


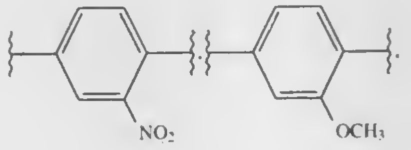












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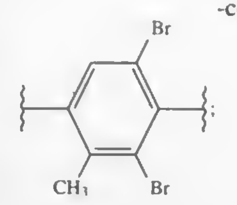


and

B is —OCH$_2$CO$_2$H, —OCH$_2$CO$_2$CH$_2$C(O)NHCH$_3$, —OCH$_2$CO$_2$CH$_2$C(O)N(CH$_2$CH$_3$)$_2$, —OCH$_2$CO$_2$CH$_2$CH$_3$, —CH$_2$CH$_2$CO$_2$H, —CH$_2$COOH, —OCH(CH$_3$)CO$_2$H, or —OCH(CH$_3$)CO$_2$CH$_2$CH$_3$.

5,854,246

TOPICAL KETOCONAZOLE EMULSIONS

Marc Karel Jozef Francois, Kalmthout, and Eric Carolus Leonarda Snoeckx, Beerse, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

PCT No. PCT/EP95/03366, § 371 Date Feb. 24, 1997, § 102(e) Date Feb. 24, 1997, PCT Pub. No. WO96/06613, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 25, 1995, Ser. No. 793,359

Claims priority, application European Pat. Off., Sep. 1, 1994, 94 202 505

Int. Cl.^{6} A61K *31/495;31/50;31/215;47/00*

U.S. Cl. 514—252 **7 Claims**

1. A stable and less irritating oil-in-water emulsion for topical application to the skin comprising by weight based on the total weight of the emulsion:

(a) 0.5 to 5% ketoconazole microfine;
(b) buffer, acid or base to maintain the pH of the emulsion in the range of from 6 to 8;
(c) sufficient dermatologically acceptable antimicrobial preservatives to prevent degradation of the emulsion;
(d) 0.5 to 10% of a stabilizing agent which is propylene glycol;
(e) 0.5 to 40% of a dermatologically acceptable oil; and
(f) water ad 100%;

provided that the emulsion lacks sodium sulfite as an anti-oxidant.

5,854,247

PIPERAZINE, PIPERIDINE AND TETRAHYDROPYRIDINE DERIVATIVES USEFUL AS 5-HT1 RECEPTER AGONISTS

Raymond Baker, Uley; Andrew Madin, Sawbridgeworth, both of Great Britain; Victor Guilio Matassa, Rome, Italy, and Leslie Joseph Street, Harlow, Great Britain, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB95/02687, § 371 Date Jul. 21, 1997, § 102(e) Date Jul. 21, 1997, PCT Pub. No. WO96/16056, PCT Pub. Date May 30, 1996

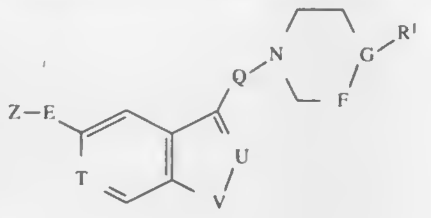
PCT Filed Nov. 15, 1995, Ser. No. 849,385

Claims priority, application United Kingdom, Nov. 23, 1994, 9423682

Int. Cl.^{6} A61K *31/495;* **C07D** *413/14*

U.S. Cl. 514—253 **9 Claims**

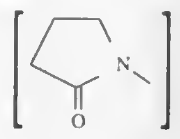
1. A compound of formula I, or a salt or prodrug thereof:



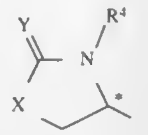
(I)

wherein

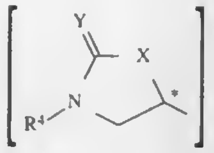
Z represents —SO$_2$NR^{5}R^6, or a group of formula (b),



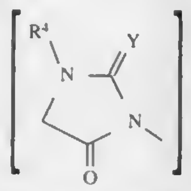
(a)



(b)



(c)



(d)

in which the asterisk * denotes a chiral centre;

X represents oxygen,
Y represents oxygen or sulphur;
E represents a chemical bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;
Q represents a straight or branched alkylene chain containing from 1 to 6 carbon atoms, optionally substituted in any position by a hydroxy group;
T represents CH;
U represents nitrogen or C—R^2;
V represents oxygen, sulphur or N—R^3;
—F—G— represents —CH$_2$—N—,
R^1 represents aryl(C$_{1-6}$)alkyl or heteroaryl(C$_{1-6}$)alkyl, either of which groups may be optionally substituted;
R^2, R^3 and R^4 independently represent hydrogen or C$_{1-6}$ alkyl; and
R^5 and R^6 independently represent hydrogen, C$_{1-6}$ alkyl, trifluoromethyl, phenyl, methylphenyl, or an optionally substituted aryl(C$_{1-6}$)alkyl or heteroaryl(C$_{1-6}$)alkyl group; or R^5 and R^6, when linked through a nitrogen atom, together represent the residue of an optionally substituted azetidine, pyrrolidine, piperidine, morpholine or piperazine ring.

5,854,248

NEFAZODONE: USE IN MIGRAINE PROPHYLAXIS

Ronald N. Marcus, and Neil M. Sussman, both of Hamden, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Apr. 10, 1997, Ser. No. 843,671

Int. Cl.^{6} A61K *31/495*

U.S. Cl. 514—255 **7 Claims**

1. A method for prophylactic treatment of recurrent headache disorders which comprises administering a non-toxic therapeutically effective dose of nefazodone or a pharmaceutically acceptable acid addition salt thereof to a patient in need of such treatment.

5,854,249

OPIOID DIARYLMETHYLPIPERAZINES AND PIPERIDINES

Kwen-Jen Chang, Chapel Hill; Grady Evan Boswell; Dulce Garrido Bubacz, both of Cary; Mark Allan Collins; Ann Otstot Davis, both of Raleigh, and Robert Walton McNutt, Jr., Durham, all of N.C., assignors to Delta Pharmaceuticals, Inc., Chapel Hill, N.C.

Division of Ser. No. 284,445, Aug. 3, 1994, Pat. No. 5,658,908.

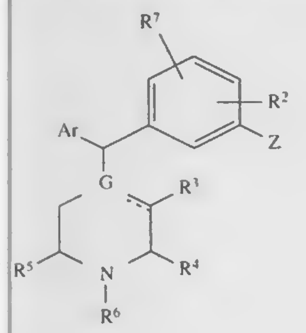
This application May 28, 1997, Ser. No. 864,667

Claims priority, application United Kingdom, Feb. 3, 1992, 9202238

Int. Cl.^{6} A01N *43/60;* **C07D** *401/00;403/00;241/04*

U.S. Cl. 514—255 **22 Claims**

1. A method for the treatment or prophylaxis of one or more conditions or disorders selected from the group consisting of diarrhea, urinary incontinence, and gastrointestinal disorders, comprising administration to a subject in need of such treatment or prophylaxis, of an effective amount of a compound of the formula:



wherein:

Ar is a 5- or 6-member carbocyclic or heterocyclic aromatic ring having on a first ring carbon atom thereof a substituent Y and on a second ring carbon atom thereof a substituent R$_1$,
Y is selected from the group consisting of:
hydrogen;
halogen;
C1–C6 alkyl;
C1–C6 haloalkyl;
C3–C6 cycloalkyl;
C1–C6 alkoxy;
C3–C6 cycloalkoxy;
sulfides of the formula SR8 where R8 is C1–C6 alkyl, C3–C6 cycloalkyl, arylalkyl comprising a C5–C10 aryl moiety and an C1–C6 alkyl moiety, or C5–C10 aryl;
sulfoxides of the formula SOR8 where R8 is the same as above;
sulfones of the formula SO2R8 where R8 is the same as above;
nitrile;
C1–C6 acyl;
alkoxycarbonylamino (carbamoyl) of the formula NHCO2R8 where R8 is the same as above;
carboxylic acid, or an ester, amide, or salt thereof;
aminomethyl of the formula CH2NR9R10 where R9 and R10 may be the same or different, and may be hydrogen, C1–C6 alkyl, C2–C6 hydroxyalkyl, C2–C6 methoxyalkyl, C3–C6 cycloalkyl, or C5–C10 aryl, or R9 and R10 together may form a ring of 5 or 6 atoms;
carboxamides of the formula CONR9R10 where R9 and R10 may be the same or different, and may be hydrogen, C1–C6 alkyl, C2–C6 hydroxyalkyl, C2–C6 methoxyalkyl, C3–C6 cycloalkyl, or C5–C10 aryl, a peptide moiety having from 2 to 30 carbon atoms, or R9 and R10 together may form a ring of 5 or 6 atoms; and
sulfonamides of the formula SO2NR9R10 where R9 and R10 are the same as above;
Z is selected from the group consisting of:
hydroxyl, and esters thereof;
hydroxymethyl, and esters thereof; and
amino, and carboxamides and sulfonamides thereof;
G is carbon or nitrogen;
R1 is hydrogen, halogen, or C1–C4 alkyl;
R2 is hydrogen, halogen, or C1–C4 alkyl;
R3, R4, and R5 may be the same or different, and are independently selected from hydrogen and methyl, subject to the proviso that the total number of methyl groups does not exceed two, or any two of such R3, R4, and R5 substituents together may form a bridge including 1 to 3 carbon atoms;
R6 is selected from the group consisting of:
  hydrogen;
  C1–C6 alkyl;
  C3–C6 cycloalkyl;
aralkyl containing C5–C10 aryl and C1–C6 alkyl moieties;
alkoxyalkyl containing C1–C4 alkoxy and C1–C4 alkyl moieties;
C1–C4 cyanoalkyl;
C1–C4 hydroxyalkyl;
aminocarbonylalkyl containing a C1–C4 alkyl moiety; and
R12COR13, where R12 is C1–C4 alkylene, and R13 is C1–C4 alkyl or C1–C4 alkoxy; and
R7 is hydrogen or fluorine,
subject to the provisos that:
  (1) R1, R2 and R7 may be fluorine only when Z is —OH; and
  (2) when G is carbon, R6 is not aralkyl,
or a pharmaceutically acceptable ester, or salt thereof.

5,854,250

N-BENZOYLAMINO ACID DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS OF PREPARING SAME

Peter Matyus; Erzsebet Zara; Lajos Farkas; Agnes Papp; Antal Simay; Lajos Toldy; Ferenc Andrasi; Katalin Goldschmidt; Eszter Hodula; Ildiko Mathe; Klara Sutka; Zsuzsanna Fittler; Valeria Vitkoczi; Laszlo Sebestyen; Istvan Sziraki; Marta Rusz, and Eva Gal, all of Budapest, Hungary, assignors to Gyogyszerkutato Intezet KFT, Hungary

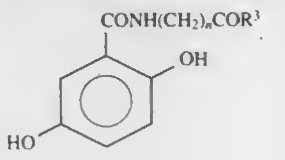
Division of Ser. No. 540,924, Oct. 11, 1995, Pat. No. 5,705,529.

This application Aug. 8, 1997, Ser. No. 908,602

Int. Cl.^{6} A61K *31/495;31/505;* **C07D** *239/50;241/04*

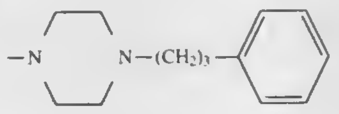
U.S. Cl. 514—255 **6 Claims**

1. An N-benzoylamino acid compound of the formula (I),



wherein

R^3 is



and n is 5.

5,854,251

AMINOTETRAZOLE DERIVATIVES USEFUL AS NITRIC OXIDE SYNTHASE INHIBITORS

Ann E. Hallinan, Evanston; Donald W. Hansen, Jr., Skokie, and Sofya Tsymbalov, Des Plaines, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

PCT No. PCT/US95/14001, § 371 Date Apr. 30, 1997, § 102(e) Date Apr. 30, 1997, PCT Pub. No. WO96/15120, PCT Pub. Date May 23, 1996

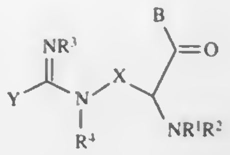
Continuation-in-part of Ser. No. 336,596, Nov. 9, 1994, Pat. No. 5,684,008. This PCT application Nov. 8, 1995, Ser. No. 817,971

Int. Cl.^{6} A61K *31/41;31/415;* **C07D** *257/06;231/40*

U.S. Cl. 514—256 **9 Claims**

1. A compound having the formula:

(I)



or a pharmaceutically acceptable salt thereof; wherein;

- R^1, R^2 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl;
- R^3, R^4 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, OR^6 where R^6 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl, COR^7, or SO_2R^8 where R^7 and R^8 are independently selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and aryl;
- X is selected from the group of the formula $—(CH_2)_pQ(CH_2)_r—$ where p is 1 to 3, r is 1 to 3 and Q is oxygen, C═O, S(O) where t is 0 to 2, or NR^{12} where R^{12} is hydrogen or lower alkyl which may be optionally substituted with lower alkyl, lower alkoxy, hydroxy, halogen, trifluoromethyl, nitro, cyano, amino; or
- X is selected from the group of formula $—(CH_2)_sA(CH_2)_v—$ where s is 0 to 2, v is 0 to 2 and A is a 3 to 6 membered carbocyclic radical which may be optionally substituted with lower alkyl, lower alkoxy, hydroxy, halogen, trifluoromethyl, nitro, cyano, amino wherein all said radicals are optionally substituted with hydrogen, halogen and lower alkyl;
- Y is selected from the group consisting of lower alkyl, lower alkenyl, and lower alkynyl or Y may be NR^9R^{10} wherein R^9 and R^{10} are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, nitro, amino, aryl, and lower alkaryl; and
- B is NR^5R^{11} wherein R^5 is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl and aryl, and R^{11} is selected from a 3 to 8 member heterocyclyl radical in which at least one member of the ring is carbon and in which 1 to about 4 members are heteroatoms independently selected from oxygen, nitrogen and sulfur and said heterocyclyl radical may be optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, SO_2R^{13} where R^{13} is selected from lower alkyl, lower alkoxy, NR^1R^2, amino, acyloxy, trifluoromethyl, phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl.

5,854,252

DIHALOTRIAZOLOPYRIMIDINE DERIVATIVES

Klaus-Jurgen Pees, Mainz, and Heinz-Manfred Becher, Bingen, both of Germany, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

PCT No. PCT/EP94/00635, § 371 Date Aug. 28, 1994, § 102(e) Date Aug. 28, 1994, PCT Pub. No. WO94/20501, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 3, 1994, Ser. No. 424,535

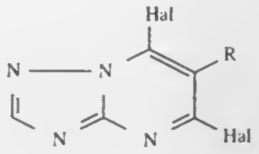
Claims priority, application European Pat. Off., Mar. 4, 1993, 93103464

Int. Cl.^{6} A61K *31/505;* **C07D** *487/00*

U.S. Cl. 514—258 **23 Claims**

1. A fungicidal composition which comprises a carrier and, as active ingredient, a compound of the formula

(I)



in which

R represents an optionally substituted branched or straight-chain alkyl, or alkoxy group, or an optionally substituted cycloalkyl, aryl, aryloxy or heterocyclic group, and Hal represents a fluorine, chlorine, bromine or iodine atom.

5,854,253

Patent Not Issued For This Number

5,854,254

MALE CONTRACEPTIVES

Susan H. Benoff, Riverdale, N.Y., assignor to North Shore University Hospital, Manhasset, N.Y.

Continuation of Ser. No. 301,957, Sep. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 219,690, Mar. 30, 1994. This application Aug. 23, 1996, Ser. No. 701,826

Int. Cl.^{6} A01N *43/40*

U.S. Cl. 514—277 **9 Claims**

1. A reversible method of human male contraception which comprises producing a period of infertility in a fertile male patient by systemically administering a pharmaceutical composition that substantially inhibits the migration of mannose lectins on the surface of said patient's sperm cells to said patient for a time and in an amount sufficient to render said patient infertile.

5,854,255

THERAPEUTIC PACKAGE FOR THE LONG TERM REDUCTION OF BODY FAT STORES INSULIN RESISTANCE HYPERINSULINEMIA AND HYPERGLYCEMIA IN VERTEBRATES

Anthony H. Cincotta, Andover, Mass., and Albert H. Meier, Baton Rouge, La., assignors to Ergo Research Corporation, Wakefield, R.I., and The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 468,528, Jun. 6, 1995, Pat. No. 5,731,312, which is a continuation of Ser. No. 249,808, May 26, 1994, Pat. No. 5,554,623, which is a continuation of Ser. No. 719,745, Jun. 24, 1991, Pat. No. 5,344,832, which is a continuation-in-part of Ser. No. 463,327, Jan. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 192,332, May 10, 1988, abandoned. This application Apr. 21, 1997, Ser. No. 843,760

Int. Cl.^{6} A61K *31/44;31/495*

U.S. Cl. 514—280 **22 Claims**

1. A therapeutic package for dispensing to, or for use in dispensing to, a patient being treated for a metabolic condition selected from the group consisting of obesity, insulin resistance, hyperinsulinemia, and hyperglycemia comprising:

- one or more unit doses, each such unit dose comprising an amount of bromocriptine therein such that periodic administration of one or more of said unit doses is effective to treat said metabolic condition, and
- a finished pharmaceutical container therefor,
  - said container containing said unit dose or doses,
  - said container further containing or comprising labeling,
  - said labeling directing the use of said package in the treatment of said metabolic condition in a dosage regimen under which the delivery of said bromocriptine is confined to the period during the day proximate to the time of day at which the serum prolactin concentration of a lean, insulin sensitive patient of the same sex is low, and further directing the use of said package in conjunction with the concomitant administration to said patient of one or more unit doses providing a therapeutically effective amount of a prolactin stimulator in a dosage regimen under which the delivery of said prolactin stimulator is confined to the period during the day after the time at which the serum prolactin concentration of a lean, insulin-sensitive patient of the same sex reaches its point of maximum depression and prior to the time of day when said prolactin concentration rises to a peak in lean, insulin-sensitive patients of the same sex.

5,854,256

QUINUCLIDINE DERIVATIVES

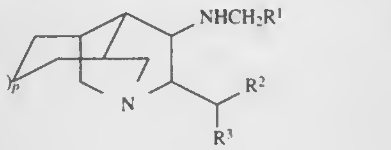
John Adams Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 403,987, Mar. 14, 1995, Pat. No. 5,641,786, which is a division of Ser. No. 988,125, Feb. 1, 1993, Pat. No. 5,422,354, which is a continuation-in-part of Ser. No. 557,442, Jul. 23, 1990, abandoned. This application Mar. 21, 1997, Ser. No. 821,500

Int. Cl.^{6} A61K *31/44;* **C07D** *221/22;221/06*

U.S. Cl. 514—294 **17 Claims**

1. A compound of the formula



III

wherein

- p is an integer from zero to one;
- R_3 is thienyl, phenyl, fluorophenyl, chlorophenyl or bromophenyl;
- R^1 is cycloalkyl having from five to seven carbon atoms, pyrrolyl, thienyl, pyridyl, phenyl or substituted phenyl, wherein said substituted phenyl is substituted with one to three substituents selected from fluorine, chlorine, bromine, trifluoromethyl, alkyl having from one to three carbon atoms, alkoxy having from one to three carbon atoms, carboxy, alkoxycarbonyl having from one to three carbons in the alkoxy moiety and benzyloxycarbonyl; and
- R^2 is furyl, thienyl, pyridyl, indolyl, biphenyl, phenyl or substituted phenyl, wherein said substituted phenyl is substituted with one or two substituents selected from fluorine, chlorine, bromine, trifluoromethyl, alkyl having from one to three carbon atoms, alkoxy having from one to three carbon atoms, carboxy, alkoxycarbonyl having from one to three carbon atoms in the alkoxy moiety and benzyloxycarbonyl.

or a pharmaceutically acceptable salt thereof.

5,854,257

NAPHTHYRIDINONE DERIVATIVES

Bernard John Armitage, and Bruce William Leslie, both of Nottingham, Great Britain, assignors to Knoll Aktiengesellschaft, Ludwigschafen, Germany

PCT No. PCT/EP95/03808, § 371 Date Mar. 24, 1997, § 102(e) Date Mar. 24, 1997, PCT Pub. No. WO96/11199, PCT Pub. Date Apr. 18, 1996

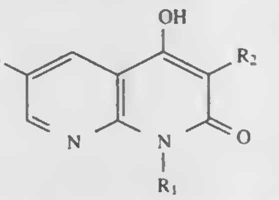
PCT Filed Sep. 26, 1995, Ser. No. 809,580

Claims priority, application United Kingdom, Oct. 6, 1994, 9420168.8

Int. Cl.^{6} A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **7 Claims**

1. A compound of formula I



I

or a pharmaceutically acceptable salt thereof, in which

- R_1 represents a phenyl C_{1-6} alkyl group, wherein the phenyl ring is unsubstituted or is optionally substituted by one or more of the following: halo, a C_{1-4} alkyl group, a C_{1-4} alkoxy group, hydroxy or trifluoromethyl; and the alkyl chain is unsubstituted or is optionally substituted by one or more C_{1-2} alkyl groups;
- R_2 represents a C_{2-6} alkoxycarbonyl group; and
- R_3 represents halo.

5,854,258

Patent Not Issued For This Number

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5,854,259

QUINOLINE TYPE MEVALONOLACTONES

Yoshihiro Fujikawa; Mikio Suzuki; Hiroshi Iwasaki, all of Funabashi; Mitsuaki Sakashita, and Masaki Kitahara, both of Saitama-ken, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 883,398, May 15, 1992, which is a division of Ser. No. 631,092, Dec. 19, 1990, which is a continuation of Ser. No. 233,752, Aug. 19, 1988. This application Nov. 19, 1992, Ser. No. 978,884

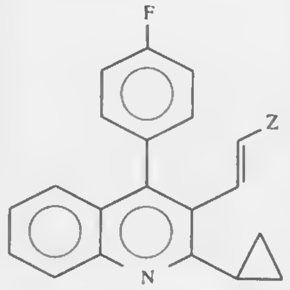
Claims priority, application Japan, Aug. 20, 1987, 62-207224; Jan. 26, 1988, 63-15585; Aug. 3, 1988, 63-193606

Int. Cl.^{6} A61K *31/47;* C07D *215/12*

U.S. Cl. 514—311 **4 Claims**

1. A pharmaceutical composition for the control or treatment of at least one of hyperlipidemia, hyperlipoproteinemia, and atherosclerosis, comprising an active agent which consists of a compound of the formula,

[A]



Z=—CH(OH)—CH_2—CH(OH)—CH_2—COO. ½Ca in a pharmaceutically effective amount together with a pharmacologically acceptable carrier.

5,854,260

ENTEROKINETIC BENZAMIDE

Georges H. P. Van Daele, deceased, late of Turnhout, Belgium, by Marie-Louise Hendrickx, Kurt Godfried Cornelius Emile Van Daele, Peter Jules Victor Van Daele, Glenn Kurt Ludo Van Daele, Jean-Paul René Marie André Bosmans, Joannes Adrianus Jacobus Schuurkes, heirs, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

PCT No. PCT/EP95/04519, § 371 Date Apr. 30, 1997, § 102(e) Date Apr. 30, 1997, PCT Pub. No. WO96/16060, PCT Pub. Date May 30, 1996

PCT Filed Nov. 16, 1995, Ser. No. 836,276

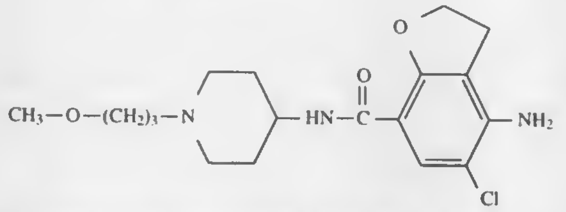
Claims priority, application European Pat. Off., Nov. 24, 1994, 94203421

Int. Cl.^{6} A61K *31/445;* C07D *401/00*

U.S. Cl. 514—320 **10 Claims**

1. A compound of formula

(I)



or a pharmaceutically acceptable acid addition salt thereof.

5,854,261

PROKINETIC COMPOUNDS

Jean-Paul René Marie André Bosmans, B-2650 Edegem, Belgium, assignor to Janssen Pharmaceutica N.V., Belgium

PCT No. PCT/EP96/00784, § 371 Date Aug. 15, 1997, § 102(e) Date Aug. 15, 1997, PCT Pub. No. WO96/26937, PCT Pub. Date Sep. 6, 1996

PCT Filed Feb. 21, 1996, Ser. No. 894,340

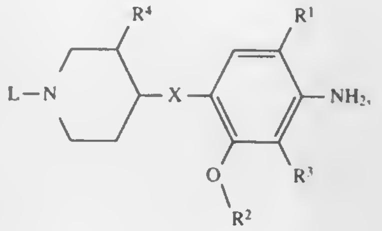
Claims priority, application European Pat. Off., Mar. 1, 1995, 95200501

Int. Cl.^{6} A61K *31/445;* C07D *413/04*

U.S. Cl. 514—320 **19 Claims**

1. A compound having the formula

(I)



a N-oxide form, a pharmaceutically acceptable acid addition form or a stereochemically isomeric form, wherein:

R^1 is hydrogen or halo;

R^2 is $C_{1\text{-}6}$alkyl, $C_{2\text{-}6}$alkenyl or $C_{2\text{-}6}$alkynyl;

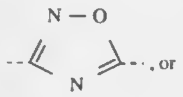
R^3 is hydrogen;

or R^2 and R^3 taken together may form a $C_{2\text{-}3}$alkanediyl radical wherein one or two hydrogen atoms may be replaced by $C_{1\text{-}4}$alkyl;

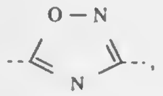
R^4 is hydrogen, hydroxy or $C_{1\text{-}6}$alkyloxy;

X is a bivalent radical of the formula

(a-1)



(a-2)



L is a radical of formula:

-Alk-R^5 (b),

-Alk—O—R^6 (c),

Alk is $C_{1\text{-}12}$alkanediyl;

R^5 is, cyano, $C_{1\text{-}6}$alkylcarbonyl, $C_{1\text{-}6}$alkylsulfinyl, $C_{1\text{-}6}$alkylsulfonyl, aryl, arylcarbonyl, tetrahydrofuran, dioxolane, dioxolane substituted with $C_{1\text{-}6}$alkyl, dioxane, dioxane substituted with $C_{1\text{-}6}$alkyl;

R^6 is hydrogen, aryl, $C_{1\text{-}6}$alkyl, hydroxy$C_{1\text{-}6}$alkyl, $C_{1\text{-}6}$alkylcarbonyl; aryl is defined as phenyl or phenyl substituted with up to three substituents selected from halo, $C_{1\text{-}6}$alkyl or $C_{1\text{-}6}$alkyloxy.

5,854,262

AMINOMETHYLENE SUBSTITUTED NON-AROMATIC HETEROCYCLES AND USE AS SUBSTANCE P ANTAGONISTS

Harry R. Howard, Bristol, and Brian T. O'Neill, Westbrook, both of Conn., assignors to Pfizer Inc., New York, N.Y.

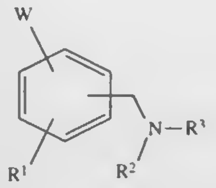
PCT No. PCT/US93/09407, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/13663, PCT Pub. Date Jun. 23, 1994

PCT Filed Oct. 7, 1993, Ser. No. 522,230

Int. Cl.^{6} A61K *31/445;* C07D *211/36;211/56*

U.S. Cl. 514—329 **14 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof;

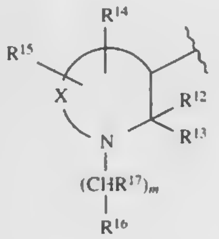
W is hydrogen, $(C_1–C_6)$alkyl optionally substituted with from one to three fluorine atoms, —$S(O)_v$—$(C_1–C_6)$ alkyl wherein v is zero, one or two, halo, benzyloxy or $(C_1– C_6)$alkoxy optionally substituted with from one to three fluorine atoms;

R^1 is a 4, 5 or 6 membered heterocyclic ring containing from one to three heteroatoms selected from oxygen, nitrogen and sulfur, wherein said heterocyclic ring contains from zero to three double bonds and is optionally substituted with one or two substituents independently selected from $(C_1–C_6)$ alkyl optionally substituted with from one to three fluorine atoms and $(C_1–C_6)$ alkoxy optionally substituted with from one to three fluorine atoms;

R^2 is hydrogen or —$CO_2(C_1–C_{10})$alkyl;

R^3 is

VII



X is $(CH_2)_q$ wherein q is an integer from 1 to 6, and wherein any one of the carbon—carbon single bonds in said $(CH_2)_q$ is optionally replaced by a carbon—carbon double bond, and wherein any one of the carbon atoms of said $(CH_2)_q$ is optionally substituted with R^{14}, and wherein any one of the carbon atoms of said $(CH_2)_q$ is optionally substituted with R^{15};

m is an integer from 0 to 8, and any one of the carbon—carbon single bonds of $(CH_2)_m$, wherein both carbon atoms of such bond are bonded to each other and to another carbon atom in the $(CH_2)_m$ chain, is optionally replaced by a carbon—carbon double bond or a carbon—carbon triple bond, and any one of the carbon atoms of said $(CH_2)_m$ is optionally substituted with R^{17};

R^{12} is a radical selected from hydrogen, $(C_1–C_6)$ straight or branched alkyl, $(C_3–C_7)$cycloalkyl wherein one of the carbon atoms is optionally replaced by nitrogen, oxygen or sulfur; aryl selected from biphenyl, phenyl, indanyl and naphthyl; heteroaryl selected from thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl-$(C_2–C_6)$alkyl, benzhydryl and benzyl, wherein the point of attachment on R^{12} is a carbon atom unless R^{12} is hydrogen, and wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl-$(C_2–C_6)$alkyl and benzhydryl is optionally substituted with one or more substituents independently selected from halo, nitro, $(C_1–C_{10})$alkyl optionally substituted with from one to three fluorine atoms, $(C_1–C_{10})$alkoxy optionally substituted with from one to three fluorine atoms, amino, hydroxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkylamino, —C(O)O($C_1–C_6$ alkyl), —($C_1–C_6$ alkyl)C(O)($C_1–C_6$ alkyl), —OC(O)($C_1–C_6$ alkyl), —($C_1–C_6$ alkyl)C(O)O($C_1–C_6$ alkyl), —($C_1–C_6$ alkoxy)C(O)($C_1–C_6$ alkyl), —C(O)($C_1– C_6$ alkyl), —N($C_1–C_6$ alkyl)($C_1–C_6$ alkyl), —C(O)NH($C_1–C_6$ alkyl), —NHC(O)H, and —NHC(O)($C_1–C_6$ alkyl); and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

R^{13} is hydrogen, phenyl or $(C_1–C_6)$alkyl;

or R^{12} and R^{13}, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms wherein one of said carbon atoms that is neither the point of attachment of the spiro ring nor adjacent to it may optionally be replaced by oxygen, nitrogen or sulfur;

R^{14} and R^{15} are each independently selected from hydrogen, hydroxy, halo, amino, oxo (=O), cyano, hydroxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, $(C_1–C_6)$alkylamino, —C(O)O($C_1–C_6$ alkyl), —OC(O)($C_1–C_6$ alkyl), —($C_1–C_6$ alkyl)C(O)($C_1–C_6$ alkyl), —($C_1–C_6$ alkyl)C(O)O($C_1–C_6$ alkyl), —($C_1–C_6$ alkoxy)C(O)($C_1–C_6$ alkyl), —C(O)($C_1– C_6$ alkyl), —N($C_1–C_6$ alkyl)($C_1–C_6$ alkyl), —C(O)NH($C_1–C_6$ alkyl), —NHC(O)H, —NHC(O)($C_1– C_6$ alkyl), and the radicals set forth in the definition of R^{12};

R^{16} is NHC(O)R^{18}, $NHCH_2R^{18}$, SO_2R^{18}, CO_2H or one of the radicals set forth in any of the definitions of R^{12}, R^{14} and R^{15};

R^{17} is oximino (=NOH) or one of the radicals set forth in any of the definitions of R^{12}, R^{14} and R^{15}; and

R^{18} is $(C_1–C_6)$alkyl, hydrogen, phenyl or phenyl-$(C_1–C_6)$alkyl;

with the proviso that (a) when m is 0, one of R^{16} and R^{17} is absent and the other is hydrogen, (b) when R^{14} and R^{15} are attached to the same carbon atom, then either each of R^{14} and R^{15} is independently selected from hydrogen, fluoro, $(C_1–C_6)$alkyl, hydroxy-$(C_1–C_6)$alkyl and $(C_1–C_6)$alkoxy-$(C_1–C_6)$alkyl, or R^{14} and R^{15}, together with the carbon to which they are attached, form a $(C_3–C_6)$ saturated carbocyclic ring that forms a spiro compound with the nitrogen-containing ring to which they are attached; (c) R^{12} and R^{13} cannot both be hydrogen; and (d) when R^{14} or R^{15} is attached to a carbon atom of X that is adjacent to the ring nitrogen, then R^{14} or R^{15}, respectively, must be a substituent wherein the point of attachment is a carbon atom.

5,854,263

1-[(1,4-BENZODIOXANYL)ALKYL]-3-(HETEROARYL) PYRROLIDINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

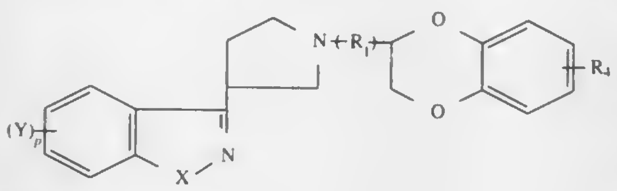
Edward J. Glamkowskl, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, Pat. No. 5,776,963, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,501

Int. Cl.^{6} A61K *31/495;31/55;31/505;31/44;31/415;31/42;31/425;* **C07D** *413/14*

U.S. Cl. 514—373 **43 Claims**

1. A compound having the formula:



wherein,

X is —O—, —S—,

$-\overset{|}{N}H$, or $-\overset{|}{N}-R_2$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, and phenylsulfonyl groups, wherein aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;

Y is lower alkoxy, hydroxy or halogen when p is 2 and X is —O—;

in which (R_1) is R_{20}, R_{21} or R_{22}, wherein:

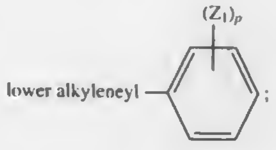
R_{20} is $—(CH_2)_n—$, where n is 2, 3, 4 or 5;

R_{21} is

$—CH_2—CH{=}CH—CH_2—$,
$—CH_2—C{\equiv}C—CH_2—$,
$—CH_2—CH{=}CH—CH_2—CH_2$,
$—CH_2—CH_2—CH{=}CH—CH_2—$,
$—CH_2—C{\equiv}C—CH_2—CH_2—$, or
$—CH_2—CH_2—C{\equiv}C—CH_2—$,

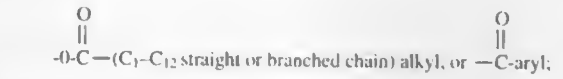
the $—CH{=}CH—$ bond being cis or trans;

R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1–C_6 linear alkyl group, phenyl group or



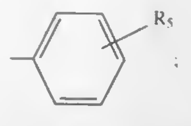
where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$ or halogen;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, amino, mono- or dialkylamino, C_1–C_3 acyl amino, C_1–C_6 alkanoyl, trifluoromethyl, chlorine, fluorine, bromine,



$$-O-\overset{O}{\overset{\|}{C}}-(C_1\text{–}C_{12}\text{ straight or branched chain) alkyl, or }-\overset{O}{\overset{\|}{C}}\text{-aryl;}$$

in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,854,264

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

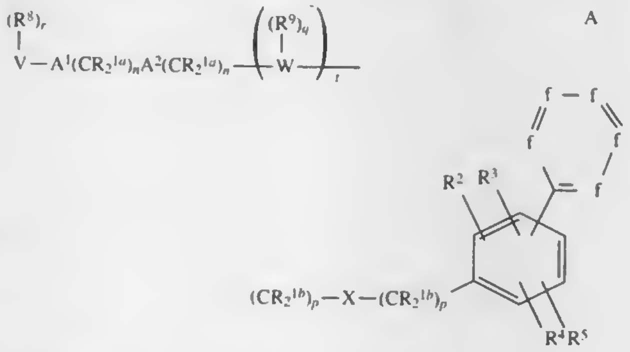
Neville J. Anthony, Hatfield, and Robert P. Gomez, Perkasie, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1997, Ser. No. 826,251

Int. Cl.^{6} A61K *31/44;* **C07D** *401/10*

U.S. Cl. 514—341 **15 Claims**

1. A compound which inhibits farnesyl-protein transferase of the formula A:



$(R^8)_r$
$V-A^1(CR_2^{1a})_nA^2(CR_2^{1a})_n$
$(R^9)_q$
W
t
f
f
f
f
f
R^2
R^3
$(CR_2^{1b})_p-X-(CR_2^{1b})_p$
R^4R^5

A

wherein:

one of the f(s) is N, and the remaining f's are CR^6;

R^{1a} and R^{1b} are independently selected from:

a) hydrogen,

b) aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $R^{11}C(O)O—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,

c) unsubstituted or substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, and $R^{11}OC(O)—NR^{10}—$;

R^2, R^3, R^4 and R^5 are independently selected from:

a) hydrogen,

b) unsubstituted or substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, halogen, C_1–C_6 perfluoroalkyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{11}C(O)O—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,

c) unsubstituted C_1–C_6 alkyl,

d) substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, and $R^{11}OC(O)—NR^{10}—$;

each R^6 is independently selected from:

a) hydrogen,

b) unsubstituted or substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, halogen, C_1–C_6 perfluoroalkyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{11}C(O)O—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,

c) unsubstituted C_1–C_6 alkyl,

d) substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, and $R^{11}OC(O)—NR^{10}—$;

R^7 is selected from: H; C_{1-4} alkyl, C_{3-6} cycloalkyl, aryl, aroyl, arylsulfonyl, unsubstituted or substituted with:

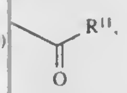
a) C_{1-4} alkoxy,

b) aryl,

c) halogen,

d) HO,

e)



f) $—SO_2R^{11}$,

g) $N(R^{10})_2$ or

h) C_{1-4} perfluoroalkyl;

R^8 is independently selected from:

a) hydrogen,

b) aryl, substituted aryl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$, and

c) C_1–C_6 alkyl unsubstituted or substituted by aryl, cyanophenyl, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NH—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{10}OC(O)NH—$;

R^9 is independently selected from:

a) hydrogen,

b) C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perfluoroalkyl, F, Cl, Br, $R^{11}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$, and

c) C_1–C_6 alkyl unsubstituted or substituted by perfluoroalkyl, F, Cl, Br, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, benzyl, 2,2,2-trifluoroethyl and aryl:

R^{11} is independently selected from C_1–C_6 alkyl and aryl;

R^{12} is independently selected from hydrogen, C_1–C_6 alkyl, C_1–C_6 aralkyl, C_1–C_6 substituted aralkyl, aryl, substituted aryl, C_1–C_6 perfluoroalkyl, 2-aminoethyl and 2,2,2-trifluoroethyl;

A^1 and A^2 are independently selected from: a bond, $—CH{=}CH—$, $—C{\equiv}C—$, $—C(O)—$, $—C(O)NR^{10}—$, $—NR^{10}C(O)—$, O, $—N(R^{10})—$, $—S(O)_2N(R^{10})—$, $—N(R^{10})S(O)_2—$ or $S(O)_m$;

V is selected from:

a) hydrogen,

b) aryl,

c) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a heteroatom selected from O, S, and N. and

d) C_2–C_{20} alkenyl,

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;

W is a imidazolyl;

X is a bond, $—CH{=}CH—$, O, $—C({=}O)—$, $—C(O)NR^7—$, $—NR^7C(O)—$, $—C(O)O—$, $—OC(O)—$, $—C(O)NR^7C(O)—$, $—NR^7—$, $—S(O)_2N(R^{10})—$, $—N(R^{10})S(O)_2—$ or $—S({=}O)_m—$;

m is 0, 1 or 2;

n is independently 0, 1, 2, 3 or 4;

p is independently 0, 1, 2, 3 or 4;

q is 0, 1, 2 or 3;

r is 0 to 5, provided that r is 0 when V is hydrogen: and

t is 1;

or a pharmaceutically acceptable salt thereof.

5,854,265

BIHETEROARYL INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

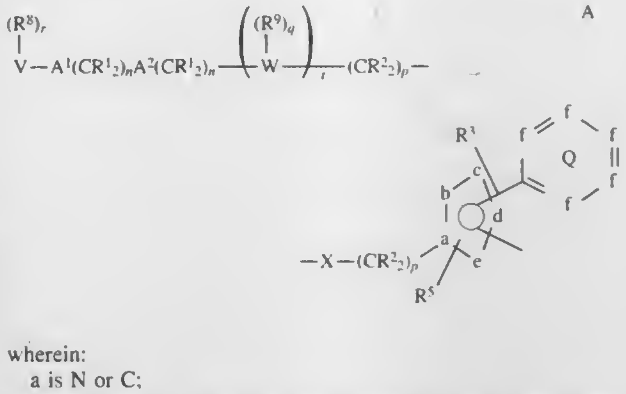
Neville J. Anthony, Hatfield, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1997, Ser. No. 827,476

Int. Cl.^{6} C07D *401/14;405/14;407/14;* **A61K** *31/415;31/455*

U.S. Cl. 514—341 **23 Claims**

1. A compound which inhibits farnesyl-protein transferase of the formula A:



A

wherein:

a is N or C;

from 0–4 of b, c, d and e are independently N, NH, O and S, and the remaining b, c, d and e atoms are independently CH, provided that if a is C, then at least one of b, c, d or e is independently N, NH, O or S;

from 1–3 of f(s) are independently N or N→O, and the remaining f's are independently CR^6;

R^1 and R^2 are independently selected from:

a) hydrogen,

b) aryl, heterocycle, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, $R^{11}C(O)O—$, CN,NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,

c) unsubstituted or substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, heterocyclic, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{10}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, and $R^{11}OC(O)—NR^{10}—$;

R^3, R^4 and R^5 are independently selected from:

a) hydrogen,

b) unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, halogen, C_1–C_6 perfluoroalkyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $R^{11}C(O)O—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, NO_2, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, or $R^{11}OC(O)NR^{10}—$,

c) unsubstituted C_1–C_6 alkyl,

d) substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, unsubstituted or substituted heterocyclic, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $(R^{10})_2NC(O)—$, $R^{10}{}_2N—C(NR^{10})—$, CN, $R^{10}C(O)—$, N_3, $—N(R^{10})_2$, and $R^{11}OC(O)—NR^{10}—$;

each R^6 is independently selected from:

a) hydrogen,

b) unsubstituted or substituted aryl, unsubstituted or substituted heterocycle, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, halogen, C_1–C_6 perfluoroalkyl, $R^{12}O—$, $R^{11}S(O)_m—$, $R^{10}C(O)NR^{10}—$, $R^{11}C(O)O—$,

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$(R^{10})_2NC(O)$—, $R^{10}{}_2N$—$C(NR^{10})$—, CN, NO_2, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) unsubstituted C_1–C_6 alkyl,

d) substituted C_1–C_6 alkyl wherein the substituent on the substituted C_1–C_6 alkyl is selected from unsubstituted or substituted aryl, unsubstituted or substituted heterocyclic, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, $R^{12}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, $(R^{10})_2NC(O)$—, $R^{10}{}_2N$—$C(NR^{10})$—, CN, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, and $R^{11}OC(O)$—NR^{10}—; or

any two of R^6 on adjacent carbon atoms are combined to form a diradical selected from —CH═CH—CH═CH—, —CH═CH—CH_2—, —$(CH_2)_4$— and —$(CH_2)_3$—;

provided that when R^6 is unsubstituted or substituted heterocycle, attachment of R^6 to Q is through a ring carbon;

R^7 is selected from: H; C_{1-4} alkyl, C_{3-6} cycloalkyl, heterocycle, aryl, aroyl, heteroaroyl, arylsulfonyl, heteroarylsulfonyl, unsubstituted or substituted with:

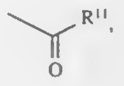
a) C_{1-4} alkoxy,

b) aryl or heterocycle,

c) halogen,

d) HO,

e)



f) —SO_2R^{11}

g) $N(R^{10})_2$ or

h) C_{1-4} perfluoroalkyl;

R^8 is independently selected from:

a) hydrogen,

b) aryl, substituted aryl, heterocycle, C_3–C^{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, $(R^{10})_2NC(O)$—, $R^{10}{}_2N$—$C(NR^{10})$—, CN, NO_2, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

c) C_1–C_6 alkyl unsubstituted or substituted by aryl, cyanophenyl, heterocycle, C_3–C_{10} cycloalkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NH$—, $(R^{10})_2NC(O)$—, $R^{10}{}_2NC(NR^{10})$—, CN, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, or $R^{10}OC(O)NH$—;

provided that when R^8 is heterocycle, attachment of R^8 to V is through a ring carbon;

R^9 is independently selected from:

a) hydrogen,

b) C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_1–C_6 perfluoroalkyl, F, Cl, Br, $R^{11}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, $(R^{10})_2NC(O)$—, $R^{10}{}_2N$—$C(NR^{10})$—, CN, NO_2, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

c) C_1–C_6 alkyl unsubstituted or substituted by perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, $(R^{10})_2NC(O)$—, $R^{10}{}_2N$—$C(NR^{10})$—, CN, $R^{10}C(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, benzyl, 2,2,2-trifluoroethyl and aryl;

R^{11} is independently selected from C_1–C_6 alkyl and aryl;

R^{12} is independently selected from hydrogen, C_1–C_6 alkyl, C_1–C_6 aralkyl, C_1–C_6 substituted aralkyl, C_1–C_6 heteroaralkyl, C_1–C_6 substituted heteroaralkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, C_1–C_6 perfluoroalkyl, 2-aminoethyl and 2,2,2-trifluoroethyl;

A^1 and A^2 are independently selected from: a bond, —CH═CH—, —C≡C—, —C(O)—, —$C(O)NR^{10}$—, —$NR^{10}C(O)$—, O, —$N(R^{10})$—, —$S(O)_2N(R^{10})$—, —$N(R^{10})S(O)_2$—, or $S(O)_m$;

V is selected from:

a) hydrogen,

b) heterocycle,

c) aryl,

d) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a heteroatom selected from O, S, and N, and

e) C_2–C_{20} alkenyl,

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;

provided that when V is heterocycle, attachment of V to R^8 and to A^1 is through a ring carbon;

W is a heterocycle;

X is a bond, —CH═CH—, O, —C(═O)—, —$C(O)NR^7$—, —$NR^7C(O)$—, —C(O)O—, —OC(O)—, —$C(O)NR^7C(O)$—, —NR^7—, —$S(O)_2N(R^{10})$—, —$N(R^{10})S(O)_2$— or —$S(═O)_m$—, provided that if a is N, then X is not O, —$C(O)NR^7$—, —C(O)O—, —$C(O)NR^7C(O)$—, —$S(O)_2N(R^{10})$— or —NR^7—;

m is 0, 1 or 2;

n is independently 0, 1, 2, 3 or 4;

p is independently 0, 1, 2, 3 or 4;

q is 0, 1, 2or 3;

r is 0 to 5, provided that r is 0 when V is hydrogen; and

t is 0 or 1;

or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical composition comprising a pharmaceutical carrier, and dispersed therein, a therapeutically effective amount of a compound of claim **1**.

14. A method for inhibiting farnesyl-protein transferase which comprises administering to a mammal in need thereof a therapeutically effective amount of a composition of claim **10**.

5,854,266

SYNERGISTIC ANTIMICROBIAL COMPOSITION PYRITHIONE AND ALCOHOL

John D. Nelson, Jr., Bethlehem, Conn., assignor to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 349,587, Dec. 5, 1994, Pat. No. 5,614,538. This application Mar. 10, 1997, Ser. No. 812,887

Int. Cl.^{6} A01K *43/40*

U.S. Cl. 514—345 **12 Claims**

1. A method of imparting antimicrobial activity to a composition comprising water or an aqueous organic solvent which comprises adding thereto an antimicrobial composition consisting essentially of at least 2 ppm of pyrithione acid or a pyrithione salt, or a combination thereof, and an aromatic alcohol selected from the group consisting of phenylethyl alcohol, benzyl alcohol, 3-phenyl-1-propyl alcohol, 2-phenoxyethanol, and combinations thereof, said aromatic alcohol being present in a weight ratio between 1,250:1 and 5:1 based upon the weight of said pyrithione acid or said pyrithione salt, or combination thereof, in said antimicrobial composition.

5,854,267

METHOD FOR PREVENTING HEARTBURN

Roger Berlin, Haverford, Pa.; Thomas N. Gates, Bonita Springs, Fla., and Thomas Simon, Berwyn, Pa., assignors to Merck & Co., Inc., Rahway, and Mc Neil-PPC, Inc., Skillman, both of N.J.

Filed Jun. 2, 1995, Ser. No. 459,182

Int. Cl.^{6} A61K *31/425*

U.S. Cl. 514—370 **1 Claim**

1. A method for preventing heartburn episodes in a patient susceptible to suffering heartburn episodes following ingestion of heartburn-inducing food or beverage, comprising administering to the patient, 30 minutes prior to consumption by the patient of the food or beverage, a composition comprising an amount of famotidine of 10 mg.

5,854,268

AZETIDINE, PYRROLIDINE AND PIPERIDINE DERIVATIVES

Raymond Baker, Uley; Sylvie Bourrain; Jose Luis Castro Pineiro, both of Harlow; Mark Stuart Chambers, Puckeridge; Alexander Richard Guiblin, Harlow; Sarah Christine Hobbs, Great Dunmow; Richard Alexander Jelley; Andrew Madin, both of Sawbridgeworth, all of United Kingdom; Victor Giulio Matassa, Rome, Italy; Austin John Reeve, Great Dunmow, United Kingdom; Michael Geoffrey Russell; Graham Andrew Showell, both of Welwyn Garden City, United Kingdom; Francine Sternfeld, London, United Kingdom; Leslie Joseph Street, Harlow, United Kingdom, and Monique Bodil Van Niel, Welwyn Garden City, United Kingdom, assignors to Merck Sharp & Dohme, Ltd., Hoddesdon, England

PCT No. PCT/GB95/01819, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO96/04274, PCT Pub. Date Feb. 15, 1996

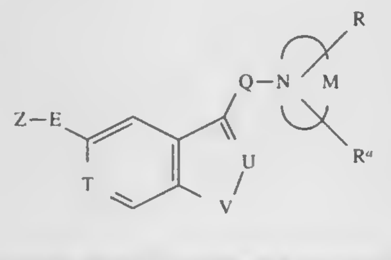
PCT Filed Aug. 1, 1995, Ser. No. 776,024

Claims priority, application United Kingdom, Aug. 2, 1994, 9415552; Aug. 2, 1994, 9415579; Dec. 21, 1994, 9426375

Int. Cl.^{6} C07D *403/14;401/14;405/14;* **A61K** *31/41*

U.S. Cl. 514—383 **10 Claims**

1. A compound of formula I, or a pharmaceutically acceptable salt thereof:



(I)

wherein

Z represents an optionally substituted five-membered heteroaromatic ring selected from furan, thiophene, pyrrole, oxazole, thiazole, isoxazole, isothiazole, imidazole, pyrazole, oxadiazole, thiadiazole, triazole and tetrazole;

E represents a chemical bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms;

Q represents a straight or branched alkylene chain containing from 1 to 4 carbon atoms, optionally substituted in any position by a hydroxy group:

T represents CH;

U represents C—R^2;

V represents N—R^3;

R^2 and R^3 independently represent hydrogen or C_{1-6} alkyl;

M represents the residue of an azetidine, pyrrolidine or piperidine ring;

R represents a group of formula —W—R^1;

W represents a chemical bond or a straight or branched alkylene chain containing from 1 to 4 carbon atoms, optionally substituted in any position by a hydroxy group;

R^1 represents —OR^x, —SR^x, —SOR^x, —SO_2R^x or —NR^xR^y;

R^x and R^y independently represent hydrogen or a hydrocarbon group; wherein

hydrocarbon is selected from the group consisting of: C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, indanyl, aryl and aryl(C_{1-6})alkyl;

aryl is phenyl or naphthyl;

aryl(C_{1-6})alkyl is benzyl, phenylethyl, phenylpropyl or naphthylmethyl;

and wherein the hydrocarbon group may in turn be optionally substituted by one or more groups selected from C_{1-6} alkyl, adamantyl, phenyl, halogen, C_{1-6} haloalkyl, C_{1-6} aminoalkyl, trifluoromethyl, hydroxy, C_{1-6} alkoxy, aryloxy, keto, C_{1-3} alkylenedioxy, nitro, cyano, carboxy, C_{2-6} alkoxycarbonyl, C_{2-6} alkoxycarbonyl(C_{1-6})alkyl, C_{2-6} alkylcarbonyloxy, arylcarbonyloxy, aminocarbonyloxy, C_{2-6} alkylcarbonyl, arylcarbonyl, C_{1-6} alkylthio, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, arylsulphonyl, —NR^vR^w, —NR^vCOR^w, —$NR^vCO_2R^w$, —$NR^vSO_2R^w$, —$CH_2NR^vSO_2R^w$, —$NHCONR^vR^w$, —$CONR^vR^w$, —$SO_2NR^vR^w$ and —$CH_2SO_2NR^vR^w$, in which R^v and R^w independently represent hydrogen, C_{1-6} alkyl, aryl or aryl(C_{1-6})alkyl, or R^v and R^w together represent a C_{2-6} alkylene group; or R^x and R^y together represent a C_{2-6} alkylene group, which alkylene group may be optionally substituted by one or more substituents selected from C_{1-6} alkyl, aryl and hydroxy, or fused with a phenyl ring; and

R^a represents hydrogen, hydroxy, or a hydrocarbon group, as defined above.

5,854,269

NASAL SPRAY COMPOSITIONS

Joseph A. Haslwanter, Germantown, and William Rencher, Cordova, both of Tenn., assignors to Schering-Plough Healthcare Products, Inc., Kenilworth, N.J.

PCT No. PCT/US94/12945, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO95/13810, PCT Pub. Date May 26, 1995

PCT Filed Nov. 17, 1994, Ser. No. 640,767

Int. Cl.^{6} A61K *31/355*

U.S. Cl. 514—385 **8 Claims**

1. An aqueous, topical, nasal decongestant composition comprising an amount of oxymetazoline or a pharmaceutically acceptable salt thereof sufficient to effect nasal decongestion and an aqueous carrier comprising:

70 to 90% by weight/volume of water;

0.10 to 5.00% by weight/volume of an aromatic alcohol;

0.01 to 0.3% by weight/volume of a non-mercurial antimicrobial preservative;

0 to 10% by weight/volume of a moisturizing agent;

0 to 0.10% by weight/volume of an antioxidant;

0 to 2.00% by weight/volume of a surfactant;

0 to 0.75% by weight/volume of menthol;

0 to 0.15% by weight/volume of camphor;

0 to 0.15% by weight/volume of eucalyptol;

a sufficient amount of a pharmaceutically acceptable buffer to maintain the pH of the composition within the range of about 4.00 to 8.00; and

QS water,

said composition being free of mercurial antimicrobial preservatives.

5,854,270

ORAL COMPOSITIONS CONTAINING ONDANSETRON

Renu Gambhir, Mississauga, Canada, assignor to Glaxo Wellcome Inc., Mississauga, Canada

PCT No. PCT/IB95/01152, § 371 Date Jul. 9, 1997, § 102(e) Date Jul. 9, 1997, PCT Pub. No. WO96/15786, PCT Pub. Date May 30, 1996

PCT Filed Nov. 20, 1995, Ser. No. 817,831

Claims priority, application United Kingdom, Nov. 22, 1994, 9423588

Int. Cl.^{6} A61K *31/415*

U.S. Cl. 514—397 **12 Claims**

1. A liquid composition for oral administration comprising ondansetron or a pharmaceutically acceptable derivative thereof, a sweetener and one or more pharmaceutically acceptable excipients, characterised in that the sweetener comprises sorbitol and the pH of the composition lies in the range 2.0 to 5.0.

5,854,271

EFFECTIVE METHOD FOR THE AMELIORATION AND PREVENTION OF TISSUE AND CELLULAR DAMAGE

Peter G. Thomas, Charlottesville, Va., and Jose-Luis Diaz, Durham, N.C., assignors to Cytos Pharmaceuticals, L.L.C., Durham, N.C.

Continuation of Ser. No. 560,595, Nov. 20, 1995, abandoned, which is a continuation of Ser. No. 235,950, May 2, 1994, abandoned. This application Apr. 14, 1997, Ser. No. 834,121

Int. Cl.^{6} A61K *31/415;9/70;* **A61L** *15/16*

U.S. Cl. 514—400 **4 Claims**

1. A method of reducing, controlling, or ameliorating cellular proliferation caused by damaging levels of cytokines or growth factors during or following interventional or surgical procedures, comprising the step of:

providing a therapeutic dose of histidine to a patient before, during, or after said interventional or surgical procedures adequate to reduce, control, or ameliorate cellular proliferation caused by damaging levels of cytokines or growth factors, provided that said cellular proliferation is not cancer.

5,854,272

2-ALKYLPYRROLIDINES

Karsten Lundgren, Frederiksberg; Palle Jakobsen, Vaerloese; Marit Kristiansen, Soeborg; Leif Nørskov-Lauritsen, Tappernoeje, and Lars Naerum, Hellerup, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jul. 14, 1997, Ser. No. 892,660

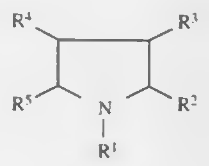
Claims priority, application Denmark, Sep. 8, 1995, 0992/95

Int. Cl.^{6} A61K *31/40*

U.S. Cl. 514—408 **26 Claims**

1. A method of treating diabetes, comprising administering to a patient in need of such treatment an effective amount of a compound of formula I

(I)



wherein

R^1 is hydrogen, acyl, alkene, cycloalkyl or alkyl which optionally is substituted with one or more of the following groups: hydroxy, alkoxy, amino, N-alkylamino, N,N-dialkylamino, halogen, cycloalkyl, optionally substituted phenyl or alkoxycarbonyl,

R^2 is hydrogen,

R^3 and R^4, which are the same or different, independent of each other, is hydrogen, halogen, hydroxy, mercapto or amino which is optionally substituted with alkyl or aralkyl, and

R^5 is alkyl substituted with hydroxy, halogen, amino, N-alkylamino, N,N-dialkylamino or mercapto, or a salt or hydrate thereof.

5,854,273

BISIMIDE COMPOUNDS

Gilbert Lavielle, La Celle Saint Cloud; Patrick Hautefaye, Servon Brie Comte Robert; Ghanem Atassi, Saint Cloud; Alain Pierre, Marly le Roi; Laurence Kraus-Berthler, Colombes, and Stéphane Leonce, Versailles, all of France, assignors to ADIR et Compagnie, Courbevoie, France

Filed Jul. 23, 1997, Ser. No. 899,289

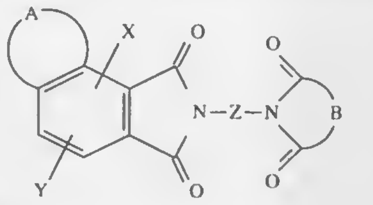
Claims priority, application France, Jul. 26, 1996, 96 09417

Int. Cl.^{6} A61K *31/40;* **C07D** *403/06;403/12*

U.S. Cl. 514—410 **13 Claims**

1. A compound selected from those of formula (I):

(I)

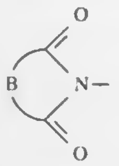


in which:

X and Y, which may be identical or different, represent hydrogen or halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) trihaloalkyl, linear or branched (C_1–C_6) alkoxy, hydroxyl, cyano, nitro, amino, alkylamino, or dialkylamino,

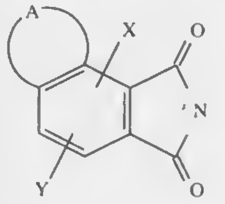
Z represents a linear or branched C_4 to C_{12} alkylene chain in which one or more —CH_2— groups are optionally replaced by any one of the following atoms or groups: —NR— (in which R represents hydrogen or linear or branched (C_1–C_6) alkyl), —O—, —S—, —SO—, —SO_2—, or —CONH—,

A forms, with two adjacent carbon atoms of the phenyl ring:
- a substituted or unsubstituted phenyl ring,
- a substituted or unsubstituted naphthyl ring,
- a substituted or unsubstituted tetrahydronaphthyl ring or substituted or unsubstituted 1,4-dioxo-1,2,3,4-tetrahydronaphthyl,



represents the following group:

(I)



in which:

X_1 and Y_1, which may be identical or different, represent hydrogen or halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) trihaloalkyl, linear or branched (C_1–C_6) alkoxy, hydroxyl, cyano, nitro, amino, alkylamino, or dialkylamino,

A_1 forms, with two adjacent carbon atoms of the phenyl ring:
- a substituted or unsubstituted phenyl ring,
- a substituted or unsubstituted naphthyl ring, or
- a substituted or unsubstituted tetrahydronaphthyl ring or substituted or unsubstituted 1,4-dioxo-1,2,3,4-tetrahydronaphthyl ring,

its optical isomers and its addition salts with a pharmaceutically-acceptable acid or base.

5,854,274

TRICYCLIC HETEROCYCLIC SULFONAMIDE AND SULFONIC ESTER DERIVATIVES

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Jun Niijima, Ibaraki; Toru Haneda, Ibaraki; Yoshihiko Kotake, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Tatsuo Watanabe, Chiba; Takeshi Nagasu, Ibaraki; Naoko Tsukahara, Chiba; Nozomu Koyanagi, and Kyosuke Kitoh, both of Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 397,254, Mar. 23, 1995. This application Dec. 5, 1996, Ser. No. 760,738

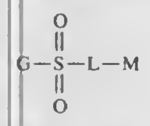
Claims priority, application Japan, Jul. 26, 1993, 5-202466; Jul. 11, 1994, 6-158870

Int. Cl.^{6} A61K *31/44;31/40;* **C07D** *221/06;209/82*

U.S. Cl. 514—290 **8 Claims**

1. A compound represented by the following formula (I) or a pharmacologically acceptable salt thereof:

(I)



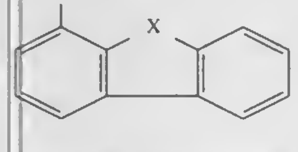
$$G-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}-L-M$$

wherein

G represents an aromatic 5- or 6-membered ring having 1 or 2 substituents, said substituents each being selected from the group consisting of a halogen atom, a linear or branched C_1–C_6 alkyl group, a linear or branched C_1–C_6 alkoxy group, and an amino group optionally substituted by linear or branched C_1–C_6 alkyl groups;

L represents oxygen or —N(R^1)—, wherein R^1 represents hydrogen or lower alkyl; and

M represents



which fused phenyl rings can be optionally substituted with one or more substituents selected from the group consisting of a halogen atom, a linear or branched C_1–C_6 alkyl group optionally substituted by a hydroxy group, a linear or branched C_1–C_6 alkoxy group optionally substituted by a hydroxy group, a hydroxy group, an amino group optionally substituted by linear or branched C_1–C_6 alkyl groups optionally having a hydroxy group, C_1–C_4 acyl groups, a cyano group and an oxo group; and

X represents —N(R^2)—, wherein R^2 represents hydrogen or lower alkyl, or —NHCO—

provided that a combination wherein G is 4-methylphenyl or 4-methoxycarbonylaminophenyl, and X is —N(R^2)— is excluded therefrom.

5,854,275

CYCLIC IMIDE DERIVATIVES

Ralph P. Robinson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

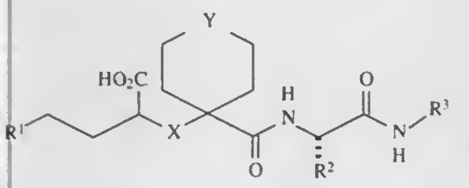
Filed May 13, 1997, Ser. No. 855,023

Int. Cl.^{6} A61K *31/40;* **C07D** *209/56*

U.S. Cl. 514—411 **11 Claims**

1. A compound of the formula

I



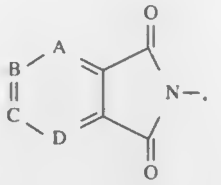
wherein

X is CH_2 or NH;

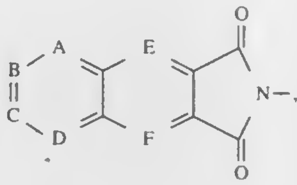
Y is a bond, CH_2, CH((C_1–C_6)alkyl), CF_2, S, or O;

R^1 is an optionally substituted cyclic imide wherein the cyclic imide ring system has the formula

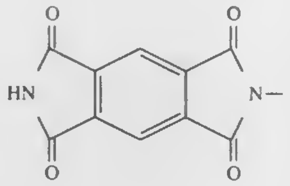
(i)



(ii)

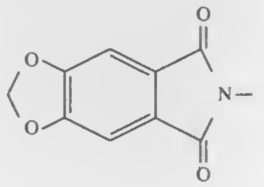


(iii)



or

(iv)



in which A, B, C and D are each CH, and E and F each independently represent CH and where the optional substituents in formulas (i), (ii), (iii), and (iv) are halogen, hydroxyl, phenyl, (C_1–C_6)alkyl, (C_1–C_6)alkoxy, or (C_1–C_6)alkylthio;

R^2 is hydrogen, (C_1–C_6)alkyl, (C_6–C_{10})aryl, (C_5–C_9)heteroaryl, (C_5–C_9)heteroaryl(C_1–C_6)alkyl, (C_6–C_{10})aryl(C_1–C_6)alkyl, (C_1–C_6)alkylthio(C_1–C_6)alkyl, (C_1–C_6)alkylsulfinyl (C_1–C_6)alkyl, (C_1–C_6)alkylsulfonyl(C_1–C_6)alkyl, [(C_3–C_6)cycloalkyl](C_1–C_4)alkyl or (C_1–C_6)alkyl substituted by a substituent selected from the group consisting of hydroxy, amino, (C_1–C_6)alkylamino, ((C_1–C_6)alkyl)$_2$amino, —COOR^4, and —CONR^{5}R^6, wherein R^4, R^5 and R^6 are each independently selected from the group consisting of hydrogen, (C_1–C_6)alkyl, (C_6–C_{10})aryl(C_1–C_6)alkyl, and (C_5–C_9)heteroaryl(C_1–C_6)alkyl; and,

R^3 is hydrogen, (C_6–C_{10})aryl, (C_5–C_9)heteroaryl, (C_1–C_6)alkyl, (C_6–C_{10})aryl(C_1–C_6)alkyl, (C_5–C_9)heteroaryl(C_1–C_6) alkyl,piperidyl(C_1–C_6)alkyl,N-((C_1–C_6)alkyl)piperidyl(C_1 –C_6)alkyl, or (C_2–C_6)alkyl substituted by hydroxy, piperazino, amino, ((C_1–C_6)alkyl)amino, ((C_1–C_6)alkyl)$_2$amino, morpholino, thiomorpholino, piperidino, pyrrolidino, N-acylpiperazino, N-((C_1–C_6)alkyl)piperazino, N-((C_6–C_{10}) aryl)piperazino, N-((C_5–C_9)heteroaryl)piperazino,N-((C_6–C_{10})aryl(C_1–C_6)alkyl)piperazino,N-((C_5–C_9) heteroaryl(C_1 –C_6)alkyl)piperazino, (C_1–C_6)alkylthio, sulfinyl or sulfoxyl.

5,854,276

SUBSTANCE WF16616, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF

Terumi Okudaira, Chiyokawa-mura; Yasuhisa Tsurumi, Tsukuba; Hiroshi Hatanaka, Moriya-machi; Toru Kino, Tsuchiura, and Seiji Hashimoto, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

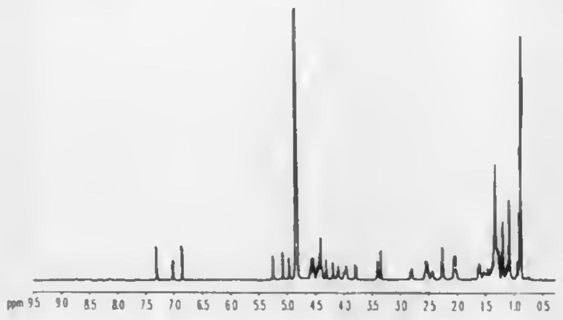
PCT No. PCT/JP96/01725, § 371 Date Jan. 26, 1998, § 102(e) Date Jan. 26, 1998, PCT Pub. No. WO97/01575, PCT Pub. Date Jan. 16, 1997

PCT Filed Jun. 21, 1996, Ser. No. 973,716

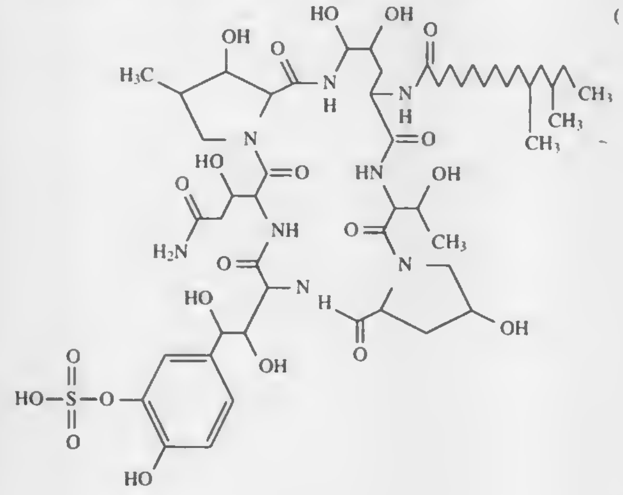
Claims priority, application Japan, Jun. 29, 1995, 7-185007

Int. Cl.^{6} A01N *43/36;* **C12P** *17/16;* **C07D** *209/82;209/94*

U.S. Cl. 514—424 **5 Claims**



1. WF16616 substance represented by the following structural formula (1) or its pharmaceutically acceptable salt.



(1)

5,854,277

THIOPHENEBUTANOIC ACID DERIVATIVES AS MATRIX METALLOPROTEASE INHIBITORS

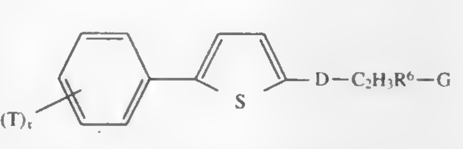
Harold Clinton Eugene Kluender, Trumbull, Conn.; Guenter Hans Herbert Heinz Benz, Velbert, Germany; William Harrison Bullock, West Haven, Conn.; Brian Richard Dixon, Woodbridge, Conn.; Michael Christopher VanZandt, Guilford, Conn.; Scott McClelland Wilhelm; Donald John Wolanln, both of Orange, Conn.; Jill Elizabeth Wood, Hamden, Conn., and David Ross Brittelli, Branford, Conn., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 463,580, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 339,846, Nov. 15, 1994, abandoned. Thls application May 30, 1997, Ser. No. 865,639

Int. Cl.^{6} A61K *31/38;31/41;31/415;31/435*

U.S. Cl. 514—448 **14 Claims**

1. Compounds having matrix metalloprotease inhibitory activity and the generalized formula:



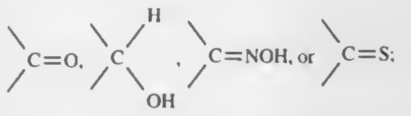
wherein

(a) T represents a substituent group, independently selected from the group consisting of halogen; alkyl; haloalkyl; alkenyl; alkynyl; —$(CH_2)_pQ$ wherein p is 0 or an integer of 1–4; -alkenyl-Q wherein said alkenyl moiety comprises 2–4 carbons; wherein Q is selected from the group consisting of aryl, heteroaryl, —CN, —CHO, —NO_2, —CO_2R^2, —$OCOR^2$, —SOR^3, —SO_2R^3, —$CON(R^2)_2$, —$SO_2N(R^2)_2$, —COR^2, —$N(R^2)_2$, —$N(R^2)COR^2$, —$N(R^2)CO_2R^3$, —$N(R^2)CON(R^2)_2$, —OR^4, and —SR^4; wherein R^2 represents H, alkyl, aryl, heteroaryl, arylalkyl, or heteroaryl-alkyl; R^3 represents alkyl, aryl, heteroaryl, arylalkyl, or heteroaryl-alkyl; and R^4 represents H, alkyl, aryl, heteroaryl, arylalkyl, heteroaryl-alkyl, alkenyl, alkynyl, haloalkyl, acyl, or alkyleneoxy or polyalkyleneoxy terminated with H, alkyl, or phenyl;

and with the proviso that unsaturation in a moiety which is attached to Q or which is encompassed by Q is separated from any N, O, or S of Q by at least one carbon atom; and

x is 0, 1, or 2;

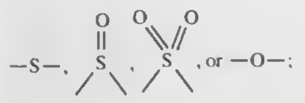
(b) D represents


$>C{=}O,\ >C(H)(OH),\ >C{=}NOH,\ \text{or}\ >C{=}S;$

(c) R^6 contains at least two carbon atoms and is selected from the group consisting of:
alkyl;
aryl;
heteroaryl;
arylalkyl;
heteroaryl-alkyl;
alkenyl;
aryl-substituted alkenyl;
heteroaryl-substituted alkenyl;
alkynyl;
aryl-substituted alkynyl;
heteroaryl-substituted alkynyl;
—$(CH_2)_tR^7$, wherein t is 0 or an integer of 1–5 and R^7 is selected from the group consisting of
  N-phthalimidoyl;
  N-(1,2-naphthalenedicarboximidoyl);
  N-(2,3-naphthalenedicarboximidoyl);
  N-(1,8-naphthalenedicarboximidoyl);
  N-indoloyl;
  N-(2-pyrrolodinonyl);
  N-succinimidoyl;
  N-maleimidoyl;
  3-hydantoinyl;
  1,2,4-urazolyl;
  amido;
  urethane;

  urea; and
  nonaromatic substituted or unsubstituted heterocycles containing and connected through a N atom, and comprising one additional O or S; and
  amino;
  and corresponding heteroaryl moieties in which the aryl portion of an aryl-containing R^7 group comprises 4–9 carbons and at least one N, O, or S heteroatom;
  with the proviso that when R^7 is a nonaromatic heterocycle or an amino group, and t is 0, then x is 1 or 2; and
—$(CH_2)_vZR^8$ wherein v is 0 or an integer of 1–4,

Z represents


$-S-,\ -S(=O)-,\ -S(=O)_2-,\ \text{or}\ -O-;$

and R^8 is selected from the group consisting of:
alkyl;
aryl;
heteroaryl;
arylalkyl; and
heteroaryl-alkyl; and
—$C(O)R^9$ wherein R^9 represents alkyl of at least two carbons, aryl, heteroaryl, arylalkyl, or heteroaryl-alkyl;

and with the provisos that

when R^8 is —$C(O)R^9$, Z is S or O; and

when Z is O, R^8 may also be alkyleneoxy or polyalkyleneoxy terminated with H, alkyl, or phenyl;

and with the further proviso that

aryl or heteroaryl portions of any of said T or R^6 groups optionally may bear up to two substituents selected from the group consisting of —$(CH_2)_yC(R^{11})(R^{12})OH$, —$(CH_2)_yOR^{11}$, —$(CH_2)_ySR^{11}$, —$(CH_2)_yS(O)R^{11}$, —$(CH_2)_yS(O)_2R^{11}$, —$(CH_2)_ySO_2N(R^{11})_2$, —$(CH_2)_yN(R^{11})_2$, —$(CH_2)_yN(R^{11})COR^{12}$, —$OC(R^{11})_2O$— in which both oxygen atoms are connected to the aryl ring, —$(CH_2)_yCOR^{11}$, —$(CH_2)_yCON(R^{11})_2$, —$(CH_2)_yCO_2R^{11}$, —$(CH_2)_yOCOR^{11}$, -halogen, —CHO, —CF_3, —NO_2, —CN, and —R^{12},

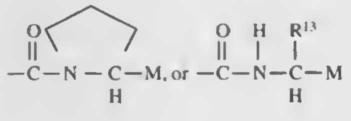
wherein

y is 0–4;

R^{11} represents H or lower alkyl; and

R^{12} represents lower alkyl; and

(d) G represents —M,


$-C(=O)-N-CH-M$, or $-C(=O)-NH-CH(R^{13})-M$

wherein

M represents —CO_2H, —$CON(R^{11})_2$, or —CO_2R^{12}; and

R^{13} represents any of the side chains of the 19 noncyclic naturally occurring amino acids;

and pharmaceutically acceptable salts thereof.

5,854,278

PREPARATION OF CHLORINATED PACLITAXEL ANALOGUES AND USE THEREOF AS ANTITUMOR AGENTS

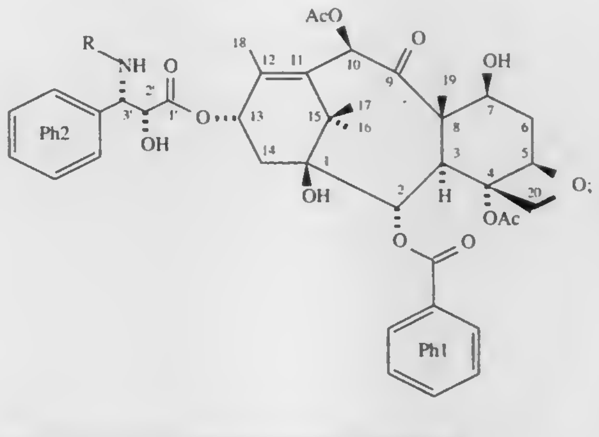
Ramesh C. Pandey, Highland Park; Luben K. Yankov, Edison; Raghu Nair, Bridgewater, and Alex Poulev, Highland Park, all of N.J., assignors to Xechem International, Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 571,427, Dec. 13, 1995. This application May 29, 1996, Ser. No. 672,397

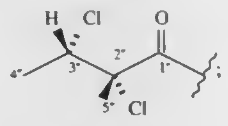
Int. Cl.^{6} A61K *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **15 Claims**

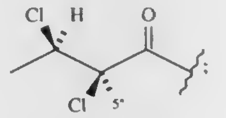
1. A compound of the formula,



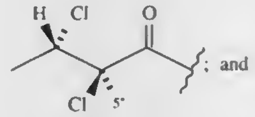
wherein R is selected from the group consisting of:



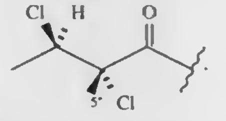
(I)



(II)

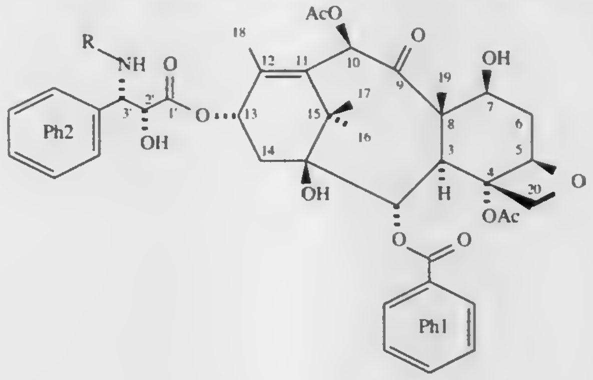


; and (III)



(IV)

8. A method for the production of a compound of the formula,



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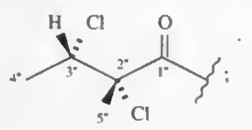
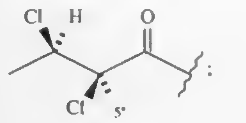
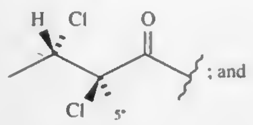
wherein R is selected from the group consisting of,



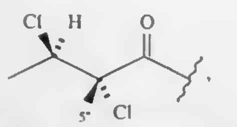
(I)



(II)



(III)



(IV)

comprising chlorinating cephalomannine and/or 7-epi-cephalomannine under conditions effective to selectively chlorinate the unsaturated 2", 3" side-chain portion of cephalomannine and/or 7-epi-cephalomannine.

5,854,279

THERAPEUTIC AGENT FOR DERMATOSIS

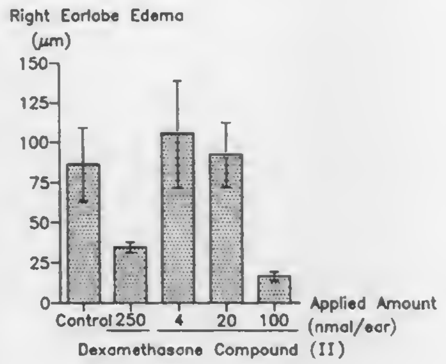
Akiko Nakahama, Tokyo; Koukichi Harada, Ibaraki; Toshihiko Yamauchi, Ibaraki; Takashi Yamanaka, Ibaraki, and Isao Yamatsu, Ibaraki, all of Japan, assignors to Eisai Co., Ltd, Tokyo, Japan

Filed May 1, 1997, Ser. No. 846,478

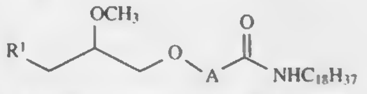
Claims priority, application Japan, Jun. 4, 1996, 8-141445

Int. Cl.^{6} A01N *43/16*

U.S. Cl. 514—453 **5 Claims**

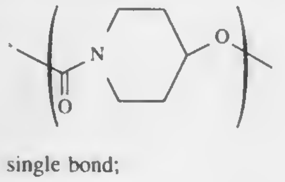


1. A method for preventing, treating and ameliorating dermatosis except for itching comprising administering a pharmacologically effective amount of a glycerol derivative represented by the formula (I) or a pharmacologically acceptable salt thereof to a person suffering from the dermatosis except for itching



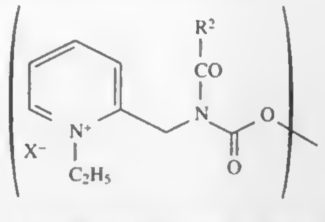
(I)

wherein A is a group represented by the formula:



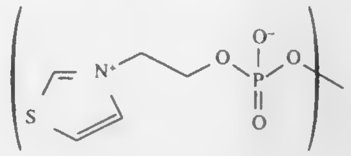
or single bond;

R^1 is a group represented by the formula:



wherein R^2 is a methoxyphenyl group or methyl group, X is an atom or atomic group which may become an anion

or group represented by the formula:



5,854,280

ANTIFUNGAL SORDARIDIN DERIVATIVES

Jose R. Ruiz Gomez; Jose Maria Bueno Calderon; Silvestre Garcia-Ochoa Dorado; Maria T. Fraile Gabaldon; Julia C. Pichel; Jose M. Fiandor Roman; Domingo Gargallo Viola; Juan C. Cuevas Zurita; Jose L. Lavandera Diaz, and Sophie Husss, all of Madrid, Spain, assignors to Glaxo Wellcome S.A., Spain

PCT No. PCT/EP95/04331, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO96/14326, PCT Pub. Date May 17, 1996

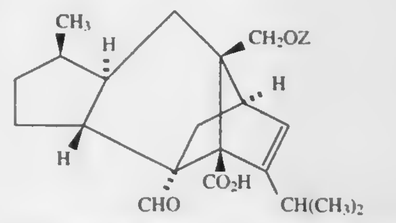
PCT Filed Nov. 6, 1995, Ser. No. 669,441

Claims priority, application European Pat. Off., Nov. 8, 1994, 94500173; Nov. 8, 1994, 94500175

Int. Cl.^{6} A61K *31/35*

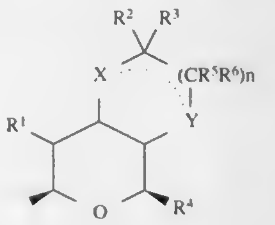
U.S. Cl. 514—456 **15 Claims**

1. A compound of formula

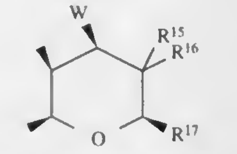


(I)

wherein Z is a tetrahydro-pyrano group selected from



(a)



(b)

and pharmaceutically acceptable salts and solvates or metabolically labile derivatives thereof,

wherein R^1 represents hydrogen, halogen, hydroxyl, C_{1-4}alkoxy or acyloxy;

R^2 and R^3 may each independently represent hydrogen, C_{1-6}alkyl or C_{1-4}alkoxy C_{1-4}alkyl or R^2 and R^3 may together with the carbon atom to which they are attached represent C═O, C═S or C_{3-8}cycloalkyl;

R^4 represents hydrogen or CH_2R^7 (where R^7 is hydrogen, hydroxyl, C_{1-4}alkoxy or a group $OCOR^8$ in which R^8 is C_{1-4}alkyl or aryl);

R^5 and R^6 may each independently represent hydrogen, C_{1-6}alkyl or C_{1-4}alkoxy C_{1-4}alkyl or R^5 and R^6 may together with the carbon atom to which they are attached represent C═O, C═S or C_{3-8}cycloalkyl;

n represents zero or 1;

X and Y may each independently represent oxygen, sulphur or CR^9R^{10} (where R^9 and R^{10} may each independently represent hydrogen, C_{1-6}alkyl, C_{1-4}alkoxy or C_{1-4}alkoxy C_{1-4}alkyl or R^9 and R^{10} may together with the carbon atom to which they are attached represent C═O, C═S, C_{3-8}cycloalkyl or $C{=}CHR^{11}$ where R^{11} represents hydrogen or C_{1-4}alkyl); or when X or Y is oxygen and n is zero then —Y—CR^2R^3 or —X—CR^2R^3— respectively may also represent —N═CR^3— or —NR^{12}—CR^2R^3— (where CR^2 and R^3 are C═O and R^{12} is C_{1-4}alkyl an acyl group COR^{13} where R^{13} is C_{1-6}alkyl) or when Y is oxygen and n is zero X may be represent the group CR^{11} which is attached to the pyran ring by a double bond;

R^{15} represents hydrogen, halogen, azido, C_{1-6}alkyl, hydroxy, C_{1-6}alkoxy (optionally substituted by 1 or 2 hydroxy or a ketal thereof or 1 or 2 C_{1-3} alkoxy groups), aryl C_{1-4}alkoxy, C_{3-6} alkenyloxy, a group $OCOR^{18}$ (where R^{18} is arylC_{1-4}alkoxy or a C_{1-10}alkyl group optionally containing one or two double bonds) or C_{1-6} alkoxycarbonyl C_{1-4}alkoxy, and R^{16} represents hydrogen or R^{15} and R^{16} may together with the carbon atom to which they are attached represent C═O or $C{=}CH_2$;

R^{17} represents CH_2R^{19} where R^{19} is hydrogen, hydroxyl, C_{1-14}alkoxy or a group $OCOR^{20}$ in which R^{20} is C_{1-4}alkyl); and

W represents an oxygen or sulphur atom or a CH_2 group;

and the dotted line in group (a) indicates the optional presence of an additional bond.

5,854,281

PREPARATION FOR PERCUTANEOUS ABSORPTION

Kaneto Uekama; Tetsumi Irie, both of Kumamoto-ken; Michio Hara, and Yasuhide Horiuchi, both of Kanagawa, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP95/02350, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO96/15793, PCT Pub. Date May 30, 1996

PCT Filed Nov. 16, 1995, Ser. No. 676,250

Claims priority, application Japan, Nov. 17, 1994, 6-283793

Int. Cl.^{6} A61K *31/34;31/19;31/20*

U.S. Cl. 514—468 **8 Claims**

1. A preparation for percutaneous absorption comprising as an effective component. a prostaglandin I_2 derivative; and a C_8–C_{14} saturated or C_{16}–C_{22} unsaturated fatty acid, a derivative thereof, a salt thereof, or mixtures thereof.

5,854,282

3-BENZOYL BENZOFURAN DERIVATIVES AS THYROID HORMONE ANTAGONISTS

Charlotta Mellin, Tullinge, Sweden, assignor to Karo Bio AB, Huddinge, Sweden

PCT No. PCT/EP95/03214, § 371 Date Apr. 7, 1997, § 102(e) Date Apr. 7, 1997, PCT Pub. No. WO96/05190, PCT Pub. Date Feb. 22, 1996

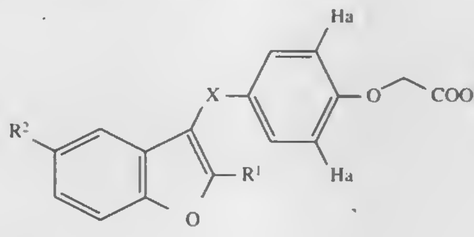
PCT Filed Aug. 11, 1995, Ser. No. 776,924

Claims priority, application United Kingdom, Aug. 11, 1994, 9416219

Int. Cl.^{6} A61K *31/34*

U.S. Cl. 514—469 **9 Claims**

1. Compounds according to the formula:



in which:

Ha=I or Br;

X=CH_2 or C=O;

R^1=C_{1-4} alkyl;

R^2=–$NHSO_2R^3$; —$NHCOR^3$; or —$NHCONHR^3$;

where R^3=–CF_3, C_{1-4} alkyl, or 4-$R^4C_6H_4$—;

where R^4=C_{1-4} alkoxy-; hydroxy-; fluoro-; or nitro-; or a pharmaceutically acceptable salt thereof.

5,854,283

HALOGEN SUBSTITUTED CARBAMATE COMPOUNDS FROM 2-PHENYL-1,2-ETHANEDIOL

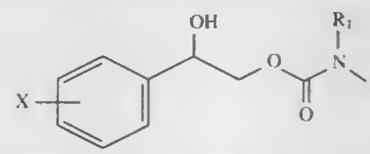
Yong Moon Choi, Towaco; Min Woo Kim, Montvale, and Jeonghan Park, Flanders, all of N.J., assignors to Yukong Limited, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 586,497, Jan. 16, 1996, Pat. No. 5,698,588. This application Jan. 9, 1997, Ser. No. 781,101

Int. Cl.^{6} A61K *31/27*

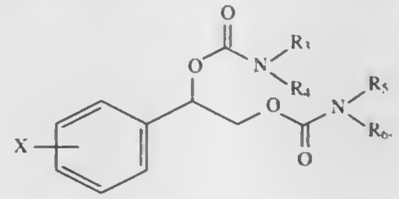
U.S. Cl. 514—483 **6 Claims**

1. Pure enantiomeric forms, as well as enantiomeric mixtures wherein one enantiomer of 2-phenyl-1,2-ethanediol carbamate compounds represented by structural formula (I) predominates, wherein the phenyl ring is substituted with a chlorine atom at the ortho position and R_1 and R_2 are both hydrogen



(I)

3. Pure enantiomeric forms, as well as enantiomeric mixtures wherein one enantiomer of 2-phenyl-1,2-ethanediol carbamate compounds represented by structural formula (II) predominates, wherein the phenyl ring is substituted with a chlorine atom at the ortho position and R_3, R_4, R_5 and R_6 are all hydrogen



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5,854,284

CANDLE FOR DISPERSION OF INSECT REPELLENT BASED ON DEET

Carl J. Abraham, 3 Baker Hill Rd., Great Neck, N.Y. 11023

Continuation-in-part of Ser. No. 803,803, Feb. 24, 1997, Pat. No. 5,738,862, which is a continuation of Ser. No. 769,993, Dec. 19, 1996, abandoned. This application Dec. 4, 1997, Ser. No. 984,843

Int. Cl.^{6} A61K *35/78;31/045;* **A01N** *9/02;9/20*

U.S. Cl. 514—511 **6 Claims**

1. A candle for repelling flying insects comprising

a body of wax material which has a melting point of not greater than 225 degrees F., and

a liquid insect repellent imbedded in the wax material during molding of the candle, the liquid insect repellent including a mixture of DEET and a fragrance oil having volatile fragrance components and retentive components which prevent flash off of the fragrance components, the flash off temperature of the fragrance oil being greater than the melting point of the wax material, such that when the candle is lit, portions of the fragrance components are vaporized and carry with them portions of the DEET into the proximate atmosphere to repel flying insects.

5,854,285

PROTEIN KINASE INHIBITOR

Subramaniam Sriram; John Bright, both of Nashville, Tenn.; Bishwajit Nag, Fremont, and Somesh D. Sharma, Los Altos, both of Calif., assignors to Natpro, Inc., Union City, Calif.

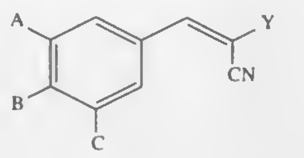
Filed Apr. 3, 1997, Ser. No. 825,662

Int. Cl.^{6} A61K *31/21;31/26;31/275*

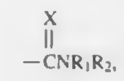
U.S. Cl. 514—514 **7 Claims**

1. A method for treating inflammation in a patient suffering from an inflammatory condition comprising the step of administering a therapeutically effective amount of a compound of the formula:

(I)



wherein A and C are H,
B is methoxy; and
Y is cyano,



$$-\overset{\overset{\displaystyle X}{\|}}{C}NR_1R_2,$$

$$—C(NR_1\ R_2)=C(CN)_2;$$

wherein X=O or S, and R_1 and R_2 are independently H, benzyl, $—CH(CH_3)$, C_6H_5

$$—(CH_2)_n\ C_6H_5,\ \text{phenyl};$$

n=2–4; R is lower alkyl of 1–6 carbon atoms.

5,854,286

TREATMENT OF NEGATIVE AND COGNITIVE SYMPTOMS OF SCHIZOPHRENIA WITH GLYCINE AND ITS PRECURSORS

Daniel C. Javitt, 3043 Johnson Ave., Riverdale, N.Y. 10463, and Stephen R. Zukin, 10105 Pasture Gate La., Columbia, Md. 21044, assignors to Daniel C. Javitt, Riverdale, N.Y., and Stephen R. Zukin, Columbia, Md.

Filed Dec. 6, 1996, Ser. No. 759,714

Int. Cl.^{6} A61K *31/215*

U.S. Cl. 514—561 **12 Claims**

7. A process for treating schizophrenia in a human patient which comprises orally administering to said patient at least more than 0.4 g/Kg body wt/day of glycine.

5,854,287

D-PROPRANOLOL METABOLITES USEFUL FOR ANTIOXIDANT ACTIVITIES

William B. Weglicki, 8404 Coach St., Potomac, Md. 20850

Filed Feb. 28, 1997, Ser. No. 807,449

Int. Cl.^{6} A61K *31/19;31/135*

U.S. Cl. 514—569 **9 Claims**

1. A method of producing an antioxidative effect to a patient in need thereof which comprises administering to said patient an effective amount of a metabolite of D-propranolol said metabolite being inactive as a beta blocker.

5,854,288

USE OF BENZOYLUREAS FOR CONTROLLING HOUSE DUST MITES

Yoshio Katsuda, Nishinomiya; Hans-Herbert Schubert, Tokyo, both of Japan; Hilmar Mildenberger, Überlingen, Germany; Stefan Schnatterer, Hattersheim, Germany, and Herbert Stark, Kelkheim, Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

PCT No. PCT/EP94/03728, § 371 Date Aug. 2, 1996, § 102(e) Date Aug. 2, 1996, PCT Pub. No. WO95/13703, PCT Pub. Date May 26, 1995

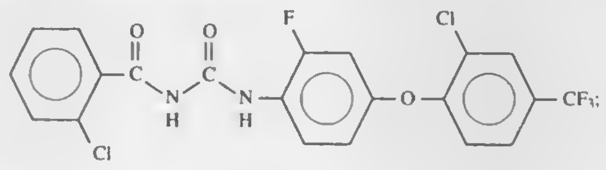
PCT Filed Nov. 11, 1994, Ser. No. 646,259

Claims priority, application Japan, Nov. 18, 1993, 5-312645; Germany, Dec. 11, 1993, 43 42 343.4

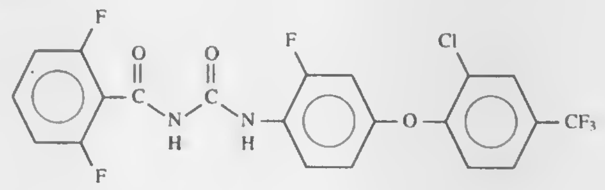
Int. Cl.^{6} A01N *43/40;47/28*

U.S. Cl. 514—594 **5 Claims**

1. A method for controlling infestation of house dust mites which comprises applying to said dust mites or to an infested locus where they reside an effective amount of a compound selected from the group consisting of



and



5,854,289

GUANYLHYDRAZONES AND THEIR USE TO TREAT INFLAMMATORY CONDITIONS

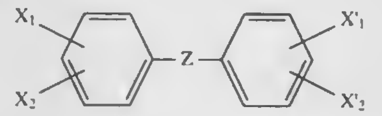
Marina Bianchi, Milan, Italy; Anthony Cerami, Shelter Island, N.Y.; Kevin J. Tracey, Old Greenwich, Conn., and Peter Ulrich, Old Tappan, N.J., assignors to The Picower Institute for Medical Research, Manhasset, N.Y.

Division of Ser. No. 463,568, Jun. 5, 1995, Pat. No. 5,750,573, which is a continuation-in-part of Ser. No. 315,170, Sep. 29, 1994, Pat. No. 5,599,984, which is a continuation-in-part of Ser. No. 184,540, Jan. 21, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,305

Int. Cl.^{6} A61K *31/16;31/155*

U.S. Cl. 514—615 **8 Claims**

1. A method for treating multiple sclerosis (autoimmune encephalomyelitis) comprising administering an effective amount of a compound or a pharmaceutically acceptable salt thereof having a formula:



wherein:

X_2=GhyCH—, GhyCCH_3— or H—;
X_1, X'_1 and X'_2, independently=GhyCH—, GhyCCH_3—;
Z=—NH(CO)NH—, or —A—$(CH_2)_n$—A—, n=2–10; and A=independently —NH(CO)—, —(CO)NH—, NH(CO)NH—, —NH— or —O—.

5,854,290

USE OF GUANFACINE IN THE TREATMENT OF BEHAVIORAL DISORDERS

Amy F. T. Arnsten, 376 Sperry Rd., Bethany, Conn. 06524; Patricia S. Goldman-Rakic, New Haven, Conn., and Robert H. Hunt, 1701 Cedar La., Nashville, Tenn. 37212, assignors to Amy F. T. Arnsten, Bethany; Patricia Goldman-Rakic, New Haven, both of Conn., and Robert H. Hunt, Nashville, Tenn.

Filed Sep. 21, 1995, Ser. No. 531,643

Int. Cl.^{6} A61K *31/65;31/155*

U.S. Cl. 514—617 **12 Claims**

1. A method of treating a behavioral disinhibition in a primate without inducing excessive sedation, comprising

administering to the primate a behavior inhibiting dose of guanfacine, wherein the dose ranges between 0.01 mg/kg of body weight and 0.86 mg/kg of body weight.

5,854,291

PAIN RELIEVER AND METHOD OF USE

Timothy R. Laughlin, and Stephen D. Holt, both of Little Rock, Ark., assignors to Medical Merchandising, Inc., Little Rock, Ak.

Filed Apr. 23, 1996, Ser. No. 635,149

Int. Cl.^{6} A61K *31/16*

U.S. Cl. 514—626 **14 Claims**

1. A composition comprising:

a carrier fluid;

a first active ingredient comprising in the range of 0.00125% to 1% by weight of capsaicin; and

at least one second active ingredient that functions as an analgesic to reduce capsaicin induced skin irritation without affecting or reducing skin irritation from any other source, said second active ingredient is selected from the group consisting of a polyol, a nettle extract, a yarrow extract, a coltsfoot extract, a birch extract, a horsetail extract, a ginger extract, a chamomile extract, a comfrey extract, a lavender extract, and a bergamot extract.

5,854,292

STIMULATING THE DIFFERENTIATION OF PREADIPOCYTIC CELLS AND THERAPIES BASED THEREON

Gérard Ailhaud, Nice; Paul Grimaldi, Nice; Irina Safonova, Nice; Braham Shroot, Antibes, and Uwe Reichert, Pont Du Loup, all of France, assignors to Centre International De Recherches Dermatologiques Galderma, Valbonne, France

Division of Ser. No. 510,312, Aug. 2, 1995, Pat. No. 5,728,739. This application Jan. 22, 1997, Ser. No. 787,217

Claims priority, application France, Aug. 2, 1994, 94-09584

Int. Cl.^{6} A61K *31/07;31/19;31/20;31/195*

U.S. Cl. 514—725 **16 Claims**

1. A method for stimulating the differentiation of preadipocytic cells into adipocytic cells, comprising treating such preadipocytic cells with an effective differentiation-stimulating amount of (a) at least one ligand displaying affinity for the nuclear receptors for retinoic acid and/or isomers thereof, and (b) at least one fatty acid.

5,854,293

LIQUID PERSONAL CLEANSING COMPOSITION WHICH CONTAIN A LIPOPHILIC SKIN MOISTURIZING AGENT COMPRISED OF RELATIVELY LARGE DROPLETS

Robert Wayne Glenn, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1996, Ser. No. 717,379

Int. Cl.^{6} A61K *7/035*

U.S. Cl. 514—844 **17 Claims**

1. A liquid personal cleansing composition comprising:

a) a moisturizing phase comprising from about 1% to about 30% by weight of the composition of a lipophilic skin moisturizing agent; said agent comprised of droplets having a particle size distribution such that at least about 10% by weight of the droplets have a diameter of greater than about 500 microns; and

b) an aqueous cleansing phase comprising i) from about 0.1% to about 10% by weight of the composition of a stabilizer, ii) from about 5% to about 30% by weight of the composition of a lathering surfactant, and iii) water.

5,854,294

PROCESS FOR PRODUCING FOAMED BODY OF POLYCARBONATE RESIN AND FOAMED BODY OBTAINED THEREBY

Kuninori Hirosawa, Utsunomiya; Yoshihisa Ishihara, Tochigi-ken; Takeshi Aoki, Imaichi; Yasushi Terui, Utsunomiya; Yoshinori Shimojo, Kashiwa; Hiroyuki Gokuraku, Utsunomiya, and Naochika Kogure, Utsunomiya, all of Japan, assignors to JSP Corporation, Japan

Filed Jan. 14, 1997, Ser. No. 783,206

Claims priority, application Japan, Jan. 19, 1996, 8-025847; Mar. 19, 1996, 8-090235; Sep. 6, 1996, 8-257856; Sep. 6, 1996, 8-257857

Int. Cl.^{6} C08J *9/04;9/14*

U.S. Cl. 521—79 **14 Claims**

1. A process for producing a foamed plate or sheet having a density of 0.03–0.35 g/cm^3, said process comprising continuously extruding, through a die selected from circular extrusion dies and flat extension dies, a composition comprising a polycarbonate resin, a volatile organic blowing agent and an inorganic blowing agent, said composition having a storage modulus G'_A dyn/cm^2 at a temperature of 250° C. and an angular frequency of 10 rad/sec, said storage modulus G'_A and storage modulus G'_B satisfying the following conditions:

$$0 \leqq \alpha \leqq 2.0$$

$$2.20 \leqq \beta 5.70$$

wherein α represents $(\log G'_B - \log G'_A)/2$ and β represents $(\log G'_B + \log G'_A)/2$.

5,854,295

MICROCELLULAR FOAMS CONTAINING AN INFRARED ATTENUATING AGENT AND A METHOD OF USING

Kyung W. Suh, Midland, Mich.; Michio Yamada, Tochigi, Japan; Creston D. Schmidt, and Daniel D. Imeokparia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 459,085, Jun. 2, 1995, Pat. No. 5,679,718, which is a continuation-in-part of Ser. No. 430,785, Apr. 27, 1995, abandoned. This application Jul. 8, 1997, Ser. No. 889,528

Int. Cl.^{6} C08J *9/14*

U.S. Cl. 521—82 **26 Claims**

1. A microcellular foam, comprising a foam material, the foam having an average cell size of about 1.0 micrometers or less and having a density of about 16 to about 250 kilograms per cubic meter, the foam further comprising an infrared attenuating agent in a quantity sufficient to reduce thermal conductivity of the foam relative to a corresponding foam without the infrared attenuating agent.

5,854,296

AZEOTROPE-LIKE COMPOSITIONS OF 1,1,1,3,3-PENTAFLUOROPROPANE AND TETRAMETHYLSILANE

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Charles E. Mortimer, Tarentum, Pa.; Herman P. Doerge, Pittsburgh, Pa., and Eric F. Boonstra, Oakdale, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Division of Ser. No. 700,345, Sep. 23, 1996, Pat. No. 5,716,541. This application Sep. 19, 1997, Ser. No. 933,572

Int. Cl.^{6} C08J *9/14*

U.S. Cl. 521—110 **7 Claims**

1. A process for the production of a polyurethane foam comprising reacting a polyisocyanate with an isocyanate-reactive material in the presence of an azeotropic composition consisting essentially of

(a) from about 60 to about 78% by weight of 1,1,1,3,3-pentafluoropropane and

(b) from about 22 to about 40% by weight of tetramethylsilane.

5,854,297

FOAM MATERIALS BASED ON COPOLYMERS OF STYRENE AND 1,1-DIPHENYLETHENE

Manfred Walter, Speyer; Konrad Knoll, Ludwigshafen; Michael Schneider, Neustadt, and Karl-Heinz Wassmer, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 22, 1996, Ser. No. 755,256

Claims priority, application Germany, Nov. 29, 1995, 195 44 487.6

Int. Cl.^{6} C08F *14/00;* **C08J** *9/20*

U.S. Cl. 521—146 **8 Claims**

1. A foam material based on styrene polymers, wherein the styrene polymer consisting essentially of a copolymer of styrene with from 2 to 50 mol % of 1-diphenylethene and up to 20 mol % of α-methylstyrene, ring alkylated styrene, acrylonitrile or maleic anhydride in copolymerized form.

5,854,298

PHOTOCURABLE LOW OBSERVABLE AIRCRAFT MATERIALS

Stephanie D. McNay, Acton, Calif.; Dustin B. Martin; Thomas L. Marino, both of Toledo, Ohio, and Douglas C. Neckers, Perrysburg, Ohio, assignors to Lockheed Martin Corporation, Palmdale, Calif.

Filed Sep. 29, 1997, Ser. No. 936,221

Int. Cl.^{6} C08F *2/50;* **C08K** *3/22;3/00;3/08*

U.S. Cl. 522—25 **20 Claims**

1. A method for curing a highly filled resin composition for use in military and commercial aircraft applications, satellite applications and weapon systems, to impart low observable performance characteristics, which comprises the steps of 1) incorporating a photo initiator composition comprised of a fluorone dye primary photo initiator and at least one co-initiator into a given resin system, wherein said fluorone dye is 5,7-diiodo-3-butoxy-6-fluorone and said co-initiator is selected from the group consisting of a borate salt and an onium salt, resulting in the formation of a photo initiator-resin mixture, 2) adding a filler to said mixture so that the filler is at least 50 wt. % of a resulting photoinitiator-resin-filler composition and 3) exposing the photo initiator-resin-filler composition to a light source for from 2 to 8 minutes to effectuate cure of said photo initiator-resin-filler composition, wherein upon the irradiation of said photo initiator-resin-filler composition a unique electron donor/electron acceptor mechanism is activated within said photo initiator-resin-filler composition resulting in the initiation of polymerization of the resin system.

5,854,299

PROCESS FOR THE POLYMERIZATION OF CYCLIC OLEFINS AND POLYMERIZABLE COMPOSITION

Andreas Mühlebach, Belfaux; Paul Bernhard, Marly; Andreas Hafner, Laupen; Thomas Karlen, Berne, and Martin Andreas Ludi, Vechigen, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/02879, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO95/07310, PCT Pub. Date Mar. 16, 1995

PCT Filed Aug. 31, 1994, Ser. No. 615,255

Claims priority, application Switzerland, Sep. 10, 1993, 2722/93; Jul. 1, 1994, 2116/94

Int. Cl.^{6} C08F *2/48;4/42;32/00;132/00*

U.S. Cl. 522—66 **44 Claims**

1. A process for the photochemically induced polymerization of a cyclic olefin or at least two different cyclic olefins in the presence of a metal compound as catalyst, which comprises:

- a) initially activating a heat-stable ruthenium or osmium compound
  - i) wherein at least two photolabile ligands are bonded to one metal atom and are selected from the group consisting of monocyclic, polycyclic and fused arenes having 6 to 24 C-atoms which are unsubstituted or substituted by substituents, from the group consisting of OH, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_6–C_{12}-aryl and halogen; or
  - ii) wherein one or more photolabile ligands are bonded to the metal atom and are selected from the group consisting of nitrogen, monocyclic heteroarenes, fused heteroarenes and fused arene-heteroarenes having 3 to 22 C-atoms and 1 to 3 heteroatoms selected from the group consisting of O, S, and N, which are unsubstituted or substituted by substituents selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen; or
  - iii) wherein one or more photolabile ligands are bonded to one metal atom and are selected from the group consisting of aliphatic, cycloaliphatic, aromatic and araliphatic nitrites which are unsubstituted or substituted by substituents selected from the group consisting of C_1–C_4-alkyl, C.–C_4-alkoxy and halogen;

  subject to the proviso that none of the photolabile ligands from the group i) are present in the catalyst together with photolabile ligands either from the group ii) or the group iii); the remaining coordination sites being occupied by non-photolabile ligands; by exposing the compound to radiation from a light source, radiating in the range, selected from the ultraviolet, visible, and infrared range, and then mixing with at least one olefin ; or by activating a mixture of cyclic olefin and the ruthenium or osmium compound by exposing the mixture to radiation from the light source, and
- b) then ending the polymerization by heating and without radiation.

5,854,300

PRINTING INK

Nigel Paul Gould, St Peters, and Fereidoun Abbasi, Cliftonville, both of United Kingdom, assignors to Sericol Limited, United Kingdom

Filed Mar. 26, 1997, Ser. No. 824,735

Claims priority, application United Kingdom, Apr. 2, 1996, 9606966

Int. Cl.^{6} C08G *18/32*

U.S. Cl. 522—85 **11 Claims**

1. A water-based, UV-curable ink for plastic substrates, comprising:

- a) a water-dispersible or water-soluble urethane acrylate oligomer;
- b) a monomer that is capable of softening the substrate in part or in full; the monomer being resistant to hydrolysis; and
- c) a passive resin that is soluble in the monomer said passive resin having a Tg between 30° and 130° C.

5,854,301

NON-CRYSTALLINE, ETHYLENICALLY UNSATURATED POLYURETHANES

Michael J. Dvorchak; Lanny D. Venham; Scott A. Grace, and Kevan E. Hudson, all of Bayer Corporation, 100 Bayer Rd., Pittsburgh, Pa. 15205-9741

Filed Nov. 12, 1997, Ser. No. 969,439

Int. Cl.^{6} C08G *18/67*

U.S. Cl. 522—90 **10 Claims**

1. An ethylenically unsaturated polyurethane which

- i) is substantially free from isocyanate groups,
- ii) is liquid at 25°C.,
- iii) has a total content of ethylenically unsaturated groups (calculated as C=C, MW 24) of 1 to 20% by weight and
- iv) comprises the reaction product of 4-isocyanatomethyl-1,8-octamethylene diisocyanate (NTI) with a hydroxyalkyl (meth)acrylate.

5,854,302

PARTIALLY POLYMERIZED DIVINYLSILOXANE LINKED BISBENZOCYCLOBUTENE RESINS AND METHODS FOR MAKING SAID RESINS

Pamela S. Foster; Ernest L. Ecker; Edward W. Rutter, Jr., and Eric S. Moyer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 54,999, Apr. 29, 1993, abandoned. This application Apr. 14, 1994, Ser. No. 224,203

Int. Cl.^{6} C08F *2/46;10/08;* **C08G** *77/20*

U.S. Cl. 522—172 **6 Claims**

1. A DVS resin formed by a process comprising heating DVS monomer in a solvent at an initial concentration of DVS monomer in the solvent of from about 12 to about 32 weight percent such that:

(a) the DVS resin, when applied and polymerized in a thin layer on a solid substrate does not craze; and

(b) the DVS resin, when formulated by adding three weight percent 2,6-bis(4-azidobenzylidene)- 4-methylcyclohexanone, spun coated onto a substrate, exposed to a photon source to cure at least a portion of the resin formulation beyond its gel point, any unexposed portions of the formulation are removed with a solvent and the photocured resin is finally cured with heat, one obtains a film retention of at least 75 percent,

which DVS resin

(1) has a weight average molecular weight of greater than 90,000 g/mole as determined by size exclusion chromatography using narrow molecular weight range linear atactic polystyrene polymers as standards;

(2) is soluble in mesitylene; and

(3) is not polymerized beyond its gel point.

5,854,303

POLYMER, ARTICLE AND METHOD FOR INHIBITING THE GROWTH OF OCULAR PATHOGENS IN EYE CARE PRODUCTS

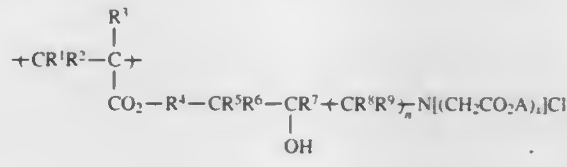
Charles Hayes Powell, Irvine, and David C. Rupp, San Pedro, both of Calif., assignors to Allergan Sales, Inc., Irvine, Calif.

Division of Ser. No. 440,579, May 15, 1995, Pat. No. 5,739,178. This application Jan. 27, 1998, Ser. No. 13,725

Int. Cl.^{6} C98L *33/14;33/13;* **A61K** *31/22;* **C08F** *20/10;* **C07D** *303/08;303/36*

U.S. Cl. 523—106 **16 Claims**

1. An eye care product comprising a polymer comprising a plurality of monomers of the formula:



$$\left[CR^1R^2 - \underset{\substack{| \\ CO_2-R^4-CR^5R^6-\underset{\substack{| \\ OH}}{CR^7}\left[CR^8R^9\right]_n N[(CH_2CO_2A)_x]Cl_y}}{\overset{\substack{R^3 \\ |}}{C}} \right]$$

wherein:

R^1, R^2, R^3, R^5, R^6, R^7, R^8 and R^9 are, independently, selected from the group consisting of H or a C_{1-6} alkyl group, and;

R^4 is selected from the group consisting of a single bond or a C_{1-6} alkenyl oxy group, and;

n is an integer from 0 to 18, and;

A is selected from the group consisting of H or an alkali metal cation, and

x consists of 3, and;

y consists of 1.

5,854,304

DEGRADABLE/COMPOSTABLE CONCENTRATES, PROCESS FOR MAKING DEGRADABLE/COMPOSTABLE PACKAGING MATERIALS AND THE PRODUCTS THEREOF

Rodrigo A. Garcia, Montgomery, Tex., and Joseph Gock Gho, Vancouver, Canada, assignors to EPI Environmental Products Inc., Conroe, Tex.

Continuation of Ser. No. 355,989, Dec. 14, 1994, abandoned. This application Jul. 24, 1997, Ser. No. 900,217

Int. Cl.^{6} C08K *5/09;5/098;3/22;* **C08J** *3/20*

U.S. Cl. 523—124 **26 Claims**

14. A process for producing a concentrate for producing degradable/compostable polyolefin products which comprises:

treating a metal carboxylate and poly hydroxy-carboxyl acid to remove water; introducing said metal carboxylate and said acid with a low melting polyolefin into an extruder;

extruding strands of the polyolefin containing said metal carboxylate and said acid at exit zone temperatures less than 300° F.; and

pelletizing said strands into pellets of polyolefin containing said metal carboxylate and said acid.

5,854,305

PLUGGING COMPOUND FOR CHEMICAL FASTENING

Stefan Schwiegk, Neustadt; Wolfgang Hübinger, Limburgerhof; Thomas Folda, Neustadt; Peter Ittemann, Lampertheim; Willi Riegel, Waghäusel; Monika Moench, Landsberg, and Peter Mauthe, Tuerkheim, all of Germany, assignors to DSM Resins B.V., Zwolle, Netherlands

Filed Aug. 22, 1996, Ser. No. 701,389

Claims priority, application Germany, Aug. 29, 1995, 195 31 649.5

Int. Cl.^{6} C09K *17/00;* **C08K** *5/3412;* **E21D** *20/00*

U.S. Cl. 523—130 10 Claims

1. A plugging compound for the chemical fastening of anchor bolts, threaded sleeves and screws in drill-holes, comprising

I. a free-radically curable reactive resin, comprising from 0.0005 to 2% by weight of an inhibitor, and

II. —spatially separated therefrom—a curing agent for the resin, wherein the inhibitor is a piperidinyl or tetrahydropyrrolyl nitroxide.

5,854,306

WEAR RESISTANT IMAGE PRINTING ON LATEX SURFACES

Henry Mattesky, Cedar Grove, and James Gugger, Roselle Park, both of N.J., assignors to Herbert Glatt, Morristown, N.J.

PCT No. PCT/US96/00163, § 371 Date Jul. 8, 1997, § 102(e) Date Jul. 8, 1997, PCT Pub. No. WO96/21701, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 5, 1996, Ser. No. 875,414

Int. Cl.^{6} C03C *17/00;* **C09D** *5/00;11/00;* **D06N** *7/04*

U.S. Cl. 523—160 35 Claims

1. A formulation containing rubber, solvent therefor and pigment, for printing an image on a latex rubber surface which is resistant to abrasion and chemical attack, characterized therein that said formulation comprises a mixture of initial components:

a) a clear coat comprising: natural rubber and a solvent therefor,

b) a premixed portion comprising: an aromatic hydrocarbon solvent and an aryl diisocyanate integrating agent capable upon cure, of forming a chemically and abrasion resistant, tough flexible structure integrating the rubber of said clear coat with the rubber of said latex surface and

c) pigment,

said components being mixed prior to printing the image on said surface.

5,854,307

INK, AND INK-JET RECORDING METHOD AND INSTRUMENT USING THE SAME

Isao Kimura, Kawasaki, and Hiroyuki Maeda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 345,426

Claims priority, application Japan, Nov. 25, 1993, 5-295373; Oct. 5, 1994, 6-241194

Int. Cl.^{6} C09D *11/10*

U.S. Cl. 523—161 13 Claims

1. A water-based ink composition comprising coloring material particles having a core-shell structure obtained by adsorbing a dye on surfaces of cores, which are water-insoluble inorganic fine particles having a particle size on the order of about 0.1 μm and having an isoelectric point of 7 or lower, or inorganic colloidal substances, and an aqueous solution of a water-soluble polymer, in which solution said coloring material particles are dispersed, wherein the polymer chains of the polymer in the composition undergo dissociation or association in response to a temperature change ranging from 20° to 50° C. or pH change ranging from 7 to 10,

wherein the water-soluble polymer is present in an amount of 0.01 to 10.0 percent by weight of the ink, and is selected from a mixture of polymethacrylic acid and polyethylene glycol, a mixture of polymethacrylic acid and polyethylene glycol-polypropylene glycol copolymer, a mixture of polyacrylic acid and a poly(N-alkyl-substituted acrylamide), a polyethylene oxide-polypropylene oxide-polyethylene oxide block copolymer, and a composite thereof.

5,854,308

WATER-BASED PIGMENTED INKS HAVING SILICONE-CONTAINING POLYMER INCORPORATED THEREIN

Richard J. Kuo, St. Paul; Smarajit Mitra, West St. Paul; Charles E. Boyer, III, Lakeland Township, and Daniel B. Pendergrass, Jr., Mendota Heights, all of Minn., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Filed Feb. 29, 1996, Ser. No. 608,921

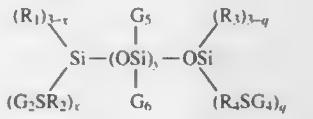
Int. Cl.^{6} C09D *11/10*

U.S. Cl. 523—161 14 Claims

1. A water-based pigmented ink formulation comprising: a water soluble or water dispersible vinyl silicone polymer, pigment, dispersant, surfactant, and a water-based carrier liquid,

wherein the vinyl silicone polymer is a graft copolymer having a silicone polymer backbone and vinyl polymer grafts,

wherein the vinyl silicone polymer has the following formula:



$$\begin{matrix}(R_1)_{3-x} & & G_5 & & (R_3)_{3-q}\\ & \diagdown & | & \diagup & \\ & \mathrm{Si}- & (\mathrm{OSi})_y & -\mathrm{OSi} & \\ & \diagup & | & \diagdown & \\ (G_2SR_2)_x & & G_6 & & (R_4SG_4)_q\end{matrix}$$

wherein G_5 represent monovalent moieties which can independently be the same or different selected from the group consisting of alkyl, aryl, alkaryl, alkoxy, alkylamino, fluoroalkyl, hydrogen, and -ZSA; A represents a vinyl polymeric segment consisting essentially of polymerized free radically polymerizable monomer, and Z is a divalent linking group;

G_6 represents monovalent moieties which can independently be the same or different selected from the group consisting of alkyl, aryl, alkaryl, alkoxy, alkylamino, fluoroalkyl, hydrogen, and -ZSA;

G_2 comprises A;

G_4 comprises A;

R_1 represents monovalent moieties which can independently be the same or different and are selected from the group consisting of alkyl, aryl, alkaryl, alkoxy, alkylamino, fluoroalkyl, hydrogen, and hydroxyl;

R_2 can independently be the same or different and represents divalent linking groups;

R_3 represents monovalent moieties which can independently be the same or different and are selected from the group consisting of alkyl, aryl, alkaryl, alkoxy, alkylamino, fluoroalkyl, hydrogen, and hydroxyl;

R_4 can independently be the same or different and are divalent linking groups;

x is an integer of 0–3;

y is an integer of 5 or greater;

q is an integer of 0–3;

wherein at least one of the following is true:

q is an integer of at least 1;

x is an integer of at least 1;

G_5 comprises at least one -ZSA moiety;

G_6 comprises at least one -ZSA moiety.

5,854,309

FLAME RETARDANT COMPOSITIONS UTILIZING AMINO CONDENSATION COMPOUNDS

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Filed Sep. 30, 1996, Ser. No. 723,779

Int. Cl.^{6} C09K *21/14*

U.S. Cl. 523—179 4 Claims

1. A method for reducing combustibility of a more flammable organic material comprising incorporating an amino condensation composition with the more flammable organic material, under reaction conditions of the more flammable organic material, and in an amount sufficient to reduce the combustibility of the more flammable organic material, said amino condensation composition produced by the method comprising of mixing, heating and reacting the following components;

(A) urea

(B) nitrogen containing compound that will condensate and/or react with isocyanic acid and/or cyanic acid produced by heating urea, and selected from the group consisting of melamine, melamine cyanurate, dicyandiamide, guanidine, cyanoguanidine, aminoguanidine and

mixtures thereof; in the amount of 10 to 300 percent by weight percentage based on the weight of urea; then adding and mixing in a

(C) Filler in the amount of 300 percent by weight based on the weight of the amino condensation compound:

components A and B are first mixed, then heated to above the melting point of urea and up to 160 degree C. for .1 to 3 hours at ambient or elevated pressure and reacted thereby producing an amino condensation composition, then component C is added and mixed.

5,854,310

CURABLE FLUOROSILICONE COMPOSITION HAVING IMPROVED LUBRICITY

Myron T. Maxson, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 21, 1997, Ser. No. 895,245

Int. Cl.^{6} C08K *9/06*

U.S. Cl. 525—213 17 Claims

1. A curable fluorosilicone composition comprising

(A) 100 weight parts of a poly(trifluoropropyl)methylsiloxane composition comprising

(i) 80 to 95 percent of a hydroxyl en-terminated poly (trifluoropropyl)methylsiloxane having a Williams plasticity number within a range of about 100 mm to 400 mm and

(ii) 5 to 20 weight parts of a hydroxyl end-terminated poly-(trifluoropropyl)vinylmethylsiloxane having a Williams plasticity number within a range of about 100 mm to 400 mm and comprising about 0.1 to 2 mole percent vinylmethylsiloxy units,

(B) 0.05 to 10 weight parts of vinylmethyldi(N-alkylacetamido)silane,

(C) 5 to 50 weight parts of reinforcing treated silica,

(D) 1 to 25 weight parts of chlorotrifluoroethylene polymer, and

(E) vinyl specific organic catalyst in an amount sufficient to cure the composition, wherein the weight parts of components (B), (C), (D), and (E) are based on 100 weight parts of component (A).

5,854,311

PROCESS AND APPARATUS FOR THE PREPARATION OF FINE POWDERS

Douglas S. Richart, 6 Golfview La., Reading, Pa. 19606

Filed Jun. 24, 1996, Ser. No. 669,143

Int. Cl.^{6} B02C *4/04;4/00*

U.S. Cl. 523—309 17 Claims

1. A method for grinding in a media mill in which a coarse material is comminuted to a smaller particle size, the improvement comprising grinding coarse material in excess of 120 micrometers while it is immersed in a liquified gas, which is a gas at room temperature and under atmospheric pressure.

5,854,312

AQUEOUS HARDENERS FOR EPOXY RESIN SYSTEMS

Achim Klippstein, Duren, Germany, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 325,244, Dec. 19, 1994, abandoned. This application Jul. 26, 1996, Ser. No. 687,767

Claims priority, application European Pat. Off., Apr. 21, 1992, 92201096

Int. Cl.^{6} C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—404 20 Claims

1. A process for the preparation of a storage stable aqueous emulsion of an active amino group-containing hardener adduct for curing epoxy resin systems which comprises sufficiently mixing (a) an epoxy resin in liquid form having an epoxy functionality of 1.2 to 3.5 and a weight average molecular weight of at least 700 and (b) an aqueous solution of an active amino group-containing hardener which disperses the epoxy resin as the adduct to yield an aqueous emulsion of a hardener adduct having an increased amine-H-equivalent weight.

5,854,313

FINE PARTICLES OF HIGH HEAT RESISTANT POLYMER AND EPOXY ESTERS

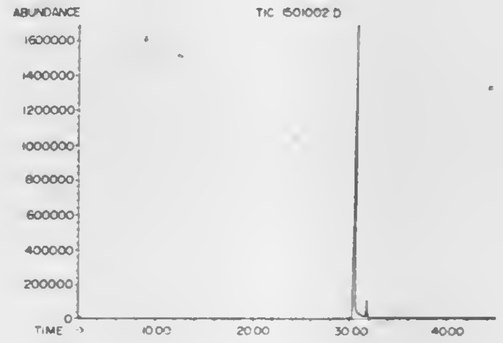
Yoshimasa Omori; Hiroya Okumura, both of Fujisawa, and Takashi Shibata, Kamakura, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 535,473, Sep. 27, 1995, abandoned. This application Apr. 21, 1997, Ser. No. 845,206

Claims priority, application Japan, Sep. 28, 1994, 6-233375; Feb. 3, 1995, 7-017163; Aug. 4, 1995, 7-199955

Int. Cl.^{6} C08K *3/20*

U.S. Cl. 523—406 12 Claims



1. Fine particles of high heat resistant polymer obtained by emulsion polymerization or seeded polymerization of at least one epoxy ester (C) having two or more unsaturated bonds in one molecule and at least one reactive monomer (D) having at least one unsaturated double bond in one molecule, in the absence of a water-insoluble inorganic material as a dispersion stabilizer, said epoxy ester (C) being obtained by adding at least one unsaturated monobasic acid (B) to at least one epoxide (A-1) having at least one glycidyl group and one monocyclic hydrocarbon group in one molecule, and/or at least one epoxide (A-2) having at least one cycloaliphatic epoxy group in one molecule.

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5,854,314

CROSSLINKABLE WATERBORNE DISPERSIONS OF HYDROXY FUNCTIONAL POLYDIENE POLYMERS AND AMINO RESINS

David John St. Clair, Houston, and James Robert Erickson, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 679,164, Jul. 12, 1996, Pat. No. 5,721,317, which is a continuation of Ser. No. 479,583, Jun. 17, 1995, abandoned, which is a continuation of Ser. No. 277,375, Jul. 18, 1994, abandoned. This application Oct. 2, 1997, Ser. No. 942,514

Int. Cl.^{6} C08K *3/20;* **C08L** *63/08*

U.S. Cl. 523—416 **11 Claims**

1. A process for making a stable water dispersion of a crosslinked hydroxy functional polydiene polymer composition which comprises:

a) making a mixture of a surfactant which is nonionic or anionic having a volatile cation and water,
b) adding a mixture of a hydroxy functional polydiene polymer and a compatible amino resin to the surfactant/water mixture,
c) dispersing the polymer/resin mixture in the surfactant/water mixture by mixing with a high shear mixer/emulsifier in the absence of an organic solvent, and
d) crosslinking the hydroxy functional polydiene polymer and the amino resin by adding a proton-donating acid catalyst and heating to a temperature of 100° to 300° C.

5,854,315

SNAP-CURE EPOXY ADHESIVES

Bing Wu, Marina Del Rey, Calif.; Quinn K. Tong, Belle Mead, and Rose Ann Schultz, Princeton, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

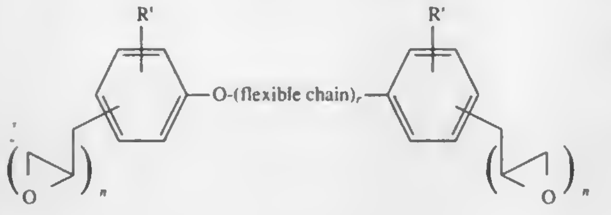
Division of Ser. No. 656,621, May 31, 1996, Pat. No. 5,770,706, which is a continuation-in-part of Ser. No. 482,540, Jun. 7, 1995, abandoned. This application Oct. 17, 1997, Ser. No. 951,875

Int. Cl.^{6} C08L *63/00;* **C08K** *3/10*

U.S. Cl. 523—427 **7 Claims**

1. An adhesive formulation for microelectronics use comprising in parts by weight:

(i) 20–80 parts of a liquid epoxy resin having a center flexible portion, characterized in that it has a total chlorine content of less than 0.1% by weight and the general structure



in which:

R' is H, C_{1-18} alkyl, C_{1-5} alkoxy or aryl or alkylaryl, C_{1-5} perfluoroalkyl, or C_{1-5} acyl; and
n is an integer 1–3; and
the flexible chain is $CH_2CH_2CH_2CH_2O$ when r is an integer 1–10;
the flexible chain is CH_2CH_2O when r is an integer 3–10; or
the flexible chain is CH_2 when r is an integer 10–20;

and

(ii) 80–20 parts of an aromatic O-glycidyl ether resin having one or more aromatic rings, the aromatic rings substituted with two or more O-glycidyl ether groups and optionally one or more C_1–C_3 groups, the aromatic O-glycidyl ether having an epoxy equivalent weight (WPE, weight per epoxy) of 200 or less,

the total parts of (i) and (ii) to equal 100 parts by weight, and

(iii) a curing catalyst, and
(iv) optionally, a conductive filler, and
(v) 20–50 parts per hundred parts of resin of a phenolic hardener.

5,854,316

EPOXY RESIN COMPOSITION

Ken Shimizu, Nagoya; Yasushi Sawamura, Otsu, and Masayuki Tanaka, Nagoya, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP96/01919, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO97/03129, PCT Pub. Date Jan. 30, 1997

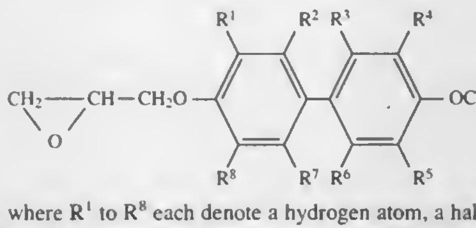
PCT Filed Jul. 10, 1996, Ser. No. 793,460

Claims priority, application Japan, Jul. 10, 1995, 7/173267

Int. Cl.^{6} C08L *63/00*

U.S. Cl. 523—442 **14 Claims**

1. An epoxy resin composition composed of an epoxy resin (A), a hardener (B), and an inorganic filler (C) containing silica and alumina as an essential component, characterized in that said epoxy resin (A) contains as an essential component a biphenyl type epoxy resin having the structure represented by the formula (I) below:



(I)

where R^1 to R^8 each denote a hydrogen atom, a halogen atom, or a C_{1-4} alkyl group, and wherein the content of the inorganic filler (C) is 70–97 wt %, based on the total weight of the composition, and the inorganic filler (C) contains 0.1–20 wt % of alumina.

5,854,317

PROCESS FOR THICKENING THERMOSET RESIN MOLDING COMPOUND COMPOSITIONS

James E. Rinz, University Heights, Ohio, assignor to Premix, Inc., North Kingsville, Ohio

Filed Dec. 18, 1996, Ser. No. 769,454

Int. Cl.^{6} C08K *5/3412;3/22;* **C08L** *67/06*

U.S. Cl. 523—508 **8 Claims**

1. A process for making a thickened thermoset resin composition for molding materials, comprising: mixing

(A) a composition comprising a carboxylic acid containing thermoset resin composition, wherein said thermoset resin is a carboxylic acid containing unsaturated polyester resin; and
(B) a compound comprising at least two aziridine rings.

5,854,318

CEMENT ADDITIVE, METHOD FOR PRODUCING THE SAME, AND CEMENT COMPOSITION

Hideyuki Tahara, Osaka; Hiroshi Ito, Takatsuki; Yasuhiro Mori, Atsuzaka, and Makoto Mizushima, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co, Ltd., Osaka, Japan

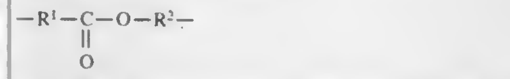
Continuation of Ser. No. 498,704, Jul. 3, 1995, abandoned, which is a division of Ser. No. 668,513, Mar. 25, 1991, Pat. No. 5,476,885. This application Dec. 5, 1996, Ser. No. 759,435

Claims priority, application Japan, Jul. 25, 1989, 1-190656; Oct. 9, 1989, 1-262242; Nov. 17, 1989, 1-297455; Sep. 5, 1998, 1-228313

Int. Cl.^{6} C08K *3/00;* **C04B** *28/00;* **C08F** *220/00*

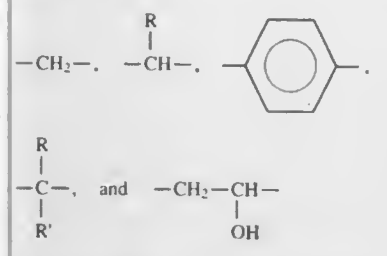
U.S. Cl. 524—5 **38 Claims**

1. A hydraulic composition comprising a hydraulic material, water and a cement additive comprising a crosslinked polymer in which, between main chains having a water-soluble polymer structure of a weight average molecular weight from 500 to 100,000, a bond having as a structural unit at least one divalent group having the following formula (I) is formed

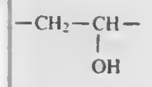


$$-R^1-\underset{O}{\underset{\|}{C}}-O-R^2- \qquad (I)$$

wherein R^1 and R^2 independently are selected from the group consisting of:



with the proviso that R^1 is not required if $R^2$is



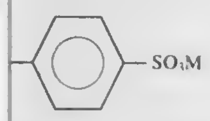
$$-CH_2-\underset{OH}{\underset{|}{CH}}-$$

and wherein R and R' independently denote an alkyl group of carbon number of 1 to 5,

wherein said main chains comprise at least one member selected from the group consisting of

$-COOM$, $-COO\left(R^5O\right)_m R^6-SO_3M$,

$-CONH-R^7-SO_3M$, $\left(CH_2\right)_n SO_3M$, and



wherein m is 0 or an integral number of 1 to 50;
n is 0 or 1;
M is at least one member selected from the group consisting of a hydrogen atom, a monovalent, divalent or trivalent metal group, an ammonium group and an organic amine group;
R^1 and R^6 independently denote an alkylene group of carbon number 2 to 4;
R^7 denotes an alkylene group of carbon number 1 to 5;
with the proviso that when m is at least 2, a plurality of R^5O may be the same or different and, when a plurality of R^5O are different from one another, their arrangement may be regular or irregular;
and wherein said crosslinked polymer is capable of forming a water-soluble polymer by cleavage of the divalent group in an alkaline medium.

5,854,319

REACTIVE SILICONE EMULSIONS CONTAINING AMINO ACIDS

Anthony J. O'Lenick, Jr., Lilburn, Ga., and Charles W. Buffa, Teaneck, N.J., assignors to Lambent Technologies Inc, Norcross, Ga., and Biosil Technologies Inc, Paterson, N.J.

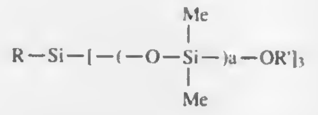
Filed Nov. 30, 1995, Ser. No. 565,407

Int. Cl.^{6} C08L *89/00*

U.S. Cl. 524—17 **9 Claims**

1. An emulsion which comprises;

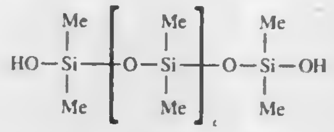
A) an alkoxy silicone compound which conforms to the following structure:



$$R-Si-[-(-O-\underset{Me}{\underset{|}{\overset{Me}{\overset{|}{Si}}}}-)_a-OR']_3$$

Me is methyl;
R is alkyl having one to ten carbon atoms;
R'is methyl or ethyl;
a is an integer ranging from 1 to 12.

B) a silanol which conforms to the following structure:



$$HO-\underset{Me}{\underset{|}{\overset{Me}{\overset{|}{Si}}}}-\left[O-\underset{Me}{\underset{|}{\overset{Me}{\overset{|}{Si}}}}\right]_c-O-\underset{Me}{\underset{|}{\overset{Me}{\overset{|}{Si}}}}-OH$$

Me is methyl and c ranges from 1 to 2,000;

C) an amino compound selected from the group consisting of amino acids and proteins;
D) an emulsifying agent; and
E) water.

5,854,320

WATER BASE ERASABLE INK COMPOSITIONS

Keiko Nakamura; Norihiro Hirano, and Kenichi Shibuya, all of Osaka, Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

Filed Aug. 1, 1996, Ser. No. 691,914

Claims priority, application Japan, Aug. 3, 1995, 7-198726

Int. Cl.^{6} C09D *11/16;* **C08L** *5/16*

U.S. Cl. 524—48 **9 Claims**

1. A water base erasable ink composition for use in marking pens which comprises:

(a) water as a solvent;
(b) a coloring agent:
(c) an aqueous emulsion of at least one oily material

which is liquid and nonvolatile at room temperature and is selected from the group consisting of aliphatic carboxylic acid esters, higher hydrocarbons selected from the group consisting of liquid paraffin, squalane and oxidized polyethylene wax, and aliphatic alcohols having 6 to 12 carbon atoms in a dry amount of 1–50% by weight based on the ink composition;

(d) a cyclodextrin or a modified cyclodextrin in an amount of 0.1–20% by weight based on the ink composition; and
(e) a resin which is film-forming at room temperatures.

5,854,321

GRAFT COPOLYMERS OF UNSATURATED MONOMERS AND SUGARS, A PROCESS FOR THE PRODUCTION AND THE USE THEREOF

Frank Krause, Kleve, and Helmut Klimmek, Krefeld, both of Germany, assignors to Stockhausen GmbH & Co. KG, Krefeld, Germany

Division of Ser. No. 713,538, Sep. 13, 1996, which is a division of Ser. No. 362,436, Dec. 29, 1994, Pat. No. 5,580,941. This application Apr. 4, 1997, Ser. No. 832,954

Claims priority, application Germany, Jul. 2, 1992, 42 21 381.9

Int. Cl.^{6} C08K *5/07;* **C14B** *1/00;* **C14C** *3/00*

U.S. Cl. 524—58 **2 Claims**

1. A leather treatment composition comprising at least one leather treating agent and an effective leather tanning or retaining enhancing amount of a graft copolymer obtained by radical graft copolymerization of from 40 to 95 parts by weight of a monomer mixture in the presence of from 5 to 60 parts by weight of a saccharide component selected from the group consisting of monosaccharides, disaccharides, oligosaccharides, saccharide

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derivatives, and mixtures thereof; said saccharide derivatives being selected from the group consisting of sorbitol, mannitol, gluconic acid, glucuronic acid, alkyl glycosides, and alkyl-, hydroxyalkyl- and carboxyalkyl- ethers of saccharides; said monomer mixture comprising the following components:

A) 36.95 to 96%-wt. of at least one monoethylenically unsaturated C3-C10 monocarboxylic acid, or salt thereof with a monovalent cation;
B) 4 to 55%-wt. of at least one monoethylenically unsaturated monomer comprising a monosulfonic acid group, monoethylenically unsaturated sulfuric acid ester, vinylphosphonic acid or a salt thereof with a monovalent cation;
C) 0 to 30%-wt. of at least one water-soluble, monoethylenically unsaturated polyalkyleneglycol ether of (meth)allyl alcohol or polyalkyleneglycol ester of (meth)acrylic acid, containing 2 to 50 moles of alkylene oxide units per mole of (meth)allyl alcohol or (meth)acrylic acid;
D) 0 to 45%-wt. of at least one further, water-soluble, radically polymerizable monomer or a monomer which comprises at least two ethylenically unsaturated double-bonds, or an ethylenically unsaturated double-bond and a cross-linkable functional group other than an ethylenically unsaturated double-bond, and
E) 0 to 30%-wt. other radically polymerizable monomers which are slightly soluble or insoluble in water selected from the group consisting of C_1 to C_{18} alkyl(meth)acrylic acid esters, hydroxyalkyl(meth)acrylic acid esters, mono- and dialkyl esters of maleic acid, N-alkyl and N,N-dialkyl(meth)acrylamides and vinyl carboxylic acid esters, the sum of components A to E being 100%-wt.

5,854,322

COAL TAR PITCH MODIFIED BY NITRILE BUTADIENE RUBBER

Joseph W. Mellott, Uniontown, Ohio, assignor to The Garland Company, Cleveland, Ohio

Filed Aug. 20, 1997, Ser. No. 915,416

Int. Cl.^{6} C08L *95/00*

U.S. Cl. 524—66 **10 Claims**

1. A modified coal tar pitch consisting essentially of:

a coal tar pitch having a softening point in the range of from about 52° C. to about 64° C.; and
a solid-phase nitrile butadiene rubber ("NBR");
wherein the coal tar pitch and the NBR are blended; and
wherein the coal tar pitch is present in the range of from about 80 to about 96% by weight and the NBR is present in the range of from about 20 to about 4% by weight.

5,854,323

PIGMENT DISPERSING AGENT, COMPOSITION CONTAINING THE SAME, AND AQUEOUS PIGMENT DISPERSION

Tadashi Itabashi; Takashi Kamikubo, and Katsuhiko Sawamura, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1996, Ser. No. 712,452

Claims priority, application Japan, Sep. 11, 1995, 7-232167; Sep. 11, 1995, 7-232169; Sep. 18, 1995, 7-238162; Sep. 18, 1995, 7-238164; Sep. 18, 1995, 7-238167; Sep. 18, 1995, 7-238168; Sep. 18, 1995, 7-238169

Int. Cl.^{6} C08K *5/34;* C08L *39/00*

U.S. Cl. 524—88 **11 Claims**

5. An aqueous pigment dispersion comprising a water dispersible or water soluble polymer, a pigment, and a pigment-dispersing agent for dispersing a pigment in an aqueous medium, wherein said pigment-dispersing agent has a structure in which at least one member selected from the group consisting of an organic dye, anthraquinone and acridone is bound to a linear acrylic polymer having two terminal ends at one or both of said terminal ends by at least one reactive group on said member selected from the group consisting of —COCl, —SO_2Cl, —CH_2Cl, and —$CH_2NHCOCH_2Cl$, wherein the linear acrylic polymer has a primary amino group or a secondary amino group.

5,854,324

POLYACETAL RESIN COMPOSITION

Yoshihisa Tajima, Shimizu; Hiroyuki Sano, Mishima, and Katsunori Takayama, Fuji, all of Japan, assignors to Polyplastics Co., Ltd., Japan

PCT No. PCT/JP96/01109, § 371 Date Sep. 24, 1997, § 102(e) Date Sep. 24, 1997, PCT Pub. No. WO96/34054, PCT Pub. Date Oct. 31, 1996

PCT Filed Apr. 24, 1996, Ser. No. 913,873

Claims priority, application Japan, Apr. 24, 1995, 7-98370

Int. Cl.^{6} C08L *59/00*

U.S. Cl. 524—232 **14 Claims**

1. A polyacetal resin composition prepared by melting a polyacetal resin (A), a modified olefinic polymer (B) modified with at least one member selected from the group consisting of an unsaturated carboxylic acid and an acid anhydride thereof, and their derivatives, and an alkylene glycol polymer (C) having a primary or secondary amino group(s) and having a number-average molecular weight of 400 to 500,000, and kneading them each other, wherein component (B) is contained in an amount of 1 to 100 parts by weight based on 100 parts by weight of component (A), and component (C) is contained in an amount of 0.1 to 100% by weight based on component (B).

5,854,325

PHOTOSENSITIVE ADHESIVE COMPOSITION FOR ADDITIVE PLATING

Takeshi Hosomi; Hiroshi Hayai, and Takayuki Baba, all of Fujieda, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Mar. 4, 1997, Ser. No. 811,026

Claims priority, application Japan, May 27, 1996, 8-132390; Dec. 26, 1996, 8-347161

Int. Cl.^{6} C08K *3/26*

U.S. Cl. 524—425 **23 Claims**

1. A photosensitive adhesive composition for additive plating comprising the following components (a), (b), (c), (d), (e) and (f) as essential components:

(a) a polyfunctional epoxy resin having an epoxy equivalent of 120–500,
(b) a modified phenol novolac obtained by reacting 20–60 mole % of the phenolic hydroxyl groups of a phenol novolac obtained by condensing a phenol compound with formaldehyde in the presence of an acidic catalyst, with a glycidyl group-containing acrylate or methacrylate,
(c) an epoxy acrylate or epoxy methacrylate compound,
(d) a diluent consisting of a polyfunctional monomer having a plurality of photosensitive functional groups or a polyfunctional monomer having a photosensitive functional group and a heat-sensitive functional group, or a diluent consisting of a combination of the two monomers,
(e) a photopolymerization initiator, and
(f) an acid-soluble filler.

5,854,326

GAS BARRIER RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Taiichi Sakaya, Takatsuki; Ryuma Kuroda, Ibaraki, and Tadatoshi Ogawa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 28, 1996, Ser. No. 704,839

Claims priority, application Japan, Aug. 29, 1995, 7-220255

Int. Cl.^{6} C08K *3/34*

U.S. Cl. 524—445 **14 Claims**

1. A resin composition comprising 100 parts by weight of an aggregated inorganic layer compound and 200–10,000 parts by weight of a resin, the particle size of the aggregated inorganic layer compound satisfying the following mathematical expressions (1):

$$10<D/L \text{ and } 5\ \mu m<D<100\ \mu m \qquad (1)$$

wherein L is the average particle diameter of the inorganic layer compound before aggregation and D is the average particle diameter of the inorganic layer compound after aggregation, i.e., average aggregated particle diameter.

5,854,327

MINERAL-FILLED ROOFING MEMBRANE COMPOSITIONS AND USES THEREFOR

James A. Davis, Indianapolis, and Brian S. Alexander, Sheridan, both of Ind., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jun. 27, 1997, Ser. No. 883,647

Int. Cl.^{6} C08K *3/00*

U.S. Cl. 524—445 **19 Claims**

1. A non-black roof sheeting material prepared from a composition of matter consisting essentially of:

100 parts by weight of at least one polymeric rubber selected from the group consisting of ethylene-propylene-diene terpolymers, ethylene-propylene copolymers and other polyolefinic type polymers;
from about 20 to about 300 parts by weight of a blend of at least two mineral fillers, per 100 parts of said polymeric rubber, wherein one of said mineral fillers is a reinforcing silica and wherein another of said mineral fillers is a clay surface modified with a polyfulctional silane couling agent;
from about 20 to about 150 parts by weight of a processing oil per 100 parts of said polymeric rubber;
from about 1 to about 6 parts by weight of a sulfur cure package having at least one accelerator but being devoid of any thiuram accelerators, said cure package allowing said sheeting material to cure at about the same rate as a carbon black reinforced roof sheeting material at 160° C.

5,854,328

POLYOLEFIN ELASTOMER COMPOSITION

Junji Koizumi, Nagoya; Haruyasu Mizutani, Aichi-ken, and Yoshiaki Shichida, Ichinomiya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Jul. 22, 1996, Ser. No. 686,050

Claims priority, application Japan, Jul. 21, 1995, 7-185973; Oct. 23, 1995, 7-274403

Int. Cl.^{6} C08K *3/34*

U.S. Cl. 524—451 **18 Claims**

1. A composition comprising the following ingredients:

(a) a crystalline polypropylene having an M_w/M_n value $Q \geqq 10$ and a melt flow rate between 50 and 120,
(b) an ethylene-α-olefin rubber having an α-olefin content between 10 wt. % and 20 wt. %, wherein the amounts by weight of said crystalline polypropylene and said ethylene-α-olefin rubber are characterized by a blending ratio with respect to each other between 35/65 and 67/33,
(c) 0–15 phr (parts per hundred weight of rubber) talc, wherein the amount phr by weight of said talc is with respect to the sum of the amounts of said crystalline polypropylene and said ethylene-α-olefin rubber, and

the phr amount by weight of said talc, Y, and the amount by weight of said ethylene-α-olefin rubber in said blending ratio, X, is characterized by:

$$Y \geqq -0.63X+34$$

wherein $0 \leqq Y \leqq 15$.

5,854,329

WATER-THINNABLE DISPERSION, A PROCESS FOR PRODUCING IT, AND COATING MEDIA

Bettina Vogt-Birnbrich, Solingen, and Armin Göbel, Wetter, both of Germany, assignors to Herberts GmbH, Wuppertal, Germany

Filed Mar. 17, 1997, Ser. No. 818,922

Claims priority, application Germany, Mar. 26, 1996, 196 11 812.3

Int. Cl.^{6} C08J *3/02*

U.S. Cl. 524—457 **7 Claims**

1. A water-thinnable dispersion of one or more cationically modified and urethane-modified (meth)acrylic copolymers, which are obtained by the solution free radical polymerization of

A) one or more unsaturated (meth)acrylic monomers which are free of cationic groups or groups which can be converted into cationic groups, in the presence of
B) one or more polyurethane macromonomers containing unsaturated groups wherein the polyurethane macromonomer is obtained by the reaction of
b1) one or more mono- and/or polyhydroxyl compounds, which optionally contain one or more polymerizable double bonds, with
b2) one or more polyisocyanates,
b3) with a compound which contains, in its molecule, at least one group which is reactive towards isocyanate groups and at least one group which is capable of forming cations,
b4) with a compound which contains a polymerizable double bond and contains at least one group which is reactive towards NCO groups, and
b5) optionally with a compound which contains a group which is reactive towards isocyanate groups and contains a linear or branched (cyclo)aliphatic hydrocarbon radical containing 5 to 20 C atoms, or with a mixture of such compounds,
wherein polymerizable double bonds are introduced into the polyurethane macromonomer by at least one of components b1) and b4), components b1) to b5) are selected so that a polyurethane macromonomer is formed which contains terminal and/or lateral unsaturated groups and the cationic groups or groups which can be converted into cationic groups of the urethane-modified (meth)acrylic copolymer are introduced via polyurethane macromonomer B), and subsequent conversion of the reaction product into the aqueous phase, wherein the cationic groups or groups which can be converted into cationic groups which are contained in the reaction product are at least partially neutralised before or during the conversion into the aqueous phase.

5,854,330

CAPSTAN COMPRISING POLYACETAL-BASED POLYMER COMPOSITION FOR MAGNETIC TAPE CARTRIDGE

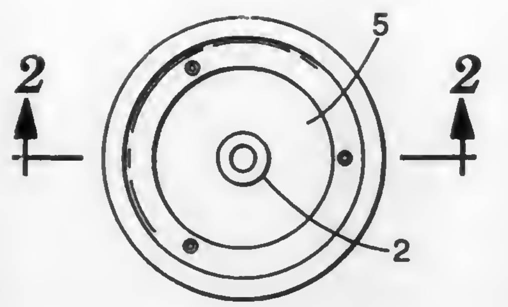
Wolfgang G. Schoeppel, Neuss, and Oliver Gayk, Duesseldorf, both of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 614,793, Mar. 7, 1996. This application Sep. 16, 1997, Ser. No. 931,709

Int. Cl.^{6} C08K *3/00*

U.S. Cl. 524—495 **3 Claims**

1. A capstan for a magnetic tape data cartridge comprising a polyacetal-based polymer composition which comprises 35–96.5



wt. % of a polyacetal component, 3–40 wt. % of a polyurethane component and 0.5–20 wt. % of a carbon black component with all percentages referring to the mass of the polymer composition.

5,854,331

BLOCK COPOLYMERS OF OXAZOLINES AND OXAZINES AS PIGMENT DISPERSANTS AND THEIR USE IN INK JET INKS

Sheau-Hwa Ma, Chaddsford, Pa., and Jose N. Rodriguez-Parada, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 4, 1997, Ser. No. 963,839

Int. Cl.^{6} C08L *53/00;* **C08K** *3/08;3/16;* **C09D** *11/10*

U.S. Cl. 524—505 **10 Claims**

1. An aqueous dispersion comprising:
(a) an aqueous vehicle,
(b) a particulate solid, and
(c) a block polymer dispersant selected from the group consisting of AB, ABA, and BAB block copolymers wherein the A block is hydrophobic, and the B block is hydrophilic, wherein the polymer as a whole has a solubility in the aqueous vehicle of at least 0.1 wt % at 25° C.;
(d) said block polymeric dispersant being comprised of monomers selected from the group consisting of 2-substituted oxazoline monomers, 2-substituted oxazine monomers, and mixtures thereof.

5,854,332

AQUEOUS URETHANE/ACRYLIC RESINS WITH BRANCHED CHAIN EXTENSION AND COATING COMPOSITIONS MADE THEREFROM

Shanti Swarup, Hampton Township, Allegheny County; Anbazhagan Natesh, Horsham Township, Montgomery County; Norene E. Fortuna, Fawn Township, Allegheny County, and Kurt G. Olson, Allegheny County, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 20, 1996, Ser. No. 771,194

Int. Cl.^{6} C08J *3/05;3/03;* **C08L** *75/04;* **C09D** *175/04*

U.S. Cl. 524—507 **19 Claims**

1. A water reducible polyurethane-acrylic resin which comprises:
(a) 20–90 percent by weight of a polyurethane selected from the group consisting of:
  (A) the reaction product of:
    (i) a first polyisocyanate having a linear carbon chain greater than C_6 in length between two isocyanate groups;
    (ii) a second isocyanate different from he first polyisocyanate;
    (iii) a polyol for reaction with the isocyanates to form polyurethane; and
    (iv) a monomer having an anionic group and functionality reactive with isocyanate to provide water dispersibility for the polyurethane through salt formation and as such different from the polyol of (iii); and
  (B) the reaction product of:
    (v) a polyisocyanate;
    (vi) a polyhydroxy compound which is the reaction product of at least one monomer having a hydrocarbon group of at least six carbon atoms, where the polyhydroxy compound reacts with the polyisocyanate to form polyurethane; and
    (vii) a monomer having an anionic group and functionality reactive with isocyanate to provide water dispersibility for the polyurethane through salt formation and as such different from the polyhydroxy compound of (vi);
the polyurethane (a) being further chain extended by reaction in water with a chain extending compound having at least three hydroxyl groups or at least three primary amine groups and being substantially free of tertiary amine groups to avoid discoloration in a coating composition having water reducible polyurethane-acrylic resin, whereby a branched polyurethane structure for (a) results from the chain extension; and
(b) 10–80 percent by weight of the free radical polymerization product of a mixture of vinyl monomers polymerized in the presence of the branched polyurethane of (a);
wherein the weight percentages are based on the total resin solids content of (a) plus (b).

5,854,333

Patent Not Issued For This Number

5,854,334

WIRE COATING COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Michael Schink, Hamburg, Germany; Geoff Rix, Petworth, Sussex, and John Kirwin, Billingsley-Bridgenorth Shrops, both of United Kingdom, assignors to BASF Lacke & Farben, AC, Muenster-Hiltrup

PCT No. PCT/EP96/00839, § 371 Date Nov. 21, 1997, § 102(e) Date Nov. 21, 1997, PCT Pub. No. WO96/27643, PCT Pub. Date Sep. 12, 1996

PCT Filed Mar. 1, 1996, Ser. No. 894,866

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *51/00;67/00*

U.S. Cl. 524—539 **12 Claims**

1. A wire-coating composition, comprising 0.5 to 5.0% by weight, based on the overall weight of the wire-coating composition of a phenolic resin and
a) from 15 to 65% by weight, based on the overall weight of the wire-coating composition, of one or more polyester resins comprising the reaction product of one or more polyhydric alcohols and at least one acid component comprising an acid or acid derivative selected from the group consisting of naphthalenedicarboxylic acid, esterifiable derivatives thereof, and mixtures thereof,
b) from 15 to 60% by weight, based on the overall weight of the wire-coating composition, of one or more polyesterimides comprising the reaction product of one or more polyhydric alcohols and at least one acid component comprising an acid or acid derivative selected from the group consisting of naphthalenedicarboxylic acid, esterifiable derivatives thereof, and mixtures thereof, or
c) from 18 to 40% by weight, based on the overall weight of the wire-coating composition, of one or more hydroxyl-containing polyesters comprising the reaction product of one or more polyhydric alcohols and at least one acid component comprising an acid or acid derivative selected from the group consisting of naphthalenedicarboxylic acid, esterifiable derivatives thereof, and mixtures thereof, and one or more isocyanate components whose free isocyanate groups are completely blocked.

5,854,335

BITUMINOUS COMPOSITION WITH DIENE/ MONOVINYL AROMATIC BLOCK COPOLYMER

Gerardus Wilhelmus Jozef Heimerikx; Aloysius Josephus Atoius Maria Van Hoek; Cornelis Petrus Valkering, and Jeroen Van Westrenen, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 603,819, Feb. 20, 1996, abandoned. This application Apr. 30, 1997, Ser. No. 846,950

Claims priority, application European Pat. Off., Feb. 20, 1995, 95301053

Int. Cl.^{6} C08K *5/01;* **C08L** *95/00*

U.S. Cl. 524—571 **2 Claims**

1. A bituminous composition which comprises a bituminous component and a block copolymer of a conjugated diene and a monovinylaromatic hydrocarbon, wherein the block copolymer has a vinyl content of from 50 to 55% by weight based on the total diene content and a diblock content of 25 wt % or less, whereas the diblock has an apparent molecular weight as measured with gel chromatography using polystyrene calibration standards according to ASTM 3536 which is in the range of from 110,000 to 150,000.

5,854,336

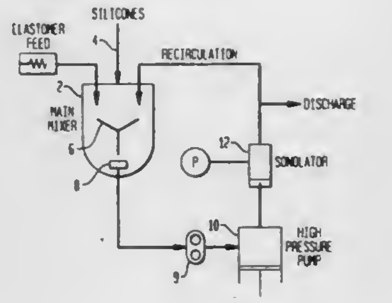
PROCESS FOR PREPARING SILICONE ELASTOMER COMPOSITIONS

Peter Anthony Divone, Sr., New York, N.Y.; Brian John Dobkowski, Shelton, Conn.; Michael Charles Cheney, Fairfield, Conn.; Salvador Pliego, Hamden, Conn.; Walter Anthony Biercevicz, Prospect, Conn., and Kenneth Paul Manzari, West Haven, Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 20, 1997, Ser. No. 822,406

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;7/16;* **C08L** *83/00*

U.S. Cl. 524—588 **12 Claims**



1. A process for preparing silicone elastomer compositions for use in cosmetic products which compositions comprise a silicone elastomer within a carrier fluid, the process comprising the steps of:
(i) feeding the silicone elastomer composition into a reactor;
(ii) mixing the silicone elastomer composition through agitation in the reactor;
(iii) transferring the agitated silicone elastomer composition from the reactor into a high pressure pump;
(iv) pumping the mixed silicone elastomer composition at a pressure ranging from 500 to 40,000 psi from the high pressure pump into a means for reducing the silicone elastomer within the composition into a smaller particle size;
(v) optionally, recirculating the resultant smaller sized silicone elastomer particles into the reactor; and
(vi) recovering a silicone elastomer composition wherein the silicone elastomer average particle size ranges from 0.05 to 30 micron.

5,854,337

AQUEOUS BINDER DISPERSION FOR PHYSICALLY DRYING COATING AGENTS AND THEIR USE

Klaus Wandelmaier, and Stefan Wiggershaus, both of Wuppertal, Germany, assignors to Herberts Gesellschaft Mit Beshrankter Haftung, Wuppertal, Germany

Filed Oct. 22, 1997, Ser. No. 955,696

Claims priority, application Germany, Oct. 30, 1996, 196 43 802.0

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **9 Claims**

1. An aqueous binder dispersion for physically drying coating agents containing a mixture of:
A) 20–80 wt. % of one or more, carbonate group-containing polyurethanes with a number average molecular weight (Mn) of 70,000 to 500,000, in the form of an aqueous dispersion, obtained by reacting
  a) 10–40 wt. % of one or more organic polyisocyanates that have no hydrophilic groups or groups that will convert into hydrophilic groups,
  b) 40–80 wt. % of one or more high molecular weight organic polyhydroxy compounds that have no hydrophilic groups or groups that will convert into hydrophilic groups, and which comprise at least 50 wt. % of one or more polyhydroxy polycarbonates,
  c) 0.2–18 wt. % of one or more low molecular weight compounds that have at least two groups that will react with isocyanate groups, but have no hydrophilic groups or groups that will convert into hydrophilic groups,
  d) 1–12 wt. % of one or more compounds that have at least one anionic group or at least one group that will convert into an anionic group, and at least one hydrogen atom that will react with isocyanate groups, and
  e) 0–8 wt. % of one or more non-ionic hydrophilic compounds that have at least one isocyanate group or at least one group that will react with isocyanate groups, the sum of the components a) to e) being 100 wt. %.
and
B) 20–80 wt. % of one or more carbonate group-free polyurethane resins containing ionic groups, with a number average molecular weight (Mn) of 10,000 to 300,000 and an acid value of 5 to 50, in the form of an aqueous dispersion obtained by preparing a OH group-containing polyurethane prepolymer with a OH number of 5 to 75 and a number average molecular weight (Mn) of 5,000 to 50,000, by reacting in an organic medium
  f) one or more compounds reactive with isocyanate and having an acid value of 0 to 10, in the form of
    f1) 70 to 100 wt. % of one or more polyester polyols and/or polyether polyols with a molecular weight of 500 to 6,000, together with
    f2) 0 to 30 wt. % of one or more compounds different from f1) having at least two groups reactive with isocyanate, with a molecular weight of 60 to 400, the sum of the components f1) and f2) being 100 wt. %, with
  g) at least one compounds with two groups reactive with isocyanate and at least one anionic group or a group that will form anions, the component g) being able to be used separately or in the form of a reaction product g1) of component g) and one or more organic diisocyanates g2), the molar ratio of the groups of g) reactive with isocyanate groups to the isocyanate groups of g2) being 1:1.5 to 1:2.5, and the reaction product g1) being prepared in the presence of component f), and the component g) or the reaction product g1) being used in such an amount that the prepared polyurethane resins have the desired acid value, and
  h) one or more polyisocyanates with at least two free isocyanate groups per molecule, in such an amount that the molar ratio of the OH groups of component f) to the NCO groups of the components g) and h) is 1.01:1 to 3:1,
following which the prepolymer obtained from f), g) and h) is, before or after the partial or complete neutralisation of existing groups that will convert into ionic groups, subjected to a chain extension in the organic medium or after conversion into the aqueous phase, by reaction with

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- i) one or more polyfunctional isocyanates having a functionality of free NCO groups of at least 1.8, in such proportions that the prepared polyurethane resins have the desired number average molecular weight,

the weight percentages of components A) and B) in each case referring to the resin solids and making up 100%.

5,854,338

AQUEOUS TWO-COMPONENT BINDERS AND THEIR USE IN COATING AND SEALING COMPOSITIONS

Wieland Hovestadt, Krefeld; Lutz Schmalstieg, Köln; Christian Wamprecht, Neuss, and Karl-Ludwig Noble, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 9, 1998, Ser. No. 57,674

Claims priority, application Germany, Apr. 14, 1997, 197 15 427.1

Int. Cl.^{6} C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;83/00*

U.S. Cl. 524—591 **17 Claims**

1. A binder composition for aqueous, two-component polyurethane coating and sealing compositions which comprises

- a) 30 to 90 wt. % of an aqueous, hydroxy- and/or amino-functional resin dispersion and
- b) 10 to 70 wt. % of a curing agent component containing alkoxysilyl groups and having a free isocyanate group content of 10 to 23 wt. % and a viscosity of 50 to 10000 mPa·s at 23° C.,

wherein the molar ratio of the hydroxyl groups of component a) to the isocyanate groups of component b) is 0.5:1 to 2:1.

5,854,339

ADHESIVE COMPOSITION BASED ON NOVOLAC

Maria Boninl, Gustavsberg; Anna Janackovic, Nacka, and Ben Nasli-Bakir, Saltsjö-Boo, all of Sweden, assignors to Casco Nobel AB, Stockholm, Sweden

Continuation of Ser. No. 325,235, Dec. 12, 1994, abandoned. This application Dec. 9, 1996, Ser. No. 761,932

Claims priority, application Sweden, Apr. 24, 1992, 9201298

Int. Cl.^{6} C08K *5/05*

U.S. Cl. 524—595 **9 Claims**

1. An adhesive composition based on resorcinol novolac or resorcinol-phenolic novolac, 35–75% by weight of resorcinol novolac or resorcinol-phenolic novolac, less than 25% by weight of water, and 10–40% by weight of an aliphatic divalent, trivalent or tetravalent alcohol.

5,854,340

BLENDED AROMATIC AND DIETHER CONDENSATION POLYMERIZATION REFLUX SOLVENT

Felipe A. Donate, Midland; Joseph Warren Kappen, Saginaw, and Debra Anne Timmers, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

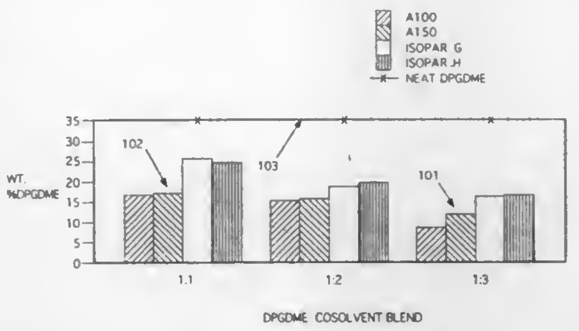
Continuation-in-part of Ser. No. 926,943, Sep. 10, 1997. This application Sep. 24, 1997, Ser. No. 936,211

Int. Cl.^{6} C08K *5/06;* **C08G** *63/78*

U.S. Cl. 524—755 **24 Claims**

1. A condensation polymerization reflux solvent admixture comprising:

- dipropylene glycol dimethyl ether having a weight percentage in said admixture between about 15 percent to about 60 percent; and



- a second fluid which is an aromatic petroleum distillate solvent characterized as having an essential preponderance of aromatic distillates and having a boiling temperature between about 136° C. to about 232° C.

5,854,341

ANTI-FOGGING COATING COMPOSITION, ANTI-FOGGING COATED ARTICLE AND METHOD FOR PRODUCING SAME

Tohru Yamamoto; Shigeo Yoshida, and Hatsumi Ikari, all of Shiga-ken, Japan, assignors to Nakato Laboratory, Inc., Shiga-ken, and Canon Kabushiki Kaisha, Tokyo, both of Japan

Filed Dec. 8, 1995, Ser. No. 569,843

Claims priority, application Japan, Dec. 8, 1994, 6-305210; Nov. 13, 1995, 7-294591

Int. Cl.^{6} C08K *3/20*

U.S. Cl. 524—767 **23 Claims**

1. An anti-fogging coating composition comprising

(a) at least one inorganic alkoxide and/or at least one hydroxyl group-containing polymer formed from said at least one inorganic alkoxide by hydrolysis and polycondensation, said at least one inorganic alkoxide being represented by the general formula (I):

$$M(OR)_n(X)_{a-n} \quad (I),$$

wherein M is an inorganic element selected from the group consisting of Si, Al, Ti, Zr, Ca, Fe, V, Sn, Li, Be, B and P; R is an alkyl group: X is an alkyl group with at least one functional group selected from the group consisting of a carbonyl group, a carboxyl group, an amino group, a vinyl group and an epoxy group, or a halogen atom; a is a number representing a valence of M; and n is an integer from 1 to a;

(b) a polyalkylene oxide;

(c) a basic catalyst;

(d) at least one of polyacrylic acid or a derivative thereof; and

(e) a mixture of a water compatible organic solvent and water.

5,854,342

WATER-BORNE FLUOROELASTOMER COATINGS AND RELATED METHOD

Pavel Kirochko, Dover, and James G. Kreiner, Green, both of Ohio, assignors to Lauren International, Inc., New Philadelphia, Ohio

Filed Dec. 24, 1996, Ser. No. 772,822

Int. Cl.^{6} C08L *27/12*

U.S. Cl. 524—805 **26 Claims**

1. A water-borne fluoroelastomer coating composition comprising:

- an aqueous dispersion of a fluoroelastomer polymer;
- from about 0.1 to about 10 parts by weight of a water soluble, stabilized amino/polyamino-siloxane curative per 100 parts by weight of said polymer; and,

- from 0 to about 40 parts by weight of an additive filler, per 100 parts by weight of said polymer; wherein there is sufficient water to provide a coating composition having a solids content of from about 10 to about 80 percent by weight.

5,854,343

CONTINUOUS PROCESS FOR PREPARING STORAGE-STABLE ORGANOPOLYSILOXANE COMPOSITIONS

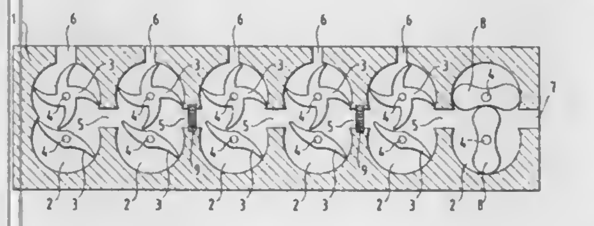
Johann Schuster, Emmerting; Helmut Wöhrl, Aetötting, both of Germany; Johann Mersch, Ach, Austria; Horst Müller, Emmerting, and Peter Webeck, Marktl, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Mar. 3, 1997, Ser. No. 811,096

Claims priority, application Germany, May 2, 1996, 196 17 606.9

Int. Cl.^{6} C08K *3/00;* **C08G** *77/00*

U.S. Cl. 524—847 **20 Claims**



1. A process for preparing organopolysiloxane compositions, which comprises blending and kneading of

(1) organopolysiloxanes having, on average per molecule, at least two radicals bound to silicon, selected from the group consisting of,

- (a) hydrocarbon radicals containing aliphatic carbon-carbon multiple bonds,
- (b) hydrogen atoms and
- (c) hydroxyl groups, and

(2) prehydrophobicized oxidic reinforcing fillers having a carbon content of at least 0.5% by weight, in a kneading machine having at least two kneading chambers which are arranged in series next to one another, each having two axially parallel kneading tools drivable so as to corotate or counterrotate, and communicate with one another via openings through which passage is possible transversely to the axes of the kneading tools, the first kneading chamber having a charging port and the final kneading chamber having a discharge port.

5,854,344

ORGANOPOLYSILOXANE COMPOSITION FOR ELECTRICAL INSULATION

Mikio Shiono; Mitsuaki Igarashi, both of Annaka, and Hironao Fujiki, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1996, Ser. No. 704,866

Claims priority, application Japan, Sep. 1, 1995, 7-248516

Int. Cl.^{6} C08L *83/05;* **C08G** *77/08;* **C08K** *3/36*

U.S. Cl. 524—862 **7 Claims**

1. An essentially unfoamable fluid organopolysiloxane composition for electrical insulation, consisting essentially of a homogeneous mixture of

(A) a fluid organopolysiloxane represented by the general formula (1):

$$(R^1)_a(R^2)_bSiO_{(4-a-b)/2} \quad (1)$$

wherein R^1's each independently represent an unsubstituted or substituted monovalent hydrocarbon group having no aliphatic unsaturated bond, R^2 represents an alkenyl group, a is a number of 1.5 to 2.0, and b is a number of 0.003 to 0.5, provided that a+b=2.00 to 2.07, having 30 to 600 silicon atoms on the average in the molecule, and containing at least two alkenyl groups each bonded to a silicon atom,

(B) a fluid organohydrogenpolysiloxane represented by the general formula (2):

$$(R^3)_cH_dSiO_{(4-c-d)/2} \quad (2)$$

wherein R^3's each independently represent an unsubstituted or substituted monovalent hydrocarbon group having no aliphatic unsaturated bond, c is a number of 1.0 to 2.0, and d is a number of 0.04 to 1.0, provided that c+d=1.1 to 2.5, having 4 to 120 silicon atoms on the average in the molecule, and containing at least two hydrogen atoms each bonded to a silicon atom; the organohydrogenpolysiloxane (B) being contained in such an amount that the number of the hydrogen atoms each bonded to a silicon atom contained in the organohydrogenpolysiloxane (B) is 0.5 to 5 per alkenyl group in the organopolysiloxane (A),

(C) a fluid organopolysiloxane represented by the general formula (3):

$$(R^4)_e(OH)_fSiO_{(4-e-f)/2} \quad (3)$$

wherein R^4's each independently represent a hydrogen atom or an unsubstituted or substituted monovalent hydrocarbon group, e is a number of 1.0 to 2.5, and f is a positive number of 1.0 or less, having 2 to 300 silicon atoms on the average in the molecule, and containing at least one hydroxyl group bonded to a silicon atom; the organopolysiloxane (C) being contained in an amount of 0.01 to 15 parts by weight per 100 parts by weight of the sum of the component (A) and the component (B),

(D) an inorganic filler having an average particle diameter of 1 to 50 μm in an amount of 30 to 350 parts by weight per 100 parts by weight of the sum of the components (A), (B), and (C), and

(E) platinum or a platinum compound in a catalytic amount,

wherein the substituents of said substituted monovalent hydrocarbon are halogen or nitrile.

5,854,345

BIODEGRADABLE POLYESTER AND NATURAL POLYMER COMPOSITIONS AND EXPANDED ARTICLES THEREFROM

Wayne Xu, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and Biotechnology Research & Development Corporation, Peoria, Ill.

Division of Ser. No. 653,635, May 24, 1996, Pat. No. 5,665,786. This application Sep. 4, 1997, Ser. No. 923,186

Int. Cl.^{6} C08G *63/48;* **C08F** *20/00*

U.S. Cl. 525—54.24 **12 Claims**

1. A composition comprising:

- an admixture, the admixture having as the major component a natural polymer and having as a minor component a hydroxy-functional polyester, wherein the hydroxy-functional polyester has repeating units represented by Formula B:
- wherein each of R^1 and R^2 is individually a divalent organic moiety which is predominately hydrocarbon, each R^3 is individually hydrogen or lower alkyl, y is a fraction from 0 to 0.5, and x is a fraction from about 0.05 to about 0.4, the admixture being useful in forming expanded, biodegradable articles.

5,854,346

IMPACT MODIFIER COMBINATION FOR AROMATIC POLYESTERS

Jean-Philippe Gaetan Meyer, 20, Chemin de Camperousse, F06130 Grasse le Plan, France; Didier Michel Leblanc, 4 Fox Ct., Hainesport, N.J. 08060, and Yannick Jean Yvon Chiquet, 69 BD Wilson, 06160 Juan les Pins, France

Division of Ser. No. 622,793, Mar. 27, 1996, Pat. No. 5,652,306. This application Dec. 3, 1996, Ser. No. 757,688

Int. Cl.^{6} C08L *67/02*

U.S. Cl. 525—64 **5 Claims**

1. A toughened blend consisting essentially of an aromatic polyester with from 5 to 20 parts, per 100 parts of polyester, of an impact modifier, which impact modifier is a blend of

- (a) 80 to 85 weight percent of a core/shell impact modifier having
  - (1) from 70 to 90 parts of a core of a rubber which is a homopolymer of butadiene or a copolymer of butadiene with up to about 30% of at least one copolymerized vinyl monomer;
  - (2) at least one shell, which shell is a homopolymer of methyl methacrylate or a copolymer which contains a majority of units derived from either methyl methacrylate or styrene; and
- (b) 15 to 20 weight percent of a linear copolymer which contains from 50 to 85 parts of units derived from ethylene, from 5 to 40 parts of units derived from a C_1–C_8 ester of (meth)acrylic acid, and from 2 to 10 parts of a copolymerizable monomer containing an epoxy group;

wherein the blend contains essentially no polycarbonate,

and wherein the toughened blend exhibits higher impact strength, as measured by a notched Izod test, than would be calculated for the blend using a linear relationship based on values of notched Izod for two blends, each containing only one of the impact modifiers at an equal use level.

5,854,347

POLYMERIC COMPOSITIONS FOR MEDICAL PACKAGING AND DEVICES

Dean Laurin, Round Lake Beach; Angeles Lillian Buan, Crystal Lake; Lecon Woo, Libertyville; Michael T. K. Ling; Yuan Pang Samuel Ding, both of Vernon Hills; William Anderson, Hoffman Estates; Larry A. Rosenbaum, Gurnee; Denise S. Hayward, Mundelein; Joseph P. Hoppesch, McHenry, all of Ill.; Gregg Nebgen, Burlington, Wis., and Stanley Westphal, East Dundee, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 153,823, Nov. 16, 1993. This application Jun. 5, 1995, Ser. No. 463,983

Int. Cl.^{6} C08L *75/00;79/08*

U.S. Cl. 525—66 **9 Claims**

1. A polymer based composition for fabricating into articles for medical applications comprising:

a polypropylene;

a polyolefin selected from the group consisting of an ultra-low density polyethylene, polyethylene, copolymers of ethylene, polybutene-1, and copolymers of butene-1;

wherein the polypropylene and polyolefin together comprise 55% or more by weight of the polymeric composition;

a radio frequency susceptible polymer having a dielectric loss greater than 0.05 at 1–60 MHz and ambient temperature to 250° C., the susceptible polymer being selected from the group consisting of a polyurethane, polyurea, polyimide, and polysulfone;

a compatibilizing polymer conferring compatibility among the polypropylene and the polyolefin and the radio frequency susceptible polymer, the compatibilizing polymer being a styrene and hydrocarbon block copolymer and

wherein the composition has a mechanical modulus of less than 40,000 psi when measured according to ASTM D-882.

5,854,348

Patent Not Issued For This Number

5,854,349

CYCLOOLEFIN COPOLYMER COMPOSITION

Yoshiharu Abe, Waki-cho, and Toshihiro Sagane, Tokyo, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan, and Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

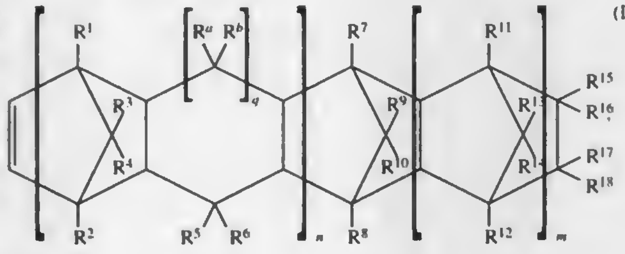
Continuation of Ser. No. 579,012, Dec. 27, 1995, abandoned. This application Apr. 14, 1997, Ser. No. 843,292

Claims priority, application Japan, Dec. 28, 1994, 6-328549

Int. Cl.^{6} C08L *23/16;23/08;53/02;45/00*

U.S. Cl. 525—98 **1 Claim**

1. A cycloolefin copolymer composition (C) obtained by: copolymerizing (a) an α-olefin and (b) a cycloolefin represented by the following formula (I)



(I)

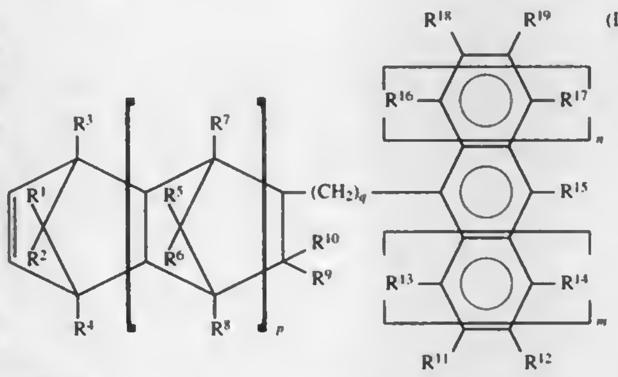
wherein

n is 0 or 1,

m is 0 or a positive integer,

r is 0 or 1,

each of R^1 to R^{18}, R^a and R^b independently represent a hydrogen atom, a halogen atom or a hydrocarbon group, provided that R^{15} to R^{18} may mutually bond to form a monocyclic or polycyclic ring structure which may contain a double bond, and a combination of R^{15} and R^{16} or a combination of R^{17} and R^{18} may form an alkylidene group, or by the following formula (II)



(II)

wherein

each of p and q is 0 or an integer of 1 or greater,

each of m and n is 0, 1 or 2,

each of R^1 to R^{19} independently represents a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an alicyclic hydrocarbon group, an aromatic hydrocarbon group or an alkoxy group, provided that a carbon atom with which R^9 or R^{10} bonds and either a carbon atom with which R^{13} bonds or a carbon atom with which R^{11} bonds may bond with each other directly or through an alkylene group having 1 to 3 carbon atoms and that, when n=m=0, a combination of R^{15} and R^{12} or a combination of R^{15} and R^{19} may mutually bond to form an aromatic monocyclic ring or aromatic polycyclic rings,

in the presence of component (A) a blend of a styrene/(ethylene/propylene)/styrene block copolymer and styrene/butadiene/styrene block copolymer, wherein the weight ratio of said styrene/(ethylene/propylene)/styrene block copolymer to styrene/butadiene/styrene block copolymer is 42/58 to 58/42, the component (A) having an intrinsic viscosity (η), as measured in decalin at 135° C., of 0.5 to 5.0 dl/g, at least one glass transition temperature (Tg), as measured by DSC, of lower than 15° C., polymerizable carbon-to-carbon double bonds in an amount of 2 to 150 (g-iodine/g-polymer) in terms of iodine value, and a refractive index $n_D(A)$, as measured at 25° C., of 1.50 to 1.65; wherein the copolymer composition (C) contains 1 to 40% by weight of the coinponent (A), and a difference Δn_D is not more than 0.015, where Δn_D is $ln_D(A)-n_D(B)$ l, $n_D(A)$ being the refractive index of component (A) and $n_D(B)$ being a refractive index of a cycloolefin copolymer component (B) obtained by copolymerizing said α-olefin (a) and said cycloolefin (b) in the absence of said component (A).

5,854,350

CURABLE RESIN COMPOSITION, COATING COMPOSITION, COATING METHOD AND COATED ARTICLE

Seigo Miyazoe, Takatsuki; Akira Fushimi, Ikoma, and Masanobu Inoue, Nishinomiya, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP95/00618, § 371 Date Nov. 8, 1996, § 102(e) Date Nov. 8, 1996, PCT Pub. No. WO95/27010, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 31, 1995, Ser. No. 718,504

Claims priority, application Japan, Apr. 1, 1994, 6-087523

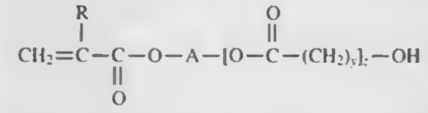
Int. Cl.^{6} C09D *133/06;183/06*

U.S. Cl. 525—100 **19 Claims**

1. A curable resin composition comprising

5 to 80 weight %, based on the nonvolatile matter in the resin composition, of a polymer containing free and esterified carboxyl groups and having an acid value of 50 to 300 mg KOH/g (1e) as obtained by reacting an acid anhydride group-containing polymer (1c), which is obtained by copolymerizing 10 to 40 weight %, based on the total amount of monomers constituting (1e), of an acid anhydride group-containing ethylenically unsaturated monomer (1a) with 90 to 60 weight %, based on the total amount of monomers constituting (1e), of a copolymerizable other ethylenically unsaturated monomer (1b), with a monohydric alcohol of 1 to 12 carbon atoms (1d) in the ratio (the number of mols of acid anhydride group in acid anhydride-containing polymer (1c))/(the number of mols of hydroxyl group in monohydric alcohol (1d)) of 1/10 to 1/1,

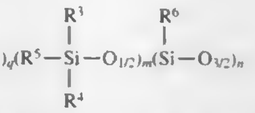
1 to 80 weight %, based on the nonvolatile matter in the resin composition, of a hydroxyl group- and epoxy group-containing polymer having an epoxy equivalent of 200 to 1000 and a hydroxyl equivalent of 250 to 1500 (2d) as obtained by copolymerizing 5 to 60 weight %, based on the total amount of monomers constituting (2d), of a hydroxylalkyl (meth) acrylate monomer (2a) of the general formula (1):



$$CH_2{=}\overset{\overset{R}{|}}{C}-\underset{\underset{O}{\|}}{C}-O-A-[O-\overset{\overset{O}{\|}}{C}-(CH_2)_y]_z-OH \qquad (1)$$

wherein R represents hydrogen or methyl; A represents a straight-chain or branched alkylene group of 2 to 8 carbon atoms; y represents a whole number of 3 to 7; z represents a whole number of 0 to 4; with 10 to 60 weight %, based on the total amount of monomers constituting (2d), of an epoxy group-containing ethylenically unsaturated monomer (2b) and 0 to 85 weight %, based on the total amount of monomers constituting (2d), of an ethylenically unsaturated monomer (2c) copolymerizable therewith, and

1 to 50 weight %, based on the nonvolatile matter in the resin composition, of an epoxy group- and alkoxyl group-containing silicone polymer (3a) of the general formula (II):



$$(\underset{R^2}{\overset{R^1}{Si}}-O)_q(R^5-\underset{R^4}{\overset{R^3}{Si}}-O_{1/2})_m(\overset{R^6}{Si}-O_{3/2})_n \qquad (II)$$

wherein R^1, R^2, R^3, R^4, R^5, and R^6 are the same or different and each represents alkyl of 1 to 10 carbon atoms, phenyl, phenethyl. alkoxyl of 1 to 5 carbon atoms, R^7-$Si(OR^8)_3$, R^7-$Si(OR^8)_2CH_3$, R^7-$Si(OR^8)(CH_3)_2$. or R^7-Y; R^7 represents a straight-chain or branched alkylene group which may have an ether bond and/or an ester bond; R^8 represents alkyl of 1 to 5 carbon atoms; Y represents an epoxy group-containing acyclic or cyclic hydrocarbon residue; q represents a whole number of 1 to 20, m represents a whole number of 0 to 4, n represents a whole number of 0 to 2; the order of the parenthesized groups occurring in q, m and n repetitions are random and not restricted to the formula shown,

wherein the molar ratio of the carboxyl group contained in said polymer containing free and esterified carboxyl groups (1e) to the epoxy group contained in said hydroxyl group- and epoxy group-containing polymer (2d) and the epoxy group contained in said epoxy group- and alkoxyl group-containing silicone polymer (3a), carboxyl group/epoxy group ration is 1/1.6 to 1/0.6.

5,854,351

RADIO FREQUENCY HEATING OF TRANS-1, 4-POLYBUTADIENE

Thomas Robert Maier, Brecksville; Bruce Raymond Hahn, Hudson, and Brian John Doucet, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 20, 1997, Ser. No. 879,350

Int. Cl.^{6} C08L *23/26*

U.S. Cl. 525—197 **22 Claims**

1. A process for heating trans-1,4-polybutadiene to a temperature at which it can be processed without causing oxidative gelation which comprises heating the trans-1,4-polybutadiene by exposing it to electromagnetic radiation having a frequency in the range of about 2 MHz to about 80 MHz, wherein the trans-1,4-polybutadiene is oil-extended with at least 10 phr of a processing oil.

5,854,352

MELT FRACTURE REDUCTION

P. Scott Chisholm; Tony Tikuisis; Shivendra Kumar Goyal; Douglas Checknita, and Nick Klaus Kurt Bohnet, all of Calgary, Canada, assignors to Nova Chemical Ltd., Calgary, Canada

Filed Feb. 21, 1997, Ser. No. 803,319

Claims priority, application Canada, Mar. 1, 1996, 2170789

Int. Cl.^{6} C08L *27/12*

U.S. Cl. 525—199 **5 Claims**

1. An extrudable composition comprising:

A) a major component of a thermoplastic polyolefin; and

B) less than 1 weight percent, based on the weight of said thermoplastic polyolefin, of a premixed blend of a fluorocarbon polymer and an acrylic-containing thermoplastic polymer said acrylic-containing thermoplastic polymer comprising a copolymer of from about 45 to about 80 weight percent of bound styrene and from about 20 to about 55 weight percent of bound methyl methacrylate.

5,854,353

THERMOPLASTIC MOLDING COMPOUND

Konrad Knoll, Ludwigshafen, and Hermann Gausepohl, Mutterstadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/02072, § 371 Date Dec. 16, 1996, § 102(e) Date Dec. 16, 1996, PCT Pub. No. WO95/34586, PCT Pub. Date Dec. 21, 1995

PCT Filed May 31, 1995, Ser. No. 750,635

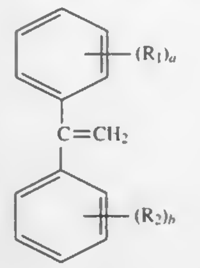
Claims priority, application Germany, Jun. 16, 1994, 44 20 917.7; Oct. 13, 1994, 44 36 499.7

Int. Cl.^{6} C08F *293/00*

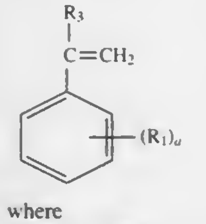
U.S. Cl. 525—314 **8 Claims**

1. A thermoplastic molding, composition of

A) from 10 to 100% by weight of a copolymer consisting essentially of the monomers of the general formulae I and II



I



II

where

R_1 is H or alkyl of 1–22 carbon atoms,
R_2 is H or alkyl of 1–22 carbon atoms,
R_3 is H or alkyl of 1–4 carbon atoms,
a is 0, 1, 2, 3, 4 or 5, and
b is 0, 1, 2, 3, 4 or 5

as obtained by providing the monomers of the formula (I) as initial charge and metering in the monomers of the formula II during the reaction according to a gradient method such that, as the reaction progresses, the amount of monomer (II) added per unit time is essentially reduced according to the amount of monomer (I) still present;

B) from 0 to 3000 ppm, based on the weight of component a, of compounds of the general formula I;

C) from 0 to 500 ppm, based on the weight of component A, of compounds of the general formula II;

D) from 0 to 90% by weight, based on the total weight of the molding compound, of polymers other than A); and

E) from 0 to 50% by weight, based on the total weight of the molding compound, of additives and processing aids.

5,854,354

PROCESS FOR PREPARING PROPYLENE POLYMER COMPOSITION AND PROPYLENE POLYMER COMPOSITION

Takashi Ueda; Mikio Hashimoto; Masaaki Kawasaki; Daisuke Fukuoka, and Junichi Imuta, all of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP95/00707, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/27740, PCT Pub. Date Oct. 19, 1995

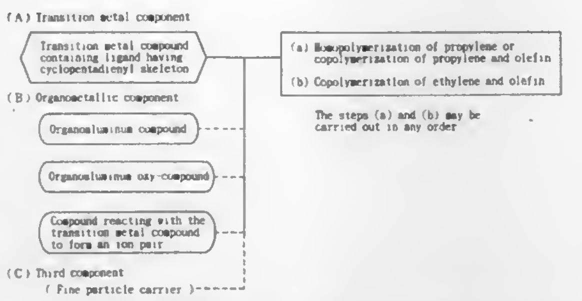
PCT Filed Apr. 11, 1995, Ser. No. 448,570

Claims priority, application Japan, Apr. 11, 1994, 6-072273

Int. Cl.^{6} C08F *297/08*

U.S. Cl. 525—322 **16 Claims**

1. A process for preparing a propylene polymer composition, comprising:


(A) Transition metal component
Transition metal compound containing ligand having cyclopentadienyl skeleton
(B) Organometallic component
Organoaluminum compound
Organoaluminum oxy-compound
Compound reacting with the transition metal compound to form an ion pair
(C) Third component
(Fine particle carrier)
(a) Homopolymerization of propylene or copolymerization of propylene and olefin
(b) Copolymerization of ethylene and olefin
The steps (a) and (b) may be carried out in any order

conducting multistage polymerization including the following steps (a) and (b) in the presence of

(A) a transition metal compound containing a ligand having a cyclopentadienyl skeleton and

(B) a compound activating the transition metal compound (A),

in which the steps (a) and (b) may be carried out in any order, and the second stage polymerization is carried out in the presence of a polymer obtained by the first stage polymerization to produce a propylene polymer composition comprising 20 to 90% by weight of a propylene (co)polymer (a) obtained in the step (a) and 10 to 80% by weight of an ethylene copolymer (b) obtained in the step (b), said composition having a melt flow rate, as measured at 230° C. under a load of 2.16 kg, of 0.01 to 500 g/10 min;

the step (a):

(i) homopolymerizing propylene or (ii) copolymerizing propylene and at least one olefin selected from ethylene and olefins of 4 to 20 carbon atoms to prepare a propylene (co)polymer (a) comprising not less than 80 mol % of constituent units derived from propylene, said propylene (co)polymer (a) having a melting point, as measured by a differential scanning calorimeter, of not lower than 100° C. and a melt flow rate, as measured at 230° C. under a load of 2.16 kg, of 0.01 to 1,000 g/10 min;

the step (b):

copolymerizing ethylene and at least one olefin selected from olefins of 4 to 20 carbon atoms to prepare an ethylene copolymer (b) comprising more than 50 mol % of constituent units derived from ethylene, said ethylene copolymer (b) having an intrinsic viscosity [η] as measured in decalin at 135° C., of 0.1 to 20 dl/g.

5,854,355

CONTINUOUS PROCESS FOR PREPARATION OF HIGHLY RIGID PROPYLENE-ETHYLENE BLOCK COPOLYMERS

Takahiro Oka; Shunji Kawazoe, and Yasuhiro Yamane, all of Chiba, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 623,077, Mar. 28, 1996, abandoned. This application Sep. 15, 1997, Ser. No. 929,052

Claims priority, application Japan, Apr. 24, 1995, 7-123065

Int. Cl.^{6} C08F *29/08*

U.S. Cl. 525—323 **11 Claims**

1. A continuous process for preparation of highly rigid propylene-ethylene block copolymers comprising the steps of:

(1) continuously feeding propylene, optionally containing up to 5% of ethylene by weight, to a catalyst in a first stage polymerization (FS) to prepare 60 to 95% of a propylene block based on the total weight of the final copolymer, provided that the melt flow rate (MFR) of the propylene block is controlled to give the relationship: $0.1 \leqq \text{Log}(\text{MFR(maximum)}/\text{MFR(minimum)}) \leqq 1$, wherein the catalyst comprises:

(A) a solid catalyst comprising titanium, magnesium, a halogen and a polyvalent carboxylic acid ester,

(B) an organic aluminum compound, and

(C) an organic silicon component of the formula $R^4{}_xR^5{}_ySi(OR^6)_z$, wherein R^4 and R^6 are hydrocarbon groups, R^5 is a hydrocarbon group, or a hydrocarbon group containing one or more heteroatom selected from the group consisting of oxygen, nitrogen, phosphorus, or silicon and $x+y+z=4$, $0 \leqq x \leqq 2$, $1 \leqq y \leqq 3$ and $1 \leqq z \leqq 3$;

(2) continuously feeding (i) a glycol compound in an amount of from 1 to 100 of the glycol compound/Ti (mole/atom) based on the titanium in the solid catalyst (A) and (ii) ethylene, containing 1–10% propylene by weight, to the first stage polymerization of step (1) to prepare 5 to 40% of an ethylene block based on the total weight of the final copolymer in a second stage polymerization (SS), wherein the glycol compound has the formula $R^1—(O—CH_2—C(R^3)H—)_n—OR^2$, wherein n is $3 \leqq n \leqq 100$, R^1 and R^2 are hydrogen atoms, or a monovalent organic group of 1 to 20 carbon atoms, or a monovalent organic group of 1 to 20 carbon atoms containing one or more heteroatom of oxygen, nitrogen, phosphorus, sulfur, or silicon, wherein R^1 and R^2 may be identical or different and R^3 is a hydrogen atom or a monovalent organic group having from 1 to 5 carbon atoms.

5,854,356

POLYMERS FOR RELEASE FILMS ON SURFACES CONTAINING PRESSURE-SENSITIVE ADHESIVES

Christer Bergstrom, Espoo; Stefan Jakobsson, Pietarsaari; Marja-Leena Markkula, Ostersundom; Ake Jafs, Pietarsaari, and Inari Seppa, Porvoo, all of Finland, assignors to Neste Oy, Espoo, Finland

Continuation-in-part of Ser. No. 104,177, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 781,980, Oct. 24, 1991, abandoned. This application May 24, 1995, Ser. No. 449,775

Claims priority, application France, Oct. 29, 1990, 90 5345

Int. Cl.^{6} C08F *8/00;* **C08L** *43/00*

U.S. Cl. 525—326.5 **15 Claims**

1. A polymer prepared by the process comprising reacting in a molten state:

(a) a copolymer selected from the group consisting of ethylene-acrylic acid, ethylene-methacrylic acid, ethylene-butyl acrylate, ethylene-ethyl acrylate, ethylene-methyl acrylate, ethylene-hydroxyethyl methacrylate, ethylene-hydroxyethyl acrylate, ethylene-glycidyl methacrylate, ethylene-vinyl alcohol and ethylene-vinyl trimethoxy silane; and

(b) a reactive release substance selected from the group consisting of silicone containing glycidyl groups, silicone containing hydroxyl groups and silicone containing amino groups.

5,854,357

PROCESS FOR THE PRODUCTION OF POLYHYDROXSTYRENE

Mitsuru Sato, Yokohama; Kazuyuki Nitta, Kanagawa; Akiyoshi Yamazaki, Yokohama; Etsuko Iguchi, Machida; Yoshika Sakai, Atsugi; Kazufumi Sato, Sagamihara, and Toshimasa Nakayama, Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Continuation of Ser. No. 625,931, Apr. 1, 1996, Pat. No. 5,736,296, and a continuation-in-part of Ser. No. 422,950, Apr. 17, 1995, abandoned, and Ser. No. 498,185, Jul. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 422,950. This application Feb. 9, 1998, Ser. No. 20,411

Claims priority, application Japan, Apr. 25, 1994, 6-107492; May 24, 1994, 6-132449; Oct. 27, 1994, 6-286168; Oct. 27, 1994, 6-286169; Jan. 26, 1995, 6-28925

Int. Cl.^{6} C08F *8/00*

U.S. Cl. 525—359.3 **5 Claims**

1. A process for producing a polyhydroxystyrene having hydroxyl groups partly substituted with alkoxyalkoxy groups, which comprises dissolving a polyhydroxystyrene in an organic polar solvent, and reacting the resultant polyhydroxystyrene with a 1-halogeno-1-alkoxyalkane in the presence of an alkaline catalyst.

5,854,358

POLYMERIZING MONOMERS IN PRESENCE OF POLYOL AND CASTOR OIL-POLYOL PRODUCT

Torsten Heinemann; Hans-Joachim Scholl, both of Köln; Manfred Dietrich, Leverkusen; Gundolf Jacobs, Rösrath; Mark Kratz, Krefeld; Josef Sanders, Leverkusen, and Helmut Woynar, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 16, 1996, Ser. No. 682,063

Claims priority, application Germany, Jul. 24, 1995, 195 26 921.7

Int. Cl.^{6} C08G *18/04;63/06;65/48*

U.S. Cl. 525—404 **10 Claims**

1. A process for the preparation of stable, low-viscosity graft copolymer dispersions by the free-radical polymerization of a reaction mixture in the presence of a free-radical catalyst, wherein said reaction mixture comprises:

1) at least one ethylenically unsaturated monomer,

2) at least one base polyol having at least two hydroxyl groups, and

3) at least one modified hydroxyl group containing compound which is prepared by reacting a) castor oil with b) a polyol in a molar ratio of 1.1:1 to 10:1.

5,854,359

PROCESS FOR MAKING POLYETHERESTER RESINS HAVING HIGH AROMATIC DIESTER CONTENT

Lau S. Yang, Wilmington, Del., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Feb. 18, 1998, Ser. No. 25,608

Int. Cl.^{6} C08F *20/00;* **C08G** *63/66;* **C08J** *11/04*

U.S. Cl. 525—444 **21 Claims**

1. A method of making a polyetherester resin comprised of aromatic diester repeating units comprising reacting a glycol ester of an aromatic diacid, a polyether and a dicarboxylic acid source at a temperature and in the presence of a catalyst effective to accomplish insertion of the aromatic diacid and the dicarboxylic acid source into the polyether to form the polyetherester resin.

5,854,360

CURABLE COMPOSITION

Shunji Matsunaga, and Tetsuo Itoh, both of Kyoto, Japan, assignors to Sanyo Chemical Industries Ltd., Kyoto, Japan

PCT No. PCT/JP95/02173, § 371 Date Jun. 18, 1996, § 102(e) Date Jun. 18, 1996, PCT Pub. No. WO96/12748, PCT Pub. Date May 2, 1996

PCT Filed Oct. 20, 1995, Ser. No. 663,061

Claims priority, application Japan, Oct. 21, 1994, HEI6-282549

Int. Cl.^{6} C08G *18/00*

U.S. Cl. 525—452 **19 Claims**

1. A curable composition which comprises

(A) a blocked polyisocyanate compound,

(B) an active hydrogen compound having at least 2 active hydrogen atom-containing groups in the molecule, and

(C) a catalyst expressed by the following general formula (1),

$$(R_1, R_2, R_3, R_4)N^+Y^- \qquad (1)$$

wherein R_1, R_2, R_3, and R_4 denote hydrocarbon groups of 1 to 18 carbon atoms which are nonreactive to isocyanates and may be the same or different, and said groups may form one or more heterocyclic rings via an oxygen or nitrogen atom, and Y^- denotes an anion of a hydroxide, an alkoxide, an aryloxy or a carbonate; or an anion of a carboxylate, a sulfonate, a phosphate or a borate which may contain a hydrocarbon group.

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5,854,361
PROCESS FOR PREPARING PHOSPHORUS-MODIFIED EPOXY RESINS

Sebastian Hörold, Erftstadt, and Hans-Peter Schmitz, Brühl, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

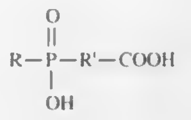
Filed Mar. 27, 1997, Ser. No. 827,433

Claims priority, application Germany, Apr. 1, 1996, 196 13 066.2

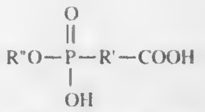
Int. Cl.^{6} C08G *59/16;* **C08K** *5/07*

U.S. Cl. 525—533 **14 Claims**

1. A process for preparing soluble and/or meltable, phosphorous-modified epoxy resins, which comprises reacting a polyepoxide compound having at least 2 epoxide groups per molecule with carboxyl-containing phosphinic or phosphonic acids of the formula (I) or (II)



$$R-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-R'-COOH \qquad (I)$$



$$R''O-\overset{\overset{O}{\|}}{\underset{\underset{OH}{|}}{P}}-R'-COOH \qquad (II)$$

in which R is a linear or branched alkyl, cycloalkyl, aryl or alkylaryl group having 1 to 18 carbon atoms or is hydrogen. R' is a linear or branched alkylene, cycloalkylene or alkylarylene group having 1 to 18 carbon atoms and R" is a linear or branched alkyl, cycloalkyl, aryl or alkylaryl group having 1 to 18 carbon atoms.

5,854,362
SUPPORTED BISCYCLOPENTADIENYL METAL COMPLEXES

Peter N. Nickias, Midland, Mich., and Lee Spencer, Pearland, Tex., assignors to The Dow Chemical Company, Midland, Mich.

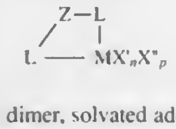
Filed Dec. 11, 1995, Ser. No. 570,261

Int. Cl.^{6} C08F *4/645*

U.S. Cl. 526—130 **8 Claims**

1. A supported catalyst for use in polymerizing addition polymerizable monomers comprising:

1) a metal complex corresponding to the formula:



$$\begin{array}{l} \quad Z-L \\ \ / \qquad | \\ L \text{——} MX'_nX''_p \end{array}$$

or a dimer, solvated adduct, chelated derivative or mixture thereof, wherein:

L independently each occurrence is a group that is bound to M via a delocalized, π-bond, said L containing up to 50 nonhydrogen atoms;

M is a metal of Group 3, 4 or the Lanthanide series of the Periodic Table of the Elements;

Z is a covalently bound, divalent substituent of up to 50 non-hydrogen atoms having the formula, $—(ER^*_2)_m—$, wherein E independently each occurrence is carbon, silicon or germanium, R* independently each occurrence is selected from the group consisting of C_{1-20} hydrocarbyl, and C_{1-20} hydrocarbyloxy, with the proviso that in at least one occurrence R* is C_{1-20} hydrocarbyloxy, and m is an integer from 1 to 3;

X' is a neutral Lewis base ligand having up to 20 non-hydrogen atoms;

X" independently each occurrence is a monovalent, anionic moiety selected from hydride, halo, hydrocarbyl, silyl, germyl, hydrocarbyloxy, amide, siloxy, halohydrocarbyl, halosilyl, silylhydrocarbyl, and aminohydrocarbyl having up to 20 non-hydrogen atoms, or two X" groups together form a divalent hydrocarbadiyl or neutral hydrocarbon group;

n is a number from 0 to 3; and

p is an integer from 0 to 2

2) an activating cocatalyst, and

3) an aluminum or silicon- containing substrate containing hydroxyl, —(Si—R)=, or —(Si—Cl)= functionally wherein R is C_{1-10} hydrocarbyl, with the proviso that the surface hydroxyl content of a hydroxyl functionalized substrate is less than 0.8 mmol/g:

or

an aluminum or silicon containing substrate that has been treated with an aluminum component selected from the group consisting of alumoxane and aluminum compounds of the formula $AlR'_xR^2_{y'}$, wherein R' independently each occurrence is hydride or R, R^2 is hydride, R or OR, x' is 2 or 3, y' is 0 or 1 and the sum of x' and y' is three,

said complex being chemically bound to the substrate by reaction of the hydrocarbyloxy functionality thereof with aluminum or silicon atoms or hydroxyl, silane or chlorosilane functionality of the substrate.

5,854,363
(OMEGA-ALKENYL) (CYCLOPENTACARBYL) METALLOCENE COMPOUNDS

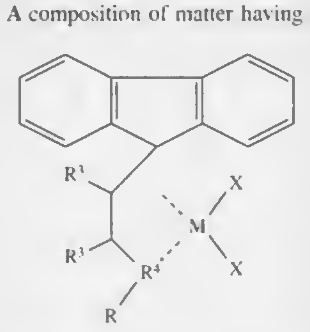
Michael Jung; Helmut G. Alt, both of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 781,157, Jan. 8, 1997, abandoned. This application Nov. 24, 1997, Ser. No. 980,696

Int. Cl.^{6} C08F *4/44;110/02;* **C07F** *17/00*

U.S. Cl. 526—160 **40 Claims**

1. A composition of matter having the following formula



wherein M is a transition metal selected from group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, and the lanthanides; and

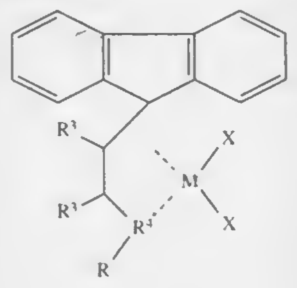
wherein X is a alkyl, aryl, alkoxy, aryloxy, amide, hydride, or halogen; and

wherein R is an $(R^1)_2C{=}C(R)—(C(R^1)_2)_n—C(R^1)_2—$ group, and wherein n is from 0 to about 20, and wherein each R^1 can be a hydrocarbyl having from 1 to about 20 carbon atoms; and

wherein R^3 can be hydrogen, alkyl, aryl, alkoxy, and aryloxy; and

wherein R^4 is a cyclopentacarbyl group.

14. A process of using a composition of matter having the following formula



wherein M is a transition metal selected from group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, and the lanthanides; and

wherein X is a alkyl, aryl, alkoxy, aryloxy, amide, hydride, or halogen; and

wherein R is an $(R^1)_2C{=}C(R^1)—(C(R^1)_2)_n—C(R^1)_2—$ group, and wherein n is from 0 to about 20, and wherein each R^1 can be a hydrocarbyl having from 1 to about 20 carbon atoms; and

wherein R^3 can be hydrogen, alkyl, aryl, alkoxy, and aryloxy; and

wherein R^4 is a cyclopentacarbyl group;

as a catalyst to polymerize monomers into polymers.

5,854,364
PROCESS FOR THE CONTROLLED RADICAL POLYMERIZATION OR COPOLYMERIZATION OF (METH) ACRYLIC, VINYL, VINYLIDENE AND DIENE MONOMERS, AND (CO) POLYMERS OBTAINED

Thierry Senninger, Hayange; Laurent Sanchez, Pau; Vincent Darcos, St. Loubert; Dominique Lastecoueres, St. Radegonde, and Jean-Baptiste Verlhac, Talence, all of France, assignors to Elf Atochem S.A., France

Filed Jun. 27, 1997, Ser. No. 884,087

Claims priority, application France, Dec. 26, 1996, 96 16049

Int. Cl.^{6} C08F *4/44;20/10;12/08;14/06;36/00;14/18*

U.S. Cl. 526—192 **20 Claims**

1. A process for the controlled radical polymerization or copolymerization of (meth)acrylic and/or vinyl and/or vinylidene and/or diene monomers, characterized in that least one of the said monomers is polymerized or copolymerized in bulk, solution, emulsion or suspension at in the presence of an initiator system comprising:

at least one radical-generator compound; and

at least one catalyst consisting essentially of a metal complex represented by formula (I) below:

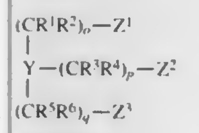
$$MA_a(L)_n \qquad (I)$$

in which:

M represents Cu, Ag or Au;

A represents a halogen, a pseudohalogen or a carboxylate group;

the groups L are ligands of the metal M which are chosen independently from those represented by formula (II) below:



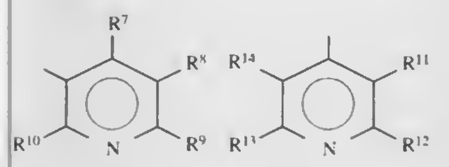
$$\begin{array}{l} (CR^1R^2)_o-Z^1 \\ | \\ Y-(CR^3R^4)_p-Z^2 \\ | \\ (CR^5R^6)_q-Z^3 \end{array} \qquad (II)$$

in which:

Y represents N or P;

R^1, R^2, R^3, R^4, R^5 and R^6 each independently represent a hydrogen atom, a C_1–C_{10} alkyl group, an aromatic group or a heteroaromatic group;

Z^1, Z^2 and Z^3 each independently represent one of the following:



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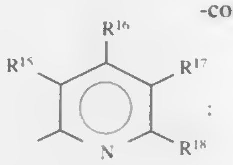

$—NR^{19}R^{20}$

where:

the radicals R^7 to R^{18} each independently represent a hydrogen atom, a C_1–C_{10} alkyl group, an aromatic group or a heteroaromatic group; and

R^{19} and R^{20} each independently represent a hydrogen atom, a halogen atom, a C_1–C_{10} alkyl radical, a C_1–C_{10} alkoxy radical or a radical $—(CR^{21}R^{22})_rNR^{23}R^{24}$, where R^{21}, R^{22}, R^{23} and R^{24} each independently represent a hydrogen atom, a C_1–C_{10} alkyl group, an aromatic group or a heteroaromatic group, and r is an integer from 1 to 10;

it being also possible for not more than two from among Z^1, Z^2 and Z^3 each to represent a hydrogen atom;

o, p and q each independently represent an integer from 1 to 10, and may also represent 0 except if the associated residue Z^1, Z^2 or Z^3, respectively, represents $—NR^{19}R^{20}$;

a is 1 or 2;

n is 1, 2 or 3.

5,854,365
TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND METHOD OF MANUFACTURING RESIN COMPOSITION

Manabu Ohno, Funabashi; Akihiko Nakazawa, Kanagawa-ken; Nobuyuki Okubo, Yokohama; Shunji Suzuki, Yokohama; Hiroyuki Suematsu, Yokohama, and Masayoshi Kato, Iruma, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 182,387, Jan. 18, 1994, Pat. No. 5,489,498. This application Dec. 19, 1995, Ser. No. 575,142

Claims priority, application Japan, Jan. 20, 1993, 023469; Mar. 31, 1993, 095004

Int. Cl.^{6} C08F *4/38*

U.S. Cl. 526—228 **3 Claims**

1. A process for producing a resin composition, comprising the steps of:

(a) reacting a mixture of a polymerizable monomer and a cross-linking monomer in the presence of a polyfunctional polymerization initiator and a monofunctional polymerization initiator to produce a high molecular weight polymer having a weight average molecular weight of 1,200,000 or more;

(b) dissolving or dispersing said high molecular weight polymer, a low molecular weight polymer having a weight average molecular weight of 30,000 or less and a low molecular weight wax having a weight average molecular weight of 30,000 or less in an organic solvent; and

(c) removing said organic solvent from the resultant mixture to obtain a resin composition (i) which does not substantially contain insoluble tetrahydrofuran (THF) component, (ii) which provides a GPC chromatograph measured of a soluble tetrahydrofuran (THF) component with a main peak in a region of a weight average molecular weight of 2,000 to 30,000 and a subpeak or a shoulder in a high molecular weight region of a weight average molecular weight of 100,000 or more, and (iii) which has a ratio of weight average molecular weight (Mw)/number average molecular weight (Mn) of 30 or more.

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5,854,366

STYRENE BASE RANDOM COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Satoshi Nakagawa, Sodegaura; Shuji Yoshimi, and Hayato Kihara, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 12, 1996, Ser. No. 744,143

Claims priority, application Japan, Nov. 10, 1995, 7-292740

Int. Cl.^{6} C08F *212/36;212/08*

U.S. Cl. 526—336 **9 Claims**

1. A process for producing a styrene based random copolymer by continuous bulk polymerization, which process comprises subjecting a monomer mixture comprising a monovinylbenzene and a divinylbenzene to continuous bulk polymerization, the monomer mixture comprising the divinylbenzene being present in an amount of 50 to 500 ppm by weight based on the weight of the monovinylbenzene, the divinylbenzene consisting of p-divinylbenzene and m-divinylbenzene, wherein the weight ratio between the p-divinylbenzene and the m-divinylbenzene is in the range of 100:0 to 75:25.

5,854,367

PROCESS FOR CATIONIC POLYMERIZATION

Jacques Salvetat, La Crêche, and Annick Debrésie, Domont, both of France, assignors to Arizona Chemical Company, Panama City, Fla.

Filed Sep. 26, 1996, Ser. No. 721,554

Int. Cl.^{6} C08F *12/08;4/14*

U.S. Cl. 526—347.1 **40 Claims**

1. A process for polymerizing monomer which comprises dissolving monomer selected from the group consisting of vinyl aromatic monomers, dicyclopentadiene compounds, terpene compounds, ethylene, isobutylene, vinyl ether monomers and mixtures of two or more of the foregoing in an organic solvent, providing in the solvent a catalyst complex consisting essentially of an ester of an unsaturated carboxylic acid and a Lewis acid, and reacting the monomer in the solvent containing the catalyst complex at a temperature ranging from about 5° to about 50° C. to produce a polymeric resin thereof having a softening point above about 125° C., a number average molecular weight in the range of from about 1100 to about 4000 and a polydispersity index of from about 2.0 to about 4.5.

35. A processing aid for thermoplastic polymers which is made by dissolving styrene and/or alpha-methylstyrene in an organic solvent containing 2-ethylhexyl acrylate or butyl acrylate and contacting the solution with gas-phase boron trifluoride to cause in situ formation of a catalyst complex of the boron triflouride and acrylate and reacting the monomer in the presence of the catalyst complex to provide the processing aid which exhibits a ring and ball softening point above about 125° C. and a polydispersity index above about 2.0.

5,854,368

ADJUVANT FOR PHARMACEUTICAL PREPARATIONS

Koji Iritani; Tetsuya Kawasaki, both of Hyogo; Nobutaka Tani, Osaka; Shigeki Masuda, and Yoshiaki Yano, both of Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

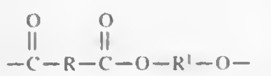
Continuation of Ser. No. 977,100, Nov. 16, 1992, Pat. No. 5,644,012. This application Dec. 30, 1996, Ser. No. 774,492

Claims priority, application Japan, Nov. 15, 1991, 3-300395; Nov. 26, 1991, 3-310873

Int. Cl.^{6} C08G *63/668*

U.S. Cl. 527—311 **10 Claims**

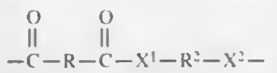
1. A copolymer which comprises at least two structural units of the following formula (I'):



$$-\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-O-R^1-O- \qquad (I')$$

wherein R is a divalent organic group and R^1 is an oligosaccharide, wherein said oligosaccharide is unsubstituted or substituted with a moiety consisting of an acyl group, and has 2–10 saccharide residues, and is hydrolyzed and/or assimilated in the large intestine; and

at least one structural unit of the following formula (II):



$$-\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-X^1-R^2-X^2- \qquad (II)$$

wherein R is a divalent organic group, each of X^1 and X^2 is independently an oxygen atom, an imino group or a sulfur atom and R^2 is selected from the group consisting of a saturated hydrocarbon having 2 to 20 carbon atoms, an unsaturated hydrocarbon having 4 to 20 carbon atoms, a polyalkylene, a polyalkylene glycol, a polyarylene oxide, a polyester and a polyamide when simultaneously R is phenylene and R^1 has 2 saccharide residues, the ratio of I':II in the copolymer is greater than 10:90.

5,854,369

MONODISPERSE SOLUBLE ORGANOPOLYSILOXANE PARTICLES

Michael Geck; Bernward Deubzer, both of Burghausen; Manfred Schmidt, Bodenheim, and Frank Baumann, Mehring, all of Germany, assignors to Wacker-Chemie GmbH, Germany

Filed Apr. 25, 1996, Ser. No. 638,060

Claims priority, application Germany, May 26, 1995, 195 19 446.2

Int. Cl.^{6} C08G *77/38;77/22;77/14*

U.S. Cl. 528—30 **4 Claims**

1. Crosslinked organopolysiloxane particles where each particle is a single molecule, comprising:

0.5 to 80.0% by weight of units of the formula

$$R_3SiO_{1/2} \qquad (1),$$

0 to 99.0% by weight of units of the formula

$$R_2SiO_{2/2} \qquad (2),$$

0 to 99.5% by weight of units of the formula

$$RSiO_{3/2} \qquad (3),$$

0 to 80.0% by weight of units of the formula

$$SiO_{4/2} \qquad (4)$$

and

0 to 20.0% by weight of units of the formula

$$R_aSi(O_{(3-a)/2})-R^1-X-(R^1-Si(O_{(3-a)/2}))_bR_a \qquad (5),$$

where

R is a hydrogen atom or identical or different, monovalent SiC-bonded, optionally substituted C_1 to C_{18}-hydrocarbon radical,

R^1 is an identical or different divalent, optionally substituted C_1 to Ch_{18}-hydrocarbon radical, which is optionally interrupted by divalent radicals from the group consisting of —O—, —COO—, —OOC—, —CONR^{2-}, —NR^{2}CO— and —CO— bonded to carbon atoms on each side,

R^2 is a hydrogen atom or a radical R,

X is a radical selected from the group consisting of —N=N—, —O—O—, —S—S— and —C(C_6H_5)$_2$—C(C_6H_5)$_2$—,

a has a value of 0, 1 or 2 and

b has a value of 0 or 1,

with the proviso that the sum of the units of formulae (3) and (4) is at least 0.5%, the percent by weight is based on the total weight of the particle and where at least 80% of the particles have a diameter which does not deviate from an average diameter of 5 to 200 nm by more than 30% and the particles are soluble in a solvent in an amount of at least 5% by weight.

5,854,370

EPOXY RESIN STILBENES AND PROCESS FOR PRODUCING THE SAME BY PHOTOISOMERIZATION

Akira Yokota; Yasuhiro Hirano; Masatsugu Akiba; Hiroshi Nakamura, and Shigeki Naitoh, all of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 657,363, Jun. 3, 1996, Pat. No. 5,705,596. This application May 27, 1997, Ser. No. 863,300

Claims priority, application Japan, Jun. 2, 1995, 7-136760

Int. Cl.^{6} C07D *303/24;* **C08G** *59/24*

U.S. Cl. 528—101 **10 Claims**

1. A process comprising the step of photoisomerizing an epoxy resin containing stilbene linkages, wherein said photoisomerization results in a cis-isomer content in the epoxy resin of at least about 10% by mole.

5,854,371

PHOSPHORUS-MODIFIED EPOXY RESIN MIXTURES COMPRISING EPOXY RESINS, PHOSPHORUS-CONTAINING COMPOUNDS AND A CURING AGENT

Sebastian Hörold, Erftstadt, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

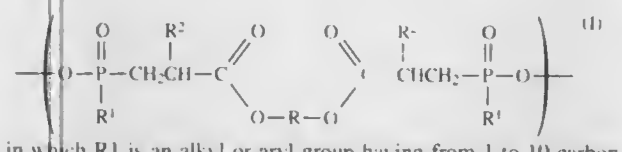
Filed Mar. 27, 1997, Ser. No. 824,641

Claims priority, application Germany, Apr. 1, 1996, 196 13 065.4; Mar. 10, 1997, 197 09 519.4

Int. Cl.^{6} C08G *59/14;59/30;59/40;* **C09K** *21/14*

U.S. Cl. 528—108 **3 Claims**

1. A method of using an epoxy resin mixture comprising incorporating said mixture into a coating and applying said coating to electrical or electronic components, wherein said mixture comprises epoxy resin, phosphorous-containing compounds and a curing agent, and wherein said epoxy resin mixture comprises structural units of the formula (I)



(I)

in which R1 is an alkyl or aryl group having from 1 to 10 carbon atoms, R2 is hydrogen or an alkyl group having from 1 to 4 carbon atoms and R is an alkylene, cycloalkylene or arylene group having from 2 to 20 carbon atoms.

5,854,372

ROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYCONDENSATES

Andree Henze, Hofheim, and Karsten Blatter, Eppstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 5, 1995, Ser. No. 539,784

Claims priority, application Germany, Oct. 7, 1994, 44 35 874.1

Int. Cl.^{6} C08G *69/28;63/78;85/00;69/48*

U.S. Cl. 528—176 **12 Claims**

1. A process for the preparation of a polycondensate in which a starting substance which still contains reactive end groups is dispersed in a high-boiling inert solvent, with the proviso that the high-boiling inert solvent is not a silicone oil, low molecular weight by-products are distilled off at elevated temperature, the batch is cooled and the dispersed polycondensate is isolated, which comprises heating up a mixture of at least two monomers which react with one another to a constant reaction temperature, a melt being formed at least in part, but initially no homogeneous melt occurring, continuing the reaction until a homogeneous melt is present, then dispersing the precondensate formed in the high-boiling inert solvent and bringing the condensation reaction to completion.

5,854,373

Patent Not Issued For This Number

5,854,374

PHOSPHONIUM BOROHYDRIDE COMPOUND AND PROCESS FOR PRODUCING POLYCARBONATE USING SAID COMPOUND

Chun-Shan Wang, and Jen-Tau Gu, both of Tainan, Taiwan, assignors to National Science Council, Taiwan

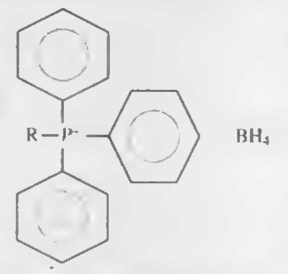
Filed Jun. 25, 1997, Ser. No. 882,588

Claims priority, application Taiwan, May 20, 1997, 86106767

Int. Cl.^{6} C08G *64/00*

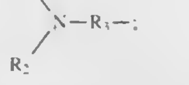
U.S. Cl. 528—196 **23 Claims**

1. A process for producing a polycarbonate comprising melt polycondensing an aromatic dihydroxy compound and a carbonic acid diester in the presence of a transesterification catalyst, said process being characterized by the employment of a phosphonium borohydride catalyst of formula (I):



(I)

wherein R is a straight-chain or branched alkyl group, or



wherein each of R_1, R_2, and R_3, independently is a C_1~C_4 alkyl group.

5,854,375

MELT POLYMERIZATION PROCESS FOR PREPARING AROMATIC POLYESTERS

Ray E. Drumright; James Lee Brewbaker, and William B. Marshall, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 15, 1997, Ser. No. 782,436

Int. Cl.^{6} C08G *63/87;63/52;63/16*

U.S. Cl. 528—286 **27 Claims**

1. A process for preparing a polyester which includes the step of heating a reaction mixture comprising (i) diesters of dihydric phenols and C_{1-10} aliphatic monoacids, (ii) aromatic dicarboxylic acids, and (iii) a catalytic amount of an organic cation-containing salt at a temperature above the melt temperature of the diesters, under reaction conditions sufficient to form the corresponding polyester.

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5,854,376

ALIPHATIC ESTER-AMIDE COPOLYMER RESINS

Takashi Higashi, Nara, Japan, assignor to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed Mar. 11, 1996, Ser. No. 613,622

Claims priority, application Japan, Mar. 9, 1995, 7-049737; May 18, 1995, 7-120293; Aug. 8, 1995, 7-202438

Int. Cl.⁶ C08G *69/44*

U.S. Cl. 528—288 **30 Claims**

1. A composition of an aliphatic ester-amide copolymer which is soluble in an organic solvent with an LD_{50} value (orally administered to a rat) of about 2,000 mg/kg or more.

5,854,377

CONTINUOUS PREPARATION OF THERMOPLASTIC POLYESTERS

Peter Braune, Erbes-Büdesheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP96/00941, § 371 Date Aug. 26, 1997, § 102(e) Date Aug. 26, 1997, PCT Pub. No. WO96/28492, PCT Pub. Date Sep. 19, 1996

PCT Filed Mar. 6, 1996, Ser. No. 894,747

Claims priority, application Germany, Mar. 16, 1995, 19509551.0

Int. Cl.⁶ C08G *63/00*

U.S. Cl. 528—309.1 **7 Claims**

1. A process for the continuous preparation of thermoplastic polyesters by

a) (trans)esterification of a dicarboxylic acid or its esters or ester-forming derivatives with a molar excess of a dihydroxy compound,

b) precondensation of the (trans)esterification product of a), and

c) polycondensation of the product of b), wherein

  i) the (trans)esterification is carried out in two or more temperature zones and under substantially identical pressure conditions, the temperature of a subsequent temperature zone being 1°–40° C. higher than the temperature of the preceding zone, and

  ii) the precondensation reaction is carried out in two or more temperature zones, the temperature of a subsequent temperature zone being 1°–40° C. higher than the temperature of the preceding zone.

5,854,378

ASPARTIC ACID COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Masayuki Tomida; Masako Yoshikawa, and Takeshi Nakato, all of Ibaraki, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Dec. 12, 1996, Ser. No. 763,837

Claims priority, application Japan, Dec. 15, 1995, 7-327080

Int. Cl.⁶ C08G *69/10*

U.S. Cl. 528—328 **8 Claims**

1. An aspartic acid copolymer obtained by copolymerizing a monomer mixture comprising (1) aspartic acid, maleamic acid and/or a reaction product of maleic acid and ammonia as a main monomer, (2) fumaric acid, and (3) succinic acid and containing 0.005 to 3% by weight, based on the total monomers, of ammonia in the form of an ammonium salt and hydrolyzing the resulting copolymer partially or completely.

5,854,379

THERMAL DECOMPOSITION DEGREASING METHOD AND MOLDED PRODUCTS THEREOF

Takemori Takayama; Yoshitaka Ohyama; Kazuo Okamura, all of Osaka; Masato Miyake, Ishikawa; Katsuyoshi Saito, Kyoto, and Hiroshi Ono, Saitama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 403,199, Mar. 13, 1995, Pat. No. 5,627,258. This application Jan. 2, 1997, Ser. No. 775,884

Claims priority, application Japan, Mar. 14, 1994, 6-42643; Oct. 25, 1996, 8-284336

Int. Cl.⁶ C08G *73/10;* **C08K** *5/3477*

U.S. Cl. 528—338 **21 Claims**

1. A thermal decomposition degreasing method for removing a thermoplastic binder from a product formed by injection molding of a powder material mixed with the thermoplastic binder,

the thermoplastic binder comprising a volatile organic compound and a thermoplastic resin, said organic compound being more volatile than said thermoplastic resin, and

wherein a degreasing process comprises:

(a) a first step for heating the product at a temperature lower than the melting point of the thermoplastic binder, the product being placed in a reduced pressure condition lower than or equal to atmospheric pressure, so that at least 5 wt. % of the thermoplastic binder is evaporated, and then heating the product to a temperature which is lower than the higher of the (1) a melting point of the organic compound and (2) a melting point of the thermoplastic resin so that at least 10 wt % of the thermoplastic binder is evaporated, the final temperature of the first step being 200° C. or less; and

(b) a second step for heating the product up to a temperature that is at least equal to (1) the highest of the melting points of components constituting the thermoplastic binder and/or (2) 200° C., and at a pressure at least equal to atmospheric pressure in an atmosphere of a gas that is inert relative to the powder material of the product.

5,854,380

POLYIMIDE PRECURSOR SOLUTION PROCESS FOR THE PRODUCTION THEREOF COATING OR FILM OBTAINED THEREFROM AND PROCESS FOR PRODUCING THE FILM

Keitarou Seto; Yoshiaki Echigo, both of Kyoto; Shoji Okamoto, Nara, and Minoru Saitou, Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jun. 5, 1997, Ser. No. 868,960

Claims priority, application Japan, Jun. 7, 1996, 8-145419; Sep. 26, 1996, 8-254304; Nov. 26, 1996, 8-314631; Dec. 19, 1996, 8-339370; Apr. 18, 1997, 9-101274

Int. Cl.⁶ C08G *69/26;73/10*

U.S. Cl. 528—353 **18 Claims**

1. A polyimide precursor solution which comprises, as the solute, a salt of (i) a diamine represented by the following general formula (1)

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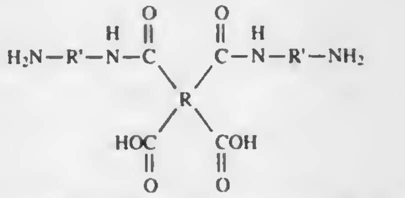
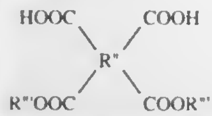


(1)

(wherein R represents a tetravalent aromatic residue containing at least one 6-membered carbon ring, wherein the four carbonyl groups are directly connected to different carbon atoms of R and each of two pairs of the four carbonyl groups is connected to adjacent carbon atoms in the 6-membered carbon ring, and R' represents a divalent aromatic residue containing at least one 6-membered carbon ring) and (ii) a tetracarboxylic acid, a tetracarboxylic ester, or a mixture thereof, represented by the following general formula (2)



(2)

(wherein R" represents a tetravalent aromatic residue containing at least one 6-membered carbon ring, wherein the four carbonyl groups are directly connected to different carbon atoms in the residue and each of the two pairs of the four carbonyl groups is connected to adjacent carbon atoms in the 6-membered carbon ring, and R'" represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms).

5,854,381

USE OF LACTIDE POLYMERS FOR ADHESION PROPHYLAXIS

Christian Jürgens; Hans Ryefger-Kricheldorf, and Ingrid Kreiser-Saunders, all c/o Merck KGaA 64271, Darmstadt, Germany

Filed Jan. 2, 1997, Ser. No. 775,885

Claims priority, application Germany, Jan. 3, 1996, 196 00 095.5

Int. Cl.⁶ C08G *63/08*

U.S. Cl. 528—354 **12 Claims**

1. Physiologically acceptable sheets of copolymers for preventing postoperative adhesion after surgical procedures, wherein the copolymers are prepared by reacting racemic lactide and a monomeric compound selected from the group consisting of ϵ-caprolactone, σ-valerolactone, τ-decalactone and β-hydroxybutyric acid, in the molar ratio of lactide to monomeric compound of from 90 to 70:30 to 10 and wherein the reaction is carried out in the presence of tin-II-diethylhexanoate initiator in a ratio of total monomer in the reaction to initiator of from 300:1 to more than 1000:1 at a temperature of between 130°–150° C. over a period of 24 to 96 hours.

5,854,382

BIORESORBABLE COMPOSITIONS FOR IMPLANTABLE PROSTHESES

Gary L. Loomis, Morristown, N.J., assignor to Meadox Medicals, Inc., Oakland, N.J.

Filed Aug. 18, 1997, Ser. No. 914,130

Int. Cl.⁶ C08G *63/08;63/06;63/66;65/02*

U.S. Cl. 528—354 **32 Claims**

1. A covalently crosslinkable composition comprising a water-insoluble copolymer having (i) a bioresorbable region; (ii) a hydrophilic region; and (iii) a plurality of crosslinkable functional groups per polymer chain.

5,854,383

ALIPHATIC POLYESTERS OF TRIMETHYLENE CARBONATE EPSILON-CAPROLACTONE AND GLYCOLIDE

Modesto Erneta, Princeton Junction, and Idrish A. Vhora, Somerville, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Oct. 6, 1997, Ser. No. 944,792

Int. Cl.⁶ C08G *63/08*

U.S. Cl. 528—354 **14 Claims**

1. An absorbable, biocompatible segmented copolymer comprising:

a prepolymer containing repeating units obtained from trimethylene carbonate, glycolide and ϵ-caprolactone monomers, wherein the mole percent of trimethylene carbonate is in the range of from about 2 to about 40; the mole percent of glycolide is in the range of from about 2 to about 55 mole percent and the mole percent of ϵ-caprolactone is in the range of from about 2 to about 40 mole percent;

copolymerized with in the range of from about 10 mole percent to about 80 mole percent of repeating units of glycolide; wherein the mole percentages are based on the total moles of monomer in the segmented copolymer.

5,854,384

PROCESS FOR PREPARING POLY-α-AMINO ACID PARTICLES

Kyoko Kuroda; Masayuki Hattori; Yoshitaka Yamakawa, all of Tsuchiura; Kenya Makino, Tokushima, and Toshio Hayashi, Sakai, all of Japan, assignors to SR Corporation, Tokyo, Japan

Filed Sep. 25, 1996, Ser. No. 719,544

Claims priority, application Japan, Sep. 26, 1995, 7-247887; Apr. 24, 1996, 8-102128

Int. Cl.⁶ C08G *69/00*

U.S. Cl. 528—355 **7 Claims**

1. A process for preparing poly-α-amino acid particles comprising polymerizing an α-amino acid-N-carboxy anhydride using a polymerization initiator in an organic solvent having a water content of 2 wt % or less in which both the solubility of the α-amino acid-N-carboxy anhydride and the solubility of the produced poly-α-amino acid are at most 0.1 g/100 ml at 25° C. said organic solvent being present in an amount of 1 to 50 wt % based on said α-amino acid-N-carboxy anhydride.

5,854,385

COATING COMPOSITIONS WITH LOW MOLECULAR WEIGHT CARBAMATE OR UREA COMPONENT

John D. McGee; Brian D. Bammel, both of Highland, Mich.; Todd A. Seaver, Fort Wayne, Ind.; Walter H. Ohrbom, Hartland Township, Mich.; John W. Rehfuss, West Bloomfield, Mich.; Gregory G. Menovcik, Farmington Hills, Mich., and Paul J. Harris, West Bloomfield, Mich., assignors to BASF Corporation, Southfield, Mich.

Continuation of Ser. No. 540,274, Oct. 6, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 698,529

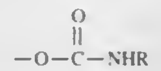
Int. Cl.⁶ C07K *1/00;14/00;16/00;17/00*

U.S. Cl. 528—369 **27 Claims**

1. A curable coating composition comprising

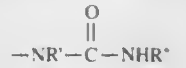
(A) a multi-functional compound comprising

  (1) at least one carbamate functional group having the structure



$$-O-\overset{\overset{\displaystyle O}{\|}}{C}-NHR$$

or urea functional group having the structure



$$-NR'-\overset{\overset{\displaystyle O}{\|}}{C}-NHR''$$

wherein R, R', and R" each independently represent H or alkyl or R' and R" together form a heterocyclic ring structure,

  (2) at least one other functional group which may or may not be carbamate or urea, and

  (3) at least one hydrogen bond acceptor group that is not also a hydrogen bond donor group, wherein said hydrogen bond acceptor group is selected from the group consisting of esters, ethers, ketones, carbonates, tertiary amines, thiones, sulfones, tertiary amides, sulfides, polyesters, polyethers, polycarbonates, and mixtures thereof, with the proviso that said multi-functional compound is other than an acrylic polymer or oligomer having carbamate functional or urea groups appended to the acrylic backbone through acrylic

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ester side chains, a polyester polymer or oligomer that is the polycondensation reaction product of a polyol and a polyacid component, or a polyurethane that is the reaction product of a polyisocyanate component and a polyester polyol component, and

(B) a curing agent comprising a plurality of groups that are reactive with the functional groups on compound (A).

5,854,386

STABILIZERS FOR POLYMER POLYOLS

Jianzhong Shen; Kenneth G. McDaniel, both of West Chester, Pa.; John E. Hayes, Gouvieux, France; Uli B. Holeschovsky, Chester Springs, Pa., and Harry R. Hinney, Cross Lanes, W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Aug. 25, 1997, Ser. No. 918,081
Int. Cl.^{6} C08G *59/00*

U.S. Cl. 528—403 **29 Claims**

1. A process for the preparation of a well defined hydroxyl-functional and unsaturation-functional polyoxyalkylene polyether, said process comprising:

(a) selecting an initiator molecule having a number average molecular weight below about 500 Da, at least one site of carbon-carbon unsaturation, and at least one functional group which is oxyalkylatable by alkylene oxide in the presence of a double metal cyanide complex, wherein said initiator molecule has not more than one free carboxylic acid group;

(b) oxyalkylating said initiator molecule with one or more alkylene oxides in the presence of an effective amount of a double metal cyanide complex catalyst and in the presence of one or more vinyl polymerization inhibitors;

(c) recovering a hydroxyl- and unsaturation-functional polyoxyalkylene polyether having not more than substantially one initiator molecule per molecule of polyether and not more than about 0.020 meq/g unsaturation beyond that of initiator molecule-derived unsaturation.

5,854,387

SIMPLE METHOD FOR THE PURIFICATION OF A BIOELASTIC POLYMER

Dan W. Urry; David T. McPherson, and Jie Xu, all of Birmingham, Ala., assignors to Bioelastics Research, Ltd., and UAB Research Foundation Ltd., both of Birmingham, Ala.

Continuation of Ser. No. 423,516, Apr. 14, 1995, abandoned. This application Oct. 13, 1995, Ser. No. 543,020
Int. Cl.^{6} A61K *38/00;38/04;* **C07K** *5/00;7/00*

U.S. Cl. 530—323 **19 Claims**

1. A method for purifying a bioelastic polymer comprising pentapeptide or tetrapeptide repeating units, wherein said repeating units exist in a conformation having a β-turn and said polymer exhibits a reversible inverse temperature transition, comprising:

(a) dissolving said polymer in an aqueous medium,

(b) adjusting the temperature of said aqueous medium to the effective transition temperature of said polymer so that the temperature of said aqueous medium is below said effective transition temperature,

(c) removing any particulate material from said medium,

(d) adjusting the temperature of said aqueous medium to the effective transition temperature of said polymer so that the temperature of said aqueous medium is above the effective transition temperature of said polymer,

(e) collecting dense phase material comprising said polymer from said medium, and

(f) optionally repeating any of steps (a)–(e) until a desired level of purity is reached;

with the proviso the order of steps can be (a)-(d)-(e)-(a)-(b)-(c) during said method.

5,854,388

ANGIOTENSIN IV PEPTIDES AND RECEPTOR

Joseph W. Harding, and John W. Wright, both of Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

PCT No. PCT/US93/06038, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/00492, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 24, 1993, Ser. No. 360,784
Int. Cl.^{6} A61K *38/04;39/06;* **C07K** *16/00;5/00*

U.S. Cl. 530—329 **14 Claims**

1. An AIV ligand that binds the AT4 receptor of claim 1 with a binding affinity having a K_d of below 3×10^{-6}M, said ligand comprising a compound of the formula:

$$R_1R_2R_3X,$$

wherein R_1 is a substituted or unsubstituted amino acid residue having a neutral or positively charged aliphatic side chain Z_1, said amino acid being selected from among V, I, L, A, G, F, P, M, K, norvaline, norleucine, and ornithine,

R_2 is a substituted or unsubstituted neutral nonpolar amino acid residue selected from among Y, W, N, Q, F or C,

R_3 is a substituted or unsubstituted neutral polar amino acid residue selected from among G, A, V, I, L, F, P, or M, and

X is nothing, R_4, R_4-R_5, or R_4-R_5-R_6, wherein R_4 is a substituted or unsubstituted basic amino acid residue selected from the group consisting of K, R and H, R_5 is a substituted or unsubstituted neutral polar amino acid residue selected from the group consisting of G, A, V, I, L, F, P, and M, and R_6 is a substituted or unsubstituted neutral polar amino acid residue selected from the group consisting of G, A, V, I, L, F, P, M, and amino acid residues containing one or more amino acid residues which do not prevent binding of the AIV ligand with the AT4 receptor;

with the proviso that R_1 can not be V when R_2 is Y, R_3 is I, R_4 is H, R_5 is P and R_6 is not present or is F.

5,854,389

PROCESS FOR PREPARING MODIFIED PROTEINS

Stephen B. H. Kent, and Martina Schnolzer-Rackwitz, both of La Jolla, Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 865,368, Apr. 7, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 312,662
Int. Cl.^{6} C07K *1/04*

U.S. Cl. 530—334 **19 Claims**

1. A process for preparing a modified protein comprising the steps of:

a. sequentially coupling amino acids or amino acid analogs to a terminal amino acid or amino acid analog bound to a first resin support to form a first peptide segment-resin, the first peptide segment comprising from about two to about one hundred amino acid residues;

b. covalently attaching a haloacyl moiety to the N-terminus of the peptide segment-resin to form a haloacylpeptide segment bound to the first resin support;

c. cleaving the haloacylpeptide segment from the first resin support;

d. sequentially coupling amino acids or amino acid analogs to a terminal amino acid or amino acid analog bound to a second resin support through a sulfur or a selenium-containing bond to form a second peptide segment-resin, the second peptide segment comprising from about two to about one hundred amino acid residues;

e. cleaving the second peptide segment-resin to form a second peptide segment having a thiol- or selenol-containing group at the C-terminus thereof; and

f. coupling the haloacylpeptide segment and the second peptide segment via the thiol- or selenol-containing group to form a non-amido linkage.

5,854,390

CHROMATOGRAPHIC PURIFICATION OF VANCOMYCIN HYDROCHLORIDE BY USE OF PREPARATIVE HPLC

Rok Grahek, Kranj, and Andrej Bastarda, Ljubljana, both of Slovenia, assignors to LEK, tovarna farmacevtskih in kemicnih izdelkov, d.d., Ljubljana, Slovenia

PCT No. PCT/SI96/00002, § 371 Date Jul. 28, 1997, § 102(e) Date Jul. 28, 1997, PCT Pub. No. WO96/24614, PCT Pub. Date Aug. 15, 1996

PCT Filed Feb. 6, 1996, Ser. No. 875,442

Claims priority, application Slovenia, Feb. 7, 1995, P-9500040
Int. Cl.^{6} C07K *5/12;* **A61K** *38/12*

U.S. Cl. 530—344 **34 Claims**

1. A method for the puruification of vancomycin antibiotics by displaccment chrotmatography, characterized in that the stationary phase is a natural or synthetic reverse phase, the mobile phase is a diluted acid or buffer and the displacing agent is an alcohol an oxyalcohol (alcohlol-ether), an alkali metal alkyl sulfate orderivative thereof or a tetraalkylammonium halide.

5,854,391

GLYCOSYLATION OF PEPTIDES USING GLYCOSYL PHOSPHITE REAGENTS

Chi-Huey Wong, Rancho Santa Fe, and Hirosato Kondo, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Mar. 18, 1993, Ser. No. 33,513
Int. Cl.^{6} C07K *1/107*

U.S. Cl. 530—345 **5 Claims**

1. A method for glycosylating peptides comprising the following steps:

Step A: providing a blocked carbohydrate donor having an anomeric carbon with an acid labile phosphite leaving group attached thereto;

Step B: blocking a peptide for providing a blocked peptide acceptor including an amino acid residue having an unprotected hydroxyl group, the amino acid residue being selected from a group consisting of serine, threonine, hydroxylysine, hydroxyproline, and hydroxyl containing pseudopeptides;

Step C: providing a promotor having Lewis acid activity for catalyzing the phosphite leaving group of said Step A; then

Step D: reacting the blocked carbohydrate donor of said Step A with the blocked peptide acceptor of said Step B in the presence of the promotor of said Step C within a solvent favoring the formation of glycosylated peptide products; and then

Step E: quenching the reaction of said Step D.

5,854,392

β APP-C100 RECEPTOR

Susan P. Manly, Wallingford; Michael R. Kozlowski, Noank, both of Conn., and Rachael L. Neve, Belmont, Mass., assignors to Bristol-Myers Squibb Company, New York, N.Y., and McLean Hospital Corporation, Belmont, Mass.

Continuation-in-part of Ser. No. 938,184, Aug. 31, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 114,555
Int. Cl.^{6} C07K *14/435*

U.S. Cl. 530—350 **7 Claims**

1. An isolated and purified C100R free of other mammalian proteins comprising the amino acid sequence of SEQ ID NO: 2.

5,854,393

Patent Not Issued For This Number

5,854,394

Patent Not Issued For This Number

5,854,395

CLONED *BORRELIA BURGDORFERI* VIRULENCE PROTEIN

Cheryl I. Champion, Culver City; Michael A. Lovett, Los Angeles; David A. Haake, Culver City; James N. Miller, Northridge, and David R. Blanco, Beverly Hills, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 261,825, Jun. 17, 1994, Pat. No. 5,558,933. This application Sep. 24, 1996, Ser. No. 719,124
Int. Cl.^{6} C07K *14/195*

U.S. Cl. 530—350 **1 Claim**

1. An isolated EppA (exported plasmid protein A) polypeptide, wherein the polypeptide has an amino acid sequence of SEQ ID NO:2.

5,854,396

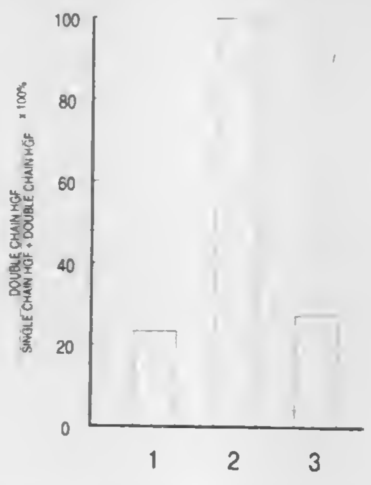
PROTEIN, DNA CODING FOR SAME AND METHOD OF PRODUCING THE PROTEIN

Takeshi Shimomura; Toshiya Kawaguchi, and Naomi Kitamura, all of Kanagawa, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Division of Ser. No. 685,660, Jul. 24, 1996, Pat. No. 5,731,412. This application Nov. 19, 1997, Ser. No. 974,196

Claims priority, application Japan, Jul. 24, 1995, 7-187134
Int. Cl.^{6} C07K *1/00;* **C12N** *15/15;15/79*

U.S. Cl. 530—350 **3 Claims**



1. A substantially pure protein having the following physicochemical properties:

(1) a molecular weight of about 30,000 daltons, as determined by SDS-polyacrylamide gel electrophoresis;

(2) inhibits hepatocyte growth factor activator protease activity; and

(3) the amino acid sequences set forth in SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3.

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5,854,397

PROCESSS FOR CROSS-LINKING COLLAGENOUS MATERIAL

Gerald L. Mechanic, Chapel Hill, N.C., assignor to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation of Ser. No. 249,533, May 26, 1994, abandoned, which is a division of Ser. No. 849,898, Mar. 12, 1992, Pat. No. 5,332,475, which is a division of Ser. No. 557,639, Jul. 30, 1990, Pat. No. 5,147,514, which is a continuation-in-part of Ser. No. 388,003, Aug. 2, 1989, abandoned. This application Jan. 10, 1997, Ser. No. 782,539

Int. Cl.^{6} A61K *38/17;* **C08K** *3/00*

U.S. Cl. 530—356 **8 Claims**

1. A process for preparing a cross-linked product suitable for use as a biomaterial which is digestion resistant comprising contacting naturally occurring collagen fibrils with a photoxidative catalyst in an aqueous medium and thereafter oxidizing the collagen fibrils to form cross-linkages therebetween in the presence of oxygen by exposing the collagen fibrils to light while holding temperature and pH at levels sufficient to maintain a desired oxygen concentration in the aqueous medium.

5,854,398

KAPOSI'S SARCOMA-ASSOCIATED HERPESVIRUS (KSHV) INTERLEUKIN 6 (IL-6) AND USES THEREOF

Yuan Chang, New York, N.Y.; Roy A. Bohenzky, Mountain View, Calif.; James J. Russo, New York, N.Y.; Isidore S. Edelman, New York, N.Y., and Patrick S. Moore, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 686,349, Jul. 25, 1996. This application Nov. 13, 1996, Ser. No. 748,640

Int. Cl.^{6} C07K *16/08;* **A61K** *39/245;* **G01N** *33/50;* **C07H** *21/04*

U.S. Cl. 530—387.1 **4 Claims**

1. An antibody specifically immunoreactive with Kaposi's sarcoma-associated herpesvirus interleukin 6 having the amino acid sequence as set forth in SEQ ID NO:1.

5,854,399

ANTIBODIES SPECIFIC FOR HUMAN CRIPTO-RELATED POLYPEPTIDE CR-3

David S. Salomon, Germantown, Md., and Maria G. Persica, Naples, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 154,198, Nov. 17, 1993, Pat. No. 5,620,866, which is a division of Ser. No. 749,001, Aug. 23, 1991, Pat. No. 5,264,557. This application Jun. 5, 1995, Ser. No. 464,023

Int. Cl.^{6} A61K *39/395*

U.S. Cl. 530—387.7 **2 Claims**

1. An antibody having binding affinity to a human CRIPTO-related polypeptide-3 (CR-3) and not to CR-1, wherein said CR-3 has the amino acid sequence set forth in SEQ ID NO:5.

5,854,400

MONOCLONAL ANTIBODIES WHICH NEUTRALIZE HIV-1 INFECTION

Tse Wen Chang; Michael S. C. Fung, both of Houston; Bill N. C. Sun; Cecily R. Y. Sun, both of Wellfort Bellaire, and Nancy T. Chang, Houston, all of Tex., assignors to Tanox, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 767,533, Sep. 26, 1991, which is a continuation of Ser. No. 137,861, Dec. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 057,445, May 29, 1987, abandoned. This application Sep. 22, 1992, Ser. No. 950,571

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.^{6} C07K *16/00;* **C12N** *5/18*

U.S. Cl. 530—387.9 **10 Claims**

1. A composition comprising monoclonal antibodies or antigen binding fragments thereof which bind to a peptide of the same sequence as the sequence of the amino acid residue numbers 298 to 322 of gp120 of HIV-1.

5,854,401

DETERMINATION OF ENDOMETRIAL RECEPTIVITY TOWARD EMBRYO IMPLANTATION

Bruce Lessey, Havertown, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 400,270, Mar. 3, 1995, Pat. No. 5,578,306, which is a continuation of Ser. No. 126,063, Nov. 1, 1993, abandoned, which is a division of Ser. No. 897,706, Jun. 12, 1992, Pat. No. 5,279,941. This application Sep. 3, 1996, Ser. No. 706,823

Int. Cl.^{6} C07K *16/00;* **A61K** *39/395*

U.S. Cl. 530—388.1 **3 Claims**

1. A contraceptive comprising a neutralizing Fab fragment specific for β_3 in a therapeutically effective amount and a pharmaceutically acceptable carrier, said Fab fragment capable of preventing, embryo implantation.

5,854,402

ANTIBODIES AGAINST STREPTOCOCCUS

Thomas Lehner, and Roberta Smith, both of London, England, assignors to Counsil of Governors of the United Medical and Dental Schools of Guy's and St. Thomas's Hospital, London, England

Continuation of Ser. No. 481,732, Jun. 7, 1995, Pat. No. 5,612,031, which is a continuation of Ser. No. 301,481, Sep. 7, 1994, Pat. No. 5,518,721, which is a continuation of Ser. No. 80,693, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 970,655, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 806,814, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 399,515, Oct. 27, 1989, abandoned. This application Mar. 5, 1997, Ser. No. 810,888

Claims priority, application United Kingdom, Feb. 27, 1987, 8704648

Int. Cl.^{6} C07K *16/00;16/12;16/28*

U.S. Cl. 530—388.4 **6 Claims**

1. An antibody having a binding site which binds to an epitope of the surface antigen I/II of *Streptococcus sobrinus* serotype d and also binds to the surface antigen I/II of *Streptococcus mutans* serotypes c, e, f and g.

5,854,403

METHOD FOR ISOLATION OF HIGHLY PURE VON WILLEBRAND FACTOR

Bernhard Fischer, Vienna; Artur Mitterer, Orth/Donau; Friedrich Dorner, Vienna; Hans-Peter Schwarz, Vienna; Peter Turecek, Vienna; Johann Eibl, Vienna; Falko-Guenter Falkner; Uwe Schlokat, both of Orth/Donau; Wolfgang Mundt, Vienna; Manfred Reiter, Vienna, and Renate Den-Bouwmeester, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed May 24, 1996, Ser. No. 653,298

Claims priority, application Germany, Oct. 4, 1994, 44 35 485.1

Int. Cl.^{6} C07K *1/18:1/22:1/14*

U.S. Cl. 530—412 **16 Claims**

1. A method for purifying recombinant von Willebrand Factor, comprising:

(a) contacting the recombinant von Willebrand Factor with a quaternary amino type anion exchanger, wherein the contacting is undertaken using buffer having a salt concentration less than 270 mM in the absence of stabilizers and free amino acid residues; and

(b) eluting the recombinant von Willebrand Factor by increasing the salt concentration above 270 mM, wherein the von Willebrand Factor is in the form of multimers having high structural integrity.

5,854,404

ANTITUMOR SUBSTANCE EXTRACTED FROM GRIFOLA

Hiroaki Nanba, and Keiko Kubo, both of Hyogo, Japan, assignors to Yukiguni Maitake Co., Ltd., Niigata, Japan

Filed Mar. 6, 1997, Ser. No. 812,795

Claims priority, application Japan, Mar. 8, 1996, 8-051880

Int. Cl.^{6} C07K *1/00*

U.S. Cl. 532—424 **17 Claims**

1. A glucao/protein complex produced by the steps of:

(a) thermally extracting mycelia or fruit bodies of Grifola with water at a temperature of from 50° C. to 135° C.;

(b) adding alcohol to the resulting water-soluble extract at a final concentration of 20 to 60% by volume, allowing said extract to stand in a vessel at a temperature of 1° to 25° C., and removing floating matter on the liquid or in the liquid or matter adhered to the vessel wall; and

(c) addition alcohol to said extract at a final concentration of 80 to 99% by volume, allowing said extract to stand at 1° to 25° C., and recovering said glucan/protein complex in the form of precipitates.

5,854,405

CONTINUOUS PROCESS FOR DIAZOMETHANE FROM AN N-METHYL-N-NITROSOAMINE AND FROM METHYLUREA THROUGH N-METHYL-N-NITROSOUREA

Thomas G. Archibald, Fair Oaks; James C. Barnard, Shingle Springs, and Harlan F. Reese, Placerville, all of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.

Filed Nov. 13, 1997, Ser. No. 969,993

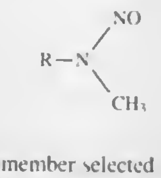
Int. Cl.^{6} C07C *245/12;245/16*

U.S. Cl. 534—565 **36 Claims**

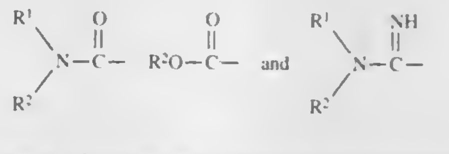
1. A continuous process for production of diazomethane, comprising:

(a) continuously contacting

(i) an organic solution comprising an N-methyl-N-nitroso amine dissolved in a mixture of a first organic solvent that is at least partially water-miscible and dissolves said N-methyl-N-nitroso amine and a second organic solvent that is substantially less water-miscible than said first organic solvent and forms a separate phase when contacted with water, said first organic solvent and said second organic solvent being in a mole ratio of from about 0.3:1 to about 3:1 and said N-methyl-N-nitroso amine having the formula



in which R is a member selected from the group consisting of



in which R^1 is a member selected from the group consisting of H, lower alkyl, and nitro, and R^2 is a member selected from the group consisting of H and lower alkyl, with

(ii) an aqueous solution of an inorganic base, at relative flow rates such that said inorganic base is in stoichiometric excess of said N-methyl-N-nitroso amine, at a temperature of from about −10° C. to about +15° C., and for a contact time of at least about five minutes, to form a product mixture;

(b) continuously settling said product mixture into (i) an organic phase containing diazomethane produced from said N-methyl-N-nitroso amine by reaction with said inorganic base and (ii) an aqueous phase, while maintaining said phases at a temperature of from about −10° C. to about +15° C.; and

(c) continuously isolating said organic phase from said aqueous phase.

5,854,406

HIGH MOLECULAR WEIGHT AZOAMIDE COMPOUND

Tsuneaki Maesawa; Kazuo Shiraki, and Nobutaka Shimamura, all of Kawagoe, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 7, 1997, Ser. No. 888,625

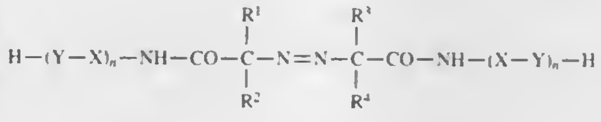
Claims priority, application Japan, Jul. 11, 1996, 8-201278; Jul. 11, 1996, 8-201279

Int. Cl.^{6} C07C *245/00;* **C09B** *29/00;* **C08K** *5/23*

U.S. Cl. 534—886 **8 Claims**

1. An azoamide compound represented by the following formula:

[1]



$$H-(Y-X)_n-NH-CO-\underset{R^2}{\overset{R^1}{C}}-N=N-\underset{R^4}{\overset{R^3}{C}}-CO-NH-(X-Y)_n-H$$

wherein R^1 to R^4 are independently an alkyl group; X is an alkylene group; Y is O or NH provided that a plurality of Y is the same or different; and n is an integer of 2 or more.

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5,854,407
15-HYDROXY 6,9-HEMIACETAL ERYTHROMYCIN COMPOUNDS

Setsuo Harada, Kawanishi; Yasunori Funabashi, Osaka; Nobuhiro Inatomi, Osaka; Shigeharu Tanayama, Osaka, and Seiichi Tanida, Kyoto, all of Japan, assignors to Takeda Chemical Corporation, Osaka, Japan

Division of Ser. No. 33,777, Mar. 19, 1993, Pat. No. 5,470,961.
This application Jun. 7, 1995, Ser. No. 475,557
Claims priority, application Japan, Mar. 19, 1992, 4-064243; Jun. 11, 1992, 4-152467
Int. Cl.^{6} C07H *17/08*
U.S. Cl. 536—7.2 **23 Claims**

1. A 6,9-hemiacetal-erythromycin compound having a hydroxyl group at the 15-position or a salt thereof.

5,854,408
PROCESS FOR ACYLATING THE 1-POSITION OF SACCHARIDES

Tadakatsu Mandai, c/o Kurashiki Univ. of Sci. & Arts 2640, Tsurajima-cho, Nishinoura, Kurashaiki-shi, Okayama-ken, 712; Hiroshi Okumoto, Kurashiki; Koji Hara, Yokohama; Katsuhiko Mikuni, Yokohama; Kozo Hara, Yokuhama, and Hiroki Hamada, Okayama, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Yokohama, Japan, and Tadakatsu Mandai, Kurashiki, Japan

Filed Jun. 3, 1997, Ser. No. 868,147
Int. Cl.^{6} C07H *1/00;3/02;3/04*
U.S. Cl. 536—18.6 **12 Claims**

1. A method of producing a sugar derivative having a hydroxy-carboxylic acid residue bonded to the 1-position of the sugar via the hydroxyl group thereof, comprising:

(a) reacting a hydroxy-carboxylic acid ester with a sugar having a hydroxyl group or a halogen atom at the 1-position thereof, to form an ether linkage between the hydroxyl group of the hydroxy-carboxylic acid ester and the carbon atom at the 1-position of the sugar,

wherein, when the sugar has other hydroxyl groups, said other hydroxyl groups are protected as benzyl ethers; and

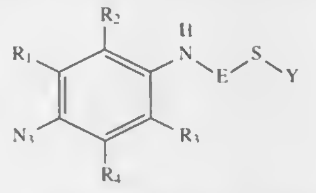
(b) saponifying said ester.

5,854,409
PRO-THIOL ARYL AZIDE LABELLING OF NUCLEIC ACIDS

Mark E. Westling, San Mateo, and Steven G. Daniel, Sunnyvale, both of Calif., assignors to Vector Laboratories, Burlingame, Calif.

Division of Ser. No. 562,650, Nov. 27, 1995, Pat. No. 5,700,921. This application Apr. 8, 1997, Ser. No. 835,267
Int. Cl.^{6} C07H *21/00*
U.S. Cl. 536—22.1 **15 Claims**

1. A pro-thiol aryl azide for coupling a thiol group to a nucleic acid, said pro-thiol aryl azide having the structure:



wherein, R_1 to R_4, which may be the same or different, are selected from the group consisting of H, alkyl, nitro, hydroxy, halide, carboxylic acid, methoxy, cyano, amino groups and salts thereof;

wherein E comprises an amine and salts thereof, and a chain of C_1–C_{20} having chain constituents selected from the group consisting of alkyl, alkenyl, alkynyl heteroatoms and salts thereof, said chain constituents having substituents selected from the group consisting of H, C_1–C_6 alkyl, aryl, ester, ether, amine, amide, halo groups and salts thereof;

and wherein Y is a group capable of protecting the sulfur moiety from chemical reaction and removable so as to generate a thiol moiety.

5,854,410
OLIGONUCLEOSIDE CLEAVAGE COMPOUNDS AND THERAPIES

Lyle J. Arnold, Jr., Poway; Mark A. Reynolds, San Diego; David A. Schwartz, Encinitas, and William J. Daily, San Diego, all of Calif., assignors to Genta Incorporated, San Diego, Calif.

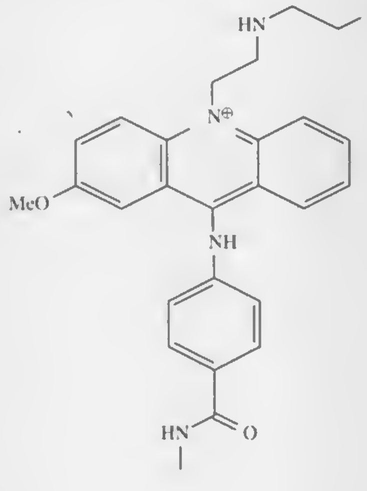
Filed Mar. 31, 1994, Ser. No. 223,355
Int. Cl.^{6} C07H *21/00;21/04;* **C12Q** *1/68*
U.S. Cl. 536—23.1 **2 Claims**

1. An oligonucleotide cleavage compound for hybridizing to a target nucleic acid strand and effecting cleavage thereof, comprising:

an oligonucleoside sequence that is substantially complementary to a target region of the target nucleic acid strand;

a portion that is non-complementary to a target site in the target region such that, when the cleavage compound is hybridized to the target strand, a base group at said site is oriented away from an inter-strand orientation; and

a cleavage moiety, wherein the cleavage moiety and the non-complementary region are linked, selected from the group consisting of:



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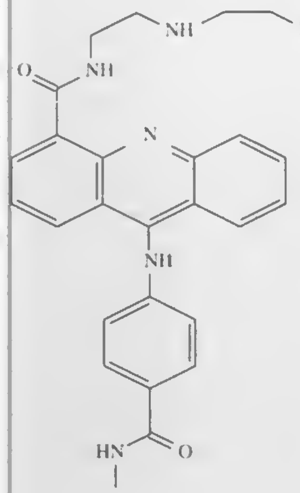
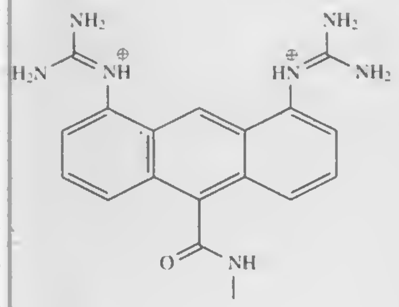
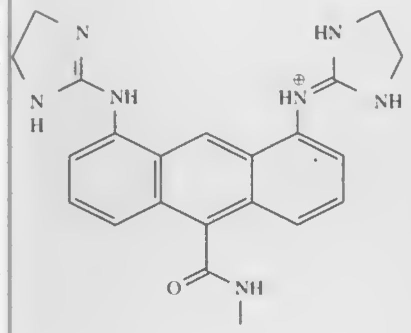




and



5,854,411
HUMAN CHLORIDE CHANNEL

Surya K. Goli, Sunnyvale, and Olga Bandman, Mountain View, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

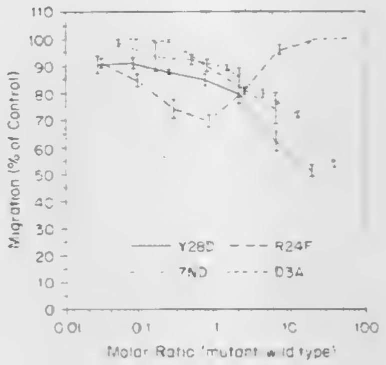
Filed Jan. 9, 1997, Ser. No. 781,560
Int. Cl.^{6} C07H *21/02;21/04;* **C12Q** *1/68*
U.S. Cl. 536—23.1 **8 Claims**

1. An isolated and purified polynucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO: 1.

5,854,412
CHEMOKINE N-TERMINAL DELETION MUTATIONS

Barrett Rollins, and Yujun Zhang, both of Brookline, Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Division of Ser. No. 455,629, May 31, 1995, Pat. No. 5,739,103, which is a continuation-in-part of Ser. No. 330,218, Oct. 27, 1994, Pat. No. 5,459,128, which is a continuation-in-part of Ser. No. 152,301, Nov. 12, 1993, abandoned. This application Oct. 23, 1997, Ser. No. 956,708
Int. Cl.^{6} C07H *21/04;* **C12N** *15/19;* **C12P** *21/02*
U.S. Cl. 536—23.1 **11 Claims**



1. An isolated DNA sequence encoding a mutant chemokine comprising an N-terminal deletion mutation of the endogenous chemokine, wherein said mutant chemokine is without chemokine activity and inhibits endogenous chemokine binding and activation of a responsive chemokine receptor, with the proviso that the chemokine is not interleukin-8.

5,854,413
SYNAPTOGYRIN HOMOLOG

Phillip R. Hawkins, Mountain View; Susan G. Stuart, Montara, and Lynn E. Murry, Portola Valley, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Apr. 30, 1996, Ser. No. 700,637
Int. Cl.^{6} C12P *21/02;* **C12Q** *1/68;* **C07H** *21/04;* **C12N** *5/10*
U.S. Cl. 536—23.5 **6 Claims**

1. A purified polynucleotide encoding a polypeptide with an amino acid sequence shown in SEQ ID NO:2.

5,854,414
HUMAN MITOCHONDRIAL MEMBRANE PROTEIN

Jennifer L. Hillman, Mountain View, and Surya K. Goli, Sunnyvale, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palu Alto, Calif.

Filed Mar. 7, 1997, Ser. No. 812,645
Int. Cl.^{6} C07H *21/04;* **C12N** *15/63;1/21*
U.S. Cl. 536—23.5 **8 Claims**

1. An isolated and purified polynucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:1.

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5,854,415
METHODS FOR THE DIAGNOSIS OF GLAUCOMA

Thai D. Nguyen; Jon R. Polansky, both of Mill Valley, and Weidong Huang, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 649,432, May 17, 1996, Pat. No. 5,789,169, which is a continuation-in-part of Ser. No. 546,568, Oct. 20, 1995, which is a continuation-in-part of Ser. No. 336,235, Nov. 3, 1994, Pat. No. 5,606,043. This application Jun. 25, 1997, Ser. No. 882,238

Int. Cl.^{6} C07H *21/04*

U.S. Cl. 536—23.5 **10 Claims**

1. A substantially purified nucleic acid molecule that encodes the secretory protein of clone II.2.

5,854,416
STREPTOCOCCUS PNEUMONIAE 37-KDA SURFACE ADHESIN A PROTEIN AND NUCLEIC ACIDS CODING THEREFOR

Jacquelyn S. Sampson, College Park; Harold Russell, Atlanta; Jean A. Tharpe, Lithonia; Edwin W. Ades, Atlanta, and George M. Carlone, Stone Mountain, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 222,179, Apr. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 791,377, Sep. 17, 1991, Pat. No. 5,422,427. This application Sep. 17, 1996, Ser. No. 715,131

Int. Cl.^{6} C07H *21/04*

U.S. Cl. 536—23.7 **9 Claims**

1. An isolated nucleic acid whose nucleotide sequence encodes a protein of *Streptococcus pneumoniae*, the protein being the 37-kDa surface adhesin A protein whose amino acid sequence is set forth in SEQ ID NO:2.

5,854,417
BORNA DISEASE VIRUS-SPECIFIC DNA AND PROTEINS

Janice Clements, Columbia; Opendra Narayan, Timonium, both of Md.; Susan Vandewoude, Loveland, Colo., and Juergen Richt, Moensheim, Germany, assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 351,176, Nov. 30, 1994, which is a continuation of Ser. No. 618,288, Nov. 28, 1990, abandoned. This application May 31, 1995, Ser. No. 455,976

Int. Cl.^{6} C07H *21/04;* **C12N** *15/31*

U.S. Cl. 536—23.72 **9 Claims**

2. An isolated DNA molecule that hybridizes to the nucleotide sequence of SEQ ID NO:1 under stringent conditions.

5,854,418
KAPOSI'S SARCOMA-ASSOCIATED HERPESVIRUS (KSHV) VIRAL MACROPHAGE INFLAMMATORY PROTEIN-1α II (VMIP-1α II) AND USES THEREOF

Yuan Chang, New York, N.Y.; Roy A. Bohenzky, Mountain View, Calif.; James J. Russo, New York, N.Y.; Isidore S. Edelman, New York, N.Y., and Patrick S. Moore, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 25, 1996, Ser. No. 687,253

Int. Cl.^{6} A61K *39/245;* **C07H** *21/04;* **C07K** *14/03;* **C12N** *15/38*

U.S. Cl. 536—23.72 **13 Claims**

1. An isolated nucleic acid encoding Kaposi's sarcoma-associated herpesvirus viral macrophage inflammatory protein-1α II having the amino acid sequence as set forth in SEQ ID NO: 1.

5,854,419
TRICYCLIC PTERIDINONES AND A PROCESS FOR THEIR PREPARATION

David Daniel Davey, El Sobrante, Calif., and John William Lampe, Rockaway, N.J., assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation-in-part of Ser. No. 844,324, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 649,384, Feb. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 437,574, Nov. 17, 1989, abandoned. This application Oct. 16, 1992, Ser. No. 961,987

Int. Cl.^{6} C07D *487/14;* **A61K** *31/505*

U.S. Cl. 544—115 **29 Claims**

1. A compound which is 9-ethyl-4-[N-(2-(pyridin- 2-yl)ethyl)-methylamino]imidazo[5,1-h]pteridin-6(5H)-one.

15. A compound which is 4-(dimethylamino)-9-((morpholin-4-yl)methyl)imidazo[5,1-h]pteridin-6(5)-one.

5,854,420
MAIZE ACETYL COA CARBOXYLASE ENCODING DNA CLONES

Anthony Richard Ashton, Cook; Colin Leslie Dow Jenkins, Evatt, and Paul Raymond Whitfeld, Hackett, all of Australia, assignors to Zeneca Limited, United Kingdom, and ICI Australia Operations Proprietary Limited, Australia

PCT No. PCT/GB92/02205, § 371 Date Aug. 18, 1994, § 102(e) Date Aug. 18, 1994, PCT Pub. No. WO93/11243, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 27, 1992, Ser. No. 244,537

Claims priority, application United Kingdom, Nov. 28, 1991, 9125330

Int. Cl.^{6} A01H *5/00;* **C12N** *15/29;15/82*

U.S. Cl. 800—205 **6 Claims**

1. An isolated DNA sequence selected from the group consisting of that depicted in any one of FIGS. 3 (SEQ ID NO:1), 4(*a*) (SEQ ID NO:3); 4(*b*) (SEQ ID NO:5), 5(*a*) (SEQ ID NO:7), 5(*b*) (SEQ ID NO:9), and 5(*c*) (SEQ ID NO:11), wherein said sequence encodes a plant acetyl CoA carboxylase or portion thereof.

ELECTRICAL

5,854,421
SEMICONDUCTOR SENSORS AND METHOD FOR ADJUSTING THE OUTPUT

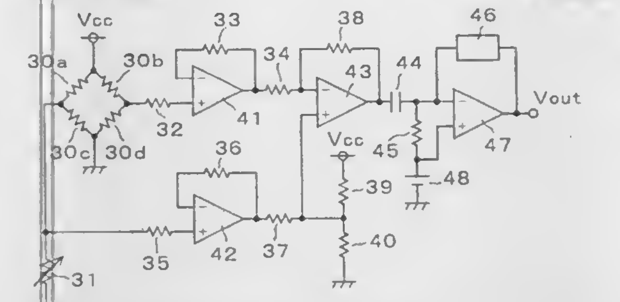
Masahiro Yamamoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1996, Ser. No. 729,407

Claims priority, application Japan, May 28, 1996, 8-133761

Int. Cl.^{6} G01L *9/06;27/00;* **G01P** *15/12;21/00*

U.S. Cl. 73—1.88 **4 Claims**



1. A semiconductor sensor employing semiconductor as a sensor element, comprising:

sensor means including a bridge circuit formed with piezoresistors exhibiting the piezoresistance effect;

a high-pass filter including a capacitor and a resistor;

a prestage amplifier which is placed before said high-pass filter and differentially amplifies an unbalanced voltage produced at said sensor means;

a poststage amplifier which is placed after said high-pass filter and amplifies an output voltage that passed through said high-pass filter after having been amplified by said prestage amplifier;

a reference voltage supply providing a reference voltage to said high-pass filter and said poststage amplifier; and

offset adjusting means which adjusts an offset of said sensor means;

said offset adjusting means adjusting an output voltage of said prestage amplifier Vm by adjusting the offset of said sensor means in order to reduce the maximum rise time of an output of said poststage amplifier after the power supply is switched on.

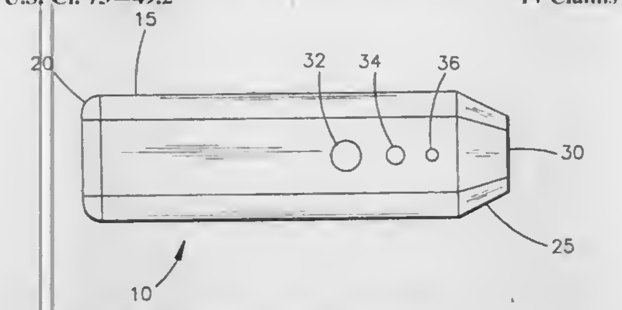
5,854,422
ULTRASONIC DETECTOR

R. Clayton McKeon, Holland, and Melvin F. Clouse, Hudsonville, both of Mich., assignors to K-Line Industries, Inc., Holland, Mich.

Filed Jul. 10, 1997, Ser. No. 889,979

Int. Cl.^{6} G01M *03/20;03/24;* **G01N** *21/17*

U.S. Cl. 73—49.2 **14 Claims**



1. An ultrasonic detector device comprising:

a housing of a size suitable for being carried within the palm of a user's hand;

an ultrasonic transducer mounted in one end of said housing for detecting received ultrasonic energy and generating an electrical signal having an amplitude corresponding to the detected level of the received ultrasonic energy; and

a light source fixedly mounted in said housing to have a fixed optical axis relative to said housing that intersects a directional axis of said ultrasonic transducer at a predetermined distance from the end of said housing for illuminating an area from which said ultrasonic transducer may detect ultrasonic energy.

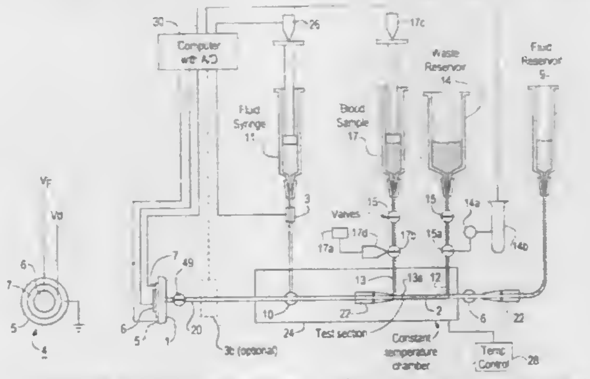
5,854,423
APPARATUS AND METHOD FOR ASSESSMENT OF VISCO-ELASTICITY AND SHEAR ADHERENCE STRENGTH PROPERTIES OF BLOOD CLOTS

Jose G. Venegas, 12 Laurel Rd., Swampscott, Mass. 01907

Filed Mar. 19, 1997, Ser. No. 820,149

Int. Cl.^{6} G01N *11/00;* **G01Y** *33/86;* **C12Q** *1/56*

U.S. Cl. 073—64.41 **20 Claims**



1. An apparatus for assessment of visco-elasticity and/or shear adherence strength properties of blood as it clots, said apparatus comprising:

a tubular conduit having a first section, a second section, and an intermediate zone therebetween for blood under test;

a fluid chamber connected to said first section of said tubular conduit and in fluid communication with said intermediate zone;

a piezo-electric bender attached to said fluid chamber, said bender deformable in response to a signal to cause a volume variation in said fluid chamber, which causes a pressure variation and displacement effect in fluid in said tubular conduit including said intermediate zone, the shape and amplitude of which effect when detected reflect clotting properties in blood in said intermediate zone.

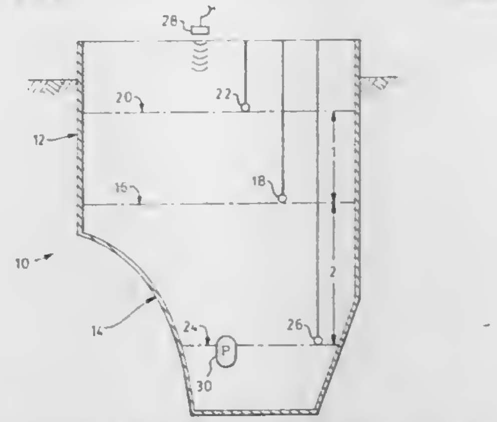
5,854,424
METHOD OF ESTIMATING TOTAL VOLUME OF AN IRREGULAR WETWELL

Johannes N. Jorritsma, 13 Colleen Avenue, Barrie, Ontario, Canada, L4M 2M9

Filed Apr. 6, 1998, Ser. No. 55,292

Int. Cl.^{6} G01F *17/00*

U.S. Cl. 73—149 **3 Claims**



1. For use in a system which tracks liquid throughput at a wetwell for purposes of improving the pumping efficiency of the wetwell, the wetwell including pumping means and having:

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a) a geometrically regular upper portion defining, between an upper level sensor means and an intermediate level sensor means, a first volume which is easily calculated from its geometry, and

b) a geometrically irregular lower portion defining, between said intermediate level sensor means and a lower level sensor means, a second volume which is not easily calculated from its geometry;

a method of estimating said second volume, comprising:

A) calculating the said first volume by multiplying the cross-sectional area of the upper portion by the vertical distance separating the intermediate level sensor means and the upper level sensor means;

B) performing a series of cycles each consisting of allowing the wetwell to fill with liquid between the lower level sensor means and the upper level sensor means while the pumping means is off or is set at a consistent lower rate, then causing the wetwell to be emptied from the upper level sensor means down to the lower level sensor means by running the pumping means;

C) during the filling part of each cycle, noting the time T_2 required for the liquid to rise between the lower level sensor means and the intermediate level sensor means, and the time T_1 required for the liquid to rise between the intermediate level sensor means and the upper level sensor means;

D) for each cycle, multiplying the said first volume by the expression T_2/T_1, this being the equivalent of dividing the first volume by T_1 to get the inflow rate and then multiplying said rate by T_2, thereby to arrive at an estimate of the second volume;

E) storing each calculated estimate of the second volume; and

F) averaging said estimates to provide a good approximation of the actual second volume.

5,854,425

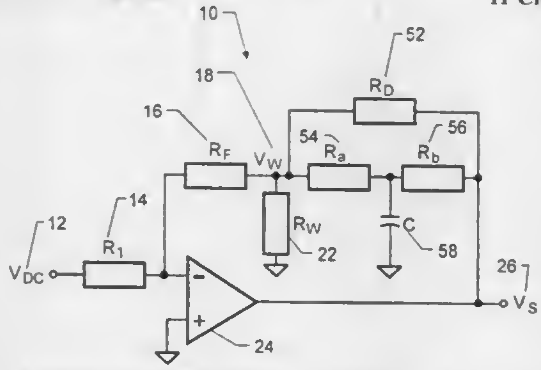
METHOD FOR MEASUREMENT AND COMPENSATION OF A TIME CONSTANT FOR A CONSTANT VOLTAGE ANEMOMETER

Garimella Ramakrishna Sarma, Newport News, Va., assignor to Tao of Systems Integration, Inc., Williamsburg, Va.

Filed Jun. 9, 1998, Ser. No. 94,336

Int. Cl.^{6} G03F *1/68*

U.S. Cl. 73—204.18 **11 Claims**



1. A method for compensating a constant voltage anemometer for sensor time delay comprising the steps of:

providing a test setup of a basic uncompensated constant voltage anemometer circuit having a sensor;

measuring the time constant of the sensor of said constant voltage anemometer test setup at a specific operating point;

canceling the constant voltage anemometer circuit changes to the time constant output leaving only the sensor portion of the time constant in the output;

adding a circuit compensator to the original constant voltage anemometer setup;

setting a circuit compensator to match the time constant of the sensor, thereby providing a compensated constant voltage anemometer; and

collecting experimental data, said data being the output of said compensated constant voltage anemometer.

5,854,426

METHOD AND APPARATUS FOR METERING AND DISTRIBUTING POURING MATERIAL, ESPECIALLY FOR THE PRODUCTION OF MINERAL-BONDED PARTICLE BOARDS

Wilhelmus Benda, Voorthuizen, Netherlands, assignor to Bau- und Forschungsgesellschaft Thermoform AG, Murten, Switzerland

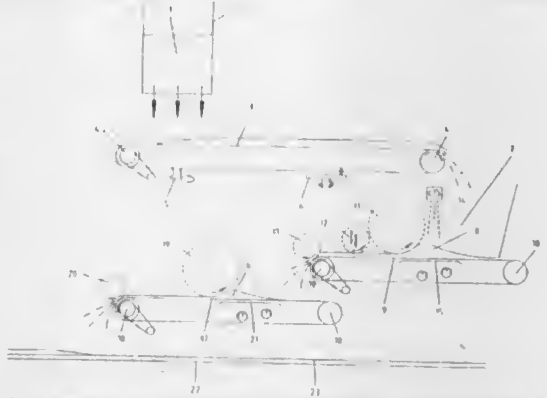
PCT No. PCT/EP95/03306, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/06715, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 18, 1995, Ser. No. 793,563

Claims priority, application Netherlands, Aug. 30, 1994, 9401394

Int. Cl.^{6} B29C *31/00*

U.S. Cl. 73—432.1 **18 Claims**



1. A method for metering and distributing pouring material onto a moulding conveyor, said method comprising the steps of

metering the pouring material volumetrically,

controlling the volume and/or weight of the supplied pouring material, and

supplying, during the course of time as well as transversely to the direction of supply of the material, a varying and metered volume of pouring material to a measurement device before distributing the pouring material on the moulding conveyor.

5,854,427

ANGULAR VELOCITY SENSOR

Jiro Terada, Hirakata; Hiroshi Senda, Neyagawa; Masami Tamura, Uji; Masaharu Ushihara, Hirakata, and Masakazu Hatanaka, Hannan, all of Japan, assignors to Matsushita Electric Industrical Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/02538, § 371 Date May 7, 1997, § 102(e) Date May 7, 1997, PCT Pub. No. WO97/09585, PCT Pub. Date Mar. 13, 1997

PCT Filed Sep. 6, 1996, Ser. No. 836,482

Claims priority, application Japan, Sep. 8, 1995, 7-230885; Dec. 19, 1995, 7-330002

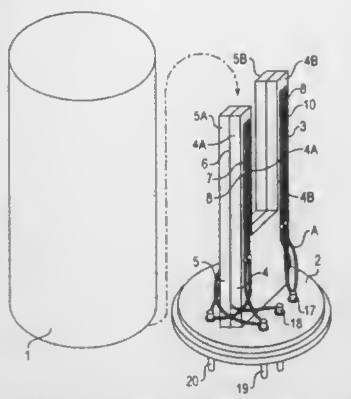
Int. Cl.^{6} G01P *9/04*

U.S. Cl. 73—504.16 **10 Claims**

1. An angular velocity sensor comprising

U-shape first and second piezoelectric elements bonded together sandwiching a detection electrode, said first piezoelectric element having in at least one of the tuning fork arms a first and a second driving electrodes on a surface opposite to the detection electrode and said second piezoelectric element having in a tuning fork arm corresponding to the tuning fork arm on which said first and second driving electrodes are disposed a third and a fourth driving electrodes on a surface opposite to the detection electrode; wherein

the first and the third driving electrodes, among said first through fourth driving electrodes, disposed in diagonal arrangement across the detection electrode, are coupled with a first driving power source, while the second and the fourth driving electrodes disposed in diagonal arrangement across the detection electrode are coupled with a second driving power source which supplies a signal whose phase is inverse to that of said first driving power source, and at least one of the tuning fork arms of said U-shape first and second piezoelectric elements is polarized in a direction of thickness along which the first and the second piezoelectric elements are bonded together.



5,854,428

VIBRATION GYROSCOPE

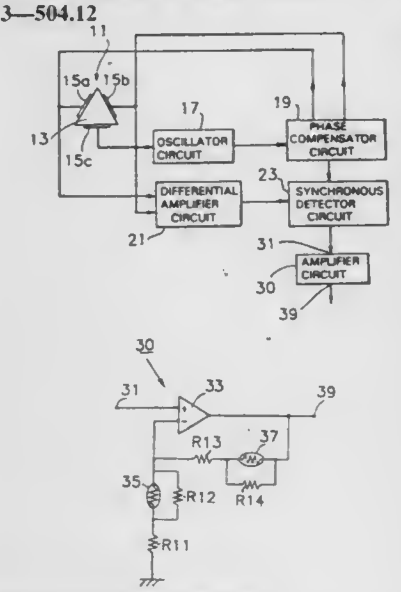
Kenjiro Okaguchi, Shiga-ken, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 18, 1997, Ser. No. 801,204

Claims priority, application Japan, Feb. 16, 1996, 8-029356

Int. Cl.^{6} G01C *19/00*

U.S. Cl. 73—504.12 **10 Claims**



3. A vibration gyroscope, comprising:

a piezoelectric vibrator which generates a detection signal which varies with temperature; and

an amplifier circuit which amplifies a detection signal derived from said piezoelectric vibrator;

said amplifier circuit including an operational amplifier and at least two temperature-sensitive elements which are arranged in a circuit with said operational amplifier such that the amplification factor of said operational amplifier varies inversely to the variation in the detection signal caused by a change in temperature, said amplifier circuit further including an input terminal which is connected to the inversion input of said operational amplifier, the non-inversion input of said operational amplifier being grounded; and an output terminal connected to the output of said operational amplifier; and

wherein said at least two temperature-sensitive elements include a first temperature-sensitive element connected between said input terminal and the inversion input of said operational amplifier, and a second temperature-sensitive element connected between said inversion input of said operational amplifier and said output of said operational amplifier.

5,854,429

MAGNETIC PROTECTION DEVICE

Lionel Haudebert, Macon, and Marcel Freund, Griéges, both of France, assignors to Schlumberger Industries, S.A., Montrouge, France

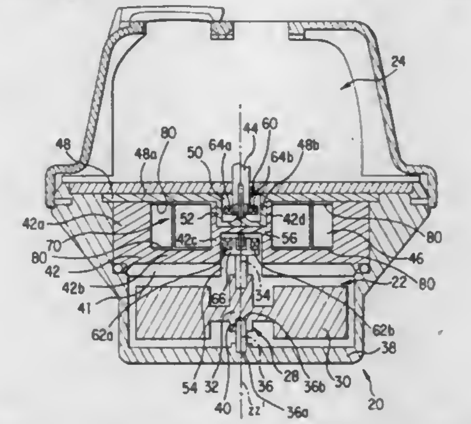
PCT No. PCT/FR95/01052, § 371 Date Jun. 9, 1997, § 102(e) Date Jun. 9, 1997, PCT Pub. No. WO96/06480, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 4, 1995, Ser. No. 793,790

Claims priority, application France, Aug. 23, 1994, 94 10200

Int. Cl.^{6} G01N *1/58*

U.S. Cl. 73—861.13 **4 Claims**



1. A fluid meter comprising a measurement chamber and an enclosure containing a totalizing counter separating by at least one wall made of non-magnetic material, and axial spinner situated in said measurement chamber being immersed in said fluid, and a shaft in coaxial alignment with said spinner and mechanically connected to said totalizing counter, a rotary drive system magnetically coupling together the axial spinner and the shaft of the counter and comprising at least two axially magnetized elements comprising two parts of magnetic material which are secured respectively to said axial spinner and to said shaft of the totalizing counter, characterized in that said fluid meter includes a protection device for protecting said drive system against an external magnetic field and includes an additional wall cooperating with at least one wall in contact with the enclosure to define an additional chamber disposed between the enclosure and the measurement chamber, wherein the two parts of magnetic material are situated in the additional chamber and are separated from each other.

5,854,430

CORIOLIS MASS FLOW SENSOR

Wolfgang Drahm, Zwingen, Switzerland, and Christian Matt, Lörrach, Germany, assignors to Endress + Hauser Flowtec AG, Reinach, Switzerland

Filed Mar. 5, 1997, Ser. No. 811,709

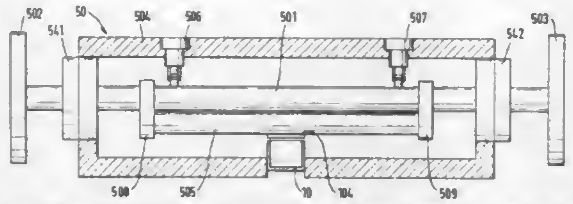
Claims priority, application European Pat. Off., Feb. 4, 1997, 97810059

Int. Cl.^{6} G01F *1/00*

U.S. Cl. 73—861.357 **6 Claims**

1. A Coriolis mass flow sensor which can be inserted in a pilpeline by means of an inlet-side and an outlet-side connecting element,

having an oscillating system which comprises at least one measuring tube through which a fluid to be measured flows when operating.



having an electromagnetic exciter arrangement for oscillations of the oscillating system

which exciter arrangement has at least one low-resistance exciter coil which is fed from an exciter current source, a core which contains a permanent magnet, and an armature,

having a capacitor which is coupled to the exciter coil in the manner of a parallel circuit and whose capacitance is selected as a function of the inductance of the exciter coil such that the resonant frequency of the electrical parallel resonant circuit which is formed by the capacitor and the exciter coil is approximately equal to the mechanical resonant frequency of the oscillating system, and having a sensor for the inlet-side oscillations, which is arranged with a distance between the center of the measuring tube and the inlet-side connecting element, and a sensor for the outlet-side oscillations, which is arranged with said distance between the center of the measuring tube and the outlet-side connecting element wherein the exciter coil, as the primary coil, and a secondary coil are arranged on the core, and the capacitor is connected in parallel with the secondary coil.

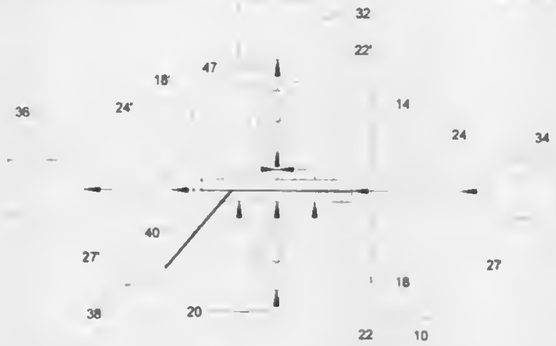
5,854,431
PARTICLE PRECONCENTRATOR

Kevin L. Linker, Albuquerque; Frank J. Conrad, Russellville; Chad A. Custer, and Charles L. Rhykerd, Jr., both of Albuquerque, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Dec. 10, 1997, Ser. No. 988,542

Int. Cl.⁶ G01N *1/00*

U.S. Cl. 73—863.23 **24 Claims**



1. An apparatus for collecting particles entrained in a moving first gas stream, said apparatus comprising:

at least one pervious screen disposed across the first gas stream, whereby the first gas stream passes through said screen and at least some of the particles are caught by said screen;

means for interrupting the passage of the first gas stream through said at least one screen;

means for generating a cross-flow of a carrier gas stream parallel past said at least one screen, whereby particles caught upon said screen are entrained into the carrier gas stream; and

means for detecting particles in the carrier gas stream.

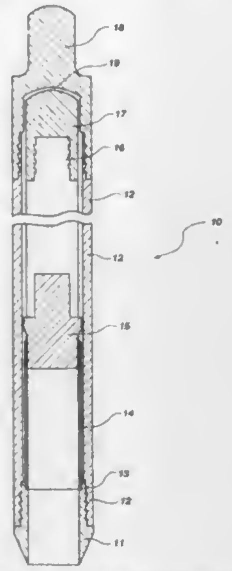
5,854,432
DUAL TUBE SAMPLING SYSTEM

Arthur R. Vollweiler, and Timothy J. Vollweiler, both of 105 Harrison, American Falls, Id. 83211

Filed Nov. 13, 1997, Ser. No. 969,752

Int. Cl.⁶ G01N *1/04*

U.S. Cl. 73—864.44 **6 Claims**



1. A dual tube sampling apparatus for subsurface material exploration, comprising in combination:

an outer hollow drive tube having a respective upper and a lower end;

a hollow drive shoe attached to the lower end of the outer hollow drive tube, said drive shoe adapted to contact material to be sampled;

an inner drive tube having a respective upper and lower end; said inner drive tube being disposed unattached and concentrically within the outer hollow drive tube;

a hollow sample chamber connected to the lower end of the inner drive tube disposed at least partially within the drive shoe; said sample chamber having a modulus of elasticity substantially less than the outer driving tube; and

means for transferring vertical impact to both inner and outer driving tubes.

5,854,433
VARIABLE ROTATION AND IRRADIATION WEATHERING TESTING MACHINE

Bhakti S. Patel, Bensenville, and Jacob Tikhtman, Northbrook, both of Ill., assignors to Atlas Electric Devices Co., Chicago, Ill.

Filed Nov. 8, 1996, Ser. No. 746,378

Int. Cl.⁶ G01N *17/00*

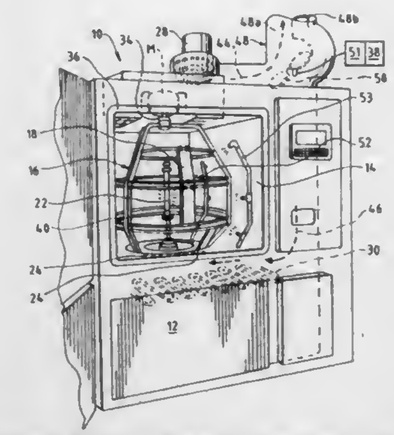
U.S. Cl. 73—865.6 **19 Claims**

1. A weathering testing machine which comprises:

a source of radiation;

a power controller having a plurality of settings corresponding to predetermined radiation intensity outputs from the source of radiation;

a circuit connected to said source of radiation and said power controller wherein the inductance of said circuit is changed as said power controller settings are changed to cause the spectral distribution of the radiation emitted by said source of radiation to be relatively constant; and



a rack positioned to be irradiated by said source of radiation, for carrying samples to be irradiated.

5,854,434
HIGH-MODULUS IRON-BASED ALLOY WITH A DISPERSED BORIDE

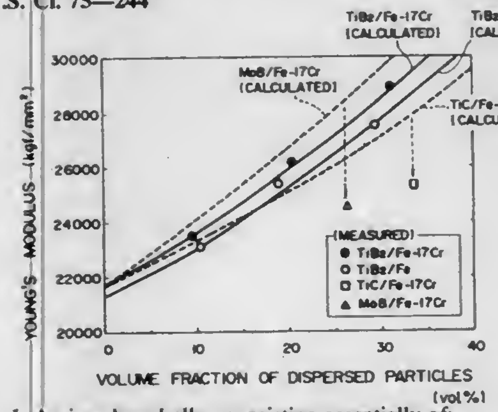
Takashi Saito, and Kouji Tanaka, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Continuation of Ser. No. 363,917, Dec. 27, 1994, abandoned. This application Jan. 21, 1997, Ser. No. 785,087

Claims priority, application Japan, Dec. 27, 1993, 5-354467; Mar. 11, 1994, 6-067590

Int. Cl.⁶ B22F *3/12*; C22C *1/05;33/02*

U.S. Cl. 75—244 **19 Claims**



1. An iron-based alloy consisting essentially of:

a matrix formed of iron or an iron alloy; and

at least one boride selected from the group consisting of borides of Group IVa elements titanium, zirconium or hafnium and complex borides of at least one Group Va element vanadium, niobium or tantalum, and iron, said at least one boride being dispersed in said matrix, and wherein said at least one boride is in the form of fine particles having a diameter of not more than 100 microns, and dispersed uniformly in said matrix.

5,854,435
NATURAL RESONANT SPEAKER

Young-ahn Kim, 101-703 Tungji Apt., 912 Tunsan-dong, Seo-gu, Teajon, Rep. of Korea

Filed Oct. 9, 1996, Ser. No. 731,060

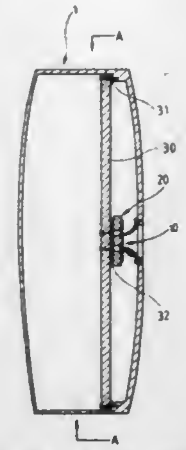
Claims priority, application Rep. of Korea, Oct. 13, 1995, 1995 35723

Int. Cl.⁶ G10D *3/00*

U.S. Cl. 84—291 **4 Claims**

1. A natural resonant speaker comprising:

a speaker body having a hollow inside, said speaker body defined by a pair of opposed convex lower and upper side portions interconnected by concave middle side portions and



convex-surfaced frontal and rear plates interconnecting with said upper and lower side portions, said frontal plate having at least one resonant hole formed therein adjacent to said concave side portions, said speaker body generally configured in the form of a figure eight;

a vibratory unit disposed within said hollow speaker body and directly attached to said frontal plate in close proximity to said at least one resonant hole, said unit for transforming an electrical sound signal into a mechanical sound vibration and comprised of a vibrator body having a terminal portion and a magnet structure combined with said vibrator body, said frontal plate including an aperture coincident with said terminal portion of said vibrator body; and

a fixture disposed within said hollow speaker body for holding said magnet structure thereto, said fixture is physically detached from said magnet structure by a first vibration-proof material inserted therebetween, said fixture extending between said upper and lower side portions and terminating in close proximity to said side portions, said fixture fixed to said speaker body with a second vibration-proof material therebetween and said first and second vibration-proof materials preventing sound vibrations from being transmitted from said speaker body to said fixture and from said fixture to said magnet structure.

5,854,436
PERCUSSION PADS

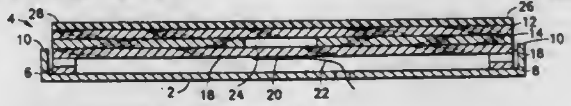
William Melville Wernick, 19 Tichborne Street, Leicester, LE2 ONQ, United Kingdom

Filed Mar. 11, 1996, Ser. No. 614,958

Claims priority, application United Kingdom, Mar. 11, 1995, 9504964

Int. Cl.⁶ G10D *13/02*

U.S. Cl. 84—411 P **8 Claims**



1. A percussion pad comprising:

a base;

a block including an upper surface and a lower surface having a cavity therein;

at least one resilient support element supporting the block on the base while allowing freedom of movement of the block in any direction relative to the base, whereby when the percussion pad is struck the block vibrates as a rigid body on the at least one resilient support element; and

a sensor for detecting the vibrations of the block, the sensor being mounted on a mounting area of the lower surface of the block and being located below the lower surface of the block;

wherein the cavity is aligned in the block between the upper surface of the block and the mounting area of the lower surface of the block; the sensor located outside the cavity.

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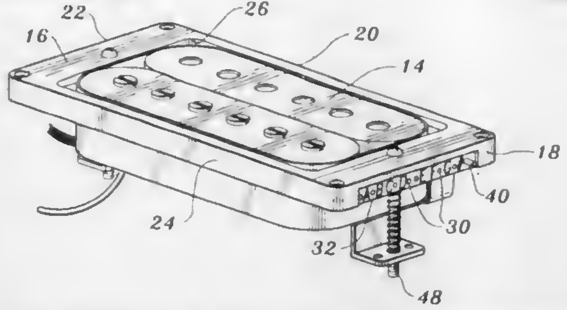
5,854,437
APPARATUS FOR TUNING ELECTRIC STRINGED MUSICAL INSTRUMENTS

Jeffrey A. Merrick, 210 Wesley Ct., Roseville, Calif. 95661, and Keith F. Elliston, 1320 Woodside Glen Way, Sacramento, Calif. 95833

Continuation-in-part of Ser. No. 503,825, Jul. 18, 1995. This application Apr. 22, 1996, Ser. No. 635,618

Int. Cl.⁶ G10H *3/00;3/12*

U.S. Cl. 84—454 **17 Claims**



1. In combination with an electric guitar having a pickup cavity formed therein and a pickup permanently located in said pickup cavity, apparatus for tuning said electric guitar, said apparatus including;

a pickup ring connected to the electric guitar and defining a pickup ring interior in communication with the pickup cavity of the electric guitar, said pickup ring having a plurality of interconnected pickup ring walls and extending substantially around said pickup, at least one of said pickup ring walls comprising a visual display panel; and

tuner circuit means located in the pickup cavity of the electric guitar adjacent to said pickup and within the pickup ring interior of said pickup ring, said tuner circuit means including visual display means positioned adjacent to said visual display panel and observable at said visual display panel from a location external of said pickup ring.

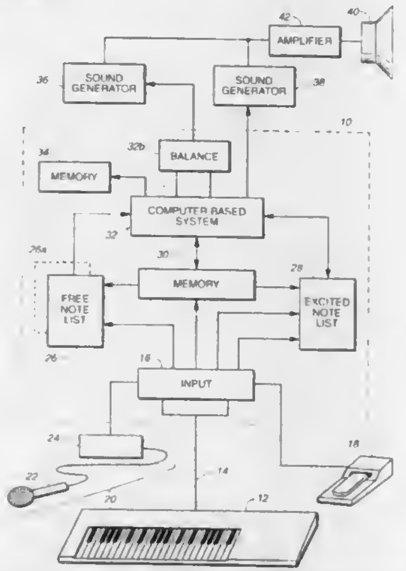
5,854,438
PROCESS FOR THE SIMULATION OF SYMPATHETIC RESONANCES ON AN ELECTRONIC MUSICAL INSTRUMENT

Gérard Assayag, Gervais, and Georges Bloch, Strasboure, both of France, assignors to France Telecom, France

Filed Apr. 8, 1997, Ser. No. 827,713

Int. Cl.⁶ G10H *1/057;1/46;7/00*

U.S. Cl. 84—625 **22 Claims**



1. Process for the simulation of first sympathetic resonances for at least one electronic musical instrument adapted to generate sounds for a set of notes and to receive at least one of activation and release controls of at least one of excited and free notes, the activation controls causing the activation of the at least one of the excited and free notes and the release controls causing the release of the at least one of the excited and free notes, the process comprising:

updating, at least during each free note activation or release, at least one first list of free notes in which with each free note are associated harmonics of said free note;

updating, at least during each excited note activation or release, a second list of excited notes in which with each excited note are associated harmonics of said excited note;

for each free note activation, determining at least one harmonic of a note of the second list identical to each harmonic of said free note and differing from said free note, such that the playing of a sympathetic note is controlled at the pitch of each identical harmonic; and

for each excited note activation, determining at least one harmonic of a free note of the first list identical to each harmonic of said excited note and differing from said excited note such that the playing of a base note at the pitch of a fundamental harmonic of said excited note and a sympathetic note are controlled at the pitch of each identical harmonic.

5,854,439
METHOD FOR ELECTRICALLY INITIATING AND CONTROLLING THE BURNING OF A PROPELLANT CHARGE AND PROPELLANT CHARGE

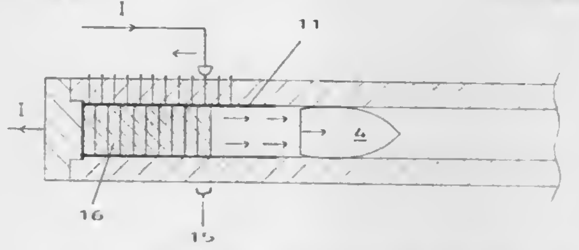
Henrik Almström, Västerhaninge, Sweden, and Gert Bjarnholt, Tyresö, Sweden, assignors to Forsvarets Forskningsanstalt, Stockholm, Sweden

Filed Jun. 7, 1995, Ser. No. 460,011

Claims priority, application Sweden, Jun. 17, 1994, 9402148-2

Int. Cl.⁶ F41F *1/00*

U.S. Cl. 89—8 **12 Claims**



1. A method for electrically controlling the mass burning rate of a compact propellant charge, said method comprising initiating a burning of a compact propellant charge having a compact mass of propellant and an electrically conductive material dispersed therein, controlling the amount of propellant mass that is initiated at each point of time during said burning by feeding an electric current to said conductive material over a select zone of said mass, said current having sufficient power to instantly heat said zone to ignition temperature, and feeding said current to different selected zones of said mass at different points of time during said burning.

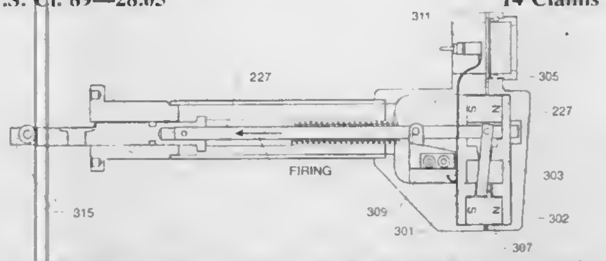
5,854,440
SHOULDER-LAUNCHED MULTI-PURPOSE ASSAULT WEAPON

Michael M. Canaday, King George, and Fred W. Watson, Jr., Montross, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 514,575, Oct. 30, 1995, Pat. No. 5,712,443. This application Jun. 20, 1996, Ser. No. 667,170

Int. Cl.⁶ F41A *19/58;19/21*

U.S. Cl. 89—28.05 **14 Claims**



1. A shoulder-launched multi-purpose assault weapon comprising:

a spotting rifle assembly having a single-trigger dual firing subassembly for firing both rifle and rocket armaments, a dual-function subassembly for cartridge-ejecting and bolt locking back, and a breech bolt and lock assembly;

an electrical pulse generator for firing a rocket attached to said spotting rifle assembly; and

a rocket tube mounted on said spotting rifle assembly.

5,854,441
DEVICE FOR INFLATING AN AIRBAG ACCOMMODATED IN A STEERING WHEEL

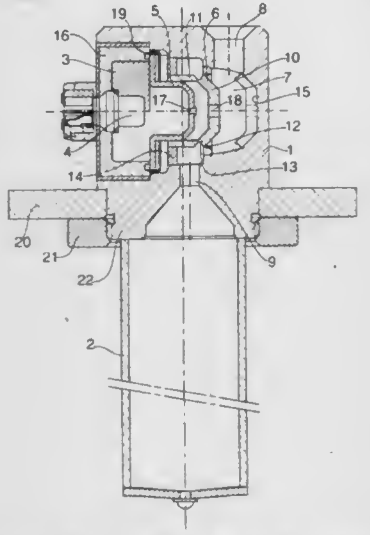
Marcus Metzger, Baden-Baden, Germany, assignor to TRW Automotive Safety Systems GmbH, Aschaffenburg, Germany

Filed Jul. 11, 1997, Ser. No. 893,886

Claims priority, application Germany, Jul. 20, 1996, 196 29 339.1

Int. Cl.⁶ B60R *21/26;* **C06D** *5/00*

U.S. Cl. 102—531 **14 Claims**



1. A device for rapidly inflating an airbag accommodated in a steering wheel, comprising: a housing, a compressed-gas container containing a compressed gas and connected to the housing, a pyrotechnical propellant in the housing, a primer in the housing, a gas-combining chamber in the housing having an outlet to an airbag and a port between the compressed-gas container and the gas-combining chamber and closed off by a rupture disk, a thruster for destroying the rupture disk when the propellant ignites to allow combined gaseous products of combustion of the propellant and the compressed gas to escape into the airbag, wherein the compressed-gas container is tubular and mountable coaxially with or inside a steering-wheel column, wherein the outlet to the airbag and the port in the housing comprise bores in the housing that are essentially parallel to a longitudinal axis of the compressed-gas container, wherein the housing has a space for accommodating the propellant, the primer, the thruster, and the rupture disk comprising a graduated-diameter cylindrical recess at a right angle to the longitudinal axis of the compressed-gas container, and wherein the effective path traveled by the thruster and the rupture disk is coaxial with the recess.

5,854,442
GAS GENERATOR COMPOSITIONS

Robert S. Scheffee, Lorton, and Brian K. Wheatley, Marshall, both of Va., assignors to Atlantic Research Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 663,010, Jun. 7, 1996, which is a continuation-in-part of Ser. No. 663,012, Jun. 7, 1996, which is a continuation-in-part of Ser. No. 508,350, Jul. 28, 1995, which is a continuation-in-part of Ser. No. 414,470, Mar. 31, 1995. This application Sep. 6, 1996, Ser. No. 708,195

Int. Cl.⁶ C06B *45/06*

U.S. Cl. 149—18 **24 Claims**

1. A composition for generating a low particulate non-toxic, non-flammable, odorless and colorless gas, said composition comprising a propellant mixture of about 55 to about 70% by weight of guanidine nitrate (GN) and/or a gas-generative effective derivative thereof with about 30 to about 45% by weight of a perchlorate of an alkali metal and a minor combustion modifying effective amount of cellulose acetate butyrate (CAB).

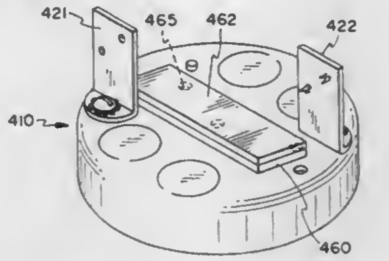
5,854,443
LOAD SUPPORTING ELECTRICAL BOX SUITED FOR ATTACHING TO A JOIST

Kenneth H. Reiker, P.O. Box 4106, Shalimar, Fla. 32579

Filed Jan. 12, 1995, Ser. No. 371,695

Int. Cl.⁶ H01R *13/46*

U.S. Cl. 174—58 **33 Claims**



1. An electrical fixture mounting assembly, comprising:

a) a junction box;

b) said junction box including a wall assembly defining a junction box cavity therein, said wall assembly including a top wall and a downwardly extending side wall;

c) a first mounting bracket disposed on said wall, and said first mounting bracket being configured for attaching to a joist;

d) a second mounting bracket disposed on said wall assembly, and said second mounting bracket being configured for attaching to a joist;

e) said second mounting bracket is spaced apart from said first mounting bracket;

f) said first and second mounting brackets being configured and positioned relative to each other for engaging opposite sides of a joist, said second mounting bracket being spaced apart from said first mounting bracket in a direction of elongation of a joist disposable between said first and second mounting brackets; and

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g) at least one of said first and second mounting, brackets being disposed on said top wall and extending upwardly away therefrom.

5,854,444

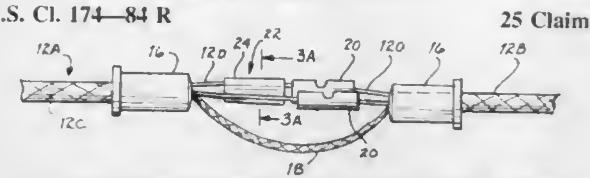
ENVIRONMENTALLY SEALED SPLICE KIT FOR SHIELDED CABLE AND METHOD THEREFOR

Gene L. Fehlhaber, Cave Creek, Ariz., assignor to Phoenix Logistics, Inc., Phoenix, Ariz.

Filed Aug. 5, 1997, Ser. No. 906,767

Int. Cl.⁶ H02G *15/188*

U.S. Cl. 174—84 R **25 Claims**



1. An environmentally sealed splice kit for splicing together a shielded cable which is fully immersion protected and which is installed using only hand tool without using heat generating sources comprising, in combination:

a pair of crimp sleeves wherein each crimp sleeve of said pair of crimp sleeves is coupled to a separate wire braided end of said shielded cable;

jumper wire having two ends wherein each end of said jumper wire is coupled to each crimp sleeve of said pair of crimp sleeves for providing electrical continuity between each of said wire braided end of said shielded cable and for providing axial strain relief for said shielded cable to be spliced together;

conductor splices for splicing together center conductors of said shielded cable;

dielectric spacer for separating and providing an isolating medium between said center conductors of said shielded cable to be spliced together and said jumper wire;

shield seal sleeve placed around said center conductors which are spliced together and positioned over said dielectric spacer for providing a sealing boot with shielding capabilities for said shielded cable to be spliced together and said jumper wire;

a pair of end caps coupled to each end of said shield seal sleeve for environmentally sealing said shielded cable to be spliced together; and

adhesive sealant placed inside said end caps for holding said pair of end caps to said shield seal sleeve and environmentally sealing said shielded cable to be spliced together.

5,854,445

THERMALLY EFFICIENT POWER BUSWAY SYSTEM WITH INTEGRAL CLAMPING MECHANISM

Eric J. Graham, Farmington; Louis A. Rosen, Wallingford; Ira Goldman, Waterbury; Jeffrey Scott Berliner, New Britain; Thomas D. Collins, West Simsbury, all of Conn., and Clarence W. Walker, Selmer, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 6, 1996, Ser. No. 692,564

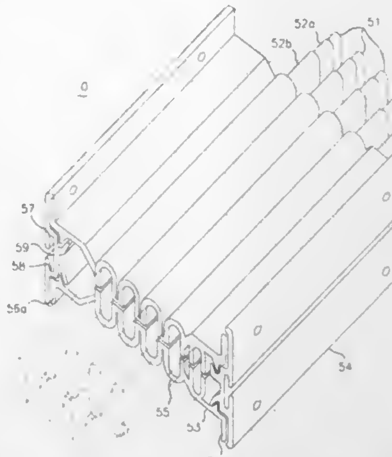
Int. Cl.⁶ H02G *5/06*

U.S. Cl. 174—99 B **23 Claims**

1. An electric power busway system comprising:

a plurality of electric power bus bars;

an elongated housing section comprising a pair of opposing metal plates, said plates being shaped with a plurality of troughs, each trough receiving one of said bus bars, said through in said housing section supporting and retaining said bus bars at proper intervals from each other; and



a fastening member at two opposite edges of each of said housing plates for fastening said plates where said plates come into contact with one another.

5,854,446

COMBINATIONAL WEIGHING OR COUNTING METHOD AND APPARATUS THEREFOR

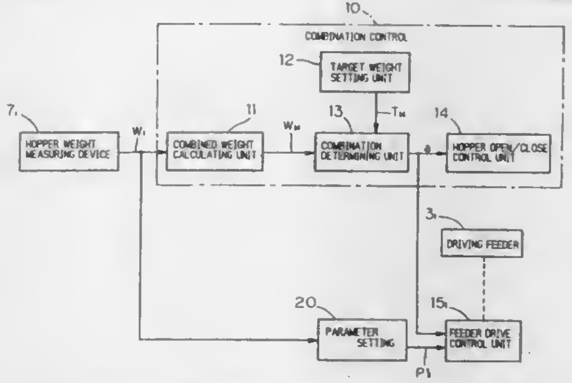
Masahiko Tatsuoka, and Toshiyuki Komatsu, both of Shiga, Japan, assignors to Ishida Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 300,347, Sep. 2, 1994. This application Oct. 6, 1997, Ser. No. 943,228

Claims priority, application Japan, Sep. 8, 1993, 5-248833; Nov. 8, 1993, 5-303466

Int. Cl.⁶ G01G *19/40;13/00*

U.S. Cl. 177—17 **17 Claims**


10
COMBINATION CONTROL
12
TARGET WEIGHT SETTING UNIT
7
HOPPER WEIGHT MEASURING DEVICE
W₁
11
COMBINED WEIGHT CALCULATING UNIT
Wₘ
13
Tₘ
COMBINATION DETERMINING UNIT
14
HOPPER OPEN/CLOSE CONTROL UNIT
3
DRIVING FEEDER
20
PARAMETER SETTING
15
FEEDER DRIVE CONTROL UNIT
P1

1. A combinational weighing or counting method which comprises the steps of:

driving a plurality of driving feeders for supplying articles from an upstream side into a plurality of weighing hoppers according to a predetermined parameter for controlling a supply ability of the driving feeder;

determining a new parameter for each of the driving feeders on the basis of a target supply value for each weighing hopper, to which the respective weighing hopper is supplied with the articles, and a measured weight of the articles supplied into each weighing hopper; and

selecting a combination of the articles on the basis of the measured values and a target combined value, some or all of the target supply values for the respective weighing hoppers being chosen to be of values different from each other so that some or all of the measured weights of the articles in the weighing hoppers fall in values different from each other.

5,854,447

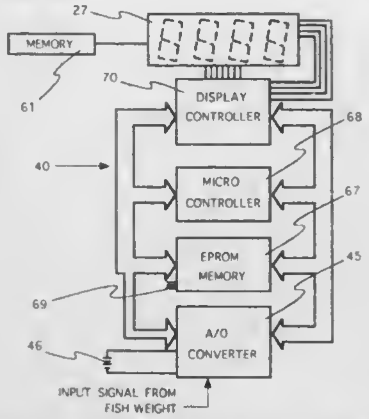
ELECTRONIC FISH LENGTH MEASURING APPARATUS

Jon B. Greenwood, 8579 Gray Ct., Arvada, Colo. 80003, and Bruce H. Campbell, 567 Manorwood La., Louisville, Colo. 80027

Continuation-in-part of Ser. No. 781,529, Jan. 9, 1997, abandoned. This application Feb. 3, 1998, Ser. No. 20,589

Int. Cl.⁶ G01G *19/40;19/56;19/00*

U.S. Cl. 177—25.14 **14 Claims**



1. An electronic fish measuring apparatus comprising:

(a) a means for generating an electronic signal from the weight of a fish,

(b) a means for electronically converting said electronic signal into a visual display of fish length and,

(c) a visual display of fish length and weight.

5,854,448

COORDINATE INPUT DEVICE USED FOR INPUTTING CHARACTERS AND DRAWINGS INTO A PERSONAL COMPUTER/WORD PROCESSOR

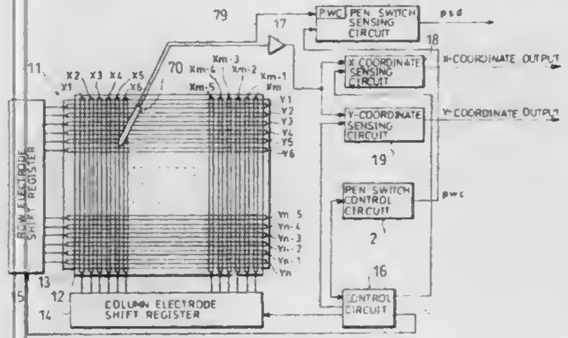
Kiyohiro Nozaki, Nara, and Takao Tagawa, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1996, Ser. No. 629,271

Claims priority, application Japan, Apr. 12, 1995, 7-087184; Mar. 19, 1996, 8-063472

Int. Cl.⁶ G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18.01 **15 Claims**


1
79
17
PWC
PEN SWITCH SENSING CIRCUIT
psd
18
X-COORDINATE SENSING CIRCUIT
X-COORDINATE OUTPUT
Y-COORDINATE SENSING CIRCUIT
Y-COORDINATE OUTPUT
19
PEN SWITCH CONTROL CIRCUIT
pwc
2
16
CONTROL CIRCUIT
11
70
X1 X2 X3 X4 X5 X6
Xm-6 Xm-5 Xm-3 Xm-2 Xm-1 Xm
Y1 Y2 Y3 Y4 Y5 Y6
Yn-5 Yn-4 Yn-3 Yn-2 Yn-1 Yn
ROW ELECTRODE SHIFT REGISTER
13
12
14
15
COLUMN ELECTRODE SHIFT REGISTER

1. A coordinate input device, comprising:

a panel having a coordinate input area;

indicating means for indicating a point on said panel;

coordinate sensing means for sending coordinates of the point indicated by said indicating means;

switch means disposed in said indicating means and switched; when provided with an operational power supply, depending on whether or not said indicating means is pressed against said panel;

switch condition sensing means for providing said switch means with said operational power supply, and for sensing whether said switch means is in an 'ON' state or in an 'OFF' state; and

switch control means, connected to said switch condition sensing means, for controlling said switch condition sensing means, so that said switch condition sensing means senses whether said switch means is in the 'ON' state or in the 'OFF' state, by providing the operational power supply to said switch means only during the switch sensing period that is irrelevant to the accuracy in sensing by said coordinate sensing means.

5,854,449

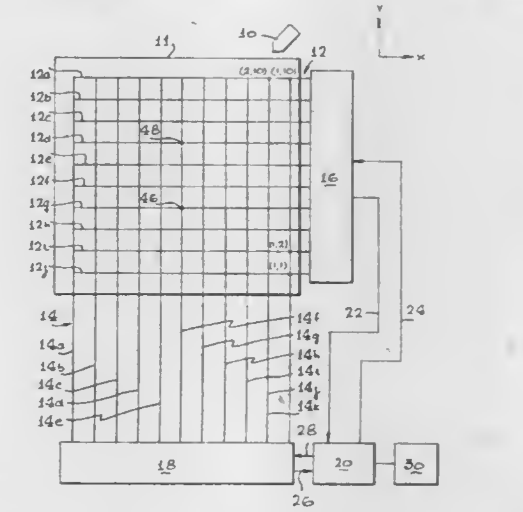
HIGH ACCURACY DIGITIZER SYSTEM

David L. Adkins, Phoenix, Ariz., assignor to CalComp Inc., Anaheim, Calif.

Filed Sep. 11, 1995, Ser. No. 526,185

Int. Cl.⁶ G08C *21/00;* **G09G** *5/00*

U.S. Cl. 178—18.02 **10 Claims**



1. A high accuracy digitizer system for determining the position of a pointer relative to a tablet comprising:

a tablet having a positional grid thereon, said positional grid having positional inaccuracies therein;

location means for determining the coarse position of said pointer relative to said tablet utilizing said positional grid on said tablet; and

error correction means containing information regarding said positional inaccuracies in said positional grid and coupled to said location means for receiving said coarse position from said location means and for generating the true position of said pointer relative to said tablet.

5,854,450

ACOUSTIC CONDITION SENSOR EMPLOYING A PLURALITY OF MUTUALLY NON-ORTHOGONAL WAVES

Joel Kent, Fremont, Calif., assignor to Elo TouchSystems, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 424,216, Apr. 19, 1995. This application Aug. 12, 1996, Ser. No. 695,716

Int. Cl.⁶ G08C *21/00;* **G09G** *5/00*

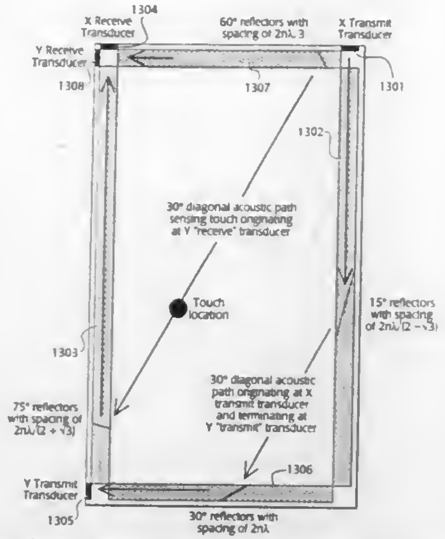
U.S. Cl. 178—18.04 **57 Claims**

1. A touch sensor comprising:

an acoustic wave transmissive medium having a surface and a touch sensitive portion of said surface;

a transducer system for emitting acoustic energy into said medium; and

a receiver system for receiving the acoustic energy from the substrate as at least two distinct sets of waves, a portion of each of which overlap temporally at said receiver system or overlap physically by propagating in said touch sensitive portion along axes which are substantially non-orthogonal;


1304
X Receive Transducer
60° reflectors with spacing of 2nλ, 3
X Transmit Transducer
Y Receive Transducer
1308
1307
1301
1302
30° diagonal acoustic path sensing touch originating at Y "receive" transducer
Touch location
15° reflectors with spacing of 2nλ/(2 − √3)
1303
30° diagonal acoustic path originating at X transmit transducer and terminating at Y "transmit" transducer
75° reflectors with spacing of 2nλ/(2 + √3)
1306
Y Transmit Transducer
1305
30° reflectors with spacing of 2nλ

said receiver system being for determining a position or a waveform perturbing characteristic of a touch on said touch sensitive portion.

5,854,451
PRESSURE SENSITIVE RESISTOR CELL

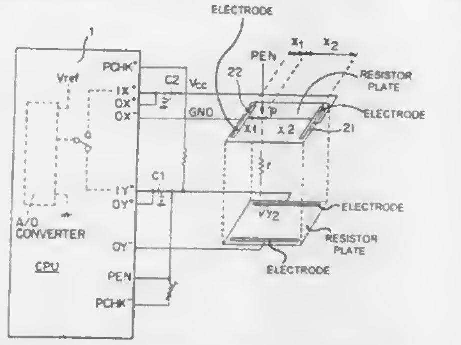
Minekazu Miyazaki, and Noriyuki Nakanishi, both of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,216

Claims priority, application Japan, Mar. 16, 1995, 7-083465

Int. Cl.^{6} G08C *21/00;* G09G *5/00*

U.S. Cl. 178—18.05 **7 Claims**



1. A pressure sensitive resistor cell, comprising:

a pair of opposed X- and Y-coordinate resistor plates having an insulating gap defined therebetween, each of said pair of resistor plates including electrodes, the electrodes of each of said pair of resistor plates includes a voltage input electrode and a grounding electrode;

detecting voltage input means, which in a coordinate detecting mode of the cell applies a coordinate detecting voltage alternately to the voltage input electrode of either one of said pair of resistor plates and also grounds the grounding electrode of said either one of said pair of resistor plates, to generate a potential gradient in a surface of said either one of said pair of resistor plates;

an A/D converter having an input terminal that is alternately connected to an electrode of one or the other of said pair of resistor plates;

calculating means which receives a potential at a pressed point on a first one of said pair of resistor plates to which the coordinate detecting voltage is applied, via said A/D converter when the input terminal of said A/D converter is connected to an electrode of a second one of said pair of resistor plates and which calculates the coordinates of the pressed point from the potential input via said second one of said pair of resistor plates and said A/D converter, wherein said detecting voltage input means applies the coordinate detecting voltage to the first one of said pair of resistor plates to generate therein a first potential gradient only during a fixed period of time necessary for the calculation of both of the X and Y coordinates of the pressed point in said fixed periods;

stylus pressure detecting mode setting means for selecting a waiting state of the cell, said stylus pressure detecting mode setting means increasing the potential of the first one of said pair of resistor plates to a stylus pressure detecting voltage level and decreasing the potential of the second one of said pair of resistor plates to ground level; and

stylus pressure detecting means for judging that said first one of said pair of resistor plates is being pressed and changing the state of the cell from the waiting state to the coordinate detecting mode, when the potential at said input terminal of said A/D converter exceeds a stylus pressure detecting threshold value, said stylus pressure detecting means including a logic circuit having means for comparing an electrode voltage of the electrode connected to the input terminal of said A/D converter and a threshold voltage;

wherein when an electrode of the first one of the pair of resistor plates is connected to the terminal of the A/D converter, the voltage of the first one of the pair of the resistor plates varies with the stylus pressure applied thereto, and when the voltage of the electrode of the first one of the pair of resistor plates connected to the input terminal of the A/D converter exceeds the threshold voltage, then said stylus pressure detecting means makes a primary detection that said first one of said pair of resistor plates is being pressed at a pressed point, said A/D converter starts and the potential at said input terminal is compared with the stylus pressure detecting threshold value; and

wherein said A/D converter, said stylus pressure detecting mode setting means, said stylus pressure detecting means and said logic circuit are built in a one-chip CPU, and wherein while the cell is in the waiting state, said CPU is in a sleep mode such that all circuits of said CPU, except for said stylus pressure detecting mode setting means and said logic circuit, are in an OFF-state, and

wherein when the electrode voltage varies due to the stylus pressure and exceeds the threshold value of said logic circuit, said CPU leaves the sleep mode so as to turn ON all of its circuits;

further comprising switching means which, after the calculation of one of the coordinates of the pressed point, switches between said pair of resistor plates for the generation of a second potential gradient in said second one of said pair of resistor plates by said detecting voltage input means and for the connection with the input terminal of said A/D converter, respectively; and

still further comprising output means which outputs as XY coordinate data, for each fixed period, both X and Y coordinates of the pressed point calculated by said calculating means.

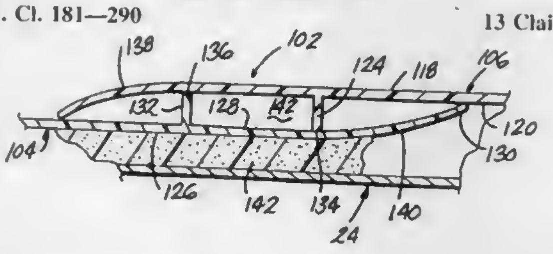
5,854,452
SYSTEM FOR FASTENING SHEET MATERIALS TOGETHER

Michael T. Campbell, Grand Rapids, and Andrew R. Skestone, Hastings, both of Mich., assignors to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Jul. 25, 1997, Ser. No. 901,233

Int. Cl.^{6} E04B *1/82*

U.S. Cl. 181—290 **13 Claims**



1. An acoustical barrier adapted to be mounted to a barrier wall, the acoustical barrier comprising:

first and second mat portions juxtaposed to each other in overlapping relationship, each mat portion being of a molded construction and having sound dampening characteristics with an inner surface adapted to face the barrier wall and an outer surface adapted to face away from the barrier wall;

the first and second mat portions each having a terminal edge; the terminal edge of the second mat portion being in engagement with one of the inner and outer surfaces of the first mat portion to thereby acoustically seal the first and second mat portions together;

a first spacer rib having one end integrally molded as a single piece with one of the first and second mat portions, the rib extending from the one mat portion to the other mat portion or from the one mat portion to the barrier wall when the acoustical barrier is mounted thereto, the first spacer rib being adjacent to but spaced from the terminal edge of the one mat portion to space the one mat portion from the other mat portion or to space the one mat portion from the barrier wall; and

a second spacer rib having one end integrally molded as a single piece with the other of the first and second mat portions, the second spacer rib extending from the other of the first and second mat portions to the one mat portion.

5,854,453
SOUND ABSORBING BODY, SOUND ABSORBING PLATE, AND SOUND ABSORBING UNIT

Kyoji Fujiwara, Fukuoka; Shinta Yamamura, Kanagawa; Naoyuki Furuta; Tadanori Mizukami, both of Tokyo; Yutaka Tasaki, Kanagawa, and Takashi Mikami, Saitama, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

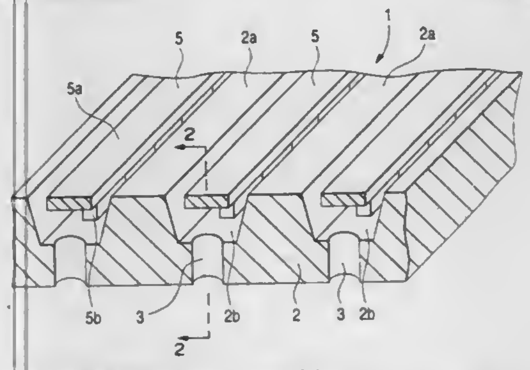
PCT No. PCT/JP95/02067, § 371 Date Apr. 9, 1997, § 102(e) Date Apr. 9, 1997, PCT Pub. No. WO96/11464, PCT Pub. Date Apr. 18, 1996

PCT Filed Oct. 9, 1995, Ser. No. 809,731

Claims priority, application Japan, Oct. 11, 1994, 6-331337; Jun. 14, 1995, 7-171465

Int. Cl.^{6} E04B *1/82*

U.S. Cl. 181—293 **9 Claims**



1. A sound absorbing body comprising:

a sound absorbing main body formed substantially in the shape of a plate;

a plurality of projecting ribs at predetermined intervals on a front surface side of said sound absorbing main body for reinforcing said sound absorbing main body, each of said ribs having a desired cross-sectional shape;

through-holes formed through said sound absorbing main body from a front surface thereof to to a back surface thereof at respective locations positioned between said ribs; and

concealing materials disposed between said ribs on the front surface side of said sound absorbing main body and concealing said through-holes;

wherein slits are formed between the concealing materials and said ribs which communicate with said through-holes.

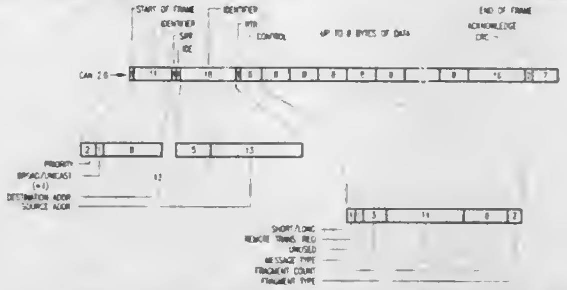
5,854,454
MESSAGE ROUTING IN CONTROL AREA NETWORK (CAN) PROTOCOL

Bhargavender P. Upender, Middletown; David C. Brajczewski, Vernon; Alexander G. Dean, Glastonbury, and Stephen A. Hatzirallis, Farmington, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 16, 1996, Ser. No. 714,647

Int. Cl.^{6} B66B *1/28;* H04Q *5/22;* G01R *31/08*

U.S. Cl. 187—247 **4 Claims**



1. A method of communicating between various nodes of a multi-processor control system, utilizing control area network (CAN) hardware which responds to a standard CAN message format in which the most significant bit is a start of frame bit, the next 31 most significant bits include a 29-bit identifier field, the next bit comprises a remote transmission request bit, the next six bits comprise a field of control bits, the next field of between 8 and 64 bits comprises a data field, the next 16 bits comprise a cyclic redundancy check field, the next 2 bits comprise an acknowledge field, and the least significant seven bits comprise an end of frame field, which method comprises:

providing a priority field consisting of a fraction of said CAN identifier field including the most significant bits of said identifier field, the content of which will determine a particular one of a plurality of priority levels, whereby standard CAN bus arbitration, by high order to low order zero dominance bit-wise comparison collision avoidance, effects transmission of a message of a higher priority one of said priority levels rather than a message of a lower priority one of said priority levels; and

providing, as a plurality of other bits in said CAN identifier field, a multi-bit source address uniquely identifying the source of any message in said system, whereby collision avoidance as between messages having the same priority level is carried out by said standard CAN bus arbitration.

5,854,455
SWITCHING DEVICE WITH SECONDARY SWITCHING FUNCTION

John Cranick, White Lake, and Mark Feldman, Farmington Hills, both of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Mar. 25, 1997, Ser. No. 824,005

Int. Cl.^{6} H01H *9/00*

U.S. Cl. 200—1 B **18 Claims**

1. A switching device, comprising:

a housing;

an electrical power supply supported in said housing;

a first switch contact supported in said housing to be selectively moved from a first position into a second position where said switch contact is coupled to said power supply;

a second switch contact supported within said housing including a flexible conductive member having a flexible contact surface;

a signal generator supported within said housing and having a conductive contact portion, said second switch contact being supported adjacent said signal generator such that a central portion of said flexible surface is deflected between a first position where said central portion does not contact said conductive contact portion and a second position where said central portion contacts said conductive contact portion; and

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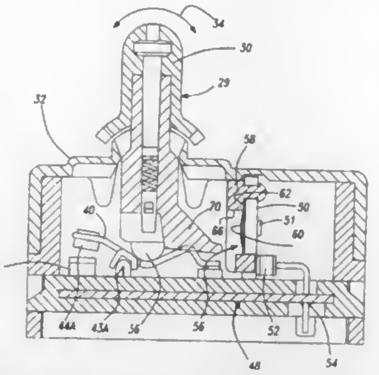


a user manipulatable switch handle supported for movement relative to said housing and having a first actuator portion that only engages said first switch contact to thereby selectively move said first switch contact into said position to accomplish a primary switching function when said switch handle is moved a first distance in a first direction and a second actuator portion that only engages said second switch contact to thereby cause said central portion to contact said conductive contact portion to accomplish a secondary switching function when said switch handle is moved a second distance in said first direction, wherein said second distance is greater than said first distance.

5,854,456

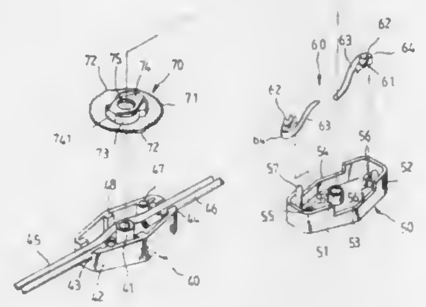
LINE SWITCH HAVING A PARALLEL ARRANGEMENT BETWEEN CONDUCTING PLATES WITH PIERCING TIPS AND THE ELECTRICAL CORD

Liu Lee-ven, P.O. Box 55-175, Taichung, Taiwan

Filed Jul. 22, 1997, Ser. No. 898,034

Int. Cl.^{6} H01H *19/58;19/20*

U.S. Cl. 200—11 TW **5 Claims**



1. a safety switch for controlling electricity between a plug and an appliance comprising:

an upper casing comprising a first protrudent central bore projected downward from an inner surface thereof, an enclosure wall therearound, a pair of first slots at two ends of said enlcosure wall for receiving a pair of first and second electrical cords which are parallel disposed and connect with a plug and an appliance at two ends respectively with said second cord being broken off inside said casing, a coupling socket projected downward from a corner of each end wall and a pair of ribs formed symmetrically abutting a pair of opposite lateral walls thereof;

a lower casing engageable with said upper casing and secured by means of screw, said lower casing comprising a second protrudent central bore made in registry with said first protrudent central bore, an enclosure wall engageable with the enclosure wall of said upper casing, a pair of elongate slots symmetrically formed in opposing lateral walls, a pair of positioning stems centrally projected inward from adjacent two ends of said enclosure wall thereof each including a vertical retaining slot centrally extended along a longitudinal orientation and a post projected upward at a corner of each end wall engageable with said coupling socket of said tipper casing;

a pair of copper conduct plates secured at two ends of said lower casing therein, said conduct plates each having a flat rectangular portion engaged into the vertical slot of said positioning stems including a pair of tip points parallel projected upward from a top thereof and staggered each other away from a vertical axis, a transverse portion extended from said rectangular portion and abutting said positioning stem, and an elastic conducting portion extended inward from said transverse portion first parallel to said rectangular portion and then bending a predetermined angle and terminated at a position adjacent an opposing periphery of said second protrudent central bore;

a swivel disk member rotatably engaged onto said second protrudent central bore of said lower casing, said disk member comprising a flat circular body of serrated outer circumference, a pair of positioning marks at opposite circumference, a S-shaped protrusion centrally projected downward from a planar portion of said body, an elliptic copper plate attached to a top of said protrusion including a pair of narrower portion extended outward from two ends each having a conducting piece perpendicular to free end thereof and fixedly secured to a vertical portion of opposite ends of said protrusion and a third central bore engageable with said second protrudent central bore formed through said elliptic copper plate and said protrusion;

whereby, said swivel disk member rotates to engage or disengage said conducting pieces with said pair of copper conduct plates inside said casing for controlling the electric current between a plug and an appliance.

5,854,457

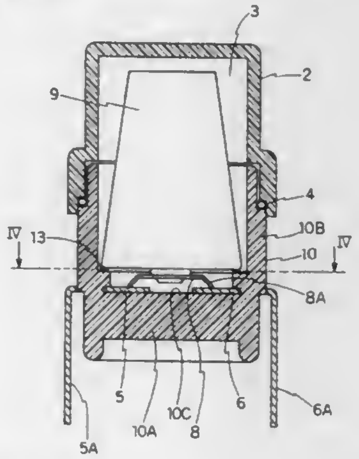
TILTING ON-OFF SWITCH

Kikuyoshi Nishikawa, 17, Tsuokacho, Asahi-ku, Yokohama-shi, Kanagawa, Japan

Filed Nov. 17, 1997, Ser. No. 971,680

Int. Cl.^{6} H01H *35/02*

U.S. Cl. 200—61.51 **10 Claims**



1. A tilting ON-OFF switch for detecting overturning, comprising:

a cylindrical housing containing a cylindrical side wall and a bottom frame closing a lower end of said cylindrical side wall to define a columnar cavity in the housing;

a pair of fixed contact pieces located in a lower end portion of said cavity in a plane perpendicular to a center axis of said cavity and opposed from one another across said axis, said pair of fixed contact pieces respectively having portions that extend through said cylindrical side wall of said housing to form terminals exterior to said housing;

a weight movably received on said pair of fixed contact pieces in said cavity, said weight having a substantially truncated-conical portion whose diameter gradually decreases in an upward direction; and

a movable contact piece formed of sheet metal, said movable contact piece being fixed to an underside of said weight concentrically therewith and extending over said pair of fixed contact pieces, said movable contact piece having plural tongues arranged along a circle of a diameter smaller than a maximum diameter of said weight and bent downward, tips of said tongues being arranged along a circle having a diameter smaller than said maximum diameter of said weight.

5,854,458

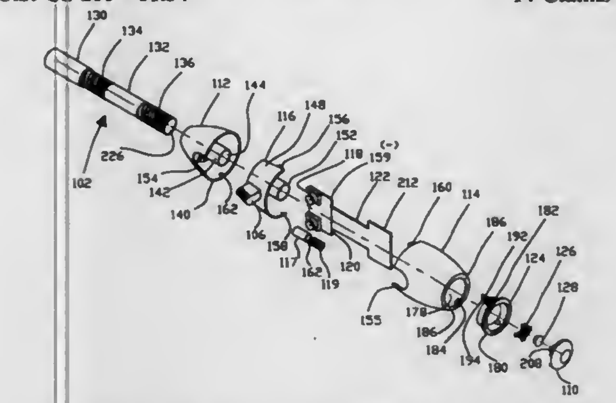
STALK MOUNTED THREE FUNCTION SWITCH ASSEMBLY HAVING A SINGLE MULTIPLEXED OUTPUT

Rajkumar Ramamurthy, Keokuk, Iowa; Robert A. Buenzow, Hamilton, and James K. Pettit, Carthage, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Mar. 3, 1997, Ser. No. 811,432

Int. Cl.^{6} H01H *9/00*

U.S. Cl. 200—61.54 **14 Claims**



1. A multi-function switch assembly for mounting to the end of a tubular member and providing control information to external devices via control wires contained within said tubular member, said switch assembly comprising:

a housing defining at least one internal cavity for mounting switch components therein, and also defining an internal bore configured to receive said tubular member, and communicating with said at least one internal cavity, and having an outside end;

first, second, and third switches mounted within the at least one internal cavity defined by said housing;

a bi-directional switch actuator mounted within the at least one internal cavity defined by the housing for actuating the first and second switches, the first and second switches being positioned such that when the switch actuator is moved in a first direction, the first switch is actuated, and when the switch actuator is moved in a second, opposite direction, the second switch is actuated;

a linear switch actuator for actuating the third switch; and

multiplex circuitry electrically connected to the first, second, and third switches, the multiplex circuitry generating a single electrical signal from which an operative open or closed switch state of each switch can be determined.

5,854,459

METHOD AND DEVICE FOR PROCESSING WORKPIECES BY MEANS OF ELECTRICAL DISCHARGE MACHINING

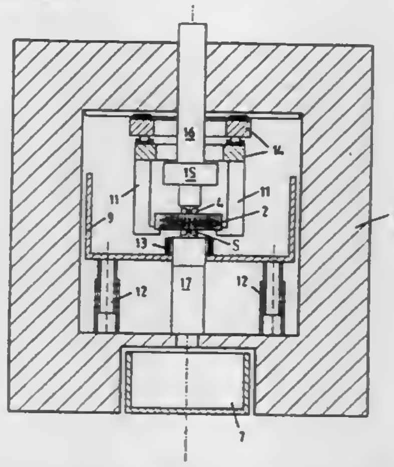
Ernst. Bühler, Losone; Hans-Jürg Etter, Verscio, and Peter Wehrli, Auressio, all of Switzerland, assignors to Agie Ltd., Switzerland

Filed Oct. 2, 1997, Ser. No. 942,507

Claims priority, application Germany, Oct. 2, 1996, 196 40 790.7

Int. Cl.^{6} B23H *7/10*

U.S. Cl. 219—69.12 **12 Claims**



1. A method for processing workpieces by electric discharge machining, with at least one electrode which is guided in guide heads above and below the working zone, said method comprising the steps of:

a) providing a workpiece;

b) providing an electric discharge machine having at least one electrode, a machine frame, a worktank for containment of machining fluid, an upper guide head and a lower guide head, said frame, said worktank, and said lower guide head forming a stationary unit with respect to a horizontal X/Y main axis, said lower guide head passing through a bottom of the worktank;

c) providing an X/Y main drive for moving said workpiece in a horizontal X/Y plane;

d) moving said workpiece in the X/Y plane; and

e) simultaneously eroding said workpiece with said at least one electrode.

5,854,460

LINEAR MOTOR DRIVEN LASER CUTTING MACHINE

Raymond J. Graf, Cincinnati, Ohio; Dale C. Smyth, Jr., Lawrenceburg, Ind.; Jeffrey D. Wintring, Florence, Ky.; Robert C. Hertlein, Cincinnati, Ohio; Randall P. Coons, Crescent Springs, Ky.; Jeff J. Mills, Cincinnati, Ohio; Michael A. Halley, Westminster, Colo., and Jeffrey E. Farmer, Cincinnati, Ohio, assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed May 7, 1996, Ser. No. 643,725

Int. Cl.^{6} B23K *26/00*

U.S. Cl. 219—121.67 **27 Claims**

1. A laser cutting machine of the type having a main frame with longitudinally extending front-side and rear-side upstanding main frame portions in parallel spaced relationship and having horizontal, coplanar top surfaces, a cutting zone and a loading and unloading zone located between said upstanding main frame portions, upper and lower workpiece supporting pallets being shiftable between said cutting and said loading and unloading zones, said laser cutting machine having a longitudinal X axis, a transverse Y axis, and a vertical Z axis, said upper surfaces of said upstanding main frame portions each having a pair of longitudinally extending bearing rails thereon, a first front-side gantry carriage and a second rear-side gantry carriage being mounted on and shiftable longitu-

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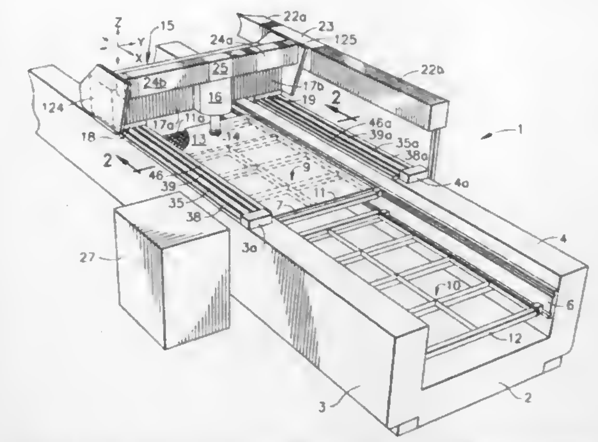


dinally along said pair of bearing rails on said front-side upstanding main frame portion and said pair of bearing rails on said rear-side upstanding main frame portion, each of first and second gantry carriages having its own linear motor associated therewith and being independently driven thereby in the directions of said X axis, a gantry extending transversely of said main frame, said gantry having ends each attached to and supported on the adjacent one of said first and second gantry carriages by a torsion plate, a carriage mounted laser head, said gantry having a pair of bearing rails, said laser head and carriage therefor being mounted on and shiftable along said gantry bearing rails transversely of the main frame and a linear motor associated with said laser head carriage to move said laser head carriage in the directions of said Y axis, said laser head being shiftable vertically with respect to said laser head carriage in the directions of said Z axis, a high performance multi-axis motion controller capable of interfacing with said linear motors of said gantry carriages and said laser head carriage, and a linear encoder associated with each of said linear motors providing position feedback for said motion controller.

5,854,461

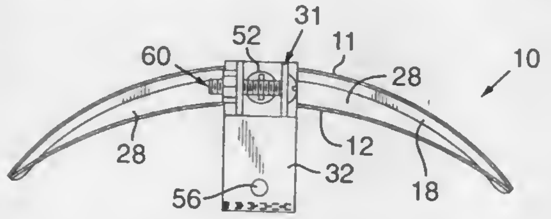
WELDING SHIELD

Jared T. Sorenson, 19841-A River Rd., Gladstone, Oreg. 97027

Filed Apr. 29, 1997, Ser. No. 848,692

Int. Cl.⁶ B23K ***9/29***

U.S. Cl. 219—136 **8 Claims**



1. A shield for protecting a welder and/or a welding instrument from heat, sparks and slag of a welding operation, comprising:
  a front plate having a middle region, a peripheral region, and a contour defined by a first radius of curvature;
  a rear plate having a middle region, a peripheral region, and a contour defined by a second radius of curvature that is greater than the first radius of curvature;
  wherein the front plate is attached to the rear plate about a portion of their respective peripheral regions so that the middle region of the front plate is separated from the middle region of the rear plate to define an air channel for permitting air to pass between the front plate and the rear plate, thereby cooling the front plate and attenuating the transmission of heat to the rear plate.

5,854,462

STAINLESS-STEEL FLUX CORED WIRE ELECTRODE

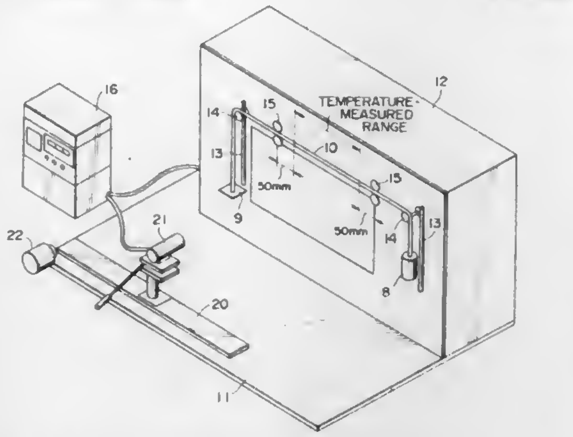
Tsuneshi Ogawa; Teru Haginoya; Toshiharu Maruyama; Shigeki Nishiyama, and Shintaro Ozaki, all of Fujisawa, Japan, assignors to Kabushiki Kaisha Kohe Seiko Sho, Kobe, Japan

Filed Mar. 28, 1997, Ser. No. 828,383

Claims priority, application Japan, Mar. 29, 1996, 8-077599

Int. Cl.⁶ B23K ***9/24***

U.S. Cl. 219—137 WM **4 Claims**



1. A process, comprising welding with a flux cored wire electrode, wherein
  the electrode comprises a stainless steel housing and 10–30% by total weight of the wire of a flux in said housing,
  the electrode has a K value of at most 2.5, and
  the K value is measured by a process comprising:
    passing electricity in a longitudinal direction through a first point and a second point in the electrode to heat the electrode to 500° to 1000° C., wherein the first point and second point are separated by 300 to 1000 mm; and
    recording at least one temperature of the electrode between the first and second point on a chart recorder to produce a temperature distribution curve,
    wherein the recorder is scaled such that 100° C. corresponds to a 5 cm vertical distance and a 100 mm electrode length corresponds to a horizontal distance of 1 cm, and
    the K value is a ratio of a length of the temperature distribution curve to a length of a baseline.

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FLUX CORED WIRE FOR STAINLESS STEEL

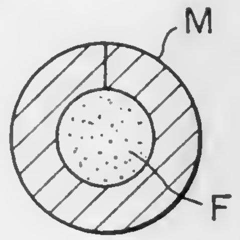
Ken Yamashita, and Tsuyoshi Kurokawa, both of Fujisawa, Japan, assignors to Kabushiki Kaisha Kobe Seikn Sho, Kobe, Japan

Filed Feb. 28, 1997, Ser. No. 808,651

Claims priority, application Japan, May 13, 1996, 8-118030

Int. Cl.⁶ B23K ***35/24***

U.S. Cl. 219—145.22 **5 Claims**



1. In a flux cored wire for stainless steel which comprises a metal covering and flux enclosed by the metal covering, the improvement wherein the flux contains a slag forming agent in an amount of 6.0 wt. % to 13.0 wt. % based on the total weight of the wire and the metal covering is made of an austenite-base stainless steel containing 0.003 wt. % to 0.090 wt. % of O, 0.0005 wt. % to 0.02 wt. % of S, 0.1 wt. % to 0.6 wt. % of Si and 0.005 wt. % to 0.2 wt. % of V, each based on the total weight of the metal covering.

5,854,464

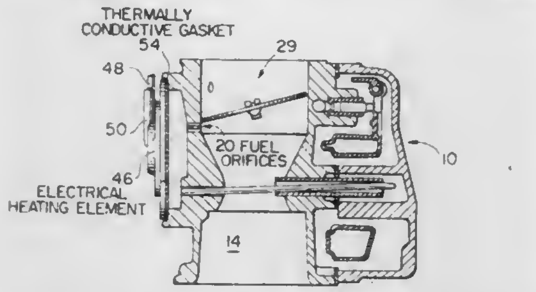
MARINE CARBURETOR ANTI-ICING APPARATUS

Mark E. Sweeney, Oshkosh, and Paul H. Jennerjahn, Greenville, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Continuation of Ser. No. 302,500, Sep. 8, 1994, Pat. No. 5,628,927. This application May 6, 1997, Ser. No. 851,908

Int. Cl.⁶ F02M ***15/04;*** **H05B** ***3/00***

U.S. Cl. 219—207 **2 Claims**



1. In a marine drive carburetor having a carburetor body containing a set of small fuel orifices for an idle circuit and a progression circuit, a progression circuit cover that is removably mounted on a side of the carburetor over the idle and progression circuits by at least one fastener at a fastening location on the carburetor body near the fuel orifices forming the idle and progression circuits, and a sealing gasket located adjacent the fuel orifices between the progression circuit cover and the carburetor body, an improved carburetor anti-icing apparatus for heating the carburetor body adjacent the idle and progression circuits to prevent the formation of ice in and over the set of small fuel orifices forming the idle and progression circuits, said carburetor anti-icing apparatus comprising:
  a carburetor heater and a thermally conductive gasket which are removably mounted to the carburetor body on the side of the carburetor over the set of small fuel orifices forming the idle and progression circuits in place of the recited progression circuit cover and sealing gasket;
  wherein the carburetor heater includes two electrical leads and an electrical heating element and is removably mounted to the carburetor body by at least one fastener at the fastening location on the carburetor body near the fuel orifices; and
  wherein the thermally conductive gasket includes no more than one layer mounted between the carburetor heater and the carburetor body and surrounds the set of small fuel orifices in the carburetor body forming the idle and progression circuits, thereby facilitating heat transfer from the electrical heating element in the carburetor heater to the carburetor body in the vicinity of the set of small fuel orifices forming the idle and progression circuits to prevent the formation of ice in and over the set of small fuel orifices and provide improved low speed operation.

5,854,465

THERMAL FIXING DEVICE FOR AN IMAGE FORMING APPARATUS

Kazuhito Kishi, Yokohama; Takeshi Takemoto, Yamato, and Takashi Kimura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

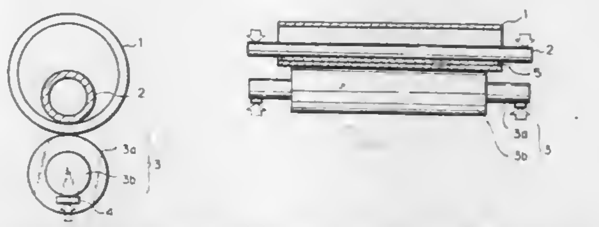
Filed Sep. 20, 1995, Ser. No. 531,003

Claims priority, application Japan, Sep. 21, 1994, 6-226677; Oct. 11, 1994, 6-245648; May 31, 1995, 7-134098

Int. Cl.⁶ G03G ***15/20***

U.S. Cl. 219—216 **94 Claims**

1. A thermal fixing device comprising:



  a hollow heat generating member comprising at least a heat generating layer;
  a first pressing member disposed in said heat generating member throughout said heat generating member and rotating independently of said heat generating member;
  a second pressing member located outside of said heat generating member; and
  biasing means for biasing at least one of said first and second pressing members toward the other to thereby urge said heat generating member against said first pressing member or said second pressing member, wherein said first pressing member comprises a freely rotatable roller.

5,854,466

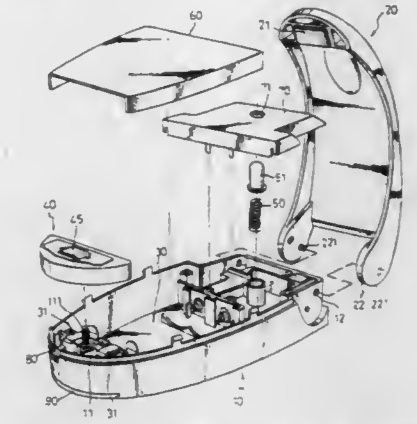
HAND-HELD PIVOTING ELECTRIC HEAT SEALING APPARATUS

Ammy Chou, Taipei Hsien, Taiwan, assignor to Welcome Company, Ltd., Taiwan

Filed Aug. 26, 1997, Ser. No. 917,358

Int. Cl.⁶ H05B ***3/00***

U.S. Cl. 219—227 **19 Claims**



1. A hand-held electric sealing apparatus comprising:
(a) a casing having a front end and a rear end.
(b) a compression spring mounted near said front end of said casing.
(c) a heat sealing unit supported on said compression spring. said heat sealing unit comprising:
  (i) a heat insulative base.
  (ii) an electric heating wire secured to said heat insulative base
  (iii) a cover shell covering said heat insulative base and having defined therein an opening through which a portion of said heat insulative base and said electric heating wire project.
  (iv) a cover frame secured to said cover shell, and
  (v) a heat insulative sheet disposed between said cover frame and said cover shell, and
(d) a press handle having a front end and a rear end pivotally connected to said rear end of said casing.

5,854,467

Patent Not Issued For This Number

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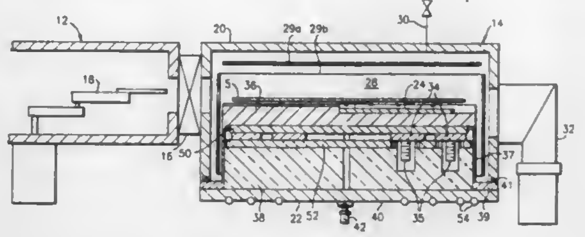
SUBSTRATE HEATING APPARATUS WITH CANTILEVERED LIFTING ARM

Richard S. Muka, Topsfield, Mass., assignor to Brooks Automation, Inc., Chelmsford, Mass.

Filed Jan. 25, 1996, Ser. No. 591,278

Int. Cl.^{6} H05B *3/68;* **F27B** *5/14;* **C23C** *14/00*

U.S. Cl. 219—443 **22 Claims**



1. A substrate heating apparatus comprising:
a frame forming a chamber;
a heater having a heating surface located in the chamber, the heating surface having grooves along the heating surface;
a lift arm located in at least one of the grooves and extending out of the at least one groove at a lateral side of the heater; and
a lift mechanism connected to the frame and the lift arm for moving the lift arm in and out of the at least one groove past a top of the heating surface.

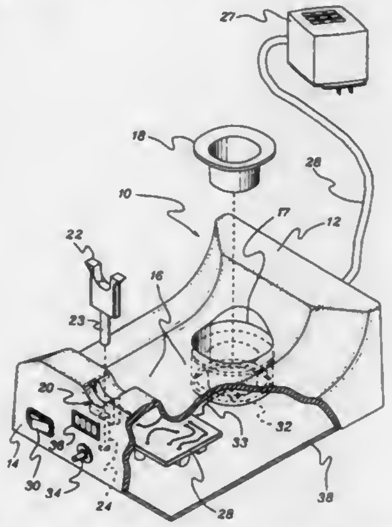
5,854,469
HEATING UNIT FOR THERAPEUTIC INSTRUMENT

David Gabay, 92 Parkhurst Rd., Gansevoort, N.Y. 12831

Filed Jun. 28, 1996, Ser. No. 673,345

Int. Cl.^{6} H05B *3/70*

U.S. Cl. 219—521 **7 Claims**



1. A stand-alone thermal unit for warming a portion of a body-contacting instrument comprising, in combination:
a non-conductive case having a saddle shape defined by elevated front and rear ends with a lower ridge therebetween, a circular depression disposed proximately central of said ridge and a manually height-adjustable col member disposed in an uppermost portion of at least one of said ends; and
an electrical heating element comprising a nichrome filament sandwiched between two mica wafers and disposed in said depression, said heating element connected to a power control circuit contained within said case and which is operable by a manual control means included therein.

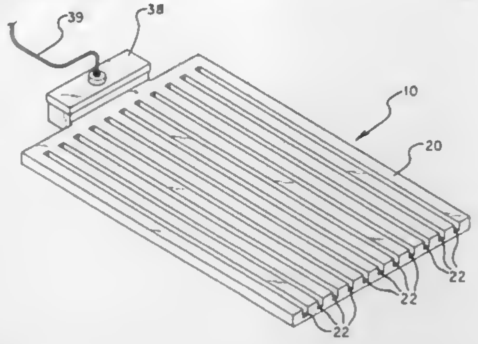
5,854,470
SNOW MELTING MAT SYSTEM

Percy Silva, 151 Pacific St. Apt. 8, Paterson, N.J. 07503

Filed Apr. 17, 1997, Ser. No. 840,243

Int. Cl.^{6} A47B *97/00*

U.S. Cl. 219—528 **8 Claims**



1. A snow melting mat, comprising:
a mat substantially swaged and formed for positioning along a walkway; and
a heating means positioned within said mat for heating said mat thereby melting accumulated snow or ice for preventing slipping of an individual;
wherein said mat has top and bottom surfaces with a plurality of drain slots projecting into said top surface of the mat such that said slots form a plurality of elongate ridges, each of said ridges having an upper surface oriented substantially parallel to each other and to said bottom surface, said slots each having a lower surface oriented substantially parallel to the upper surfaces of said ridges;
wherein said heating means a positioned in said ridges between a plane formed by the upper surfaces of said ridges and a plane formed by the lower surfaces of said slots to thereby concentrate the heat transferred from said top surface of said mat and minimize the heating of water in said slots.

5,854,471
APPARATUS USING A THERMISTOR WITH A POSITIVE TEMPERATURE COEFFICIENT

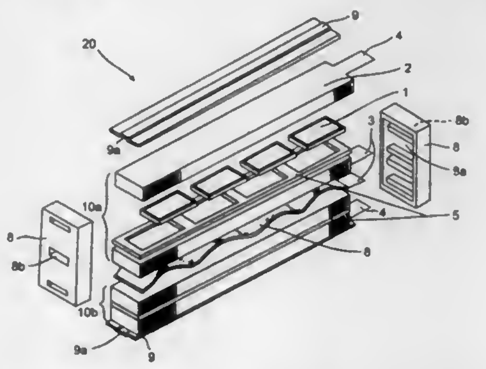
Tomoaki Tadokoro; Akira Mizoi, both of Shiga-ken; Shinji Omura, Ohmihachiman; Tomomi Okada, Youkaichi, and Osamu Watanabe, Hikone, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Continuation of Ser. No. 513,398, Aug. 10, 1995. This application Apr. 8, 1997, Ser. No. 835,475

Claims priority, application Japan, Aug. 10, 1994, 6-188410

Int. Cl.^{6} H05B *3/06;1/02;* **F24D** *13/00;* **H01C** *7/10*

U.S. Cl. 219—540 **30 Claims**



1. A PTC thermistor apparatus comprising:
two or more heating blocks, each heating block including a spacer having at least one through-hole for holding a PTC thermistor, and including radiating elements disposed in contact with at least two surfaces of said PTC thermistor;
an elastic element disposed between said heating blocks;
insulating elements for holding portions of said radiating elements at the ends of said heating blocks, said heating blocks being biased from each other by an elastic force of said elastic element; and
a first reinforcing element disposed adjacent to at least one of said heating blocks, said reinforcing element having a groove formed therein, wherein said groove forms at least one space disposed between said reinforcing element and at least one of said heating blocks.

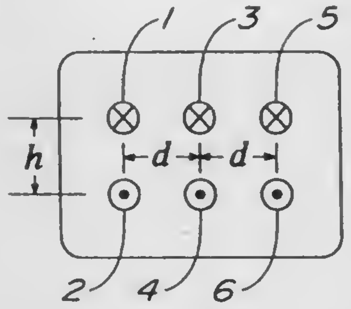
5,854,472
LOW-VOLTAGE AND LOW FLUX DENSITY HEATING SYSTEM

Theodore Wildi, Quebec, Canada, assignor to Sperika Enterprises Ltd., Quebec, Canada

Filed Jun. 6, 1996, Ser. No. 659,180

Int. Cl.^{6} H05B *3/34*

U.S. Cl. 219—549 **36 Claims**



1. A low-voltage heating system for heating a surface area, said system comprising at least one cable having six conductive heating wires contained in an insulated sheath, said six conductive heating wires of said cable being arranged in an upper row of three wires and a lower row of three wires within said cable which is of substantially rectangular cross-section, said upper and lower rows lying parallel to one another and to a horizontal axis of said cable, said rows being in vertical juxtaposition and separated by a distance h, wherein h is the perpendicular distance between said parallel upper and lower rows, an adequate low voltage supply source, feeder conductor means connected to said supply source, said heating wires being connected at one end to said feeder conductor means, said wires having low resistivity similar to that of copper, said at least one cable and said wires therein being permanently fixed relative to said surface area to be heated; said cable having a length (L) based on specific parameters of said system including (i) the operating voltage (E) of said supply source, (ii) the number of phases of said supply sources (iii) the total cross sectional dimension (A) of said six heating wires, (iv) the resistivity (p) of the wire material, (v) the desired thermal power per unit length (P_C) of said cable, and (vi) the connection of said wires in said cable to said feeder conductor means, whereby the resultant magnetic flux density of said cable is less than a specific value at a specific distance from a cable when current is applied to said heating wires in said cable.

5,854,473
INDUCTION HEATING APPARATUS HAVING AN ALTERNATING CURRENT GENERATOR WITH A SATURABLE CHOKE

Michel Auguste Malnoe, Saint-Samson, France, assignor to Moulinex S.A., Bagnolet, France

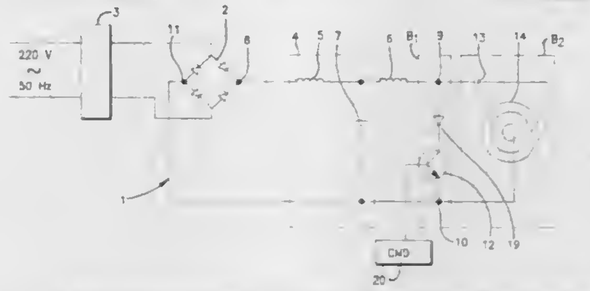
PCT No. PCT/FR94/01334, § 371 Date Apr. 30, 1996, § 102(e) Date Apr. 30, 1996, PCT Pub. No. WO95/14364, PCT Pub. Date May 26, 1995

PCT Filed Nov. 15, 1994, Ser. No. 637,721

Claims priority, application France, Nov. 15, 1993, 93 13587

Int. Cl.^{6} H05B *6/06;6/12*

U.S. Cl. 219—626 **13 Claims**



1. An alternating current generator for an induction heating apparatus, the current generator having an oscillating circuit comprising:
a parallel assembly of two branches, a first of said branches comprising a power switch, and a second of said branches comprising a capacitor connected in series with an induction heating coil; and
a saturable current injection choke connected in series with said parallel assembly, said current injection choke comprising a magnetic circuit that automatically reaches saturation during a resonance phase of the oscillating circuit.

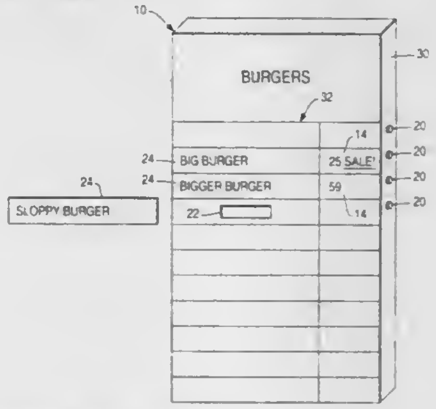
5,854,474
ELECTRONIC SIGN HAVING AUTOMATIC PRICE DISPLAY

John C. Goodwin, III, Suwanee, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 6, 1996, Ser. No. 708,994

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 235—383 **7 Claims**



1. An electronic sign comprising:
a plurality of item description cards which together form a menu, wherein each item description card includes an item description on a front side and a two-dimensional bar code label containing price information on a back side;
a housing containing a plurality of adjacent slots which retain the item description cards;
wherein each slot contains a two-dimensional bar code reader, a memory for storing the price information from the item identification card, and a display for displaying the price information; and

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a plurality of switches, one for each slot, for activating the two-dimensional bar code readers to read the two-dimensional bar code labels on the item description cards and store the price information in the memory, and for causing the displays to display the price information in the two-dimensional bar code labels.

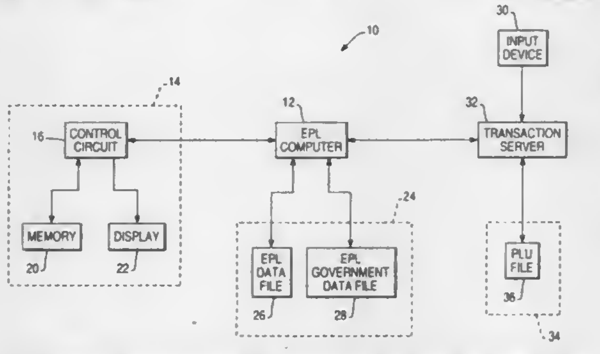
5,854,475
METHOD OF DISPLAYING A GOVERNMENT PROGRAM MESSAGE BY AN ELECTRONIC PRICE LABEL

John C. Goodwin, III, Suwanee, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 7, 1996, Ser. No. 726,594

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 235—383 **14 Claims**



1. A method of displaying a government program message by an electronic price label (EPL) comprising the steps of:
- storing the government program message with a government program indicator associated with the government program message in a first location;
- storing the government program indicator in a second location;
- creating a control message addressed to the EPL including the substeps of
  - reading the government program indicator for the EPL from the second location; and
  - reading the government program message from the first location;
- wirelessly transmitting the control message to the EPL;
- receiving the control message by the EPL; and
- electronically displaying the government program message by the EPL.

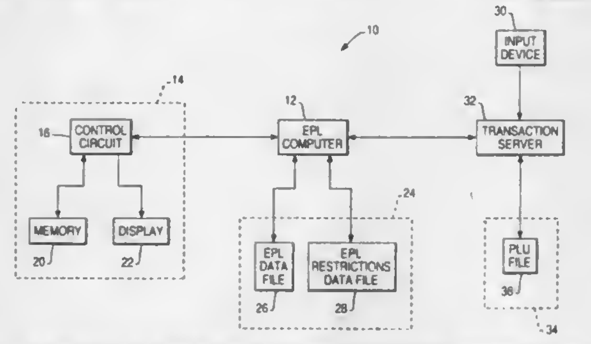
5,854,476
METHOD OF DISPLAYING A PRODUCT RESTRICTION MESSAGE BY AN ELECTRONIC PRICE LABEL

John C. Goodwin, III, Suwanee, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 7, 1996, Ser. No. 726,595

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 235—383 **14 Claims**



1. A method of displaying a product restriction message by an electronic price label (EPL) comprising the steps of:
- storing the product restriction message with a product restriction indicator associated with the product restriction message in a first location;
- storing the product restriction indicator in a second location;
- creating a control message addressed to the EPL including the substeps of
  - reading the product restriction indicator for the EPL from the second location; and
  - reading the product restriction message from the first location;
- wirelessly transmitting the control message to the EPL;
- receiving the control message by the EPL; and
- electronically displaying the product restriction message by the EPL.

5,854,477
REUSABLE TICKET PROCESSING APPARATUS AND TICKET REGENERATING APPARATUS

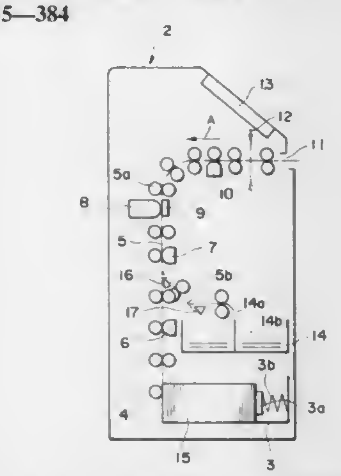
Masatoshi Kawaji; Yoshio Murakami, and Toshihiro Ikeda, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1997, Ser. No. 870,595

Claims priority, application Japan, Jun. 7, 1996, 8-145831

Int. Cl.^{6} G07B *15/02*

U.S. Cl. 235—384 **6 Claims**



1. A ticket processing apparatus for reusable tickets, having a thermal print portion capable of repeatedly printing by heating at a predetermined write temperature and deleting the printed characters and the like by heating at a deletion temperature, and also capable of setting information about the number of times of printing done, said ticket processing apparatus comprising:
- printed-character-deletion heating means for deleting reservation information by heating a thermal print portion of a reservation ticket to a deletion temperature when a reusable reservation ticket on which reservation information has been printed is inserted;
- reuse decision means for deciding whether or not said reservation ticket is reusable by reading said information about the number of times of printing done on said reservation ticket;
- real ticket conversion means for, when said ticket is decided to be reusable by said reuse decision means, converting said reservation ticket into a real ticket by printing real-ticket information on said thermal print portion of said reservation ticket by controlling a thermal head, and issuing a real ticket;
- storage means for storing a reusable ticket as a real ticket in store;
- stored real ticket issuing means for, when said reuse decision means decides that said reservation ticket is not reusable, taking out a stored real ticket, and printing real-ticket information on said thermal print portion of said stored real ticket by controlling said thermal head; and
- number-of-times updating means for updating the number of times of printing done on a real ticket to be issued.

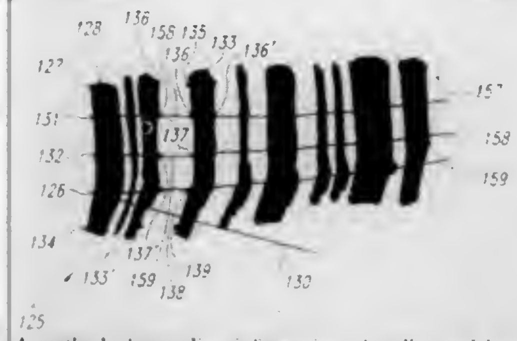
5,854,478
METHOD AND APPARATUS FOR READING MACHINE-READABLE SYMBOLS HAVING SURFACE OR OPTICAL DISTORTIONS

Lingnan Liu, Mill Creek; Mark Y. Shimizu, Seattle, and Lisa M. Vartanian, Kirkland, all of Wash., assignors to Intermec IP Corp., Everett, Wash.

Filed Oct. 11, 1996, Ser. No. 731,274

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 235—462 **34 Claims**



13. A method of sampling information of a distorted image of machine-readable visual indicia within a reader image generated and stored by an indicia reader, the machine-readable visual indicia in its undistorted form having a plurality of information bearing indicia extending and decodable along at least one axis, and the plurality of information bearing indicia having a plurality of edges between the information bearing indicia and areas formed therebetween, the method comprising the steps of:
- identifying a starting point proximate to an information bearing indicia of the distorted image of the machine-readable visual indicia;
- identifying at least some edges of the information bearing indicia based on the starting point;
- selecting at least one point on each identified edge;
- defining at least one path extending between each corresponding point of each edge; and
- sampling the information bearing indicia along the at least one path.

5,854,479
BAR-CODE READER AND BAR-CODE READING METHOD FOR DETECTING VARIOUS POSSIBLE REPRODUCIBLE BAR CODE COMBINATIONS AND SYNTHESIZING INFORMATION THEREFROM

Mitsuo Watanabe; Ichiro Shinoda; Shinichi Sato; Isao Iwaguchi; Hiroaki Kawai, and Motohiko Itoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

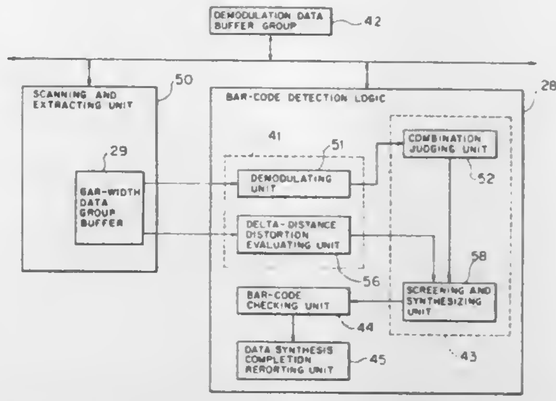
Continuation of Ser. No. 504,191, Jul. 19, 1995, abandoned. This application Nov. 26, 1997, Ser. No. 980,012

Claims priority, application Japan, Jul. 21, 1994, 6-169742; Dec. 21, 1994, 6-318747

Int. Cl.^{6} G06K *7/10*

U.S. Cl. 235—462 **2 Claims**

1. A bar-code reader comprising:
- scanning and extracting means for scanning a bar-code with electromagnetic radioactive rays and then extracting data regarding a bar-width thereof based on the reflected rays;
- demodulating means for demodulating said bar-width data extracted by said scanning and extracting means and creating the demodulated data;
- combination judging means for judging the presence or absence of one of a plurality of possible bar-code reproducible combinations in demodulated data created by said demodulating means and for judging the type of combination when the reproducible combination exists;
- delta-distance distortion evaluating means for evaluating a degree of deviation of a distance of every character of the bar-width data from a predetermined standard of the bar-width data extracted by said scanning and extracting means; and


DEMODULATION DATA BUFFER GROUP
42
SCANNING AND EXTRACTING UNIT
50
BAR-CODE DETECTION LOGIC
28
41
51
29
COMBINATION JUDGING UNIT
52
BAR-WIDTH DATA GROUP BUFFER
DEMODULATING UNIT
DELTA-DISTANCE DISTORTION EVALUATING UNIT
58
56
BAR-CODE CHECKING UNIT
SCREENING AND SYNTHESIZING UNIT
44
DATA SYNTHESIS COMPLETION REPORTING UNIT
45
43

- screening and synthesizing means for screening demodulated data or a character forming demodulated data, based on said degree of deviation determined by said delta-distance distortion evaluating means and then synthesizing said demodulated data screened or said character screened according to the type of combination judged by said combination judging means.

5,854,480
TAG WITH IC CAPACITIVELY COUPLED TO ANTENNA

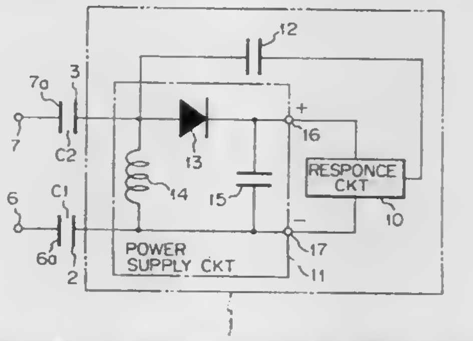
Hiroyuki Noto, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 678,099

Claims priority, application Japan, Jul. 18, 1995, 7-181518

Int. Cl.^{6} G06K *19/06*

U.S. Cl. 235—492 **12 Claims**



1. A tag device having a generally flat IC (Integrated Circuit) device including a response circuit for storing information and for outputting a signal based on said information, and an antenna, said tag device comprising:
- a generally flat electrode plate positioned on a major surface of said IC device and connected to said response circuit; and
- a generally flat antenna terminal connected to said antenna and facing said electrode plate at a preselected distance.

5,854,481
ELECTRONIC CORD AND CIRCUIT WITH A SWITCH FOR MODIFYING THE RESONANT FREQUENCY OF A RECEIVER

Giulio Ricotti, Broni; Roberto Bardelli, Milan, and Domenico Rossi, Cilavegna (Pavia), all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

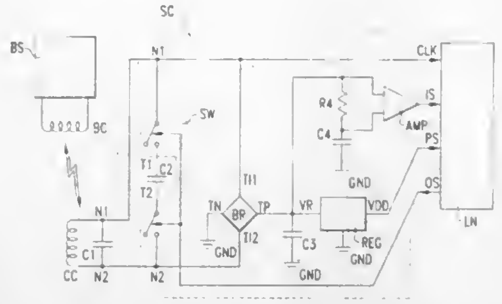
Filed Jul. 31, 1996, Ser. No. 688,830

Claims priority, application European Pat. Off., Jul. 31, 1995, 95830342

Int. Cl.^{6} G06K *19/06*

U.S. Cl. 230—492 **34 Claims**

1. A smart card operable in a purely wireless mode, comprising:
- an RF antenna and a tank circuit having a first resonant frequency;



- a power supply circuit connected to draw power from said tank circuit, and to provide a power supply voltage therefrom; and
- a tank-switching circuit, comprising:
  - an additional reactance having at least first and second nodes.
  - first and second field-effect transistors each interposed between a respective one of said nodes and said tank circuit, and
  - control circuitry connected to turn said first and second transistors both on or both off;

wherein, when said first and second transistors are both on, said tank-switching circuit is structored to shift the first resonant frequency of said RF antenna and said tank circuit to a second resonant frequency which is different from the first resonant frequency.

5,854,482

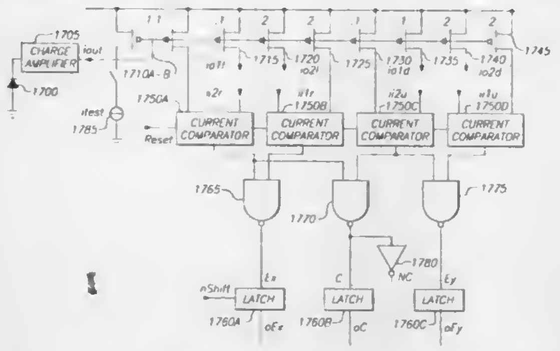
POINTING DEVICE UTILIZING A PHOTODECTOR ARRAY

Marc Bidiville, Pully, Switzerland; Eric Raeber, Menlo Park, Calif.; Javier Arreguit, Le Mont sur Lausanne, Switzerland; Harthmuth Buczek, Marin-Epagnier, Switzerland; Floris A. Van Shaik, Chavannes, Switzerland; François Bauduin, Chézard, Switzerland, and Denis O'Keeffe, Newmarket, Northern Ireland, assignors to Logitech, Inc., Fremont, Calif.

Continuation of Ser. No. 477,448, Jun. 7, 1995, abandoned, which is a division of Ser. No. 424,125, Apr. 19, 1995, Pat. No. 5,703,356, which is a continuation-in-part of Ser. No. 199,982, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 856,907, Oct. 5, 1992, Pat. No. 5,288,993. This application Mar. 28, 1997, Ser. No. 825,435

Int. Cl.^{6} G09G *5/08*

U.S. Cl. 250—221 **24 Claims**



1. An optical sensor for detecting radiation reflected off of a surface, said optical sensor comprising:

- a plurality of pixels, responsive to said radiation reflected from the surface, each of said pixels includes:
  - a photodetector element for receiving said radiation reflected from said surface and for converting said radiation into an electrical signal having an signal strength corresponding to an intensity of said received radiation;
  - a first memory unit for storing a first intensity value of said pixel representing the intensity of radiation received by said photodetector element at a first time;
  - a second memory unit for storing a second intensity value of said pixel representing the intensity of radiation received by said photodetector element at a second time;
  - a first comparator, disposed to receive signals from said first memory unit, for identifying that an edge condition occurred between said first time and said second time if a ratio between said first and second intensity values is not within a predefined range.

5,854,483

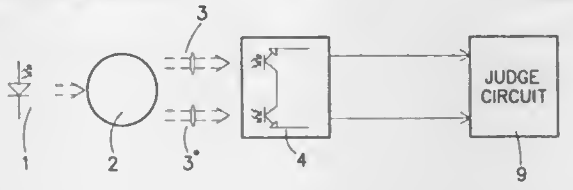
METHOD AND SYSTEM FOR READING ENCODED OPTICAL SIGNALS AND FORMING SQUARE WAVE SIGNALS THEREFROM

Hsin-Te Tseng, 4F, No. 19, Shih Chien St., Peitou, Taipei, Taiwan

Filed Oct. 25, 1996, Ser. No. 736,684

Int. Cl.^{6} G01D *5/34*

U.S. Cl. 250—231.13 **2 Claims**



2. An optical encoder for providing substantially square wave encoded electrical signals, comprising:

- a light source producing a light beam;
- a wheel positioned to intercept said light beam to produce a pair of encoded optical signals, said wheel being rotated to encode said pair of encoded optical signals as periodic signals;
- a phototransistor device supplied with a working voltage and having a pair of optical receiving crystals to respectively output a pair of encoded electrical signals respectively corresponding to said pair of encoded optical signals, each of said receiving crystals clamping an upper voltage level of a respective one of said pair of encoded electrical signals to said working voltage;
- a pair of lenses disposed between said wheel and said phototransistor, each of said pair of lenses focusing a respective one of said pair of encoded optical signals on a respective one of said optical receiving crystals to increase a potential of said clamped encoded electrical signal corresponding to a particular light level of said encoded optical signal; and,
- a judge circuit for reading said pair of clamped encoded electrical signals, said judge circuit including means for disregarding a voltage level of each of said clamped encoded electrical signals that is below a predetermined critical level to establish substantially square wave signals.

5,854,484

COLLISION CELL WITH INTEGRATED ION SELECTOR FOR MS/MS-TIME-OF FLIGHT MASS-SPECTROMETER

Thorald Horst Bergmann, Buchenweg 9a, D-82441 Ohlstadt, Germany

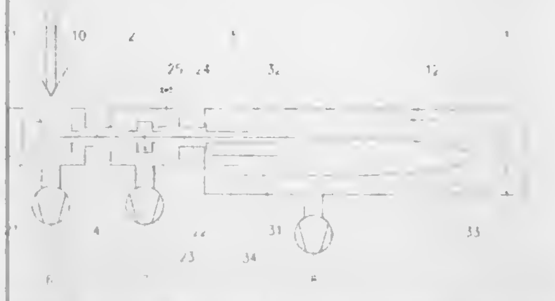
Filed Jul. 24, 1997, Ser. No. 903,243

Claims priority, application Germany, Aug. 1, 1996, 196 31 162.4

Int. Cl.^{6} H01J *49/40*

U.S. Cl. 250—287 **6 Claims**

1. An MS/MS-time-of-flight mass-spectrometer comprising an ion source(**21**), a reflector(**33**), a detector(**34**), an ion selector(**23**), and a collision cell(**22**), said collision cell having a port of entry for some collision gas causing the decomposition of primary ions to fragment ions, characterized by said ion selector(**23**) being arranged within the collision cell.



5,854,485

MS/MS TIME-OF-FLIGHT MASS-SPECTROMETER WITH COLLISION CELL

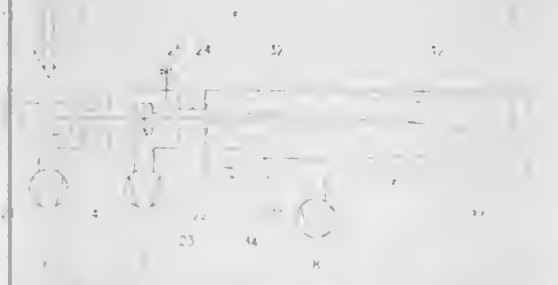
Thorald Horst Bergmann, Buchenweg 9a11 D-82441, Ohlstadt 11, Germany

Filed Jul. 24, 1997, Ser. No. 903,244

Claims priority, application Germany, Aug. 1, 1996, 196 31 161.6

Int. Cl.^{6} H01J *49/40*

U.S. Cl. 250—287 **8 Claims**



1. An MS/MS-time-of-flight mass-spectrometer comprising an ion source(**21**), a reflector(**33**), a detector(**34**), and a collision cell(**22**), said collision cell having a port of entry for some collision gas causing the decomposition of primary ions to fragment ions, characterized by

- said mass-spectrometer being subdivided into regions of different gas pressure, each of these regions containing its own port for connection of a pump(**6**,**7**,**8**).
- said regions of different gas pressure being connected via flow restrictions(**4**,**5**,**32**,**35**).
- one of said regions being the reflector chamber(**3**) containing the reflector(**33**).
- another one of these regions being the collision chamber(**2**) containing the collision cell(**22**).
- said collision chamber(**2**) being positioned with respect of the ion paths in front of the reflector chamber(**3**).

5,854,486

METHOD AND APPARATUS FOR MALDI MASS SPECTROMETRY

Russell W. Dreyfus, Madrid, Spain, assignor to R. T. Hodgson, Ossining, N.Y.

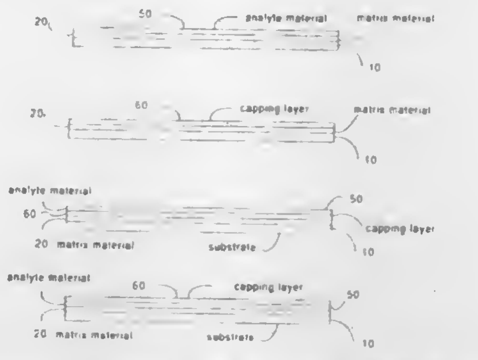
Filed Dec. 27, 1996, Ser. No. 775,016

Int. Cl.^{6} H01J *44/04*

U.S. Cl. 250—288 **7 Claims**

1. An apparatus for Matrix Assisted Laser Desorption and Ionization (MALDI) Mass Spectrometry comprising:

- a substrate; and
- a first layer deposited on the substrate, the first layer comprising molecules of matrix material, the first layer being substantially free of pinholes, the first layer having an average thickness between 1 nanometer and 10 micrometers.



5,854,487

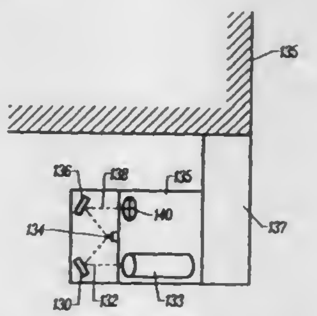
SCANNING PROBE MICROSCOPE PROVIDING UNOBSTRUCTED TOP DOWN AND BOTTOM UP VIEWS

David Braunstein, Campbell; Michael Kirk; Quoc Ly, both of San Jose, and Thai Nguyen, Sunnyvale, all of Calif., assignors to Park Scientific Instruments, Sunnyvale, Calif.

Filed Feb. 28, 1997, Ser. No. 808,351

Int. Cl.^{6} H01J *37/26*

U.S. Cl. 250—306 **48 Claims**



1. A scanning probe microscope head comprising:

- an x-y flexure stage for providing scanning motion to a probe in the x and y directions;
- a z scanning stage attached to the x-y flexure stage off-center relative to a lateral footprint of the x-y flexure stage for providing scanning motion in the z direction to a probe attached to the z scanning stage, and
- a bracket for attaching a probe to the z scanning stare such that the x, y flexure stage, the z-scanning stage and the bracket are oriented relative to each other so as to provide an unobstructed top down and bottom up optical view of the probe.

5,854,488

ION BEAM MACHINING METHOD AND DEVICE THEREOF

Kazuo Aita, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Jun. 20, 1997, Ser. No. 879,342

Claims priurity, application Japan, Jun. 20, 1996, 8-160301

Int. Cl.^{6} H01J *37/317*

U.S. Cl. 250—309 **5 Claims**

1. A focused ion beam machining device in which ions generated from an ion source are clustered into a focused ion beam by an ion lens system in a vacuum tank exhausted by a vacuum pump, the focused ion beam is irradiated by scanning on a predetermined region of a surface of a sample where a thin film is formed on a surface of a matrix thereof by a scanning electrode, secondary particles emitted from the sample are detected by a detector, signals from the detector are supplied to a display device via an

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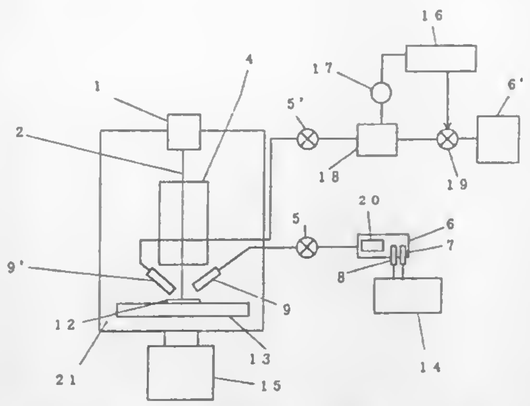


A/D converter thereby imaging the sample and an ion beam machining is conducted with respect to the predetermined region based on a result of imaging:

- wherein in an assist gas supply unit having a gas injector for supplying an assist gas at least including steam gas to the predetermined region and the gas injector is constituted by a nozzle for blowing the assist gas, one or more of reservoirs constituting an etching gas supply source, heaters for heating at least one of the reservoirs, temperature sensors for measuring temperatures of the reservoirs, a temperature controller of the heaters for controlling the temperatures of the reservoirs based on measured values of the temperature sensors and a valve installed between the temperature controller and the gas injector, a salt hydrate for supplying the steam gas is filled in the reservoirs provided with the heaters and the temperature sensors, the steam gas for blowing to the predetermined region is supplied by heating the salt hydrate and an amount of the steam gas is controlled by controlling the temperatures of the reservoirs by the temperature sensors, the heaters and the temperature controller.

5,854,489

METHOD AND DEVICE FOR CORRECTION OF SPECTROMETRIC MEASUREMENTS IN THE γ PHOTON DETECTION FIELD

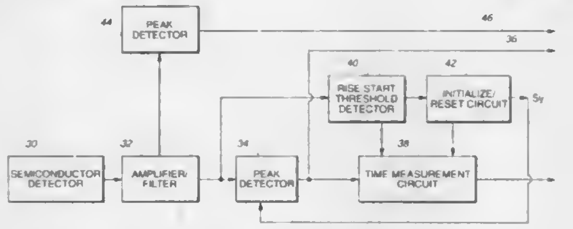
Loïck Verger; Jean-Paul Bonnefoy-Claudet, both of Grenoble, and Françoise Mathy, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Sep. 13, 1996, Ser. No. 713,630

Claims priority, application France, Sep. 15, 1995, 95 10849

Int. Cl.^{6} G01T *1/24*

U.S. Cl. 250—370.06 **14 Claims**



12. Device for detecting a γ radiation comprising:

- a semiconductor detector, for outputting a signal in response to the interaction of a γ photon of energy E with said detector, said signal having an electronic component corresponding to the collection of electrons of electron-hole pairs induced by said γ photon in said detector;
- means for producing a signal representative of the rise time of said electronic component; and
- means for producing a signal representative of an amplitude of said detected signal.

5,854,490

CHARGED-PARTICLE-BEAM EXPOSURE DEVICE AND CHARGED-PARTICLE-BEAM EXPOSURE METHOD

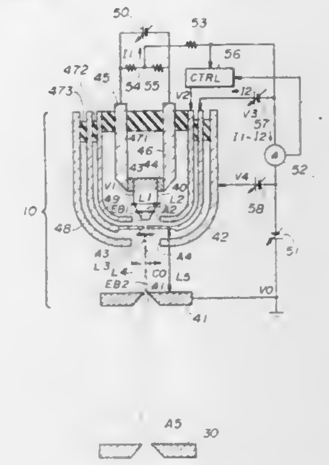
Yoshihisa Ooaeh; Akio Yamada, and Hiroshi Yasuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 16, 1996, Ser. No. 680,960

Claims priority, application Japan, Oct. 3, 1995, 7-256397; Feb. 2, 1996, 8-17989; Mar. 19, 1996, 8-063512

Int. Cl.^{6} H01J *37/63*

U.S. Cl. 250—492.23 **11 Claims**



1. An electron gun for emitting an electron beam traveling along a beam axis, said electron gun comprising:

- a cathode having a tip, said tip having substantially a circular conic shape and a tip surface substantially at said beam axis, said cathode having applied thereto a first voltage;
- an anode having a first aperture substantially on said beam axis and having applied thereto a second voltage higher than said first voltage;
- a control electrode having a second aperture substantially on said beam axis and having applied thereto a voltage lower than said first voltage to control a current of said cathode, said second aperture being larger than said tip surface;
- a guide electrode having a third aperture substantially on said beam axis, arranged between said cathode and said anode and having applied thereto a voltage higher than said first voltage and lower than said second voltage, said third aperture being smaller than said tip surface; and
- a lens electrode having a fourth aperture substantially on said beam axis, arranged between said guide electrode and said anode and having applied thereto a voltage lower than said first voltage to form a cross-over image of said electron beam, said fourth aperture being larger than said third aperture.

5,854,491

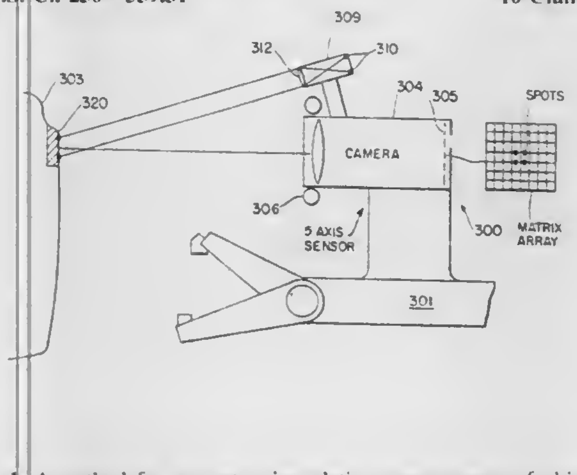
METHOD AND APPARATUS FOR ELECTRO OPTICALLY DETERMINING THE DIMENSION, LOCATION AND ATTITUDE OF OBJECTS

Timothy R. Pryor; Bernard Hockley; Nick Liptay-Wagner; Omer L. Hageniers, and W. J. Pastorius, all of Windsor, Canada, assignors to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 334,350, Nov. 2, 1994, Pat. No. 5,510,625, which is a division of Ser. No. 124,605, Sep. 21, 1993, Pat. No. 5,362,970, which is a division of Ser. No. 836,508, Feb. 18, 1992, Pat. No. 5,280,179, which is a division of Ser. No. 711,397, Jun. 6, 1991, Pat. No. 5,164,579, which is a continuation of Ser. No. 511,967, Apr. 17, 1990, abandoned, which is a continuation of Ser. No. 381,031, Jul. 19, 1989, abandoned, which is a continuation of Ser. No. 262,131, Oct. 25, 1988, abandoned, which is a continuation of Ser. No. 59,632, Jun. 8, 1987, abandoned, which is a continuation of Ser. No. 757,208, Jul. 22, 1985, Pat. No. 4,674,869, which is a continuation of Ser. No. 697,683, Feb. 1, 1985, abandoned, which is a continuation of Ser. No. 634,191, Jul. 27, 1984, abandoned, which is a continuation of Ser. No. 378,808, May 17, 1982, abandoned, which is a division of Ser. No. 34,278, Apr. 30, 1979, Pat. No. 4,373,804. This application Jun. 5, 1995, Ser. No. 463,095

Int. Cl.^{6} G01C *3/08*

U.S. Cl. 250—559.31 **10 Claims**



1. A method for accurate triangulation measurement of object surface location comprising the steps of:

- projecting light using a light source means on to a portion of the surface of said object,
- providing a detection means having a plurality of photodetector elements and an optical axis, said detection means having an output thereof,
- imaging light reflected from said surface onto said detection means, said optical axis of said detection means being at an angle to the axis of said light projection, wherein said reflected light is imaged onto more than one but less than all of said plurality of photodetector elements simultaneously,
- detecting the position of said image relative to said optical axis of said detection means,
- controlling the amount of light gathered by said detection means, and
- determining from said image position, the dimension, location or attitude of said object with respect to said detection means.

5,854,492

SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE FLUXMETER AND NONDESTRUCTIVE INSPECTION APPARATUS

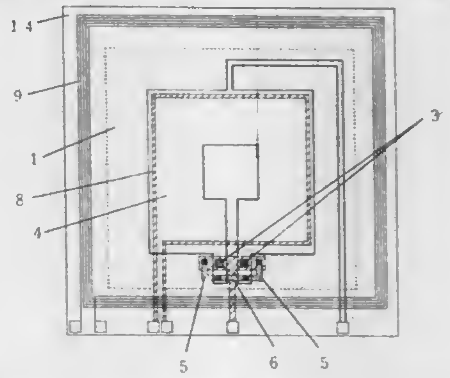
Kazuo Chinone; Toshimitsu Morooka; Satoshi Nakayama, and Akikazu Odawara, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 29, 1996, Ser. No. 739,307

Claims priority, application Japan, Nov. 22, 1995, 7-304782

Int. Cl.^{6} H01L *29/06;31/0256;39/22;* **G01R** *33/035*

U.S. Cl. 257—31 **16 Claims**



1. A superconducting quantum interference device fluxmeter comprising: a supporting substrate; a superconducting quantum interference device having at least one Josephson junction formed on the supporting substrate, a washer coil connected to the at least one Josephson junction to form a superconducting loop, and a feedback modulation coil magnetically coupled with the washer coil; a pickup coil for detecting a magnetic field; an input coil coupled to the pickup coil and magnetically coupled with the washer coil, the input coil being formed on the supporting substrate; and a magnetic field applying coil formed on the supporting substrate for applying a predetermined magnetic field to a sample to be inspected.

5,854,493

SUPERCONDUTING DEVICE HAVING AN EXTREMELY SHORT SUPERCONDUCTING CHANNEL FORMED OF OXIDE SUPERCONDUCTOR MATERIAL AND METHOD FOR MANUFACTURING THE SAME

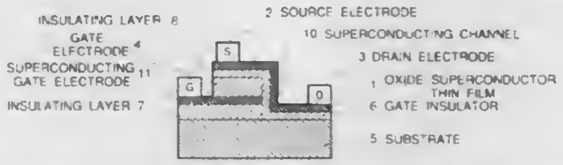
Takao Nakamura; Hiroshi Inada, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 400,448, Mar. 7, 1995, abandoned, which is a continuation of Ser. No. 115,805, Sep. 3, 1993, abandoned, which is a continuation of Ser. No. 783,681, Oct. 29, 1991, abandoned. This application Apr. 14, 1997, Ser. No. 843,297

Claims priority, application Japan, Oct. 29, 1990, 2-291197; Oct. 29, 1990, 2-291198

Int. Cl.^{6} H01L *29/06*

U.S. Cl. 257—39 **25 Claims**



1. A superconducting device which controls current flow within a superconducting channel thereof in accordance with a gate voltage applied to a gate electrode region of said device, said device comprising:

- a substrate,
- a first oxide superconductor thin film situated at an angle with respect to a deposition surface of said substrate, said first oxide superconductor thin film having a thickness of not greater than 5 nm and defining said superconducting channel,
- a superconductor source electrode region and a superconductor drain electrode region formed at opposite ends of said superconducting channel, so that a superconducting current can flow through said superconducting channel between said superconductor source electrode region and said superconductor drain electrode region,
- a second oxide superconductor thin film situated parallel to said deposition surface of said substrate, the second oxide superconductor thin film defining said gate electrode region, and
- a first insulating layer which separates said superconducting channel and said gate electrode region and which prevents tunnel current therebetween,

said gate electrode region having an end portion which abuts said first insulating layer and being formed at only one side of the superconducting channel.

5,854,494
ELECTRIC DEVICE, MATRIX DEVICE, ELECTRO-OPTICAL DISPLAY DEVICE, AND SEMICONDUCTOR MEMORY HAVING THIN-FILM TRANSISTORS

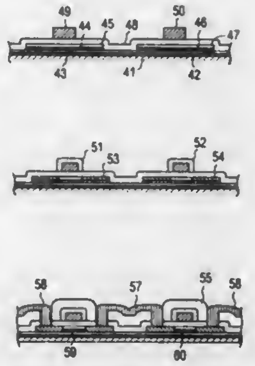
Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Shiga, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 19,880, Feb. 19, 1993, abandoned, and a division of Ser. No. 68,672, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 846,164, Mar. 5, 1992, Pat. No. 5,289,030, and a continuation-in-part of Ser. No. 836,797, Feb. 18, 1992, Pat. No. 5,218,464. This application Jun. 30, 1994, Ser. No. 268,446

Claims priority, application Japan, May 29, 1992, 4-164302

Int. Cl.^{6} H01L *29/76;29/04*

U.S. Cl. 257—57 **20 Claims**



1. An electro-optical display device comprising:
- a substrate having an insulating surface; and
- a plurality of pixel electrodes provided on said insulating surface, each of said pixel electrodes being provided with at least one MOS transistor having only one conductivity type and comprising at least a channel semiconductor region and source and drain semiconductor regions said source and drain semiconductor regions having a p-type conductivity and have a higher crystallinity than said channel semiconductor region,

wherein said channel semiconductor region is thinner than said source and drain regions.

5,854,495
PREPARATION OF NUCLEATED SILICON SURFACES

David Buhaenko, Guildford, Great Britain; Peter John Ellis, Farnham, England; Paul Southworth, Buckinghamshire, England, and Carolyn Elizabeth Beer, Woking, England, assignors to Kobe Steel Europe Limited, London, United Kingdom

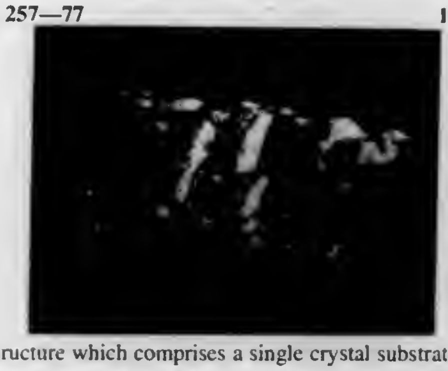
PCT No. PCT/GB94/00964, § 371 Date Mar. 26, 1996, § 102(e) Date Mar. 26, 1996, PCT Pub. No. WO94/27323, PCT Pub. Date Nov. 24, 1994

PCT Filed May 4, 1994, Ser. No. 535,059

Claims priority, application United Kingdom, May 6, 1993, 9309346

Int. Cl.^{6} H01L *29/80*

U.S. Cl. 257—77 **11 Claims**



1. A structure which comprises a single crystal substrate capable of forming a binary carbide, said substrate having a surface which has been nucleated for subsequent growth of an oriented diamond layer, the nucleated surface comprising a thin film of quadrilateral carbide containing platelets which are substantially coplanar, having a maximum slope of 5° at the top surface relative to the surface of the substrate, the platelets having a maximum dimension of 0.5 μm.

5,854,496
HYDROGEN-TERMINATED DIAMOND MISFET AND ITS MANUFACTURING METHOD

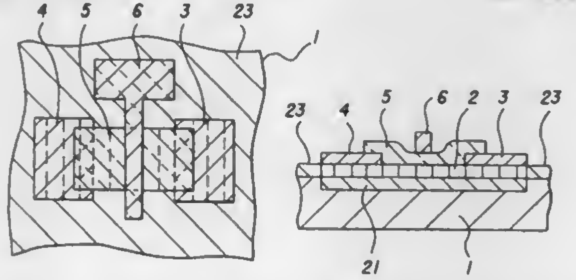
Takefumi Ishikura; Satoshi Yamashita, both of Tokyo; Hiroshi Kawarada, Yokohama, and Akira Hokazono, Higashimurayama, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1997, Ser. No. 919,792

Claims priority, application Japan, Sep. 2, 1996, 8-232189; Aug. 12, 1997, 9-217679

Int. Cl.^{6} H01L *31/0312*

U.S. Cl. 257—77 **26 Claims**



1. A hydrogen-terminated diamond MISFET comprising a drain and a source, and a gate electrode mounted between said drain and said source on an insulating layer, mounted on a region of a diamond where a surface of said diamond is hydrogen-terminated.

5,854,497
SEMICONDUCTOR MEMORY DEVICE

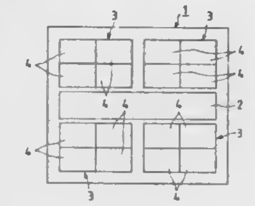
Toshiro Hiramoto, Yokohama; Nobuo Tamba, and Motoki Kasai, both of Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

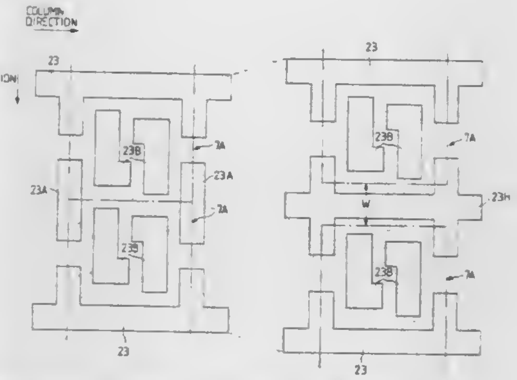
Continuation of Ser. No. 314,775, Sep. 29, 1994, Pat. No. 5,594,270. This application Dec. 24, 1996, Ser. No. 773,312

Claims priority, application Japan, Sep. 29, 1993, 5-243002

Int. Cl.^{6} H01L *29/76;* **G11C** *11/00*

U.S. Cl. 257—206 **17 Claims**





1. A semiconductor memory device comprising:
- pairs of first and second memory cells each having transistor regions arranged in a first direction, wherein said first memory cell is arranged adjacent to said second memory cell in a second direction perpendicular to said first direction,
- each of said first and said second memory cells comprising a pair of n channel MISFETS, a pair of p channel MISFETs, and a first and a second interconnect line such that gate electrodes of said n channel MISFETs and said p channel MISFETs overlie a main surface of a semiconductor substrate, such that source and drain regions of said n channel MISFETs and said p channel MISFETs are formed in said substrate, such that first interconnect line is electrically connected between said drain region of one of said pair of said n channel MISFETs and said drain region of one of said pair of said p channel MISFETs, and such that said second interconnect line is electrically connected between said drain region of the other of said pair of said n channel MISFETs and said drain region of the other of said pair of said p channel MISFETs,
- a first conductive layer overlying said main surface and formed of the same level layer as said first and said second interconnect lines,
- wherein, in said pair of said first and said second memory cells, said p channel MISFETs of said first and said second memory cells are arranged, in said second direction, between said n channel MISFETs of said first memory cell and said n channel MISFETs of said second memory cell,
- wherein, in said pair of said first and second memory cells, said first conductive layer is electrically connected to said source regions of said p channel MISFETs of said first memory cell and to said source regions of said p channel MISFETs of said second memory cell,
- wherein, in said pair of said first and said second memory cells, said first interconnect line of said first memory cell is arranged, in said second direction, adjacent to said first interconnect line of said second memory cell such that no conductive layer, including said first conductive layer, formed of the same level layer as said first and said second interconnect lines is positioned, in said second direction, between said first interconnect line of said first memory cell and said first interconnect line of said second memory cell,
- wherein, in said pair of said first and said second memory cells, said second interconnect line of said first memory cell is arranged, in said second direction, adjacent to said second interconnect line of said second memory cell such that the first conductive layer formed of the same level layer as said first and said second interconnect line is not positioned, in said second direction, between said first interconnect line of said first memory cell and said first interconnect line of said second memory cell,
- wherein said first and said second interconnect lines are spaced apart from said first conductive layer in said first direction; and
- a wiring line extending in said first direction and formed of a different level layer than said first conductive layer and than said first and second interconnect lines,
- wherein said wiring line is electrically connected to said source regions of said p channel MISFETs of said first and second memory cells through said first conductive layer.

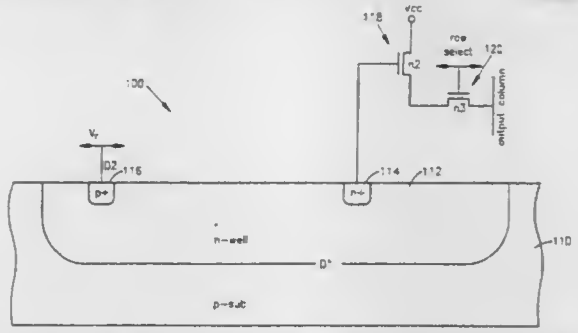
5,854,498
ACTIVE PIXEL SENSOR CELL THAT REDUCES THE EFFECT OF I/F NOISE, INCREASES THE VOLTAGE RANGE OF THE CELL, AND REDUCES THE SIZE OF THE CELL

Richard Billings Merrill, Daly City, Calif., assignor to Foveonics, Inc., Cupertino, Calif.

Division of Ser. No. 609,553, Mar. 1, 1996, Pat. No. 5,721,425. This application Feb. 23, 1998, Ser. No. 28,125

Int. Cl.^{6} H01L *31/062;31/113*

U.S. Cl. 257—292 **7 Claims**



1. An active pixel sensor cell formed in a semiconductor substrate of a first conductivity type, the cell comprising:
- a well region of a second conductivity type formed in the substrate;
- a reset region of the first conductivity type formed in the well region; and
- a buffer transistor having a gate connected to the well region.

5,854,499
FERROELECTRIC FILM CAPACITOR WITH INTERGRANULAR INSULATION

Yasushiro Nishioka, Ibaraki, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 12, 1995, Ser. No. 501,840

Claims priority, application Japan, Jul. 12, 1994, 6-159966

Int. Cl.^{6} H01L *27/02*

U.S. Cl. 257—295 **12 Claims**

9. A semiconductor device including a ferroelectric film capacitor having a laminated configuration, the ferroelectric film capacitor comprising:
- a substrate;
- a lower electrode formed over the substrate;
- a ferroelectric film formed over the lower electrode, the ferroelectric film being crystallized and having intergranular cavities substantially passed through to the surface of the lower electrode;

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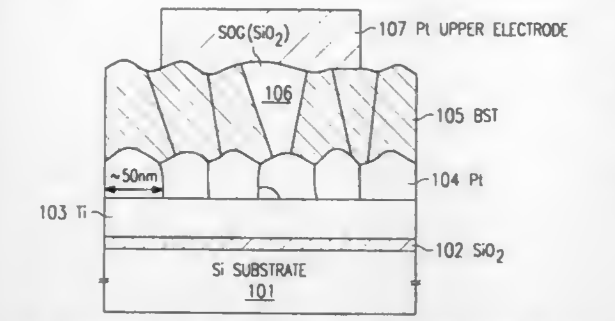


an insulating oxide film, of a material different from the ferroelectric film, formed over the ferroelectric film, materials of the insulating oxide film being filled in the intergranular cavities of the ferroelectric film; and

an upper electrode formed over the insulating oxide film.

5,854,500

DRAM CELL ARRAY WITH DYNAMIC GAIN MEMORY CELLS

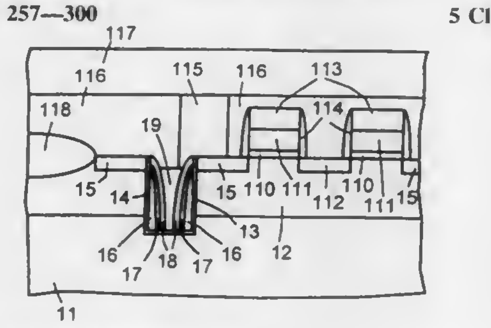
Wolfgang Krautschneider, Hohenthann, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 26, 1996, Ser. No. 721,546

Claims priority, application Germany, Sep. 26, 1995, 195 35 496.6

Int. Cl.⁶ H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—300 **5 Claims**



1. A DRAM cell array, comprising:

a plurality of dynamic gain memory cells, integrated in a substrate;

a selection transistor included in each memory cell formed as a planar MOS transistor, and a memory transistor formed as a vertical MOS transistor;

a common source/drain region connecting the selection transistor and the memory transistor to one another;

a source/drain region of the memory transistor being connected to a supply voltage line;

a source/drain region of the selection transistor being connected to a bit line;

a gate electrode of the selection transistor being connected to a word line;

a gate electrode of doped silicon in the memory transistor disposed along at least one side of a longitudinal trench; and

a silicon structure being doped with the opposite conductivity type of said gate electrode and being disposed in the trench, said silicon structure together with said gate electrode of the memory transistor forming a diode and being connected to said common source/drain region via a contact, and wherein said gate electrode of the memory transistor and said silicon structure are each formed as spacers, which line the sides of said trench.

5,854,501

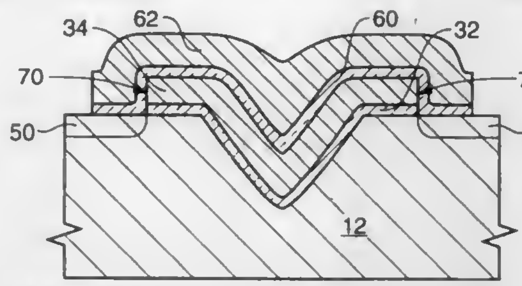
FLOATING GATE SEMICONDUCTOR DEVICE HAVING A PORTION FORMED WITH A RECESS

David Y. Kao, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 20, 1995, Ser. No. 559,878

Int. Cl.⁶ H01L *27/115*

U.S. Cl. 257—316 **12 Claims**



1. A semiconductor device comprising:

a semiconductor layer having a trench therein, said trench having a bottom, first and second sides, and in cross section comprises a "V" shape;

an oxide layer having a generally uniform thickness formed over said bottom and said first and second sides;

a transistor source and a transistor drain separated by said trench, said source and said drain each having a lower surface, said trench bottom being below said lower surface of at least one of said source and said drain;

a transistor channel along said bottom of said trench;

a floating gate at least partially within said trench; and

a control gate overlying said floating gate.

5,854,502

NON-VOLATILE MEMORY CELL HAVING FLOATING GATE ELECTRODE AND REDUCED BIRD'S BEAK PORTIONS

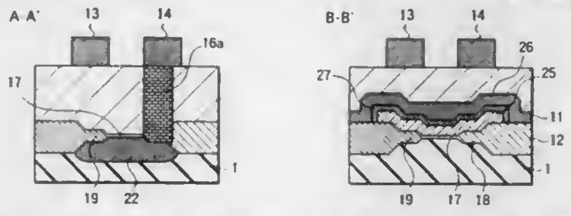
Toshiyuki Nishihara, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 544,728, Oct. 18, 1995, abandoned. This application Jul. 21, 1997, Ser. No. 897,528

Claims priority, application Japan, Oct. 31, 1994, 6-267733

Int. Cl.⁶ H07L *29/788*

U.S. Cl. 257—321 **10 Claims**



1. An electrically programmable, insulated gate field effect transistor memory cell, comprising:

a substrate;

a source region and a drain region formed in the substrate and spaced apart from each other to define a channel region;

a first film extending across a width of the channel region and having a first thickness;

a pair of second films formed at a second thickness over the source region and the drain region, respectively, with each second film having one end connected to the first film on opposite ends of the channel; and

a pair of locos formed on the substrate at a third thickness, each locos connected to a respective second film at a second end of the second film opposite the second film's one end;

a floating gate member disposed over the first film, over the pair of second films, and over the pair of locos;

wherein the first thickness is smaller than the second thickness, the second thickness is smaller than the third thickness, and the first film, the second film, and an inner portion of the locos are covered with the floating gate member and wherein the first thickness of the first film is substantially uniform across the channel region.

5,854,503

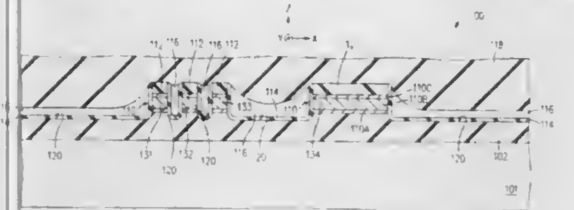
MAXIMIZATION OF LOW DIELECTRIC CONSTANT MATERIAL BETWEEN INTERCONNECT TRACES OF A SEMICONDUCTOR CIRCUIT

Cheng-Chen Hsueh, Sunnyvale; Shih-Ked Lee, Fremont, and Chuen-Der Lien, Los Altos Hills, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Nov. 19, 1996, Ser. No. 753,009

Int. Cl.⁶ H01L *29/00*

U.S. Cl. 257—347 **10 Claims**



1. A semiconductor structure comprising:

a substrate;

a first insulating layer located over the substrate, the first insulating layer having an upper surface;

a patterned conductive interconnect layer located over portions of the upper surface of the first insulating layer, the interconnect layer having a plurality of traces;

one or more trenches located in the upper surface of the first insulating layer, wherein the trenches are located between the traces of the interconnect layer;

a patterned insulating layer located over the patterned interconnect layer: and

a dielectric material located in the trenches and between the traces of the interconnect layer.

5,854,504

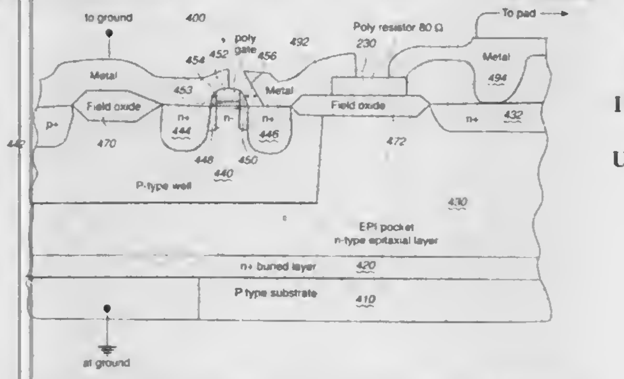
PROCESS TOLERANT NMOS TRASISTOR FOR ELECTROSTATIC DISCHARGE PROTECTION

Rosario J. Consiglio, San Jose, Calif., assignor to Maxim Integrated Products, Inc., Sunnyvale, Calif.

Filed Apr. 1, 1997, Ser. No. 832,771

Int. Cl.⁶ H01L *29/76;23/62*

U.S. Cl. 257—358 **20 Claims**



1. An electrostatic discharge (ESD) cell formed in an integrated circuit comprising:

an n-type layer;

a p-type well formed in said n-type layer;

a connection pad;

an NMOS transistor formed in said p-type well with a lightly-doped drain (LDD), said NMOS transistor having a source, a drain and a gate, said source of said NMOS transistor electrically connected to ground, and said p-type well having a tap electrically connected to ground;

a resistor electrically connecting said drain of said NMOS transistor to said connection pad; and

a conductor coupling said connection pad to said n-type layer.

5,854,505

PROCESS FOR FORMING SILICON OXIDE FILM AND GATE OXIDE FILM FOR MOS TRANSISTORS

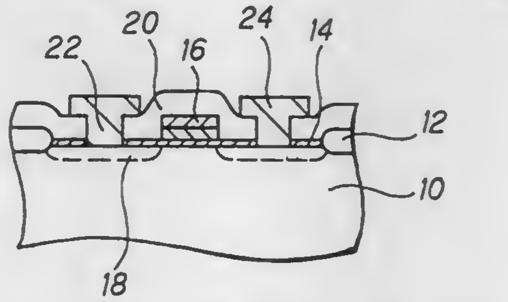
Atsushi Suzuki; Akihide Kashiwagi; Kazuhiko Tokunaga, and Toshihiko Suzuki, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 599,157, Feb. 9, 1996, abandoned, which is a division of Ser. No. 172,167, Dec. 23, 1993, Pat. No. 5,506,178. This application Feb. 24, 1997, Ser. No. 804,957

Claims priority, application Japan, Dec. 25, 1992, 4-357895; Mar. 23, 1993, 5-086836; Oct. 22, 1993, 5-287494

Int. Cl.⁶ H01L *29/76*

U.S. Cl. 257—410 **6 Claims**



1. A gate oxide film of a MOS transistor, which comprises a silicon oxide film formed by a process for forming a silicon oxide film comprising:

(a) forming a silicon oxide film on a semiconductor substrate by wet oxidation; and

(b) subjecting the silicon oxide film to heat treatment under an inert gas atmosphere containing a halogen element;

wherein a pyrogenic oxidation process is used as the wet oxidation process; and

wherein the halogen element is chlorine.

5,854,506

SEMICONDUCTOR PARTICLE-DETECTOR

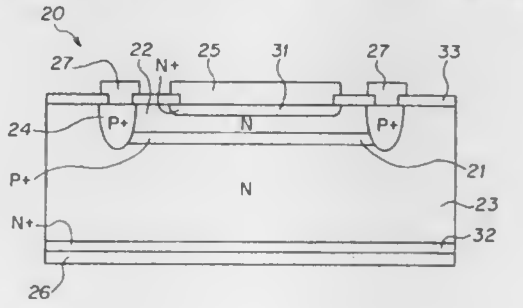
Piero G. Fallica, Catania, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Feb. 27, 1996, Ser. No. 607,511

Claims priority, application European Pat. Off., Feb. 27, 1995, 95830060

Int. Cl.⁶ G01T *1/24;* **H01L** *31/00*

U.S. Cl. 257—429 **14 Claims**



1. A particle-detector formed on a die of semiconductor material comprising:

a first layer with a first type of conductivity having a surface on the front face of the die,

a second layer with the first type of conductivity having a surface on the rear face of the die,

a third layer with a second type of conductivity interposed between the first and second layers and extending laterally only to a certain distance from the edge of the die,

first and second means for electrical connection with said first layer and said second layer, respectively, disposed on the surfaces thereof, and

third means for electrical connection with the third layer,

wherein the third electrical connection means comprise a region with the second type of conductivity which extends from the front face of the die as far as the third layer and means for surface electrical contact with this region;

wherein said certain distance between the edge of the die and said third layer is chosen so that a depletion region formed between said third and said second layers during operation of said particle-detector does not reach the sidewall of the die.

5,854,507

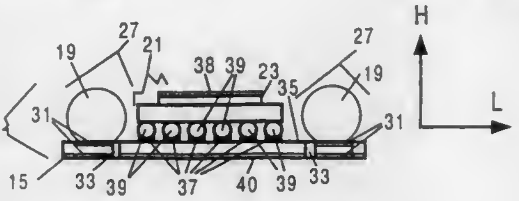
MULTIPLE CHIP ASSEMBLY

Jian Miremadi, Sunnyvale, and Marc P. Schuyler, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 21, 1998, Ser. No. 119,702

Int. Cl.^{6} H01L *23/02*

U.S. Cl. 257—686 **15 Claims**



1. A multiple chip assembly, comprising:

a first integrated circuit mounted upon a first substrate;

a second integrated circuit mounted upon a second substrate, the second integrated circuit having a height associated with it, the second integrated circuit also being overlapped by the second substrate in at least one of width and length dimensions, such that the second substrate presents a free area not masked by the second integrated circuit; and

solder bumps which provide electrical interconnection between the first and second substrates, the solder bumps being at least as tall as the height of the second integrated circuit to thereby electrically mount the first substrate in a stacked relation above the second integrated circuit;

a thermal transport layer in between and in contact with each of the second integrated circuit and the first substrate;

wherein

the second substrate includes (on a side of the second substrate which mounts the second integrated circuit), in the free area, electrical terminations for electrical interconnection to the first substrate,

the first substrate includes corresponding electrical terminations for electrical interconnection to the second substrate, and

the solder bumps connect the electrical terminations of the second substrate with the corresponding electrical terminations of the first substrate.

5,854,508

SEMICONDUCTOR MEMORY DEVICE HAVING ZIGZAG BONDING PAD ARRANGEMENT

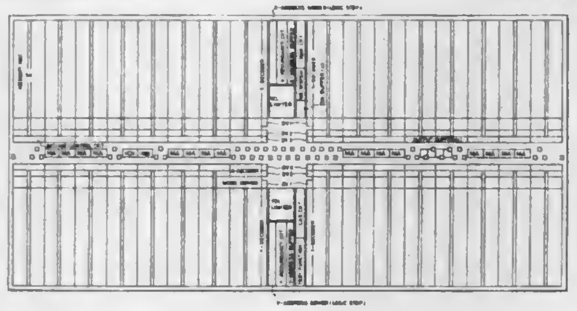
Kazuhiko Kajigaya; Kazuyuki Miyazawa, both of Iruma; Manabu Tsunozaki, Ohme; Kazuyoshi Oshima, Ohme; Takashi Yamazaki, Ohme; Yuji Sakai, Machida; Jiro Sawada, Kokubunji; Yasunori Yamaguchi, Tokyo; Tetsurou Matsumoto, Higashiyamato; Shinji Udo, Akishima; Hiroshi Yoshioka, Akishima; Hirokazu Saito, Tokorozawa; Mitsuhiro Takano, Tokorozawa; Makoto Morino, Akishima; Sinichi Miyatake, Tokyo; Eiji Miyamoto, Ohme; Yasuhiro Kasama, Tokyo; Akira Endo, Hachioji; Ryoichi Hori, Tokyo; Jun Etoh, Hachinji; Masashi Horiguchi, Kawasaki; Shinichi Ikenaga, Koganei, and Atsushi Kumata, Kodaira, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 455,411, May 31, 1995, Pat. No. 5,544,096, which is a continuation of Ser. No. 159,621, Dec. 1, 1993, Pat. No. 5,548,547, which is a division of Ser. No. 899,572, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 424,904, Oct. 18, 1989, abandoned. This application Mar. 19, 1996, Ser. No. 618,381

Claims priority, application Japan, Nov. 1, 1988, 63-277132; Nov. 7, 1988, 63-279239; Jan. 24, 1989, 1-14423; Mar. 20, 1989, 1-65840

Int. Cl.^{6} H01L *23/48*

U.S. Cl. 257—786 **14 Claims**



1. A semiconductor device comprising:

a rectangular shaped semiconductor chip having bonding pads formed on a main surface thereof, said bonding pads being arranged in a direction substantially parallel to longer edges of said rectangular shaped semiconductor chip and in a zigzag formation;

leads being arranged on said main surface of said rectangular shaped semiconductor chip; and

wires electrically connecting said bonding pads with said leads.

5,854,509

METHOD OF FABRICATING SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE

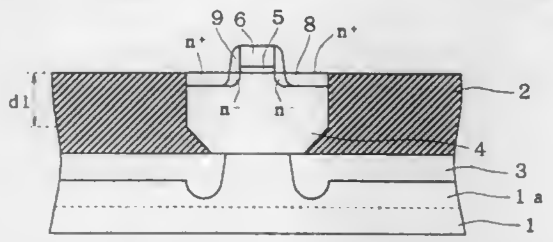
Tatsuya Kunikiyo, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1996, Ser. No. 641,819

Claims priority, application Japan, Nov. 9, 1995, 7-290799

Int. Cl.^{6} H01L *27/92*

U.S. Cl. 257—506 **19 Claims**



1. A method of fabricating a semiconductor device which is subjected to element isolation by an oxide film, said method comprising the steps of:

(a) preparing a semiconductor substrate;

(b) forming an oxide film on said semiconductor substrate;

(c) selectively removing said oxide film to form a groove in the oxide film to a prescribed depth d1 and continuing the removal of said oxide film in an inward taper downwardly toward the semiconductor substrate;

(d) filling the groove with a material to form a semiconductor region; and

(e) forming a semiconductor element in a region of the semiconductor region within the prescribed depth d1, at least a portion of which is underneath the semiconductor element.

5,854,510

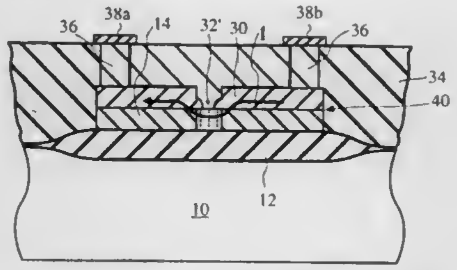
LOW POWER PROGRAMMABLE FUSE STRUCTURES

Harlan Lee Sur, Jr., San Leandro; Subhas Bothra, San Jose; Xi-Wei Lin, Fremont; Martin H. Manley, Saratoga, and Robert Payne, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 774,036, Dec. 27, 1996. This application Jun. 26, 1997, Ser. No. 883,403

Int. Cl.^{6} H01L *27/10;29/00*

U.S. Cl. 257—529 **24 Claims**



1. A semiconductor fuse structure having a low power programming threshold, comprising:

a substrate having a field oxide region:

a polysilicon strip lying over the field oxide region and including an increased dopant concentration region; and

a silicided metallization layer having first and second regions lying over the polysilicon strip, the first region has a first thickness, and the second region has a second thickness that is less than the first thickness and is positioned substantially over the increased dopant concentration region of the polysilicon strip;

wherein the semiconductor fuse structure can be programmed by breaking the second region.

5,854,511

SEMICONDUCTOR PACKAGE INCLUDING HEAT SINK WITH LAYERED CONDUCTIVE PLATE AND NON-CONDUCTIVE TAPE BONDING TO LEADS

Won Sun Shin, and Won Kyun Lee, both of Seoul, Rep. of Korea, assignors to Anam Semiconductor, Inc., Seoul, Rep. of Korea, and Amkor Technology, Inc., Chandler, Ariz.

Filed Nov. 15, 1996, Ser. No. 749,450

Claims priority, application Rep. of Korea, Nov. 17, 1995, 1995-41844; Nov. 29, 1995, 1995-44554

Int. Cl.^{6} H01L *23/10;23/28;23/34;* **H05K** *7/20*

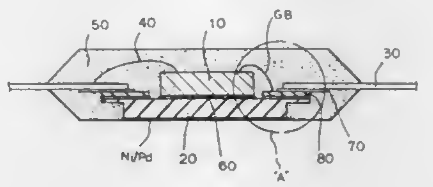
U.S. Cl. 257—713 **15 Claims**

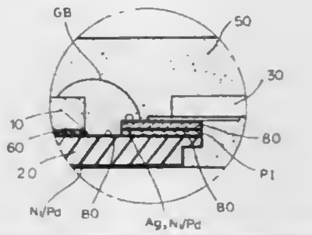
1. A semiconductor package comprising:

a semiconductor chip integrated with an electronic circuit:

a heat sink having an upper surface on which the semiconductor chip is centrally attached by an epoxy resin layer coated on the upper surface, the heat sink being provided with an oxidation layer formed on the upper surface thereof;

a plurality of leads attached to opposite lateral end portions of the upper surface of the heat sink by non-conductive bonding tapes, respectively, the leads extending laterally to a position outside of the package and serving to transmit signals from the semiconductor chip to the outside of the package;





wires for electrically connecting the semiconductor chip to the leads, respectively;

a plane comprised of a conductive thin plate and bonded between the heat sink and the leads at each lateral end portion of the heat sink by a non-conductive tape, said plate including wire bonding areas extending inwardly from said tape to provide a ground bonding area or a power bonding area; and

a sealing resin molded on the semiconductor chip and peripheral elements thereof in order to protect them from external oxidation and erosion.

5,854,512

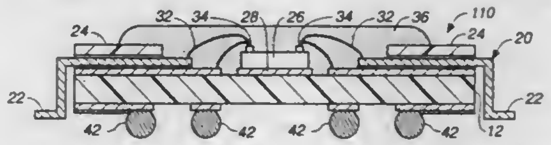
HIGH DENSITY LEADED BALL-GRID ARRAY PACKAGE

Kamran Manteghi, Manteca, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 20, 1996, Ser. No. 710,602

Int. Cl.^{6} H05K *1/18;7/20;* **H01L** *23/28;23/36*

U.S. Cl. 257—735 **11 Claims**



1. A high density leaded ball-grid array package for packaging an integrated-circuit die comprising:

a non-conductive layer having top and bottom sides;

a first conductive trace pattern being laminated on the top side of said non-conductive layer;

a second conductive trace pattern being laminated on the bottom side of said non-conductive layer, said non-conductive layer being sandwiched between said first and second conductive trace patterns so as to form a laminated substrate;

a high lead-count leadframe having a plurality of conductive leads and a centrally-located open portion, said plurality of conductive leads having innermost ends defining bonding fingers;

said leadframe being directly attached onto said first conductive trace pattern of the laminated substrate by a non-conductive adhesive so that the open portion thereof overlies a central region of said laminated substrate:

a solder mask being disposed over said second conductive trace pattern so as to form selective solderable areas; and

an integrated-circuit die being mounted in the central region of said laminated substrate, said bonding fingers being disposed peripherally surrounding said integrated-circuit die:

bonding wires interconnected between bonding pads formed on said integrated-circuit die and said bonding fingers on said leadframe;

a plastic material being molded over the top of said die, bonding fingers and bonding wires;

solder balls being attached to said selective solderable areas.

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SEMICONDUCTOR DEVICE HAVING A BUMP STRUCTURE AND TEST ELECTRODE

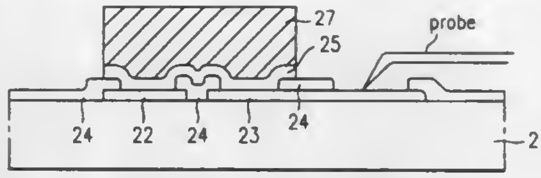
Seong Jin Kim, Namchaeju-kun, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 12, 1996, Ser. No. 679,074

Claims priority, application Rep. of Korea, Jul. 14, 1995, 1995-20848

Int. Cl.^{6} H01L *29/50;29/78;23/54*

U.S. Cl. 257—737 **21 Claims**



1. A bump structure of a semiconductor device, the bump structure comprising:

at least one pad electrode on a semiconductor substrate;

a test electrode on the semiconductor substrate, the pad electrode and the test electrode being located separately from one another;

a passivation layer on an area of the semiconductor substrate other than that covered by the pad electrode and the test electrode;

a base metal layer formed on a portion of the pad electrode and on a portion of the test electrode adjacent to the pad electrode, the remaining portion of the test electrode extending beyond the base metal layer so as to be accessible by a test probe; and

a bump on an overall surface of the base metal layer.

5,854,514

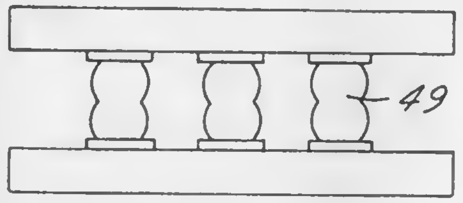
LEAD-FREE INTERCONNECTION FOR ELECTRONIC DEVICES

Judith Marie Roldan, Ossining, and Ravi F. Saraf, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1996, Ser. No. 693,923

Int. Cl.^{6} H01L *23/48*

U.S. Cl. 257—746 **21 Claims**



1. An electrical device comprising:

a plurality of pads positioned on said electrical device for making electrical interconnections thereto, each said pad having an electrically conductive surface, and

a substantially electrically conductive first composite adhered to said pads, said electrically conductive first composite comprises thermoplastic polymeric binder and at least about 30% by volume of conductive metal particles based on the total volume of said metal particles and said thermoplastic polymer, said electrically conductive first composite deforms elastically to at least 15% deformation.

5,854,515

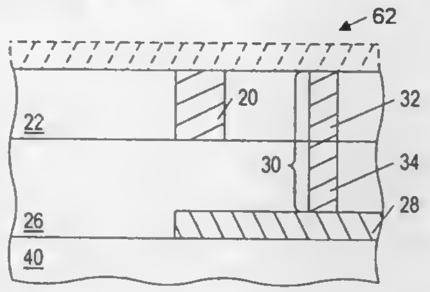
INTEGRATED CIRCUIT HAVING CONDUCTORS OF ENHANCED CROSS-SECTIONAL AREA

Basab Bandyopadhyay; H. Jim Fulford, Jr.; Robert Dawson; Fred N. Hause; Mark W. Michael, and William S. Brennan, all of Austin, Tex., assignors to Advanced Micro Devices, Inc.

Filed Jul. 23, 1996, Ser. No. 685,143

Int. Cl.^{6} H01L *23/52*

U.S. Cl. 257—775 **12 Claims**



1. A plurality of conductors, comprising:

a pair of conductors each having an upper surface and a lower surface;

a first conductor spaced partially between the pair of conductors, said first conductor having a first upper surface and a first lower surface, said first conductor comprising a first layer of conductive material and a second layer of conductive material, said second layer of conductive material being arranged collinear with said first layer of conductive material; and

said first upper surface is substantially coplanar with said upper surface and said first lower surface is configured below said lower surface.

5,854,516

METHOD AND APPARATUS FOR GENERATING ELECTRIC POWER USING WAVE FORCE

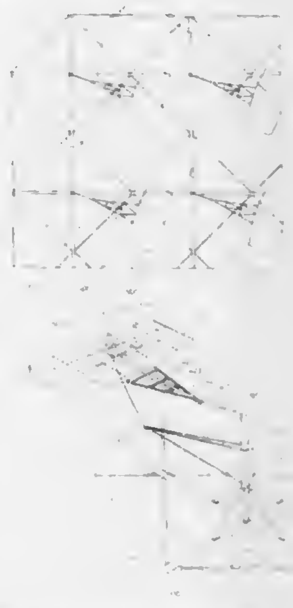
Hyun Jin Shim, 350-59, Sangdo 3-Dong, Dongjak-Ku, Seoul, Rep. of Korea

Filed Sep. 23, 1996, Ser. No. 710,848

Claims priority, application Rep. of Korea, Apr. 18, 1996, 1996-11790

Int. Cl.^{6} F03B *13/10;13/12*

U.S. Cl. 290—53 **26 Claims**



1. An apparatus for generating an electric power using a wave force, comprising:

a frame having a central power generation sector S1 disposed at a predetermined depth of the sea within a predetermined area of a construction site of the apparatus; and a plurality of pressurized liquid generation sectors S2 spaced-apart by a predetermined distance with respect to the central power generation sector S1;

support means for movably supporting the frame at the sea;

rotation means disposed at the pressurized liquid generation sector S2 of the frame, a predetermined portion of the same being protruded beyond the sea level;

lifting/lowering support means connected to an upper portion of the rotation means;

a plurality of buoys connected to each of the end portions of the lifting/lowering support means;

rotation force generation means disposed at each of the buoys for converting the lifting/lowering movement into a rotation force, and including a support member rotatable and vertically disposed at the pressurized liquid generation sector S2;

pressurized liquid generation means disposed at an upper surface of each buoy;

one-directional driving means for transferring one-directional force of the rotation force generation means to the pressurized liquid generation means;

pressurized liquid generation means for transferring the pressurized liquid discharged from the pressurized liquid generation means to the power generation sector S1;

a turbine T disposed at the power generation sector S1 for generating a driving force necessary for the power generation in cooperation with the pressurized liquid transferred from the pressurized liquid generation means; and

a power generator F driven by the turbine T.

5,854,517

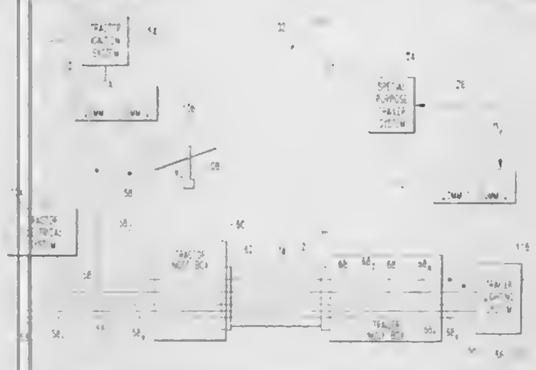
COMMUNICATIONS LINK BETWEEN A TRACTOR AND TRAILER UTILIZING TRACTOR CIRCUITRY

Antonio Hines, Tampa, Fla., assignor to Grote Industries, Inc., Madison, Ind.

Continuation of Ser. No. 807,665, Feb. 27, 1997, abandoned. This application Oct. 24, 1997, Ser. No. 957,423

Int. Cl.^{6} G08B *21/00*

U.S. Cl. 307—10.8 **20 Claims**



1. A tractor communication system for establishing communications with an external system comprising:

an electrical connector mounted to a tractor and having a number of electrical terminals adapted for connection to an electrical system external to the tractor:

a tractor electrical system including a first turn signal circuit having a first turn signal circuit path connected to one of said electrical terminals of said electrical connector: and

a communications device having a first communications port connected to said first turn signal circuit path, said communications device monitoring said first communications port and permitting communications over said first turn signal circuit path as long as said first turn signal circuit is inactive.

5,854,518

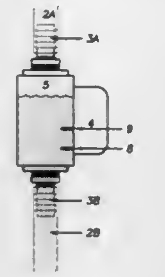
INLINE CONDENSATION ALARM SYSTEM FOR A CENTRAL AIR CONDITIONING UNIT

Billy Wayne Revis, P.O. Box 10038, Killeen, Tex. 76547

Filed Feb. 23, 1998, Ser. No. 27,733

Int. Cl.^{6} H01H *35/18*

U.S. Cl. 307—118 **1 Claim**



INLINE CONDENSATION ALARM SYSTEM FOR A CENTRAL AIR CONDITIONING UNIT

1. An alarm system for detecting condensation backup within a condensation drain line hose of a central air conditioning unit and for sounding an alarm to notify one of a possible blockage comprising:

said condensation drain lime hose having first and second sections, said first section having a first end coupled to the central air conditioning unit and a second end, said second section having first end for draining central air conditioning unit condensation and a second end,

a PVC pipe having threaded splined male hose adapters on each end which is inserted into the condensation drain line hose by inserting the threaded splined male hose adapters into the second ends of the first and second sections of the condensation drain line hose,

the PVC pipe containing upper and lower stainless steel screw contact points which are electrically coupled to an alarm circuit which sounds a piezo buzzer when both the upper and lower stainless steel screw contact points contact backed-up condensation in the condensation drain line hose.

a PVC housing containing the alarm circuit attached to an external surface of the PVC pipe, wherein the alarm circuit comprises a 9 volt battery, the piezo buzzer and an electrical connection to the upper and lower stainless steel screw contact points electrically connected so as to sound the piezo buzzer when both the upper and lower stainless steel screw contact points contact backed-up condensation in the condensation drain line hose.

5,854,519

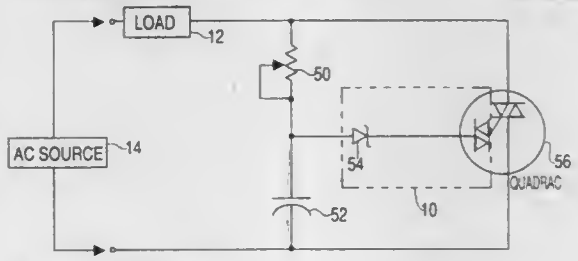
ASYMMETRICAL AC TRIGGER SIMULATION

Bernard J. Gershen, Centerport; Alfred J. Lombardi, La Grangeville; Edward J. Krajci, Franklin Square, and Yevgeny Shafir, Jamaica Estates, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 183,459, Jan. 18, 1994, Pat. No. 5,619,081. This application Mar. 20, 1997, Ser. No. 821,748

Int. Cl.^{6} H01H *47/00*

U.S. Cl. 307—125 **6 Claims**



1. A dimmer comprising:

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a) switching means having first and second terminals and a gate terminal; said first terminal connected to one side of a load; said second terminal connected to a source of AC voltage; said switching means operable to change from a state of high impedance to a state of low impedance upon the application of sufficient current to said gate terminal causing current to flow through said load;

b) a conductor coupled between the other side of said load and said source of AC voltage;

c) symmetrical trigger means having third and fourth terminals, said symmetrical trigger means fourth terminal coupled to said gate terminal of said switching means for preventing said switching means from changing state until sufficient voltage appears across said third and fourth terminals of said symmetrical trigger means; said symmetrical trigger means exhibiting negative impedance characteristic upon breakover and having similar breakover points during both positive and negative half cycles of a source of AC voltage;

d) phase control means coupled between said one side of said load, said source of AC voltage and to an output terminal; and

e) asymmetrical trigger means connected between said output terminal of said phase control means and said third terminal of said symmetrical trigger means, said symmetrical trigger means operable to compensate for charge depletion in said phase control means caused by said symmetrical trigger means; said asymmetrical trigger means effective to change state asymmetrically during each half cycle of said AC voltage.

5,854,520

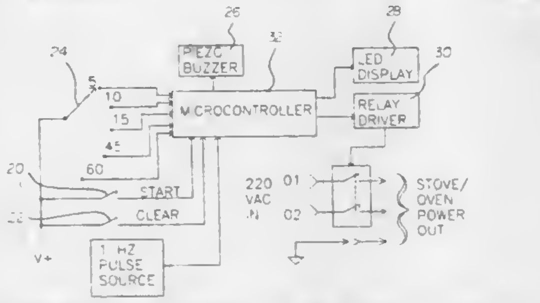
STOVE TIMER AND AUTOMATIC CUT OFF SYSTEM

Beatrice L. Buck; Beatrice B. Tibbitt, both of 124 Coal Valley Rd., Clairton, Pa. 15025, and Loretta A. Sudsina, 3712 Bevan Rd., N. Versailles, Pa. 15137

Filed Nov. 6, 1997, Ser. No. 963,633

Int. Cl.^{6} H05B *1/02*

U.S. Cl. 307—141 **1 Claim**



1. A stove timer and automatic cut off system comprising, in combination:

a stove having a plurality of burners each adapted to generate heat upon the receipt of power, the stove further including a control panel;

a start switch situated on the control panel of the stove for transmitting a start signal upon the depression thereof;

a clear switch situated on the control panel of the stove for transmitting a clear signal upon the depression thereof;

a timer selector switch assembly situated on the control panel of the stove and having a plurality of discrete orientations, wherein the switch assembly is adapted to transmit a timer signal representative of a unique predetermined amount of time in each orientation;

an audio means situated on the control panel of the stove and adapted to emit an audible alarm only during the actuation thereof;

a display situated on the control panel of the stove for depicting a plurality of numeric digits thereon;

relay means connected between the burners of the stove and a source of power, the relay means adapted to supply the burner with power only during the actuation thereof; and

control means connected between the start switch, clear switch, timer selector switch assembly, audio means, display, and relay means, the control means adapted to function in an activated mode only upon the receipt of the start signal wherein the control means actuates the relay means and further depicts a decrementing timer on the display which decrements from the predetermined amount of time represented by the timer signal, the control means, while in the activated mode and upon the receipt of the start signal, adapted to continuously actuate the relay means and further depict on the display a decrementing timer which decrements again from the predetermined amount of time represented by the timer signal currently received, the control means, while in the activated mode and upon the cessation of the predetermined amount of time represented by the timer signal, adapted to actuate the alarm for an interim and further deactuate the relay means and the alarm upon the cessation of the interim, the control means, while in the activated mode and upon the cessation of the predetermined amount of time represented by the timer signal and further upon the receipt of the start signal, adapted to continuously actuate the relay means and further depict on the display a decrementing timer which decrements again from the predetermined amount of time represented by the timer signal currently received, the control means, while in the activated mode and upon the receipt of the clear signal, further adapted to merely deactuate the relay means;

wherein the timer selector switch assembly is adapted to default to a predetermined non-zero setting upon each depression of the start switch thereby requiring the user to depress a more lengthy setting if desired.

5,854,521

MULTI-PHASE TRANSVERSE MAGNETIC FLUX MACHINE

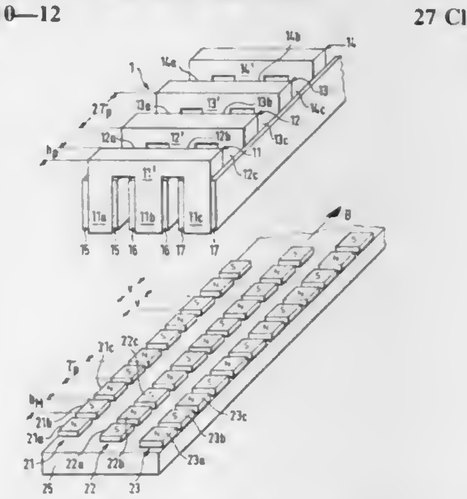
Eugen Nolle, Sersheim, Germany, assignor to BLUM GmbH, Vaihingen, Germany

Filed Apr. 26, 1996, Ser. No. 638,506

Claims priority, application Germany, Apr. 27, 1995, 195 15 543.2; Sep. 4, 1995, 195 32 614.8

Int. Cl.^{6} H02K *21/00*

U.S. Cl. 310—12 **27 Claims**



1. A multi-phase transverse flux machine having

two primary components and a secondary component associated with each primary component and in which said primary components include individual bundles of lamination elements which are spaced at a mutual separation distance along a longitudinal direction of the transverse flux machine,

each said bundle of lamination elements having leg members, each of said leg members extending in a direction transverse to the longitudinal direction of the machine, said leg members being spaced at a mutual separation distance and being arranged in respective rows, said rows extending in said longitudinal direction, and sides of the primary components, oppositely disposed from free leg ends being arranged in adjoining fashion,

a respective exciting winding serving to excite each said row of leg members,

said exciting windings being excited so that the flux in the transverse direction at the various leg members reaches a maximum in a sequence,

said secondary components including rows of permanent magnet elements, said rows each extending in the longitudinal direction of the machine, said rows of permanent magnet elements being disposed next to each other in the transverse direction of the machine, wherein the improvement comprises each said row being associated with a row of leg members of the lamination element bundles,

in each said row of permanent magnet elements said permanent magnet elements being arrayed in a sequence of alternating polarity, and

each said longitudinal row of permanent magnet elements being displaced in the longitudinal direction of the machine with respect to a nearest neighboring row so that when the exciting windings are excited, said secondary element is caused to move in the longitudinal direction of the machine.

5,854,522

ELECTRIC MOTOR FOR DRIVING A PISTON PUMP AND METHOD OF ASSEMBLY

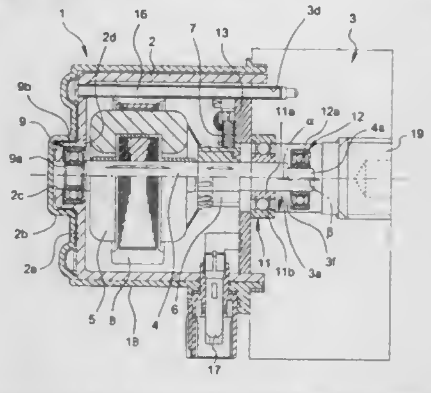
Masato Iwata, Kiryu, and Hiroshi Hagiwara, Isesaki, both of Japan, assignors to Mitsuba Corporation, Kiryu, Japan

Filed Jun. 27, 1997, Ser. No. 884,471

Claims priority, application Japan, Jun. 28, 1996, 8-188944; Jun. 10, 1997, 9-167970

Int. Cl.^{6} H02K *5/00*

U.S. Cl. 310—89 **6 Claims**



1. An electric motor for driving a piston pump comprising:

a yoke including a yoke bearing located at one end of the yoke;

a pump housing connected to the other end of the yoke and including a first pump housing bearing located in the pump housing;

an armature shaft extending between the yoke bearing and the first pump housing bearing and including an eccentric shaft tip portion protruding from said first pump housing bearing; and

a second pump housing bearing, smaller in diameter than the first pump housing bearing, located on the eccentric shaft tip portion of the armature shaft;

wherein an inner cylinder portion of the pump housing comprises the sequential formation of:

a first pump housing bearing support portion by which the first pump housing bearing is supported;

a second pump housing bearing moveable support portion which is smaller in diameter than the first pump housing bearing support portion and by which the second pump housing bearing is moveably supported;

a temporary supporting portion which is smaller in diameter than the second pump housing bearing moveable support portion and configured to support the second pump housing bearing in a temporarily supported state; and

an inserting hole portion for inserting a jig from a side of the pump housing that is opposite a side to which the yoke is connected to press against an inner ring of the second pump housing bearing which is temporarily supported and then to press the inner ring onto the eccentric shaft tip portion of the armature shaft.

5,854,523

Patent Not Issued For This Number

5,854,524

MOTOR WITH SEMI-SPHERICAL BEARING

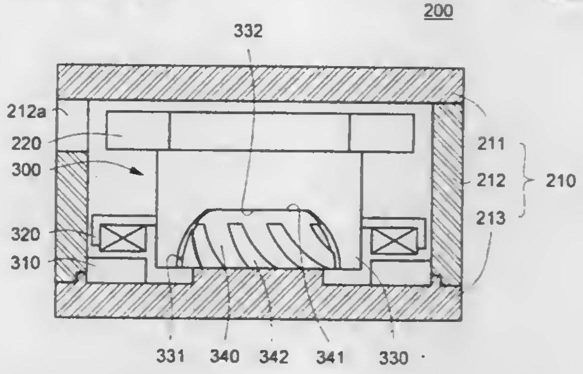
Chang-Woo Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 19, 1997, Ser. No. 934,395

Claims priority, application Rep. of Korea, Nov. 13, 1996, 9639852

Int. Cl.^{6} F16C *17/10;* H02K *7/08*

U.S. Cl. 310—90 **2 Claims**



1. A motor comprising:

a stator;

a rotor cooperating with the stator;

a rotating shaft rotating with the rotor, the rotating shaft including a downwardly facing bottom surface in which is formed a receiving space having a downwardly facing first planar surface; and

a semi-spherical bearing disposed in the receiving space of the rotating shaft, wherein the semi-spherical bearing includes a side surface forming a segment of a spherical surface, and a second planar surface intersecting the spherical surface segment to define a truncation of that spherical surface segment, the second planar surface opposing the first planar surface and including a plurality of grooves, each arranged in a spiral shape.

5,854,525

JACKETED ROTARY MACHINE

Hervé Pommelet, Elesmes, France, assignor to Jeumont Industrie, Courbevoie, France

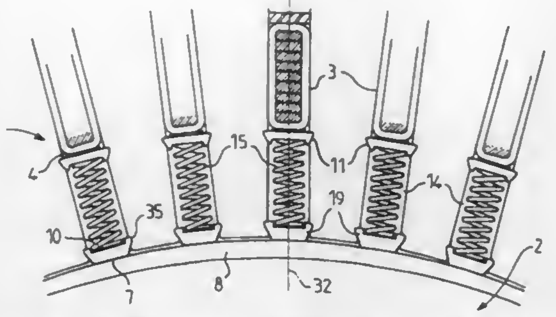
Continuation-in-part of Ser. No. 281,403, Jul. 27, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 690,727

Claims priority, application France, Jul. 30, 1993, 93 09455

Int. Cl.^{6} H02K *3/48*

U.S. Cl. 310—214 **8 Claims**

1. A rotary machine comprising a stator with coils retained in notches by shims and a leakproof jacket located in the stator bore wherein the shims for retaining the coils are fixed in the notch and do not close the notch and such that a passage is formed between said retaining shims and the notch end leading into the bore and



wherein the machine further comprises notch closing shims of a predetermined height positioned within said passage independent of said coils and protruding from said bore to avoid direct contact between the jacket and the bore, and elastic means provided in said passage between said retaining and notch closing shims for retaining the coils and said notch closing shims, said notch closing shims exerting a pressure on the jacket and in cooperation with said elastic means providing an elastic support for the jacket, in order to compensate for any possible dilatation deviations.

5,854,526

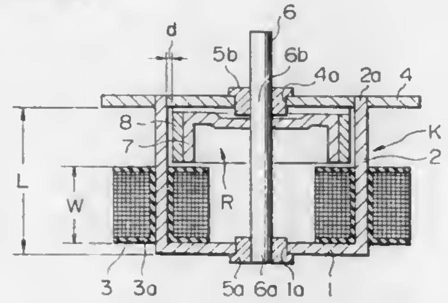
THREE-PHASE PERMANENT-MAGNET ELECTRIC ROTATING MACHINE

Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Ltd., Tokyo-to, Japan

Filed Jul. 11, 1996, Ser. No. 678,757

Int. Cl.^{6} H02K *1/12;21/12;21/14;21/16*

U.S. Cl. 310—254 **12 Claims**



1. A three-phase permanent-magnet electric rotating machine comprising:

a stator which includes a stator iron core made from a magnetic material and having a disc portion and 3n (n being an integer not smaller than 1) magnetic poles erected perpendicularly from an outer circumference of said disc portion, said disc portion and said 3n magnetic poles formed from a single sheet of said magnetic material, and excitation windings mounted on said magnetic poles respectively, each of said windings having a predetermined width in an axial direction; and

a rotor having a permanent magnet by which a predetermined number of pairs of N and S magnetic poles are formed alternately in a direction of rotation of said rotor and so as to be opposite to said magnetic poles piercing said excitation windings at top end portions of said magnetic poles respectively beyond said excitation windings.

5,854,527

SURFACE ACOUSTIC WAVE DEVICE AND PORTABLE TELEPHONE USING SAME

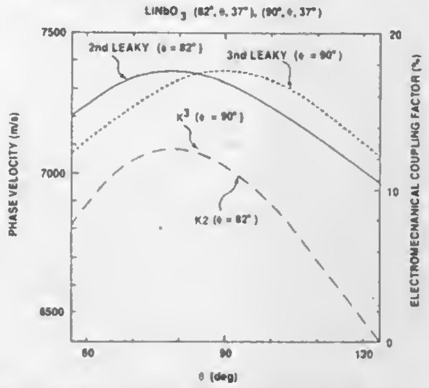
Yasutaka Shimizu; Atsuhiro Nishikata, both of Tokyo, and Shigetaka Tonami, Toyama, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 6, 1997, Ser. No. 812,880

Claims priority, application Japan, Mar. 8, 1996, 8-051808

Int. Cl.^{6} H03H *9/25;* H01L *41/08*

U.S. Cl. 310—313 A **12 Claims**



1. A surface acoustic wave device, comprising:

a piezoelectric substrate of lithium niobate and electrodes formed on the substrate for propagating second leaky waves, wherein the piezoelectric substrate has a cut plane and a surface acoustic wave propagation direction which are (ϕ, θ, ψ) as expressed in Eulerian angles and within ranges substantially equivalent thereto, the angles ϕ, θ and ψ being within the respective ranges of the following mathematical expressions:

$$80^\circ \leqq \phi \leqq 86^\circ$$

$$73^\circ \leqq \theta \leqq 118^\circ$$

$$34^\circ \leqq \psi \leqq 44^\circ.$$

5,854,528

ULTRASONIC MOTOR

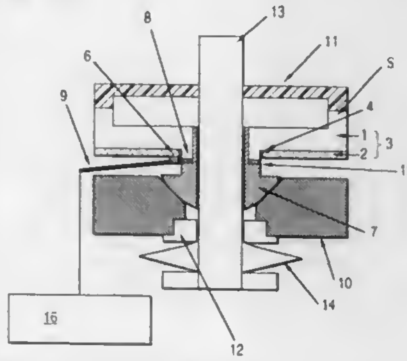
Takahiro Nishikura, Nara; Masanori Sumihara; Takashi Nojima, both of Osaka, and Osamu Kawasaki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 15, 1996, Ser. No. 647,724

Claims priority, application Japan, May 15, 1995, 7-116167

Int. Cl.^{6} H01L *41/08*

U.S. Cl. 310—323 **14 Claims**



1. An ultrasonic motor comprising:

a vibrating body comprising:

a metal elastic element having an upper surface and a lower surface, with plural protrusions formed on the upper surface of the elastic element, and

a piezoelectric element having an upper surface and a lower surface, with plural individual electrodes formed on the lower surface of the piezoelectric element and a common electrode on the upper surface of the piezoelectric element, the upper surface of the piezoelectric element being fixed to the lower surface of the elastic element so that the common electrode may be electrically coupled to the elastic element,

wherein the vibrating body vibrates by inverse piezoelectric effect of the piezoelectric element;

a moving body,

wherein the moving body is driven by vibrations of the vibrating body, and moves relative to the vibrating body;

pressing means for pressing the moving body against the plural protrusions on the vibrating body;

a supporting component having an upper end, a rounded lower end, and at least one flat portion formed between the upper end and the rounded lower end,

wherein the upper end of the supporting component is fixed to the vibrating body, and the rounded lower end projects downward from the vibrating body;

a supporting base having a tapered dent,

wherein the supporting base supports the rounded lower end of the supporting component by the dent;

a driving circuit for driving the ultrasonic motor;

a first lead wire,

wherein one end of the first lead wire is held between the lower surface of the elastic element and the flat portion of the supporting component and is pressed against the lower surface of the elastic element so as to be coupled electrically to the common electrode of the piezoelectric element through contact with the elastic element, and the other end of the first lead wire is coupled to the driving circuit; and

plural second lead wires,

wherein one end of each second lead wire is respectively coupled to one of the individual electrodes of the piezoelectric element, and the other end of each second lead wire is respectively coupled to the driving circuit.

5,854,529

VIBRATION ACTUATOR

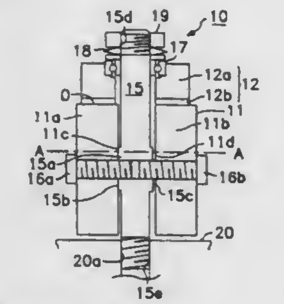
Takatoshi Ashizawa, Kawasaki, and Isao Sugaya, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 22, 1996, Ser. No. 701,673

Claims priority, application Japan, Aug. 22, 1995, 7-213480; May 23, 1996, 8-128337

Int. Cl.^{6} H02N *2/00;* H01L *41/08*

U.S. Cl. 310—323 **17 Claims**



1. A vibration actuator, comprising:

a rod shaped support member having an exterior surface;

an elastic body having an inner circumferential surface and being located on the exterior surface of the support member and which supports an electro-mechanical energy conversion element to convert electrical energy into mechanical energy and being excited by a drive signal, the electromechanical energy conversion element generating a drive force in a drive surface which is an end surface of the elastic body;

a relative motion member, disposed to be freely rotatable around the support member and compressively contacting the elastic body at the drive surface; and

a fixed member which penetrates the support member and the elastic body,

wherein the support member has a first side edge that contacts an inner circumferential surface of said elastic body, and a second side edge opposite the first side edge that does not contact the inner circumferential surface of said elastic body, and

wherein a portion of the inner circumferential surface of the elastic body includes a mounting standard unit disposed to regulate the positional relationship of the elastic body and the support member.

5,854,530

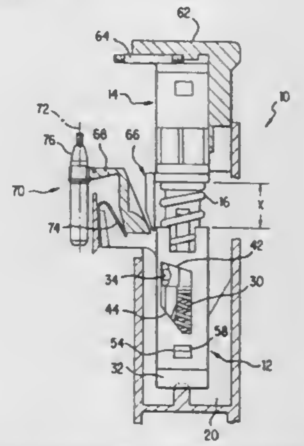
PIEZOELECTRIC LIGHTER WHICH HAS A HIGHER LEVEL OF DIFFICULTY FOR OPERATION

Guy LaForest, Cascais, Portugal, and Marcel Meury, Tarragona, Spain, assignors to BIC Corporation, Milford, Conn.

Filed Dec. 18, 1996, Ser. No. 768,545

Int. Cl.^{6} H01L *41/08*

U.S. Cl. 310—339 **21 Claims**



1. A piezoelectric ignition mechanism comprising:

a telescopic assembly having first and second members;

a return spring associated with the first and second members for biasing the first and second members away from each other;

a piezoelectric element positioned inside the telescopic assembly;

a plexor movably disposed in the telescopic assembly and is resiliently biased by an impact spring, said impact spring is supported at the other end by an end member of the telescopic assembly, said plexor is retained at a predetermined distance away from the piezoelectric element, such that when the plexor is released, it impacts against the piezoelectric element to produce a spark;

wherein the ignition mechanism further comprises a resistant spring disposed within the telescopic assembly, such that it resists the release of the plexor.

5,854,531

STORAGE RING SYSTEM AND METHOD FOR HIGH-YIELD NUCLEAR PRODUCTION

Phillip E. Young, Temecula, Calif., and Delbert J. Larson, DeSoto, Tex., assignors to Science Applications International Corporation, San Diego, Calif.

Filed May 30, 1997, Ser. No. 865,851

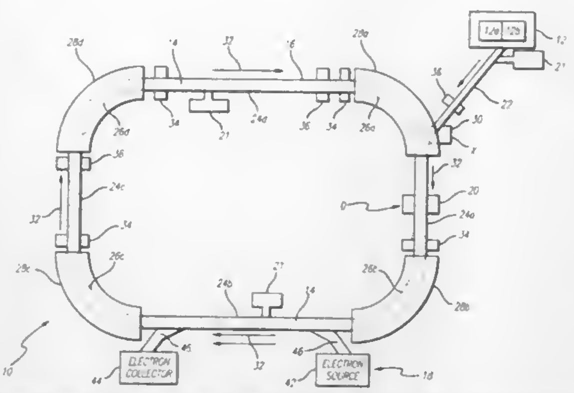
Int. Cl.^{6} H05H *13/04*

U.S. Cl. 313—362.1 **25 Claims**

17. A method for promoting nuclear reaction, comprising:

providing a storage ring having a closed configuration and a target within said storage ring;

introducing projectile particles into said storage ring to impinge the target, and magnetically manipulating a direction of travel of unreacted projectile particles such that said unreacted particles circulate said storage ring; and



introducing electrons into said storage ring to join said projectile particles, and removing said electrons.

5,854,532

DEFLECTION YOKE DEVICE WITH IMPROVED COLOR SHIFT PROPERTIES

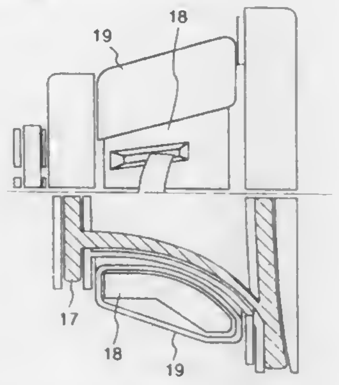
Yasunobu Kuwahara, Tamana, and Katsuhiko Shiomi, Tamana-gun, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 18, 1996, Ser. No. 683,387

Claims priority, application Japan, Jul. 21, 1995, 7-185228; Jun. 17, 1996, 8-155126

Int. Cl.^{6} H01F *1/00;7/00*

U.S. Cl. 313—440 **50 Claims**



2. A deflection yoke device comprising:

a pair of cores;

vertical deflection coils wound on said pair of cores, respectively; and

a pair of horizontal deflection coils, each having two longitudinal portions, a larger arcuate interconnecting portion and a smaller arcuate interconnecting portion, wherein said two longitudinal portions are connected to said larger arcuate interconnecting portion and said smaller arcuate interconnecting portion to assume a saddle-like contour;

wherein, in each of said pair of horizontal deflection coils, said smaller arcuate interconnecting portion is connected generally perpendicularly to said two longitudinal portions, respectively, and said larger arcuate interconnecting portion is connected at an acute angle to said two longitudinal portions, respectively.

5,854,533

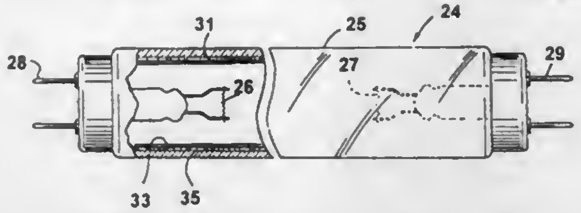
FLUORESCENT LAMPS WITH HIGH COLOR-RENDERING AND HIGH BRIGHTNESS

Romano G. Pappalardo, Sudbury, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Oct. 19, 1992, Ser. No. 963,873

Int. Cl.^{6} H01J *1/62*

U.S. Cl. 313—487 **28 Claims**



1. A fluorescent lamp comprising a metameric mixture of a plurality of blends of lamp phosphors for converting ultraviolet radiation to visible illumination, each of said blends of lamp phosphors having a different Spectral Power Distribution and substantially identical color coordinates, the color rendering index (CRI) of said metameric mixture being higher than the CRI of each of said blends of lamp phosphors.

5,854,534

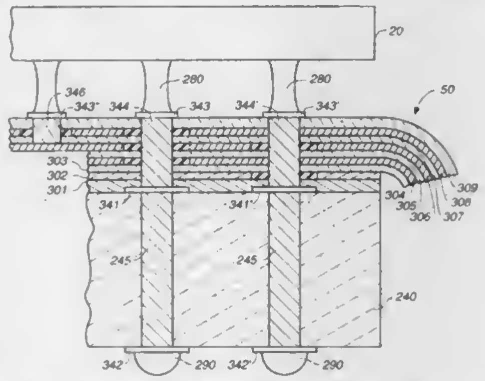
CONTROLLED IMPEDENCE INTERPOSER SUBSTRATE

Solomon I. Beilin, San Carlos; William T. Chou, Cupertino; David Kudzuma; Michael G. Lee, both of San Jose; Michael G. Peters, Santa Clara; James J. Roman, Los Altos; Som S. Swamy, Danville; Wen-chou Vincent Wang, Cupertino; Larry L. Moresco, San Carlos, and Teruo Murase, San Jose, all of Calif., assignors to Fujitsu Limited, Japan

Continuation-in-part of Ser. No. 274,915, Jul. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 157,332, Nov. 22, 1993, Pat. No. 5,426,563, which is a continuation of Ser. No. 925,962, Aug. 5, 1992, abandoned. This application Nov. 16, 1995, Ser. No. 559,369

Int. Cl.^{6} H01L *23/52;23/04;23/053;23/34*

U.S. Cl. 257—691 **23 Claims**



1. An interposer substrate for coupling an integrated circuit chip to a multichip module substrate, comprising:

a rigid member having a first surface for mounting to said multichip module substrate and a second surface for receiving said integrated circuit chip.

power distribution means for coupling power distribution means having a plurality of vias formed through said rigid member from said first surface to said second surface and wherein power is routed through said rigid member from said surface to said second surface; and

controlled impedance signal path means for coupling signals from said multichip module substrate to said integrated circuit chip;

wherein said power distribution means and said controlled impedance signal path means are substantially isolated from each other.

5,854,535

METAL HALIDE DISCHARGE LAMP WITH A QUARTZ DISCHARGE VESSEL AND AN OUTER UV RADIATION ABSORBENT ENVELOPE

Andreas Hohlfeld; Dirk Hoffmann, both of Berlin, Germany; Akihiro Kanda, Ogasa-gun, and Katsuya Otani, Yamato, both of Japan, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

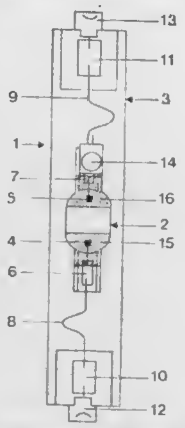
PCT No. PCT/EP94/04233, § 371 Date Jun. 25, 1996, § 102(e) Date Jun. 25, 1996, PCT Pub. No. WO95/19639, PCT Pub. Date Jul. 20, 1995

PCT Filed Dec. 20, 1994, Ser. No. 666,398

Claims priority, application European Pat. Off., Jan. 18, 1994, 94100669

Int. Cl.^{6} H01J *61/30*

U.S. Cl. 313—636 **15 Claims**



1. A metal halide lamp having a discharge vessel (2, 22) made of quartz glass;

a light transmissive outer envelope (3, 23) surrounding the discharge vessel (2, 22);

electrodes (4, 5; 24, 25) in said discharge vessel;

current supply wires (8, 9; 28, 29) electrically connected to said electrodes and extending from said discharge vessel within and into said outer envelope (3, 23); and

an ionizable fill which includes sodium or a sodium compound gas-tightly retained in the discharge vessel (2, 22),

and including the improvement formed by a combination to reduce loss of sodium from the ionizable fill by reduction of UV radiation impinging upon said current supply wires (8, 9; 28, 29),

said combination comprising

the sodium content in the ionizable fill being at most 0.7 mg/cm^{3} of the discharge volume;

said outer envelope (3, 23) consisting of quartz glass doped with a doping material which renders the quartz glass UV radiation absorbent;

the outer envelope (3, 23) being evacuated; and

the spacing of the outer envelope (3, 23) from the discharge vessel (2, 22) being at most 5 mm.

5,854,536

RESONANT CAVITY HAVING A COUPLING ORIFACE FACILITATE COUPLING TO ANOTHER RESONANT CAVITY

Michel Langlois, Thonon Les Bains, and Gérard Fetre, Vongy, both of France, assignors to Thomas Tubes Electroniques, Velizy, France

Filed Nov. 17, 1995, Ser. No. 560,079

Claims priority, application France, Nov. 18, 1994, 94-13840

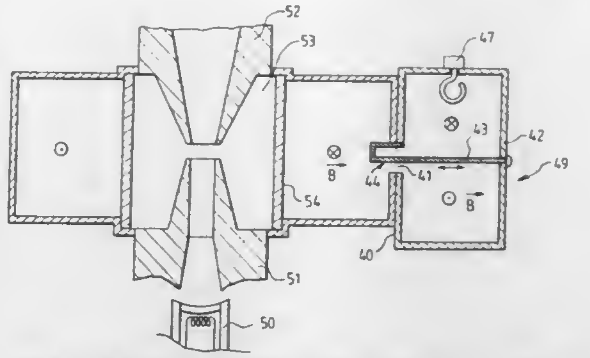
Int. Cl.^{6} H01J *23/16;23/22;25/00*

U.S. Cl. 315—5 **19 Claims**

18. An electron beam tube comprising:

at least one cavity through which an electron beam passes; and

a resonant cavity coupled to the at least one cavity through which the electron beam passes, said resonant cavity including,



a first wall having a coupling orifice therein to couple said resonant cavity to said at least one cavity,

a second wall opposite the first wall, and

an electrically conducting mast, projecting from the second wall and towards the coupling orifice, the electrically conducting mast terminating at one end thereof with a hook-shaped portion, the hook-shaped portion being in contact with an edge of the coupling orifice, another end of the electrically conducting mast being in contact with the second wall.

5,854,537

HEAD LAMP DEVICE FOR VEHICLE INCLUDING LIGHT DISTRIBUTION CONTROL OF AN AUXILIARY LIGHT SOURCE

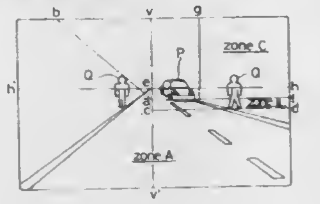
Shinichiro Gotoh; Takeshi Kobayashi; Shujiro Ohnuma, and Tatsuya Ishizaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

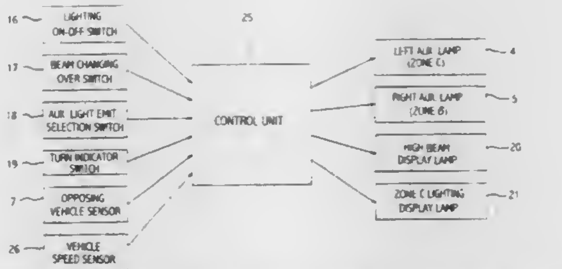
Filed Aug. 1, 1996, Ser. No. 690,892

Claims priority, application Japan, Aug. 4, 1995, 7218280

Int. Cl.^{6} H05B *37/02*

U.S. Cl. 315—82 **13 Claims**




16 LIGHTING ON-OFF SWITCH
17 BEAM CHANGING OVER SWITCH
18 AUX LIGHT EMIT SELECTION SWITCH
19 TURN INDICATOR SWITCH
7 OPPOSING VEHICLE SENSOR
26 VEHICLE SPEED SENSOR
25
CONTROL UNIT
LEFT AUX LAMP (ZONE C) 4
RIGHT AUX LAMP (ZONE B) 5
HIGH BEAM DISPLAY LAMP 20
ZONE C LIGHTING DISPLAY LAMP 21

1. A head lamp device for a subject vehicle, comprising:

main light emitting means capable of changing over a low beam and a high beam from each other;

auxiliary light emitting means for lighting a front and upper portion on an opposing vehicle lane side concurrently while said main light emitting means emits one of said low beam and said high beam;

opposing vehicle detection means for detecting existence of an opposing vehicle; and

control means for controlling said auxiliary light emitting means, said control means decreases or turns off the light of auxiliary light emitting means in response to input of an opposing vehicle detection signal from said opposing vehicle detection means when said main light emitting means emits said low beam at the same time said auxiliary light emitting means is turned on.

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5,854,538
CIRCUIT ARRANGEMENT FOR ELECTRODE PRE-HEATING OF A FLUORESCENT LAMP

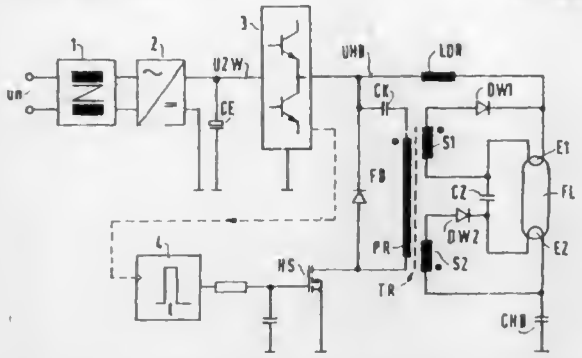
Peter Krummel, Traunreut, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 10, 1996, Ser. No. 662,440

Claims priority, application Germany, Jun. 8, 1995, 195 20 999.0

Int. Cl.⁶ H05B *41/36*

U.S. Cl. 315—105 **6 Claims**



1. A circuit arrangement for pre-heating electrodes of at least one flourescent lamp operated with electronic ballast equipment, said electrodes being respectively disposed at opposite ends of said flourescent lamp, the circuit arrangement comprising:

- means for supplying a stabilized intermediate circuit voltage;
- inverter means for emitting a half-bridge voltage in the form of a high frequency pulse sequence, said inverter means having an input connected to said means for supplying a stabilized intermediate circuit voltage and having an output;
- a load circuit including a lamp throttle, connected to a first of said electrodes, an ignition capacitor connected across said electrodes, and a half-bridge capacitor connected to a second of said electrodes, said load circuit connected between said output of said inverter and a ground reference potential;
- a switchable voltage source including a transformer having a primary winding, connected to said output of said inverter and to said ground reference potential, said switchable voltage source further comprising secondary windings having outputs connected in parallel with said electrodes, said secondary windings having a synchronized winding direction; and
- means, connected to said switchable voltage source, for activating said switchable voltage source during a predetermined pre-heating period of said electrodes.

5,854,539
ELECTROLUMINESCENT LAMP DRIVER CIRCUIT WITH SIGNAL TRACKING

Ermanno Pace; Giorgio Mariani, and Alessandro Fasan, all of Phoenix, Ariz., assignors to StMicroelectronics, Inc., Carrollton, Tex.

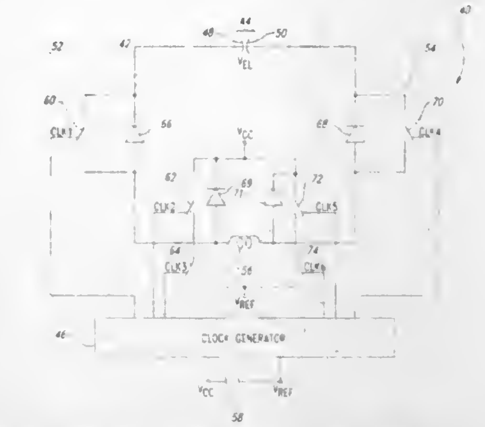
Filed Aug. 26, 1997, Ser. No. 918,859

Int. Cl.⁶ H05B *39/09*

U.S. Cl. 315—208 **20 Claims**

5. A high voltage source responsive to a set of clocking signals and an input supply voltage to produce a periodic signal having a peak voltage greater than the supply voltage, comprising:

- a reference signal source operative to produce a target signal;
- an inductive circuit having first and second terminals and being responsive to an input voltage across the first and second terminals to store energy;
- a first switching circuit coupled to the inductive circuit, the first switching circuit having a first control terminal and a first voltage terminal adapted to receive the supply voltage, the first switching circuit being responsive to a first of the clocking signals at the first control terminal to apply the supply voltage between the first and second terminals in a first direction;



- a second switching circuit coupled to the inductive circuit, the second switching circuit having a second control terminal and a second voltage terminal adapted to receive the supply voltage, the second switching circuit being responsive to a second of the clocking signals at the second control terminal to apply the supply voltage across the first and second terminals in a second direction opposite the first direction; and
- a comparing circuit having a first comparator input coupled to the reference signal source and a second comparator input coupled to the first or second terminal, the comparing circuit being responsive to the relative magnitudes of the target signal and the voltage of the first or second driving terminals to produce the first or second clocking signals.

5,854,540
PLASMA DISPLAY PANEL DRIVING METHOD AND PLASMA DISPLAY PANEL DEVICE THEREFOR

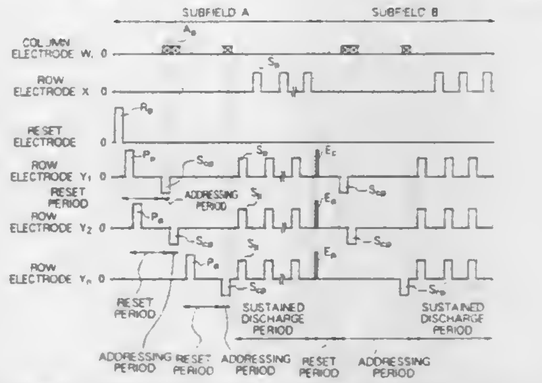
Sadayuki Matsumoto; Takashi Hashimoto; Takahiro Urakabe; Shigeki Harada, and Masao Karino, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,917

Claims prinrity, application Japan, Jun. 18, 1996, 8-157013

Int. Cl.⁶ G09G *3/10*

U.S. Cl. 315—169.1 **20 Claims**



1. A method of driving a plasma display panel device which is comprised of a plurality of first electrodes and a plurality of second electrodes covered with a dielectric layer, and a plurality of third electrodes disposed so as to extend orthogonally to at least one of said first and second electrodes to thereby define individual cells, respectively,

- wherein a plurality of fields for image display each comprise at least two types of subfields including first and second subfields;
- said first subfield comprising:
  - a first reset period in which a priming pulse having a voltage value and a pulse width for causing discharge to occur in all of said cells defined between said first electrodes and said second electrodes is applied and after the discharge of all of said cells, a voltage applied between said first and second electrodes is set to zero for erasing wall charge stored in said dielectric layer;
  - an addressing period in which a write operation is performed by bringing about electric discharge between said first or second electrodes and said third electrodes for thereby allowing the wall charge to be stored in said dielectric layer; and
  - a sustained discharge period in which an AC voltage is applied between said first and second electrodes for thereby realizing a sustained discharge by making use of said wall charge stored in said dielectric layer; and
- said second subfield comprising:
  - a second reset period in which an erasing pulse having a voltage value and a pulse width for causing only the cells discharged in the preceding subfield to be discharged is applied for allowing only the cells discharged in the preceding subfield to be discharged and thereafter the wall charge stored in said dielectric layer is erased by setting to zero the voltage applied between said first and second electrodes;
  - a second addressing period in which a write operation is performed by causing discharge to take place between said first or second electrodes and said third electrodes to thereby store the wall charge in said dielectric layer; and
  - a second sustained discharge period in which an AC voltage is applied between said first and second electrodes for realizing a sustained discharge by making use of the wall charge stored in said dielectric layer.

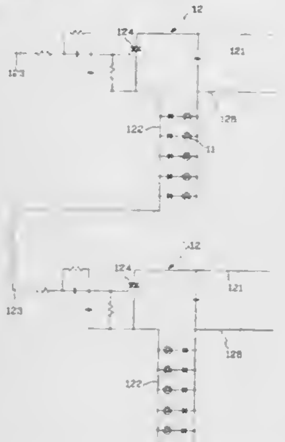
5,854,541
FLICKER LIGHT STRING SUITABLE FOR UNLIMITED SERIES-CONNECTION

Tsung-Ming Chou, 1 Lane 328, Chung Hsin Road, Sec. 3, Chu-Tung Haian, Hsin Chu Hsien, Taiwan, 310

Filed Mar. 19, 1997, Ser. No. 820,630

Int. Cl.⁶ H05B *37/00*

U.S. Cl. 315—185 R **4 Claims**



1. A synchronously flickering light array comprising:

a) a plurality of flicker light strings, each flicker light string comprising:
  i) a plurality of lights electrically connected together;
  ii) a driver having a trigger circuit electrically connected to the plurality of lights, the driver controlling the flickering of the lights on the light string; and.
  iii) a plug extending from the driver to connect the driver to an external power source; and,
b) a trigger wire connecting a first flicker light string to a driver of a second flicker light string such that the lights on first and second flicker light strings flicker synchronously.

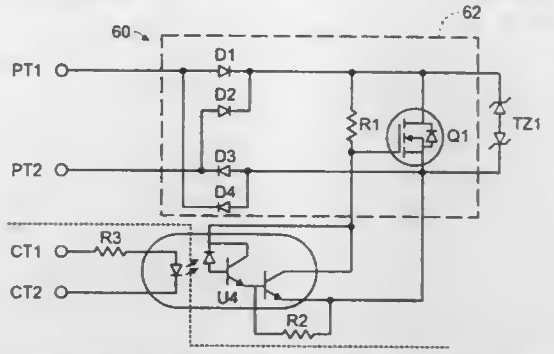
5,854,542
FLASHING AND DIMING FLUORESCENT LAMPS FOR A GAMING DEVICE

Mark G. Forbes, Corvallis, Oreg., assignor to Acres Gaming Incorporated, Corvallis, Oreg.

Filed Aug. 30, 1996, Ser. No. 706,038

Int. Cl.⁶ G05F *1/00*

U.S. Cl. 315—291 **41 Claims**



1. A controllable starter circuit for a fluorescent lamp comprising:

- a first power terminal for coupling the starter circuit to a fluorescent lamp circuit;
- a second power terminal for coupling the starter circuit to a fluorescent lamp circuit;
- a control port for receiving an external control signal;
- a switch having:
  - a controlled current path coupled between the first and second power terminals;
  - a switch control terminal coupled to the control port to receive the control signal;
  - a rectifier bridge having a first input terminal coupled to the first power terminal, a second input terminal coupled to the second power terminal, a first output terminal, and a second output terminal; and
  - a transistor having a controlled current path coupled between the first and second output terminals of the rectifier bridge;
- a voltage suppressor coupled in parallel with the switch; and
- a resistor coupled between the switch control terminal and the first output terminal of the rectifier bridge so as to hold the switch in a conductive state in the absence of a control signal.

5,854,543
INVERTER CIRCUIT FOR LIGHTING A COLD CATHODE TUBE BY THE USE OF A PIEZOELECTRIC TRANSFORMER

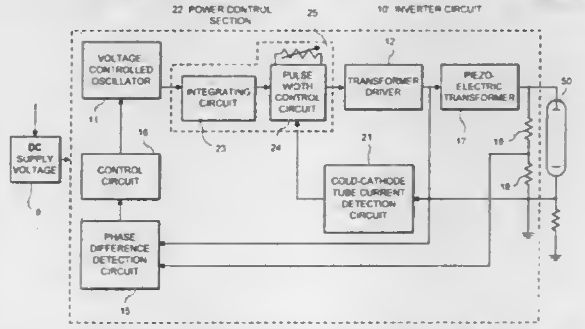
Hiroyuki Satoh; Yoshihiro Ino, and Hutoshi Shiotani, all of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan

Filed Dec. 26, 1996, Ser. No. 773,969

Claims priority, application Japan, Dec. 26, 1995, 7-338623

Int. Cl.⁶ H05B *41/00;37/02*

U.S. Cl. 315—307 **4 Claims**


22 POWER CONTROL SECTION
25
10 INVERTER CIRCUIT
12
VOLTAGE CONTROLLED OSCILLATOR
INTEGRATING CIRCUIT
PULSE WIDTH CONTROL CIRCUIT
TRANSFORMER DRIVER
PIEZO-ELECTRIC TRANSFORMER
50
11
16
23
24
21
17
19
18
DC SUPPLY VOLTAGE
CONTROL CIRCUIT
COLD-CATHODE TUBE CURRENT DETECTION CIRCUIT
PHASE DIFFERENCE DETECTION CIRCUIT
15

1. An inverter circuit supplied with a DC supply voltage for lighting a cold-cathode tube, said inverter circuit including, a piezoelectric transformer responsive to a transformer input voltage

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signal for producing a transformer output voltage signal and for supplying said transformer output voltage signal to said cold-cathode tube to thereby light said cold-cathode tube; a transformer driver responsive to a driver input pulse voltage signal for producing a transformer drive voltage signal for use in driving said piezoelectric transformer, said transformer driver delivering said transformer drive voltage signal to said piezoelectric transformer as said transformer input voltage signal, a voltage-controlled oscillator supplied with a control voltage for producing an oscillation pulse voltage signal having an oscillation frequency controlled by said control voltage; pulse voltage supply means for supplying said oscillation pulse voltage signal to said transformer driver as said driver input pulse voltage signal, a phase difference detection circuit for detecting as a detected phase difference a phase difference between said transformer input voltage signal and said transformer output voltage signal; and a control circuit for producing said control voltage so that said detected phase difference is coincident with a predetermined value; wherein:

said inverter circuit comprises a cold-cathode tube current detection circuit for detecting as a detected current value a cold-cathode tube current which flows through said cold-cathode tube;

said pulse voltage supply means comprising a power control section supplied with said oscillation pulse voltage signal and said detected current value for controlling an electric power of said oscillation pulse voltage signal so that said detected current value has a preselected value, said power control section producing a power-controlled pulse voltage signal as said driver input pulse voltage signal.

5,854,544

VELOCITY CONTROL WITH LIMITED JOLTING

Wolfgang Speth, Grossbottwar, and Wilhelm Westermeyer, Nürnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

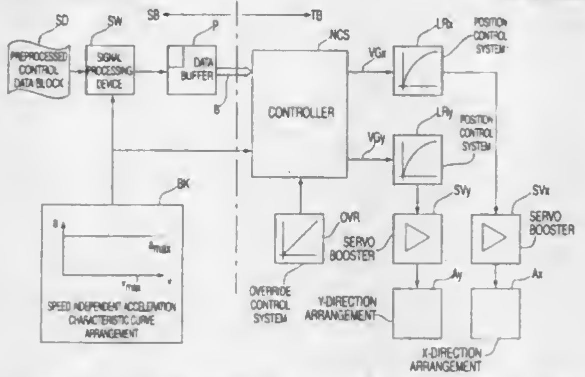
PCT No. PCT/EP95/03973, § 371 Date Jun. 27, 1997, § 102(e) Date Jun. 27, 1997, PCT Pub. No. WO96/12992, PCT Pub. Date May 2, 1996

PCT Filed Oct. 9, 1995, Ser. No. 817,667

Claims priority, application European Pat. Off., Oct. 21, 1994, 94116655.5

Int. Cl.⁶ G05B *19/416*

U.S. Cl. 318—270 **10 Claims**



1. A device for controlling the speed of electric drives, comprising:

a data buffer;

a controller;

a first area operating in a block-specific manner for analyzing a control data, the first area including a signal preprocessing unit; and

a second area operating in a clock-specific manner for controlling the speed, the control data being feedable via the signal preprocessing unit to the data buffer,

wherein the signal preprocessing unit determines relevant speed parameters with the control data, the relevant speed parameters being determined using a noncyclical block-specific preprocessing procedure and being stored in the data buffer, the control data being simultaneously read in parallel by the controller using a multi-block handling procedure,

wherein a machine data is fed to the signal preprocessing unit, and then to the controller for determining the relevant speed parameters, and

wherein output signals of an override control system are fed to the controller so that individual adaptations of a control procedure can be performed to correct the speed control.

4. A method for controlling a speed of an electric drive, comprising the steps of:

in a desired speed approach phase, controlling a path speed to substantially reach a predetermined acceleration limit by optimally utilizing a maximum permissible jolt factor, the path speed being controlled for adjusting a machine to a desired speed with a least number of jolt changes, the path speed being controlled as a function of a profile of the desired speed prescribed over time;

in a target approach phase, analyzing local speed limitations at predefined target points which are approached using a look-ahead method, wherein the target approach phase is subdivided into an acceleration decrease phase, a constant speed phase and a braking phase;

determining a possible travel margin by continuously determining a required braking distance using the look-ahead method and by comparing the required braking distance with a travel distance to be traveled to reach a target position;

starting the acceleration decrease phase when the required braking distance can be under-reached, the acceleration decrease phase being started, at the latest, when an acceleration operation at a reached acceleration limit does not allow the predetermined desired speed to be exceeded, wherein the acceleration decrease phase is started by decreasing a built-up acceleration to zero using a maximum jolt factor;

when a travel margin is present and during the constant speed phase, reducing the possible travel margin to the desired speed that is reached using a maintained speed upper-limit;

at a latest possible time and during the braking phase, steadily reducing an acceleration to reach a negative acceleration limit using minimal continuous jolt changes; and

thereafter, raising the acceleration from zero to the target position so that the path speed is decreased to reach the local speed limitations at the target position.

5,854,545

METHOD FOR THE POSITIONING OF AN ACTUATOR

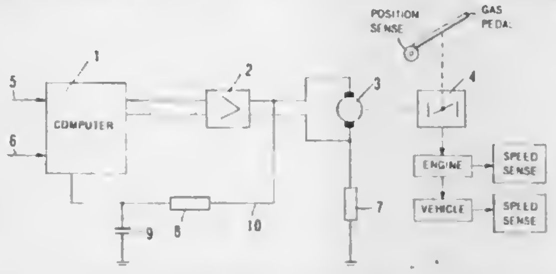
Michael Eibel, Rüdesheim, Germany, assignor to VDO Adolf Schindling AG, Frankfurt, Germany

Continuation of Ser. No. 316,935, Oct. 3, 1994, abandoned. This application Mar. 27, 1997, Ser. No. 827,154

Claims priority, application Germany, Oct. 15, 1993, 43 35 239.1

Int. Cl.⁶ H02K *7/10*

U.S. Cl. 318—369 **8 Claims**



1. A method for the positioning, without acknowledgment, of an actuator by a rotor of an electric motor, the motor being controlled as a function of time by a microprocessor, comprising the steps of:

determining a value K_1 of a proportionality constant K and a corresponding value T_1 of an adjustment time T during a braking of the rotor under a value B_1 of a load B from a first speed of rotation N_2 to a second speed of rotation N_b, upon deenergization of the electric motor, for use in a formula

adjustment path=$(K)\ (T)$;

storing the values K_1, T_1, B_1, N_a and N_b;

repeating said steps of determining and storing for additional corresponding $K_2 \ldots K_n$, $T_2 \ldots T_n$ and $B_2 \ldots B_n$ for the braking from speed N_a to speed N_b;

measuring a time T_x for braking the rotor from the speed N_a to the speed N_b upon operation of the actuator to obtain a measured value of time T_x;

interpolating by linear interpolation between two stored values of time T_n and T_{n+1} to obtain a value of the constant K_x corresponding to the measured value of time T_x; and

positioning the actuator with a braking of the rotor through an adjustment path equal to the product of K_x and T_x.

5,854,546

SUPPRESSION OF RADIO FREQUENCY EMISSIONS

Colin Hargis, Bwlchyddar, United Kingdom, assignor to Control Techniques PLC, Powys, United Kingdom

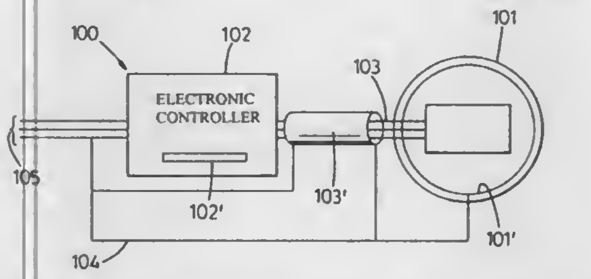
PCT No. PCT/GB95/00442, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO95/24763, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 2, 1995, Ser. No. 537,806

Claims priority, application United Kingdom, Mar. 8, 1994, 9404468; Sep. 9, 1994, 9418186; Feb. 22, 1995, 9503527

Int. Cl.⁶ H02H *07/08*

U.S. Cl. 318—458 **26 Claims**



1. A method for the suppression of radio frequency emissions from an electrical drive comprising an electronic controller comprising high speed switching means which generates high frequency energy and an electric motor to which power from a source of electrical power is supplied via said electronic controller, said method comprising providing an electric screen to receive radio frequency energy which, in use, is emitted from at least a part of the electrical drive; and electrically connecting said electrical screen back to a non-grounded position at an input side of said switching means.

5,854,547

CONTROL SYSTEM FOR PERMANENT MAGNET SYNCHRONOUS MOTOR

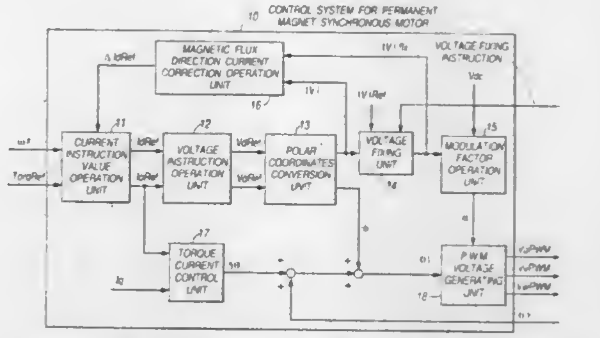
Yosuke Nakazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 10, 1996, Ser. No. 709,843

Claims priority, application Japan, Sep. 11, 1995, 7-232212

Int. Cl.⁶ H02P *7/06*

U.S. Cl. 318—716 **8 Claims**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CONTROL SYSTEM FOR PERMANENT MAGNET SYNCHRONOUS MOTOR
MAGNETIC FLUX DIRECTION CURRENT CORRECTION OPERATION UNIT
16
Δ IdRef
|V|
|V|Ref
VOLTAGE FIXING INSTRUCTION
Vdc
11
12
13
14
15
17
18
ω*
TorqRef
CURRENT INSTRUCTION VALUE OPERATION UNIT
IdRef
IqRef
VOLTAGE INSTRUCTION OPERATION UNIT
VdRef
VqRef
POLAR COORDINATES CONVERSION UNIT
VOLTAGE FIXING UNIT
MODULATION FACTOR OPERATION UNIT
TORQUE CURRENT CONTROL UNIT
Iq
PWM VOLTAGE GENERATING UNIT
vuPWM
vvPWM
vwPWM

1. A control system which controls a permanent magnet synchronous motor via a power conversion system, comprising:

a current instruction value operation unit having inputs including a torque instruction, an angular frequency of the motor and a magnetic flux direction current correction value, and having outputs including a magnetic flux direction current instruction and a torque direction current instruction;

a voltage instruction operation unit having inputs including the magnetic flux direction current instruction and the torque direction current instruction outputted by said current instruction value operation unit, and having outputs including a magnetic flux direction voltage instruction and a torque direction voltage instruction;

a polar coordinates conversion unit having inputs including the magnetic flux direction voltage instruction and the torque direction voltage instruction outputted by said voltage instruction operation unit, and having outputs including a voltage vector size and a voltage vector angle to a magnetic flux axis direction;

a voltage fixing unit having inputs including the voltage vector size outputted by said polar coordinates conversion unit, a voltage vector size instruction value and a voltage fixing instruction, and having an output including a fresh voltage vector size of one of the voltage vector size outputted by said polar coordinates conversion unit and the voltage vector size instruction value, said fresh voltage vector size is selected based on the voltage fixing instruction;

a magnetic flux direction current correction value operation unit having inputs including the voltage vector size outputted by said polar coordinates conversion unit and the fresh voltage vector size outputted by said voltage fixing unit, and having an output including said magnetic flux direction current correction value;

a modulation factor operation unit having inputs including the fresh voltage vector size outputted by said voltage fixing unit and a DC link voltage of said power conversion system, and having an output including a modulation factor of said power conversion system;

a torque current control unit having inputs including the torque direction current instruction outputted by said current instruction value operation unit and a torque current actual value, and having an output including a torque angle correction value; and

a PWM voltage generating unit having inputs including the modulation factor outputted by said modulation factor operation unit and a sum of the voltage vector angle outputted by said polar coordinates conversion unit, the torque angle correction value outputted by said torque current control unit and a permanent magnet magnetic flux angle, and having outputs including PWM voltage instructions for said power conversion system.

5,854,548

ELECTRICAL ANGLE DETECTING DEVICE AND SYNCHRONOUS MOTOR DRIVE DEVICE

Yoshiaki Taga, deceased, late of Tokorozawa; Shigeo Taga, heir; Takiko Taga, heiress, both of Tokorozawa; Tomoyo Taga, heiress, Nagoya, and Yasutomo Kawabata, Aichi-gun, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 27, 1997, Ser. No. 807,633

Claims priority, application Japan, Feb. 29, 1996, 8-071508

Int. Cl.⁶ H02P *6/16*

U.S. Cl. 318—721 **10 Claims**

1. An electrical angle detecting device of a synchronous motor whose rotor is driven to rotate by interaction between a magnetic field produced by windings upon passage of polyphase currents therethrough and a magnetic field produced by permanent magnets, said electrical angle detecting device comprising:

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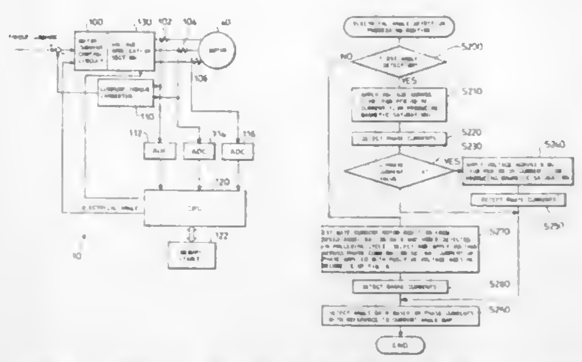


memory means for storing in advance relationships between electrical angle and behavior of currents passing through polyphase windings in response to a prescribed voltage applied to a combination of said polyphase windings through which currents pass,

voltage applying means for applying said voltage to said combination, said voltage including only one voltage pulse used for detecting an electrical angle,

current behavior detecting means for detecting said behavior of said currents passing simultaneously through each of said polyphase windings in a range of 0 to 2π in response to said only one voltage pulse applied by said voltage applying means as a unique combination of electric currents passing through said polyphase windings, and

electrical angle computing means for determining said electrical angle of said motor between 0 and 2π based on said behavior of said currents in said windings detected by said current behavior detecting means by referring to said relationships stored in said memory means.

5,854,549

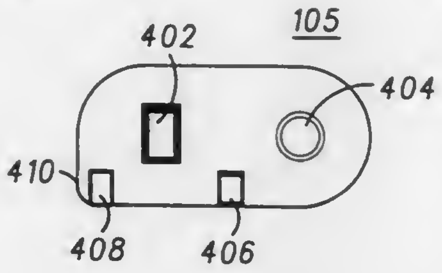
CONTACT ARRANGEMENT HAVING AN AUXILIARY CONTACT

Thomas Eugene Paulick, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1996, Ser. No. 710,912

Int. Cl.^{6} H01M *10/46*

U.S. Cl. 320—110 **22 Claims**



9. A contact arrangement for a power device comprising at least one cell, said contact arrangement comprising:

a packaging encapsulating said at least one cell;

an external positive contact coupled to a positive node of said at least one cell;

an external negative contact coupled to a negative node of said at least one cell; and

an external charging contact associated with said packaging and located on said packaging at least partially outside an area adjacent said positive node and said negative node of said at least one cell.

5,854,550

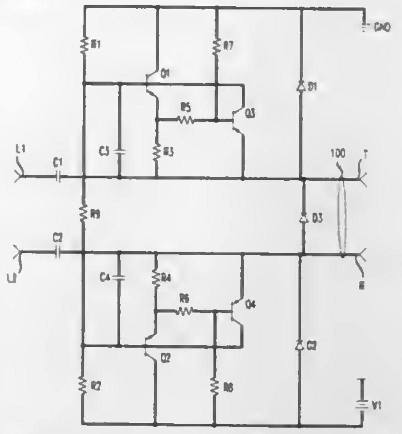
TRANSFORMERLESS DIGITAL-LINE BATTERY FEED CIRCUIT

Dieter J.H. Knollman, Arvada, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 6, 1997, Ser. No. 964,383

Int. Cl.^{6} H04B *3/36*

U.S. Cl. 320—127 **7 Claims**



1. A transformerless battery feed circuit for a digital communications line having a pair of leads, comprising:

a pair of controlled transformerless current sources, one for each said lead, each for supplying direct current to its corresponding lead; and

a pair of control circuits, one for each said current source, each sensing voltage across its corresponding current source and causing its corresponding current source to supply an amount of current that is inversely proportional to the sensed voltage, and each further sensing current supplied by its corresponding current source and causing its corresponding current source to limit its supplied current to below a predetermined maximum current.

5,854,551

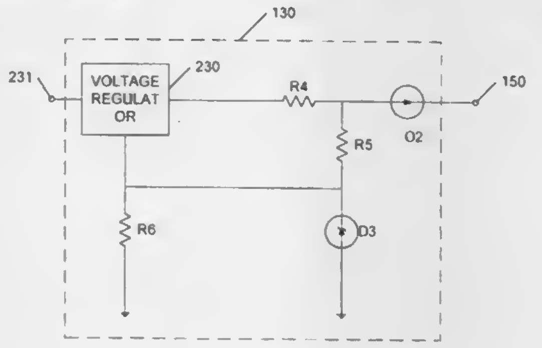
BATTERY CHARGER WITH LOW STANDBY CURRENT

Patrik Lilja, Raleigh, and Thomas Joseph Karpus, Apex, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 26, 1997, Ser. No. 806,995

Int. Cl.^{6} H02J *7/00*

U.S. Cl. 320—163 **23 Claims**



1. An apparatus for charging a battery, comprising:

a power supply terminal;

a controllable power control switch coupled to said power supply terminal;

a charging circuit coupled to said power control switch, said charging circuit having a charging terminal for connection to a terminal of the battery; and

control means, coupled to said power control switch, for detecting the presence of a battery connected to the charging terminal and for opening said power control switch if no battery is connected to the charging terminal.

5,854,552

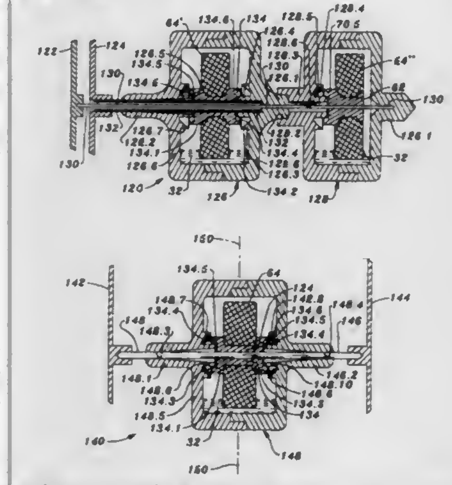
MOVING MAGNET INDICATING INSTRUMENTS WITH A PLURALITY OF DAMPING FLUID MIGRATION BARRIERS

Vincent H. Rose, 420 N. Civic Dr., #407, Walnut Creek, Calif. 94596

Filed Dec. 20, 1996, Ser. No. 770,562

Int. Cl.^{6} G01R *1/20*

U.S. Cl. 324—146 **14 Claims**



1. A moving magnet indicating instrument, comprising:

a coil bobbin defining a chamber, which chamber contains a quantity of damping fluid;

a rotor shaft rotatably mounted in said bobbin and extending through said chamber and through at least one aperture in a wall of said chamber;

a magnetic rotor fixedly mounted on said rotor shaft and located in said chamber;

a first damping fluid migration barrier projecting into said chamber from said wall thereof and surrounding the axis of said rotor shaft; and

a second damping fluid migration barrier projecting from a face of said rotor which confronts said wall of said chamber and surrounding the axis of said rotor shaft.

5,854,553

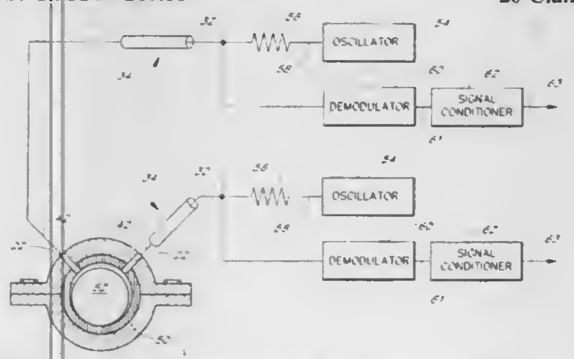
DIGITALLY LINEARIZING EDDY CURRENT PROBE

John T. Barclay, Carlsbad; Phillip L. Maness, El Cajon, and Leroy R. Bannach, San Diego, all of Calif., assignors to SKF Condition Monitoring, San Diego, Calif.

Filed Jun. 19, 1996, Ser. No. 666,860

Int. Cl.^{6} G01G *7/14;* G01R *33/12*

U.S. Cl. 324—207.16 **20 Claims**



1. An apparatus for determining the position of a conductive target, comprising:

an eddy current probe, wherein said eddy current probe comprises an inductor mounted near said conductive target;

an oscillator connected to said inductor;

a demodulator having an output comprising the peak voltage across said inductor wherein said peak voltage has a first functional dependence on the position of said conductive target;

an analog to digital converter digitizing said demodulator output to produce a first set of digital data;

a signal processor performing arithmetic operations on said first set of digital data to produce a second set of digital data; and

a digital to analog converter having as an input said second set of digital data and as an output an analog signal which has a second functional dependence on the position of said conductive target, wherein said second functional dependence is substantially linear.

5,854,554

METHOD AND APPARATUS FOR TESTING A MAGNETIC HEAD DURING MANUFACTURE UTILIZING AN INTERNAL MAGNETIC FIELD

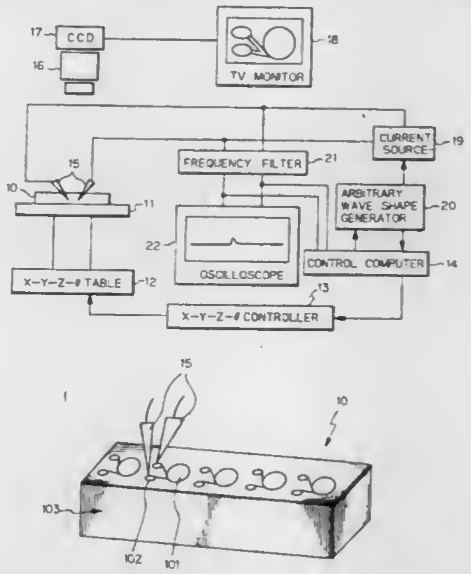
Katsuhiko Tomita, Narashino; Nozomu Hachisuka, and Toshiaki Maeda, both of Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 17, 1996, Ser. No. 733,282

Claims priority, application Japan, Oct. 26, 1995, 7-300465

Int. Cl.^{6} G01R *33/12*

U.S. Cl. 324—210 **16 Claims**



1. A method for testing a magnetic head provided with at least one magnetoresistive transducer element and input/output terminals of said magnetoresistive transducer element during manufacture utilizing an internal magnetic field, said method comprising the steps of:

applying, through a single pair of conductors, a sense current sinusoidally varying with respect to time to said magnetoresistive transducer element via said input/output terminals without applying an external magnetic field to said magnetoresistive transducer element;

receiving, through said single pair of conductors, a terminal voltage across said input/output terminals of said magnetoresistive transducer element;

measuring said terminal voltage across said input/output terminals of said magnetoresistive transducer element to check magneto-resistance characteristics of said magnetoresistive transducer element; and

comparing the magneto-resistance characteristics against an acceptable value, wherein said value denotes a usable magnetoresistive transducer.

5,854,555
METHOD AND APPARATUS FOR DETECTING AN ABNORMAL CURRENT IN AUTOMOTIVE WIRING HARNESSES

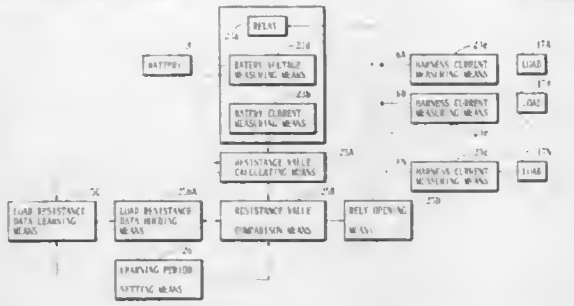
Tohru Sasaki, Hiroshima, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 14, 1997, Ser. No. 818,041

Claims priority, application Japan, Mar. 18, 1996, 8-61527

Int. Cl.^{6} G01R *27/26*

U.S. Cl. 324—539 **8 Claims**


RELAY
BATTERY
BATTERY VOLTAGE MEASURING MEANS
BATTERY CURRENT MEASURING MEANS
HARNESS CURRENT MEASURING MEANS
HARNESS CURRENT MEASURING MEANS
HARNESS CURRENT MEASURING MEANS
LOAD
LOAD
LOAD
RESISTANCE VALUE CALCULATING MEANS
LOAD RESISTANCE DATA LEARNING MEANS
LOAD RESISTANCE DATA HOLDING MEANS
RESISTANCE VALUE COMPARISON MEANS
RELY OPENING MEANS
LEARNING PERIOD SETTING MEANS

1. A method of detecting an abnormal current in automotive wiring harnesses, comprising the steps of:

measuring currents flowing between an automotive battery and power supply wiring harnesses connecting the battery and a plurality of loads;

measuring a voltage of the battery;

calculating resistance values between the battery and the wiring harnesses based on the measured current between the battery and the wiring harnesses and the measured battery voltage; and

comparing the calculated resistance values between the battery and the wiring harnesses with data on normal resistance values between the battery and the wiring harnesses as produced by each of the loads being activated, to determine whether any abnormal current is flowing in the wiring harnesses.

5,854,556
MEASUREMENT SYSTEM FOR PARTIAL DISCHARGES ON DIELECTRICS IN COAXIAL CABLES

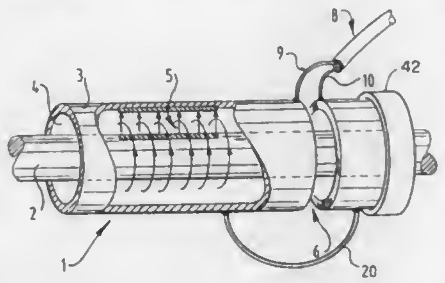
Evert Frederik Steennis; Edwin Pultrum, both of Arnhem; Petrus Arnoldus Antonius Francisca Wouters, Eindhoven, and Egbertus Johannes Maria Van Heesch, Vught, all of Netherlands, assignors to N.V. Kema, Arnhem, Netherlands

Filed Apr. 16, 1996, Ser. No. 634,308

Claims priority, application European Pat. Off., Apr. 21, 1995, 95201031

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—541 **14 Claims**



1. A method comprising:

inserting an interruption in a sheath conductor of a coaxial cable to create first and second sections disposed on opposite sides of the interruption;

arranging a conductive connection between the first and second sections suitable for transferring a first signal, the first signal comprising a current flowing through the first section at a main frequency;

measuring a second signal across the first and second sections, the second signal comprising a voltage between the first and second sections; and

displaying only signal components of the second signal with frequencies greater than 0.5 MHz.

5,854,557
CORROSION MEASUREMENT SYSTEM

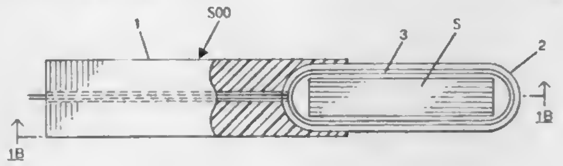
Eugen Tiefnig, 3653 Lost Nation Rd., Willoughby, Ohio 44094

Continuation-in-part of Ser. No. 229,449, Apr. 18, 1994, Pat. No. 5,583,426. This application Dec. 10, 1996, Ser. No. 763,974

Claims priority, application Australia, Apr. 16, 1993, A760/93-1

Int. Cl.^{6} G01N *17/04;27/26*

U.S. Cl. 324—700 **28 Claims**



1. A corrosion measurement system for use in a particular corrosive medium to obtain measurements for determining a rate of corrosivity of the medium, comprising:

a probe having a reference element and a corroding element, each element having identical physical properties, the probe adapted for contacting the corrosive medium, the reference element having a conformal coating that protects the reference element from exposure to corrosivity of the medium, and the corroding element fully exposed for corrosion by the medium;

a measuring circuitry with a power source associated with the elements of the probe for measuring a rate of corrosivity; and,

means for instantaneously displaying the rate of corrosivity of the medium, said means in communication with the probe.

5,854,558
TEST BOARD FOR TESTING A SEMICONDUCTOR DEVICE AND METHOD OF TESTING THE SEMICONDUCTOR DEVICE

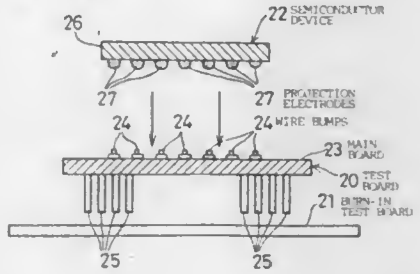
Toshiyuki Motooka; Syuichirou Takahashi; Tatsuharu Matsuda; Kunio Kodama, and Jouji Fujimori, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 21, 1995, Ser. No. 531,449

Claims priority, application Japan, Nov. 18, 1994, 6-285342

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—754 **10 Claims**



1. A test board for testing a semiconductor device provided with projection electrodes, said test board comprising:

a main board; and

testing electrodes provided on said main board, each projecting upward from the main board;

wherein said testing electrodes are formed as a cylindrically-shaped wire bump and are electrically connected to said projection electrodes by insertion of said testing electrodes into the projection electrodes and the semiconductor device is mounted on the main board to test the semiconductor device through the testing electrodes, and wherein each of said testing electrodes has a diameter less than a diameter of each of said projection electrodes.

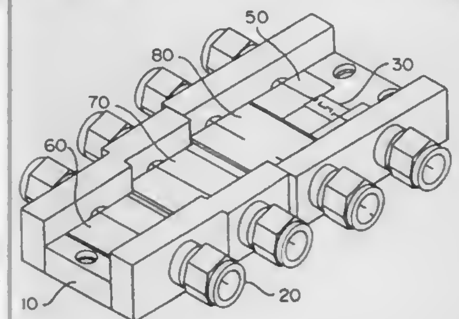
5,854,559
METHOD AND APPARATUS FOR TESTING MICROWAVE DEVICES AND CIRCUITS IN A CONTROLLED ENVIRONMENT

Felix A. Miranda, Olmsted Falls, Ohio, and Stanley S. Toncich, San Diego, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 20, 1996, Ser. No. 780,093

Int. Cl.^{6} G01R *31/02*

U.S. Cl. 324—754 **42 Claims**



1. A test fixture for use in characterizing planar microwave components in a controlled environment without disturbing the controlled environment during testing, wherein said fixture comprises:

a mounting block;

a pair of planar microwave connecting lines each having a first and second end, mounted on said mounting block and wherein the first end of said connecting lines are to be connected electrically to the component;

a plurality of planar microwave calibration standards mounted on said mounting block; and

a plurality of coaxial connectors mounted on said mounting block wherein said coaxial connectors are electrically connected to the second ends of said pair of connecting lines and to said plurality of calibration standards.

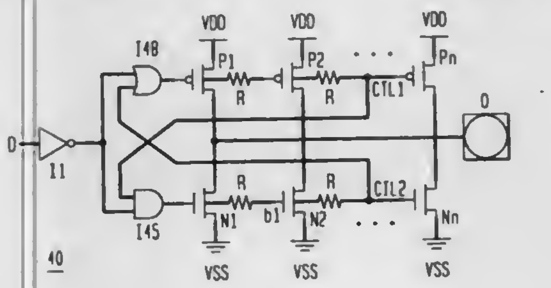
5,854,560
CMOS OUTPUT BUFFER HAVING A HIGH CURRENT DRIVING CAPABILITY WITH LOW NOISE

Hwang-Cherng Chow, 4F, No. 28, San Chung Road, Chutung, Hsinchu, Taiwan, 310

Filed Nov. 20, 1996, Ser. No. 749,360

Int. Cl.^{6} H03K *19/0948;17/16*

U.S. Cl. 326—27 **13 Claims**



1. An output buffer, comprising:

a first driver, comprising a plurality of pull-up CMOS transistors, each separated by one of a respective resistor and invertor, for driving a terminal to a voltage corresponding to a high logic value of a first output signal, said plurality of pull-up transistors activate sequentially with an R-C delay from said one of a respective resistor and invertor when the output from said second predriver is low;

a second driver, comprising a plurality of pull-down CMOS transistors, each separated by one of a respective resistor and invertor, for driving said terminal to a voltage corresponding to a low logic value of a second output signal, said plurality of pull-down transistors activate sequentially with an R-C delay from said one of a respective resistor and invertor when the output from said first predriver is high;

a first predriver circuit, connected to said first driver; and

a second predriver circuit, connected to said second driver,

wherein said first predriver receives the complement of said first output signal and a delayed output of said second predriver, and said second predriver receives the complement of said second output signal and the delayed output of said first predriver, and wherein said delayed output of said first and second predriver circuits being delayed by said R-C delay.

5,854,561
SWITCHED SUBSTRATE BIAS FOR MOS DRAM CIRCUITS

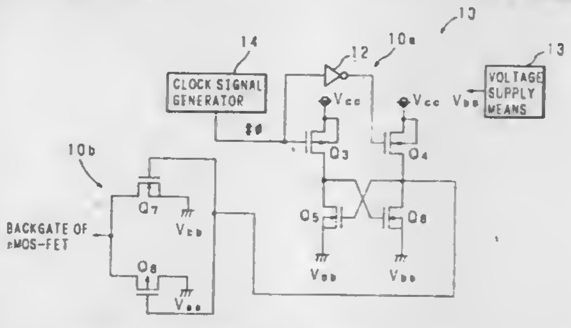
Kazutami Arimoto, and Masaki Tsukude, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 708,429, Sep. 5, 1996, Pat. No. 5,703,522, which is a division of Ser. No. 350,064, Nov. 29, 1994, Pat. No. 5,610,533. This application Oct. 24, 1997, Ser. No. 957,426

Claims priority, application Japan, Nov. 29, 1993, 5-298084; Apr. 27, 1994, 6-090303

Int. Cl.^{6} G05F *3/16;* **H03K** *17/16*

U.S. Cl. 327—534 **26 Claims**



1. A semiconductor device comprising:

an FET having a source, a drain, and a backgate between said source and said drain;

a level shift circuit including a first transistor responsive to a control signal and coupled between a power supply node and a first node, a second transistor coupled between said first node and a first backgate potential supply node and having a gate coupled to a second node, and a third transistor coupled between said second node and said first backgate potential supply node and having a gate coupled to said first node; and

a switch circuit including a fourth transistor responsive to a potential of said first node and coupled between said backgate of said FET and said first backgate potential supply node, and a fifth transistor responsive to the potential of said first node and coupled between said backgate of said FET and a second backgate potential supply node.

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5,854,562
SENSE AMPLIFIER CIRCUIT

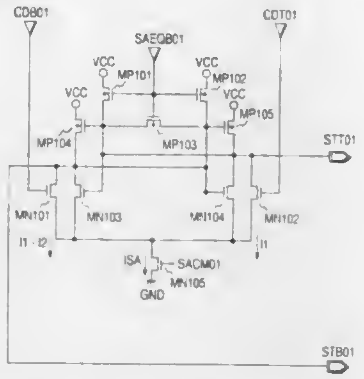
Hiroshi Toyoshima, Akiruno; Masashige Harada, Fuchū; Tomohiro Nagano, Akishima; Yoji Nishio, Hitachi; Atsushi Hiraishi, Kodaira; Kunihiro Komiyaji, Hachioji; Hideharu Yahata, Chofu; Kenichi Fukui, Kodaira; Hirofumi Zushi, Fussa; Takahiro Sonoda, Fuchū ; Haruko Kawachino, Urawa, and Sadayuki Morita, Higashi-Yamato, all of Japan, assignors to Hitachi, Ltd, and Hitachi ULSI Engineering Corp., both of Tokyo, Japan

Filed Apr. 15, 1997, Ser. No. 842,536

Claims priority, application Japan, Apr. 17, 1996, 8-094992; Dec. 17, 1996, 8-336587

Int. Cl.^{6} G11C *7/06*

U.S. Cl. 327—55 **10 Claims**



1. A sense amplifier circuit comprising:

first and second input signal lines;

a differential amplifying circuit including first and second NMOS transistors, with the sources thereof being connected together, for amplifying a voltage difference of first and second input signals on said first and second input signal lines;

a current source connected to the sources of said first and second NMOS transistors; and

a latch circuit made up of a first CMOS inverter which is supplied on its input with the output of said differential amplifying circuit corresponding to said second input signal and which is directly connected to a first power line, the sources of said first and second NMOS transistors and said current source, and a second CMOS inverter which is supplied on its input with the output of said differential amplifying circuit corresponding to said first input signal and which is directly connected to said first power line, the sources of said first and second NMOS transistors and said current source, said first and second CMOS inverters having their outputs connected to the inputs of said second and first CMOS inverters, respectively.

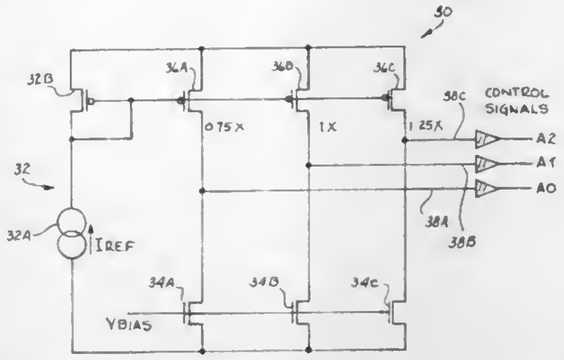
5,854,563
PROCESS CONTROL MONITORING SYSTEM AND METHOD THEREFOR

Sung-Hun Oh, Phoenix, and Richard Ulmer, Tempe, both of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 19, 1996, Ser. No. 684,964

Int. Cl.^{6} H03K *5/153;5/22*

U.S. Cl. 327—74 **39 Claims**



1. A process control monitoring system comprising, in combination:

reference current source means for generating a stable reference current;

a plurality of differently weighted reference current source means coupled to said reference current source means for receiving said stable reference current and for generating a plurality of differently weighted reference currents;

a plurality of current comparator means each of said plurality of current comparator means having a variable input signal which varies with at least one of temperature, power supply voltage, and process changes and each of said plurality of current comparator means being individually coupled to a separate one of said plurality of differently weighted reference current source means for providing an output voltage corresponding to said differently weighted reference current source means coupled thereto and said variable input signal; and

wherein each of said plurality of current comparator means is of a same process corner thus producing said output voltage for process control monitoring and correction.

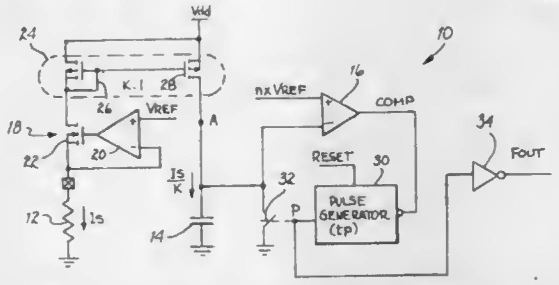
5,854,564
DIRECT SENSOR INTERFACE (DSI) MODULE

Hartono Darmawaskita, and James B. Nolan, both of Chandler, Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed May 12, 1997, Ser. No. 855,868

Int. Cl.^{6} H03K *5/153;5/22*

U.S. Cl. 327—78 **27 Claims**



1. A direct sensor interface (DSI) module which allows a microcontroller to directly interface to sensors having at least one of a resistive, capacitive, and current source characteristics comprising, in combination:

a sensor device which generates a sensor current proportional to an output reading of said sensor device;

a current mirroring circuit coupled to said sensor device for outputting a charging current proportional to said sensor current of said sensor device;

a capacitive device coupled to said current mirroring circuit, said capacitive device generating a voltage as said capacitive device is charged by said charging current outputted by said current mirroring circuit;

a switch coupled to said capacitive device for allowing said charging current outputted by said current mirroring circuit to charge said capacitive device and for discharging said capacitive device to ground;

a comparator having a first input coupled to a threshold voltage source and a second input coupled to said capacitive device and said switch for signalling when said voltage generated by said capacitive device reaches a level of said threshold voltage source; and

a pulse generator having an input coupled to an inverted output of said comparator for generating a constant pulse width and an output coupled to said switch which causes said switch to close to completely discharge said capacitive device to ground when said voltage generated by said capacitive device reaches said level of said threshold voltage source.

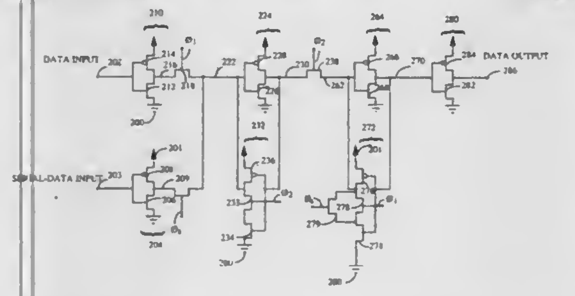
5,854,565
LOW POWER LATCH REQUIRING REDUCED CIRCUIT AREA

Sanjay K. Jha, and Jian Lin, both of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 539,981, Oct. 6, 1995, abandoned. This application Jun. 24, 1997, Ser. No. 881,555

Int. Cl.^{6} H03K *3/289*

U.S. Cl. 327—202 **11 Claims**



1. An integrated circuit connected between a data input line and a data output line, said integrated circuit comprising:

a first clock input line receiving a first clock signal;

a second clock input line receiving a second clock signal, with said first and second clock signals being non-overlapping with respect to one another;

a data input inverter having an input connected to the data input line;

a first n-channel gating transistor having an input connected to an output of said data input inverter and having a gate connected to said first clock input line;

a first data storage inverter having an input connected to an output of said first n-channel gating transistor;

a second n-channel gating transistor having an input connected to an output of said first data storage inverter and having a gate connected to said second clock input line;

a second data storage inverter having an input connected to an output of said second n-channel gating transistor;

a data output inverter having an input connected an output of said second data storage inverter and having an output connected to the data output line;

a first gated feedback inverter having a p-channel transistor, a first n-channel transistor and a second n-channel transistor connected serially in order with no other transistors between a voltage source and a ground, with said first n-channel transistor of said first gated feedback inverter having a gate connected to said second clock input line, said p-channel transistor and said second n-channel transistor of said first gated feedback inverter having gates connected to said output of said first data storage inverter, and said p-channel transistor of said first gated feedback inverter having a drain connected to said input of said first data storage inverter; and

a second gated feedback inverter having a p-channel transistor, a first n-channel transistor and a second n-channel transistor connected serially in order with no other transistors between the voltage source and the ground, with said first n-channel transistor of said second gated feedback inverter having a gate connected to said first clock input line, said p-channel transistor and said second n-channel transistor of said second gated feedback inverter having gates connected to said output of said second data storage inverter, and said p-channel transistor of said second gated feedback inverter having a drain connected to said input of said second data storage inverter.

5,854,566
RESURF EDMOS TRANSISTOR AND HIGH-VOLTAGE ANALOG MULTIPLEXER CIRCUIT USING THE SAME

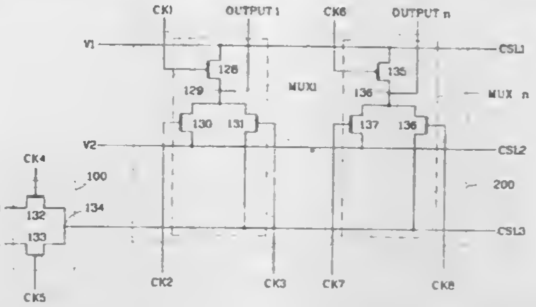
Oh-Kyong Kwon, Seoul, and Koan-Yel Jeong, Kyungsangnam-Do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 19, 1996, Ser. No. 588,948

Claims priority, application Rep. of Korea, Oct. 13, 1995, 35381/1995

Int. Cl.^{6} H03K *5/01;* **G06F** *3/00*

U.S. Cl. 327—403 **11 Claims**



1. A multiplexer array circuit responsive to a plurality of clock signals, comprising:

a multiplexer array unit having a plurality of array multiplexer circuits, each array multiplexer circuit coupled to a first source line for receiving a first predetermined voltage and a common source line for receiving at least one of second, third and fourth predetermined voltages; and

a common multiplexer for providing at least one of the third and fourth predetermined voltages to the common source line, wherein

each array multiplexer circuit outputs one of the first, second, third and fourth predetermined voltages at an output node.

5,854,567
LOW LOSS INTEGRATED CIRCUIT WITH REDUCED CLOCK SWING

Stefan Meier, and Erik De Man, both of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

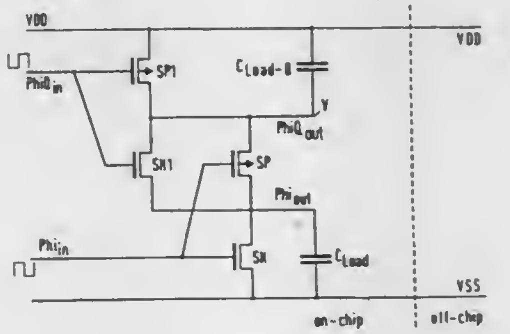
PCT No. PCT/DE95/00335, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO95/26077, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 10, 1995, Ser. No. 716,440

Claims priority, application Germany, Mar. 24, 1994, 44 10 280.1

Int. Cl.^{6} H03K *17/687;19/096;19/094;* **G05F** *1/10*

U.S. Cl. 327—437 **2 Claims**



1. An integrated circuit, comprising:

a clock driver circuit having first and second terminals and a plurality of stages,

said first terminal of at least a last stage of the clock driver circuit being supplied with a clock supply voltage that is lower in terms of amount than a general supply voltage of the integrated circuit.

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said second terminal of the at least one last stage of the clock driver circuit being directly connected to reference potential, a load current flowing between said first and second terminals,

an inverter unit being provided that is supplied with a difference voltage between an output of the last stage and the general supply voltage, that is driven with a clock input signal inverse to the clock input signal of the last stage, and said inverter having an output supplying the clock supply voltage for the last driver stage, the clock supply voltage simultaneously representing a clock output signal inverse to a clock output signal of the last stage.

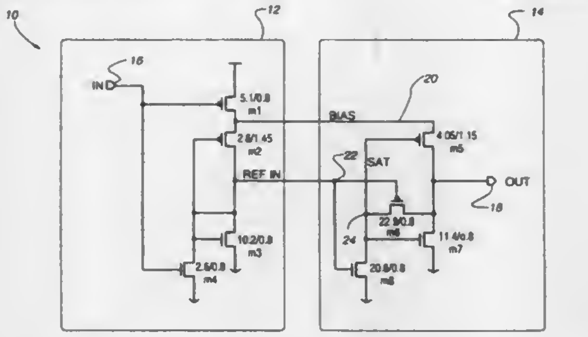
5,854,568
VOLTAGE BOOST CIRCUIT AND OPERATION THEREOF AT LOW POWER SUPPLY VOLTAGES

Gary Peter Moscaluk, Colorado Springs, Colo., assignor to Ramtron International Corporation, Colorado Springs, Colo.

Filed Aug. 20, 1997, Ser. No. 915,054

Int. Cl.^{6} G05F *1/10*

U.S. Cl. 327—537 **20 Claims**



1. A voltage boost circuit comprising:
a first input for receiving a voltage input signal;
a second input for receiving a control signal;
an output for providing a boosted input signal;
a first transistor having a control node, and a current path coupled between the second input and the output;
a second transistor having a control node coupled to the first input, and a current path coupled between the control node of the first transistor and the output;
a third transistor having a control node coupled to the control node of the first transistor, and a current path coupled between the output and ground; and
a fourth transistor having a control node coupled to the first input and a current path coupled between the control node of the first transistor and ground.

5,854,569
CURRENT SOURCE FOR RAPID SWITCHING AND REDUCED OSCILLATORY TRANSIENTS

Hiroyuki Kohno; Yasuyuki Nakamura, and Takahiro Miki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

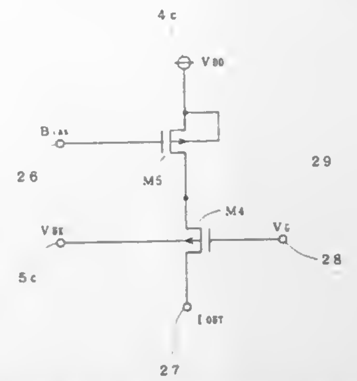
Continuation of Ser. No. 496,306, Jun. 29, 1995, abandoned. This application Jul. 31, 1997, Ser. No. 890,027

Claims priority, application Japan, Nov. 15, 1994, 6-280375

Int. Cl.^{6} G05F *3/02*

U.S. Cl. 327—543 **4 Claims**

1. A current source for outputting a current signal comprising:
first, second, and third power source lines;
a constant current generator connected between said first and second power source lines; and
a first MOS transistor having a gate to which a control signal for turning on and off the first MOS transistor is supplied, a source, a drain and a back gate connected to said third power source line, and said drain connected to an output terminal to output the current signal, wherein
said third power source line supplies a voltage from a voltage source only to said back gate of said first MOS transistor;
wherein said constant current generator comprises:
  a second MOS transistor having a drain, a source connected to said first power source line, a gate to which a specified bias voltage is applied, and a back gate connected to said first power source line;
  said source of said first MOS transistor is connected to said drain of said second MOS transistor; and
  said second MOS transistor supplies a specified current to an element connected between said drain of said first MOS transistor and said second power source line.



5,854,570
FEEDBACK-FREE METHOD FOR THE DEMODULATION OF HIGHER-LEVEL MQAM SIGNALS WITHOUT KNOWLEDGE OF THE TRANSMITTED SYMBOLS

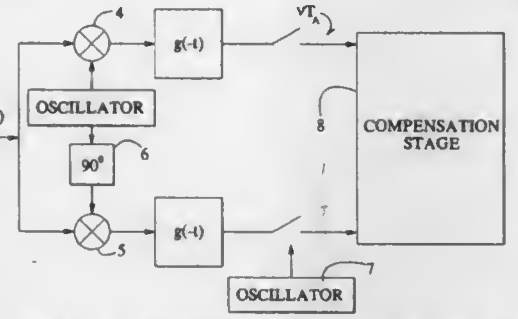
Kurt Schmidt, Grafing, Germany, assignor to Rohde & Schwarz, GmbH & co., Munich, Germany

Filed Aug. 26, 1997, Ser. No. 918,958

Claims priority, application Germany, Aug. 31, 1996, 196 354 444.7

Int. Cl.^{6} H03D *3/00;* **H04L** *27/38*

U.S. Cl. 329—304 **6 Claims**



1. A method for demodulating higher-level MQAM signals produced by transmitting symbols in a data sequence using a baseband signal, without knowledge of the transmitted symbols, comprising:
(a) by sampling the baseband signal with a clock frequency corresponding to the MQAM signal;
(b) estimating a clock phase error and compensating a corresponding time shift of the baseband signal by interpolation with the estimated clock phase error; and
(c) calculating a carrier frequency deviation and a carrier phase deviation feedback-free according to the principle of the maximum likelihood theory using a procedure selected from the group consisting of Fourier transformation and by convolution in the time domain and, thereby compensating the data sequence.

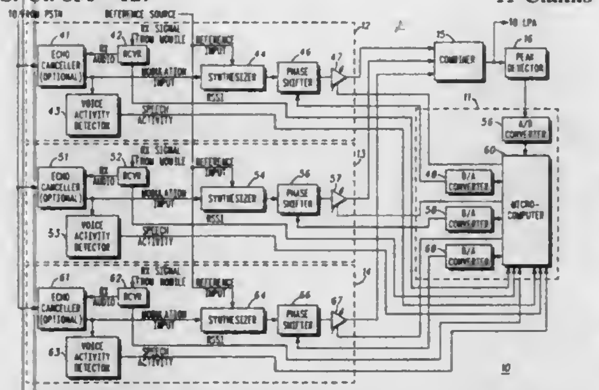
5,854,571
METHOD AND APPARATUS FOR CONTROLLING A PEAK ENVELOPE POWER OF A POWER AMPLIFIER

Danny Thomas Pinckley, Arlington; Kevin Michayl Laird, Haltom, and Charles N. Lynk, Jr., Bedford, all of Tex., assignors to Motorola Inc., Schaumburg, IL, Del.

Filed Oct. 28, 1993, Ser. No. 144,931

Int. Cl.^{6} H03G *3/20*

U.S. Cl. 330—129 **11 Claims**



1. A method of reducing a peak envelope power of a linear power amplifier amplifying a plurality of carriers of a corresponding plurality of channels, such method comprising the steps of: measuring the peak envelope power of a composite of at least two of the carriers; measuring a channel activity level of one of the at least two carriers; and, when the measured peak envelope power exceeds a first threshold, changing a parameter of one of the at least two carriers when the measured channel activity level exceeds a second threshold.

5,854,572
COMPACT STRUCTURE OF AUTOMATIC GAIN CONTROL CIRCUIT

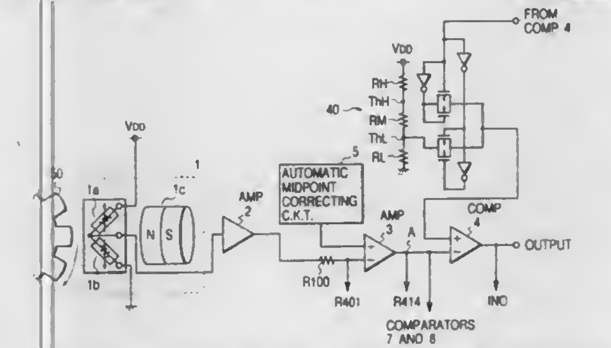
Seiki Aoyama, Toyohashi, and Yasuaki Makino, Okazaki, both of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jun. 3, 1997, Ser. No. 867,743

Claims priority, application Japan, Jun. 4, 1996, 8-141478

Int. Cl.^{6} H03G *3/20*

U.S. Cl. 330—282 **4 Claims**



1. An automatic gain control apparatus for controlling gain of an amplifier amplifying an ac signal comprising:
a resistance circuit including a plurality of resistors connected in series through taps, designed to adjust the gain of the amplifier;
a comparing circuit comparing an output signal of the amplifier with reference upper and lower limit values to provide an upper limit signal when the output signal of the amplifier exceeds the reference upper limit value and a lower limit signal when the output signal exceeds the reference lower limit value;
a gain control determining circuit determining whether said comparing circuit has provided the upper limit signal and the lower limit signal sequentially or not for determining whether the gain of the amplifier is to be changed or not; and
a gain controlling circuit selectively short-circuiting the taps on both sides of each of the resistors of said resistance circuit to change a total resistance of said resistance circuit for controlling the gain of the amplifier based on determination of said gain control determining circuit.

5,854,573
LOW-VOLTAGE MULTIPATH-MILLER-ZERO-COMPENSATED CMOS CLASS-AB OPERATIONAL AMPLIFIER

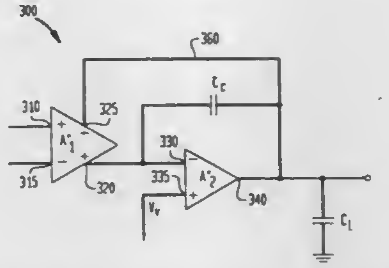
Pak Kwong Chan, Singapore, Singapore, assignor to Institute of Microelectronics National University of Singapore, Singapore

Filed Oct. 15, 1996, Ser. No. 729,916

Claims priority, application Singapore, May 16, 1996, 9609131-9

Int. Cl.^{6} H03F *1/14*

U.S. Cl. 330—292 **11 Claims**



1. A multipath-miller-zero-compensated operational amplifier comprising:
a class AB front stage having an inverted input, a non-inverted input, an inverted output, and a non-inverted output;
a class AB back stage having an output and an input, wherein the input of the back stage is connected to the non-inverted output of the front stage, and wherein the output of the back stage is connected to the inverted output of the front stage; and
a feedback element coupled between the output and the input of the back stage.

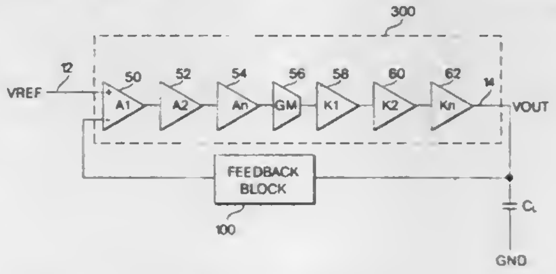
5,854,574
REFERENCE BUFFER WITH MULTIPLE GAIN STAGES FOR LARGE, CONTROLLED EFFECTIVE TRANSCONDUCTANCE

Lawrence Singer, Bedford, and Todd L. Brooks, Boston, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 26, 1996, Ser. No. 639,208

Int. Cl.^{6} H03F *1/34;1/42*

U.S. Cl. 330—293 **15 Claims**



13. A reference buffer comprising:
at least one transconductance amplifier; and

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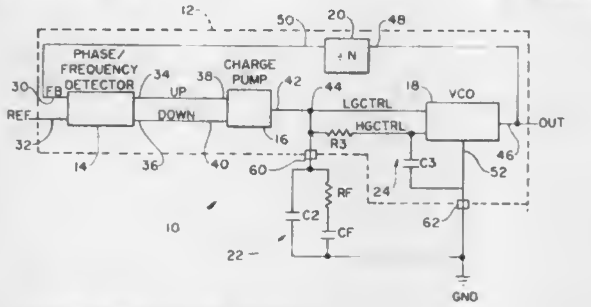
at least one current gain amplifier cascade-connected to the at least one transconductance amplifier;

wherein the at least one current gain amplifier includes a current mirror having positive feedback to increase a current gain of the current gain amplifier without increasing a quiescent power of the current gain amplifier.

5,854,575
DUAL-LOOP PHASE-LOCKED LOOP

Alan S. Fiedler, Minneapolis, and Daniel J. Baxter, St. Paul, both of Minn., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 13, 1997, Ser. No. 969,100
Int. Cl.⁶ H03L *7/08*
U.S. Cl. 331—10 **12 Claims**



1. An integrated circuit comprising:

a phase/frequency detector, a charge pump, and a voltage-controlled oscillator (VCO) which are coupled together in series to form a phase-locked loop, wherein the VCO has first and second VCO control inputs and has a VCO output coupled to the phase/frequency detector, and wherein the VCO has a lower voltage-to-frequency gain from the first VCO control input to the VCO output than from the second VCO control input to the VCO output;

an off-chip loop filter input coupled between the charge pump and the first VCO control input; and

an on-chip loop filter coupled between the first VCO control input and the second VCO control input.

5,854,576
METHOD AND APPARATUS FOR A FINELY ADJUSTABLE CLOCK CIRCUIT

Philip Lawrence Swan, Toronto, Canada, assignor to ATI Technologies, Canada

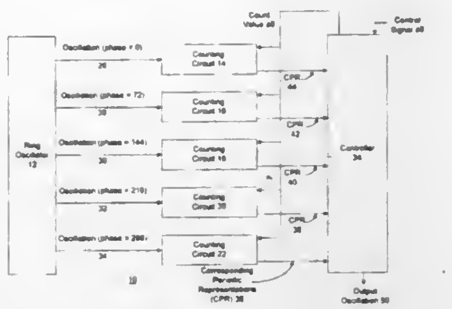
Continuation-in-part of Ser. No. 840,568, Apr. 21, 1997. This application Apr. 29, 1997, Ser. No. 840,399
Int. Cl.⁶ H03B *27/00*
U.S. Cl. 331—57 **20 Claims**

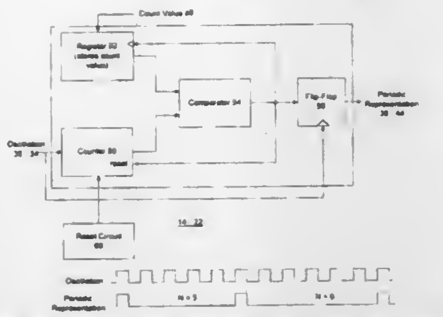
1. A finely adjustable clock circuit comprising:

a ring oscillator that generates a plurality of oscillations, each of the plurality of oscillations has an approximately equal period and is phase shifted by an approximately equal phase offset;

a plurality of counting circuits, wherein each of the plurality of counting circuits is operably coupled to receive a corresponding one of the plurality of oscillations and to produce, therefrom, a corresponding periodic representation based on a given count value; and

a controller operably coupled to the plurality of counting circuits, wherein the controller selects, based on a control signal, one of the corresponding periodic representations to be an output oscillation, and wherein the controller provides the given count value to the plurality of counting circuits.

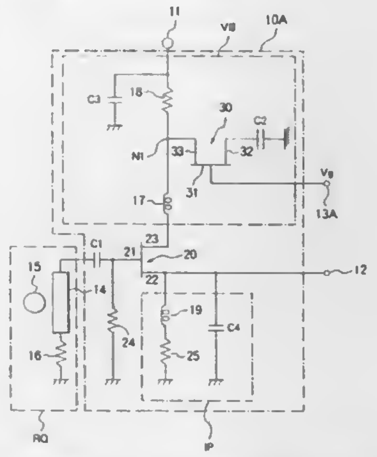




5,854,577
VARIABLE FREQUENCY JFET MICROWAVE OSCILLATOR WITH VARIABLE IMPEDANCE BIAS

Sadayoshi Yoshida, and Kazunari Sato, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1997, Ser. No. 846,376
Claims priority, application Japan, Feb. 16, 1996, 8-029261
Int. Cl.⁶ H03B *5/18*
U.S. Cl. 331—117 D **6 Claims**



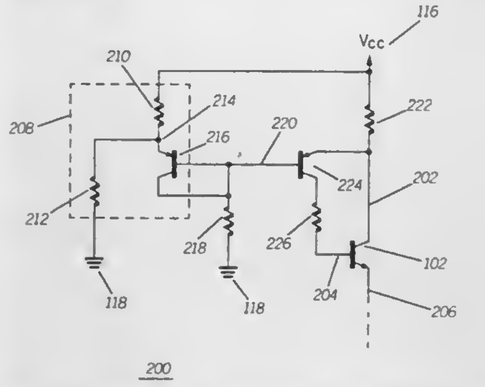
1. A variable frequency microwave oscillator comprising a first function field effect transistor (JFET) having a gate, source and a drain, an impedance block connected to the source of said first JFET to determine a source impedance appearing on the source of said first JFET, and a variable bias block having a control terminal for receiving a control voltage and connected to the drain of said first JFET to determine a drain impedance appearing on the drain of said first JFET at a value based on said control voltage, whereby the gate of said first JFET exhibits in a certain frequency range a negative impedance for oscillation determined by said source impedance and drain impedance,

wherein said variable bias block comprises an inductance having a first electrode connected to the drain of said first JFET and a second electrode, and a second JFET having a drain connected to the second electrode of said inductance.

5,854,578
ACTIVE CIRCUIT HAVING A TEMPERATURE STABLE BIAS

David H. Minasi, Plantation; Peter J. Yeh, Coral Springs; Roger A. Davenport, Ft. Lauderdale, and Gustavo V. Leizerovich, Miami Lakes, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1997, Ser. No. 929,480
Int. Cl.⁶ H03B *5/12;* H03F *1/30;* H03L *1/02*
U.S. Cl. 331—117 R **19 Claims**



1. An active circuit having a temperature stable bias, comprising:

an amplifying transistor having a collector, an emitter, a base, and a collector current;

a voltage reference having a temperature coefficient; and

a bias transistor connected between the collector and the base of the amplifying transistor, and responsive to the voltage reference, the bias transistor having a temperature coefficient substantially equal to the temperature coefficient of the voltage reference, the bias transistor providing a bias current to the amplifying transistor such that the collector current is held substantially constant over a predetermined temperature range.

5,854,579
SAW FILTER USING LOW-PASS CONFIGURATION AND METHOD OF PROVIDING THE SAME

David Penunuri, Fountain Hills, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 25, 1997, Ser. No. 920,192
Int. Cl.⁶ H03H *9/64;9/72*
U.S. Cl. 333—193 **16 Claims**

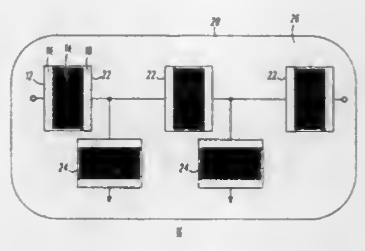
1. An acoustic wave filter, comprising:

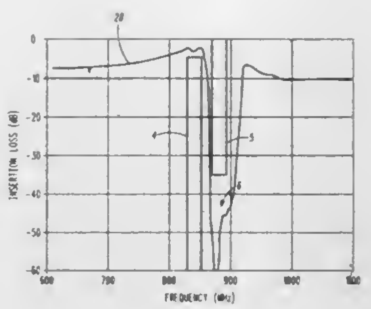
a piezoelectric substrate having an upper surface;

at least one series resonator including a plurality of interdigitated electrodes disposed on the upper surface, when electrically energized the electrodes causing acoustic waves to resonate at a first resonant frequency within a passband of the filter and to provide a first antiresonant frequency within a stopband of the filter

at least one shunt resonator including a plurality of interdigitated electrodes disposed on the upper surface, when electrically energized the electrodes causing acoustic waves to resonate at a second resonant frequency higher than the first resonant frequency and within a stopband of the filter so as to widen the stopband and to provide a second antiresonant frequency higher than the stopband; and

the series resonators being electrically connected in series and each shunt resonator being electrically connected in shunt to provide a ladder network, the series resonators are configured to provide a low-pass frequency response, and the shunt resonators are used as capacitive impedance inverters within the passband.

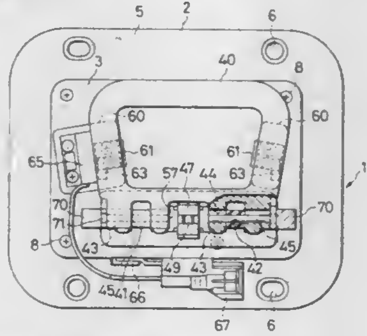




5,854,580
BREAKER DEVICE

Kazumoto Konda; Kunihiko Watanabe, both of Yokkaichi; Toshiyuki Sekimori, and Yasuyoshi Fukao, both of Toyota, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed May 14, 1997, Ser. No. 856,018
Claims priority, application Japan, May 17, 1996, 8-123196
Int. Cl.⁶ H01M *67/02*
U.S. Cl. 335—132 **9 Claims**



1. A breaker device comprising:

a casing;

a pair of fixed electrodes extending substantially parallel to one another in the casing;

a movable electrode selectively insertable into the casing, said movable electrode being fittable with and detachable from both of said fixed electrodes for selectively disconnecting and connecting said fixed electrodes;

a handle inclinably arranged on said movable electrode said handle being disposed to enable selective movement of said movable electrode toward and away from said casing for selectively disconnecting and connecting said movable electrode with said fixed electrode;

projections disposed on said casing in proximity to said fixed electrodes; and said handle including guiding grooves engageable with said projections for guiding said handle and said movable electrode relative to said fixed electrodes and said casing, each of said guiding grooves includes an inclination preventing portion configured for preventing inclination of said handle relative to said movable electrode prior to complete fitting of said movable electrode with said fixed electrodes and an inclination allowing portion configured for allowing a relative displacement between said projections and said grooves to allow said handle to incline when fitting of the movable electrode with the fixed electrodes is completed.

5,854,581

TRANSACTION PROCESSING SYSTEM AND TRANSACTION PROCESSING METHOD

Tohru Mori; Seiji Yoshizawa; Yoshinori Koshida; Shusaku Tanabe; Sinichi Suto, and Satoshi Hamasaki, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

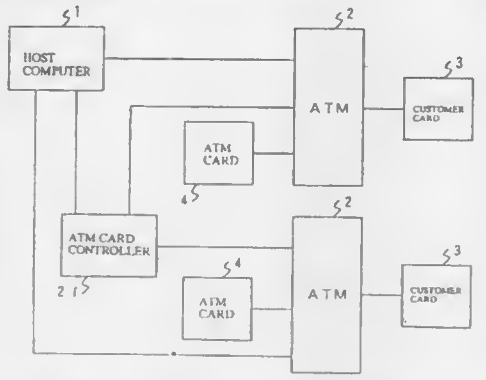
PCT No. PCT/JP95/00369, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO95/24690, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 7, 1995, Ser. No. 704,782

Claims priority, application Japan, Mar. 8, 1994, 6-036813

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 235—379 **29 Claims**



1. A transaction processing system comprising a host computer of financial institutions, a transaction machine, a first card for customers, and a second card for financial institutions and stored in said transaction machine; wherein

said transaction machine includes an interface for transmitting and receiving signals between said transaction machine and said host computer, a first card reader-writer for transmitting and receiving signals between said transaction machine and said first card, and a second card reader-writer for transmitting and receiving signals between said transaction machine and said second card;

said transaction machine accesses an account stored in said host computer in response to account information stored in said first card when receipt payment or payment processing is carried out;

said host computer transmits a signal representing authentication of receipt or payment processing to be carried out between said first card and said second card to said first card and said second card by way of said transaction machine;

wherein said first card and said second card directly and mutually carry out receipt or payment processing based on the signal representing authentication of the receipt or payment processing; and

wherein said host computer renews a balance of said account which is accessed, by adding or subtracting a sum transferred by the receipt or payment processing.

5,854,582

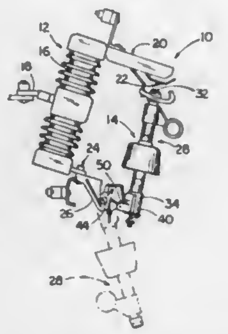
PIVOTAL LATCHING MECHANISM WITH INTERENGAGEABLE LATCH ARM AND CATCH IN A SECTIONALIZER ASSEMBLY

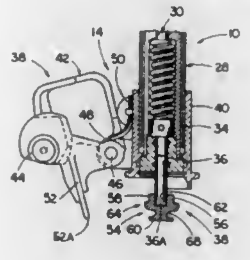
Daren A. Clark, and Marc S. Bacon, both of Centralia, Mo., assignors to Hubbell Incorporated, Orange, Conn.

Filed Aug. 27, 1997, Ser. No. 921,928

Int. Cl.^{6} H01H *71/10;83/00;73/02;* **H02H** *7/26*

U.S. Cl. 337—169 **9 Claims**





1. A sectionalizer assembly, comprising:

(a) a mounting structure having spaced apart upper and lower electrical contacts;

(b) a sectionalizer tube means having spaced apart upper and lower ends;

(c) an actuating member mounted to said sectionalizer tube means and having a lower end movable from a non-actuated position to an actuated position relative to said lower end of said sectionalizer tube means; and

(d) a pivotal latching mechanism disposed between said lower electrical contact and said lower end of said sectionalizer tube means, said pivotal latching mechanism including

(I) a pivot member mounted to said lower electrical contact and to said lower end of said sectionalizer tube means for undergoing pivotal movement relative thereto between latching and releasing positions,

(ii) a latch arm attached to said pivot member and extending outwardly therefrom for undergoing pivotal movement therewith between said latching and releasing positions, said latch arm having an outer end, and

(iii) a catch carried on said lower end of said actuating member for undergoing movement therewith, said catch having a recess defined therein, said outer end of said latch arm being releasably fittable with said catch within said recess thereof such that said outer end of said latch arm interengages said catch within said recess thereof and thereby maintains said pivot member in said latching position when said actuating member is at said non-actuated position and said pivot member is at said latching position whereas said outer end of said latch arm disengages said recess of said catch as said actuating member is moved from said non-actuated position to said actuated position and said pivot member is thereby moved from said latching position to said releasing position, said movement of said catch with said actuating member from said non-actuated position to said actuated position causing said outer end of said latch arm to pivotally move with said pivot member away from and disengage said catch, thereby permitting said upper end of said sectionalizer tube to move from a closed position to an open position relative to said upper electrical contact.

5,854,583

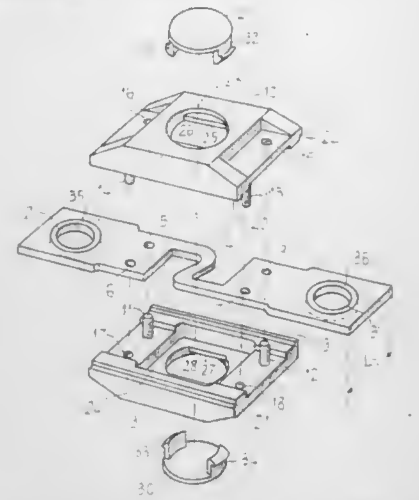
AUTOMOTIVE-TYPE FUSE FOR LARGE CURRENTS

Antonio Falchetti, Codogno, Italy, assignor to Meccanotecnica Codognese S.p.A., Italy

Filed Dec. 31, 1996, Ser. No. 777,594

Int. Cl.^{6} H01H *85/02;85/143;85/15*

U.S. Cl. 337—290 **5 Claims**



1. A fuse for large currents, comprising a conducting metal strip with a central portion shaped to form a conductor of smaller conducting cross section, having the function of a usable element, with two end portions each having a through hole for a screw clamping member, and a housing that contains said fusible element, is integral with said metal strip and is made up of a pair of juxtaposed plates with said central portion of the strip interposed between them,

characterized in that each of said holes houses a bush made of copper with tellurium, tin-plated steel or other conducting material with a yield-point stress and modulus of elasticity greater than that of zinc, so that even when said clamping member exerts clamping pressures greater than the compressive yield stress of the zinc, there is no plastic deformation of the strip and relaxation of the clamping pressure.

5,854,584

PROTECTIVE DEVICE AGAINST THERMAL OVERLOAD FOR A SMALL HIGH-HEAT-LOAD ELECTRIC MOTOR

Dieter Rögelein, Kernerstrasse 35, D-70182 Stuttgart, Germany

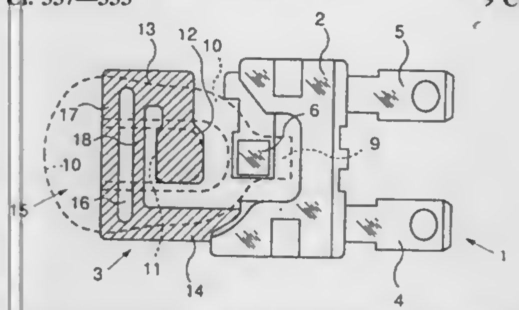
PCT No. PCT/DE95/00464, § 371 Date Oct. 7, 1996, § 102(e) Date Oct. 7, 1996, PCT Pub. No. WO95/27302, PCT Pub. Date Oct. 12, 1995

PCT Filed Apr. 5, 1995, Ser. No. 704,501

Claims priority, application Germany, Apr. 5, 1994, 44 11 712.4

Int. Cl.^{6} H01H *37/52*

U.S. Cl. 337—333 **9 Claims**



1. A device for protecting a fractional-horsepower motor from overheating when accommodating a high heat load, comprising: a make-or-break switch; a bimetal component for opening said switch, suddenly once a specific temperature has been attained; a support for mounting said bimetal component and having at least one part; said switch, said bimetal component, and said support being electrically connected in series; said bimetal component having an electrical impedance and a heat capacity that have a specific ratio to the electrical impedance and heat capacity of said support, said bimetal component and said support being in extensive surface-to-surface contact; said support being flat and radiating heat toward said bimetal component; said ratio being dimensioned so that switching cycles following a maintenance time determined by when the motor is first turned on and when said motor is first turned off due to overheating, provide an increasingly shorter switching-on duration as an overload continues at constant current and have an increasing ratio of switch-off duration to switch-on duration, ratios of electrical resistance and heat storage capacity of said bimetal component and said support being measured with said support comprising a large-area heat radiator, so that a stop time determined on initial switch-on of the motor and a first heat-overload switch-off with continuing overload and constant current sets an increasingly shorter switch-on duration for subsequent switching cycles and an increasing ratio of switch-off duration to switch-on duration; support being in form of a flat heat radiator substantially planar parallel to and overlapping to an extent at least one of two surfaces of said bimetal component while remaining slightly off said bimetal component the ratio of the heat-storage capacities of said support to the storage capacities of said bimetal component are at least 1.5:1 to 3.5:1, the ratio of said electrical impedance of said support to the electrical impedance of said bimetal component being at least 4:1 to 8:1.

5,854,585

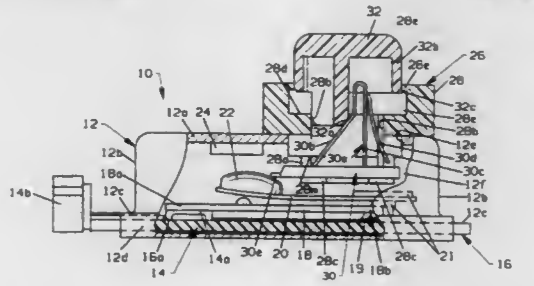
MANUAL RESET ELECTRICAL EQUIPMENT PROTECTOR APPARATUS

Geoffrey Kingma, North York, Canada, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 20, 1998, Ser. No. 27,174

Int. Cl.^{6} H01H *37/54;37/00;37/06;37/14*

U.S. Cl. 337—367 **10 Claims**



1. A manual reset circuit protector comprising:

a first housing member defining a switch cavity and having a wall mounting thereon a stationary electrical contact, the wall having a reset housing aperture formed therethrough,

a second housing member attached to the first housing member, the second housing member mounting thereon a movable contact assembly, the movable contact assembly comprising a snap acting, cantilever mounted thermostatic disc, the disc having a free distal end, a movable electrical contact mounted on the free distal end adapted to move into and out of engagement with the stationary electrical contact,

respective electrical terminals electrically connected to the stationary and movable electrical contacts,

a manual reset assembly comprising a third housing member attached to the wall of the first housing member in alignment with the reset housing aperture, the third housing member having an opening formed therethrough in communication with the reset housing aperture, a slide member mounted on the third housing member within the switch cavity for rectilinear movement toward and away from the stationary electrical contact, the slide member having a follower surface extending into the opening in the third housing member, a push button disposed in the opening in the third housing

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member and movable in a direction in and out of the opening, the push button having a cam surface receivable on the follower surface and spring means for biasing the slide member toward the stationary electrical contact, the slide member being movable between a first retracted position away from the movable stationary contact when the push button is depressed into the opening by means of the cam member co-acting with the follower surface to push the slide member against the bias of the spring and a second protracted position adjacent the stationary electrical contact and in alignment with the movable electrical contact when the snap acting disc can snap to an open contact position allowing the slide to move in response to the bias of the spring, the slide member when in the protracted position limiting movement of the movable electrical contact when the disc attempts to snap back to the contacts engage position.

5,854,586

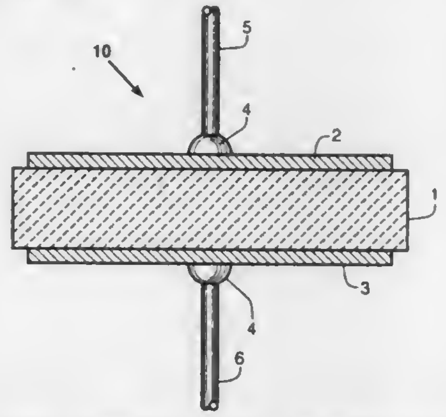
RARE EARTH DOPED ZINC OXIDE VARISTORS

April D. McMillan, Knoxville; Frank A. Modine; Robert J. Lauf, both of Oak Ridge, all of Tenn.; Mohammad A. Alim, Medina, Ohio; Gerald D. Mahan, and Miroslaw Bartkowiak, both of Oak Ridge, Tenn., assignors to Lockheed Martin Energy Research Corporation, Oak Ridge, Tenn.

Filed Sep. 17, 1997, Ser. No. 932,948

Int. Cl.^{6} H01C *7/10*

U.S. Cl. 338—21 **7 Claims**



1. A varistor comprising a Bi-free, essentially homogeneous sintered body of a ceramic composition comprising, expressed as nominal weight %, 0.2–4.0% oxide of at least one rare earth element, 0.5–4.0% Co_3O_4, 0.05–0.4% K_2O, 0.05–0.2% Cr_2O_3, 0–0.2% CaO, 0.00005–0.01% Al_2O_3, 0–2% MnO, 0–0.05% MgO, 0–0.5% TiO_3, 0–0.2% SnO_2, 0–0.02% B_2O_3, balance ZnO, said sintered body characterized by nonlinear electrical resistance.

5,854,587

$RE_xM_{1-x}MN_yO_\delta$ FILMS FOR MICROBOLOMETER-BASED IR FOCAL PLANE ARRAYS

James Horwitz, Fairfax, Va.; Douglas Chrisey, Bowie, Md.; John T. Caulfield, Santa Barbara, and Paul E. Dorsey, Fremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1997, Ser. No. 883,037

Int. Cl.^{6} H01C *7/10*

U.S. Cl. 338—22 SD **12 Claims**

1. An improved microbolometer comprising:

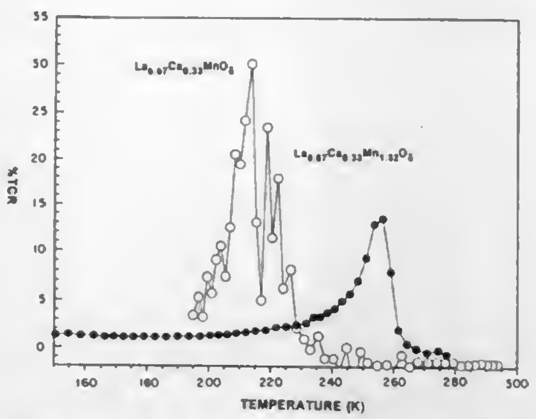
a thin film composition of matter, the thin film comprising:

a manganite of the formula

$$RE_xM_{1-x}Mn_yO_\delta$$

wherein

RE is selected from the group consisting of Y and the rare earths, and combinations thereof,



M is selected from the group consisting of divalent metals, and combinations thereof,

x is less than 1,

v is from about 0.75 to about 1.5, and

δ is from about 2.5 to about 4.0; and

a microbridge for measuring resistance changes due to temperature changes in the thin film, comprising a substrate having a cavity disposed thereon;

wherein the thin film is deposited on the microbridge.

5,854,588

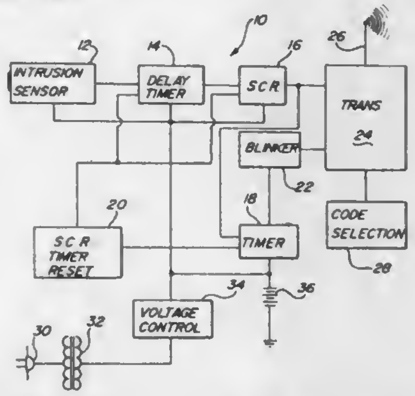
HOME SECURITY SYSTEM FOR DETECTING AN INTRUSION INTO A MONITORED AREA BY AN INFRARED DETECTOR

Devan Dockery, Rte. 8, Box 14, Defuniak Springs, Fla. 37433

Continuation-in-part of Ser. No. 427,433, Apr. 24, 1995, Pat. No. 5,570,079. This application Oct. 24, 1996, Ser. No. 736,536

Int. Cl.^{6} G08B *13/19*

U.S. Cl. 340—541 **19 Claims**



1. A security system for a home or the like comprising:

an intrusion detector to be set in an area of said home or the like to be protected, said intrusion detector comprising:

means for generating an intrusion signal in response to an intrusion into said area;

means for storing the intrusion signal and for transmitting a radio signal only upon actuation by receipt of a predetermined radio signal;

means for modulating said radio signal for a predetermined time after the receipt of said intrusion signal; and

time delay means for delaying the actuation of said intrusion detector to allow a person sufficient time to exit said area to be protected after setting said intrusion detector; and

a portable receiver comprising:

means for generating said predetermined radio signal to activate said radio signal from said intrusion detector and for generating an output signal in response to said radio signal from said intrusion detector; and

display means for generating a visual display indicating an intrusion has occurred in response to said output signal.

5,854,589

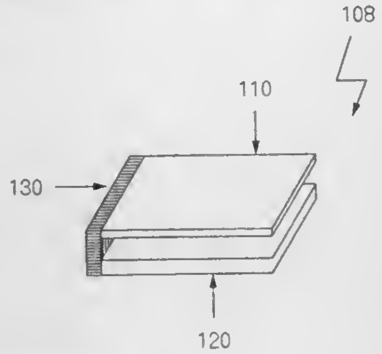
METHOD AND APPARATUS FOR GENERATING AND DETECTING ACOUSTIC SIGNALS

Hoton How, 262 Clifton St., Belmont, Mass. 02178, and Carmine Vittoria, 300 Commercial St., Suite 805, Boston, Mass. 02109

Filed Oct. 22, 1997, Ser. No. 956,241

Int. Cl.^{6} G08B *13/181*

U.S. Cl. 340—551 **1 Claim**



1. A tag comprising:

a base having first and second opposing surfaces;

a side wall having a first surface coupled to the first surface of the base; and

a resonator having a first end coupled to a second surface of said side wall.

5,854,590

METHOD FOR GENERATING A FAULT INDICATION SIGNAL

Thomas Dalstein, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

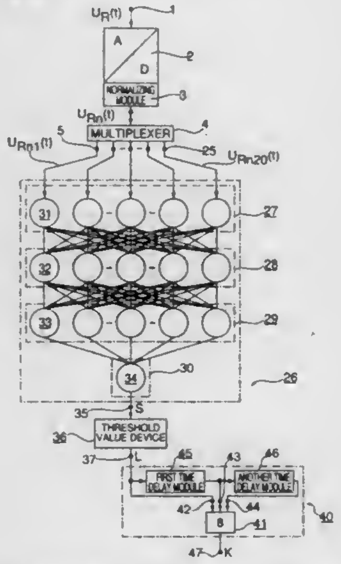
PCT No. PCT/DE94/01137, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO95/09463, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 20, 1994, Ser. No. 619,742

Claims priority, application Germany, Sep. 27, 1993, 43 33 257.9

Int. Cl.^{6} G08B *21/00*

U.S. Cl. 340—650 **4 Claims**



1. A method of generating a fault indication signal for an electric power supply network having a plurality of phases, said method comprising:

(a) sequentially sampling and normalizing voltage values of each of the phases of the electric power supply network;

(b) monitoring the electric power supply network with a neural network arrangement including a neural network for each of the phases; and

(c) simultaneously supplying said sampled and normalized values to neurons of an input layer of each of said neural networks,

wherein:

(i) each of said neural networks has been trained to generate (1) an output signal having a first predetermined value if a metal contact short-circuit fault occurs and (2) an output signal having a second predetermined value if an arcing short-circuit fault occurs, and

(ii) said neural networks have been trained through simulated voltages for each of the phases by using (1) sinusoidal voltages to simulate a metal contact short circuit fault and (2) sinusoidal voltages with an approximately rectangular additive voltage to simulate an arcing short-circuit fault.

5,854,591

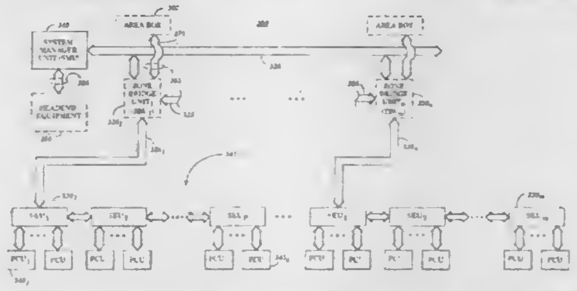
SYSTEM AND METHOD FOR PROCESSING PASSENGER SERVICE SYSTEM INFORMATION

Michael R. Atkinson, Irvine, Calif., assignor to Sony Trans Com, Inc., Irvine, Calif., and Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1996, Ser. No. 713,811

Int. Cl.^{6} H04N *7/00;* H04L *12/403;* G05B *23/02*

U.S. Cl. 340—825.17 **20 Claims**



1. A digital passenger entertainment system that assists in providing passenger service operations to a plurality of end nodes on a vehicle, comprising:

a digital communication bus;

a plurality of zone bridge units coupled to the digital communication bus, each of the plurality of zone bridge units containing passenger service system (PSS) status information pertaining to a particular area of the vehicle; and

a system manager unit coupled to the digital communication bus, the system manager unit polling each of the plurality of zone bridge units in accordance with a round-robin scheme in order to place a message, including updated PSS status information loaded into a targeted zone bridge unit, onto said digital communication bus to be read by at least one of the plurality of zone bridge units excluding the targeted zone bridge unit.

5,854,592

PAGING RECEIVER WITH IMPROVED SYNCHRONIZATION TECHNIQUES

Masayuki Kushita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

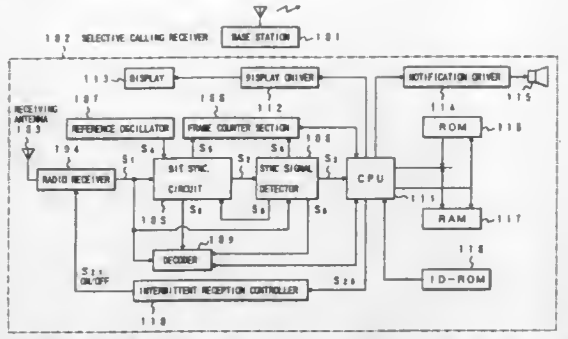
Filed Oct. 29, 1996, Ser. No. 740,412

Claims priority, application Japan, Oct. 30, 1995, 7-281312

Int. Cl.^{6} H04L *7/00*

U.S. Cl. 340—825.21 **18 Claims**

1. A method for intermittently receiving a transmission signal after synchronization establishment, the transmission signal including a frame synchronization signal and a frame identifying signal, the method comprising the steps of:



storing an ideal frame identifying value which was produced at a preceding intermittent receiving timing;

detecting a received frame synchronization signal from a received transmission signal;

detecting a received frame identifying signal from the received transmission signal to produce a received frame identifying value;

comparing the received frame identifying value with the ideal frame identifying value;

determining intermittent receiving timing based on the ideal frame identifying value when either the received frame synchronization signal or the received frame identifying signal is not detected;

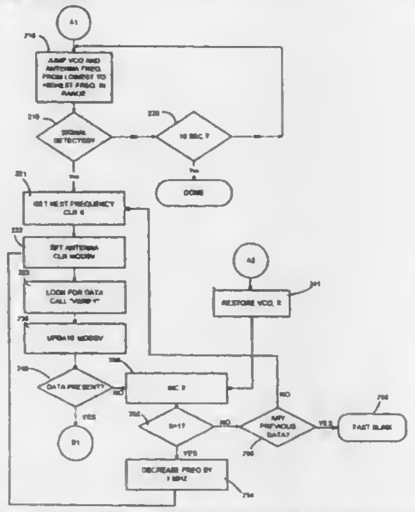
determining intermittent receiving timing based on the ideal frame identifying value when the received frame identifying value is coincident with the ideal frame identifying value; and

storing a next ideal frame identifying value which should be received at a next intermittent receiving timing, the next ideal frame identifying value being produced based on the ideal frame identifying value.

5,854,593
FAST SCAN TRAINABLE TRANSMITTER

Kurt A. Dykema; Mark L. Zeinstra, and Paul C. Duckworth, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jul. 26, 1996, Ser. No. 688,820
Int. Cl.^{6} H04Q *7/00*
U.S. Cl. 340—825.22 **30 Claims**



1. A trainable transmitter for learning the signal characteristics of a received RF signal and for subsequently transmitting a modulated RF signal having the learned characteristics, said trainable transmitter comprising:

an antenna for receiving an RF signal from a remote control transmitter used to remotely actuate a device, the RF signal having signal characteristics including a data code and an RF carrier frequency that is initially an unknown frequency within a predefined frequency band between a first frequency and a second frequency;

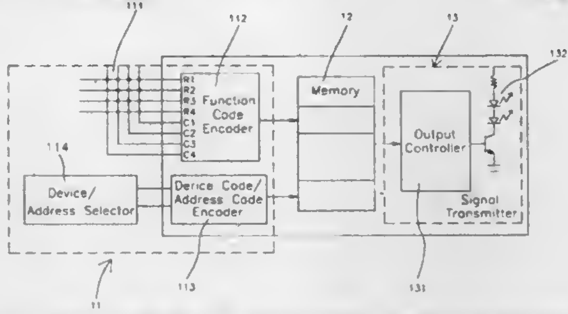
a tunable RF circuit coupled to said antenna for receiving RF signals received by said antenna, said RF circuit having a data output terminal and a frequency control terminal for receiving frequency control signals, wherein said RF circuit is selectively tuned to a frequency corresponding to a frequency control signal applied to said frequency control terminal, said RF circuit providing any data code present in a received RF signal at said data output terminal whenever the RF carrier frequency of the received RF signal corresponds to the frequency at which said RF circuit is tuned; and

a control circuit coupled to said frequency control terminal and to said data output terminal of said RF circuit, said control circuit being operative in a training mode and in an operating mode, when in the training mode, said control circuit initiates a training sequence by applying a first frequency control signal to said frequency control terminal to tune said RF circuit to said first frequency and immediately thereafter applying a second frequency control signal to said frequency control terminal to tune said RF circuit to said second frequency in order to create a rapid transition from said first frequency to said second frequency, wherein, during the rapid transition from said first frequency to said second frequency, said RF circuit supplies a detection signal at said data output terminal representing the presence of a received RF signal having an RF carrier frequency within said predefined frequency range, and, in response to said detection signal, said control circuit continues said training sequence by identifying the RF carrier frequency and code of the received RF signal.

5,854,594
REMOTE CONTROLLER FOR CONTROLLING A PLURALITY OF ELECTRIC APPLIANCES

James J. Y. Lin, Hsin-Chu; Wu Jui Kuang, Miaoli Hsien, and Denny Hwang, Tainan, all of Taiwan, assignors to Winbond Electronics Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 306,264, Sep. 14, 1994, abandoned. This application Oct. 29, 1996, Ser. No. 739,521
Int. Cl.^{6} G05B *19/07*
U.S. Cl. 340—825.72 **12 Claims**



1. A remote controller for independently controlling at least two appliances comprising:

a selector configured to transmit a signal which controls a selected appliance, said selector device including:

(a) a memory configured to store:

(i) at least two device codes, each said device code corresponding to a particular type of appliance, thereby enabling a user of the remote controller to independently control said particular types of appliances;

(ii) at least one device code having at least two address codes, each said address code representing a specific appliance of the particular type, thereby enabling the user to independently control said specific individual appliances of each of said particular types; and

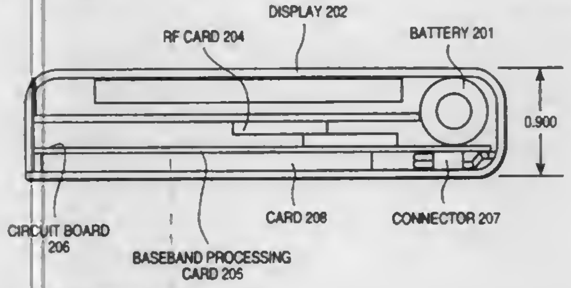
(iii) each address code having a function code representing a function the selected appliance is to execute, thereby enabling the user to independently control a plurality of functions of each of said selected appliances; and

(b) a signal transmitter electrically connected to said memory and configured to transmit an electromagnetic signal which corresponds to the functions of the selected appliance based on the type of appliance selected, and an address of a selected appliance of said selected type.

5,854,595
COMMUNICATIONS APPARATUS AND METHOD WITH A COMPUTER INTERCHANGEABLE INTEGRATED CIRCUIT CARD

Tim A. Williams, Danville, Calif., assignor to Wireless Access, Santa Clara, Calif.

Filed Jul. 20, 1995, Ser. No. 504,407
Int. Cl.^{6} H04Q *7/14*
U.S. Cl. 340—825.44 **34 Claims**



1. An apparatus comprising:

a portable radio-frequency (RF) messaging mechanism; and

an integrated circuit (IC) card having a connector and being removably coupled to the RF messaging mechanism and a computer system at different times using the connector, wherein said IC card stores messages received by the portable RF messaging mechanism and is computer compatible to permit access to information stored on the IC card when coupled to a computer via the connector, such that the connector supports coupling the IC card to the RF messaging mechanism and the computer system using the same interface at different times.

5,854,596
ENCODING ARRANGEMENT AND METHOD FOR ENCODING (N-1)-BIT INFORMATION WORDS INTO N-BIT CHANNEL WORDS AND DECODING ARRANGEMENT AND METHOD FOR DECODING THE CHANNEL WORDS INTO INFORMATION WORDS

Kornelis A. Schouhamer Immink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 595,534, Feb. 2, 1996, Pat. No. 5,774,077. This application Jul. 10, 1997, Ser. No. 891,341
Claims priority, application European Pat. Off., Feb. 8, 1995, 95200305
Int. Cl.^{6} H03M *7/00*
U.S. Cl. 341—50 **4 Claims**

1. Encoding arrangement for encoding (n-1)-bit information words into n-bit channel words to form a channel signal of concatenated channel words, the channel signal being a bit sequence in which, at most, k 'zeroes' between 'ones' occur, the encoding arrangement comprising:

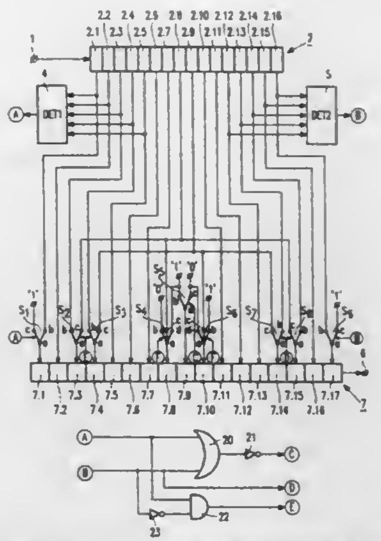
input means for receiving the (n-1)-bit information words;

converting means for converting the (n-1)-bit information words into n-bit channel words; and

output means for supplying the channel signal of concatenated n-bit channel words,

wherein the converting means comprises:

inserting means for inserting one bit of a first or a second binary value in between a specified first and a second neighboring bit position in each of the (n-1)-bit information words, a 'zero' bit being inserted in between said specified first and second neighboring bit positions of any particular (n-1)-bit information word if the number of leading 'zeroes' at the leading end of said any particular information word exceeds a specified first integer number, or the number of trailing 'zeroes' at the trailing end of said any particular information word exceeds a specified second integer number; and

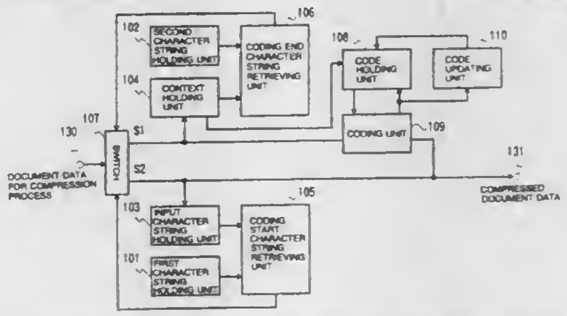


setting means for setting a logical value in a specified third bit position to a 'one' value if the number of leading 'zeroes' exceeds said specified first number, and for setting the logical value in a specified fourth bit position to a 'one' value if the number of trailing 'zeroes' exceeds said specified second number, the specified third bit position being one of a specified third number of leading bit positions of said any particular information word, the specified fourth bit position being one of a specified fourth number of trailing bit positions of said any particular information word, the specified third number being equal to the specified first number plus one, the specified fourth number being equal to the specified second number plus one, n and k being integer values, and the specified first and second numbers having a relationship with k.

5,854,597
DOCUMENT MANAGING APPARATUS, DATA COMPRESSING METHOD, AND DATA DECOMPRESSING METHOD

Kimitaka Murashita; Shigeru Yoshida, and Yoshiyuki Okada, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 22, 1997, Ser. No. 787,537
Claims priority, application Japan, Mar. 19, 1996, 8-063573
Int. Cl.^{6} H03M *7/30*
U.S. Cl. 341—51 **20 Claims**


106
102
SECOND CHARACTER STRING HOLDING UNIT
CODING END CHARACTER STRING RETRIEVING UNIT
108
CODE HOLDING UNIT
110
CODE UPDATING UNIT
104
CONTEXT HOLDING UNIT
107
130
S1
SWITCH
CODING UNIT
109
S2
131
DOCUMENT DATA FOR COMPRESSION PROCESS
COMPRESSED DOCUMENT DATA
105
103
INPUT CHARACTER STRING HOLDING UNIT
CODING START CHARACTER STRING RETRIEVING UNIT
101
FIRST CHARACTER STRING HOLDING UNIT

1. A document managing apparatus for forming compressed document data in response to an inputted character string, comprising:

control character string storing means for storing more than one starting control character string and more than one end control character string;

compressing means for compressing an inputted character to thereby output compressed character data;

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retrieving means for retrieving start control character strings and end control character strings from an inputted character string of successively inputted characters; and

control means, when a start control character string is retrieved by said retrieving means, for commencing to output compressed character data produced by said compressing means as an element of the compressed document data, and when an end control character string is retrieved by said retrieving means, for commencing, after outputting the compressed end control character as the element of the compressed document data, to directly output inputted character as it is as another element of the compressed document data.

5,854,598

METHOD OF TESTING AN ANALOG-TO-DIGITAL CONVERTER

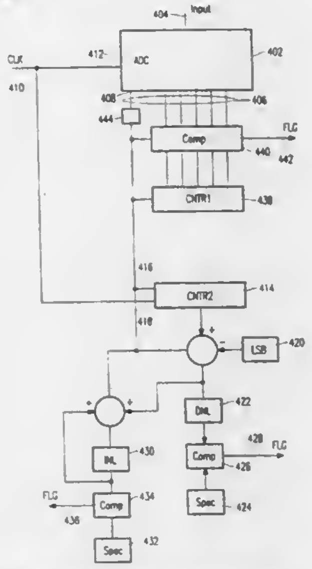
Ronald De Vries, and Botjo Atzema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1996, Ser. No. 726,284

Claims priority, application European Pat. Off., Jun. 17, 1996, 96201683

Int. Cl.^{6} H03M *1/12*

U.S. Cl. 341—120 **27 Claims**



1. A method of testing an analog-to-digital converter in an integrated circuit, which method comprises the following steps:

supplying an input of the analog-to-digital converter with a test signal which varies in time and covers a given voltage range in order to form a series of successive code words, each of which comprises a plurality of bits, on outputs of the analog-to-digital converter,

excluding at least the most significant bit from the outputs of the analog-to-digital converter to form a set of bits excluding at least the most significant bit,

determining the number of occurrences of code words having one or more given values in the series by examining the set of bits, and

characterizing the differential and/or the integral non-linearity of the analog-to-digital converter on the basis of the number of occurrences determined.

5,854,599

DIGITAL-TO-ANALOG CONVERSION WITH REDUCED QUANTIZATION NOISE

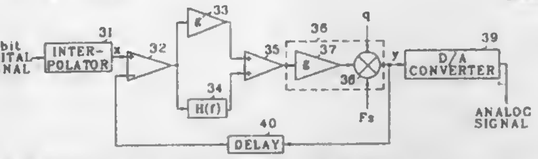
Jung-Kwon Heo, Seoul, and Tae-Hee Lee, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 11, 1997, Ser. No. 927,533

Claims priority, application Rep. of Korea, Sep. 11, 1996, 96-39336

Int. Cl.^{6} H03M *3/02*

U.S. Cl. 341—143 **7 Claims**



1. A digital-to-analog (D/A) conversion apparatus comprising:

a differentiator for receiving data which is quantized as a predetermined, plurality of quantization bits and oversampled, and 1-bit data, and generating differential data between both the received data;

filter means for band-pass-filtering the differential data generated by said differentiator and outputting the filtered data;

a first multiplier for multiplying the differential data generated by said differentiator by a first factor and outputting the resultant data;

an adder for adding the data output from said filter means and the data output from said first multiplier and outputting the resultant data;

a quantizer for quantizing the data output from said adder into 1-bit data expressed as a 1-bit quantization bit and outputting the result;

a delay for delaying the 1-bit data output from said quantizer by a predetermined interval of time and supplying the delayed 1-bit data to said differentiator; and

a DA converter for digital-to-analog-converting a 1-bit bitstream composed of the 1-bit data output from said quantizer.

5,854,600

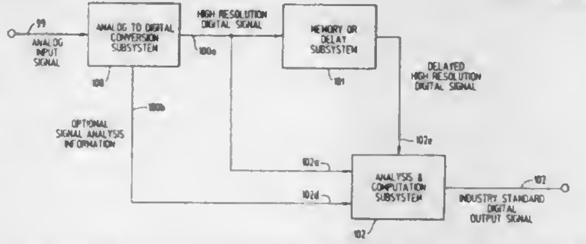
HIDDEN SIDE CODE CHANNELS

Keith O. Johnson, Pacifica, and Michael W. Pflaumer, Berkeley, both of Calif., assignors to Pacific Microsonics, Inc., Berkeley, Calif.

Continuation of Ser. No. 456,027, May 31, 1995, abandoned, which is a division of Ser. No. 110,335, Aug. 20, 1993, Pat. No. 5,479,168, which is a continuation of Ser. No. 957,631, Oct. 6, 1992, which is a continuation of Ser. No. 707,073, May 29, 1991. This application Aug. 29, 1997, Ser. No. 919,566

Int. Cl.^{6} H03M *1/00*

U.S. Cl. 341—155 **12 Claims**


99
ANALOG INPUT SIGNAL
ANALOG TO DIGITAL CONVERSION SUBSYSTEM
100
HIGH RESOLUTION DIGITAL SIGNAL
100a
100b
MEMORY OR DELAY SUBSYSTEM
101
DELAYED HIGH RESOLUTION DIGITAL SIGNAL
OPTIONAL SIGNAL ANALYSIS INFORMATION
102e
102a
102d
ANALYSIS & COMPUTATION SUBSYSTEM
102
INDUSTRY STANDARD DIGITAL OUTPUT SIGNAL
102

1. A method for converting and encoding analog signals to a standardized digital format, comprising the steps of:

monitoring the physical characteristics of an analog waveform to be converted to a standardized digital format;

converting said analog waveform to said digital format; and

encoding as compatible hidden code inserted asynchronously within said standardized digital format information indicative of said physical characteristics of said analog waveform, said information facilitating subsequent more accurate reconstruction of said analog waveform from said digital format.

5,854,601

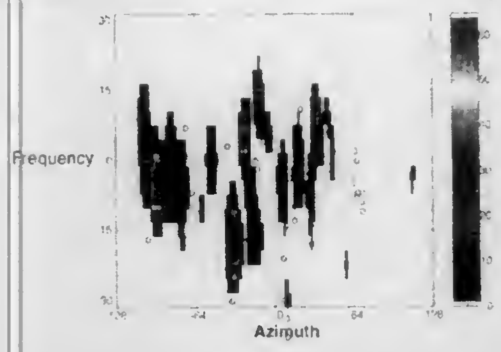
METHODS FOR ESTIMATING THE NUMBER OF EMITTERS AND THEIR PARAMETERS

Richard J. Kenefic, Fort Wayne, Ind., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 29, 1996, Ser. No. 641,117

Int. Cl.^{6} G01S *13/06*

U.S. Cl. 342—13 **4 Claims**



Collapsed amplitude planes for all reported emitters with all hits shown(o), and the emitters reported (x) for the 3D method. Dense data set.

1. A method for estimating the number of emitters of intermittent or periodic pulsed energy waveforms received at a sensor location and the parameters of said intermittent or periodic energy waveforms, comprising:

(a) accumulating over a selected period of time output of said sensor, said output consisting of a set of vectors, each of said vectors consisting of at least one element of parameters of direction, frequency, and amplitude, and which element(s) specify(ies) a point in a space defined by said element(s) for each of said waveforms received when at least said parameter of direction is included;

(b) dividing said space into a plurality of bins, considering each said vector in turn, and apportioning weight of said each said vector to be accumulated within at least some of said plurality of bins;

(c) determining at the end of said selected period of time which of said bins exceed a threshold strength and are, therefore, said emitters; and

(d) calculating said at least one element of parameters for each said emitter as appropriate for said vector elements selected for said space.

5,854,602

SUBAPERTURE HIGH-ORDER AUTOFOCUS USING REVERSE PHASE

Herbert C. Stankwitz, and Ken W. Burgener, both of Ann Arbor, Mich., assignors to Erim International, Inc., Ann Arbor, Mich.

Filed Apr. 28, 1997, Ser. No. 842,094

Int. Cl.^{6} G01S *13/90*

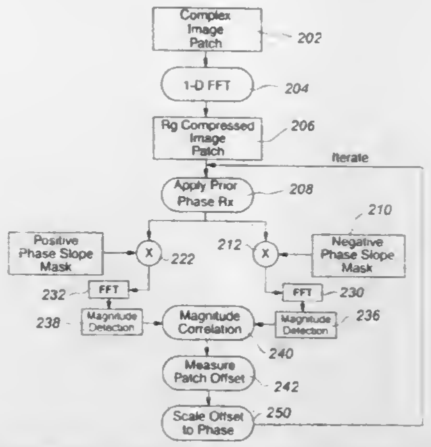
U.S. Cl. 342—25 **9 Claims**

1. A method of autofocusing a synthetic radar (SAR) image, comprising the steps of:

(a) receiving a complex, unfocused SAR image comprised of a plurality of image patches;

(b) partitioning the Fourier transform of each patch into a plurality of subapertures, each partition being associated with the maxima and minima of a basis function for the current order;

(c) applying a positive mask to each subaperture wherein the basis function is increasing in phase slope, and applying a negative mask to each subaperture wherein the basis function is decreasing in phase slope; and



(d) correlating the results of the masking, operations of step (c) to obtain a focused image.

5,854,603

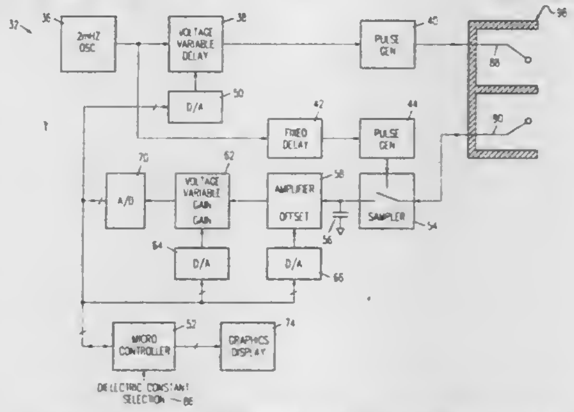
ULTRA-WIDEBAND SWEPT RANGE GATE RADAR SYSTEM WITH VARIABLE TRANSMITTER DELAY

Charles E. Heger, Saratoga, Calif., assignor to Zircon Corporation, Campbell, Calif.

Division of Ser. No. 582,290, Jan. 3, 1996, abandoned, which is a continuation of Ser. No. 300,279, Sep. 2, 1994, Pat. No. 5,543,799. This application Jun. 3, 1997, Ser. No. 868,017

Int. Cl.^{6} G01S *13/18*

U.S. Cl. 342—85 **15 Claims**



1. A range swept ultra-wideband radar system adapted for sensing a nearby target, comprising:

a transmitter emitting ultra-wideband radio pulses wherein the transmitter is driven by a continuously variable delay to determine a distance of the target from the system; and

a receiver located for receiving the emitted signals after being reflected from the target.

5,854,604

HIGH-POWER WAVEFORM GENERATOR

John Xavier Przybysz, Pittsburgh, Pa.; Stephen Pusey Caldwell, Columbia, Md.; Donald Lynn Miller, Export, and Andrew Hostetler Miklich, Monroeville, both of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

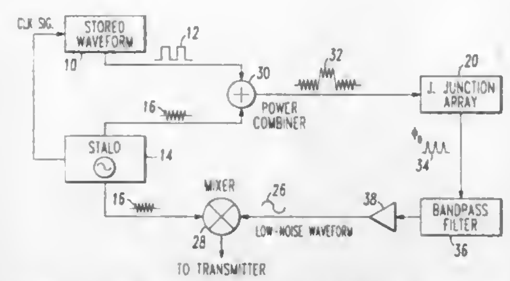
Filed May 12, 1997, Ser. No. 854,856

Int. Cl.^{6} G01S *7/28*

U.S. Cl. 342—175 **25 Claims**

1. Apparatus for generating a low phase-noise RF signal for use in a radar system, comprising:

a digital signal generator generating a digital data stream having binary amplitude values representative of an analog signal of at least a first RF frequency;



an analog signal generator generating a relatively low phase-noise analog signal of a second RF frequency;

a power combiner connected to said digital signal generator and said analog signal generator, being responsive to said digital data stream and said low phase-noise analog signal and outputting a composite signal comprised of said digital data stream and said low phase-noise analog signal of a second RF frequency;

an array of series connected Josephson junctions coupled to said power combiner and being biased and excited by said composite signal outputted from said power combiner to generate a digital data stream having quantum mechanically accurate binary amplitude values;

a filter circuit coupled across said array and being responsive to said digital data stream having quantum mechanically accurate binary amplitude values for generating a relatively low phase-noise analog signal of said analog signal of said at least a first RF frequency; and

a signal mixer coupled to said analog signal generator and said filter circuit, said mixer being responsive to both said low phase-noise analog signals generated thereby and then generating therefrom a low phase-noise RF output signal for use with radar transmitter apparatus in said radar system.

5,854,605

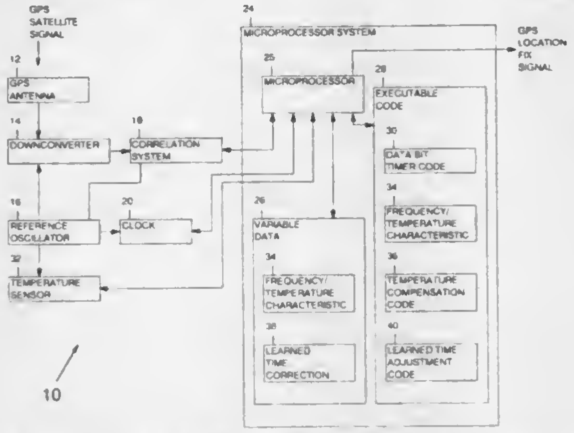
GPS RECEIVER USING DATA BIT TIMING TO ACHIEVE A FAST TIME TO FIRST FIX

David R. Gildea, Menlo Park, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Jul. 5, 1996, Ser. No. 678,573

Int. Cl.^{6} G01S ***5/02;*** **H04B** ***7/185***

U.S. Cl. 342—357 **16 Claims**



10. A method in a global positioning system (GPS) receiver for receiving a GPS satellite signal having a GPS data bit having a time-of-arrival synchronized to a GPS-based clock time, comprising steps of:

providing an internal clock time in a time clock signal from a local clock;

correlating to a GPS signal representative of said GPS satellite signal for providing a correlation signal having information for said time-of-arrival of said GPS data bit; and

aligning said internal clock time to GPS-based clock time by synchronizing to said time-of-arrival of said GPS data bit.

5,854,606

SURFACE-MOUNT ANTENNA AND COMMUNICATION APPARATUS USING SAME

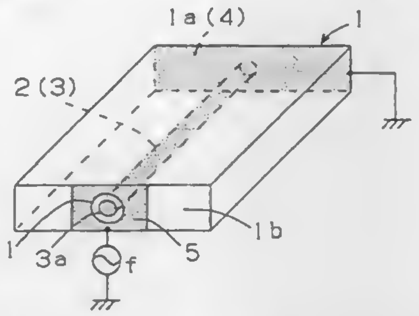
Kazunari Kawahata, Kyoto, and Kazuhisa Yamaki, Muko, both of Japan, assignors to Murata Manufacturing Co. Ltd., Kyoto, Japan

Filed Oct. 17, 1996, Ser. No. 733,297

Claims priority, application Japan, Oct. 17, 1995, 7-268790

Int. Cl.^{6} H01Q ***1/24;1/38***

U.S. Cl. 343—702 **59 Claims**



1. A surface-mount antenna comprising:

a base member comprising at least one of a dielectric material and a magnetic material, the base member having a main surface and an end surface at an edge of the main surface, the end surface being dividable into end-face portions;

a through-hole formed between one end-face portion and an opposite end-face portion in said base member;

a ground electrode formed on said one end-face portion;

a radiation electrode formed on an inside surface of said through-hole, one end of said radiation electrode being connected to said ground electrode and another end comprising an open end on the opposite end-face portion; and

a power-supplying electrode disposed around said open end on the opposite end-face portion, a gap being provided between the power supplying electrode and the radiation electrode.

5,854,607

ARRANGEMENT FOR SUPPLYING POWER TO MODULAR ELEMENTS OF A PHASED ARRAY ANTENNA

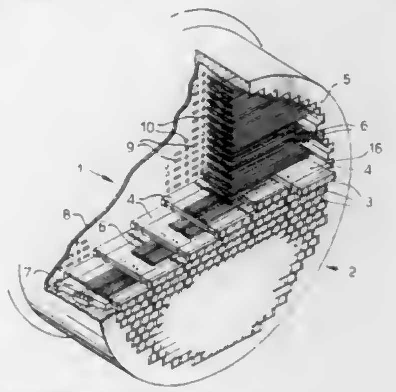
Anthony Miles Kinghorn, Edinburgh, United Kingdom, assignor to GEC-Marconi Avionics (Holdings) Limited, Middlesex, Great Britain

Filed Jan. 30, 1996, Ser. No. 593,577

Claims priority, application United Kingdom, Feb. 3, 1995, 9502127

Int. Cl.^{6} H01Q ***21/00***

U.S. Cl. 343—853 **43 Claims**



1. Antenna apparatus, comprising:

antenna frame for supporting a plurality of electrical modules;

a plurality of electrical modules each having a front face for transmitting and/or receiving a signal and a rear face inserted in said frame; and

at least one cooling duct having an outer surface in thermal contact with the plurality of modules and supplying electrical power to a point on at least one of the modules other than the rear face.

5,854,608

HELICAL ANTENNA HAVING A SOLID DIELECTRIC CORE

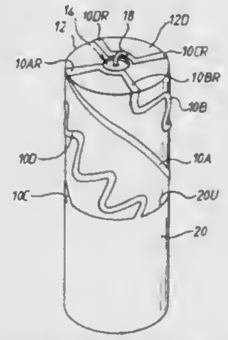
Oliver Paul Leisten, Duston, England, assignor to Symetri Com, Inc., San Jose, Calif.

Filed Dec. 6, 1994, Ser. No. 351,631

Claims priority, application United Kingdom, Aug. 25, 1994, 9417450

Int. Cl.^{6} H01Q ***1/36***

U.S. Cl. 343—895 **43 Claims**



1. An antenna for operation at a frequency in excess of 200 MHz, comprising an electrically insulative antenna core of a solid material having a relative dielectric constant greater than 5, the core having distal and proximal ends, a three-dimensional antenna element structure which includes a plurality of longitudinally extending conductive elements, the structure being disposed on or adjacent an outer surface of the core and defining an interior volume, and a feeder structure which is connected to the antenna element structure and passes through the core from the proximal end of the core to connections with the distal ends of the longitudinally extending conductive elements, the material of the core occupying the major part of said interior volume.

5,854,609

SATELLITE TRACKING METHOD FOR VEHICLE-MOUNTED ANTENNA SYSTEM

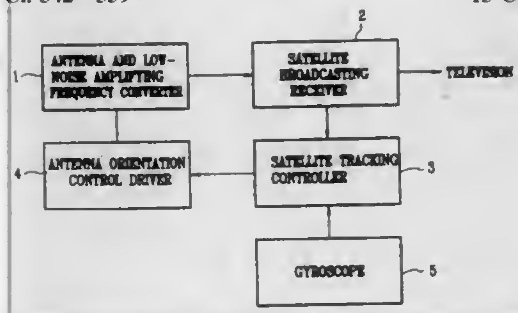
Cheol-Sig Pyo; Sook-Ik Jeon, and Chan-Goo Park, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 17, 1997, Ser. No. 932,369

Claims priority, application Rep. of Korea, Dec. 2, 1996, 1996-61025

Int. Cl.^{6} H01Q ***3/00***

U.S. Cl. 342—359 **15 Claims**


2
1
ANTENNA AND LOW-NOISE AMPLIFYING FREQUENCY CONVERTER
SATELLITE BROADCASTING RECEIVER
TELEVISION
4
ANTENNA ORIENTATION CONTROL DRIVER
SATELLITE TRACKING CONTROLLER
3
GYROSCOPE
5

1. A satellite tracking method for a mobile-mounted antenna system, in which a satellite tracking controller receives a signal through a satellite broadcasting receiver and a turning angle of a moving body provided by a gyroscope for the purpose of controlling an antenna orientation control driver and rotating the antenna mounted on the moving body, the satellite tracking method comprising:

an initial mode for rotating the antenna depending on the turning angle of the moving body until a level voltage of a reception signal which is transmitted from a satellite with a system power on is larger than a fourth threshold voltage corresponding to a predetermined rainfall margin;

a maximum value search mode for rotating the antenna depending on the turning angle of the moving body and a symmetric point of the reception signal level voltage with respect to the maximum reception signal level voltage so as to search for a voltage corresponding to the maximum reception signal level voltage, which is defined as a first threshold voltage, the maximum value search mode being accomplished when the reception signal level voltage is larger than the fourth threshold voltage;

a normal tracking mode for controlling the orientation of the antenna depending on the turning angle of the moving body so as to maintain the reception signal level voltage to be larger than a second threshold voltage, the normal tracking mode accomplished when the reception signal level voltage is between the first threshold voltage and the second threshold voltage;

an error correction mode for rotating the antenna in the left and right directions depending on the turning angle of the moving body, the initial mode, the maximum value search mode and the normal tracking mode according to whether the reception signal level voltage is between the second threshold voltage and a third threshold voltage, the error correction mode being performed when the reception signal level voltage is between the second threshold voltage and the third threshold voltage;

a signal blocking mode for controlling the orientation of the antenna depending on the turning angle of the moving body until a time value in a timer is over a predetermined time, the signal blocking mode accomplished when the reception signal level voltage is smaller than the third threshold voltage, and the time value in the timer is not over a predetermined time

a rainfall mode for controlling the orientation of the antenna depending on the turning angle of the moving body, until a time value in a timer exceeds a predetermined time the rainfall mode accomplished when the time value in the timer exceeds the predetermined time and the reception signal level voltage is between the fourth threshold voltage and the third threshold voltage even though the reception signal level voltage is in the same range as in the signal blocking mode,

wherein the first threshold voltage is greater than the second threshold voltage which is greater than the third threshold voltage which is greater than the fourth threshold voltage, the second threshold voltage is a voltage when the reception signal level voltage is smaller than the first threshold voltage by a predetermined voltage level, the third threshold voltage is a voltage when the reception signal level voltage is smaller than the second threshold voltage by a predetermined voltage level.

5,854,610

RADAR ELECTRONIC SCAN ARRAY EMPLOYING FERRITE PHASE SHIFTERS

John Wojtowicz, Hampstead, and Richard S. Konapelsky, Columbia, both of Mass., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 13, 1997, Ser. No. 969,270

Int. Cl.^{6} H01Q ***3/22;3/24;3/26***

U.S. Cl. 342—372 **18 Claims**

1. An electronic scan array (ESA) for radar apparatus, the ESA comprising:

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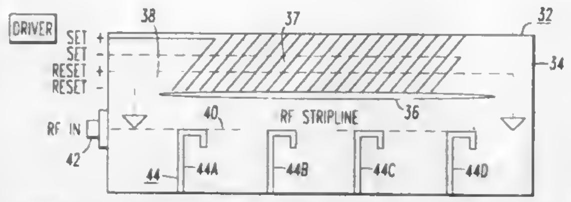


a plurality of transmit/receive (TR) modules coupled to an RF manifold system;

each TR module having RF amplifier circuitry and a phase shifter which generate a radio frequency (RF) module signal for steering of the ESA beam as a whole;

a ferrite phase shifter forming a subarray and coupled to each TR module to receive the RF module signal therefrom, to phase shift the RF module signal and generate multiple output RF signals phase shifted by different amounts on the basis of permeability control applied to ferrite material of the ferrite phase shifter, and thereby to provide steering for a whole-beam sector associated with the ferrite phase shifter;

the phase shifter having at least one elongated ferrite substrate structure;

at least one elongated RF conductor strip receiving the RF module signal, formed on the ferrite substrate structure, and extending longitudinally thereof;

a latching field coil structure coupled to the ferrite substrate structure, being operable to carry an electric current pulse and generate magnetic flux in the ferrite substrate structure along magnetic circuitry which extends along the conductor and within the field coil structure, thereby controlling the permeability of the ferrite substrate including magnetic material along the conductor; and

a plurality of tap conductors secured to the ferrite substrate, connected to the conductor at respective selected points along the conductor, and disposed to provide output coupling of the phase shifted output signals to the associated radiators with phase shifting determined by the permeability of the ferrite substrate; and

multiple radiators to which the respective phase shifted output RF signals of each phase shifter are applied for generation of the ESA beam.

5,854,611

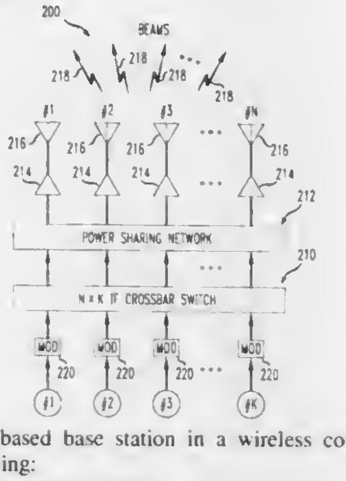
POWER SHARED LINEAR AMPLIFIER NETWORK

Michael James Gans, Monmouth Beach, and Yu Shuan Yeh, Freehold, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 24, 1995, Ser. No. 506,286

Int. Cl.^{6} H01Q *3/22*

U.S. Cl. 342—373 **8 Claims**



1. A ground-based base station in a wireless communication system, comprising:

a transmitting system, comprising:

a power sharing network having a plurality of input ports and a plurality of output ports, said power sharing network operable to receive a plurality of input information signals at the input ports thereof, wherein said input information signals correspond to information-bearing signals originating from a telephone network linked to said base station, said power sharing network operable to divide each said information signal among a plurality of output ports thereof with a staggered phase relationship therebetween to thereby provide a plurality of first output signals of substantially equal power levels;

a plurality of linear amplifiers, each for amplifying one of said first output signals to provide a corresponding amplified signal;

a plurality of antenna array elements coupled to outputs of said amplifiers, said antenna elements being excited by said amplified signals so as to radiate output information signals in multiple, high gain antenna beams, each pointing in a distinct azimuthal direction, with each output information signal corresponding to one of said input information signals and transmitted on an associated one of said antenna beams; and

a switching network operable to selectively switch said input information signals to the input ports of said power sharing network, wherein a signal transmission to a wireless terminal in the wireless communication system is handed off from one of said antenna beams to another of said antenna beams without assigning a new frequency channel for the signal transmission.

5,854,612

METHOD AND APPARATUS FOR CONTROLLING ARRAY ANTENNA

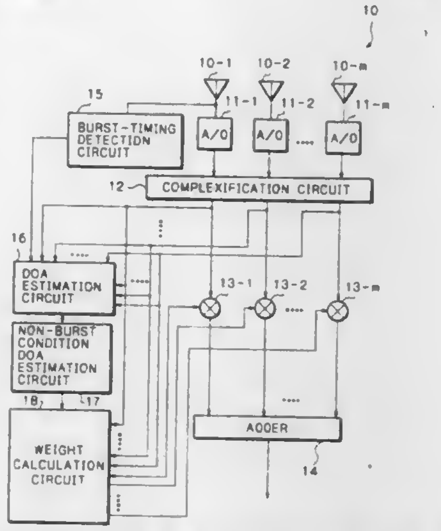
Yukihiro Kamiya, Saitama; Shinichi Nomoto, and Hideo Kobayashi, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1998, Ser. No. 20,540

Claims priority, application Japan, Feb. 13, 1997, 9-042877

Int. Cl.^{6} G01S *3/16;3/28*

U.S. Cl. 342—383 **19 Claims**



1. A method of controlling an array antenna having a plurality of antenna elements for providing antenna output signals by receiving TDMA burst signals, comprising the steps of:

estimating a DOA of incident signal based upon the antenna output signals;

calculating weights with reference to the estimated DOA;

multiplying the antenna output signals by the calculated weights, respectively; and

summing the multiplied antenna output signals,

wherein said estimating step includes a first step of calculating a phase difference between the output signals of two of the antenna elements during burst, a second step of calculating a phase difference between the output signals of two antenna elements during an interval of bursts, and a third step of calculating a difference between said calculated phase differences.

5,854,613

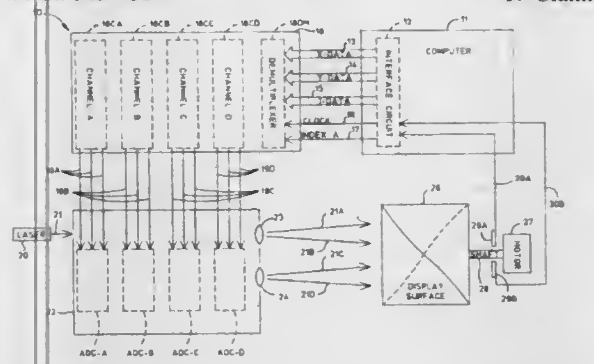
LASER BASED 3D VOLUMETRIC DISPLAY SYSTEM

Parviz Soltan, San Diego; John A. Trias, La Mesa; Weldon J. Dahlke, San Diego, all of Calif.; Robert V. Belfatto, Melbourne Beach, and Frank Sanzone, Satellite Beach, both of Fla., assignors to The United Sates of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 215,798, Mar. 16, 1994, abandoned. This application May 3, 1996, Ser. No. 687,091

Int. Cl.^{6} C09G *3/00*

U.S. Cl. 345—32 **19 Claims**



1. A system for generating images, comprising:

a data processor which generates a first data stream representing coordinates along a first axis, a second data stream representing coordinates along a second axis, and a third data stream representing the intensities of multiple optical beams;

a demultiplexer which generates control signals in response to receiving said first, second, and third data streams;

an optical energy source which generates an optical signal;

an optically reflective structure which defines a display volume when subjected to periodic motion; and

an optical beam steering system which (1) divides said optical signal into multiple optical beams; (2) deflects and intensity modulates said optical beams under the supervision of said control signals; (3) combines said optical beams into multiple composite optical beams; and (4) simultaneously directs each of said composite optical beams to reflect off said reflective structure at predetermined coordinates within said display volume.

5,854,614

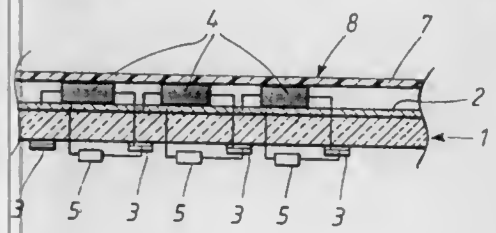
DISPLAY DEVICE AND METHOD FOR VISUALIZING COMPUTER GENERATED IMAGE INFORMATION

Ove Larson, Västra Frölunda, Sweden, assignor to Array Printers AB Publ., Vastra Frolunda, Sweden

Filed Nov. 18, 1996, Ser. No. 749,958

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—90 **10 Claims**



1. An information display device, comprising a matrix, said matrix comprising:

a first set of electrodes and a second set of electrodes, said first and second sets being connected to control means for multiplexing, scanning or pulsing electric signals to the electrodes;

a plurality of heating means electrically connected between said first and second electrode sets at each cross point between electrodes from each of said first and second electrode sets;

a thermosensitive layer being capable of changing state from opaque to transparent depending upon its temperature, said thermosensitive layer being arranged in thermal contact with said heating means,

wherein said matrix further comprises a plurality of diodes, with a diode being arranged at each of said cross points so that a current can only flow from one current carrying electrode of the first set, via said heating means, to the corresponding electrode in the second set.

5,854,615

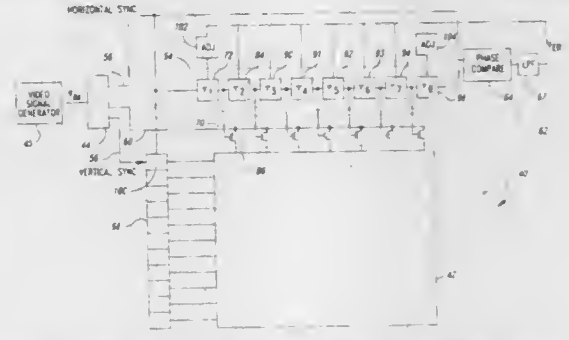
MATRIX ADDRESSABLE DISPLAY WITH DELAY LOCKED LOOP CONTROLLER

Glen E. Hush, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Oct. 3, 1996, Ser. No. 720,877

Int. Cl.^{6} G09G *3/36;5/00;* **H03L** *7/00*

U.S. Cl. 345—99 **35 Claims**



1. A driving circuit for driving a matrix addressable display in response to a driving signal and a sync signal, comprising:

a delay chain including a plurality of serially coupled delay circuits coupled to receive the sync signal, wherein at least a first one of the delay circuits is operative to propagate the sync signal with a variable delay in response to a delay control signal;

a comparator having a first input coupled to receive a delayed signal from a selected second one of the delay circuits and a second input coupled to receive the sync signal, the comparator being operative to compare the delayed signal and the sync signal and to produce the delay control signal in response to the relative phases of the delayed signal and the sync signal; and

a first line driver circuit coupled to receive the driving signal and the delayed signal from the delay chain, the line driver circuit being configured to produce samples of the driving signal in response to the delayed signal.

5,854,616

ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAY SYSTEM AND DRIVING METHOD THEREFOR

Masuyuki Ota; Katsumi Kondo, both of Katsuta, and Masahito Oh-e, Hitachi, all of Japan, assignors to Hitach, Ltd., Tokyo, Japan

PCT No. PCT/JP94/01020, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO94/00408, PCT Pub. Date Jan. 4, 1996.

PCT Filed Jun. 24, 1994, Ser. No. 374,513

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—100 **21 Claims**

1. An active matrix type liquid crystal display system having a plurality of switching elements comprising:

a pair of substrates;

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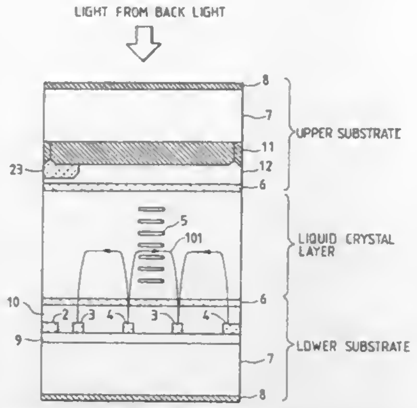


signal electrode lines and scanning electrode lines formed on one of said pair of the substrates and crossing each other in a matrix form;

a plurality of pixels formed by adjoining said signal electrode lines and said scanning electrode lines; and

a liquid crystal layer interposed between said pair of the substrates;

wherein each pixel of said pixels comprises an electrode structure for generating an electric field having a component substantially in parallel with one of said pair of said substrates upon application of at least one predetermined voltage thereto, and a scanning signal having at least two kinds of non-selective voltage values is applied to said scanning electrode lines.

5,854,617
CIRCUIT AND A METHOD FOR CONTROLLING A BACKLIGHT OF A LIQUID CRYSTAL DISPLAY IN A PORTABLE COMPUTER

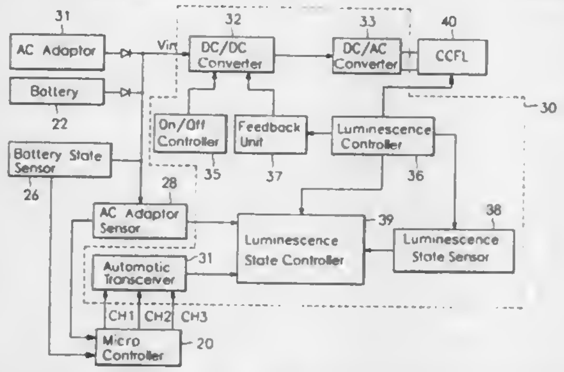
Chang-Hum Lee, Anyang, and Yun-Ho Choi, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 9, 1996, Ser. No. 647,064

Claims priority, application Rep. of Korea, May 12, 1995, 1995/11722

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—102 **23 Claims**



1. A circuit for controlling a backlight of a liquid crystal display of a portable computer, comprising:

a controller for determining whether alternating current is available for the backlight of the liquid crystal display, measuring a voltage level of a battey when the alterating current is not available for the backlight of the liquid crystal display, determining a lumninescence level from the measured voltage level, and generating a luminescence control signal corresponding to the luminescence level determined for controlling the backlight of the liquid crystal display; and

a backlight driver for driving the backlight of the liquid crystal display according to the luminescence control signal, said backlight driver comprising:

an adapter sensor for sensing whether an alternating current adaptor is connected to the portable computer to convert an alternating current received from an electrical receptacle into a direct current;

a first converter for producing a switching signal upon reception of the direct current when the alternating current adaptor is connected to the portable computer;

a second converter for transforming the switching signal from the first converter into an alternating current signal and boosting the alternating current signal to supply to the backlight of the liquid crystal display;

a luminescence state sensor for sensing the brightness of the backlight of the liquid crystal display;

an automatic transceiver for transmitting said luminescence control signal corresponding to the luminescence level when the battery is in use; and

a luminescence state controller for determining the backlight luminescence of the liquid crystal display according to signals from said adaptor sensor, said automatic transceiver and said luminescence state sensor; and

a luminescence controller for controlling the backlight luminescence of the liquid crystal display according to said luminescence control signal.

5,854,618
APPARATUS COMPRISING A DISPLAY SCREEN WHICH IS ACTIVE IN THE OPERATING MODE AND IN THE STANDBY MODE

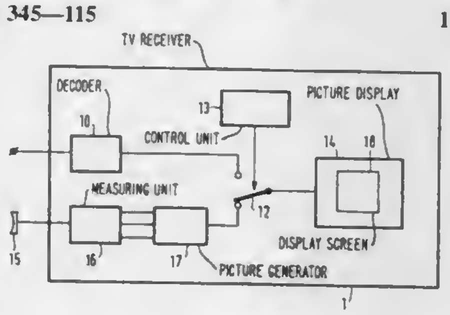
Nicoline J. Kiwiet, Yorktown Heights, N.Y., and Robbert G. Van Der Waal, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 559,786, Nov. 15, 1995, abandoned. This application Nov. 3, 1997, Ser. No. 962,896

Claims priority, application European Pat. Off., Nov. 17, 1994, 94203351

Int. Cl.^{6} G09G *5/00;* H04N *3/20*

U.S. Cl. 345—115 **15 Claims**



1. An apparatus which comprises:

switching means for switching the apparatus between an operating mode and a standby mode;

a display screen;

picture-generating means for generating a picture on the display screen in the standby mode; and

measuring means for measuring a value of a parameter of an environment of the apparatus, coupled to the picture-generating means, in order to change a composition of the picture on the display screen while in the standby mode in response to a change of the measured value.

5,854,619
KARAOKE APPARATUS DISPLAYING IMAGE SYNCHRONOUSLY WITH ORCHESTRA ACCOMPANIMENT

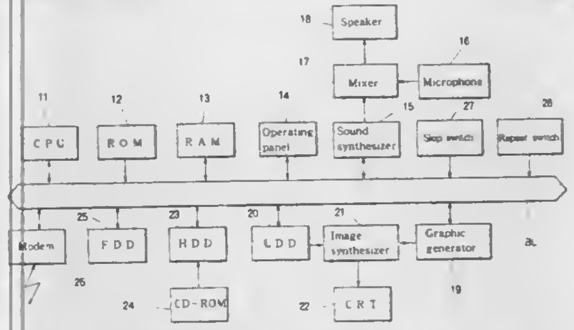
Hirokazu Kato, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 132,581, Oct. 6, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,978

Claims priority, application Japan, Oct. 9, 1992, 5-297793

Int. Cl.^{6} G09G *5/40;* G10H *1/36*

U.S. Cl. 345—116 **6 Claims**



5. A Karaoke apparatus for reproducing an instrumental accompaniment of a requested song during the course of a vocal performance of the song by a singer. the apparatus comprising:

register means for registering composite data of a song containing synchronized accompaniment information, word information and picture information, wherein the accompaniment information, word information and picture information are synchronized with each other at a plurality of points during the song;

sound means receptive of the accompaniment information for reproducing an instrument accompaniment of said song according to the accompaniment information;

display means receptive of the word information and the picture information for displaying a word of said song in the form of a sequence of characters according to the word information, and for displaying, in superposed relation to the word, an image associated to said song according to the picture information; and

control means for addressing the composite data stored in the register means to sequentially distribute the synchronized accompaniment information, the word information and the picture information in synchronous manner with each other to those of the sound means and the display means so that the word and the image can be displayed in a linked manner in accordance with progression of the sounded instrumental accompaniment, wherein the control means includes skip means responsive to a given skip command for skipping distribution of the accompaniment information, the word information and the picture information concurrently with each other so that the displayed word and image can be skipped synchronously to skip of the sounded instrumental accompaniment.

5,854,620
METHOD AND APPARATUS FOR CONVERTING MONOCHROME PIXEL DATA TO COLOR PIXEL DATA

Karl Scott Mills, Lynnwood; Jeffrey Michael Holmes, Seattle; Mark Emil Bonnelycke, Seattle, and Richard Charles Andrew Owen, Seattle, all of Wash., assignors to Cirrus Logic, Inc., Fremont, Calif.

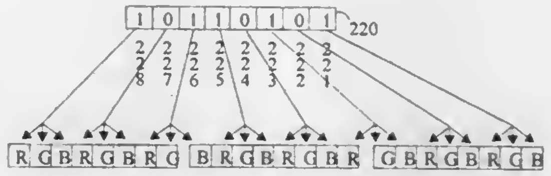
Filed Dec. 19, 1995, Ser. No. 574,502

Int. Cl.^{6} G09G *5/04*

U.S. Cl. 345—153 **20 Claims**

1. A graphics controller circuit for converting a plurality of monochrome pixel data into a corresponding set of color pixel data, the graphics controller circuit comprising:

a memory interface circuit for receiving the plurality of monochrome pixel data; and



a convertor coupled to receive the plurality of monochrome pixel data from the memory interface circuit. the convertor converting each of the plurality of monochrome pixel data into a corresponding corresponding set of color pixel data, each set of color pixel data comprising groups of pixel elements. the converter packing a plurality of color pixel data sets into a plurality of color pixel words,

wherein one element of a first color pixel data is stored in a first color pixel word and another element of the first color pixel data is stored in a second color pixel word.

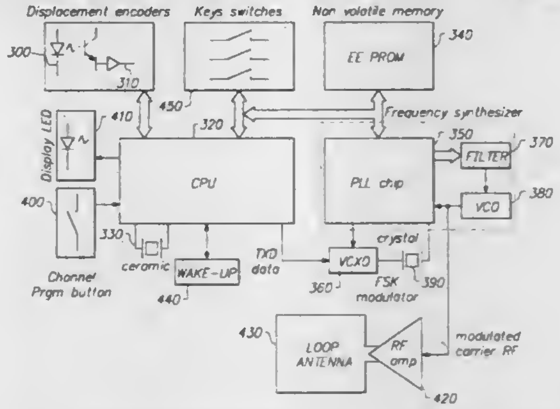
5,854,621
WIRELESS MOUSE

Philippe Junod, Aclens; Berni Joss, Bussigny; Nicolas Sasselli, Lausanne; Rene Sommer, Prilly, and Aldo Bussien, Vuillerens, all of Switzerland, assignors to Logitech, Inc., Fremont, Calif.

Continuation of Ser. No. 695,126, Aug. 7, 1996, abandoned, which is a continuation of Ser. No. 250,461, May 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 176,324, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 672,090, Mar. 19, 1991, abandoned. This application Apr. 7, 1997, Ser. No. 826,935

Int. Cl.^{6} G06F *3/033*

U.S. Cl. 345—158 **29 Claims**



1. A communication system for receiving signals representing displacement action of a peripheral device comprising:

- a first peripheral device, having
  - a first non-volatile memory device for storing a first identifier:
  - a first signal generator for generating a first displacement signal based upon a displacement action of said first peripheral device and for generating a first identification signal: and
  - a first transmitter. coupled to said first signal generator. for transmitting a first electromagnetic data signal. said first electromagnetic data signal having said first identification signal and said first displacement signal: and
- a receiving unit having:
  - a second non-volatile memory device;
  - a signal receiver. for receiving said electromagnetic data signal: and
  - a processor. disposed to receive said first electromagnetic data signal from said signal receiver. for locking said first peripheral device with said receiving unit when said receiving unit is in a lock-on mode to identify said first identifier as a first of one or more authorized peripherals. and storing a signal representing said first identifier in said second

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non-volatile memory device, and for processing electromagnetic data signals transmitted only from said authorized peripherals.

5,854,622

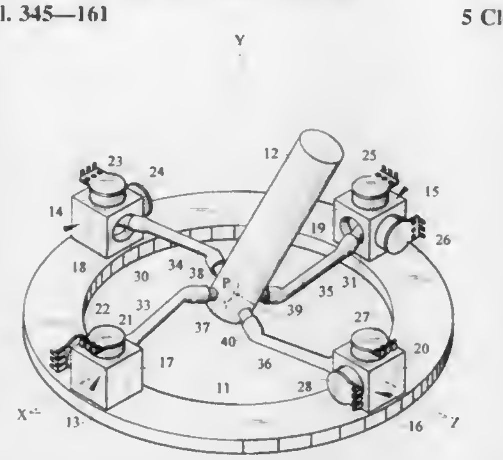
JOYSTICK APPARATUS FOR MEASURING HANDLE MOVEMENT WITH SIX DEGREES OF FREEDOM

Daniel J. Brannon, P.O. Box 3443, San Luis Obispo, Calif. 93403

Filed Jan. 17, 1997, Ser. No. 784,495

Int. Cl.⁶ G09G *5/00;5/08*

U.S. Cl. 345—161 **5 Claims**



1. A joystick allowing six degrees of freedom of hand input force for conversion of the hand input force into electrical output signals, said joystick comprising:

a) a handle;
b) abase;
c) at least three dual-axis sensors attached to said base; and
d) means for coupling said sensors to said handle so as to support said handle and to transmit said hand input force to said sensors whereby said hand input force varies the quantities measured by the sensors in relation to the direction and magnitude of the hand input force.

5,854,623

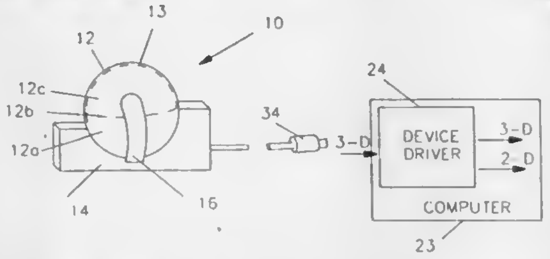
TWO- AND THREE-DIMENSIONAL TRACKBALL WITH ENHANCED MEASUREMENT OPTICS

Edward T. Bullister, 86 Concord St., Newton, Mass. 02139

Continuation-in-part of Ser. No. 337,979, Nov. 14, 1994, Pat. No. 5,854,623. This application Nov. 16, 1995, Ser. No. 558,710

Int. Cl.⁶ G09G *5/08*

U.S. Cl. 345—167 **17 Claims**



1. A device for measuring motion corresponding to coordinate information for input to a computer, comprising:

a) a foundation,
b) a spherical ball, said ball;
  i) having a center,
  ii) being rotatable with respect to said foundation about any axis passing through said center of said ball,
  iii) being coextensive with a sphere which is substantially fixed with respect to said foundation, such that said ball is retained adjacent to said foundation,
  iv) having first and second areas on the surface of said substantially fixed sphere, said first and second areas exposed for manipulation and suitable for grasping between a user's thumb and a user's finger when said thumb and said finger are located on opposite sides of said ball,
c) a sensor, said sensor being:
  i) supported by said foundation,
  ii) capable of detecting rotation with respect to said foundation about at least one of said axes passing through said center of said ball,
d) a retainer, said retainer:
  i) supported by said foundation,
  ii) covering a third area on the surface of said substantially fixed sphere, said third area separating said first area from said second area,
  iii) trapping said ball adjacent to said foundation such that said coextensive sphere is held substantially fixed with respect to said foundation,
  iv) exposing said first and second areas for grasping between said user's thumb and said user's finger;

whereby a user of said device for measuring motion corresponding to coordinate information can grasp exposed areas on opposite sides of said ball and apply opposing forces between said user's finger and said user's thumb, and thereby easily apply simultaneous rolling and twisting motions to said ball.

5,854,624

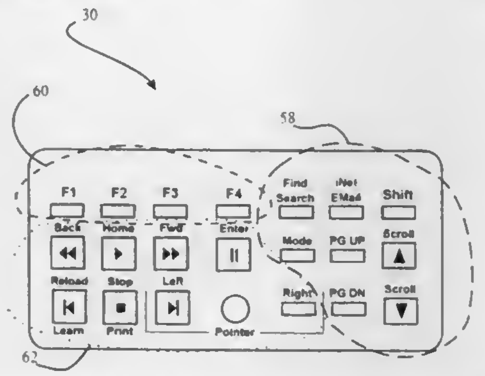
POCKET-SIZED USER INTERFACE FOR INTERNET BROWSER TERMINALS AND THE LIKE

Gerry R. Grant, Costa Mesa, Calif., assignor to Innovative Device Technologies, Inc., Newport Beach, Calif.

Filed Sep. 12, 1996, Ser. No. 713,210

Int. Cl.⁶ G09G *5/00*

U.S. Cl. 345—169 **12 Claims**



1. A user interface for at least one browser terminal, each said terminal providing, users interface to browser software applications, comprising:

a pocket-sized keypad for accepting user input to at least one browser terminal, comprising:
  a pocket-sized housing, further having a face and a plurality of touch-sensitive switches disbursed across said face and arranged in functional groups, said groups comprising a user-programmable group, a control group and one navigating group to accept user input to select said browser functions; and
    said control group comprises a Find/Search switch, an iNet EMail switch, a Shift switch, a Mode switch, a PG UP switch, a Scroll ↑ switch, a PG DN switch and a Scroll ↓ switch; and
    said navigating group comprises a Back switch, a Home switch, a Fwd switch, an Enter switch, a Reload switch, a Stop switch, a Left switch and a Right switch;

a translator for receiving said user input from said keypad and translating said user input into browser software-specific commands for use by at least one browser terminal;
a first communicating means for said keypad to communicate with said translator;
second communicating means for said translator to communicate with at least one browser terminal; and
said keypad further comprises at least one pointer device located on said housing to assist user input to select said browser functions and said keyboard functions.

5,854,625

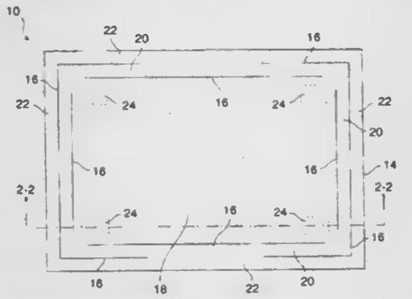
FORCE SENSING TOUCHPAD

Josef C. Frisch, Belmont; Gregory E. Leyh, Brisbane; John C. Platt, Fremont; Timothy P. Allen, Los Gatos; Richard R. Schediwy, Union City, and Federico Faggin, Los Altos Hills, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Filed Nov. 6, 1996, Ser. No. 744,283

Int. Cl.⁶ G09G *5/00*

U.S. Cl. 345—173 **21 Clalms**



1. A force sensing touchpad comprising:

a substantially rigid touch surface, force to be sensed being applied thereto;
a substantially rigid frame member;
a plurality of spring means disposed between said touch surface and said frame member, said spring means mechanically connected to said touch surface and said frame member; and
a plurality of variable capacitors associated with said touchpad, each variable capacitor having a capacitance which is a monotonic function of the distance between selected portions of said touch surface and said frame member, each said variable capacitor having sense outputs.

5,854,626

Patent Not Issued For This Number

5,854,627

TFT LIQUID CRYSTAL DISPLAY DEVICE HAVING A GRAYSCALE VOLTAGE GENERATION CIRCUIT COMPRISING THE LOWEST POWER CONSUMPTION RESISTIVE STRINGS

Hiroshi Kurihara; Shinichi Iwasaki, and Yasuyuki Mishima, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co., Ltd., Mobara, both of Japan

Filed Nov. 9, 1995, Ser. No. 555,412

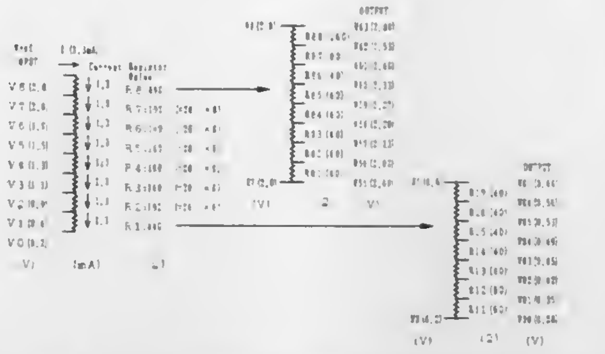
Claims priority, application Japan, Nov. 11, 1994, 6-277351

Int. Cl.⁶ G09G *5/00*

U.S. Cl. 345—211 **11 Claims**

1. A liquid crystal display device comprising:

a liquid crystal display panel on which a plurality of pixels are arranged, each pixel having a thin film transistor and a pixel electrode electrically connected to a source of said thin film transistor;



a drain driver for outputting to a drain of said thin film transistor a voltage selected from a plurality of grayscale voltages;
a power supply circuit for supplying a plurality of reference voltages to said drain driver; and
a gate driver for outputting to a gate of said thin film transistor a voltage that selects said pixel;
wherein said drain driver has a grayscale voltage generation circuit, which divides each of voltage ranges between said reference voltages into a plurality of voltages by a voltage dividing circuit to generate said plurality of grayscale voltages, said voltage dividing circuit comprising resistors connected in series;
wherein resistances between said reference voltages of said voltage driving circuit are set to magnitudes substantially proportional to voltage differences between said reference voltages, at least one of a total resistance of said series connected resistors between one pair of adjacent reference voltages being different from a total resistance of said series connected resistors between another pair of adjacent reference voltages.

5,854,628

WINDOW DISPLAY PROCESSING METHOD AND APPARATUS

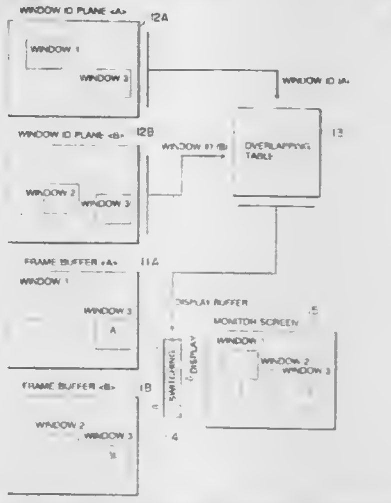
Yukihiro Nakagawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 12, 1995, Ser. No. 527,091

Claims priority, application Japan, Dec. 27, 1994, 6-325757

Int. Cl.⁶ G09G *5/14*

U.S. Cl. 345—340 **10 Claims**



1. A window display processing apparatus for displaying a plurality of windows comprising:

a plurality of frame buffers each for storing image information regarding at least one window to be displayed on a monitor;
a plurality of window ID information storages, each corresponding to one of said plurality of frame buffers, each window ID information storage storing, pixel by pixel, window ID infor-

mation identifying the corresponding at least one window for each pixel in the corresponding frame buffer;

an overlapping table for storing overlapping information representing an overlapping relation among windows as between said plurality of frame buffers, the overlapping information being cross-indexed by the windows in each of said window ID information storages to indicate a window to be displayed when windows overlap as between windows in different frame buffers; and

switching means for selecting, pixel by pixel, a frame buffer from which a pixel is transmitted to the monitor from among said plurality of frame buffers in accordance with the window ID information and the overlapping information.

5,854,629

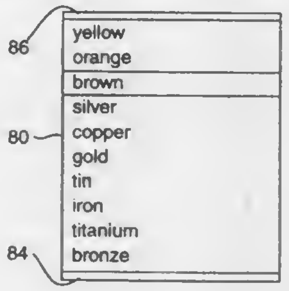
ENHANCED SCROLLING TECHNIQUE FOR CONTEXT MENUS IN GRAPHICAL USER INTERFACES

Richard J. Redpath, Cary, N.C., assignor to International Business Machine Corporation, Armonk, N.Y.

Filed Dec. 31, 1996, Ser. No. 774,560

Int. Cl.^{6} G06F *3/00*

U.S. Cl. 345—341 **13 Claims**



1. Computer readable code embodied on a computer readable-medium for use in a computing environment for providing a scrolling function for a context menu which logically comprises a first number of panes and for which a second number of panes may be displayed at a time via a graphical user interface, and the first number of panes is larger than the second number of panes, comprising:

first subprocesses for displaying a predetermined number of panes in a context menu;

second subprocesses for determining whether the predetermined number of panes is less than a total number of panes logically associated with the context menu;

third subprocesses for displaying a selectable mechanism along a bottom edge of the context menu if it is determined that the total number of panes is greater than the predetermined number of panes, wherein the selectable mechanism is a bar having a width substantially equal to that of the context menu; and

fourth subprocesses for causing the panes displayed in the context menu to logically scroll down one pane upon selection of the mechanism by a user.

5,854,630

PROSPECTIVE VIEW FOR WEB BACKTRACK

Jakob Nielsen, Atherton, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 671,296

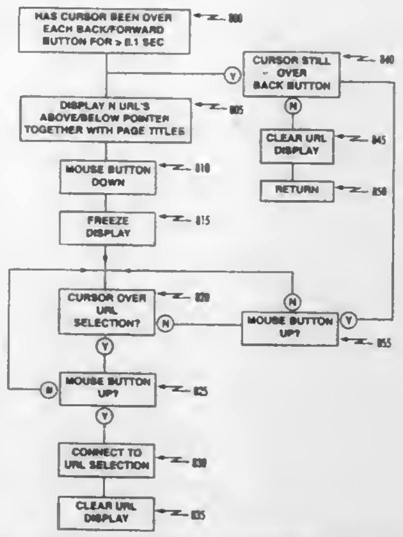
Int. Cl.^{6} G06F *15/00*

U.S. Cl. 345—352 **15 Claims**

1. Apparatus for navigating through information space in a network environment, comprising:

a. a computer having a network access port;

b. browser software running on said computer, said browser software maintaining a list of network addresses to which a user has connected over said network access port and having a user interface implementing back and forward functionality activated by a back button and a forward button, respectively, on a display screen, said browser software displaying said list when a cursor is positioned over said back button or said forward button for a period of time.


HAS CURSOR BEEN OVER EACH BACK/FORWARD BUTTON FOR > 0.1 SEC
800
DISPLAY N URL'S ABOVE/BELOW POINTER TOGETHER WITH PAGE TITLES
805
MOUSE BUTTON DOWN
810
FREEZE DISPLAY
815
CURSOR OVER URL SELECTION?
820
MOUSE BUTTON UP?
825
CONNECT TO URL SELECTION
830
CLEAR URL DISPLAY
835
CURSOR STILL OVER BACK BUTTON
840
CLEAR URL DISPLAY
845
RETURN
850
MOUSE BUTTON UP?
855
Y
N

5,854,631

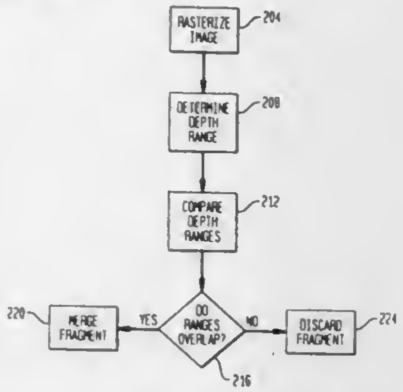
SYSTEM AND METHOD FOR MERGING PIXEL FRAGMENTS BASED ON DEPTH RANGE VALUES

Kurt Barton Akeley, and Carroll Phillip Gossett, both of Mountain View, Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Nov. 22, 1995, Ser. No. 562,283

Int. Cl.^{6} G06T *15/40*

U.S. Cl. 345—419 **25 Claims**



1. A method for merging a new fragment with an existing fragment, comprising the steps of:

determining a depth range for the new fragment;

comparing said depth range for the new fragment with a depth range of the existing fragment to determine whether said depth range for the new fragment overlaps said depth range of the existing fragment; and

merging the new fragment with the existing fragment if said depth range for the new fragment overlaps said depth range of the existing fragment.

5,854,632

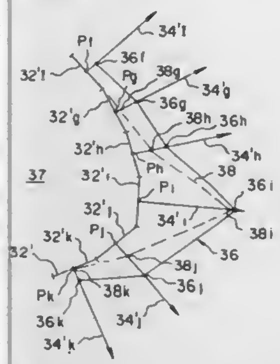
APPARATUS AND METHOD FOR SIMULATING SPECULAR REFLECTION IN A COMPUTER GRAPHICS/IMAGING SYSTEM

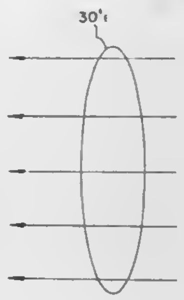
Walter Robert Steiner, Enterprise, Fla., assignor to Real 3D, Orlando, Fla.

Filed Oct. 15, 1996, Ser. No. 731,635

Int. Cl.^{6} G06T *15/50*

U.S. Cl. 395—426 **20 Claims**





1. A specular-reflected illumination color intensity data processing unit for a display processor in a real-time computer image generator, comprising:

means for receiving separate input data signals characterizing (a) a specular coefficient (SC) for a polygon presently being rendered, (b) a shininess exponent (S) specified for said polygon, and (c) an intensity (I_s) of a light source illuminating that polygon;

means for receiving a Gouraud Shading Intensity (GSI) data signal for each of a plurality of pixels to be displayed as defining said polygon; and

means for generating a data signal (SL) setting a specular-reflected component of the present pixel illumination intensity as the product of said light source intensity I_s data signal and said specular coefficient (SC) data signal and a data signal for a shading term proportional to the exponentiation of GSI by S.

5,854,633

METHOD OF AND SYSTEM FOR DYNAMICALLY ADJUSTING COLOR RENDERING

Michael R. Cooper, Boca Raton; Mark Hamzy, Boynton Beach; Matt Rutkowski, Plantation, and Mark Vanderwiele, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1995, Ser. No. 495,139

Int. Cl.^{6} G06T *11/40*

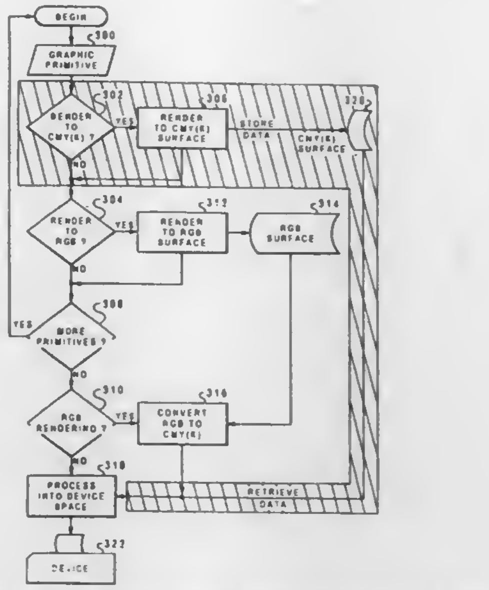
U.S. Cl. 345—431 **21 Claims**

1. In a data processing system having an operating system that provides for a graphical user interface (GUI) displayable in a first color scheme, and further including at least one device driver supporting a second color scheme, a method for providing dynamically adjusted rendering from said first color scheme to said second color scheme, comprising the steps of:

rendering a graphic primitive in said first color scheme to a second color scheme;

storing said rendered graphic primitive in a data store as a new second color scheme surface;

repeating said rendering step and said storing step until a completed rendered surface is achieved; and



processing said completed rendered surface utilizing said at least one device driver.

5,854,634

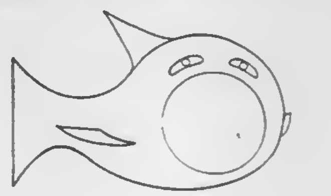
COMPUTER-ASSISTED ANIMATION CONSTRUCTION SYSTEM USING SOURCE POSES WITHIN A POSE TRANSFORMATION SPACE

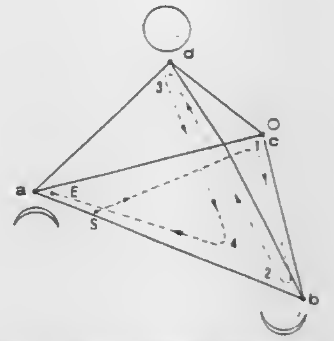
Roman B. Kroitor, Arundel, Canada, assignor to Imax Corporation, Ontario, Canada

Filed Dec. 26, 1995, Ser. No. 578,293

Int. Cl.^{6} G06T *13/00*

U.S. Cl. 345—473 **58 Claims**





44. A process for creating computer animation comprising:

automatically defining a pose transformation space dependent upon a predetermined number of selected source poses for an object, and assigning each of said source poses to a point within said pose transformation space;

detecting a path traversed by a computer input device moved within said pose transformation space;

selecting a plurality of points along said path;

generating, for each said selected point, a corresponding constructed pose, said constructed pose comprised of a composite of said source poses, wherein the contribution of each said source pose is determined by its distance to said selected point.

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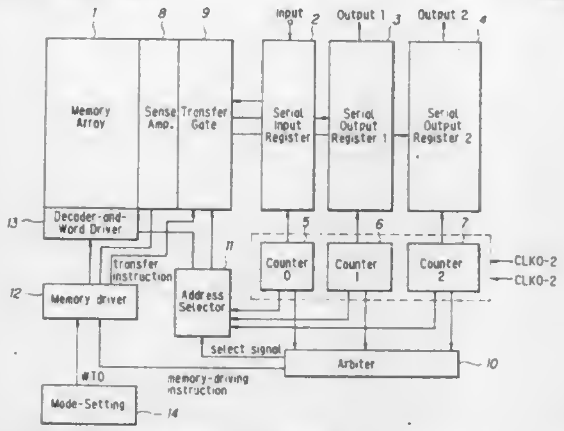
5,854,635
VIDEO STORAGE DEVICE

Masataka Wakamatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 429,437, Apr. 27, 1995, abandoned, which is a continuation of Ser. No. 75,261, Jun. 11, 1993, abandoned. This application Dec. 18, 1996, Ser. No. 768,414
Claims priority, application Japan, Jun. 15, 1992, 4-181815
Int. Cl.⁶ G09G *5/00*
U.S. Cl. 345—507 **4 Claims**



1. A video storage device comprising:

a dynamic memory array for storing a plurality of bits of data;

register means coupled to said dynamic memory array through gate means, said register means comprising input register means and output register means, said input register means having input terminals to which said data are supplied, said output register means having output terminals to which said data are outputted;

arbitration means for conciliating transfer operation between said dynamic memory array and said register means and refreshing operation, wherein after data is transferred from said dynamic memory array to said register means, said input register means and said output register means operate independently from said refreshing operation;

a write address counter for counting successive clock pulses and for specifying addresses in writing data to said memory;

a still image-holding mode-setting means for establishing a still image-holding mode in which data stored in said memory is held; and

wherein said write address counter serves as a refresh counter that specifies addresses in said memory to refresh it in said still image-holding mode.

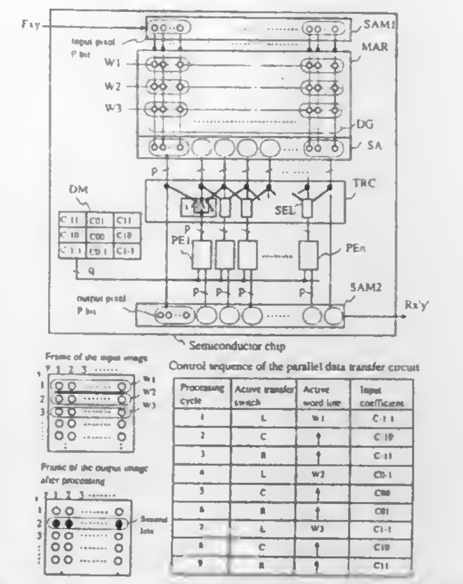
5,854,636
SEMICONDUCTOR IC WITH A PLURALITY OF PROCESSING CIRCUITS WHICH RECEIVE PARALLEL DATA VIA A PARALLEL DATA TRANSFER CIRCUIT

Takao Watanabe, Fuchu; Yoshinobu Nakagome, Hamura; Kazuo Ishikura, Kunitachi; Tetsuya Nakagawa, Koganei, and Atsushi Kiuchi, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 412,968, Mar. 29, 1995, abandoned. This application Sep. 16, 1997, Ser. No. 931,776
Claims priority, application Japan, Apr. 11, 1994, 6-071821
Int. Cl.⁶ G06F *13/00*
U.S. Cl. 345—507 **28 Claims**

1. A semiconductor integrated circuit comprising:

a memory cell array including a plurality of data lines, a plurality of word lines intersecting said plurality of data lines, and a plurality of memory cells disposed at desired intersections between said plurality of data lines and said plurality of word lines;

a parallel data transfer circuit coupled to first group, second group, and third group data lines of said plurality of data lines; and


SAM1
MAR
W1
W2
W3
DG
SA
TRC
SEL
DM
PE1
PEn
SAM2
Semiconductor chip
Frame of the input image
Control sequence of the parallel data transfer circuit
Frame of the output image after processing
Second line

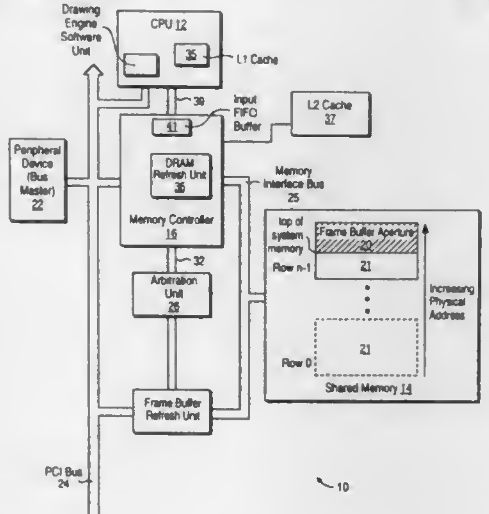
first, second, and third processing circuits coupled to said parallel data transfer circuit respectively,

wherein said parallel data transfer circuit selects one of said first group, second group, and third group data lines of said plurality of data lines, and

wherein the adjoining ones of said first, second, and third processing circuits can be coupled to the same group data lines.

5,854,637
METHOD AND APPARATUS FOR MANAGING ACCESS TO A COMPUTER SYSTEM MEMORY SHARED BY A GRAPHICS CONTROLLER AND A MEMORY CONTROLLER

Jay J. Sturges, Orangevale, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Aug. 17, 1995, Ser. No. 515,672
Int. Cl.⁶ G06F *15/167*
U.S. Cl. 345—512 **17 Claims**



1. A memory control system comprising:

a shared memory divided into a first portion and a second portion;

an element for selectively defining a part of the second portion of the memory as a frame buffer;

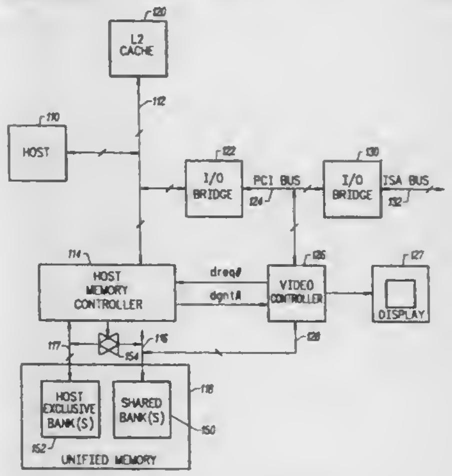
a graphics controller for accessing the second portion of the shared memory;

a memory controller for processing graphics operations; and

an element for intercepting graphics operations and routing the graphics operations through the memory controller if the frame buffer is defined, and routing the graphics operations through the graphics controller if the frame buffer is not defined.

5,854,638
UNIFIED MEMORY ARCHITECTURE WITH PARRALLEL ACCESS BY HOST AND VIDEO CONTROLLER

Hsu-Tien Tung, San Jose, Calif., assignor to OPTI Inc., Milpitas, Calif.
Filed Feb. 2, 1996, Ser. No. 595,852
Int. Cl.⁶ G06F *15/167*
U.S. Cl. 345—512 **18 Claims**



1. Computer system apparatus comprising:

a memory including first and second banks of memory;

a first device having a first data path to said first bank of memory;

a second device having a second data path to said second bank of memory;

a third data path coupling said first device to said second bank of memory, said third data path being enabled when said first device has control of said second bank of memory; and

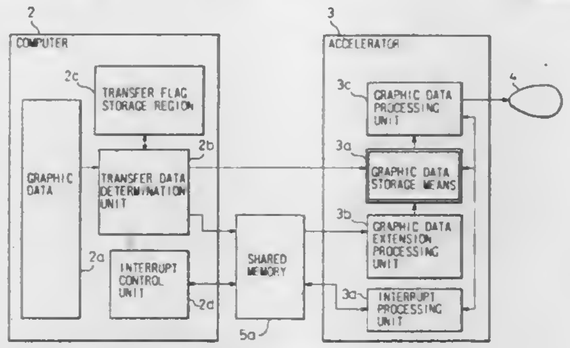
a memory controller,

wherein said memory controller, in response to an access by said first device to a specified address, if said specified address is in said second bank of memory and said memory controller does not have control of said second bank of memory, performs said access to said second bank of memory only after arbitrating with at least said second device for control of said second bank of memory, and if said specified address is in said first bank of memory, performs said access to said first bank of memory without arbitrating with said second device for control of said first bank of memory,

and wherein said memory controller disables said third data path when said memory controller is performing said access to said first bank of memory so that an additional access can be performed to said second bank of memory concurrently with said access to said first bank of memory.

5,854,639
GRAPHIC DISPLAY UNIT AND GRAPHIC DISPLAY METHOD USING THE SAME

Takaaki Miyoshi, Yohohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 368,016, Jan. 3, 1995, abandoned. This application Aug. 19, 1997, Ser. No. 912,826
Claims priority, application Japan, Mar. 3, 1994, 6-033923
Int. Cl.⁶ G06F *15/167*
U.S. Cl. 345—512 **2 Claims**


2
COMPUTER
2c
TRANSFER FLAG STORAGE REGION
2b
GRAPHIC DATA
TRANSFER DATA DETERMINATION UNIT
2a
INTERRUPT CONTROL UNIT
2d
SHARED MEMORY
5a
3
ACCELERATOR
3c
GRAPHIC DATA PROCESSING UNIT
4
3a
GRAPHIC DATA STORAGE MEANS
3b
GRAPHIC DATA EXTENSION PROCESSING UNIT
3a
INTERRUPT PROCESSING UNIT

1. A graphic display unit comprising:

a shared memory storing graphic data;

an accelerator which accesses said shared memory to receive graphic data written into said shared memory, said accelerator provided with a graphic data storage means, operating on a first-in-first-out basis, for storing graphic data and a graphic data extension processing unit that processes graphic data written into said shared memory and writes the processed graphic data into the data graphic storage means, said accelerator being provided with an interrupt processing unit which, upon receiving an interruption command, causes the display of the graphic data written into said graphic data storage means;

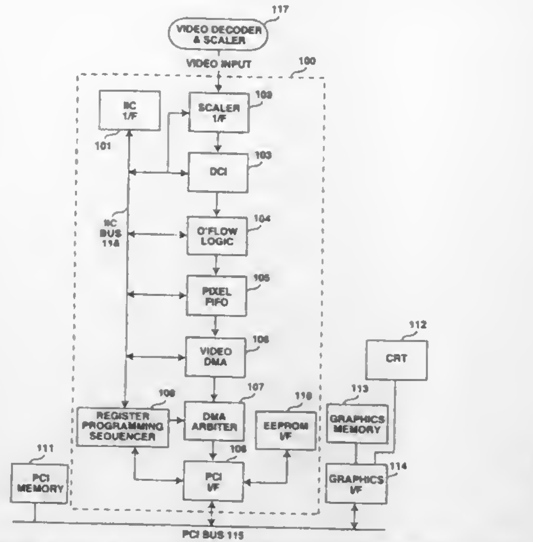
a computer which accesses said shared memory, said computer provided with a transfer flag storage region which stores a transfer flag that indicates whether the graphic data should be written directly into said graphic data storage means or into said shared memory, and a transfer data determination unit which, based on the transfer flag, determines whether the graphic data should be directly written into said graphic data storage means or into said shared memory and based upon the determination writes graphic data that does not need to be extended directly into said graphic data storage means and writes graphic data that does need to be extended into said shared memory, said computer being provided with an interrupt control unit that issues an interruption command for synchronizing the writing of graphic data into said graphic data storage means; and

a display unit which displays the graphic data written into said graphic data storage means.

5,854,640
METHOD AND APPARATUS FOR BYTE ALIGNMENT OF VIDEO DATA IN A MEMORY OF A HOST SYSTEM

Matthew A. North, Beaverton, and Bill A. Munson, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Continuation-in-part of Ser. No. 581,871, Jan. 2, 1996, Pat. No. 5,760,794. This application Apr. 30, 1997, Ser. No. 846,374
Int. Cl.⁶ G09G *5/36*
U.S. Cl. 345—515 **8 Claims**

1. In an apparatus coupling a video camera to a host computer having access to a memory, a method for mapping a line of video data being received from the video camera to the memory, comprising the steps of:



a) mapping a first n bytes of the video line to the memory at an offset m bytes from an n byte aligned memory address, where $0 \leqq m < n$; and

b) mapping each successive n bytes of the video line to the memory at the offset m from a successive n byte aligned memory address.

5,854,641

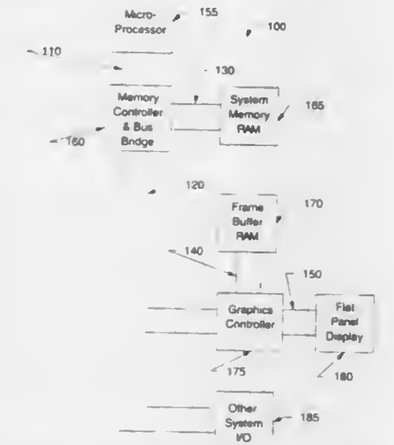
METHOD AND APPARATUS FOR DISPLAY IMAGE ROTATION

Brian D. Howard, Menlo Park, and Robert L. Bailey, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 27, 1996, Ser. No. 721,482

Int. Cl.^{6} G06F *12/06*

U.S. Cl. 345—517 **8 Claims**



1. A computer system including a processor and a display system, the display system having a memory, said display system comprising:

a display means for displaying image information to be arranged in a plurality of horizontal lines of pixel data;

a frame buffer containing the image information, the frame buffer being stored in the memory in a manner that data of each of the plurality of horizontal lines including pixel data for the display means being stored in the memory resulting in the frame buffer occupying a contiguous block in the memory and the frame buffer further being accessible by the processor using a processor address set of row and column addresses;

controller means for establishing new row addresses of a controller address set as the column addresses of the processor address set, and establishing new column addresses of the controller address set as the row addresses of the processor address set;

the controller means being coupled to the display means for transferring the pixel data of the frame buffer to the display means using the new controller address set, the controller means setting each of the new row addresses of the controller address set as the difference between its current value and a maximum value of the new row addresses of the controller address set and providing the pixel data of the frame buffer to the display means while referencing both the new row addresses and the new column addresses of the controller address set in an ascending order.

5,854,642

INK-JET PRINTED PRODUCTS PRODUCING APPARATUS AND INK-JET PRINTED PRODUCTS PRODUCED BY THE APPARATUS

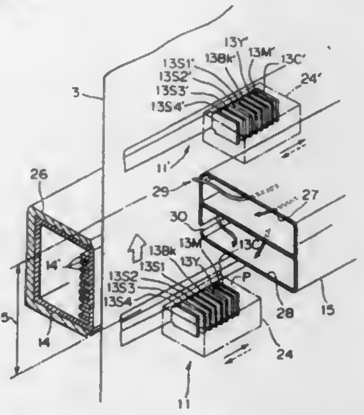
Kazuyoshi Takahashi, Kawasaki, and Shoji Koike, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 294,827, Aug. 29, 1994, abandoned. This application Jul. 16, 1997, Ser. No. 895,265

Claims priority, application Japan, Aug. 31, 1993, 5-215835; Aug. 26, 1994, 6-202277

Int. Cl.^{6} B41J *2/145;2/15;2/01;* **G01D** *11/00*

U.S. Cl. 347—40 **24 Claims**



11. An ink-jet printed product producing apparatus employing a plurality of ink-jet heads ejecting inks of a same tone and different compositions and performing printing by ejecting inks from said plurality of ink-jet heads to a printing medium containing a plurality of kinds of fibers, said apparatus comprising:

transfer means for transferring ejection data to each of said plurality of ink-let heads, correspondingly;

head driving means for driving each of said plurality of ink-jet heads to elect the inks of the same tone and different compositions on a basis of the ejection data; and

control means for varying an ejection ratio of the inks ejected to the printing medium through said plurality of ink-jet heads depending upon a ratio of content of said plurality of fibers, wherein the ejection ratio is a ratio of an ejection amount of respective inks and the content ratio is a ratio of amounts of the plurality of kinds of fibers in the printing medium.

5,854,643

METHOD AND APPARATUS FOR ADJUSTING A GAP BETWEEN A PRINTING HEAD AND A PRINTING MEDIUM

Hitoshi Katsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

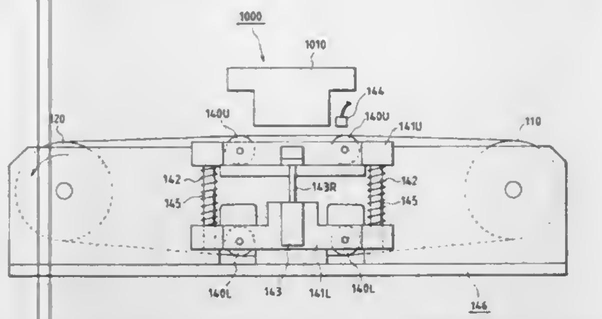
Filed Oct. 4, 1995, Ser. No. 539,220

Claims priority, application Japan, Oct. 7, 1994, 6-244421; Sep. 27, 1995, 7-249967

Int. Cl.^{6} B41J *25/308;13/02;* **B65H** *5/02*

U.S. Cl. 347—8 **10 Claims**

1. A printing apparatus for printing with a printing head on a printing medium conveyed by an endless conveying member, comprising:



two roller members supporting the endless conveying member, the endless conveying member being tensioned around said two roller members;

a first displacing unit arranged between said two roller members and pressing the endless conveying member, the first displacing unit displacing a first portion of the endless conveying member facing the printing head in directions separating from and approaching toward the printing head;

a second displacing unit arranged between said two roller members and pressing the endless conveying member, the second displacing unit displacing a second portion of the endless conveying member opposite to the first portion of the endless conveying member displaced by said first displacing unit in the directions separating from and approaching toward the printing head; and

means for moving said second displacing unit together with said first displacing unit and relative to said two roller members supporting the endless conveying member, while maintaining a distance between said first displacing unit and said second displacing unit substantially constant.

5,854,644

ELECTROMAGNETIC INK-JET PRINTHEAD FOR IMAGE FORMING APPARATUS

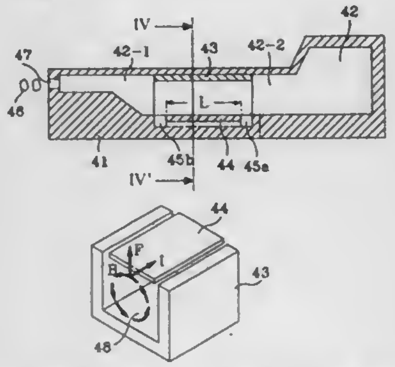
Jong-Moon Eun, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Kyungki, Rep. of Korea

Filed Oct. 15, 1996, Ser. No. 730,051

Claims priority, application Rep. of Korea, Oct. 13, 1995, 35339/1995

Int. Cl.^{6} B41J *2/04*

U.S. Cl. 347—54 **7 Claims**



1. An electromagnetic ink-jet printhead for an image forming apparatus, comprising:

a body having an ejection aperture and a chamber accommodating ink, and communicating said ejection aperture said ejection aperture being oriented to eject ink from said chamber, said body comprising:

a conductive vibration plate disposed within said chamber and made of an electrically conductive material, comprising a first side, a second side and a third side and a fourth side, disposed to contact the ink within said chamber;

a first electrode disposed on said first side of said conductive vibration plate;

a second electrode disposed on said second side, opposite to said first side, of said conductive vibration plate for generating, in cooperation with said first electrode, a current through said conductive vibration plate;

a U-shaped magnet disposed near said third side and said fourth side of said conductive vibration plate imparting a magnetic field orthogonal to a direction of said current; and

said conductive vibration plate vibrating in response to the generating of said current across said vibration plate and through said magnetic field, resulting in increases in pressure in said chamber, causing the ink to be ejected through said ejection aperture.

5,854,645

INKJET ARRAY

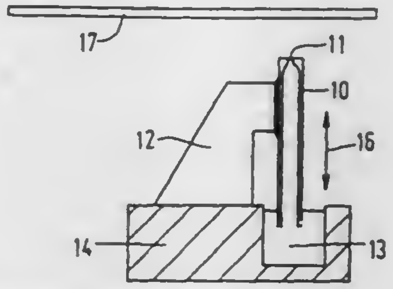
Bontko Witteveen; Frederik Maria Van Beek, both of Venlo, and Peter Wilhelmus Hubertus Engels, Beringe, all of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Jan. 11, 1996, Ser. No. 584,360

Claims priority, application Netherlands, Jul. 19, 1993, 9301259

Int. Cl.^{6} G01D *15/16*

U.S. Cl. 347—68 **20 Claims**



1. An inkjet array for a printer comprising:

a holder;

a plurality of elongated ink chambers, each ink chamber being separated from other ink chambers and each ink chamber having a nozzle;

means for supplying ink to the ink chambers; and

a plurality of piezo-actuators each having a rod shape being rigidly secured to the holder and to one side of a respective elongated ink chamber, an image signal being receivable by at least one of the piezo-actuators whereafter the ink chamber connected to a piezo-actuator receiving the image signal is moved in a direction generally parallel to an axis of the chamber to thereby eject an ink droplet from the nozzle thereof.

5,854,646

DIAPHRAGM PUMP FOR INK SUPPLY

John A. Barinaga, Portland, and Eric L. Gasvoda, Salem, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 429,915, Apr. 27, 1995, and a continuation-in-part of Ser. No. 566,833, Dec. 4, 1995. This application Apr. 30, 1997, Ser. No. 846,785

Int. Cl.^{6} B41J *2/175*

U.S. Cl. 347—85 **12 Claims**

1. An ink supply of the type having a diaphragm pump for providing ink to a printhead, the diaphragm pump comprising:

a diaphragm barrier layer;

a chassis at least partially defining a variable volume chamber, the chassis having a flange disposed proximate an opening in the chassis; and

a fastening device, the fastening device disposed on the chassis with the diaphragm barrier layer disposed between the fastening device and the chassis, the fastening device engaging the flange to compress the diaphragm barrier layer against the

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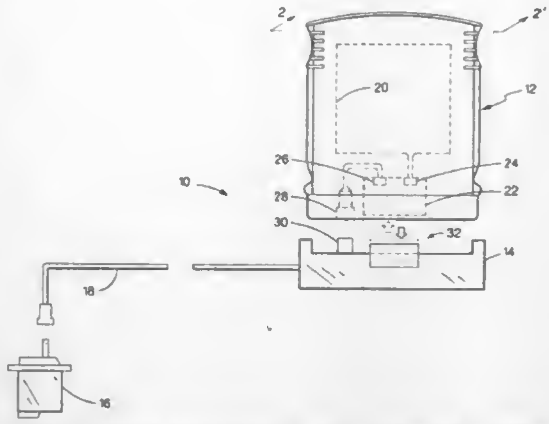


chassis forming a compression seal between the diaphragm barrier layer and the chassis.

5,854,647
TAPE-SHAPED PRINTING MEDIUM AND METHOD OF PRINTING ON TAPE-SHAPED PRINTING MEDIUM BY MEANS OF INK-JET PRINTER

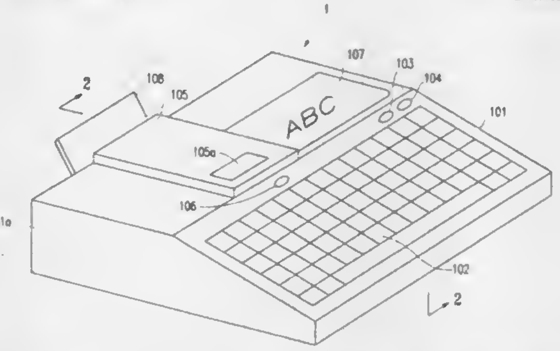
Nobutoshi Ohtsuka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 580,300

Claims priority, application Japan, Dec. 28, 1994, 6-326811; Nov. 24, 1995, 7-306187

Int. Cl.⁶ B41J *2/01;2/175;5/30*

U.S. Cl. 347—101 **52 Claims**



1. A method of printing upon a tape-shaped printing medium by means of an ink-jet printer, said method comprising:

providing a tape-shaped printing medium including an image-receiving surface of a given width and a dummy image-receiving surface formed on at least one side of said image-receiving surface;

transporting said tape-shaped printing medium along a transport path through a printing position for an ink-jet printing head.

conducting solid printing onto said tape-shaped printing medium which passes through said printing position in such a manner that said solid printing overlaps an edge of said image-receiving surface onto said dummy image-receiving surface for solidly printing an edge portion of said image-receiving surface neighboring said dummy image-receiving surface; and

cutting said tape-shaped printing medium along a border between said image-receiving surface and said dummy image-receiving surface, thereby obtaining a printed tape-shaped printing medium solidly printed essentially without gaps at least at said edge portion of said dummy image-receiving surface.

5,854,648
INK JET RECORDING METHOD AND APPARATUS

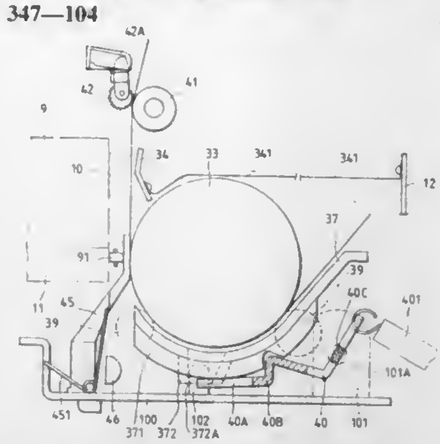
Tadashi Hanahusa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 738,629, Jul. 31, 1991, abandoned. This application Feb. 18, 1997, Ser. No. 801,423

Claims priority, application Japan, Aug. 2, 1990, 2-205851

Int. Cl.⁶ B41J *2/01;11/02*

U.S. Cl. 347—104 **21 Claims**



1. An ink jet recording apparatus for recording onto a recording medium by discharging ink, said apparatus comprising:

conveying means for conveying the recording medium to a position opposed to an ink discharge portion of a recording head for discharging the ink, while being in contact with the recording medium, said conveying means including a conveying roller for conveying the recording medium, a paper presser bar for abutting said conveying roller, and a conveyance passage forming member for forming a conveyance passage for the recording medium;

a platen for defining a record face of the recording medium, said platen being disposed at a position corresponding to the recording area of the recording medium opposed to the recording head; and

means for reducing an electrical charge amount of a recording area of the recording medium, the recording medium being electrically charged, by grounding so as to reduce a disturbance of a recording position of ink discharged from said recording head, said reducing means being electrically conductive and electrically connected to said platen, wherein the potential of said reducing means is held at a constant voltage, and an absolute value of a potential of said reducing means is less than an absolute value of a potential of the electrically charged recording medium which is conveyed by said conveying means.

5,854,649
INK-JET PRINTING CLOTH AND INK-JET PRINTING PROCESS

Shoji Koike, Yokohama; Masahiro Haruta, Tokyo, and Tomoya Yamamoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 165,333, Dec. 13, 1993, abandoned. This application Feb. 13, 1996, Ser. No. 600,648

Claims priority, application Japan, Dec. 17, 1992, 4-354758

Int. Cl.⁶ B41J *2/01*

U.S. Cl. 347—106 **36 Claims**

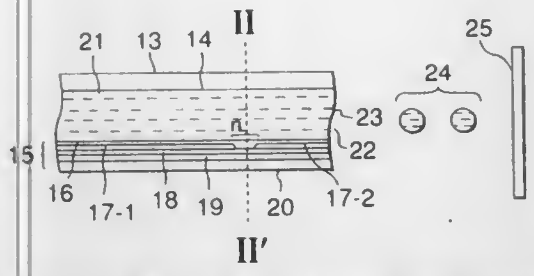
1. An ink-jet printing cloth comprised mainly of polyester fibers, wherein the cloth has a water content of 1 to 101% of the weight of the cloth, and comprises polyester yarn having an average thickness of 20 to 100 deniers comprised of polyester fibers having an average thickness of 1 to 10 deniers.

12. An ink-jet printing process comprising the steps of:

applying an ink to a cloth by an ink-jet system;

subjecting the cloth to a dyeing treatment; and then

washing the cloth thus treated, wherein said cloth is comprised mainly of polyester fibers, has a water content of 1 to 101% of



the weight of the cloth, and comprises polyester yarn having an average thickness of 20 to 100 deniers comprised of polyester fibers having an average thickness of 1 to 10 deniers printing cloth according to claim 1.

5,854,650
FIELD EMISSION PRINT HEAD

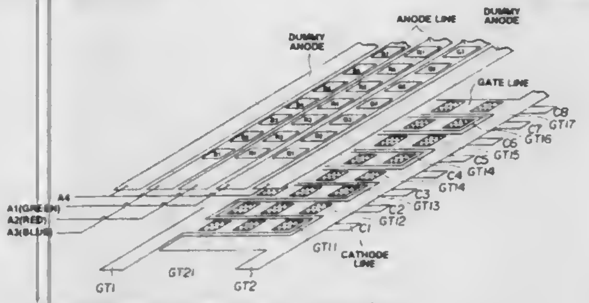
Yoichi Kobori; Yukihiko Shimizu, and Kinya Ueda, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jun. 27, 1996, Ser. No. 671,193

Claims priority, application Japan, Jun. 28, 1995, 7-183309

Int. Cl.⁶ B41J *2/415;2/435*

U.S. Cl. 347—122 **3 Claims**



1. A field emission print head, comprising:

a plurality of cathode lines formed on a cathode substrate:

a plurality of emitters formed on said cathode lines;

a plurality of gate lines formed on said cathode substrate through an insulating layer at positions opposite to said cathode lines. said gate lines being disposed adjacent to leading ends of said plural emitters;

a first gate lead electrode formed coplanar with said plurality of gate lines and connected to odd order gate lines of said plurality of gate lines;

a second gate lead electrode formed coplanar with said plurality of gate lines and connected to even order gate lines of said plurality of gate lines, wherein said even and said odd order gate lines are patterned to be interdigitated with each other, whereby when the even and odd order lines are alternately selected non-selected lines receive a lower potential than selected gate lines to thereby accelerate electrons emitted from the selected gate lines to be converged by the potential of the non-selected gate lines in a first scanning direction;

a plurality of anode lines formed on an anode substrate disposed opposite to said cathode substrate;

a first dummy anode formed on a first side of said plurality of anode lines and a second dummy anode formed on a second side of said plurality of anode lines wherein said first side is opposite to said second side;

fluorescent members covering a portion of an anode line which is opposite to said gate lines, whereby when said first gate lead electrode and said second gate lead electrode are alternately selected and operated, said plurality of anode lines are sequentially selected and operated and potentials of non-selected gate lead electrodes and non-selected anode lines and said dummy anode lines are at a low level to thereby permit electrons emitted from said plurality of emitters to be converged toward selected ones of said anode by said low level potential of said non-selected anodes and said dummy electrodes in a second scanning direction.

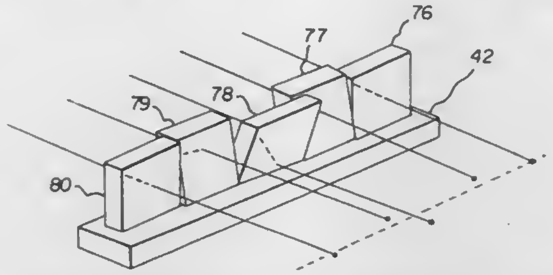
5,854,651
OPTICALLY CORRECTING DEVIATIONS FROM STRAIGHTNESS OF LASER EMITTER ARRAYS

David Kessler, and Douglass Lane Blanding, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1996, Ser. No. 659,469

Int. Cl.⁶ G02B *26/08*

U.S. Cl. 347—241 **9 Claims**



1. An optical apparatus for correcting deviations from straightness of an array of laser emitters, said apparatus comprising:

an array of laser emitters in generally aligned positions along an array direction, the positions of the emitters deviating from a straight, array direction line in a cross-array direction perpendicular to the array direction, each laser emitter producing a beam of light in a direction normal to the array and the cross-array directions such that the light beams travel along individual light beam paths;

adjustable corrector means in the light beam paths for aligning the light beam paths in a cross-array direction, thereby to correct for any deviation of the laser emitters from the straight, array direction line of the laser emitters; and

wherein the corrector means includes an array of lenslets, each lenslet of the array being associated with a respective one of the beams and being movable in the cross-array direction in the path of the associated beam so as to displace the associated beam by an amount to align the beam paths in a cross-array direction, thereby to correct for any deviation of the laser emitters from the straight, array direction line of the laser emitters.

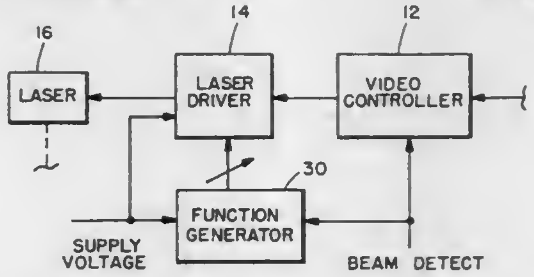
5,854,652
LASER PRINTER EMPLOYING MODULATED LASER PROVIDING A UNIFORM GRAY SCALE ACROSS A MEDIA SHEET

Eric L. Andersen, Meridian, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 8, 1996, Ser. No. 614,794

Int. Cl.⁶ B41J *2/47*

U.S. Cl. 347—246 **11 Claims**



1. Electrophotographic apparatus comprising:

photoreceptor;

laser means for producing an optical beam;

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modulation means coupled to said laser means and responsive to binary data values, for applying modulation signals to said laser means to cause an image-wise modulation of said optical beam;

scan means, including focusing optics, for repetitively scanning said optical beam through said focusing optics and onto said photoreceptor to induce an image-wise charge state thereon, said scan means and focusing optics causing, for one of said binary values, a variation of charge state corresponding to said one of said charge states, across said photoreceptor; and

function means for applying fixed correction signals to said modulation means during each scan to alter said optical beam in a manner to substantially prevent said variation of charge state induced by said scan means and focusing optics, said fixed correction signals being unchangeable from scan to scan.

5,854,653

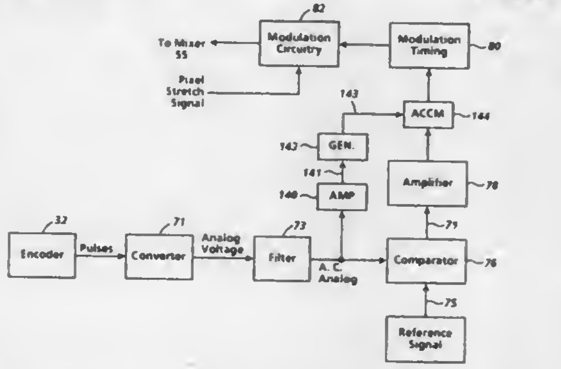
MOTION QUALITY ENHANCEMENT WITH WHITE NOISE

John F. Derrick, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1994, Ser. No. 323,977

Int. Cl.⁶ B41J *2/385;* **B41T** *2/47;* **G01D** *15/14;* **G02F** *1/11*

U.S. Cl. 347—255 **20 Claims**



1. In a printing machine having a moving photosensitive surface, a raster scanning system for scanning a beam across the photosensitive surface, a modulator for modifying the scanning beam to project a halftone image onto the photosensitive surface, a sensor mounted adjacent to the photosensitive surface providing signals in relation to the speed of the photosensitive surface, a comparator responsive to said signals for determining a change of speed of the photosensitive surface in relation to a reference speed, a converter connected to the comparator and responsive to a change in speed to provide a signal representing an image quality factor, and means responsive to the signal representing the image quality factor for altering the modulation of the beam of the scanning system to adjust the projected image, the improvement comprising a random signal generator responsive to said signals in relation to the speed of the photosensitive surface for generating a random frequency signal, the random frequency signal altering the modulation of the beam of the scanning system to nullify banding errors on the projected image.

5,854,654

SYSTEM AND METHOD FOR HIGH FREQUENCY TRANSMISSION OF TELEVISION SHOTS

Laurent Zwahlen; Milva Zwahlen, both of Rue des Epancheurs 10, CH-2012 Auvernier, and Rudolf Schaffer, Cernil-Antoine 9, CH-2306 La Chaux-de-Fonds, all of Switzerland

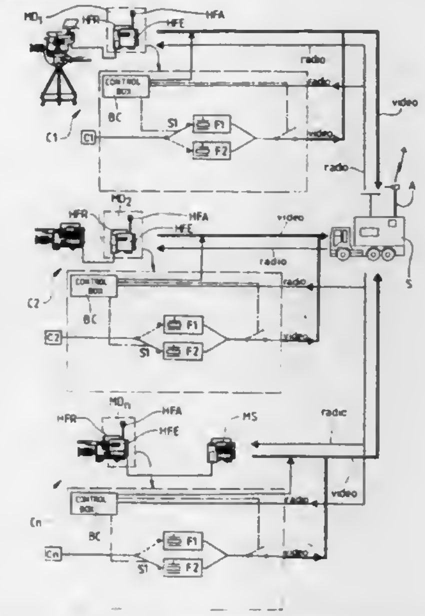
PCT No. PCT/EP95/01555, § 371 Date Oct. 23, 1996, § 102(e) Date Oct. 23, 1996, PCT Pub. No. WO95/29556, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 25, 1995, Ser. No. 722,225

Claims priority, application France, Apr. 25, 1994, 94 04953

Int. Cl.⁶ H04N *7/18*

U.S. Cl. 348—159 **13 Claims**



1. High frequency television image transmission system comprising:

at least three shooting units each comprising a camera and a module comprising a radio wave receiver and a high frequency transmitter (HFE) able to transmit via radio waves a shot signal provided by said camera to a central production unit capable of communicating with a television network for broadcasting live and/or recording at least one of said signals,

two hertzian video channels allowing respectively the transmission on a first and a second predetermined carrier frequency of a video signal representing a determined number of images per second, said channels linking said shooting units to said central production unit,

said central production unit comprising a control unit comprising means for establishing a radio wave link with said receivers of said shooting units, the system being characterized in that

said linking means are arranged so that they can transmit a control radio signal to said shooting units for remote controlling the operation of said shooting units, their transmitters and their receivers and for controlling the assignment of said channels to said shooting units so that one of said channels transmits, on one of said carrier frequencies, a first video signal formed by the shot signal coming from a selected shooting unit, while the other of said channels transmits, on the other of said carrier frequencies, a second video signal formed by temporal multiplexing of the shot signals coming from the other shooting units, and in that said control unit transmits said control radio signal to said shooting units for each image so as to validate, image by image, the operation of said module (Md_i) and the turning on of said transmitter (HFE).

5,854,655

DEFECTIVE PIXEL DETECTING CIRCUIT OF A SOLID STATE IMAGE PICK-UP DEVICE CAPABLE OF DETECTING DEFECTIVE PIXELS WITH LOW POWER CONSUMPTION AND HIGH PRECISION, AND IMAGE PICK-UP DEVICE HAVING SUCH DETECTING CIRCUIT

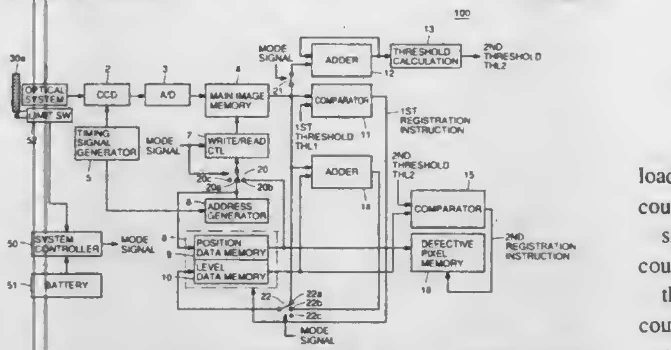
Toshiyuki Watanabe, Ikoma; Nobuhide Dotsubo, Daito, and Hiroshi Akizuki, Takatsuki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 12, 1996, Ser. No. 693,684

Claims priority, application Japan, Aug. 29, 1995, 7-220886; Aug. 29, 1995, 7-220888

Int. Cl.⁶ H04N *5/335*

U.S. Cl. 348—247 **7 Claims**



1. A defective pixel detecting circuit for a solid state image pick-up device, comprising:

light intercepting means for intercepting incidence of light to the solid state image pick-up device;

image memory for storing image pick-up signal of each pixel from said solid state image pick-up device with the light intercepted, as image data; and

defective pixel specifying means for specifying a defective pixel in said solid state image pick-up device, based on the image data in said image memory; wherein

said defective pixel specifying means includes

operating means for reading image data of one image plane obtained with the light intercepted from said image memory, and for comparing the data with a first threshold value pixel by pixel for extracting a possibly defective pixel, and

accumulated value calculating means for calculating accumulated value of the image data of each said possibly defective pixel, by reading a prescribed number of times the image pick-up signal from said solid state image pick-up device with the light being intercepted; and wherein

said operating means specifies, by comparing said accumulated value of each said possibly defective pixel with a second threshold value, that possibly defective pixel of which accumulated value exceeds said second threshold value as a defective pixel.

5,854,656

NON-UNIFORM CLOCKING SYSTEM FOR AREA IMAGING DEVICE

Thomas Lynn Noggle, Oakland, Calif., assignor to Logitech, Inc., Fremont, Calif.

Filed Nov. 15, 1995, Ser. No. 558,096

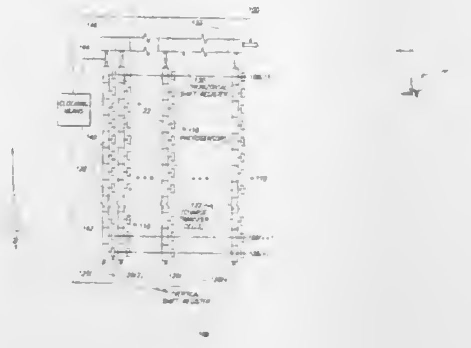
Int. Cl.⁶ H04N *5/335*

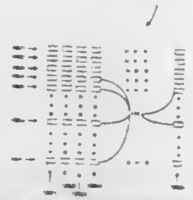
U.S. Cl. 348—311 **13 Claims**

1. A method for transferring pixel data that includes image and non-image pixels to a serial output of a shift register, wherein the pixel data is arrayed as a plurality of rows of a fixed number of pixels and each pixel is associated with a row and column, the method comprising the steps of:

identifying the row and column of each image pixel;

defining a recovery region as including non-image pixels originating in rows and columns proximate to an image pixel;





loading the rows of pixels sequentially into the shift register;

coupling the non-image pixels of the recovery region out of the shift register at a first rate;

coupling image pixels out of the shift register at a second rate that is slower than the first rate; and

coupling the non-image pixels proximate to the image pixels out of the shift register at a third rate to reduce image distortion.

5,854,657

DEVICE FOR PREVENTING ENTRANCE OF BACKLIGHT INTO OPTICAL VIEW FINDER

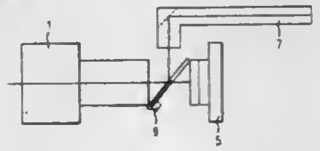
Kee Tae Um, Seoul, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

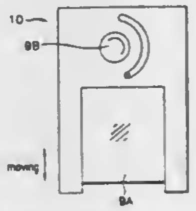
Filed Dec. 27, 1995, Ser. No. 578,086

Claims priority, application Rep. of Korea, Dec. 27, 1994, 37193/1994

Int. Cl.⁶ H04N *5/225*

U.S. Cl. 348—340 **3 Claims**





1. A camera device for preventing entrance of backlight into an optical view finder comprising;

a zoom lens part for adjusting a size and angle of an image signal of an objective in planning a picture frame;

a mirror shutter part movable in a rectilinear motion for sending the image signal processed in, and received from the zoom lens part to a first optical axis and a second optical axis;

said mirror shutter part includes a mirror attached thereto instead of a blade of a galvanometer and a mirror controlling part for controlling periodic opening and closing movement of the mirror;

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an image forming CCD part, having no electronic shutter function, disposed at an image forming plane of the image signal of the zoom lens part on the first optical axis for converting the image formed on the first optical axis into an electric signal and for applying the electric signal to a display or a recording medium; and,

an optical view finder part disposed on the second optical axis for adjusting a magnification of the image signal on the second optical axis by means of an internal optical system for being observed by an observer's eye;

wherein an operation period of the mirror shutter part is set to be 1/60 seconds, during a first duration of the 1/60 seconds, the mirror is opened for delivering 100% of the image signal from the zoom lens part to the image forming CCD part, and during a second duration of the 1/60 seconds, the mirror is closed to deflect 100% of the image signal from the zoom lens part to the optical view finder part.

5,854,658

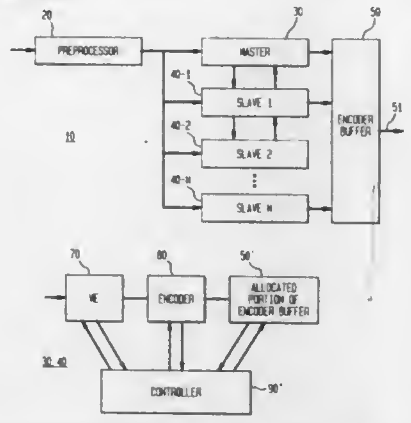
STATISTICAL MULTIPLEXING SYSTEM WHICH ENCODES A SEQUENCE OF VIDEO IMAGES USING A PLURALITY OF VIDEO ENCODERS

K. Metin Uz, Mountain View, Calif., and Aaron Wells, New Rochelle, N.Y., assignors to C-Cube Microsystems Inc., Milpitas, Calif.

Continuation of Ser. No. 578,811, Dec. 26, 1995, Pat. No. 5,686,963. This application Jul. 18, 1997, Ser. No. 896,482

Int. Cl.⁶ H04N *7/12;11/02;11/04*

U.S. Cl. 348—419 **3 Claims**



1. In a statistical multiplexing system comprising a plurality of video encoders and a central controller in communication with the encoders, a method for allocating the bandwidth of a shared channel among said encoders comprising the steps of

(a) at each encoder determining upper and lower rate limits for the encoder depending on the fullness of an output buffer of the encoder,

(b) computing at said central controller, a desired rate allocation for each of said encoders independent of the limits determined in step (a),

(c) for each encoder, clamp the desired rate allocation determined in step (b) to be within the limits determined in step (a)

(d) rescale the bit rates allocated in step (b) so that a bundle rate of the channel is not exceeded while excluding from the rescale one or more of the clamped encoders, and

(e) encoding a sequence of video images at said encoders in accordance with the rates determined in step (d).

5,854,659

APPARATUS AND METHOD FOR GENERATING A PROCESSED VIDEO PICTURE BY INTERPOLATING INTENSITIES OF AN ORIGINAL VIDEO PICTURE

Christhard Deter; Dieter Hubrich; Olaf Kotowski, all of Gera, and Dirk Loeffer, Brahmenau, all of Germany, assignors to LDT GmbH & Co. Laser-Display-Technologie KG, Gera, Germany

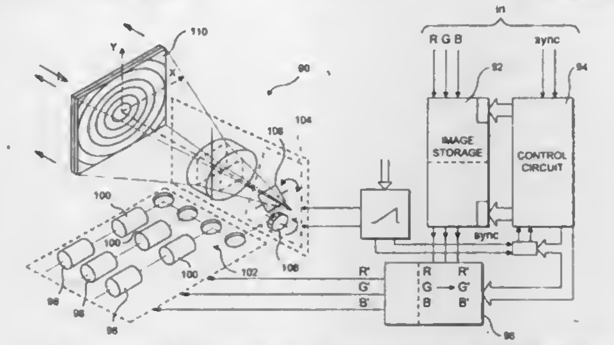
PCT No. PCT/EP96/01760, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO96/36175, PCT Pub. Date Nov. 14, 1996

PCT Filed Apr. 26, 1996, Ser. No. 765,531

Claims priority, application Germany, May 11, 1995, 195 17 357.0

Int. Cl.⁶ H04N *7/01*

U.S. Cl. 348—458 **17 Claims**



1. In a process for processing a first video picture with image points in m_1 lines, whose image points in the l_1-th line have an intensity $I_1(t, l_1)$ depending on a parameter t, in particular depending on time, for generating a second video picture with m_2 lines, the improvement comprising the steps of:

interpolating the respective intensity $I_2(t, l_2)$ of an image point in the l_2-th line of the second video picture from the intensities of the image points of the first video picture $I_1(t, l_1)$; and

obtaining I_2 according to the following equation:

$$I_2(t,l_2)=Max(J(t,l_2)+\Delta;0),$$

where the values J, with respect to the lines, represent discretized values of a signal waveform given by the sampling theorem and in which an offset Δ is provided for partial compensation of negative intensities of the discretized signal waveform J so that the interpolation with respect to the lines is effected with A as a freely selectable amplitude of positive value according to the following equation:

$$J(t,l_2)=\sum_{l_1} A\cdot\frac{\sin\left(\pi\cdot\left\{\frac{m_1}{m_2}\,l_2-l_1\right\}\right)}{\pi\cdot\left(\frac{m_1}{m_2}\,l_2-l_1\right)}\cdot I_1(t,l_1)$$

5,854,660

METHOD AND APPARATUS FOR DECODING AN ANALOG EXTENDED VIDEO SIGNAL HAVING SIGNALLING INFORMATION INCLUDED THEREIN FOR CONTROLLING THE DECODING OPERATIONS

Johannes Y. Tichelaar, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

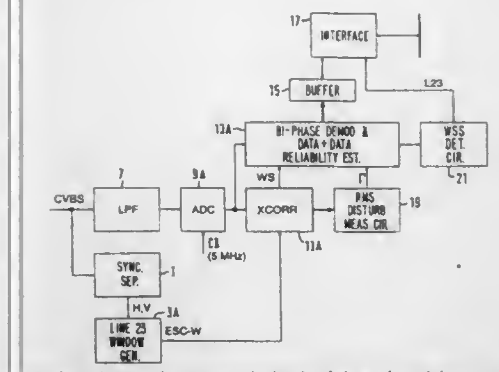
Filed Oct. 23, 1995, Ser. No. 553,811

Claims priority, application European Pat. Off., Oct. 28, 1994, 94203156

Int. Cl.⁶ H04N *7/12*

U.S. Cl. 348—466 **11 Claims**

1. A method of decoding an analog extended television signal having binary signalling information to control decoding operations, the method comprising the steps:



converting the analog extended television signal into a sequence of multi-bit samples;

processing the sequence of multi-bit samples to obtain a word sync signal indicating signalling synchronization information; and

code demodulating the sequence of multi-bit samples in response to the word sync signal to obtain demodulated signalling data, wherein the processing step includes the further step:

obtaining a disturbance measurement signal from the sequence of multi-bit samples, and wherein said step of code demodulating the sequence of multi-bit samples is in dependence upon the disturbance measurement signal.

5,854,661

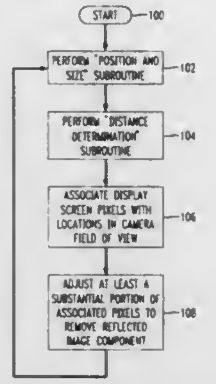
SYSTEM AND METHOD FOR SUBTRACTING REFLECTION IMAGES FROM A DISPLAY SCREEN

Gregory Peter Kochanski, Dunellen, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 30, 1997, Ser. No. 940,221

Int. Cl.⁶ H04N *5/57*

U.S. Cl. 348—602 **8 Claims**


START
100
PERFORM "POSITION AND SIZE" SUBROUTINE
102
PERFORM "DISTANCE DETERMINATION" SUBROUTINE
104
ASSOCIATE DISPLAY SCREEN PIXELS WITH LOCATIONS IN CAMERA FIELD OF VIEW
106
ADJUST AT LEAST A SUBSTANTIAL PORTION OF ASSOCIATED PIXELS TO REMOVE REFLECTED IMAGE COMPONENT
108

1. A system for use in conjunction with a video display device, the video display device having image control means connected to a display screen for displaying an image of a predetermined first brightness value, for subtracting, from the displayed image, at least one reflection image of a second brightness value caused by light generated by at least one light source, the at least one reflection image being visible to a user of the video display device from a viewing position, the system comprising:

image acquisition means, positioned in proximity to the video display device at a predetermined distance and at predetermined coordinates with respect to the display screen and oriented to point substantially perpendicularly to the display screen and toward the user, operable for determining a position of at least one bodily feature of the user and positions of the at least one light source relative to said image acquisition means; and

control means, connected to said image acquisition means and to the image control means, operable for:

determining the position and area of the at least one reflection image, caused by said at least one light source, on the display screen as seen from the user's viewing position, from said predetermined distance and coordinates of said image acquisition means and said positions of at least one bodily feature of the user and of the at least one light source;

determining, in conjunction with said image acquisition means, the second brightness value of the at least one reflection image;

determining a difference between the predetermined first brightness value of the display image and the second brightness value of the at least one reflected image; and

causing the image control means to lower the first brightness value in said area of the at least one reflection image by a function of said difference, thereby eliminating at least a portion of said at least one reflection image from the display screen.

5,854,662

DRIVER FOR PLANE FLUORESCENT PANEL AND TELEVISION RECEIVER HAVING LIQUID CRYSTAL DISPLAY WITH BACKLIGHT OF THE PLANE FLUORESCENT PANEL

Masami Yuyama; Noriyasu Murata, and Yoshimata Yasui, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

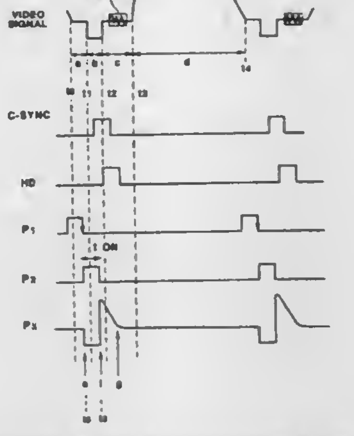
Division of Ser. No. 459,183, Jun. 2, 1995, abandoned, which is a division of Ser. No. 66,547, May 24, 1993, abandoned.

This application Aug. 12, 1996, Ser. No. 696,001

Claims priority, application Japan, Jun. 1, 1992, 4-140497; Jun. 16, 1992, 4-183239; Oct. 9, 1992, 4-271314; Oct. 14, 1992, 4-276007; Oct. 14, 1992, 4-276008; Dec. 2, 1992, 4-322853

Int. Cl.⁶ H04N *5/67*

U.S. Cl. 348—790 **5 Claims**



1. A liquid crystal television receiver with a plane fluorescent panel disposed on the side of the back of a liquid crystal display unit, comprising:

the plane fluorescent panel disposed close to the side of the back of a liquid crystal display unit;

a driving device for the fluorescent panel. said driving device comprising:

a driver for driving the fluorescent panel intermittently in accordance with drive pulses of a drive pulse signal; and

a control circuit coupled to said driver for providing said drive pulse signal to said driver, said control circuit including a timing controller which generates a first timing pulse to cause a first edge of each drive pulse of the drive pulse signal and which is a rise or fall edge of the drive pulse signal to be within a front porch of a horizontal blanking period of a video signal so as to turn on said fluorescent panel at a timing within the front porch of the horizontal blanking period, and generates a second timing pulse to cause a second edge of that drive pulse which is a fall or rise edge of that drive pulse to be within the duration of a horizontal sync pulse of the horizontal blanking period, thereby positively turning off said fluorescent panel within the duration of the horizontal sync pulse of the horizontal

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blanking period so that said fluorescent panel is driven to be illuminated only during the duration of the horizontal sync pulse of the horizontal blanking period.

5,854,663
LCD DEVICE AND METHOD OF FORMING THE SAME IN WHICH A BLACK MATRIX IS FORMED ON THE ORIENTATION LAYER AND COVERS THE ACTIVE SEMICONDUCTOR LAYER OF A TFT

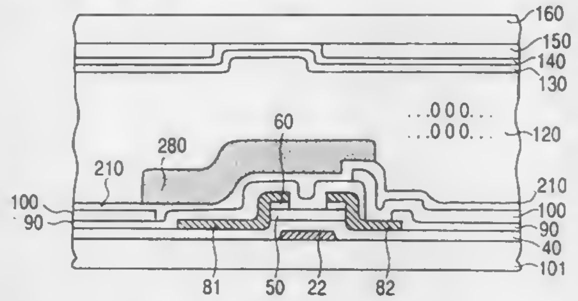
Young-Jin Oh, Seoul; Jeong-Hyun Kim, Kyeongki-do, and Kyoung-Nam Lim, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 3, 1996, Ser. No. 675,316

Claims priority, application Rep. of Korea, Mar. 13, 1996, 96-6617

Int. Cl.^{6} G02F *1/136;1/1335;1/1333;1/1337*

U.S. Cl. 349—42 **24 Claims**



1. A liquid crystal display device having a plurality of pixel electrodes for transmitting light, the device comprising:

a first panel including an activation portion for selectively activating the plurality of pixel electrodes, a first orientation layer formed on the activation portion, and a black matrix formed on the first orientation layer, the activation portion including at least one semiconductor layer, the black matrix completely covering the at least one semiconductor layer;

a second panel including a second orientation layer; and

a liquid crystal formed between the first and second panels.

5,854,664
LIQUID CRYSTAL DISPLAY PANEL AND METHOD AND DEVICE FOR MANUFACTURING THE SAME

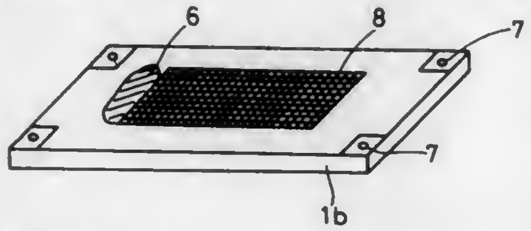
Kazuo Inoue; Tsuyoshi Uemura, and Junji Nakajima, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1995, Ser. No. 533,149

Claims priority, application Japan, Sep. 26, 1994, 6-229316

Int. Cl.^{6} G02F *1/1339;1/1341;1/137*

U.S. Cl. 349—92 **14 Claims**



1. A method of manufacturing a liquid crystal display panel comprising the steps of:

dropping liquid crystals and resin or a mixed material of liquid crystals and resin on at least one of a first substrate and a second substrate in an amount greater than an amount needed to cover a display area for the display panel when the substrates are sealed;

adhering said first substrate and said second substrate to each other;

removing excess liquid crystals out of a display area; and

carrying out a phase-separation of said liquid crystals and said resin by irradiating light while pressure is added to at least one of said first substrate and said second substrate,

wherein after the phase-separation of the liquid crystals and the resin is carried out, the first and second substrates are cut along a peripheral section of a display area and the cut surface or a section of said cut surface of the first substrate and the second substrate is then sealed.

5,854,665
LIQUID CRYSTAL DEVICE WITH OPTICAL MEMBER HAVING A PLANAR EXTENSION IN PARALLEL WITH THE SUBSTRATES AND NON-UNIFORM OPTICAL ANISOTROPY ALONG THE PLANAR EXTENSION

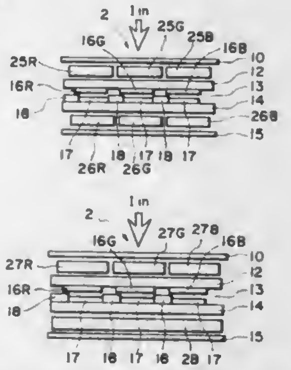
Jun Iba, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 499,296

Claims priority, application Japan, Jul. 6, 1994, 6-179416; Apr. 21, 1995, 7-097261

Int. Cl.^{6} G02F *1/1335;1/13*

U.S. Cl. 349—119 **20 Claims**



1. A liquid crystal device, comprising a pair of substrates and a liquid crystal disposed between the substrates, said liquid crystal device further comprising an optical member having a planar extension parallel to the substrates; wherein said optical member has a distribution of optical anisotropy which varies from a center to a periphery in the planar extension, such that lines each joining points of equal optical anisotropy do not intersect each other in the planar extension.

5,854,666
LIQUID CRYSTAL DISPLAY DEVICE HAVING PARTICULAR TWIST ANGLE, Δ_n, $\Delta\epsilon$, AND THRESHOLD VOLTAGE

Eriko Fujimaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 26, 1997, Ser. No. 979,265

Claims priority, application Japan, Nov. 28, 1996, 8-317598

Int. Cl.^{6} C09K *19/02;* **G02F** *1/1335*

U.S. Cl. 349—180 **6 Claims**

1. A TN mode, normally-white format liquid crystal display device, comprising:

a base panel having a plurality of switch elements and pixel electrodes connected thereto, arranged in matrix-form and covered by a first orientation film;

a back panel having a plurality of color filters corresponding to said pixel electrodes, and covered by a second orientation film;

a liquid crystal layer between said base panel and said back panel;

a first polarizing plate provided on an outside of said base panel; and

a second polarizing plate provided on an outside of said back panel;

wherein

a twist angle of the liquid crystal layer is at least 78° and at most 90°, a product $\Delta_n d$ between a refractive index anisotropy Δ_n and a thickness d of said liquid crystal layer is at least 0.3 μm and at most 0.4 μm, a dielectric constant anisotropy Δ_ϵ of the liquid crystal layer is at least 6.2, and a threshold voltage of the liquid crystal display device is at most 1.2 V.

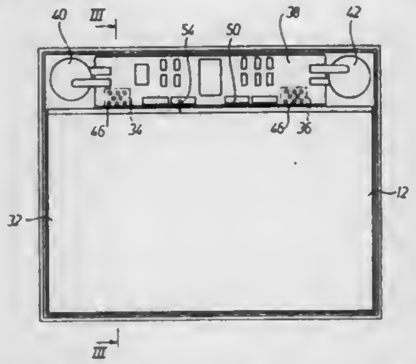
5,854,667
ELECTROOPTICAL FILTER CARTRIDGE AND A METHOD FOR MANUFACTURING THE SAME

Emil Ackermann, Wattwil, Switzerland, assignor to Oprel AG, Wattwil, Switzerland

Filed Apr. 4, 1997, Ser. No. 832,863

Int. Cl.^{6} G02F *1/13*

U.S. Cl. 349—187 **15 Claims**



9. A method for manufacturing an electrooptical filter cartridge, characterised by the steps of:

forming an open, flat cavity comprising a frame (**12**) and a bottom wall (**10**),

filling the cavity completely with an optical, transmissive resin (**44**, **52**, **56**, **62**) and an active device (**14**), so that the latter is completely surrounded by the resin (**44**, **52**, **56**, **62**), said active device (**14**) comprising as components an LC panel (**30**, **32**) positioned in parallel with the bottom wall (**10**) for controlling light transmission through the filter cartridge, sensor means (**34**, **36**) for detecting incident light on the filter cartridge, a circuit means (**38**) for controlling the LC panel (**30**, **32**) in response to an output from the sensor means (**34**, **36**), and a power supply means (**40**, **42**) for operating the active device (**14**),

closing the cavity by sealingly connecting a top wall (**16**) to the frame (**12**), the LC panel (**30**, **32**) being positioned between light-transmissive portions (**24**, **28**) of the bottom and top walls (**10**, **16**), and

curing said resin (**44**, **52**, **56**, **62**) for fixing the components (**30**–**42**) of the active device (**14**) in the cavity.

5,854,668
OPHTHALMOSCOPIC CAMERA ILLUMINATION APPARATUS

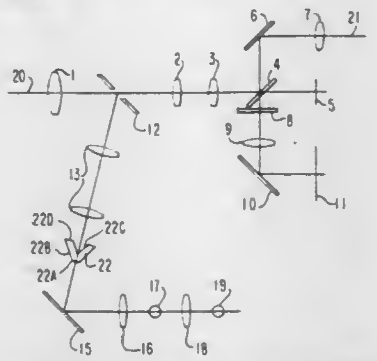
Masanobu Kaneko, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 18, 1997, Ser. No. 896,361

Claims priority, application Japan, Feb. 6, 1997, 9-038384

Int. Cl.^{6} A61B *3/14*

U.S. Cl. 351—206 **11 Claims**



1. An ophthalmoscopic illumination apparatus which illuminates a fundus of a patient's eye for an ophthalmoscopic camera for photographing the fundus through an objective lens, comprising:

a light source for supplying illumination light;

a condenser optical system for gathering said illumination light from said light source to form a light source image; and

an annular flux forming means comprising:

an entering end positioned in the vicinity of a light source image forming position;

an annular emitting end;

an outer reflective surface formed between an outer periphery of said emitting end and the outer periphery of said entering end;

an inner reflective surface formed inside said outer reflective surface so as to be connected to the inner periphery of said emitting end, so that the illumination light entering said entering end is reflected at said outer reflective surface and said inner reflective surface, and guided to said emitting end to go out as an annular light from said emitting end; and wherein

said annular light emerging from said emitting end of said annular flux forming means passes through said objective lens to form an annular illumination area in the vicinity of a pupil of the eye of a patient.

5,854,669
SERIES OF LENSES

Helmut Altheimer; Norbert Awrath, both of Munich; Rudolf Barth, Vierkirchen; Peter Baumbach, Munich; Jochen Brosig, Gruenwald; Gregor Esser, Haar; Monika Fuess, Munich; Guenther Guilino, Munich; Walter Haimerl, Munich; Christine Meixner, Munich; Herbert Pfeiffer, Munich, and Manfred Rohrbach, Hebertshausen, all of Germany, assignors to Optische Werke G. Rodenstock, Munich, Germany

PCT No. PCT/DE95/00438, § 371 Date Mar. 21, 1996, § 102(e) Date Mar. 21, 1996, PCT Pub. No. WO95/27229, PCT Pub. Date Oct. 12, 1995

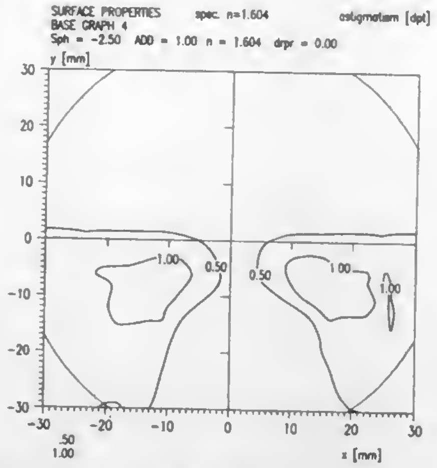
PCT Filed Mar. 30, 1995, Ser. No. 553,499

Claims priority, application Germany, Mar. 30, 1994, 44 11 157.6; Oct. 29, 1994, 44 38 506.4

Int. Cl.^{6} G02C *7/06*

U.S. Cl. 351—169 **20 Claims**

1. Series of progressive lenses, wherein the individual lenses of the series present, in a distance-vision part, at least one of a



different surface power and a different increase of the surface power from the distance-vision part towards a near-vision part, with each of the lenses

comprising a front surface having a continuously varying surface power increasing from the respective value BK suitable for distance vision, at the point having the coordinates x=0 mm, y=8 mm in the lower region of the distance-vision part along a wound line (primary line), which is approximately coincident with the primary line of vision, with eyes dropped, towards a value suitable for near vision in the upper region of the near-vision part, which value is greater than the value of the surface power BK in the lower region of the distance-vision part by the value Add of the addition, and

presenting a surface, in particular the surface on the concave side, which has a spherical shape or aspherical shape, respectively,

wherein for the maximum height y of the line on which the surface astigmatism is 0.5 dpt and which defines the lower limit of the region clear vision on either side of the primary line at a distance of 25 mm, applies:

$$y=f(\mathrm{Add},BK)=b(BK)+a/\mathrm{Add}*1000)$$

$$b(BK)=a_0+a_1*BK+a_2*BK^2$$

and that for the coefficients on the nose and temporal sides of the primary line applies:

	nose side		temporal side	
a	−8.5 ± 20%		−7.5 ± 20%	
a_0	18...19	mm	19...20	
a_1	−3580 ± 29%	mm^2	−4520 ± 20%	mm^2
a_2	3900 000 ± 20%	mm^3	480 000 ± 20%	mm^3

5,854,670
IMAGE FORMING DEVICE FOR BOTH UNBOUND AND BOUND ORIGINALS

Gao Yong, 981 Gulf Pl, Apt. 909, Ottawa, Ontario, Canada, K1K 3X9

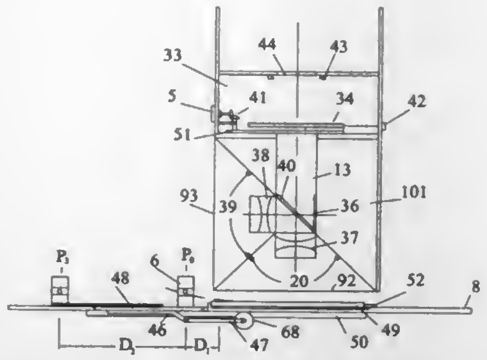
PCT No. PCT/CA92/00414, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/06061, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 30, 1992, Ser. No. 392,986

Claims priority, application Canada, Sep. 10, 1992, 2,077,956-0

Int. Cl.^{6} G03B *27/32;27/52*

U.S. Cl. 355—25 **22 Claims**



1. An image forming device for both automatic and manual image formation from both unbound and bound originals thereof, comprising:

image forming means for forming images of the said originals;

image recording means for recording the formed images of the said originals onto recording media;

means, having open and closed positions, for shutting off the image light to an image bearing member in the said image recording means;

means for presetting an image field in a desired size, eliminating any dark edge effect in the formed images of the said originals, preventing dark edge shadows from forming on the recording media with transferred images and avoiding a wasteful consumption of toner and a pollution in the said recording means;

means for monitoring the set-up of the said originals in different sizes so that the orientation, field and size of the images of the said originals can be visibly adjusted before starting an image recording process;

means for loading, positioning and manipulating the said originals;

means for turning pages of the said originals; and

controlling means, having a microcomputer-based controlling unit, for programming and instructing the said device to perform the said image formation.

5,854,671
SCANNING EXPOSURE METHOD AND APPARATUS THEREFOR AND A PROJECTION EXPOSURE APPARATUS AND METHOD WHICH SELECTIVELY CHOOSES BETWEEN STATIC EXPOSURE AND SCANNING EXPOSURE

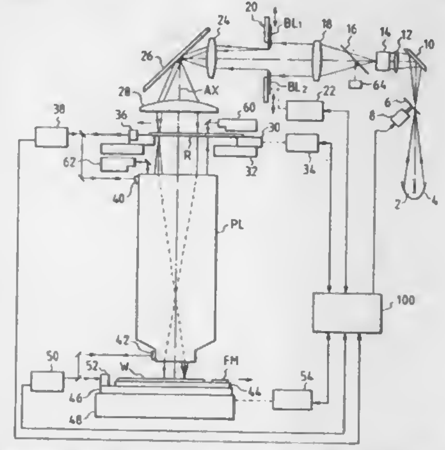
Kenji Nishi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 547,147, Oct. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 254,672, Jun. 6, 1994, Pat. No. 5,473,410, which is a continuation of Ser. No. 68,101, May 28, 1993, abandoned. This application Aug. 5, 1997, Ser. No. 906,429

Claims priority, application Japan, Oct. 24, 1994, 6-257835

Int. Cl.^{6} G03B *27/42;27/52*

U.S. Cl. 355—53 **38 Claims**



1. A method of illuminating a mask with transfer patterns formed thereon with an exposure illumination light and of effecting an exposure of images of said mask patterns respectively onto a plurality of shot regions disposed on a photosensitive substrate through a projection optical system, said method comprising:

providing a scan-exposure mode for irradiating said mask with said illumination light in a state where said mask and said photosensitive substrate are scanned in synchronization along a direction crossing the optical axis of said projection optical system, and a static-exposure mode for irradiating said mask with said illumination light in a state where said mask and said photosensitive substrate stand still;

determining which of said modes is to be used for effecting an exposure for each of said plurality of shot regions on said photosensitive substrate by using information on at least one of a layout of the plurality of shot regions on said photosensitive substrate, a required quantity of integrated exposure light on said photosensitive substrate, a shape of said shot region, a degree of resolution required for exposing the pattern images of said, and a permissible distortion; and

effecting the exposure of the pattern image of said mask on each shot region on said photosensitive substrate in said determined exposure mode.

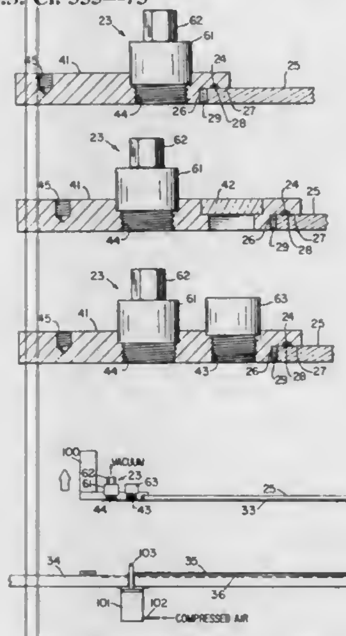
5,854,672
VACUUM EXPOSURE FRAME WITH UNWORKED GLASS INSERT/PLATE EXPOSER AND OPTIONALLY HAVING SEPARATE 1D VIEWING AREA

Janet Casteel, Harrisonburg, and Shawn Benson, Criders, both of Va., assignors to R.R. Donnelley & Sons Company, Chicago, Ill.

Filed Mar. 7, 1995, Ser. No. 399,632

Int. Cl.^{6} G03B *27/58;27/20*

U.S. Cl. 355—73 **24 Claims**



1. An improvement in an exposure frame useful in lithography and the printing arts wherein said frame is required to withstand

(a) movement of said frame, and

(b) a vacuum means, wherein said frame has a film exposure window, said vacuum means holds a film firmly against said film exposure window,

the improvement being

i) that said film exposure window is made of unworked glass and through which copy is exposed, and

ii) that there is at least one other separate exposure window having an insert made of polycarbonate and through which identification information is exposed.

5,854,673
METHOD OF AUTHENTICATING WATERMARKED PAPER

Marc I J Beale, Malvern, and David R Dinn, Leatherhead, both of Great Britain, assignors to Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, and Evaluation Research Agency, both of United Kingdom

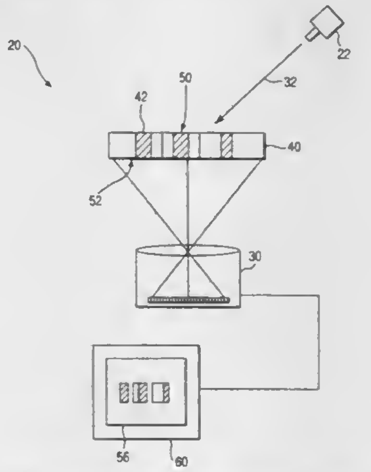
PCT No. PCT/GB95/02855, § 371 Date Jun. 3, 1997, § 102(e) Date Jun. 3, 1997, PCT Pub. No. WO96/18978, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 7, 1995, Ser. No. 849,383

Claims priority, application United Kingdom, Dec. 14, 1994, 9425232

Int. Cl.^{6} G06K *9/74*

U.S. Cl. 356—71 **12 Claims**



1. A method of authenticating watermarked paper comprising the steps of:

(i) changing the temperature of a first surface (**50**) of a region of the paper containing a watermark (**42**);

(ii) measuring the region's temperature during the change of temperature; and

(iii) analyzing the temperature measurements to determine the thermal response of the paper as a function of time and hence determine whether or not the watermarked paper is authentic.

5,854,674
METHOD OF HIGH SPEED, HIGH DETECTION SENSITIVITY INSPECTION OF REPETITIVE AND RANDOM SPECIMEN PATTERNS

Lawrence H. Lin, Alamo, Calif., assignor to Optical Specialties, Inc., Fremont, Calif.

Filed May 29, 1997, Ser. No. 865,380

Int. Cl.^{6} G02B *27/42*

U.S. Cl. 356—237 **16 Claims**

1. A method of detecting defects in a patterned specimen having repetitive die circuit patterns and random die circuit patterns, comprising:

illuminating plural die circuit patterns;

generating a light pattern representing substantially the Fourier transform pattern of the illuminated die circuit patterns;

positioning an optical filter to receive the light pattern and to block spatial frequency components thereof, the optical filter having relatively transparent and relatively nontransparent portions, the relatively nontransparent portion conforming to the Fourier transform pattern of an error-free reference pattern corresponding to substantially all features of the repetitive die circuit patterns and selected features of the random die circuit patterns;

collecting spatial frequency components not blocked by the optical filter to form a filtered light pattern that includes image defect information; and

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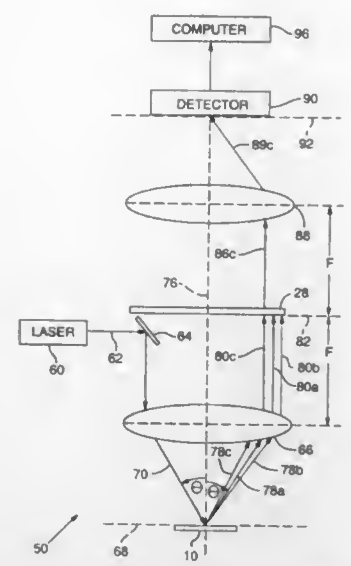


processing unblocked spatial frequency components to determine the presence of a possible defect in the patterned specimen, the processing including defining an array of pixels for the filtered light pattern and determining for each of multiple pixels in the array a statistical characteristic derived from an amount of light energy present in the pixel, each of the multiple pixels characterized by a unit pixel size that is greater than that which provides an amount of light energy representing a defect of a selected size but less than that which provides an amount of light energy representing a die circuit pattern feature that would render undetectable the defect of the selected size.

5,854,675
METHOD FOR MEASURING INJECTION BORES OF FUEL INJECTION VALVES FOR INTERNAL COMBUSTION ENGINES

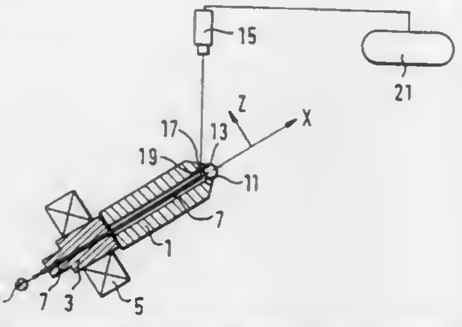
Ulrich Lessing, Stuttgart; Heinz-Arno Marto, Weil Der Stadt, and Reiner Kaess, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 21, 1997, Ser. No. 821,556

Claims priority, application Germany, Mar. 23, 1996, 196 11 613.9

Int. Cl.^{6} G01N *21/00*

U.S. Cl. 356—241 **8 Claims**



1. A method for measuring injection bores of fuel injection valves for internal combustion engines, which comprise fastening an object to be measured in a receiving device, adjusting the object to be measured prior to a measuring operation by means of the receiving device in a geometrically defined position with a measuring device, ascertaining a location and geometry of the bore to be measured, during the measuring operation successively measuring inlet edges (**17**) and outlet edges (**19**) of the bore (**13**) to be measured by means of an optoelectronic measuring system.

5,854,676
METHOD AND DEVICE FOR CONTINUOUS ANALYSIS OF THE COMPOSITION OF A GASEOUS ATMOSPHERE CONTAINING PARTICLES OF MATERIAL IN SUSPENSION

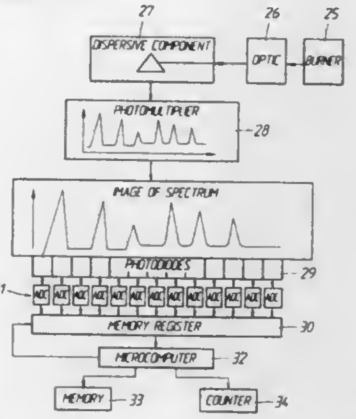
Patrick Bleuse, Bois D'Avray; Pierre Clausin, Ville D'Avray; Gilles Guéné, Elancourt, and Eric Wurmser, Saint Cyr L'Ecole, all of France, assignors to Proengin S.A., France

Filed Jul. 25, 1997, Ser. No. 900,455

Claims priority, application France, Jul. 25, 1996, 96 09498

Int. Cl.^{6} G01N *21/72*

U.S. Cl. 356—315 **12 Claims**



1. A method of analyzing the composition of a gaseous atmosphere containing particles in suspension, comprising the following operations:

continuously combusting a gaseous atmosphere to be analyzed in a flow of combustion-supporting gas at a constant flowrate,

decomposing the luminous radiation to obtain instantaneously a luminous spectrum,

periodically sampling all of said spectrum and converting the samples into digital data representative of the spectrum,

comparing these digital data with digital data representative of previously memorized reference spectra,

identifying a substance looked for if the comparison reveals similarity between the digital data resulting from said conversion and the digital data representative of a reference spectrum,

counting the number of times a same component or a same set of components has been identified during a predetermined time period in order to determine the composition of the particles in suspension in the atmosphere and their number per unit volume.

5,854,677
RLG OPTICAL NOISE INJECTOR

Frederick Aronowitz, Laguna Niguel, and Ludd A. Trozpek, Claremont, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

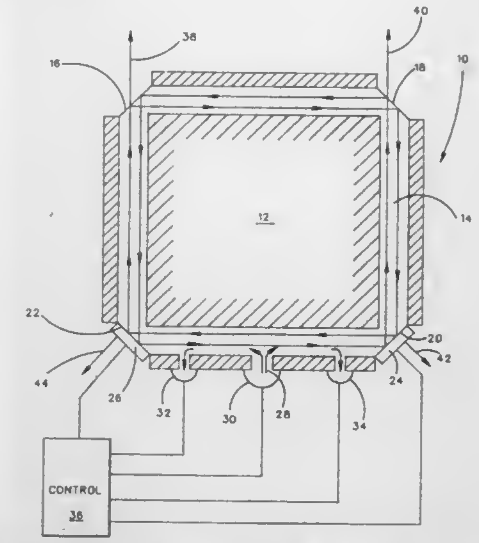
Filed Aug. 31, 1990, Ser. No. 576,767

Int. Cl.^{6} G01B *9/02*; H01S *3/083*

U.S. Cl. 356—350 **8 Claims**

1. A method for preventing or reducing dynamic lock-in of a ring laser gyro (RLG) having at least two mirrors controlling an optical path length (OPL) of the RLG, comprising:

(a) moving a first mirror in such a manner as to randomly change the OPL of the RLG; and



(b) simultaneously moving a second mirror in such a manner as to at least approximately counteract the OPL change induced by the first mirror.

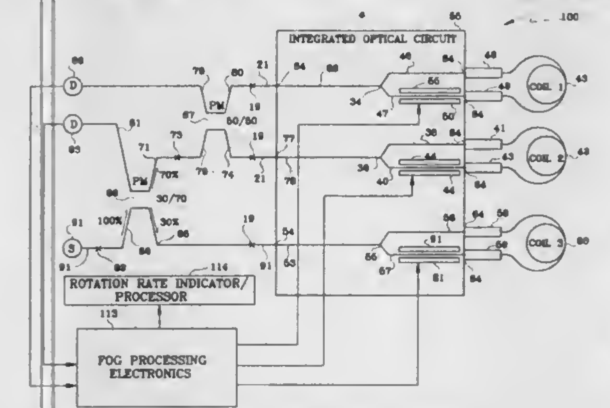
5,854,678
THREE-AXIS FIBER OPTIC GYROSCOPE HAVING A SINGLE SOURCE AND MULTI-COUPLER CONFIGURATION

Ren-Young Liu, Mesa, and Ralph A. Bergh, Phoenix, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1996, Ser. No. 672,249

Int. Cl.^{6} G01C *19/72*

U.S. Cl. 356—350 **22 Claims**


INTEGRATED OPTICAL CIRCUIT
100
D
S
PM
70%
30/70
100%
30%
50/50
COIL
ROTATION RATE INDICATOR/ PROCESSOR
113
116
FOG PROCESSING ELECTRONICS

1. A three-axis fiber optic gyroscope comprising:

a first coupler having first, second, third and fourth ports;

a source connected to the first port of said first coupler;

a detector connected to the second port of said first coupler;

a second coupler having a first port connected to the third port of said first coupler, a second port connected to a second detector, and having third and fourth ports;

a first Y junction having a first port connected to the third port of said second coupler, and having second and third ports;

a second Y junction having a first port connected to the fourth port of said second coupler, and having second and third ports;

a third Y junction having a first port connected to the fourth port of said first coupler, and having second and third ports;

a first sensing loop having first and second ends connected to the second and third ports, respectively, of said first Y junction;

a second sensing loop having first and second ends connected to the second and third ports, respectively, of said second Y junction; and

a third sensing loop having first and second ends connected to the second and third ports, respectively, of said third Y junction.

5,854,679
OBJECT CHARACTERISTICS MEASUREMENT SYSTEM

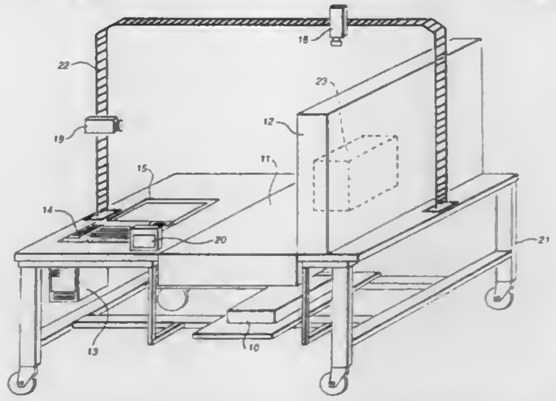
Jean-Pierre Bourgoin; Jean-Michel Jacquot, both of Bourges; Patrick Connan, La Chapelle Saint Ursin, and Benoït Fle, Vignoux Sous les Aix, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 13, 1997, Ser. No. 969,460

Claims priority, application France, Nov. 15, 1996, 96 13962

Int. Cl.^{6} G01B *11/00*

U.S. Cl. 356—372 **9 Claims**



1. System for measuring the characteristics of an object, comprising:

scales fitted with a weighing platform;

two light boxes, the first being placed in a upper horizontal plane above the scales platform, the second being placed in a vertical plane above and to the side of the upper plane of the first light box;

a processing unit, connected firstly to an information input device and secondly to a display device;

at least two cameras facing the object positioning space from two different directions located above the upper plane of the first light box and connected to the processing unit wherein one camera is directed towards one of the light boxes and the other camera being directed towards the other light box.

5,854,680
PHOTOELECTRIC DENSITOMETER

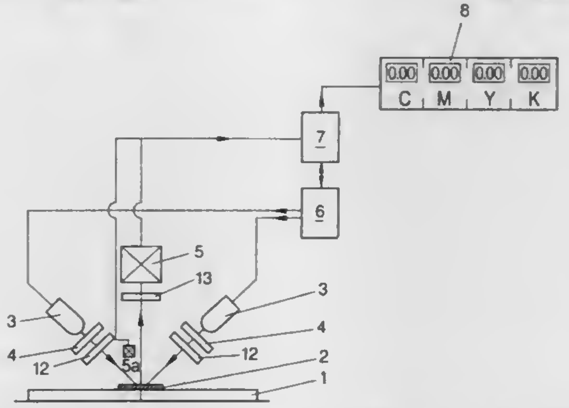
Peter Rakitsch, Moosburg, Germany, assignor to Man Roland Druckmaschinen, Germany

Filed Apr. 25, 1997, Ser. No. 846,122

Claims priority, application Germany, Apr. 27, 1996, 196 17 009.5

Int. Cl.^{6} G01J *3/51*; G01N *21/25*

U.S. Cl. 356—406 **20 Claims**



1. A method of measuring a density of ink at an area of a printed product comprising the steps of generating a predetermined sequence of incident beams of light having different spectral intensity distributions; irradiating the measuring area with the incident beams of light, a portion of every incident beam of light being reflected by the measuring area to produce reflected beams of light; collecting the reflected beams of light; generating reflectance sig-

nals, each reflectance signal being correlated to an intensity of a respective reflected beam of light; generating from the reflectance signals an ink density signal; and generating at least one dark phase during the sequence of incident beams of light in which the measuring area is not irradiated with the incident beams of light, a dark phase reflectance signal being generated during the at least one dark phase and used as an offset value for generating the ink density signal.

5,854,681
DEVICE AND METHOD MEASURING OPTICALLY THE CHARACTERISTICS OF A SUBSTANCE

Robert Delignieres, Mareil Marly, and Christian Durand, Marly Le Roi, both of France, assignors to Institute Francais du Petrole, Reuil Malmaison, France

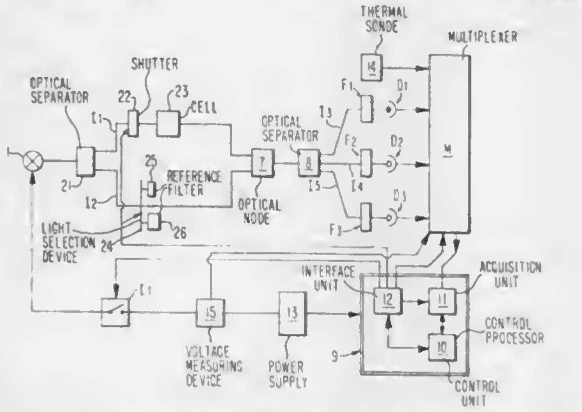
PCT No. PCT/FR96/01296, § 371 Date Jun. 30, 1997, § 102(e) Date Jun. 30, 1997, PCT Pub. No. WO97/07394, PCT Pub. Date Feb. 27, 1997

PCT Filed Aug. 20, 1996, Ser. No. 809,447

Claims priority, application France, Aug. 21, 1995, 95 10121; Nov. 30, 1995, 95 14146

Int. Cl.^{6} G01N *21/25;21/00*

U.S. Cl. 386—416 **21 Claims**



1. A device for measuring and/or for detecting optically at least one characteristic or a variation of at least one characteristic of a reacting substance contained in a transparent cell, comprising at least one light source connected by at least one optical branch to at least one device controlling selective passage of incident light through the transparent cell, at least one reference filter, an optical system for forming light beams which have passed through the at least one device for controlling selective passage and a selective optical filter including an array of three selective filters, the first filter passing a wavelength corresponding to an isobestic point of the reacting substance, the second filter passing a wavelength in a part of the light spectrum where the reacting substance is most sensitive and the third filter passing a wavelength in another part of the spectrum where the reacting substance is least sensitive, a device for measuring an intensity of the light passing through the optical system, a control unit and a power supply unit, and wherein the control unit determines transmittance of the at least one reference filter which is determined for each of the wavelengths in accordance with the relationship Trj=(Kr·Mrj)/Mij with Kr being a coupling coefficient of the at least one reference filter, Mrj being a measurement of incident light passing through the at least one reference filter for each wavelength j and being MIJ being a measurement of incident light to the selective optical filter, determines for the j wavelengths a value of a correction coefficient Kcj=Te/Trj where Tc is an initial transmittance for the at least one reference filter, determines for the correction coefficient Kcj a value of the transmittance of a substance contained in the transparent cell Tsj = Kcj[(Ks·Msj)/Mij] where Ks is a coupling coefficient of the transparent cell and determines a value of absorbance of As/Asj of the reacting substance contained in the transparent cell where Asj=1—Tsj.

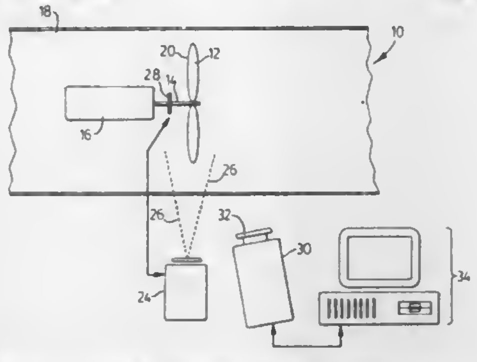
5,854,682
METHOD AND APPARATUS FOR SURFACE PRESSURE MAPPING OF ROTATING OBJECTS BY SYNCHRONIZED OPTICAL IMAGING OF LUMINESCENT COATING

Xljia Gu, 113 Marbury Crescent, North York, Ontario, Canada, M3A 2G3

Filed May 1, 1997, Ser. No. 848,756

Int. Cl.^{6} G01N *21/84;* G01M *9/00;* G01L *9/00*

U.S. Cl. 356—426 **10 Claims**



1. A method of surface pressure mapping rotating objects, comprising;

a) providing an object having an outer surface and applying to said outer surface a pressure sensitive photoluminescent coating;
b) rotating said object at a preselected rotational velocity and directing a train of light pulses from a light source at said rotating object, synchronizing said light pulses to said rotational velocity of said object, with said light pulses being of a first wavelength;
c) detecting and storing a photoluminescent light intensity due to emission from said pressure sensitive photoluminescent coating on said rotating object due to said light pulses impinging on the coated outer surface of the rotating object; and
d) processing said photoluminescent light intensity to convert said photoluminescent light intensity into an image of a pressure distribution over the surface of the rotating object.

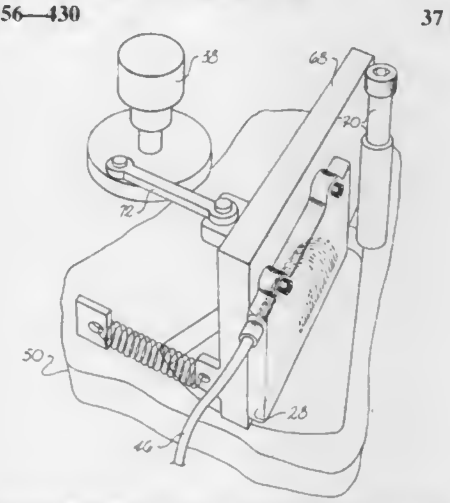
5,854,683
OPTICAL WEB DEFECT DETECTION SYSTEM

Barry P. Keane, 1704 Keowee Lakeshore Dr., Seneca, S.C. 29672

Filed Oct. 24, 1997, Ser. No. 957,535

Int. Cl.^{6} G01N *21/86*

U.S. Cl. 356—430 **37 Claims**



1. An optical web defect detection system, said system comprising:

a light source;
a detector disposed with respect to said light source so that said detector receives light modulated by a moving web proximate

said light source, wherein said detector outputs a signal corresponding at least in part to said modulated light;
an adjustment mechanism in operative communication with said detector to adjust the position of said detector with respect to said web; and
a control mechanism in operative communication with said detector and said adjustment mechanism, said control mechanism receiving said signal to detect a defect in said web based thereon and adjusting said position of said detector to optimize reception of said modulated light by said detector.

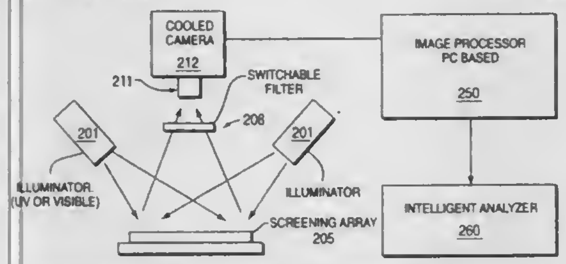
5,854,684
MASSIVELY PARALLEL DETECTION

Paul J. Stabile, Langhorn; David Norman Ludington, Newtown; Pamela Kay York, Yardley, all of Pa.; Arye Rosen, Cherry Hill, N.J.; Satyam Choudary Cherukuri, Cranbury, N.J.; Peter John Zanzucchi, Lawrenceville, N.J., and Paul Heaney, Plainsboro, N.J., assignors to Sarnoff Corporation, Princeton, N.J.

Filed Sep. 26, 1996, Ser. No. 721,432

Int. Cl.^{6} G01N *21/00*

U.S. Cl. 356—440 **20 Claims**



1. An apparatus for measuring the amount of light emitted or reflected from or transmitted through a first set of two or more detection sites on a planar substrate while spatially resolving the measurements from each first set detection site, the apparatus comprising:

a source of a light beam directed towards the planar substrate at a first angle;
one or more lenses for focusing light emitted or reflected from or transmitted through each of the first set detection sites and having a second angle having an angle offset from the first angle, onto a unique area of an array detector; and
the array detector comprising a plurality of light responsive pixels, wherein for each of the first set detection sites there is at least one light responsive pixel that receives light emitted or reflected from or transmitted through that detection site and substantially no cross-talk from another detection site, and wherein substantially none of the light from the light source intersects with the array detector.

5,854,685
HOLOGRAPHIC GAS ANALYZER UTILIZING HOLOGRAPHIC OPTICS

Michael S. Levine, 204 N. El Camino Real, E-531, Encinitas, Calif. 92024

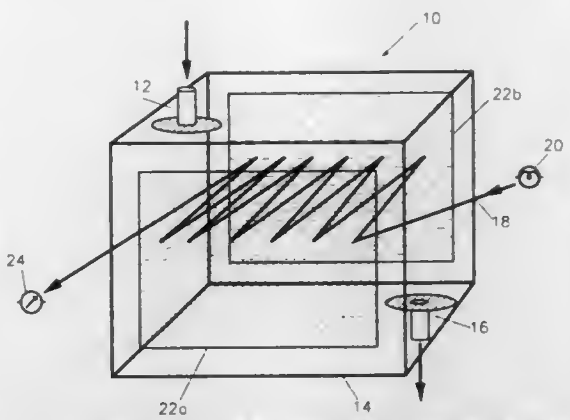
Filed Mar. 5, 1997, Ser. No. 812,380

Int. Cl.^{6} G01N *21/00;* G01J *3/28;5/02;* G02B *5/32*

U.S. Cl. 356—440 **17 Claims**

1. An apparatus for determining the presence of light absorbing matter in a fluid medium, said apparatus comprising:

means for collecting the fluid medium;
a light source;
a light detector; and
a plurality of non-dispersive holographic optics positioned relative to said light source and said light detector, at least one of said plurality of holographic optics reflecting at least a portion of light from said light source through said collecting means to another one of said plurality of holographic optics, and one



of said plurality of holographic optics reflecting at least a portion of the light to said light detector.

5,854,686
ILLUMINATION DEVICE, IMAGE READING APPARATUS HAVING THE DEVICE AND INFORMATION PROCESSING SYSTEM HAVING THE APPARATUS

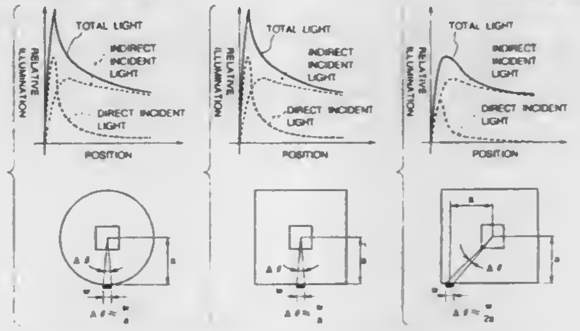
Shinichi Takeda, Atsugi; Hidemasa Mizutani, Sagamihara; Noriyuki Kaifu, Hachioji, and Isao Kobayashi, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 358,096, Dec. 16, 1994. This application Oct. 13, 1995, Ser. No. 543,092

Claims priority, application Japan, Dec. 24, 1993, 5-327614

Int. Cl.^{6} H04N *1/21*

U.S. Cl. 358—296 **106 Claims**



24. An information processing apparatus comprising:

(a) an illumination device provided with a longitudinal light guide for guiding light introduced from a plurality of light sources, each of said plurality of light sources having different light emission colors and for emitting the light along a longitudinal side thereof, having a longitudinal reflection member arranged along said light guide for reflecting the light from said plurality of light sources, wherein, at least at an end of said reflection member near said plurality of light sources, a normal line passing through a center of a width of said reflection member is shifted from a center of at least one of said plurality of light sources, when viewed in a longitudinal direction of said light guide;
(b) a photoelectric converting device having a plurality of photoelectric conversion elements for reading an image illuminated by said illumination device and for outputting an image signal; and
(c) control circuits for controlling said illumination device and said photoelectric converting device.

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5,854,687
RECORDING APPARATUS FEATURING A PLURALITY OF MOVING MEANS FOR CONTROLLED MOVEMENT OF AN IMAGE SCANNER AND A RECORDING HEAD

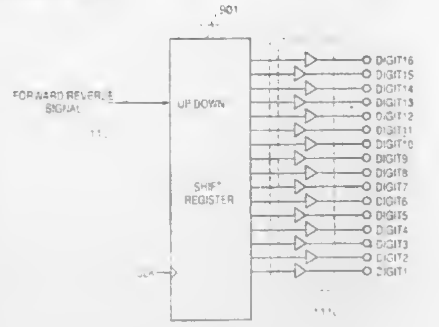
Fumio Mikami, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 153,037, Nov. 17, 1993, Pat. No. 5,629,771. This application Dec. 17, 1996, Ser. No. 768,880

Claims priority, application Japan, Nov. 19, 1992, 4-309888

Int. Cl.^{6} H04N *1/21;* **B41J** *1/145*

U.S. Cl. 358—296 **13 Claims**



1. A recording apparatus using an image scanner including a plurality of reading elements and a recording head including a plurality of recording elements, comprising:

first moving means for reciprocating the image scanner along a main-scanning direction at a predetermined speed;

second moving means for, each time reciprocating motion of the image scanner is completed, moving the image scanner in a subscanning direction by a predetermined distance relatively to an original to read the original;

third moving means for reciprocating the recording head along the main-scanning direction at a speed substantially equal to that of the image scanner;

fourth moving means for, each time reciprocating motion of the recording head is completed, moving a recording medium in the subscanning direction by the predetermined distance relatively to the recording head;

control means for driving said first and third moving means while substantially synchronizing said first moving means with said third moving means; and

driving means for driving, under control of said control means, the recording elements of the recording head being moved by said third moving means based on image data read by driving of said first moving means,

wherein the plurality of recording elements of the recording head are aligned in a line slanted at a predetermined angle to the subscanning direction of the recording head.

5,854,688
IMAGE READING APPARATUS THAT CORRECTS THE OUTPUT OF LIGHT RECEIVING ELEMENT CORRESPONDING TO A PIXEL BASED ON OUTPUT VALUES OF LIGHT RECEIVING ELEMENTS CORRESPONDING TO SURROUNDING PIXELS

Nobumasa Fukuzawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 263,356, Jun. 21, 1994, abandoned. This application Jan. 9, 1997, Ser. No. 781,143

Claims priority, application Japan, Jun. 22, 1993, 5-150629

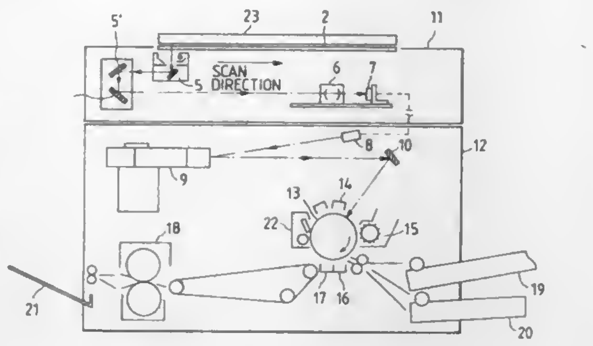
Int. Cl.^{6} H04N *1/40;1/04*

U.S. Cl. 358—296 **11 Claims**

1. An original reading apparatus comprising:

a light source for illuminating an original;

a light receiving means for receiving light reflecting from the original, said light receiving means having a plurality of light receiving elements each outputting an electric signal in accordance with an amount of received light; and



correction means for correcting respective output values of light receiving elements corresponding to each pixel on the original,

wherein when the output value of a respective one of said light receiving elements corresponding to any one pixel on the original is Sxy and an output value of light receiving elements corresponding to peripheral pixels surrounding said any one pixel is S'xy, said correction means calculates a correction value CSxy in accordance with the following equation:

$$CSxy = Sxy\left(1 - \alpha\frac{\rho S'xy}{\Sigma nxy}\right)$$

where, α is a constant and Σnxy is a sum of the peripheral pixels.

5,854,689
IMAGE PROCESSING APPARATUS AND METHOD FOR PERFORMING SMOOTHING PROCESSING FOR EACH OF DIFFERENT COLORS

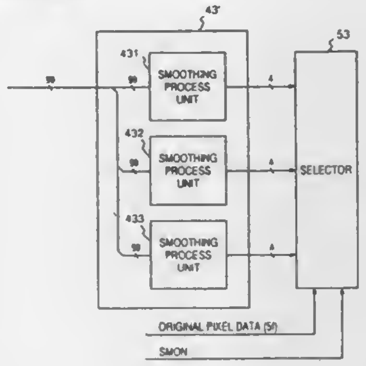
Tetsuo Saito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 141,476, Oct. 22, 1993, abandoned. This application Oct. 17, 1997, Ser. No. 953,750

Claims priority, application Japan, Oct. 28, 1992, 4-290176; Jan. 29, 1993, 5-013548

Int. Cl.^{6} H04N *1/10;1/46;1/58*

U.S. Cl. 358—298 **9 Claims**



1. An image processing apparatus comprising:

storage means for storing color image data by color component;

smoothing means for smoothing the color image data by color component; and

changing means for changing a logic for smoothing used by said smoothing means by color component.

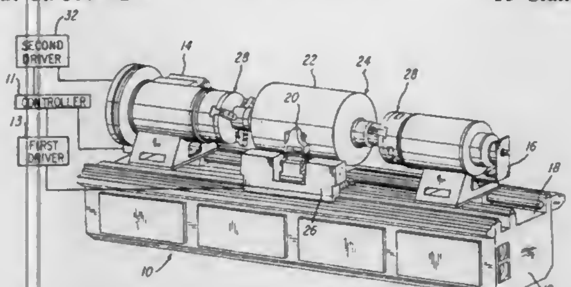
5,854,690
METHOD AND APPARATUS FOR ALIGNING A CYLINDER IN AN ENGRAVER

Kenneth F. Bornhorst, Jr., Centerville; Robert D. Likins, Wilmington, both of Ohio, and Richard Arnold MacKinnon, Plantation, Fla., assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Division of Ser. No. 394,720, Feb. 27, 1995, Pat. No. 5,661,565, which is a continuation-in-part of Ser. No. 57,327, May 5, 1993, Pat. No. 5,424,846. This application Jun. 24, 1997, Ser. No. 881,396

Int. Cl.^{6} B41C *1/02*

U.S. Cl. 358—299 **15 Claims**



1. A method for aligning a cylinder support in an engraver comprising the step of:

actuating a plurality of jaws to grip said cylinder support such that said cylinder support becomes automatically aligned in said engraver.

5,854,691
FACSIMILE INFORMATION PROCESSING APPARATUS FOR VIDEO CASSETTE TAPE RECORDER AND METHOD OF THE SAME

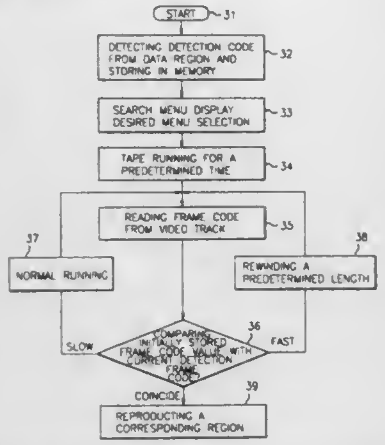
Yongtaik Lim, Seoul; Seyong Ro, Kyungki-Do, and Insung Hwang, Kyungki-Do, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 31, 1996, Ser. No. 690,562

Claims priority, application Rep. of Korea, Jul. 31, 1995, 1995 23485; Oct. 24, 1995, 1995 36767; Oct. 24, 1995, 1995 36768; Dec. 18, 1995, 1995 51438

Int. Cl.^{6} H04N *5/782*

U.S. Cl. 358—403 **13 Claims**


START
31
DETECTING DETECTION CODE FROM DATA REGION AND STORING IN MEMORY
32
SEARCH MENU DISPLAY DESIRED MENU SELECTION
33
TAPE RUNNING FOR A PREDETERMINED TIME
34
READING FRAME CODE FROM VIDEO TRACK
35
37
NORMAL RUNNING
38
REWINDING A PREDETERMINED LENGTH
SLOW
COMPARING INITIALLY STORED FRAME CODE VALUE WITH CURRENT DETECTION FRAME CODE?
36
FAST
COINCIDE
39
REPRODUCTING A CORRESPONDING REGION

1. A facsimile information processing method for a video cassette tape recorder, comprising the steps of:

recording the received facsimile information in the frame memory which is divided into a plurality of frames and the facsimile information arranged in a form of a frame unit and outputted from the frame memory on a video tape;

searching the facsimile information of a selection menu by detecting the frame code from the video tape when a search mode is set; and

scrolling a predetermined information by moving the facsimile information searched and displayed on the screen in the rightward and leftward direction.

5,854,692
FACSIMILE APPARATUS HAVING CONTROL MEANS FOR RECORDING A PRESCRIBED PAGE WHICH HAS NOT BEEN COMPLETELY RECORDED WHEN A TROUBLE DETECTED BY DETECTING MEANS IS SOLVED

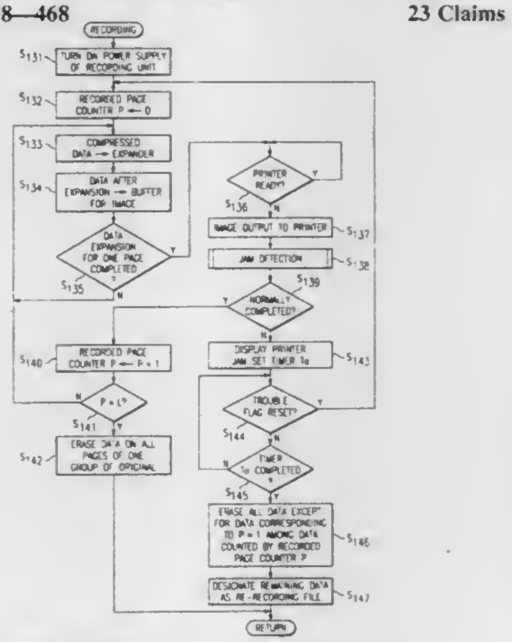
Munehiro Nakatani, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 44,252, Apr. 7, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,285

Claims priority, application Japan, Apr. 8, 1992, 4-086873

Int. Cl.^{6} H04N *1/32*

U.S. Cl. 358—468 **23 Claims**


RECORDING
S131
TURN ON POWER SUPPLY OF RECORDING UNIT
S132
RECORDED PAGE COUNTER P ← 0
S133
COMPRESSED DATA → EXPANDER
S134
DATA AFTER EXPANSION → BUFFER FOR IMAGE
DATA EXPANSION FOR ONE PAGE COMPLETED ?
S135
PRINTER READY?
S136
IMAGE OUTPUT TO PRINTER
S137
JAM DETECTION
S138
NORMALLY COMPLETED?
S139
S140
RECORDED PAGE COUNTER P ← P + 1
DISPLAY PRINTER JAM SET TIMER To
S143
P = L?
S141
TROUBLE FLAG RESET?
S144
ERASE DATA ON ALL PAGES OF ONE GROUP OF ORIGINAL
S142
TIMER To COMPLETED ?
S145
ERASE ALL DATA EXCEPT FOR DATA CORRESPONDING TO P = 1 AMONG DATA COUNTED BY RECORDED PAGE COUNTER P
S146
DESIGNATE REMAINING DATA AS RE-RECORDING FILE
S147
RETURN
Y
N

1. A facsimile apparatus, comprising:

storage means for storing received image data;

recording means for extracting said image data stored in said storage means sequentially from a first page on a page-by-page basis and for recording the image data on recording paper in a recording operation;

detection means for detecting a trouble occurrence during the recording operation of said recording means; and

control means for controlling said recording means to again record a prescribed page which has already been recorded and to record one or more pages of the image data stored in said storage means which has not been completely recorded, when a trouble detected by said detection means is solved.

5,854,693
IMAGE FORMING SYSTEM

Syoichiro Yoshiura, Tenri; Hidetomo Nishiyama, Yamatokoriyama, and Yasuhiro Nakai, Soraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1997, Ser. No. 779,387

Claims priority, application Japan, Feb. 7, 1996, 8-021458; Mar. 5, 1996, 8-047397

Int. Cl.^{6} H04N *1/21;1/32;* **B41B** *15/00;* **B41J** *15/00*

U.S. Cl. 358—468 **42 Claims**

1. An image forming system, comprising:

a plurality of image forming apparatuses; and

a transmission apparatus for interconnecting said plurality of image forming apparatuses to allow them to communicate with each other by transmitting and receiving image data;

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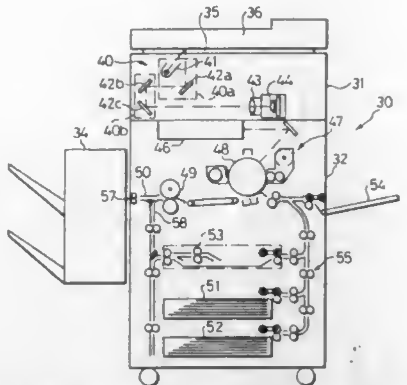


wherein at least one of said plurality of image forming apparatuses serves as a first image forming apparatus which includes:

an image recording section for forming a visible image based on the image data;

an input section for inputting an instruction with regard to an image processing function to be performed by said first image forming apparatus; and

a transmission-side control section for storing function data indicative of types of image processing functions provided in each of said plurality of image forming apparatuses, selecting a plurality of image forming apparatuses provided with a selected image processing function based on an instruction from said input section for requesting a predetermined image processing function to be applied to the image data and the function data so as to distribute thereto the image data to be processed, and transferring the image data to the selected plurality of image forming apparatuses through said transmission apparatus, and further realigning a plurality of processed image data returned from other image forming apparatus to said image recording section; and

some of said plurality of image forming apparatuses excluding said first image forming apparatus serve as second image forming apparatuses, each second image forming apparatus including:

a processing section for processing the image data with the predetermined image processing function; and

a processing-side control section for supplying the image data inputted through said transmission apparatus to said processing section and returning the image data processed by said processing section to said first image forming apparatus through said transmission apparatus.

5,854,694
PORTABLE COMMUNICATION APPARATUS

Simon Graham Payne, Devon, and Stephen John Love, Cambridgeshire, both of Great Britain, assignors to Optionexist Limited, United Kingdom

PCT No. PCT/GB95/00849, § 371 Date Dec. 17, 1996, § 102(e) Date Dec. 17, 1996, PCT Pub. No. WO95/28800, PCT Pub. Date Oct. 26, 1995

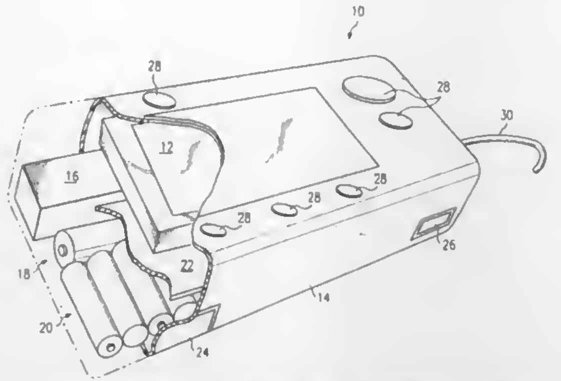
PCT Filed Apr. 13, 1995, Ser. No. 727,437

Claims priority, application United Kingdom, Apr. 19, 1994, 9407760

Int. Cl.⁶ H04N *1/04;* **H04M** *11/00*

U.S. Cl. 358—473 **13 Claims**

1. A portable facsimile machine (**10**) for use in image scanning and the storage and transmission of data representative of the scanned image, the machine comprising a housing, which housing contains an internal power source (**20**) and a user input device (**28**) for communicating with a controller (**32**) which controls the operation of devices (**16**, **12**, **36**) within the machine and the housing,



which devices comprise a scanner (**16**) for manually scanning an image and inputting data representative of a scanned image into a memory (**34**), a display (**12**) for a user to view the scanned image stored in the memory and a communication system having a transducer (**36**) operable to create an outgoing signal representative of the image data wherein the outgoing signal is suitable for communication with a remote facsimile machine to enable transmission of the image data to a remote location via a telecommunications system.

5,854,695
DOCUMENT TRANSMITTING INTERVAL RETAINER FOR A FACSIMILE

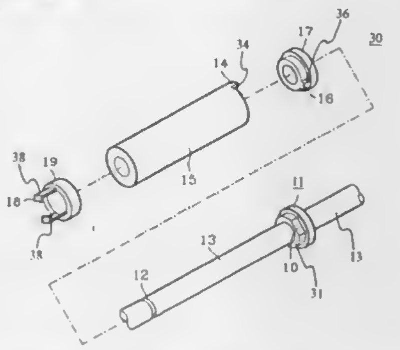
Young-Bok Cho, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 8, 1996, Ser. No. 679,431

Claims priority, application Rep. of Korea, Jul. 8, 1995, 16851/1995

Int. Cl.⁶ H04N *1/04*

U.S. Cl. 358—498 **7 Claims**



1. A document transmitting interval retainer for a facsimile comprising:

a shaft including a step-like portion on one end and a groove formed along the circumference on an opposite end of the shaft;

a document feeding roller rotatably mounted on said shaft, said document feeding roller having a projection on one end;

a bushing in which the step-like portion is inserted, said bushing having an idling stopping means that protrudes in one lateral direction for contacting said projection to keep the document feeding roller from idling when said shaft is rotated; and

a fixing ring having a pair of hooked catches formed on one side to be inserted into the groove to keep the document feeding roller from being disjoined from the shaft.

5,854,696
SINGLE MOTOR DRIVING DEVICE OF A FACSIMILE SYSTEM

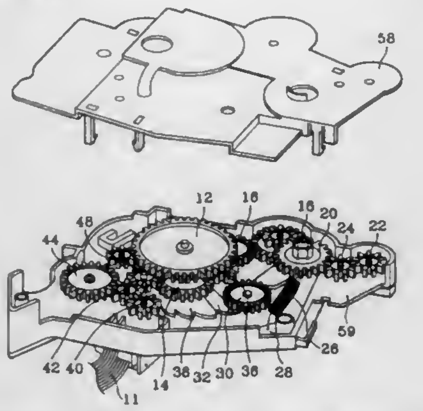
Young-Jung Yun, Kyungki-do, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 15, 1996, Ser. No. 730,052

Claims priority, application Rep. of Korea, Oct. 12, 1995, 28546/1995

Int. Cl.⁶ H04N *1/04:1/36*

U.S. Cl. 358—498 **32 Claims**



1. A single motor driving device in a facsimile system, comprising:

a motor alternately rotatable in a first direction and a second and different direction;

a drive gear directly connected to said motor to rotate in one of said first direction and said second direction in response to a driving force of said motor;

a first gear rotatably engaged with said drive gear;

a center gear rotatably engaged with said first gear;

a first reciprocating gear pivotally connected to said center gear via a first link;

a second gear disposed adjacent to said first reciprocating gear, for transferring rotational power from said first reciprocating gear when said first reciprocating gear is engaged with said second gear;

a third gear rotatably engaged with said second gear;

an automatic feed roller gear rotatably engaged with said third gear;

a first idler gear rotatably engaged with said automatic feed roller gear;

a second idler gear rotatably engaged with said first idler gear:

a transmission roller gear rotatably engaged with said second idler gear, for transferring rotational power from said second idler gear to drive a transmission roller coaxially mounted thereon to feed an original document into the facsimile system;

a second reciprocating gear pivotally connected to said center gear via a second link;

fourth and fifth gears interlocked and disposed adjacent to said second reciprocating gear, for transferring rotational power from said second reciprocating gear when said second reciprocating gear is engaged with one of said fourth and said fifth gear;

a sixth gear rotatably engaged with said fifth gear, for transferring rotational power from said fifth gear to drive a reception roller gear having a reception roller coaxially mounted thereon to feed a recording paper into the facsimile system;

a lever positioned to regulate movement of said second link: and

a cam gear disposed adjacent to said first reciprocating gear, for controlling movement of said first link and movement of said second link via said lever to begin operation of one of a transmission mode, a reception mode, a copying mode and a reception back mode.

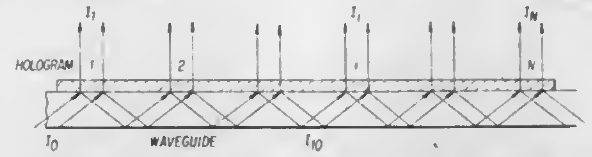
5,854,697
WAVEGUIDE HOLOGRAM ILLUMINATORS

H. John Caulfield; Qiang Huang, both of Huntsville, Ala.; Andrei Putilin, Moscow, Russian Federation; Valentin Morozov, Boulder, Colo., and Joseph Shamir, Haifa, Israel, assignors to The University of Alabama in Huntsville, Huntsville, Ala.

Continuation of Ser. No. 902,881, Jun. 23, 1992, Pat. No. 5,515,184, which is a continuation-in-part of Ser. No. 790,516, Nov. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,966

Int. Cl.⁶ G03H *1/00;* **G02B** *5/32;6/26*

U.S. Cl. 359—34 **9 Claims**



1. A holographic-based system for producing spatial intensity modulated distributions of light for illuminating an object, wherein said system comprises:

a thin substrate having first and second planar surfaces between which light is transmitted in a waveguided manner;

a light source optically coupled to said thin substrate for transmitting light along said thin substrate between said first and second planar surfaces in a waveguided manner; and

a hologram embodied within a recording medium mounted on said first planar surface of said thin substrate;

and wherein said object is disposed adjacent said recording medium for modulating the spatial intensity of light illuminating said object;

said light being transmitted along said thin substrate between said first and second planar surfaces in a waveguided manner while a portion of said transmitted light is diffracted by said hologram so as to produce a distribution of emitted light from said hologram having substantially uniform spatial intensity characteristics over the region of said hologram corresponding to the regions of said object at which spatial intensity modulation occurs.

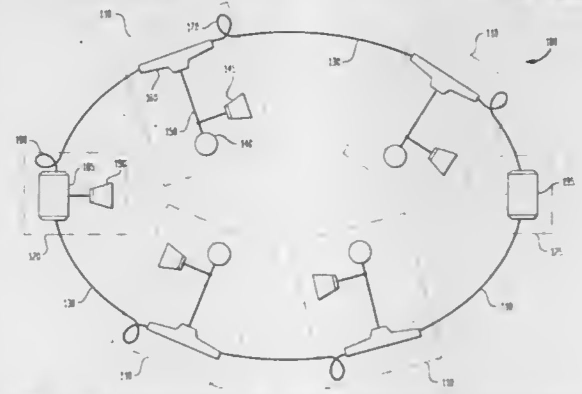
5,854,698
REPEATERLESS BRANCH POWERED FIBER OPTIC COMMUNICATION SYSTEM

Lars Erik Eskildsen, Fair Haven; Evan Lee Goldstein, Princeton, and Per Bang Hansen, Bradley Beach, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 10, 1997, Ser. No. 797,157

Int. Cl.⁶ H04B *10/20;* **H04J** *14/02*

U.S. Cl. 359—119 **20 Claims**



10. A repeaterless trunk and branch fiber optic ring network, comprising:

at least one branch assembly;

at least one hub assembly;

an optical fiber cable trunk coupling said at least one branch assembly and said at least one hub assembly, said optical fiber cable trunk enabling a plurality of telecommunications traffic between said branch assembly and said hub assembly; and

wherein said at least one branch assembly contains:

- a cable station transmitting and receiving at least one telecommunications signal, said cable station optically coupled with a branch fiber optic cable;
- a light emitting power source generating and delivering energy to said branch fiber optic cable at a wavelength other than the wavelength of said telecommunications traffic;
- a branching unit optically coupling said optical fiber cable trunk with said branch fiber optic cable; and
- an optical amplifier embedded within said optical fiber cable trunk, said optical amplifier powered by said energy for amplifying said plurality of telecommunications traffic.

5,854,699

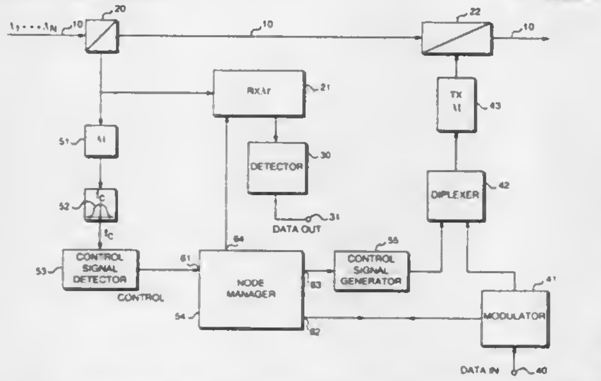
MULTIPLEXED SUBCARRIER CONTROL IN WAVELENGTH DIVISION MULTIPLEXED BROADBAND NETWORKS

Robert Olshansky, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 366,179, Dec. 29, 1994, abandoned, which is a division of Ser. No. 100,513, Jul. 30, 1993, abandoned. This application Dec. 30, 1996, Ser. No. 775,040

Int. Cl.^{6} H04B *10/14;* **H04J** *14/02*

U.S. Cl. 359—125 **6 Claims**



1. A wavelength division multiplexed network having a plurality of nodes and having N channels at wavelengths λi, where $i=1 \ldots N$, for transmission over optical interconnection means, each node comprising optical transmission means transmitting at wavelength λt, where λt is one of said wavelengths λi different from a current transmission wavelength of another node for transmitting data at baseband, data means for providing a digital bit stream at a data rate to said optical transmission means, and subchannel multiplex control means comprising a subcarrier control signal generator providing a control signal at a frequency f_c, diplexer means coupling both said control signal generator and said data means for modulation of said optical transmission means, each said node further comprising optical input coupling means and first and second optical receivers, said first optical receiver for responding to the wavelength λr, where λr is a wavelength transmitted by one said another node and means for detecting signals at baseband, said second receiver for responding to all values of λi and means for detecting f_c therefrom and means for responding to the control signal from said another node.

5,854,700

OPTICAL COMMUNICATION NETWORK

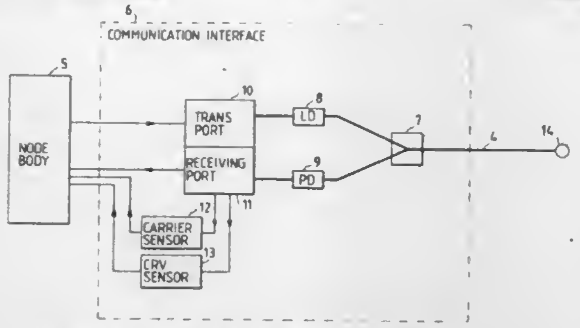
Takeshi Ota, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 026,054, Mar. 4, 1993, abandoned. This application May 2, 1996, Ser. No. 643,098

Claims priority, application Japan, Mar. 5, 1992, 4-048521; Sep. 1, 1992, 4-233892; Dec. 8, 1992, 4-328266; Dec. 15, 1992, 4-334747

Int. Cl.^{6} H04J *14/08*

U.S. Cl. 359—136 **7 Claims**



1. An optical communication network comprising:

nodes connected to star couplers through a bidirectional broadcasting bus for transmitting packets to other nodes, the nodes including carrier detecting means for detecting a carrier on the broadcasting bus, the packets including a code train indicative of a priority o; the node associated with the packet;

wherein the nodes further include means for fetching a code train of a packet corresponding to the carrier detected by the carrier detecting means, means for comparing the priority of the code train of the fetched packet with the code train of the transmitting node by sequentially comparing pairs of bits of the code train of the transmitting node with corresponding pairs of bits of the code train of the fetched packet until the pairs of bits do not match, and means for discontinuing sending the packet if the code train of the transmitting node has less priority than the fetched code train.

5,854,701

PASSIVE OPTICAL NETWORK

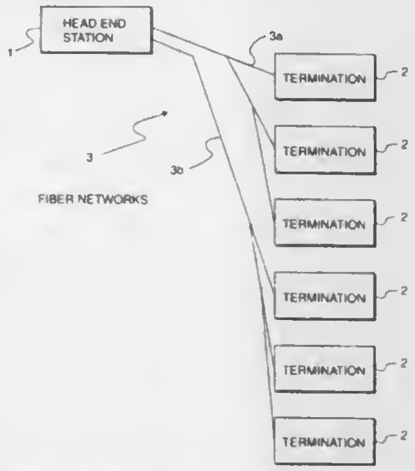
Donald Eric Arthur Clarke; Michael Anthony Hale, both of Essex, and Jeremy Brian Chuter, Suffolk, all of England, assignors to British Telecommunications public limited company, London, England

Filed Apr. 29, 1993, Ser. No. 50,029

Claims priority, application United Kingdom, Oct. 18, 1990, 9022682

Int. Cl.^{6} H04J *14/08*

U.S. Cl. 359—137 **8 Claims**



1. A head-end station for a passive optical network system arranged to transmit downstream time division multiple access (TDMA) frames and receive upstream TDMA frames, said head-end station comprising a TDMA master and an optical stage connected to the TDMA master, the TDMA master comprising means for assembling incoming data into downstream TDMA frames and means for demultiplexing upstream TDMA frames, the optical stage being arranged to be connected to a fiber network and comprising an optical transmitter arranged to modulate an optical signal with downstream TDMA frames output by the TDMA master, and an optical receiver arranged to detect an optical signal carrying upstream TDMA frames, said head-end station further comprising:

- at least one further optical stage connected to the TDMA master being arranged to be connected to a respective fiber network, and having an optical transmitter arranged to modulate an optical signal with said downstream TDMA frames output by the TDMA master, and a demultiplexing means for demultiplexing each received upstream TDMA frame, and wherein a data output of the TDMA master is connected in common to respective inputs of the transmitters of the plurality of optical stages, and the outputs of the receivers of the plurality of optical stages are connected in parallel to a data input of the TDMA master.

5,854,702

OPTICAL TELECOMMUNICATION MODULE

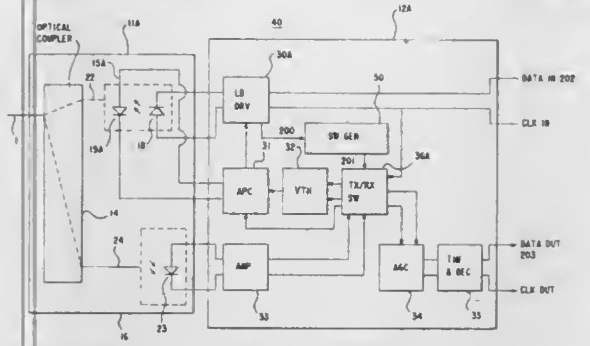
Tomohisa Ishikawa; Katsuhiko Hakomori, both of Kawasaki, and Tatsuya Nishimura, Sapporo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 8, 1996, Ser. No. 694,343

Claims priority, application Japan, Aug. 10, 1995, 7-204252

Int. Cl.^{6} H04B *10/00*

U.S. Cl. 359—152 **5 Claims**



1. An optical telecommunication module comprising:

an optical transceiver adapted for coupling to an optical transmission line for sending out an outgoing optical transmission signal therealong and for receiving an incoming optical transmission signal therefrom;

said optical transceiver including:

- a base;
- a light emitting device mounted on the base and supplied with a transmission signal for emitting an optical signal in response thereto in a forward direction along a predetermined optical axis;

an optical coupler adapted for coupling to the optical transmission line, the optical coupler being connected optically to the light emitting device for injecting the optical signal emitted from the light emitting device into the optical transmission line as the outgoing optical transmission signal, and a photodetection device connected optically to the optical coupler for receiving the incoming optical transmission signal from the optical transmission line, the photodetector producing a reception signal in response thereto, the photodetection device being mounted on the base at a position forward of the light emitting device, with an offset from the predetermined optical axis, the photodetection device being inclined toward the light emitting device for detecting a part of the optical beam emitted from the light emitting device;

a drive unit for driving the optical transceiver, said drive unit including a drive circuit feeding the transmission signal to the light emitting device, an automatic power control circuit for controlling a drive current of the light emitting device such that the optical signal emitted from the light emitting device has a predetermined, constant optical power, an automatic gain control circuit for controlling a level of the reception signal at a predetermined level, and a transmission/reception switching circuit for selectively activating the automatic power control circuit and the automatic gain control circuit, such that the automatic power control circuit is activated in a transmission mode for transmitting the outgoing optical signal and that the automatic gain control circuit is activated in a reception mode for receiving the incoming optical signal;

said optical telecommunication module further including a monitoring photodetection device such that the monitoring photodetection device captures a part of the optical signal that is emitted from the light emitting device in the forward direction for injection into the optical transmission line, wherein the monitoring detection device and the photodetection device are a same photodetection device used for receiving the incoming optical transmission signal.

5,854,703

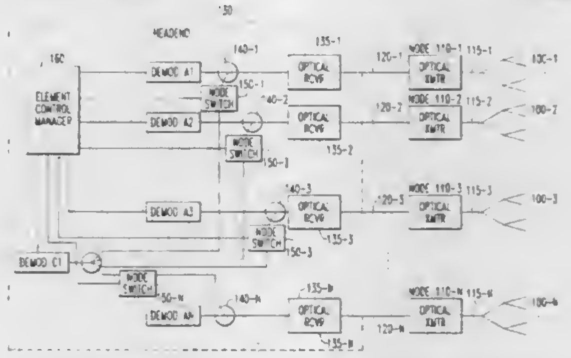
HYBRID FIBER COAX COMMUNICATIONS NETWORK

Lamar E. West, Jr., Maysville, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Feb. 28, 1997, Ser. No. 808,535

Int. Cl.^{6} H04B *10/00*

U.S. Cl. 359—167 **15 Claims**



1. A hybrid fiber coax communications system, comprising:

- a coaxial distribution plant including coaxial distribution lines;
- a plurality of nodes coupled to said coaxial distribution plant;
- a plurality of fiber optic links including at least one fiber optic cable; and
- a headend coupled to said nodes by ones of said fiber optic links, said headend including:
  - optical receivers, each optical receiver for receiving an upstream signal from a corresponding one of said nodes,
  - a first demodulator, selectively coupled to said optical receivers, for receiving one upstream signal at any given time from a first optical receiver, and
  - a plurality of switches located in a signal path between said optical receivers and said first demodulator, a first switch being in a closed state to operatively connect said first optical receiver to said first demodulator, and second switches being in an open state to disconnect second optical receivers from said first demodulator; and
- an element control manager, coupled to said switches being in an open state to disconnect second optical receivers from said first demodulator.

5,854,704
RECEIVER FOR OPTICAL DIGITAL TRANSMISSION SYSTEM

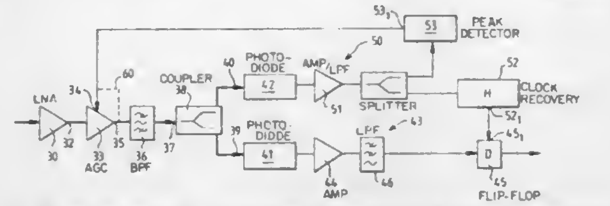
Georges Grandpierre, Guibeville, France, assignor to Alcatel Submarine Networks, Clichy, France

Filed Jun. 25, 1997, Ser. No. 882,259

Claims priority, application France, Jun. 26, 1996, 96 07 926

Int. Cl.^{6} H04B *11/26*

U.S. Cl. 359—189 **13 Claims**



1. A digital optical receiver including photodetector means for converting optical signals into electrical signals on a data channel and a clock channel and including at least one optical amplifier on the input side of said photodetector means which comprise two photodetectors a first of which is connected to a data processing channel and the second of which is connected to a clock signal processing or recovery channel.

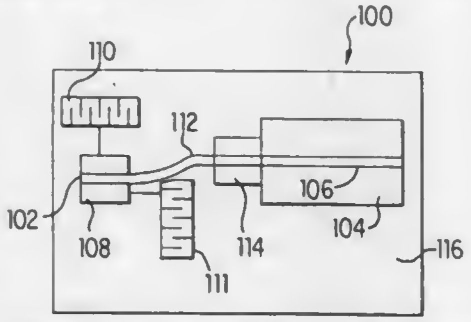
5,854,705
MICROPOSITIONED LASER SOURCE FOR RASTER OUTPUT SCANNERS

Raj B. Apte, Palo Alto; Thomas L. Paoli, Los Altos; Patrick Y. Maeda, Mountain View, and Tibor Fisli, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 17, 1997, Ser. No. 785,229

Int. Cl.^{6} G02B *26/08*

U.S. Cl. 359—196 **21 Claims**



1. A raster output scanner for forming an image, comprising:

a substrate;

a light emitting apparatus attached to the substrate that emits at least one light beam from an apparent source location;

a positioning device within the light emitting apparatus for moving the apparent source location, wherein the apparent source location moves on the substrate with reduced static friction; and

an optical system which directs the at least one light beam onto at least one image receiving location.

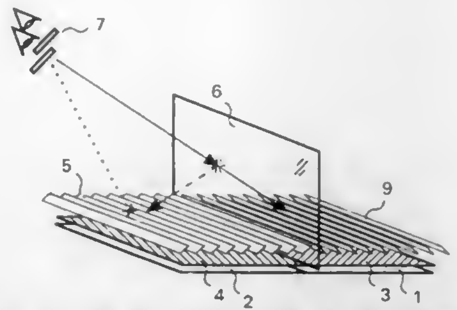
5,854,706
SYSTEM FOR VIEWING STEREOSCOPIC IMAGES

Cristian I. Alb, 2450 Athlone, #607, Montreal, Quebec, Canada, H3R 3H6

Filed Oct. 15, 1996, Ser. No. 730,402

Int. Cl.^{6} G02B *27/26;* H04N *13/00*

U.S. Cl. 359—465 **3 Claims**



1. A stereoscopic viewing system comprising:

a first image displaying means showing the reversed left eye view of a three dimensional scene;

a second image displaying means showing the right eye view of said three dimensional scene, said displaying means being placed such that the superior edge of said second image displaying means and the inferior edge of said first image displaying means are either in contact or are slightly spaced apart;

a semitransparent mirror placed between said first and second image displaying means in order to superimpose the images generated by said first and second image displaying means on a common viewing area;

a first polarizing filter that polarizes light rays coming from said first image displaying means before being reflected by said semitransparent mirror;

a second polarizing filter that polarizes light rays coming from said second image displaying means before passing through said semitransparent mirror, the polarizing directions of said first and second polarizing filters being chosen such that the polarizing direction of light rays reflected on said semitransparent mirror is orthogonal on the polarizing direction of light rays that have passed through said semitransparent mirror;

a first louver type filter placed above said first image displaying means ano operating on light rays coming from said first image displaying means in such a way that light rays coming directly to the viewer eyes are suppressed or strongly attenuated while light rays coming to the viewer eyes through reflection on said semitransparent mirror are only slightly attenuated;

a second louver type filter placed between said second displaying means and said semitransparent mirror, and inducing a slight attenuation on light rays travelling from said second image displaying means toward the viewer eyes in such a way that said slight attenuation is equal to the attenuation induced by said first louver type filter on light rays travelling from said first image displaying means toward the viewer eyes through reflection on said semitransparent mirror; and

a viewing device consisting of a pair of polarizing means that the viewer wears in front of his eyes, said polarizing means having their planes of polarization oriented in such a way that each eye perceives only the corresponding view of said three dimensional scene.

5,854,707
POLARIZING TYPE OPTICAL APPARATUS

Nobuyuki Kasama; Yasuyuki Mitsuoka; Yukiya Funanami, and Tadao Iwaki, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

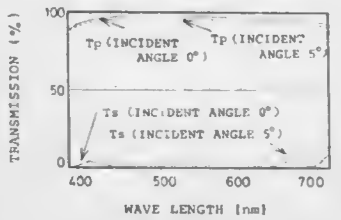
Filed Mar. 6, 1996, Ser. No. 611,738

Claims priority, application Japan, Mar. 7, 1995, 7-047667

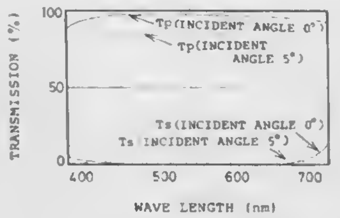
Int. Cl.^{6} G02B *5/30;* G02F *1/1335*

U.S. Cl. 359—487 **19 Claims**

10. A polarizing type optical apparatus comprising: a light source for producing an incident luminous flux; a first polarizing element disposed in a path of the luminous flux; and a second polarizing element disposed in a path of a portion of a luminous flux reflected by the first polarizing element; wherein the first polarizing element has a greater p-polarized light component transmittance than the second polarizing element and the second polarizing element has a lower s-polarized light component transmittance than the first polarizing element.



WAVE LENGTH CHARACTERISTICS OF FIRST PBS



WAVE LENGTH CHARACTERISTICS OF SECOND PBS

5,854,708
ANTI-FOG ELEMENT

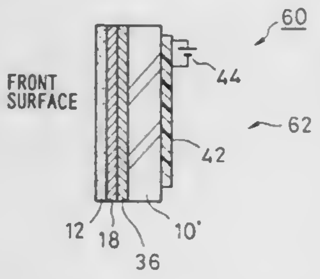
Toru Komatsu, Shimada, and Masatoshi Nakamura, Fujieda, both of Japan, assignors to Murakami Corporation, Japan

Filed Jul. 21, 1997, Ser. No. 897,291

Claims priority, application Japan, Jul. 26, 1996, 8-215212

Int. Cl.^{6} G02B *5/08*

U.S. Cl. 359—512 **11 Claims**



1. An anti-fog element comprising:

a transparent substrate;

a transparent film of a photocatalyzer catalyzing a photocatalytic reaction formed on the transparent substrate; and

a transparent porous inorganic oxide film formed on the film of the photocatalyzer as the outer layer of said anti-fog mirror which is exposed to the air and having a surface exhibiting a hydrophilic property wherein said transparent film of photocatalyzer is made of TiO_2 and said porous inorganic oxide film is made of SiO_2.

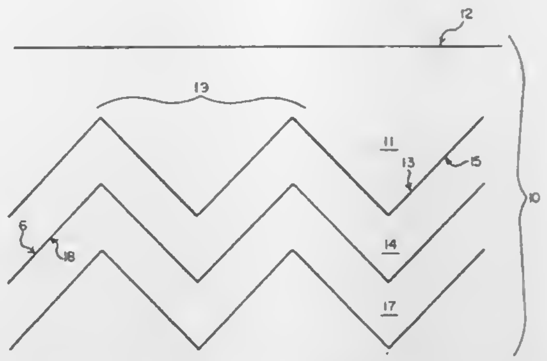
5,854,709
CHAMELEONIC CUBE CORNERS

Dennis I. Couzin, Evanston, Ill., assignor to Stimsonite Corporation, Niles, Ill.

Filed Jun. 24, 1997, Ser. No. 881,595

Int. Cl.^{6} G02B *5/122;5/124*

U.S. Cl. 359—529 **20 Claims**



1. A solid cube corner retroreflector construction comprising

a first transparent layer having a front surface and a rear surface, said rear surface having formed thereon one or more retroreflective cube corner elements,

a second transparent layer in substantially uninterrupted contact with the rear surface of said first layer and substantially conforming to the shape of the retroreflective cube corner elements thereon, said second layer being formed of a material of significantly lower index of refraction than said first layer, and

a third reflective metallic layer in substantially uninterrupted contact with said second layer, such that said second layer is disposed between said first layer and said third layer.

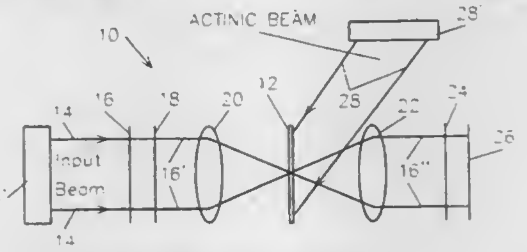
5,854,710
OPTICAL FOURIER PROCESSING

Devulapalli V. G. L. N. Rao, Lexington; Francisco J. Aranda, Arlington, both of Mass.; Joby Joseph, New Delhi, India; Joseph A. Akkara, Holliston, and Masato Nakashima, Weston, both of Mass., assignors to University of Massachusetts, Boston, Mass.

Filed Sep. 9, 1996, Ser. No. 709,994

Int. Cl.^{6} G02B *27/46:5/30;* G03C *11/00;* G11C *13/04*

U.S. Cl. 359—559 **38 Claims**



1. An optical processing system comprising:

a film comprising a photochromic material;

a first radiation source to generate an input beam, wherein the input beam carries an input image;

a polarizer arranged in the path of the input beam to generate a polarized input beam;

a first optical Fourier transformer arranged to focus the polarized input beam onto the photochromic material film;

a second radiation source to generate a polarized actinic beam configured to illuminate the photochromic material film, wherein the actinic beam is set at a wavelength and intensity to induce in the photochromic material anisotropy that varies as a function of the intensity of total illumination on the photochromic material, such that the film transmits a variably polarized image beam including a plurality of polarization components;

a second optical Fourier transformer arranged to provide an inverse Fourier transform of the variably polarized image beam from the photochromic material film;

a polarizing analyzer arranged in the path of the variably polarized image beam and configured to selectively block a specific set of polarization components to generate an output image beam; and

a radiation detector arranged to detect the output image beam.

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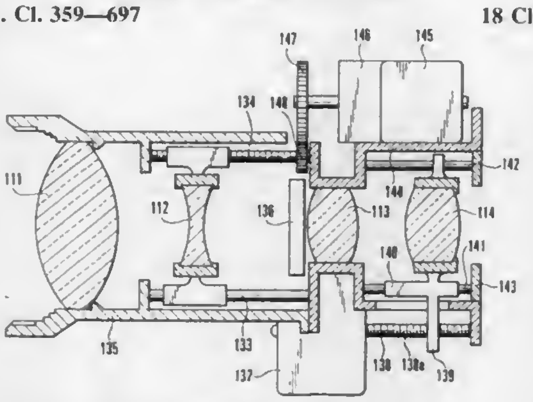
5,854,711
LENS POSITION CONTROL DEVICE AND OPTICAL APPARATUS WITH DRIVING AND CONTROLLING OF FIRST AND SECOND LENSES

Naoya Kaneda, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,586, Feb. 5, 1996, abandoned.
This application May 21, 1997, Ser. No. 859,846
Claims priority, application Japan, Aug. 2, 1995, 7-043597
Int. Cl.^{6} G02B *15/14;07/02*
U.S. Cl. 359—697 **18 Claims**



1. A lens position control device comprising:

a first lens arranged to be movable along an optical axis;

first lens position detecting means for detecting a position of said first lens in the direction of the optical axis;

a second lens arranged to be movable along the optical axis;

second lens position detecting means for detecting a position of said second lens in the direction of the optical axis; and

driving control means for driving and controlling said first and second lenses, said driving control means including a storing part and a position setting part,

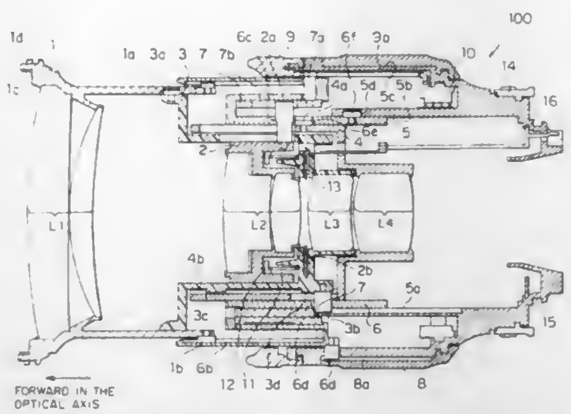
wherein, in said storing part, is stored information related to positions of said second lens at which an in-focus state is retained respectively for a plurality of object distances with respect to each of a plurality of positions of said first lens, and

wherein said position setting part is arranged to determine limit positions of a moving range of said first lens in the direction of the optical axis, to set at least one limit position (Ta) of the moving range to such a position of said first lens that a maximum value of difference between a position of said second lens where an in-focus state is retained for a predetermined object distance when said first lens is located at the one limit position (Ta) of the moving range and a position of said second lens where an in-focus state is retained for the predetermined object distance when said first lens is located at another position (Za) within the moving range coincides with a maximum value of contents stored in said storing part, and to cause the stored plurality of positions of said first lens within a moving range (M–T) which is smaller than the entire moving range of said first lens and which extends toward another limit position (Wa) of the moving range from the one limit position (Ta) to correspond to positions determined on the basis of a moving amount of said first lens stored beforehand in said storing part from the one limit position (Ta).

5,854,712
LENS BARREL WITH HIGHER FOCUSING ACCURACY

Hiroshi Okano, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 17, 1997, Ser. No. 896,024
Claims priority, application Japan, Sep. 9, 1996, 8-237448
Int. Cl.^{6} G02B *7/02*
U.S. Cl. 359—823 **17 Claims**



1. In a lens barrel comprising:

a first member formed with a guide groove; and

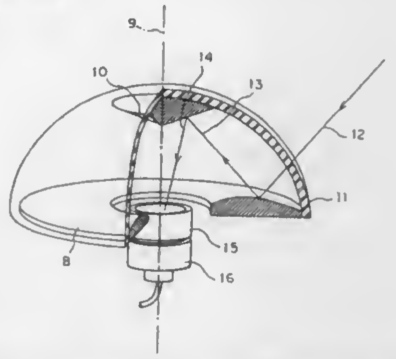
a second member having a main protrusion inserted into said guide groove and moving relative to said first member along said guide groove by moving said main protrusion within said guide groove, the improvement comprising a displacement protrusion provided in a position on said second member and in a position displaced in a direction orthogonal to a direction in which said guide groove extends, the positions being different from the position where said main protrusion is provided in the extending direction of said guide groove, and

said displacement protrusion being inserted into said guide groove and being in contact with one side surface of said guide groove, thereby a play of said main protrusion with respect to said guide groove being removed.

5,854,713
REFLECTION TYPE ANGLE OF VIEW TRANSFORMING OPTICAL APPARATUS

Takeshi Kuroda; Akito Takeya; Kenichi Nishiguchi, and Akira Ichikawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 256,693, Jul. 20, 1994, abandoned.
This application Aug. 2, 1996, Ser. No. 691,418
Claims priority, application Japan, Nov. 30, 1992, 4-341103
Int. Cl.^{6} G02B *5/08;5/10;21/00;17/00*
U.S. Cl. 359—850 **21 Claims**



1. A reflection-type angle-of-view-transforming optical apparatus comprising:

a primary mirror having a primary reflecting surface provided in an axisymmetric form about an axis of rotational symmetry, the primary mirror being an annular member having an inner periphery and an outer periphery, the inner periphery thereof defining an aperture on the axis of rotational symmetry through which light is to be reflected, the primary mirror being constructed and arranged to receive incident light from an observed object and to reflect the incident light from the primary reflecting surface as primary reflected light;

a secondary mirror having a secondary reflecting surface provided in an axisymmetric form about the axis of rotational symmetry, the secondary mirror being disposed with the secondary reflecting surface facing the primary reflecting surface so that the secondary reflecting surface receives the primary reflected light and reflects the primary reflected light as secondary reflected light, the secondary mirror being constructed and arranged to focus the secondary reflected light on a view point that is positioned on the axis of rotational symmetry; and

an optically transparent cover constructed and arranged to support the primary mirror and the secondary mirror relative to each other so that the secondary mirror is axially aligned with the aperture,

wherein the primary reflecting surface has a convex shape relative to the incident light received thereon in a radial direction, a sectional shape of the primary mirror being defined by an equation $y=f_1(x)$ under a condition that an incident angle θ, a sectional shape of the secondary mirror and a relationship defined by $\theta=g(\phi)$ are satisfied, $f_1(x)$ being determined by numerically integrating a first order derivative $f_1'(M_x)$ defined as follows:

$$f_1(M_x)=\frac{D\cos\phi - M_y - \sqrt{D^2 - 2(M_x\sin\phi + M_y\cos\phi)D + M_x^2 + M_y^2}\quad(\cos\theta)}{D\sin\phi - M_x - \sqrt{D^2 - 2(M_x\sin\phi + M_y\cos\phi)D + M_x^2 + M_y^2}\quad(\sin\theta)}$$

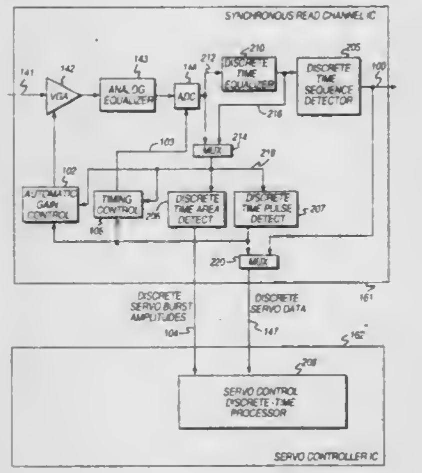
from a point M_1 on the inner periphery of the primary mirror to a point (M_x, M_y), wherein (M_x, M_y) is a coordinate point on the primary reflecting surface, θ is an incident angle of the incident light to the primary mirror, ϕ is an incident angle of the secondary reflected light from the secondary mirror to the view point, P is a point on the secondary reflecting surface, and D is a distance between the viewpoint and P, and

wherein the secondary reflecting surface has a nonplanar shape relative to the primary reflected light received thereon to focus the secondary reflected light through the aperture.

5,854,714
DIGITAL SERVO DEMODULATION FOR SAMPLED AMPLITUDE MAGNETIC RECORDING

David E. Reed, Westminster, and William G. Bliss, Thornton, both of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 325,842, Nov. 14, 1994, Pat. No. 5,668,678. This application Oct. 29, 1996, Ser. No. 741,156
Int. Cl.^{6} G11B *5/09*
U.S. Cl. 360—51 **29 Claims**



1. A discrete time area detector used in a sampled amplitude read channel, responsive to a sequence of discrete time sample values generated by sampling pulses in an analog signal representative of digital data stored on a magnetic medium, the analog signal being generated by reading the medium using a magnetic read/write head, the digital data comprises a plurality of servo bursts wherein each servo burst comprises a plurality of pulses, the servo bursts used to control an electromechanical servo system for positioning the read/write head with respect to the medium, the discrete time area detection circuit comprising:

(a) a means for receiving the discrete time sample values;

(b) a rectifier for generating a rectified sequence of sample values proportional to the absolute magnitude of the discrete time sample values of the analog signal;

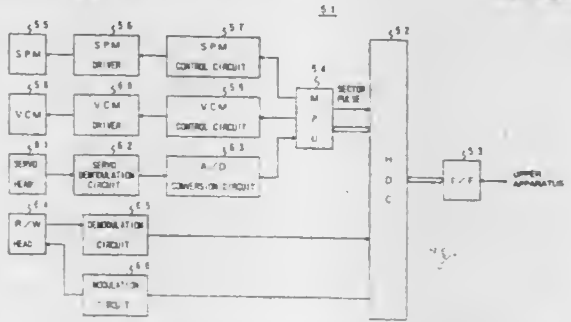
(c) an accumulator for accumulating a predetermined number of the rectified sample values representative of one of the plurality of servo bursts; and

(d) a discrete time output for outputting a discrete time servo control signal indicative of an area of the pulses representing a servo burst.

5,854,715
METHOD FOR TRACKING A READ HEAD ON A DATA AREA ON A DISK AND DISK APPARATUS USING THE METHOD

Masahiro Takagi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 519,569, Aug. 25, 1995, abandoned.
This application Oct. 1, 1997, Ser. No. 942,239
Claims priority, application Japan, Nov. 17, 1994, 6-283665
Int. Cl.^{6} G11B *5/09*
U.S. Cl. 360—53 **20 Claims**



1. A recording and reproducing apparatus for recording and reproducing data on a disk-like recording medium using a head having a read head for reproducing and a write head for recording, said head being moved substantially in a radial direction of said recording medium along an arc-like line, said recording medium having a track comprising a plurality of sectors each having a data area storing data and an identification area storing identification information of the data, said data area being displaced from said identification area due to movement of said head relative to said recording medium, said recording and reproducing apparatus comprising:

offset commanding means for performing an offset operation of said head when a data read command is supplied so that said head is moved from a first position to a second position, said read head tracking on said identification area when said head is at said first position and said read head tracking on said data area when said head is at said second position, wherein a read error is ignored during said offset operation;

index detecting means for detecting an index signal provided for each track on said recording medium when a predetermined period of time has elapsed since said offset operation was started;

measuring means for detecting a target sector on which a data read operation is to be performed when said index signal is detected, said target sector being detected by measuring a predetermined factor representing a period of time since said index signal was detected; and

read commanding means for performing a data reading operation for said data area of said target sector when said target sector is detected.

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5,854,716

Patent Not Issued For This Number

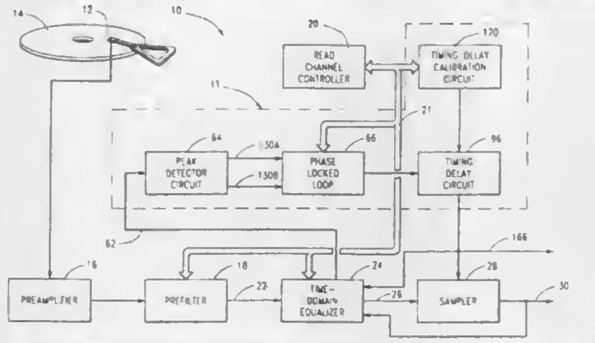
5,854,717
SELF-SYNCHRONIZATION IN A MAGNETIC RECORDING CHANNEL UTILIZING TIME-DOMAIN EQUALIZATION

Vadim B. Minuhin, Bloomington, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 536,008, Sep. 29, 1995, Pat. No. 5,682,125, and a continuation-in-part of Ser. No. 593,824, Jan. 30, 1996, Pat. No. 5,650,954. This application Aug. 1, 1996, Ser. No. 690,905

Int. Cl.^{6} G11B *5/09;5/35*

U.S. Cl. 360—65 **13 Claims**



10. A communication channel, comprising:

a data recovery channel for maximum likelihood detection of an input signal, the data recovery channel comprising a time domain equalizer which generates an equalized signal by filtering the input signal to an approximation of a selected waveform, the time domain equalizer comprising a plurality of serially connected filter sections and a plurality of associated tap locations disposed between adjacent filter sections; and

a clock recovery channel, operably coupled to a selected tap location, which generates timing signals in response to tap signals at the selected tap location.

5,854,718
RECORD AMPLIFYING CIRCUIT FOR RESPECTIVELY SERIALLY AND DIFFERENTIALLY DRIVING SETS OF SERIES-CONNECTED SOUND AND VIDEO RECORD HEADS

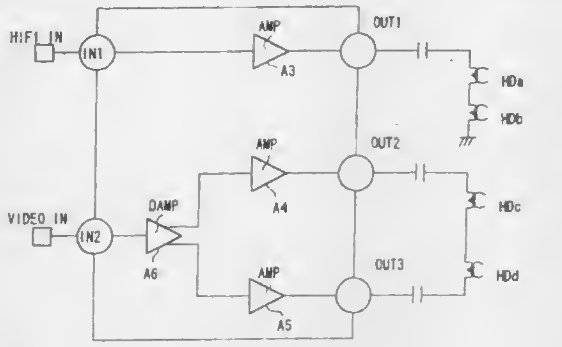
Toshikazu Fujii, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 477,947, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 267,407, Jun. 29, 1994, abandoned. This application Apr. 23, 1997, Ser. No. 842,051

Claims priority, application Japan, Jun. 30, 1993, 5-162394

Int. Cl.^{6} G11B *5/02*

U.S. Cl. 360—68 **11 Claims**



1. A record amplifying circuit for a magnetic record and playback apparatus having low power consumption, comprising:

a set of sound record heads connected in series;

a set of video record heads connected in series;

means for inputting an audio signal and a video signal;

means for driving said set of sound record heads in series to decrease power consumption of the record amplifying circuit;

means for differentially driving said set of video record heads to suppress distortion of the video signal and to further decrease the power consumption of the record amplifying circuit; and

means for converting the video input signal into differential video signals and for providing each of the differential video signals to the means for differentially driving said set of video record heads.

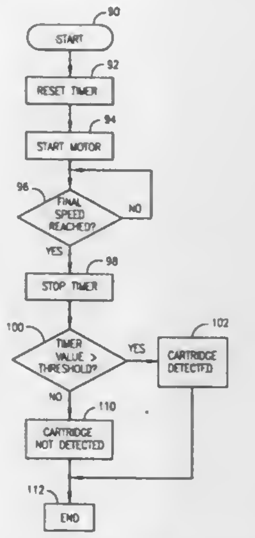
5,854,719
METHODS AND APPARATUS FOR DETECTING WHETHER A REMOVABLE CARTRIDGE DISK DRIVE IS EMPTY

David M. Ginosar, Ogden; Mark S. Thayne, West Point; Yiping Ma, Layton, and Clark C. Bruderer, Farmington, all of Utah, assignors to Iomega Corporation, Roy, Utah

Continuation-in-part of Ser. No. 324,671, Oct. 18, 1994, abandoned. This application Nov. 10, 1994, Ser. No. 337,678

Int. Cl.^{6} G11B *15/18*

U.S. Cl. 360—69 **44 Claims**



1. In a disk drive of the type that receives a removable disk cartridge, said disk drive having a spindle motor that engages with a hub of the disk cartridge in order to rotate a recording disk within the cartridge, a method for detecting whether the disk drive is empty, comprising the steps of:

(a) initiating rotation of the spindle motor;

(b) obtaining a measure of load on the spindle motor; and

(c) comparing said measure of load on the spindle motor to a threshold value, and providing an indication of whether the disk drive is empty based on said comparison.

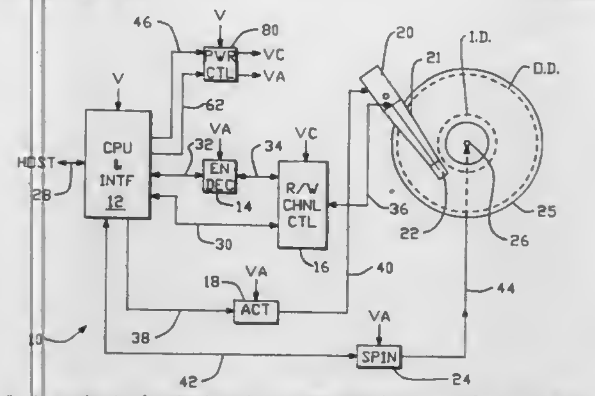
5,854,720
LOW-POWER HARD DISK DRIVE SYSTEM ARCHITECTURE

Louis J. Shrinkle, and John P. Squires, both of Boulder, Colo., assignors to Seagate Peripherals, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 292,076, Aug. 17, 1994, abandoned, which is a division of Ser. No. 123,582, Sep. 17, 1993, Pat. No. 5,402,200, which is a continuation of Ser. No. 564,693, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 152,069, Feb. 4, 1988, abandoned. This application Jul. 12, 1996, Ser. No. 678,198

Int. Cl.^{6} G11B *15/18*

U.S. Cl. 360—69 **5 Claims**



1. A method of reducing the power requirement of a disk drive wherein said disk drive includes a rotating data storage disk having a plurality of tracks, each track including a plurality of data sectors each providing for the storage of control data and a plurality of data bytes, each data sector having a beginning and an end, and electronic means, coupled to a data transducer, for controlling said transducer, said transducer reading successive data bytes from a data sector as such sector rotates past a predetermined point relative to said data transducer, said method comprising the steps of:

a) providing for the rotation of said rotating storage disk;

b) determining a point in time when the control data of a predetermined data sector will rotate past said predetermined point relative to said data transducer;

c) applying power to said electronic means at a predetermined period of time in advance of said point in time;

d) reading the control data from said predetermined data sector; and

e) withdrawing power from said electronic means upon completing the reading of the control data from said predetermined data sector while maintaining data storage disk rotation.

5,854,721
BALANCING DEVICE OF ACTUATOR IN HARD DISK DRIVE

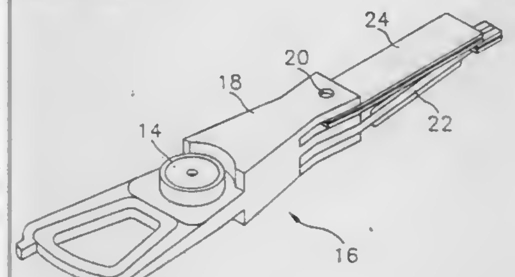
Beoyng-Cheol Lim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 10, 1995, Ser. No. 541,552

Claims priority, application Rep. of Korea, Oct. 17, 1994, 1994 26494

Int. Cl.^{6} G11B *5/48*

U.S. Cl. 360—106 **6 Claims**



3. A disk drive, comprising:

a base having a substantially rectangular shape;

at least one recording medium;

rotating means mounted on the base, for rotating the recording medium;

an actuator assembly rotatably mounted on the base by a pivot bearing, said actuator assembly including an actuator arm having a comb-shaped structure with a mounting hole at a distal end and a plurality of head gimbal assemblies each supporting a transducer head for recording and reading information on the recording medium;

at least a balance gimbal different from said head gimbal assemblies mounted on said actuator arm, said balance gimbal having the same mass as each head gimbal assembly and being configured not to support said transducer head but to mass balance said actuator arm as said actuator arms rotates about an axis of rotation, when said plurality of head gimbal assemblies mounted on said actuator arm is less than a predetermined number of head gimbal assemblies configured by said actuator arm; and

a voice coil motor assembly for enabling said actuator arm to rotate substantially in a radial direction of the recording medium about said pivot bearing, wherein said balance gimbal comprises a balance plate and a circular throat protruding from one end of said balance plate, and is mounted on said actuator arm by placing said circular throat into said mounting hole of said actuator arm and snapping a ball bearing through said circular throat to thereby secure said circular throat against an interior surface of said mounting hole, for balancing any mass imbalance presented by said actuator arm as said actuator a rotates in said radial direction of the recording medium.

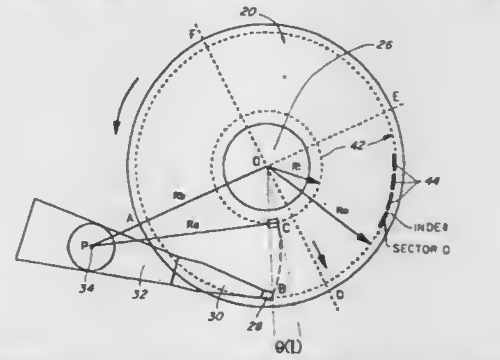
5,854,722
METHOD AND APPARATUS FOR ROTARY ACTUATOR ARC COMPENSATION CORRECTION IN A DIRECT ACCESS STORAGE DEVICE

Earl Albert Cunningham; Kevin Jack Erickson, and Hal Hjalmar Ottesen, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 112,408, Aug. 26, 1993, abandoned. This application May 18, 1995, Ser. No. 443,963

Int. Cl.^{6} G11B *5/596*

U.S. Cl. 360—77.04 **5 Claims**



1. Apparatus for providing a feedforward correction signal to drive mechanism of a rotatable actuator in a disk storage device, comprising:

means for generating a reference feedforward correction signal at each of a plurality of sectors around a predetermined track on a disk surface, said reference feedforward correction signal varying periodically as a function of angular position of the disk, said means for generating a reference feedforward correction signal includes means for measuring a runout error at each of said plurality of sectors around said predetermined track;

means for identifying a specific selected track;

means for calculating the change in the radial line to a transducer head at said specific selected track compared to the radial line with the transducer head at the predetermined reference track; and

means responsive to said identified specific selected track and to said change in radial line for modifying both magnitude and phase of said generated reference feedforward correction signal including means for calculating:

$$x_1(n, L) = \frac{2}{N}\,[C(1, L)\cos\omega_0 n - D(1, L)\sin\omega_0 n]$$

where the first harmonic phase corrected Fourier coefficients for track L C(1,L) and D(1,L) are

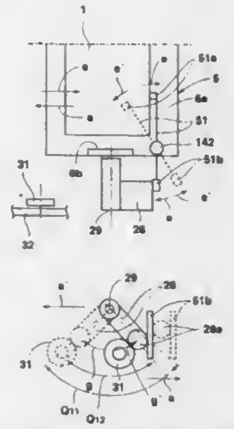
$$C(1,L)=A(1)+\theta(L)B(1)$$

$$D(1,L)=B(1)-\theta(L)A(1)$$

where A(1) and B(1) are real and imaginary Fourier coefficients for said measured runout error and θ(L) is a difference angle between a transducer head angle at the predetermined track on a disk surface and at the specific selected track.

5,854,723
CASSETTE TYPE RECORDING/REPRODUCING APPARATUS WITH A CAM DRIVEN CASSETTE STAGE FOR LOADING/UNLOADING A CASSETTE

Katsuhiro Suzuki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 15, 1997, Ser. No. 834,214
Claims priority, application Japan, Apr. 16, 1996, 8-117169
Int. Cl.^{6} G11B *15/675*
U.S. Cl. 360—96.5 **2 Claims**



1. A cassette type recording/reproducing apparatus including:

a cassette insertion port formed on a front panel;

a cassette stage which is reciprocatively moved between a cassette insertion position at which a tape cassette is inserted from said cassette insertion port, and a cassette mount position at which the inserted tape cassette is subjected to recording/reproducing operation;

a cassette discharge lever which is freely rotationally secured to said cassette stage, and pushed and moved by the cassette which is inserted through said cassette insertion port into said cassette stage;

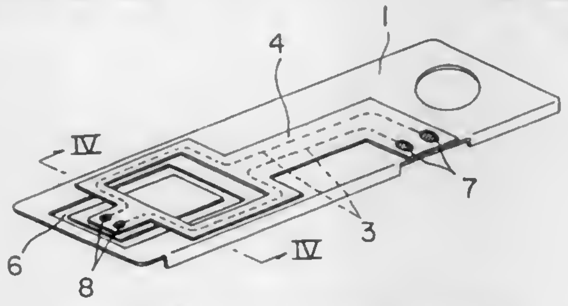
a cam driven lever which is freely rotationally secured to said cassette stage, and serves to rotationally drive said cassette discharge lever in a cassette discharging direction;

a cam which is disposed at a fixed position on a movement locus of said cam driven lever which is moved together with said cassette stage, and kicks said cam driven lever during said cassette stage being moved from the cassette mount position to the cassette insertion position, whereby said cassette discharge lever is rotationally driven in the cassette discharge direction by said cam driven lever; and

control means for positionally regulating said cam driven lever in a fixed range with some degree of freedom at the middle position in a swing range in which said cam driven lever is rotated by said cam.

5,854,724
MAGNETIC HEAD SUSPENSION ASSEMBLY

Masaichi Inaba; Hirofumi Matsumoto, both of Ushiku, and Yasuyuki Tanaka, Tsuchiura, all of Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan
Division of Ser. No. 465,760, Jun. 6, 1995, Pat. No. 5,673,484. This application Aug. 2, 1996, Ser. No. 693,463
Claims priority, application Japan, Jul. 26, 1994, 6-193662
Int. Cl.^{6} G11B *5/48*
U.S. Cl. 360—104 **20 Claims**



17. A magnetic head suspension assembly comprising:

a resilient suspension member, said suspension member including at least first and second coplanar portions arranged such that said first portion is entirely contained within and spatially isolated from said second portion to thereby define an endless opening therebetween;

a layer of flexible insulating base material at least in part supported on said suspension member, said base material bridging said first and second portions of said suspension to thereby provide a flexible support for a circuit wiring pattern;

a circuit wiring pattern at least in part formed on said base material and carried by said base material across said opening; and

a surface protecting layer formed on at least a portion of said circuit wiring pattern.

5,854,725
AIR FLOW GUIDE FOR REDUCING AIR FLOW DISTURBANCE ON AN ACTUATOR ARM OF A HAND DISK DRIVE AND A PROCESSING METHOD THEREFOR

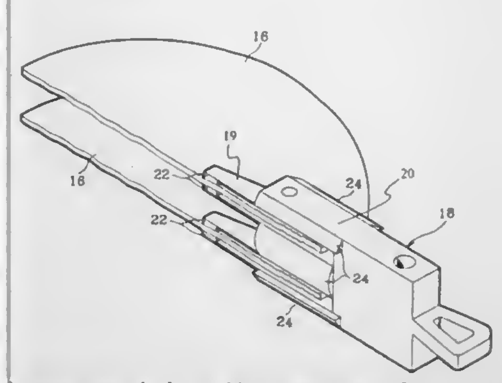
Joo-Shik Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jul. 8, 1996, Ser. No. 677,030
Claims priority, application Rep. of Korea, Jul. 8, 1995, 1995-20116
Int. Cl.^{6} G11B *5/55;21/08*
U.S. Cl. 360—106 **20 Claims**

1. A hard disk device comprising:

a disk

a spindle for rotating said disk at a predetermined speed;

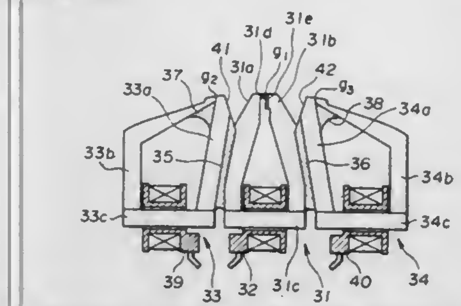
actuator means for positioned an actuator head over an object track of said disk; and



guide means attached to said actuator means for guiding an air flow generated on a surface of said disk during rotation of said disk by said spindle into a substantially laminar flow.

5,854,726
MAGNETIC HEAD DEVICE FOR DATA CARTRIDGE

Shoetsu Kubota, and Koji Honda, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 603,382, Feb. 20, 1996, abandoned, which is a continuation of Ser. No. 285,727, Aug. 4, 1994, abandoned. This application May 20, 1997, Ser. No. 859,602
Claims priority, application Japan, Aug. 31, 1993, 5-216766
Int. Cl.^{6} G11B *5/29*
U.S. Cl. 360—121 **6 Claims**



1. A magnetic head device for high density recording and reproducing in a data cartridge, comprising three magnetic head elements bonded together so as to form a unitary body and arrayed serially along a line in a direction of relative movement between the three magnetic head elements and a magnetic recording medium, and magnetic circuit separation grooves positioned between the magnetic head elements, each groove having a V-shaped cross section and being exposed to the magnetic recording medium;

wherein:

one of the magnetic head elements comprises a recording head having a recording magnetic gap,

another of the magnetic head elements comprises a reproducing head having a reproducing magnetic gap,

the recording head is formed of two core halves bonded together and having high saturation magnetic flux density metal films bonded directly onto respective magnetic gap forming faces of the core halves,

the middle magnetic head element of the three serially arrayed magnetic head elements formed of core halves which are inclined toward each other and having outer inclined faces which are inclined toward each other;

each of the outermost magnetic head elements of the three serially arrayed magnetic head elements being formed of core halves bonded together, the magnetic cores of the outermost magnetic head elements forming magnetic gaps having inclined gap forming faces, the gap forming faces of the magnetic gaps extending in a depth direction in a manner non-parallel to one another;

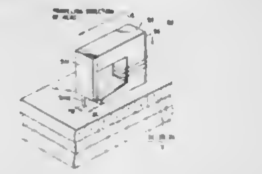
the magnetic cores of the outer magnetic head elements being obliquely bonded to the outer inclined faces of the middle magnetic head element;

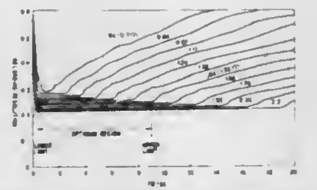
each of the magnetic head elements having back cores bonded to back sides thereof to form closed magnetic circuits;

the magnetic core halves of the middle magnetic head being distinct and different from the core halves of the outer magnetic heads.

5,854,727
MAGNETIC HEAD AND MAGNETIC DISK DRIVE

Tsutomu Tanaka, Yokohama; Tomoko Taguchi, and Yoichiro Tanaka, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 523,966, Sep. 6, 1995, Pat. No. 5,680,283. This application Jul. 16, 1997, Ser. No. 895,585
Claims priority, application Japan, Sep. 30, 1994, 6-261276
Int. Cl.^{6} G11B *5/127;5/187*
U.S. Cl. 360—125 **15 Claims**





1. A magnetic head for recording or reproducing information on or from a magnetic recording medium including a magnetic recording layer for information recording which has a magnetic anisotropy in a direction perpendicular to a surface of said recording medium, a soft magnetic under layer provided under said magnetic recording layer and having soft magnetic properties, and a non-magnetic substrate,

wherein a ratio tW/pL of a track width tW to a width pL of an end face, in a traveling direction, of a main pole which performs recording or reproduction on or from said magnetic recording layer, and a saturation magnetic flux density BS (T: tesla) of a magnetic material constituting said main pole satisfy:

$$0.515\times Bs^2-1.834\times Bs+2.02<tW/pL<3.312\times Bs^2+1.909\times Bs-1.42 \qquad (0.7<Bs\leqq 2)$$

and

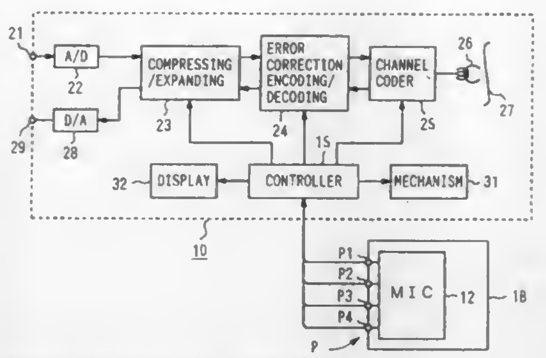
$$0.4<tW/pL<3.312\times Bs^2+1.909\times Bs-1.42 \qquad (B5>2).$$

5,854,728
CLEANING CASSETTE FOR USE IN CLEANING A RESPECTIVE TYPE OF MAGNETIC RECORDING AND REPRODUCING APPARATUS INTO WHICH A NORMAL TAPE CASSETTE IS LOADED WHEN PERFORMING RECORDING AND REPRODUCING OPERATIONS

Masaki Oguro, Tokyo, and Akira Takano, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 577,327, Dec. 22, 1995, Pat. No. 5,726,817. This application Apr. 24, 1997, Ser. No. 845,514
Claims priority, application Japan, Dec. 27, 1994, 6-337841
Int. Cl.^{6} G11B *23/02*
U.S. Cl. 360—132 **1 Claim**

1. A cleaning cassette for use in cleaning a respective type of magnetic recording and reproducing apparatus into which a normal tape cassette is loaded when performing recording and reproducing operations, said cleaning cassette comprising:

a cassette casing configured to permit the cleaning cassette to be loaded into the respective type of magnetic recording and reproducing apparatus in place of said normal cassette;



at least one reel in said cassette casing;

a cleaning tape wound about said reel; and

a memory attached to said cassette casing for storing data indicating the presence of said cleaning tape, said memory further storing data indicating an optimum time for each use of said cleaning tape, a maximum number of uses of said cleaning tape for each cleaning operation, a total accumulated time of use of said cleaning tape that is permissible, and a total accumulated time that the cleaning tape has been used.

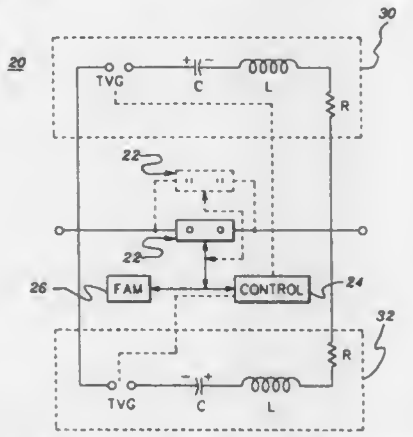
5,854,729
POWER SYSTEM DEVICE AND METHOD FOR ACTIVELY INTERRUPTING FAULT CURRENT BEFORE REACHING PEAK MAGNITUDE

Robert C. Degeneff, Niskayuna; Moises R. Gutierrez, and Mietek T. Glinkowski, both of Troy, all of N.Y., assignors to Utility Systems Technologies, Inc., Niskayuna, N.Y.

Filed May 23, 1997, Ser. No. 862,983

Int. Cl.^{6} H02H *3/00*

U.S. Cl. 361—4 **24 Claims**



1. A device for controlling fault current in an ac power system, said device comprising:

a circuit interrupter comprising a pair of separable contacts for connection in series with said ac power system, said circuit interrupter being operable to open circuit said ac power system at zero current therethrough to thereby control the fault current;

a first commutation circuit and a second commutation circuit connectable in parallel with said circuit interrupter, said first commutation circuit having a first commutating capacitance with a positive polarity when charged and said second commutation circuit having a second commutating capacitance with a negative polarity when charged;

a control circuit for opening said circuit interrupter upon detection of fault current and for selecting and connecting either said first commutation circuit or said second commutation circuit in parallel with said circuit interrupter to thereby discharge into said circuit interrupter said first commutating capacitance or said second commutating capacitance, respectively, wherein said control circuit selects between said first commutation circuit and said second commutation circuit to apply across the circuit interrupter commutating capacitance of opposite polarity to a polarity of the fault current detected such that fault current in the circuit interrupter is actively driven to zero before a peak magnitude of said fault current can be reached; and

further comprising a fast acting mechanism coupled between said circuit interrupter and said control circuit, said fast acting mechanism being employed by said control circuit to open said pair of separable contacts upon detection of fault current, wherein said fast acting mechanism operates to open said pair of separable contacts within a quarter of a 60 Hertz cycle.

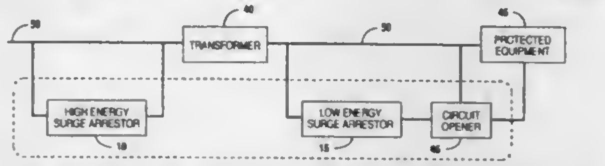
5,854,730
TRANSIENT AND VOLTAGE SURGE PROTECTION SYSTEM AND METHOD FOR PREVENTING DAMAGE TO ELECTRICAL EQUIPMENT

Dennis Mitchell, 10362 Sahara, #2816, San Antonio, Tex. 78216, and Joseph Muñoz, 21507 Tenore, San Antonio, Tex. 78259

Filed Sep. 15, 1997, Ser. No. 931,009

Int. Cl.^{6} H02H *7/04*

U.S. Cl. 361—38 **11 Claims**



1. A voltage surge suppression system for the protection of electronic equipment from damage from voltage surges and voltage transients, said system comprising:

a metal oxide varistor electrically connected to a primary power source;

a transformer;

a second metal oxide varistor electronically connected between said transformer and a power circuit board; and

a circuit opener electronically connected between said transformer and power circuit board, said circuit opener being a resettable breaker for protecting said transformer from surges greater than the rated value of said second metal oxide varistor by opening in order to close off current flow, wherein:

said transformer is connected between said primary power source and second metal oxide varistor.

5,854,731
ELECTRICAL APPARATUS

Kevin Paul Thomas, Gloucestershire, England, assignor to Smiths Industries Public Limited Company, London, England

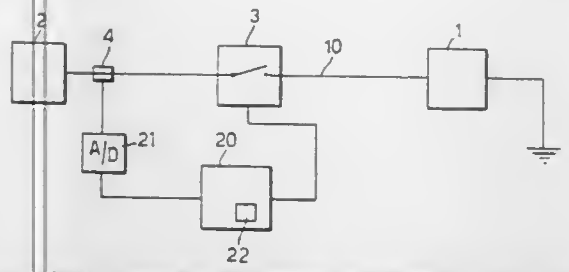
PCT No. PCT/GB96/01645, § 371 Date Dec. 22, 1997, § 102(e) Date Dec. 22, 1997, PCT Pub. No. WO97/04511, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 10, 1996, Ser. No. 981,259

Claims priority, application United Kingdom, Jul. 15, 1995, 9514528

Int. Cl.^{6} H02H *5/00*

U.S. Cl. 361—93 **1 Claim**



1. A method of controlling switching of a circuit protection device comprising the steps of deriving a first signal by raising a signal representative of current flow through the circuit protection device by a non-unity constant to derive a gross heat gain value proportional to the current, calculating a difference value by subtracting from the value of this first signal a value stored in an accumulator to derive a gross heat value loss proportional to an emulated temperature of the device, multiplying the difference value by a constant, subtracting the product of the multiplication from the value of the first signal, entering the resultant value in the accumulator, comparing the resultant accumulator value with a maximum threshold, and generating a trip command to the circuit protection device if the accumulator value exceeds the threshold, whereby the trip command is generated in response to the simultaneous combined effect of heating and cooling of the device.

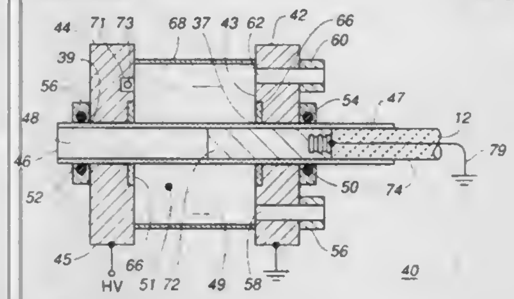
5,854,732
HIGH VOLTAGE ARCHING SWITCH INITIATED BY A DISRUPTION OF THE ELECTRIC FIELD

Michael Murray, Palm City, Fla., assignor to Argus Photonics Group, Inc., Jupiter, Fla.

Filed Mar. 10, 1997, Ser. No. 813,289

Int. Cl.^{6} H01J *5/06*

U.S. Cl. 361—120 **20 Claims**



1. A high voltage switch, comprising:

first and second electrodes having electrode surfaces: an electrically non conductive tube having an outer surface connecting said electrode surfaces;

an electrically non conductive wall surrounding said tube and forming an enclosure in which said electrode surfaces and said outer surface of said tube are sealed;

an ionizable material in said enclosure, an electric field being created in said enclosure responsive to application of a high voltage potential across said electrodes; and,

an electrically conductive member adapted for movement in said tube between a first position substantially inside said enclosure and a second position substantially outside said enclosure, said electrically conductive member distorting said electric field when moved into said first position and causing an ionized current flow path between said electrode surfaces.

5,854,733
STATIC CHARGE ELIMINATING LINGERIE ORGANIZER

Gloria B. Jerkins, P.O. Box 684, Stapleton, Ala. 36578

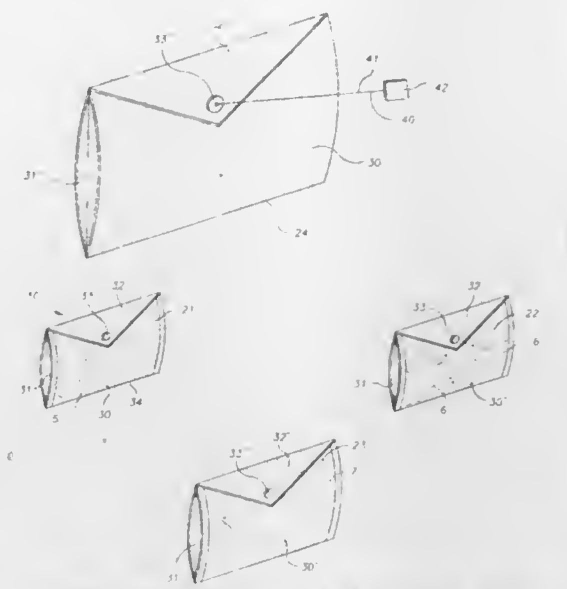
Filed Dec. 11, 1997, Ser. No. 989,100

Int. Cl.^{6} H01M *1/00*

U.S. Cl. 361—212 **19 Claims**

1. A static charge eliminating lingerie organizer comprising:

a plurality of individual lingerie storage pouches wherein each lingerie storage pouch is dimensioned to store therein at least one lingerie garment and wherein said each lingerie storage pouch attracts static charge of said at least one lingerie garment stored therein; and,



a grounding pouch dimensioned to received said plurality of individual lingerie storage pouches and neutralize said static charge.

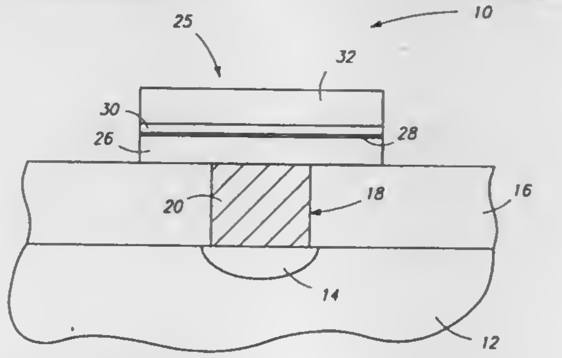
5,854,734
CAPACITOR CONSTRUCTION

Gurtej S. Sandhu, Boise, and Kris K. Brown, Garden City, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 666,896, Jun. 19, 1996, which is a division of Ser. No. 444,852, May 19, 1995, Pat. No. 5,665,625. This application Oct. 7, 1997, Ser. No. 946,275

Int. Cl.^{6} H01G *4/06;4/005;4/008*

U.S. Cl. 361—321.5 **2 Claims**



1. A capacitor comprising:

a first electrically conductive capacitor plate;

a predominately amorphous electrically conductive layer over the first capacitor plate and wherein the amorphous electrically conductive layer comprises $TiC_xN_yO_z$, and wherein "x" is about 0.01 to about 0.5, "y" is about 0.99 to about 0.5, and "z" is about 0 to about 0.3, with the sum of "x", "y" and "z" equaling about 1.0;

a capacitor dielectric layer over the predominately amorphous electrically conductive layer and which comprises Si_3N_4; and

a second electrically conductive capacitor plate over the capacitor dielectric layer.

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5,854,735
DEVICE FOR TILTABLY SUPPORTING A LCD

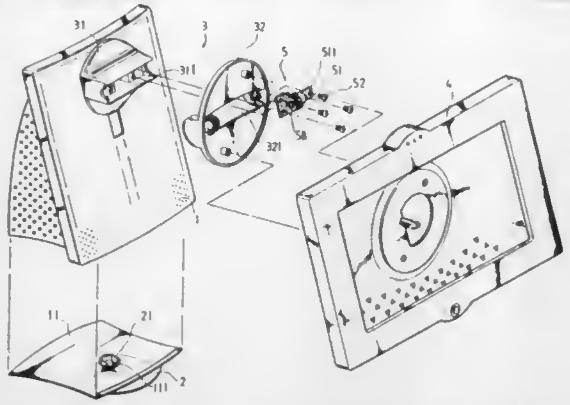
Yung-Long Cheng, Taipei, Taiwan, assignor to ADI Corporation, Taichung Hsien, Taiwan

Filed Jun. 10, 1997, Ser. No. 872,173

Claims priority, application Taiwan, Nov. 16, 1996, 85217569

Int. Cl.^{6} G06F *1/16;* H05K *7/16*

U.S. Cl. 361—681 **3 Claims**



1. A LCD support structure comprising a stand, and a LCD holder mounted on said stand to hold a LCD (liquid crystal display), permitting said LCD to be tilted forwards and backwards within a limited angle, said LCD holder comprising a mounting base fixedly fastened to said stand, a holder base fixedly mounted on said LCD, and at least one coupling device coupled between said mounting base and said holder base, enabling said holder base to be tilted forwards and backwards within a predetermined angle relative to said mounting base, and wherein said stand comprises an upright support adapted to hold said mounting base of said LCD holder and having a bottom and a through hole at said bottom, and a rotary table having an upright bolt fastened to the through hole of said upright support, permitting said upright support to be turned with said rotary table horizontally through 360°.

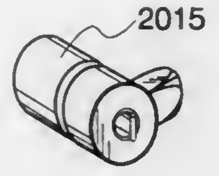
5,854,736
PERIPHERAL CARD LOCKING DEVICE

Eric D. Fuhs, Stevensville, Mich.; Peter A. Ojeda, Mundelein, Ill., and Elisa E. Zappacosta, Issaquah, Wash., assignors to Packard Bell NEC, Sacramento, Calif.

Continuation-in-part of Ser. No. 27,669, Aug. 26, 1994, Pat. No. Des. 364,853. This application Mar. 24, 1995, Ser. No. 410,633

Int. Cl.^{6} G06F *1/16;* E05B *73/00*

U.S. Cl. 361—683 **6 Claims**



1. A locking system for a portable personal computer having a housing, removable cover and a peripheral card expansion slot for removably receiving external peripheral cards;
- a metal chassis, rigidly disposed inside the computer housing, formed with a depending arm with a first keyhole slot;
- a cover formed with a second keyhole slot, said second keyhole slot to be aligned with said first keyhole slot when said cover is assembled to the computer housing; and
- a locking assembly to be secured to said first and second keyhole slots to prevent removal of said cover from said metal chassis, said lock assembly further positioned to block at least a portion of said peripheral card expansion slot for blocking removal of said peripheral cards from said peripheral card expansion slot within said housing.

5,854,737
INFORMATION PROCESSING SYSTEM USING PORTABLE TERMINAL UNIT AND DATA COMMUNICATION ADAPTER HAVING BIASED CONNECTOR

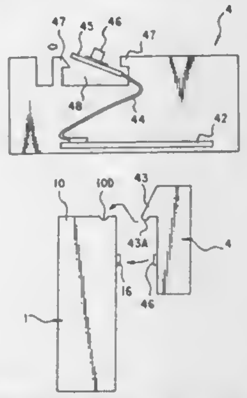
Takao Obata; Mitsuaki Kumagai, both of Inagi; Akihiko Iura, Kawasaki; Akio Murata, Kawasaki; Shinji Yamamoto, Kawasaki; Makoto Sato; Akira Okawado, both of Inagi; Shinichiro Tsurumaru, Kawasaki; Maki Miyata, Yokohama; Toshiyuki Kobayashi, Inagi; Nobuaki Akasawa, Inagi; Masahiko Okano, Inagi, and Takao Miyanaga, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 333,559, Oct. 31, 1994, Pat. No. 5,661,634. This application May 23, 1997, Ser. No. 862,711

Claims priority, application Japan, Nov. 9, 1993, 5-279846; Nov. 9, 1993, 5-304834; Nov. 9, 1993, 5-304835; Nov. 9, 1993, 5-304836; Nov. 9, 1993, 5-304837

Int. Cl.^{6} G06F *1/16;* H05K *7/12*

U.S. Cl. 361—686 **4 Claims**



1. A combination of a portable terminal unit and an optional device, said portable terminal unit being driven by a battery, and equipped with a control circuit, a keyboard, and connectors, to which the optional device for extending a function of the portable terminal unit is connected, the combination comprising:
- a housing of the portable terminal unit, the housing including the control circuit, the keyboard, and the connectors thereupon, said housing including a receiving area for receiving the optional device therein;
- a casing of the optional device, said casing of said optional device comprising
  - an opening in said casing;
  - an auxiliary connector disposed in said opening, said auxiliary connector for connecting to the portable terminal unit;
  - a printed circuit board positioned in the casing, said auxiliary connector being mounted on said printed circuit board;
  - a bias means is attached to said printed circuit board, for biasing the printed circuit board from a bottom side thereof toward the opening from a fixed location within the casing; and
  - a stopper means provided in the opening attached to the casing for retaining and regulating the position of the printed circuit board inside the opening.

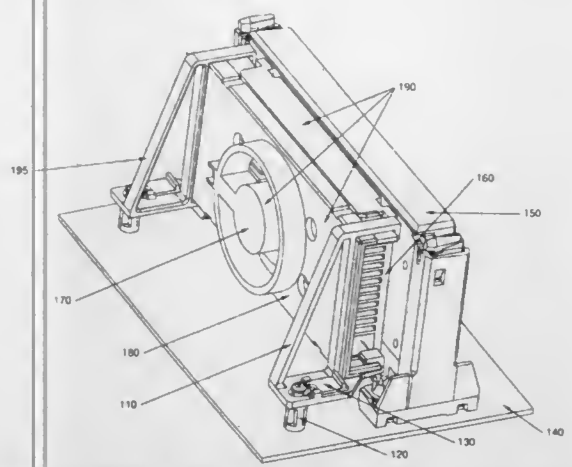
5,854,738
APPARATUS FOR SUPPORTING A COOLING ASSEMBLY COUPLED TO AN INTEGRATED CIRCUIT

Victor A. Bowler, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 30, 1997, Ser. No. 866,163

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—695 **14 Claims**



1. A support apparatus for an integrated circuit (IC) cooling assembly, comprising:
- a triangulated support bracket having a first and a second wrap-around attachment tab to engage the IC cooling assembly at a bottom and a top receiving groove respectively in the IC cooling assembly, wherein, in an installed position, a foot of the support bracket is disposed in parallel to a printed circuit board (PCB), a vertical support of the support bracket extends vertically downwardly from the second wrap-around attachment tab toward the PCB, and the support bracket extends horizontally over the PCB;
- a standoff for removably attaching to the PCB; and
- a retaining latch which detachably couples the support bracket to the standoff.

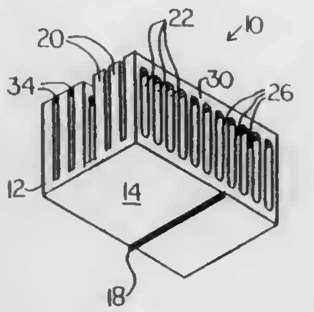
5,854,739
LONG FIN OMNI-DIRECTIONAL HEAT SINK

Ronald E. Steiner, Agoura Hills, and Peter S. Chow, Burbank, both of Calif., assignors to International Electronic Research Corp., Burbank, Calif.

Filed Feb. 20, 1996, Ser. No. 602,487

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—703 **16 Claims**



1. A one piece heat dissipating member for removing heat from an electronic component, said one piece heat dissipating member including a base having a heat receiving surface adapted to being mounted in heat receiving relationship with said electronic component, a heat discharging surface generally opposed to said heat receiving surface, a plurality of spaced apart perforated panels projecting generally outwardly from said heat discharging surface and being unsupported except by said base, said panels including outermost ends remote from said base, said panels having an aspect ratio of from approximately 10:1 to 30:1, said perforated panels being continuous in the region of said outermost ends and having a free flow area ratio of from approximately 0.4:1 to 0.7:1.

5,854,740
ELECTRONIC CIRCUIT BOARD WITH SEMICONDUCTOR CHIP MOUNTED THEREON, AND MANUFACTURING METHOD THEREFOR

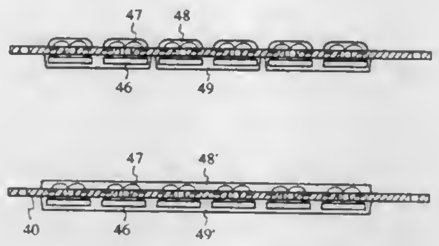
Gi-Bon Cha, Cheongju-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Apr. 29, 1996, Ser. No. 639,650

Claims priority, application Rep. of Korea, Apr. 27, 1995, 95-10040

Int. Cl.^{6} H05K *7/02;1/14;* H01R *9/09*

U.S. Cl. 361—760 **23 Claims**



1. A circuit board, comprising:
- a plurality of semiconductor chips having bonding pads formed on a surface thereof for connecting internal electronic circuits of the semiconductor chips to external circuits;
- a circuit board having an upper surface, a lower surface, a plurality of terminals, and a plurality of openings, wherein the upper surface of the circuit board comprises a plurality of bonding pads formed around the openings, wherein the bonding pads are electrically coupled to the terminals, wherein each of the semiconductor chips is attached to the lower surface of the circuit board over one of the openings with a chip attaching means;
- a plurality of wires coupling the bonding pads on the semiconductor chip to respective bonding pads on the circuit board; and
- one or more protective covers covering the semiconductor chips and the wires, wherein at least one of the protective covers extends over more than one of the semiconductor chips.

5,854,741
UNIT PRINTED CIRCUIT BOARD CARRIER FRAME FOR BALL GRID ARRAY SEMICONDUCTOR PACKAGES AND METHOD FOR FABRICATING BALL GRID ARRAY SEMICONDUCTOR PACKAGES USING THE SAME

Il Kwon Shim, Seoul, and Young Wook Heo, Kyungki-Do, both of Rep. of Korea, assignors to AMKOR Electronics, Inc., Chandler, Ariz., and ANAM Industrial Co., Ltd., Seoul, Rep. of Korea

Filed May 17, 1996, Ser. No. 651,200

Claims priority, application Rep. of Korea, Nov. 17, 1995, 1995 41846

Int. Cl.^{6} H05K *7/20*

U.S. Cl. 361—813 **10 Claims**

1. A unit printed circuit board carrier frame for ball grid array semiconductor packages comprising:
- a plurality of die pads functioning as heat sinks each bonded with a unit printed circuit board (PCB);
- a frame member adapted to support the die pads at peripheral edges of the die pads;

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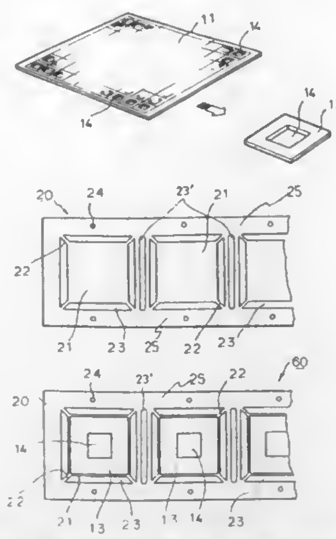


elongated slots provided at the frame member and adapted to define the peripheral edges of each die pad such that the die pad corresponds in shape to each unit PCB;

tie bars adapted to connect each die pad to the frame member such that the die pad is supported by the frame member.

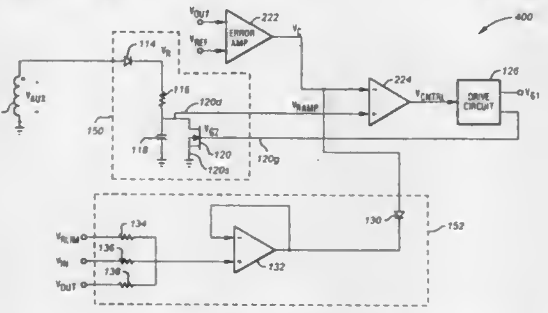
5,854,742
LOGARITHMIC POWER COMPENSATION FOR A SWITCHING POWER SUPPLY

Richard A. Faulk, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 617,597, Mar. 19, 1996, Pat. No. 5,680,036. This application Sep. 23, 1997, Ser. No. 935,842

Int. Cl.⁶ G05F *1/56*

U.S. Cl. 363—97 **20 Claims**



1. A circuit for controlling an output voltage, the circuit comprising:

a transformer having a primary winding and a secondary winding;

a first switch coupled in series with the primary winding, the first switch including a control terminal;

a second switch coupled in series with the secondary winding, the second switch including a control terminal;

a capacitor coupled in parallel with the second switch;

a comparator having a first input coupled to a reference voltage node and a second input coupled to a node between the second winding and the second switch; and

a drive circuit receiving an input signal from the comparator and being coupled to the control terminal of the first switch and to the control terminal of the second switch.

5,854,743
CONTROL SYSTEM FOR POWER CONVERSION SYSTEM

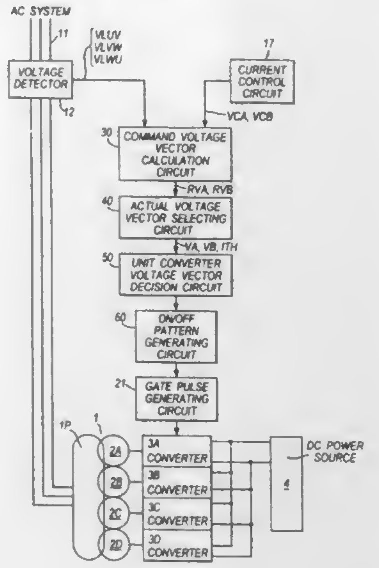
Hajime Yamamoto, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 3, 1998, Ser. No. 18,184

Claims priority, application Japan, Feb. 27, 1997, 9-043515

Int. Cl.⁶ H02H *3/24*

U.S. Cl. 363—71 **7 Claims**


AC SYSTEM
11
VLUV
VLVW
VLWU
VOLTAGE DETECTOR
12
17
CURRENT CONTROL CIRCUIT
VCA, VCB
30
COMMAND VOLTAGE VECTOR CALCULATION CIRCUIT
RVA, RVB
40
ACTUAL VOLTAGE VECTOR SELECTING CIRCUIT
VA, VB, ITH
50
UNIT CONVERTER VOLTAGE VECTOR DECISION CIRCUIT
60
ON/OFF PATTERN GENERATING CIRCUIT
21
GATE PULSE GENERATING CIRCUIT
1P
1
2A
3A CONVERTER
2B
3B CONVERTER
2C
3C CONVERTER
2D
3D CONVERTER
DC POWER SOURCE
4

1. A control system for a power conversion system composed of a plurality of unit converters and a transformer for connecting AC outputs of said unit converters in series, each of said unit converters composed of a plurality of bridge connected self-turn-off devices for converting DC power into AC power, each of AC sides of said unit converters connected to one of secondary windings of said transformer, respectively, DC sides of said unit converters connected in parallel to each other, respectively, and a primary winding of said transformer connected in series for each phase to take out an output of said power conversion system and adapted for connecting to an AC power system, said control system comprising:

means for detecting an AC system voltage at said series connected primary winding of said transformer;

means for generating a command voltage vector of a voltage to be output from said power conversion system at said primary winding of said transformer based on said AC system voltage;

actual voltage vector selecting means for preparing a plurality of actual voltage vectors of voltages which can be actually output from said power conversion system at said primary winding of said transformer, preparing a plane in which start points of said actual voltage vectors are commonly taken as an origin and said actual voltage vectors are expressed at respective end points of said actual voltage vectors, dividing said plane into a plurality of regions, each including one of said end points of said actual voltage vectors, respectively, and when an end point of said command voltage vector is included in one of said regions, selecting said actual voltage vector included in said one of said regions as a selected actual voltage vector;

unit converter voltage vector determining means for determining a plurality of unit converter voltage vectors based on said selected actual voltage vector, each of said unit converter voltage vectors allocated to one of said unit converters, respectively, and output from one of said unit converters, respectively;

means for generating a plurality of ON-OFF pattern signals for said self-turn-off devices, each determined by one of said unit converter voltage vectors, respectively; and

means for generating gate pulses to said self-turn-off devices of said unit converters based on said ON-OFF pattern signals.

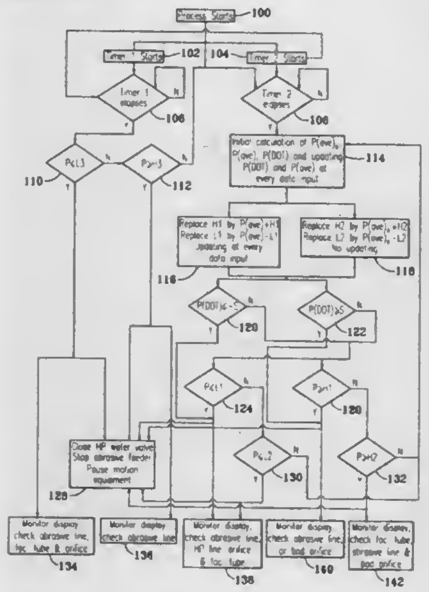
5,854,744
ADAPTIVE PROCESS CONTROL SYSTEM

Jiyue Zeng, Novi, and Jose P. Munoz, Brighton, both of Mich., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 25, 1996, Ser. No. 670,024

Int. Cl.⁶ G05B *13/00*

U.S. Cl. 364—154 **15 Claims**


Process Starts
100
Timer 1 Starts
102
104
Timer 2 Starts
Timer 1 elapses
106
Timer 2 elapses
108
Initial calculation of P(ave)1, P(ave)2, P(DOT) and updating P(DOT) and P(ave) at every data input
114
P<L3
110
P>H3
112
Replace H1 by P(ave)+H1' Replace L1 by P(ave)-L1' updating at every data input
116
Replace H2 by P(ave)2+H2' Replace L2 by P(ave)2-L2' No updating
118
P(DOT)<-S
120
P(DOT)>S
122
P<L1
124
P>H1
126
Close HP water valve Stop abrasive feeder Pause motion equipment
128
P<L2
130
P>H2
132
Monitor display check abrasive line, foc. tube & orifice
134
Monitor display check abrasive line
136
Monitor display, check abrasive line, HP line orifice & foc. tube
138
Monitor display check abrasive line, or bad orifice
140
Monitor display, check foc. tube, abrasive line & bad orifice
142

1. An adaptive process control system comprising:

a) means for measuring at least one process parameter and generating a time varying analog signal, defined as a first signal, representative of such parameter;

b) sampling means for periodically sampling, at a selected sampling rate, such first signal and providing a second signal;

c) means responsive to the second signal for converting the second signal to a digital form, defined as a third signal, reflecting the value of the process parameter;

d) a computer responsive to the third signal for providing fourth, fifth, sixth, seventh and eighth signals, the fourth signal representing the value of the rate of change of the process parameter;

the fifth signal representing a value of the running average of the process parameter, updated at the sampling rate plus a first constant;

the sixth signal representing a value of the running average of the process parameter, updated at the sampling rate, minus a second constant;

the seventh signal representing a non-running average of the process parameter plus a third constant;

the eight signal representing a non-running average of the process parameter minus a fourth constant; and

e) comparison means for comparing the values of the third signal with the values of each of the fifth through eighth signals and for generating respective error signals when the value of the third signal reflects a value beyond the value of the fifth through eighth signals and where the value of the fourth signal is beyond the value defined by a fifth constant.

5,854,745
METHOD AND APPARATUS FOR MOUNTING ELECTRONIC COMPONENT

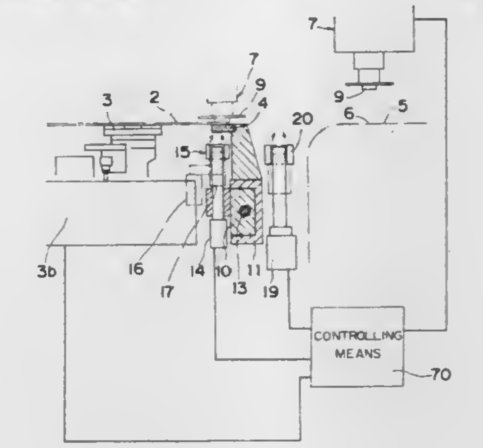
Nobuhiko Muraoka, Toyonaka; Shinji Kanayama, Kashihara; Shinzo Eguchi, Hirakata; Masaru Ichihara, Kadoma; Shuichi Hirata, Moriguchi, and Nobuhisa Watanabe, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 30, 1995, Ser. No. 413,441

Claims priority, application Japan, Mar. 30, 1994, 6-061627; Mar. 30, 1994, 6-061628; Mar. 30, 1994, 6-061629; Mar. 30, 1994, 6-061630

Int. Cl.⁶ G06F *19/00*

U.S. Cl. 364—167.01 **14 Claims**



1. A method for mounting an electronic component onto a transparent panel, comprising:

picking up the electronic component at an electronic component feeding part;

positioning and mounting the component at a predetermined mounting position on the transparent panel, said positioning and mounting of the component comprising

registering mounting position marks formed at the mounting position of the transparent panel with positioning marks indicated on the electronic component, to thereby recognize a position of the electronic component relative to the transparent panel by viewing the electronic component through the transparent panel from a side of the transparent panel opposite to a mounting surface of the transparent panel, so that a position of the electronic component is corrected based on a result of the recognition before the electronic component is mounted to the mounting position of the panel;

recognizing a position of the electronic component held at the feeding part during transfer to the mounting position before the mounting position marks and positioning marks are recognized;

recognizing a pair of reference position marks indicating a reference mounting position and formed in the panel;

correcting a mounting position data for the electronic component from recognized positions of the pair of reference position marks and recognized value of a distance between the reference position marks;

correcting the position of the electronic component based on a recognition result of a held position of the electronic component relative to a corrected mounting position, and thereby positioning the electronic component at the mounting position; and

then, mounting the electronic component on the transparent panel.

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5,854,746

FLEXIBLE PRODUCTION AND MATERIAL RESOURCE PLANNING SYSTEM USING SALES INFORMATION DIRECTLY ACQUIRED FROM POS TERMINALS

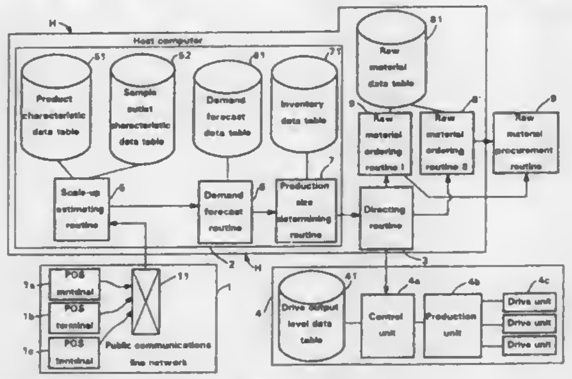
Tsukasa Yamamoto, Tokyo; Masaya Ogawa, Kanagawa; Eichi Yoshida, Chiba; Masataka Hotta, Kanagawa; Toru Morita, Hyogo, and Akiko Omori, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 422,976, Apr. 17, 1995, abandoned, which is a continuation of Ser. No. 692,425, Apr. 29, 1991, abandoned. This application May 16, 1996, Ser. No. 650,054

Claims priority, application Japan, Apr. 28, 1990, 2-112274; Sep. 26, 1990, 2-257845; Nov. 27, 1990, 2-326996

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 364—468.13 **36 Claims**


H
Host computer
61
62
81
71
81
Product characteristic data table
Sample outlet characteristic data table
Demand forecast data table
Inventory data table
Raw material data table
Raw material ordering routine I
Raw material ordering routine II
Raw material procurement routine
Scale-up estimating routine
Demand forecast routine
Production size determining routine
Directing routine
2
3
POS terminal
POS terminal
POS terminal
1a
1b
1c
11
Public communications line network
Drive output level data table
Control unit
Production unit
Drive unit
Drive unit
Drive unit
4
41
4a
4b
4c

35. A production system comprising:

a plurality of sales information collecting units located at a plurality of sales outlets for collecting sales information concerning a plurality of goods that are sold at the plurality of sales outlets; and

a main production control unit including a host computer being operatively connected to each of the plurality of sales information collecting units for receiving the sales information from the sales information collecting units, the main production control unit including a production size determining unit comprising a computer program executed on said host computer for determining a production quantity to be produced in the future for the plurality of goods based on the sales information received from the plurality of sales information collecting units and the computer program generating output data indicative of the production quantity determined by the production size determining unit; and

a raw materials ordering unit for flexibly ordering a plurality of raw materials required for manufacturing the plurality of goods based on the sales information collected at the plurality of sales information collection units the raw materials ordering unit being operatively connected to the main production control unit, wherein after the production size determining unit determines the production quantity, the main production control unit transmits the output data indicative of the production quantity determined by the production size determining unit to the operatively connected raw materials ordering unit and the raw materials ordering unit orders raw materials required for producing the production quantity of the plurality of goods in response to receiving the output data indicative of the production quantity from the main production control unit.

5,854,747

TRUSS JIGGING SYSTEM

John Fairlie, Vermont South, Australia, assignor to Mitek Holdings, Inc., Wilmington, Del.

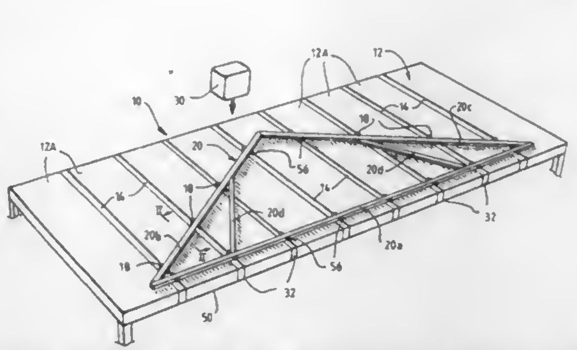
Filed Oct. 9, 1996, Ser. No. 727,900

Int. Cl.^{6} G06F *19/00;* **B25B** *1/20*

U.S. Cl. 364—468.21 **20 Claims**

1. A jig system for use in arranging components to form an assembly such as a truss, the jig system comprising:

an upper platform;



stops mounted for translational movement generally along respective lines to desired positions for locating the components to form the assembly, at least a portion of each stop being disposed above the upper platform;

stop moving means for the stops, said stop moving means comprising a motive source, a driver acted on by the motive source for moving the driver, the driver being disposed below the upper platform, at least part of the driver being movable in a direction parallel to the line of movement of the stop, means for connecting the driver to the stop for moving the stop along its line of motion to the desired position.

5,854,748

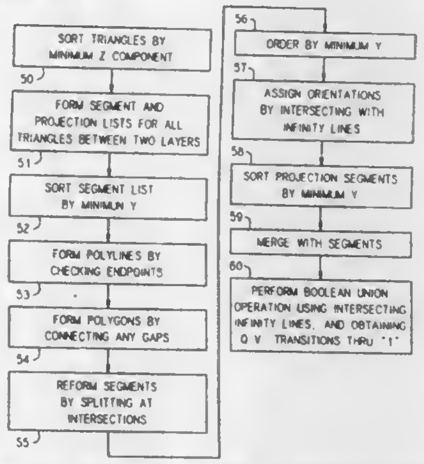
BOOLEAN LAYER COMPARISON SLICE

David E. Snead, Canyon Country; Dennis R. Smalley, Baldwin Park; Adam L. Cohen, Los Angeles; Joseph W. Allison, Valencia; Thomas J. Vorgitch, Simi Valley, and Thomas P. Chen, Sauqus, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 259,333, Jun. 13, 1994, Pat. No. 5,481,470, which is a continuation of Ser. No. 606,191, Oct. 30, 1990, Pat. No. 5,321,662, which is a continuation-in-part of Ser. No. 331,644, Mar. 31, 1989, Pat. No. 5,184,307, which is a continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359. This application Jun. 7, 1995, Ser. No. 475,730

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—468.26 **51 Claims**


SORT TRIANGLES BY MINIMUM Z COMPONENT
50
FORM SEGMENT AND PROJECTION LISTS FOR ALL TRIANGLES BETWEEN TWO LAYERS
51
SORT SEGMENT LIST BY MINIMUM Y
52
FORM POLYLINES BY CHECKING ENDPOINTS
53
FORM POLYGONS BY CONNECTING ANY GAPS
54
REFORM SEGMENTS BY SPLITTING AT INTERSECTIONS
55
56
ORDER BY MINIMUM Y
57
ASSIGN ORIENTATIONS BY INTERSECTING WITH INFINITY LINES
58
SORT PROJECTION SEGMENTS BY MINIMUM Y
59
MERGE WITH SEGMENTS
60
PERFORM BOOLEAN UNION OPERATION USING INTERSECTING INFINITY LINES, AND OBTAINING Q V TRANSITIONS THRU "1"

1. A method for forming a plurality of desired layer representations of a three-dimensional object from initial layer representations, for use in forming the object on a layer-by-layer basis, comprising the following steps:

supplying an initial layer representation of a first layer spaced below a second layer,

supplying an initial layer representation of the second layer;

forming a desired layer representation for a first selected one of the first and second layers comprising forming a Boolean difference between the initial layer representation of the first selected one and the initial layer representation of a second selected one of the first and second layers different from the first selected one;

forming desired layer representations for other layers: and

supplying the desired layer representations for forming the object on a layer-by-layer basis.

5,854,749

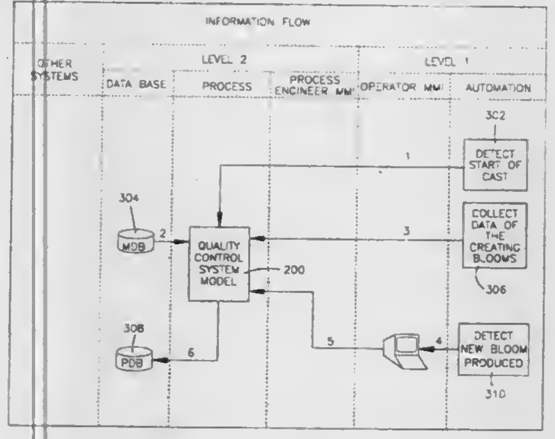
CUSTOM QUALITY CONTROL MONITORING OF A STEEL MAKING PROCESS

James Kellams, Canton, Ohio; Luigi Morsut, Tapogliano, and Giovanni Michelon, Groizia, both of Italy, assignors to Republic Engineered Steels, Inc., Massillon, Ohio

Filed Jul. 12, 1996, Ser. No. 679,100

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—472.02 **18 Claims**



1. A method for monitoring a steel manufacturing process in real-time, the method comprising the steps of:

(a) displaying a user interface on a display to prompt an operator to define one or more groups of quality control events, wherein each group corresponds to one of a plurality of steel manufacturing processes;

(b) displaying a user interface on the display to prompt the operator to define for each group one or more quality control events by defining one or more logical relationships based on one or more of a plurality of steel manufacturing process variables;

(c) casting one or more strands of steel in accordance with one of the plurality of steel manufacturing processes by pouring molten steel into a mold of a continuous caster;

(d) sensing the process variables from the continuous caster as the one or more steel strands are cast;

(e) maintaining a process variable database of data representing the sensed process variables;

(f) determining whether any of the one or more logical relationships defined by the operator for the group corresponding to the one steel manufacturing process used for the casting step (c) have been satisfied based on the maintained data in the process variable database;

(g) determining one or more defects in one or more steel strands if one or more logical relationships have been satisfied as determined for the determining step (f);

(h) determining one or more segments of the one or more steel strands where the determined one or more defects are located; and

(i) storing in a production database data representing the determined one or more defects and the determined one or more steel segments.

5,854,750

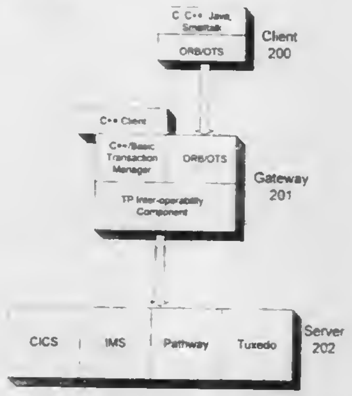
SYSTEM AND METHOD FOR PROCESSING TRANSACTIONS IN AN ENVIRONMENT CONTAINING A NUMBER OF OBJECT ORIENTED APPLICATIONS

Mark Phillips, Campbell, and Michael Blevins, Felton, both of Calif., assignors to Insession, Inc., Campbell, Calif.

Filed Sep. 3, 1996, Ser. No. 707,334

Int. Cl.^{6} B07C *17/00;* **B06F** *17/00;7/00*

U.S. Cl. 364—478.04 **9 Claims**



1. A method for processing transactions between

a number of object oriented applications and one or more instances of the same transaction processor type or multiple transaction processor types, the method comprising the steps of:

(a) establishing a first communication link between the objected oriented applications and a transaction processor interoperability component;

(b) externalizing a plurality of object oriented attributes into a data format compatible with said transaction processors;

(c) internalizing a plurality of transaction processor data into a plurality of object oriented attributes;

(d) determining which of the one or more transaction processors of the same or different type will process transactions for the utilizing implicit attributes of the transaction and a service database;

(e) establishing a communication link between the transaction processor interoperability component and the transaction processor that will process transactions for the object oriented application;

(f) transmitting a transaction from the object oriented application to the transaction processor interoperability component;

(g) formatting the transaction by the transaction processor interoperability component for the transaction processor that will process transactions for the object oriented application; and

(h) transmitting the formatted transaction to the transaction processor that will process transactions for the object oriented application.

5,854,751

SIMULATOR AND OPTIMIZER OF LASER CUTTING PROCESS

Paul Di Pietro, Fairy Meadow, Australia, and Y. Lawrence Yao, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

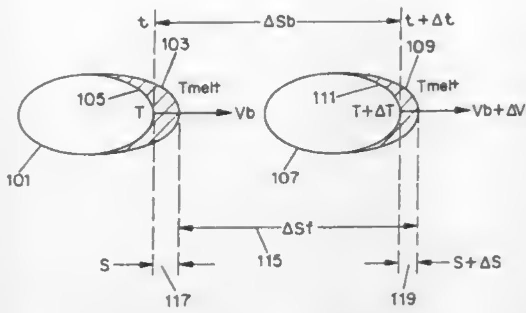
Filed Oct. 15, 1996, Ser. No. 730,330

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 364—474.08 **24 Claims**

1. A method for improving the quality of a cut made in workpiece during a laser beam cutting process, comprising the steps of:

generating a model of the temperatures of a plurality of modes on said workpiece, wherein said nodes indicate relative positions on said workpiece;



generating a laser power data profile for said cutting process responsive to said node's modeled temperature; and

varying said laser beam's power responsive to said power data profile.

5,854,752

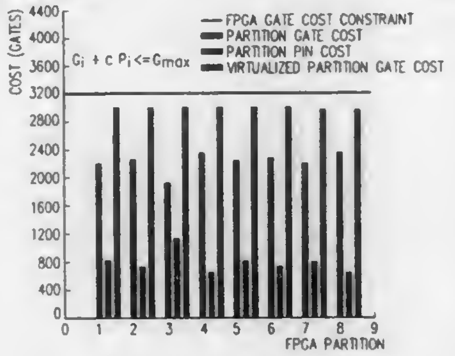
CIRCUIT PARTITIONING TECHNIQUE FOR USE WITH MULTIPLEXED INTER-CONNECTIONS

Anant Agarwal, Framingham, Mass., assignor to IKOS Systems, Inc., North Waltham, Mass.

Filed Jan. 19, 1996, Ser. No. 588,649

Int. Cl.^{6} G06F *17/50;9/455*

U.S. Cl. 364—489 **22 Claims**



1. A method for emulating a logic circuit in a plurality of programmable logic devices, comprising the steps of:

partitioning a representation of said logic circuit into a plurality of logic blocks, in accordance with a single cost constraint, said cost constraint including functions of the number of logic gates and the number of pins of each logic, each logic block having a plurality of logic gates and a plurality of pins for connecting said logic block with other logic blocks in said plurality of logic blocks; and

assigning each of said logic blocks to be implemented on one of said programmable logic device;

wherein said cost constraint is given by:

$$f(G_i, cP_i) \leqq G_{max}$$

where f is a function of the quantities G_i and cP_i, G_i being the number of logic gates in said logic block G_{max} being said predetermined number of logic gates, c being a weighting factor expressing a cost of a pin in terms of a logic gate, and P_i being the number of pins in said logic block.

5,854,753

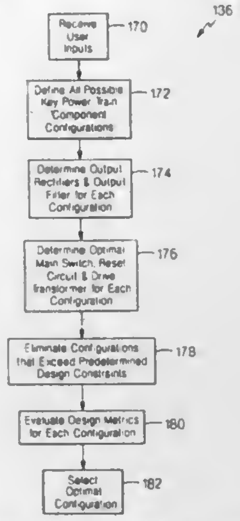
CONFIGURING POWER CONVERTERS

Steven Norman Montminy, Groton; Brian James Shaffer, Reading, and Patrizio Vinciarelli, Boston, all of Mass., assignors to VLT Corporation, San Antonio, Tex.

Filed Apr. 19, 1996, Ser. No. 635,026

Int. Cl.^{6} G06F *17/50*

U.S. Cl. 364—489 **66 Claims**


136
Receive User Inputs
170
Define All Possible Key Power Train Component Configurations
172
Determine Output Rectifiers & Output Filter for Each Configuration
174
Determine Optimal Main Switch, Reset Circuit & Drive Transformer for Each Configuration
176
Eliminate Configurations that Exceed Predetermined Design Constraints
178
Evaluate Design Metrics for Each Configuration
180
Select Optimal Configuration
182

1. A method for use in determining a configuration of a power converter comprising:

receiving power converter operating characteristic information;

using a computer, determining a plurality of alternative configurations of a power converter that are consistent with the operating characteristic information and determining efficiency characteristics of each of the alternative configurations; and

then selecting a configuration from the plurality of alternative configurations that tends to be optimal with respect to efficiency.

5,854,754

SCHEDULING COMPUTERIZED BACKUP SERVICES

Luis Felipe Cabrera, San Jose, and Claudia Beinglas Dragoescu, Gilroy, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1996, Ser. No. 598,488

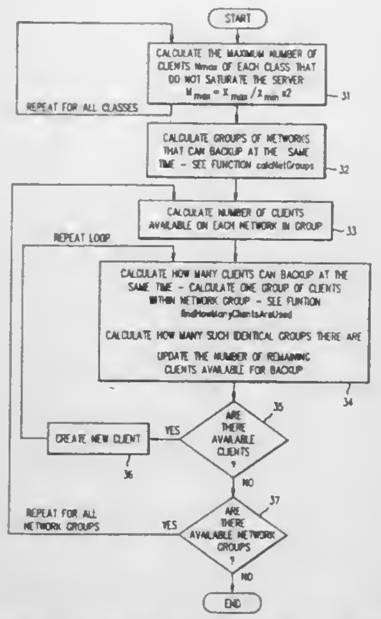
Int. Cl.^{6} G06F *9/455*

U.S. Cl. 364—578 **13 Claims**

1. A method for scheduling a backup service in a computer installation having a plurality of clients consisting of more than one client type, a plurality of interconnected networks and at least one server, the method comprising the steps of:

(a) building a model of the computer installation which calculates elapsed time and utilization of computer installation resources for the selected service for a selected subset of clients for the selected service for a selected subset of clients, the model using definitions of client types, network types and interconnection of clients and networks in the computer installation;

(b) repeatedly invoking the model with a minimum number of clients and then a maximum number of clients of a single type to find elapsed times and utilization of computer installation resources, then invoking the model with varying numbers of clients between the minimum and maximum numbers of clients until finding a number of clients for the subset for which the utilization or elapsed time criteria are met and adjusting the subsets to contain clients which can be serviced sequentially without exceeding an elapsed time criterion or a utilization criterion; and


START
CALCULATE THE MAXIMUM NUMBER OF CLIENTS Nmax OF EACH CLASS THAT DO NOT SATURATE THE SERVER: Nmax = Xmax / Xmin x2
31
REPEAT FOR ALL CLASSES
CALCULATE GROUPS OF NETWORKS THAT CAN BACKUP AT THE SAME TIME – SEE FUNCTION calcNetGroups
32
CALCULATE NUMBER OF CLIENTS AVAILABLE ON EACH NETWORK IN GROUP
33
REPEAT LOOP
CALCULATE HOW MANY CLIENTS CAN BACKUP AT THE SAME TIME – CALCULATE ONE GROUP OF CLIENTS WITHIN NETWORK GROUP – SEE FUNTION findHowManyClientsAreUsed
CALCULATE HOW MANY SUCH IDENTICAL GROUPS THERE ARE
UPDATE THE NUMBER OF REMAINING CLIENTS AVAILABLE FOR BACKUP
34
ARE THERE AVAILABLE CLIENTS ?
35
YES
CREATE NEW CLIENT
36
NO
ARE THERE AVAILABLE NETWORK GROUPS ?
37
REPEAT FOR ALL NETWORK GROUPS
YES
NO
END

(c) generating a schedule by arranging the subsets into a sequence.

5,854,755

CLOCK FREQUENCY MULTIPLICATION DEVICE

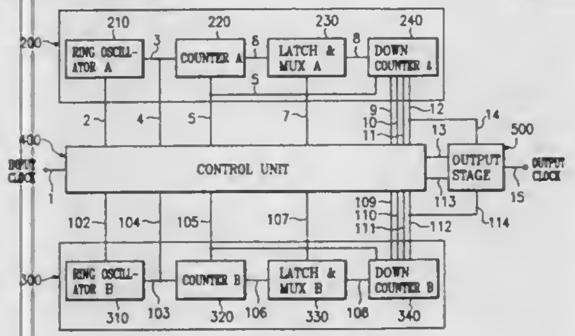
Heung-Ok Park, Yuson-ku, and Dong-Geun Kim, Daejeon, both of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 5, 1996, Ser. No. 708,681

Claims priority, application Rep. of Korea, Dec. 20, 1995, 95-52649

Int. Cl.^{6} G06F *7/68*

U.S. Cl. 364—703 **16 Claims**



1. A clock frequency multiplication device comprising:

first multiplication means for generating an oscillating frequency every half of a period of an input clock signal when the input clock signal is high in logic, by counting the oscillating frequency, dividing resultant count data by 2^n, where n is a natural number, to provide divided count data as a preset signal which is down counted to multiply the frequency of the input clock signal by a desired number for said first half of the period of the input clock signal;

second multiplication means for multiplying the frequency of the input clock signal by said desired number for the latter half of the period of the input clock signal when the input clock signal is low in logic, by counting the oscillating frequency dividing the resultant count data by 2^n, where n is a natural number to provide divided count data as a preset signal down counted to multiply the frequency of the input clock signal by said desired number which is for the latter half of the period of the input clock signal;

control means for controlling said first and second multiplication means in such a manner that they can be operated for the opposite halves of the period of the input clock signal and setting a division ratio of said first and second multiplication means ; and

output means for mixing output signals from said first and second multiplication means and outputting the mixed result as a multiplied frequency clock signal.

5,854,756

DIGITAL FILTERS

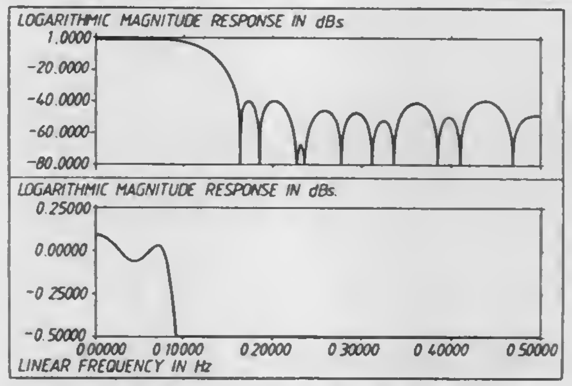
Edward Daniel Willink, Reading, England, assignor to Racal-Datacom Limited, England

Filed Aug. 15, 1996, Ser. No. 689,859

Claims priority, application United Kingdom, Feb. 1, 1996, 9602035

Int. Cl.^{6} G06F *17/10*

U.S. Cl. 364—724.16 **11 Claims**



1. A process for deriving a z-transform transfer function of a FIR digital filter comprising a plurality of cascaded subfilters, the process comprising the steps of:

a) determining a target z-transform transfer function for the filter and evaluating therefrom a first set of z-values for which the transfer function is zero,

b) generating a plurality of different n^{th}-order polynomials in z^{-1} from different combinations of polynomials in z^{-1} derived from the zero values of said first set,

c) quantizing the coefficients of said n^{th}-order polynomials to generate a plurality of quantized n^{th}-order polynomials in z^{-1},

d) factorizing each quantized nth order polynomial to evaluate one or more new values of z for which the polynomial is zero,

e) comparing the zero values of said first set with the new zero values derived from the quantized n^{th} order polynomials,

f) retaining or rejecting each quantized, n^{th}-order polynomial on the basis of the comparison of zero values,

g) using the retained polynomials to generate a plurality of different trial transfer functions having zero values substantially corresponding to the zero values of the target transfer function,

h) comparing the trial transfer functions generated at step (g) with the target transfer function, and

i) selecting one of the trial transfer functions generated in step (g) as a result of the comparison in step (h).

5,854,757

SUPER-COMPACT HARDWARE ARCHITECTURE FOR IDCT COMPUTATION

Gregg Dierke, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 7, 1996, Ser. No. 643,953

Int. Cl.^{6} G06F *17/14*

U.S. Cl. 364—725.03 **16 Claims**

1. A processor for performing a cosine transform on blocks of data, the processor comprising:

a first multiplier for scaling the blocks of data into blocks of scaled data;

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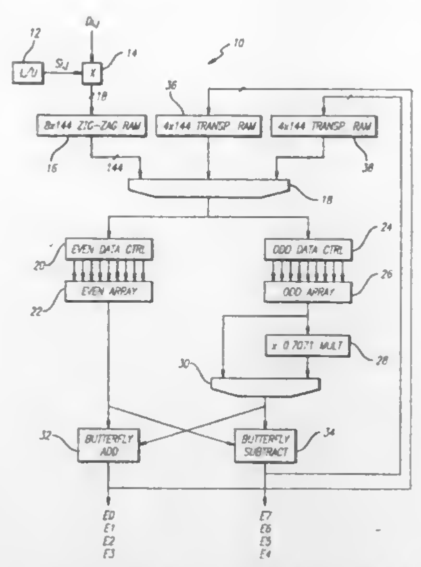


a first memory for storing the blocks of scaled data and reading out the scaled data in a first direction, the scaled data being read out in vectors having 2n elements, where n is a positive integer;

an even sum generator that generates even sums from even elements of the vectors read out of the first memory;

and odd sum generator that generates odd sums from odd elements of the vectors read out of the first memory;

a first adder that adds together the even and odd sums; and

a subtracter that subtracts the odd sums from the even sums, the operations of the first adder and subtracter being performed simultaneously;

wherein the even sum generator includes a first control for generating terms from the even elements of the vectors read out of the first memory, and a second adder for summing the terms generated by the first control;

wherein the odd sum generator includes a second control for generating terms from the odd elements of the vectors read out of the first memory, a third adder for summing the terms generated by the second control, and means for selectively multiplying the odd sums generated by the third adder with a constant value, whereby the first and second data controls generate terms for n different pairs of odd and even sums; and

wherein the means for selectively multiplying includes a second multiplier for multiplying an output of the odd sum generator with the constant value; and a multiplexer having a first input coupled to an output of the odd sum generator and a second input coupled to an output of the multiplier, the first input being selected when it is not desired to multiply the odd sum by the constant value, the second input being selected when it is desired to multiply the odd sum by the constant value.

5,854,758

FAST FOURIER TRANSFORMATION COMPUTING UNIT AND A FAST FOURIER TRANSFORMATION COMPUTATION DEVICE

Tsukasa Kosuda; Motomu Hayakawa, both of Suwa, and Naokatsu Nosaka, Chiba, all of Japan, assignors to Seiko Epson Corporation, and Seiko Instruments, Inc., both of Tokyo, Japan

Filed Aug. 6, 1996, Ser. No. 692,991

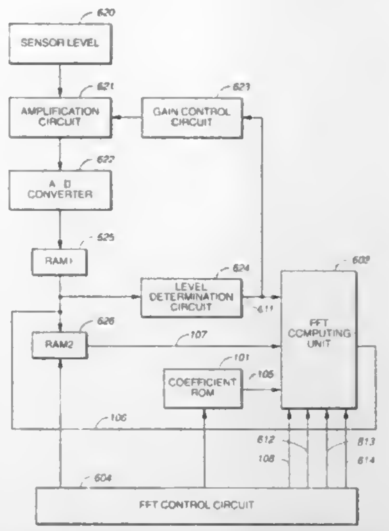
Claims priority, application Japan, Aug. 28, 1995, 7-219293; Jun. 14, 1996, 8-154671

Int. Cl.^{6} G06F *17/14*

U.S. Cl. 364—726.02 **10 Claims**

1. A Fast Fourier transformation computing unit comprising:

first and second addition/subtraction means for computing one of a sum of and a difference between a pair of two pieces of integer data;



first and second multiplication means for multiplying an output of said first and second addition/subtraction means by sine and cosine wave data, respectively;

third addition/subtraction means for computing one of a sum of and a difference between outputs of said first and second multiplication means;

data shift means for standardizing to a predetermined bit width of the two pieces of integer data as input to said first and second addition/subtraction means;

data conversion means for standardizing a bit width of at least one of output data of said first, second and third addition/subtraction means and said first and second multiplication means to the predetermined bit width by truncating part of output data therefor; and

level determination means for determining a size of input data, wherein said data shift means comprises a shift adjustment means for adjusting an amount of data shift in accordance with a determination by said determination means.

5,854,759

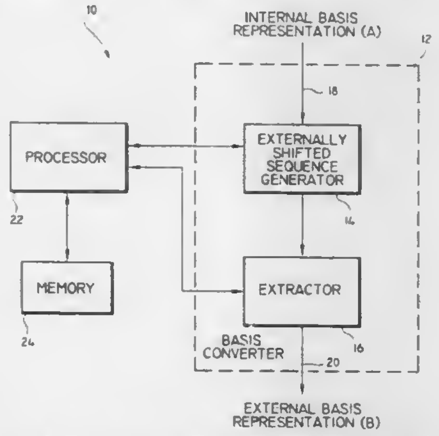
METHODS AND APPARATUS FOR EFFICIENT FINITE FIELD BASIS CONVERSION

Burton S. Kaliski, Jr., Wellesley, Mass., and Yiqun Lisa Yin, San Mateo, Calif., assignors to RSA Data Security, Inc., Redwood City, Calif.

Filed May 5, 1997, Ser. No. 851,045

Int. Cl.^{6} G06F *7/72*

U.S. Cl. 364—746.1 **34 Claims**


10
INTERNAL BASIS REPRESENTATION (A)
12
18
PROCESSOR
EXTERNALLY SHIFTED SEQUENCE GENERATOR
22
14
MEMORY
EXTRACTOR
24
BASIS CONVERTER
16
20
EXTERNAL BASIS REPRESENTATION (B)

18. An apparatus for generating, from a value A representing in a first basis an element of a finite field $GF(q^m)$, at least part of a value B representing said element in a second basis, wherein q is a prime number or power of a prime number and m is an integer greater than or equal to 2, and wherein said value B includes a vector of m coefficients from a finite field GF(q), the apparatus comprising:

an externally shifted sequence generator for generating from said value A a sequence of intermediate values representing in said first basis elements of the finite field $GF(q^m)$ whose representations in said second basis are related to said value B by at least one predetermined external shift operation; and

an extractor coupled to the externally shifted sequence generator and operative to generate at least a subset of the coefficients of said value B from said sequence of intermediate values.

5,854,760

TWO-DIMENSIONAL PE ARRAY, CONTENT ADDRESSABLE MEMORY, DATA TRANSFER METHOD AND MATHEMATICAL MORPHOLOGY PROCESSING METHOD

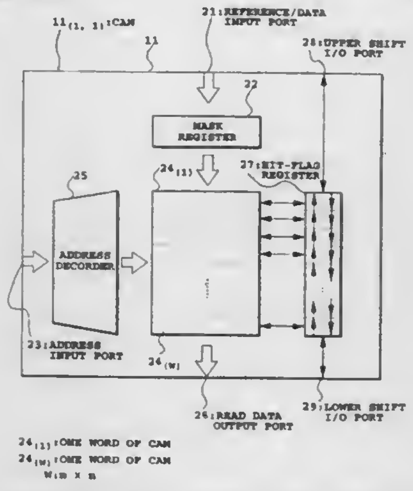
Takeshi Ikenaga, Isehara, and Takeshi Ogura, Atsugi, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 8, 1996, Ser. No. 745,403

Claims priority, application Japan, Nov. 10, 1995, 317574/1995; Feb. 27, 1996, 65356/1996

Int. Cl.^{6} G11C *13/00;15/00*

U.S. Cl. 365—49 **13 Claims**



1. A two-dimensional PE (processing element) array comprising PEs, each of said PEs comprising:

q×r CAMs (content addressable memories), where q and r are any integers equal to or greater than two, each of said CAMs including one dimensionally arrayed w words, where w is any natural number, a hit-flag register having shift up and shift down functions, and an upper shift I/O port and a down shift I/O port for inputting from or outputting to outside contents of said hit-flag register; and

hit-flag shift lines for connecting the lower shift I/O port of one CAM of two horizontally adjacent CAMs in said CAMs to the upper shift I/O port of the other CAM of said two horizontally adjacent CAMs,

wherein each of said w words in each of said CAMs is mapped successively to at least one of PEs which are arranged in m rows by n columns and are connected in a zigzag, where w,m and n are any natural numbers satisfying w=m×n, thereby forming a CAM array comprising m×q PEs in vertical direction and n×r PEs in a horizontal direction.

5,854,761

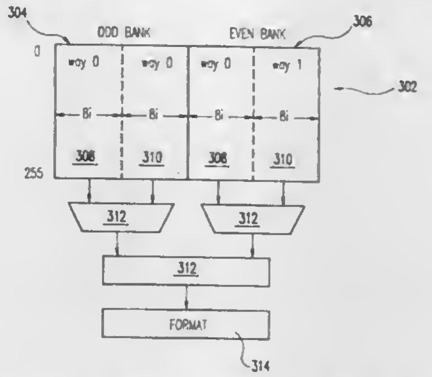
CACHE MEMORY ARRAY WHICH STORES TWO-WAY SET ASSOCIATIVE DATA

Sanjay Patel, Santa Clara; Rajasekhar Cherabuddi, Sunnyvale; Ramesh Panwar, and Adam R. Talcott, both of Santa Clara, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 26, 1997, Ser. No. 883,544

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—49 **20 Claims**



1. A cache memory array for storing two-way set associative data having odd and even number sets of data and two ways of data per set, said cache memory array comprising:

an odd set data bank which stores odd number sets of the two-way set associative data, wherein the two ways of each odd number set are aligned horizontally within said odd set data bank; and,

an even set data bank which stores even number sets of the two-way set associative data, wherein the two ways of each even number set are aligned horizontally within said even set data bank.

5,854,762

PROTECTION CIRCUIT FOR REDUNDANCY REGISTER SET-UP CELLS OF ELECTRICALLY PROGRAMMABLE NON-VOLATILE MEMORY DEVICES

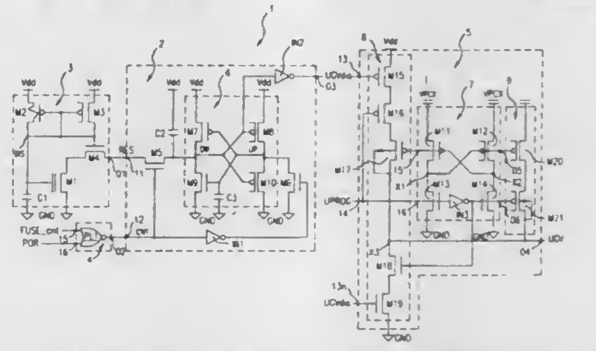
Luigi Pascucci, San Giovanni, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Filed Oct. 30, 1997, Ser. No. 961,368

Claims priority, application European Pat. Off., Oct. 30, 1996, 96830553

Int. Cl.^{6} G11C *16/06*

U.S. Cl. 365—185.04 **19 Claims**



1. A protection circuit for redundancy register set-up cells of electrically programmable non-volatile memories, comprising:

a first control circuit, said first control circuit operably coupled between a first and a second voltage reference and comprising at least one input terminal and at least one output terminal, said output terminal adaptable to deliver a voltage signal to the cells;

a second control circuit, said second control circuit comprising a first input terminal for receiving an enabling control signal, a second input terminal for receiving a Power-on-Reset signal, and an output terminal for supplying a control signal to said input terminal of said first control circuit; and

a disabling circuit, said disabling circuit operably coupled between said first and said second voltage reference and comprising an output terminal operably coupled to said input terminal of said first control circuit and at least one redundant memory element, said memory element operably coupled between a third voltage reference and said second voltage reference.

5,854,763

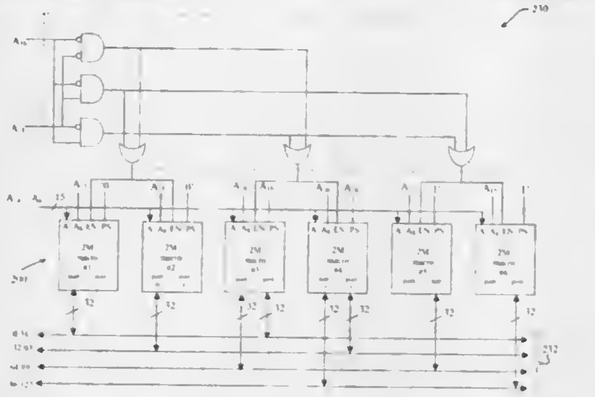
INTEGRATED CIRCUIT WITH NON-BINARY DECODING AND DATA ACCESS

Peter B. Gillingham, and John Wu, both of Kanata, Canada, assignors to Mosaid Technologies Inc., Kanata, Canada

Filed Jan. 31, 1997, Ser. No. 792,501

Int. Cl.^{6} G11C *13/00*

U.S. Cl. 365—189.04 **13 Claims**



1. A macro cell for implementing a memory device having an n-bit external data bus and a m-bit global address bus, said macro cell comprising:

(a) an array of memory cells having M rows by N columns, which array consisting of a plurality of memory segments each in communication with a common internal data bus;

(b) address input means for receiving decoded address codes, said codes for selecting a respective set of cells in one of said segments for communication on said internal data bus; and

(c) a plurality of data ports corresponding in number to said segments for communicating data between said internal data bus and one of a plurality of groups of bits of said external data bus, and each said data port being activated by a port select signal generated in response to cells in its corresponding memory segment being selected, whereby said memory segments may be logically remapped in a global address space.

5,854,764

SECTORIZED ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE MEMORY DEVICE WITH REDUNDANCY

Corrado Villa; Marco Dallabora, and Fabio Tassan Caser, all of Milan, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Mar. 21, 1997, Ser. No. 821,804

Claims priority, application European Pat. Off., Mar. 22, 1996, 96830144

Int. Cl.^{6} G11C *15/00;13/00*

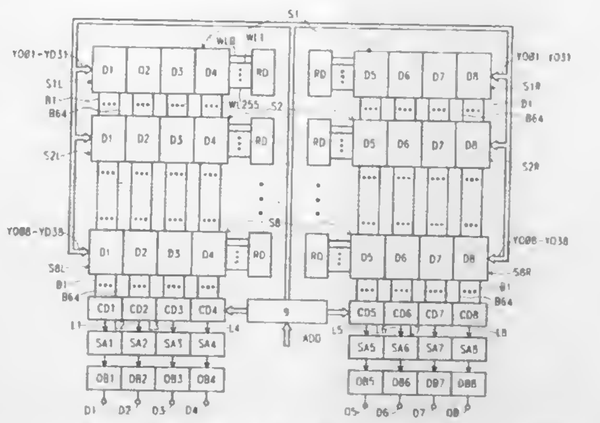
U.S. Cl. 361—200 **21 Claims**

1. A sectorized electrically erasable and programmable non-volatile memory device comprising:

a plurality of individually-addressable memory sectors, each memory sector having an array of memory cells arranged in rows and columns, the array having redundancy columns of redundancy memory cells for replacing defective columns of memory cells;

a redundancy control circuit for storing addresses of the defective columns and activating respective redundancy columns when said defective columns are addressed, said redundancy control circuit comprising at least one memory means having individually addressable memory locations each one associated with a respective memory sector for storing, individually for each memory sector, an address of a defective column belonging to the memory sector; and

address recognition means associated with said memory means for recognizing if a current address supplied to the memory device coincides with a defective column address stored in an addressed one of said memory locations associated with a currently addressed memory sector.



5,854,765

SEMICONDUCTOR MEMORY DEVICE

Naoharu Shinozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

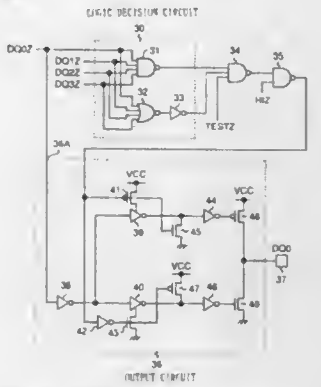
Continuation of Ser. No. 587,749, Jan. 17, 1996, abandoned.

This application Apr. 21, 1997, Ser. No. 845,031

Claims priority, application Japan, Aug. 17, 1995, 7-209390

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—201 **8 Claims**



1. A semiconductor memory device comprising:

a memory cell portion; and

at least one output part being provided with a plurality of read data which are read from said memory cell portion and a mode selection signal, said output part including

a logic decision circuit for producing a control signal indicating whether logic levels of said plurality of read data are all the same, and

an output circuit which includes a transmission path having transistors and having logic gates all of which have only a single input terminal, and said output circuit controls to operate in at least one of two states, a first state being to transmit first read data to an output port of said output circuit through said transmission path and a second state being to set said output port to be at a high-impedance state depending on said control signal and said mode selection signal;

wherein when the mode selection signal indicates a normal mode, said output circuit operates in said first state, and when the mode selection signal indicates a test mode, said output circuit operates to be in one of said first state and said second state depending on said control signal.

5,854,766

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE WITH DIAGNOSTIC POTENTIAL GENERATOR FOR INDIVIDUALLY CHECKING WHETHER MEMORY CELLS ARE OVER-ERASED

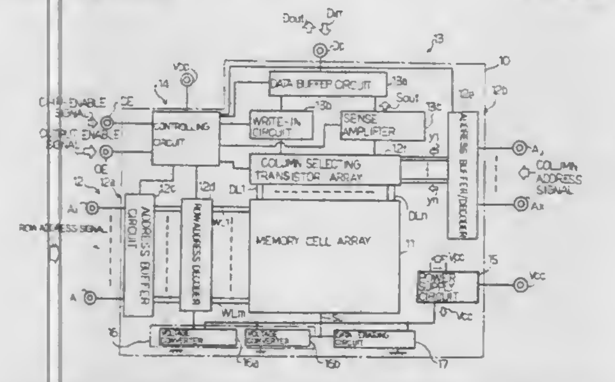
Mitsuru Sekiguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 13, 1997, Ser. No. 855,601

Claims priority, application Japan, May 13, 1996, 8-142241

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—218 **9 Claims**



1. An electrically erasable and programmable read only memory device comprising:

a memory cell array including a plurality of memory transistors, each of said plurality of memory transistors having a variable threshold and storing a data bit having one of first and second logic levels corresponding to first and second thresholds, respectively;

a plurality of bit lines selectively connected to current input nodes of said plurality of memory transistors;

a plurality of word lines selectively connected to control nodes of said plurality of memory transistors for applying potentials to word lines of memory transistors of the memory cell array;

a current discharging path connected to discharging nodes of said plurality of memory transistors;

a data logic level discriminating means selectively connected to said plurality of bit lines, for determining whether a memory transistor associated with a selected bit line has said first threshold or said second threshold on the basis of an amount of current passing through the selected bit line; and

an over-erased state discriminating means for supplying a first diagnostic potential to said discharging path, and for sequentially changing said plurality of word lines from a second diagnostic potential to a third diagnostic potential such that said data logic level discriminating means determines whether a memory transistor associated with a selected bit line and receiving said third diagnostic potential has entered into an over-erased state represented by a third threshold that is outside of a potential range between said first threshold and said second threshold, a potential difference between said first diagnostic potential level and said second diagnostic potential level causing a memory transistor in said over-erased state to be turned off, a potential difference between said first diagnostic potential level and said third diagnostic potential level allowing a memory transistor in said over-erased state to turn on.

5,854,767

SEMICONDUCTOR MEMORY DEVICE HAVING A PLURALITY OF BLOCKS EACH INCLUDING A PARALLEL/SERIAL CONVERSION CIRCUIT

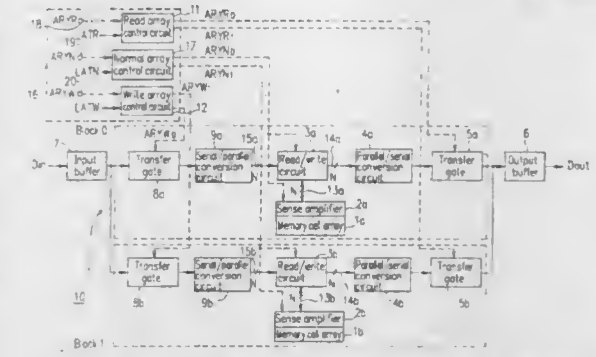
Kazuyoshi Nishi; Hironori Akamatsu, both of Hirakata; Toshiaki Tsuji, Takatsuki, and Hisakazu Kotani, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 26, 1995, Ser. No. 548,671

Claims priority, application Japan, Oct. 28, 1994, 6-265314

Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—219 **20 Claims**


Read array control circuit
Normal array control circuit
Write array control circuit
Block 0
Block 1
Input buffer
Transfer gate
Serial/parallel conversion circuit
Read/write circuit
Parallel/serial conversion circuit
Output buffer
Sense amplifier
Memory cell array
Din
Dout

5. A semiconductor memory device comprising a plurality of blocks, a plurality of first selection signals, a plurality of second selection signals, and a plurality of third selection signals being provided to the plurality of blocks,

wherein each of the plurality of blocks includes:

a memory cell array;

a read/write circuit for simultaneously reading out a plurality of data from the memory cell array and subsequently simultaneously writing a plurality of further data into the memory cell array when a corresponding one of the plurality of first selection signals is active;

a parallel/serial conversion circuit for outputting the plurality of simultaneously read out data, the outputting being performed data by data in a serial manner along the time axis;

a transfer gate for a reading operation controlled by a corresponding one of the plurality of second selection signals, the gate outputting the plurality of data from the parallel/serial conversion circuit when the corresponding one of the plurality of second selection signals is active;

a serial/parallel conversion circuit for receiving the plurality of further data, the further data being sequential, and for outputting the plurality of sequential data to the read/write circuit in a parallel manner along the time axis; and

a transfer gate for a writing operation controlled by a corresponding one of the plurality of third selection signals, the gate outputting the plurality of sequential data to the serial/parallel conversion circuit when the corresponding one of the plurality of third selection signals is active, and

wherein only one of the plurality of second selection signals is allowed to be active at a given time, while the other second selection signals remain non-active, and only one of the plurality of third selection signals is allowed to be active at a given time, while the other third selection signals remain non-active.

5,854,768

DRAM HAVING A POWER SUPPLY VOLTAGE LOWERING CIRCUIT

Takashi Ohsawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 588,930, Jan. 19, 1996, Pat. No. 5,751,639.

This application Jan. 8, 1998, Ser. No. 4,384

Claims priority, application Japan, Jan. 20, 1995, 7-007150

Int. Cl.^{6} H01L *21/00*

U.S. Cl. 365—226 **10 Claims**

1. A semiconductor integrated circuit device comprising:

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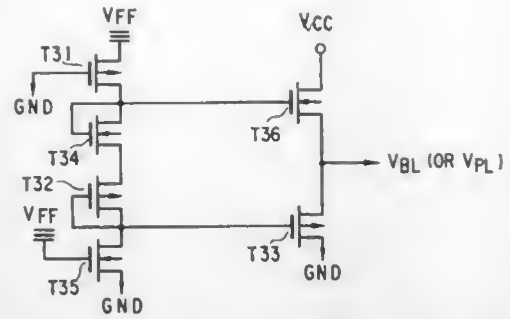


a first voltage lowering circuit of source follower type having an N-channel MOS transistor, for lowering a power supply voltage supplied from the exterior and supplying the lowered voltage to at least part of an internal circuit as a power supply voltage thereof;

a potential setting circuit for setting a potential at a specified node of the internal circuit, said potential setting circuit setting a potential at the specified node having a delay time longer than the gate delay time of the internal circuit; and

a second voltage lowering circuit of feedback type having a P-channel MOS transistor exclusively used for supplying a potential created by lowering the power supply voltage supplied from the exterior to at least part of power supply terminals of said potential setting circuit as a power supply voltage thereof.

5,854,769

ADDRESS INPUT BUFFER WITH SIGNAL CONVERTER

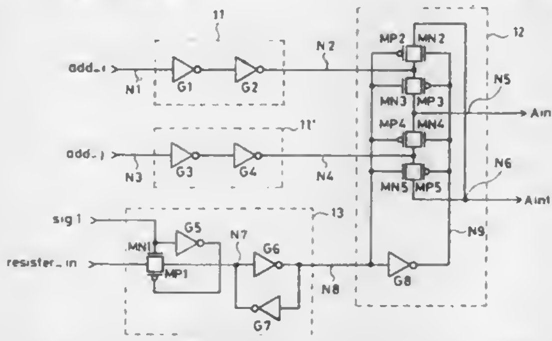
Jae Jin Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon-shi, Rep. of Korea

Continuation of Ser. No. 524,999, Sep. 8, 1995, abandoned. This application Oct. 6, 1997, Ser. No. 944,708

Claims priority, application Rep. of Korea, Sep. 9, 1994, 1994 22727

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—230.02 **8 Claims**



1. An address input buffer for a semiconductor memory device which is capable of converting address signals from external pins to access memory cells uniformly comprises of:

address buffering means buffering at least two external address signals;

multiplexing means receiving the external address signals buffered by said address buffering means and outputting the external address signals as the corresponding internal address signals through the output terminals thereof; and

multiplexing control means selectively transferring the external address signals buffered by said address buffering means to said output terminals,

wherein significant bits sequence order of the internal address signals outputted from the output terminals of the multiplexing means is proportional to significant bits sequence order of the external address signals or reciprocal to significant bits sequence order of the external address signals in accordance with an output signal state of the multiplexing control means.

5,854,770

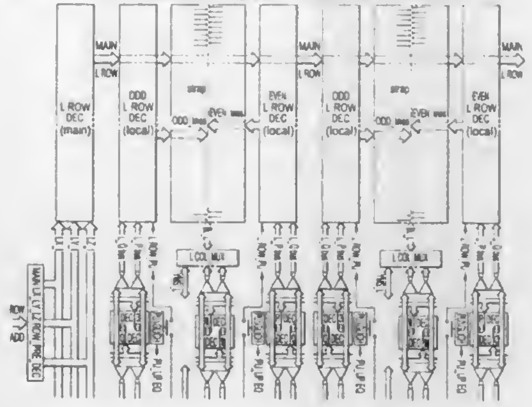
DECODING HIERARCHICAL ARCHITECTURE FOR HIGH INTEGRATION MEMORIES

Luigi Pascucci, Sesto S. Giovanni, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Brianza Agrate, Italy

Filed Jan. 30, 1997, Ser. No. 791,746

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—230.03 **24 Claims**



1. A nonvolatile static memory comprising:

a matrix of elementary cells addressable through bit-lines (columns) and word-lines (rows) mutually orthogonal among each other, said matrix forming an array being divided in two orders of subblocks, respectively left and right, aligned in a direction of extension of the word-lines and symmetrical by pairs;

an address bus;

at least one row predecoding circuit and a plurality of local row decoding circuits for said subblocks;

column predecoding circuits and a plurality of multiplexer circuits for said subblocks controlled by said column predecoding circuits;

a first main predecoding circuit of said address bus generating a first bus, a second bus and a third bus;

a pair of main row decoding circuits combining signals of said first, second and third buses and generating a resulting number of main row decoding lines, each stimulating respective local row decoding circuits of said right and left subblocks; and

two pairs of local row predecoding circuits for each of said right and left subblocks, a first pair for word-lines of even order and a second pair for word-lines of odd order of said right and left subblocks, respectively, stimulated by said address bus and generating a fourth bus and a fifth bus, respectively;

said main row decoding circuits of said right and left subblocks being stimulated by said fourth and fifth buses, respectively.

5,854,771

SEMICONDUCTOR MEMORY DEVICE INCLUDING COPY CIRCUIT

Kaori Mori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1997, Ser. No. 963,355

Claims priority, application Japan, Apr. 28, 1997, 9-111168

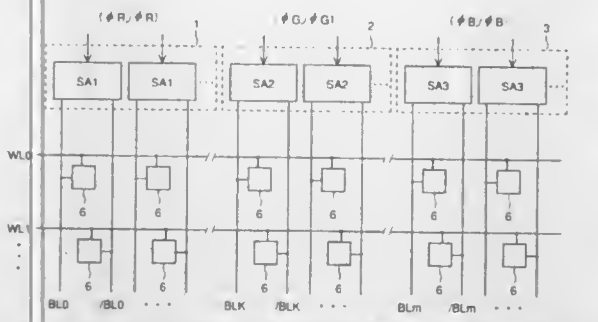
Int. Cl.^{6} G11C *7/00*

U.S. Cl. 365—230.03 **3 Claims**

1. A semiconductor memory device comprising:

a plurality of memory cells arranged in rows and columns, and divided into a plurality of groups,

wherein each of said plurality of groups includes a plurality of memory cells arranged in at least one said column,



copy means for copying data stored in at least one memory cell in at least one of said plurality of groups into at least one another relevant memory cell in said at least one group.

5,854,772

DECODER CIRCUIT WITH LESS TRANSISTOR ELEMENTS

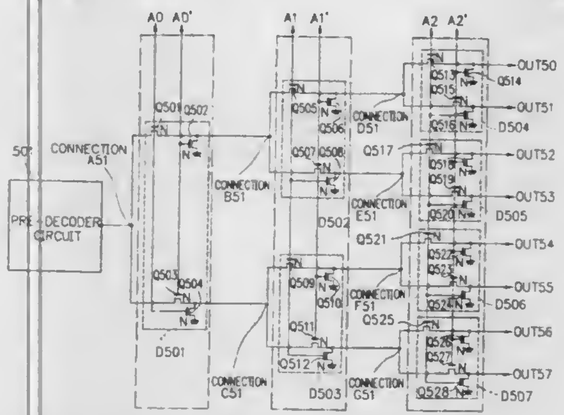
Takayuki Suzu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 9, 1997, Ser. No. 925,738

Claims priority, application Japan, Sep. 13, 1996, 8-243926

Int. Cl.^{6} G11C *8/00*

U.S. Cl. 365—230.06 **12 Claims**



1. A decoder circuit for decoding signals comprising:

an input signal wire for transmitting an input signal;

a first output signal wire for transmitting a first output signal;

a second output signal wire for transmitting a second output signal;

a first address signal wire for transmitting a first TRUE address input signal;

a second address signal wire for transmitting a second BAR address input signal which is the antiphase of the first TRUE address signal;

a first n-MOS transistor having its source terminal connected to the input signal wire, its gate terminal connected to the first address signal wire and its drain terminal connected to the first output signal wire;

a second n-MOS transistor having its source terminal connected to a power source on the ground level, its gate terminal connected to the second address signal wire and its drain terminal connected to the first output signal wire;

a third n-MOS transistor having its source terminal connected to the input signal wire, its gate terminal connected to the second address signal wire and its drain terminal connected to the second output signal wire; and

a fourth n-MOS transistor having its source terminal connected to a power source on the ground level, its gate terminal connected to the first address signal wire and its drain terminal connected to the second output signal wire.

5,854,773

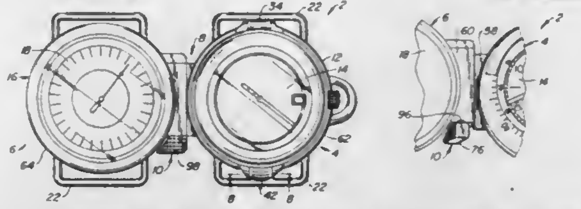
DETACHABLE WRISTWATCH-INSTRUMENT COMBINATION

Robert M. Lee, Reno, Nev., assignor to Hunting World Incorporated, Reno, Nev.

Filed Mar. 22, 1996, Ser. No. 620,652

Int. Cl.^{6} G04B *37/00*

U.S. Cl. 368—10 **18 Claims**



1. A wristwatch-instrument combination comprising first frame including a watch module and second frame adapted to receive an instrument module, respectively; means for securing the frames to each other generally side-by-side so that the frames are substantially immovable relative to each other, the securing means comprising first and second flanges projecting from the frames and defining a tongue and groove connection permitting slidable movements of the flanges relative to each other between an attached position in which the frames are substantially rigidly secured to each other and a detached position in which the frames are separate from each other while preventing pivoting movements of the flanges relative to each other, and including a lock for releasably locking the flanges to each other in the attached position; and means attached to at least one of the frames for attaching a band to the at least one frame for wearing the combination on a wrist.

5,854,774

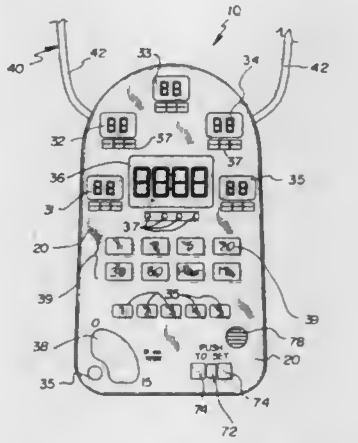
MEDICAL TIMING SYSTEM

Lissa A. Timme, 5335 N. 525 W., LaPorte, Ind. 46350

Filed Jul. 15, 1996, Ser. No. 680,018

Int. Cl.^{6} G04B *47/00;37/00;* G04F *8/00*

U.S. Cl. 368—10 **1 Claim**



1. A medical timing system comprising:

a housing structure substantially rectangular with radiused corners;

a power supply secured within the housing structure, said power source comprising a replaceable battery;

a timing means electronically connected to the power supply and secured to the housing structure; and

a securing means mounted to the rear exterior surface of the housing structure, said securing means comprising includes a belt clip secured to the rear surface of the housing structure;

wherein the housing structure includes a power source door positioned in the lower rear portion permitting replacement of the replaceable battery; and

wherein the timing means includes:

a central processing unit electronically connected to the power supply;

- a plurality of time set buttons electronically connected to the central processing unit;
- a plurality of preset time buttons electronically connected to the central processing unit, one of said preset time buttons setting a one unit time period, one of said preset time buttons setting a five unit time period, one of said preset time buttons setting a twenty unit time period, one of said preset time buttons setting a thirty unit time period, and one of said preset time buttons setting a sixty unit time period, each of said preset time buttons having indicia thereon corresponding to the time period of the preset time button;
- a speaker electronically connected to the central processing unit;
- an alphanumeric display comprising:
  - a first LED display eletronically connected to the central processing unit;
  - a second LED display electronically connected to the central processing unit;
  - a third LED display electronically connected to the central processing unit;
  - a fourth LED display electronically connected to the central processing unit; and
  - a fifth LED display electronically connected to the central processing unit;
- a start button, a stop button, and a reset button associated with each of said first, second, third, fourth and fifth LED displays;
- a central LED clock electronically connected to the central processing unit;
- an HR-RR LED display electronically connected to the central processing unit; and
- a set key electronically connected to the central processing unit adapted to prevent accidental manipulation of programmed information into the central processing unit, whereby the set key is protected by at least one set button guard near the set key.

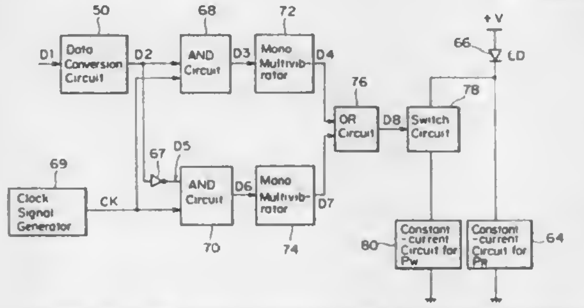
5,854,775
MAGNETO-OPTIC DISK RECORDING SYSTEM HAVING IMPROVED DUTY RATIO CONTROLLER

Haruhiko Izumi; Masaharu Moritsugu, and Masakazu Taguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 325,565, Oct. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 130,848, Oct. 4, 1993, Pat. No. 5,390,156. This application Oct. 25, 1996, Ser. No. 740,260

Int. Cl.^{6} G11B *11/00*

U.S. Cl. 369—13 **6 Claims**



1. A magneto-optic disk recording system for recording data on a magneto-optic disk including a transparent substrate and a record magnetic film formed on said transparent substrate, said system comprising:

- magnetic field generation means for applying a bias magnetic field to said disk in a vertical direction thereto;
- light beam generation means for generating a light beam;
- an optical head focusing said light beam on said disk;
- pulse generation means for generating square wave pulses with a predetermined period;
- duty ratio control means operatively connected with said pulse generation means for alternately increasing and decreasing a duty ratio of the square wave pulses every time data "1" of binary record data is generated;
- pulse cancelling means operatively connected with said duty ratio control means for cancelling a predetermined number of duty ratio decreased pulses immediately following a preceding pulse having an increased duty ratio;
- a first switch operatively connected with said duty ratio control means and said light beam generation means being turned on/off in accordance with the square wave pulses output from said duty ratio control means; and
- first drive means operatively connected with said first switch for driving said light beam generation means with a first driving current when said first switch is on, said light beam generation means, when a pulse with an increased duty ratio is applied to said first switch, being driven by said first drive means to generate a first light beam pulse, said first light beam pulse heating said record magnetic film to an elevated temperature and causing a mark having its direction of magnetization identical to the direction of the bias magnetic field to be formed in said record magnetic film, and when a pulse with a decreased duty ratio is applied to said first switch, being driven by said first drive means to generate a second light beam pulse, said second light beam pulse preheating said record magnetic film to a temperature below said elevated temperature.

5,854,776
CHANGER-EQUIPPED DISC PLAYER

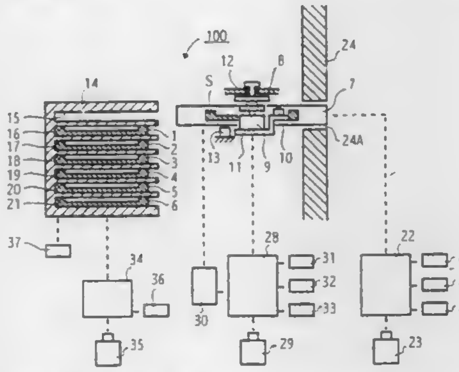
Kazuhiro Sakiyama, Irumi, Japan, assignor to Nakamichi Corp., Japan

Continuation of Ser. No. 418,604, Apr. 7, 1995, Pat. No. 5,532,986, which is a continuation of Ser. No. 198,099, Feb. 17, 1994, Pat. No. 5,438,534, which is a continuation of Ser. No. 58,545, May 5, 1993, Pat. No. 5,299,182, which is a continuation of Ser. No. 707,920, May 30, 1991, Pat. No. 5,216,645. This application Mar. 26, 1996, Ser. No. 621,957

Claims priority, application Japan, May 31, 1990, 2-143226; May 31, 1990, 2-143227; May 31, 1990, 2-143230

Int. Cl.^{6} G11B *17/22*

U.S. Cl. 369—36 **28 Claims**



4. A changer-equipped disc player for storing and playing an n number of discs comprising:

- means for moving one of said discs between a first position, a second position, and a third position of said means for moving;
- disc playing means for playing said one of said discs;
- said first position including means for permitted ejection and insertion of said one of said discs from and into said means for moving;
- said second position including means for loading and unloading of said one of said discs between said means for moving and said disc playing means;
- means for storing said discs within said changer-equipped disc player having an n number of holding means for holding said discs;

- said n number of holding means including a first holding means through an n^{th} holding means wherein said first holding means through said n^{th} holding means store a first through an n^{th} disc of said n number of discs, respectively;
- disc sensing means for sensing whether a disc is transported from said first position by said means for moving;
- manual control means for operating said changer-equipped disc player;
- said manual control means including an eject/load control;
- means for aligning a selected holding means of said first through n^{th} holding means and said third position by moving at least one of said selected holding means and said third position;
- system control means for storing and playing discs including means, responsive to operation of said eject/load control, for controlling said means for moving and said means for aligning;
- said means for controlling including means for actuating said means for moving to effect transport from said first position when said means for moving is in a disc receptive state;
- said means for controlling further including means for examining an output of said disc sensing means to detect whether a disc has been inserted and transported from said first position; and
- said means for controlling further including means for actuating said means for moving to hold an inserted disc loaded a said disc playing means in response a detected presence of an inserted disc.

5,854,777
RECORDING MEDIUM CARTRIDGE AND SIGNAL RECORDING APPARATUS

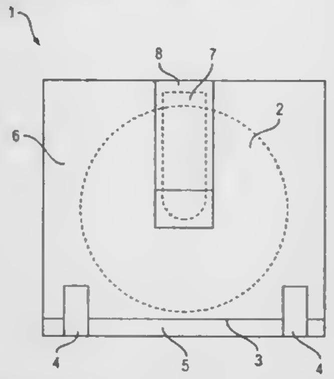
Ichiro Kawamura, Osaka; Ryoichi Imanaka, and Yoshikazu Goto, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 652,053, May 23, 1996, Pat. No. 5,764,622. This application Feb. 9, 1998, Ser. No. 20,415

Claims priority, application Japan, May 23, 1995, 7-123420; May 17, 1996, 8-122948

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—54 **3 Claims**



1. A signal recording apparatus for recording a signal on a recording medium housed in a cartridge,

- wherein said cartridge comprises,
  - cartridge body configured such that said signal recording apparatus can record a signal onto a removable recording medium when said cartridge is loaded in said signal recording apparatus,
  - an opening in said cartridge body for removing said recording medium from said cartridge body,
  - a cover covering said opening, and
  - an indicator for indicating whether said cover has ever been opened or removed from said cartridge body, and
- wherein said signal recording apparatus comprises:
  - a detector for detecting said indicator and determining whether said cover has ever been opened or removed from said cartridge body:
  - a searcher for locating defective areas on said recording medium when said detector determines that said cover has been opened or removed from said cartridge body; and
  - a recorder for recording a signal onto said recording medium, skipping said defective areas on said recording medium,
- wherein when the detector determines that said cover has been opened or removed from said cartridge body, an information signal including a code for error correction is recorded onto the entire recording medium, and then the information signal is regenerated, and
- wherein an error can be detected in said regenerated information signal, said error representing a specified location of a defective zone on the recording medium.

5,854,778
INFORMATION RECORDING AND REPRODUCING METHOD AND SYSTEM FOR DISC-SHAPED RECORDING MEDIUMS

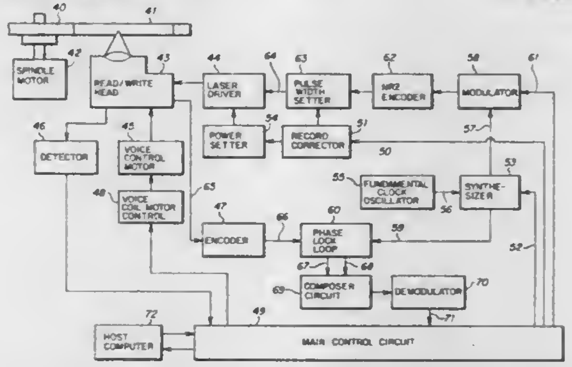
Kikuo Shimizu, Hiratuka, and Kazuo Shigematsu, Kitakatushika-gun, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 27,045, Mar. 4, 1993, Pat. No. 5,446,718. This application Dec. 2, 1994, Ser. No. 349,487

Claims priority, application Japan, Mar. 4, 1992, 04-47120

Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—59 **13 Claims**



1. A method of controlling the rate of change of a read/write clock frequency driving a read/write head in recording or reading information on a disc recording medium, which comprises the steps of:

- forming a plurality of spiral recording tracks on said recording medium;
- forming a plurality of logical tracks on said recording medium, wherein each of said logical tracks is comprised of at least one of said spiral recording tracks;
- dividing each of said logical tracks into a plurality of sectors;
- dividing said recording medium into a plurality of circumferential zones, with each of said zones comprised of one or more of said logical tracks;
- wherein each of said zones has one more of said sectors than a radially-adjacent inner one of said zones, and one less of said sectors than a radially-adjacent outer one of said zones; and
- changing said read/write clock frequency as a function of the number of said sectors in said zones which are traversed by said read/write head during a reading or recording of information on said recording medium.

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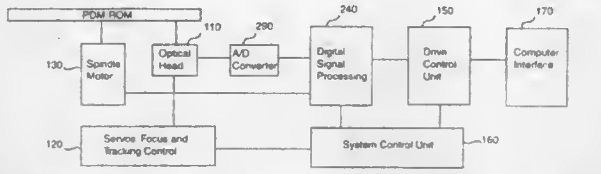
5,854,779
OPTICAL DISC READER FOR READING MULTIPLE LEVELS OF PITS ON AN OPTICAL DISC

Bruce V. Johnson, Berkeley; Gregory A. McDermott, San Francisco; Michael P. O'Neill, Richmond; Cezary Pietrzyk, Pinole; Steven Spielman, Berkeley, and Terrence L. Wong, San Francisco, all of Calif., assignors to Calimetrics, Alameda, Calif.

Filed Jan. 5, 1996, Ser. No. 583,651
Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—59 **6 Claims**



1. A method of reading data from an optical information storage disc having an information storage track that includes a plurality of pits, each pit having the capacity to store at least three discrete data levels represented by the depth of the pit comprising:

reading the information storage track and outputting an analog data signal indicative of the depth of the pits;

sampling the analog data signal in the vicinity of the location of a pit;

converting the analog data signal to a digital data signal which is indicative of the depth of the pit at the location of the sampled pit and which includes a plurality of bits for each sample;

determining the discrete data level stored at the location of the sampled pit from the digital data signal, there being the potential of at least three discrete data levels, wherein each data level corresponds to an associated range of digital signal values, wherein determining the discrete data level stored at the location of the sampled pit includes dynamically calibrating the ranges of digital signal values, wherein the dynamic calibration includes determining a signal range corresponding to each of the potential data levels from reading a calibration pattern on the disc wherein the calibration pattern includes a calibration pit corresponding to each discrete data level so that each discrete data level has a corresponding calibration pit in the calibration pattern used to determine the signal range corresponding to each of the discrete data levels;

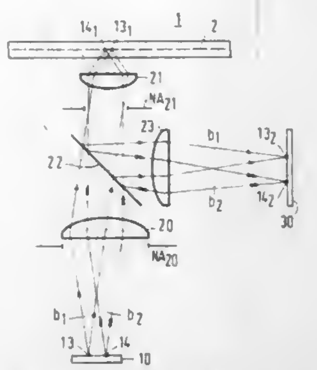
whereby the discrete data level read from each pit has the capacity to represent more than one bit of information.

5,854,780
OPTICAL SCANNING DEVICE USING A PLURALITY OF SCANNING SPOTS

Willem G. Opheij, and Jozef P. H. Benschop, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 927,558, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 650,529, Feb. 5, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,265
Claims priority, application Netherlands, Feb. 6, 1990, 9000282
Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—112 **13 Claims**



1. A device for simultaneously optically scanning a plurality of the information tracks in an information plane of an optical record carrier, said device comprising:

a radiation source for supplying a series of scanning beams;

an objective system for focusing the scanning beams to form a corresponding series of scanning spots focussed on the information plane, each positioned on a respective information track to scan such track;

a series of photodetectors for respectively receiving radiation produced from the respective tracks by the scanning spots and converting such radiation into corresponding respective detection signals;

a plurality of error signal generating circuits respectively coupled to respective ones of said photodetectors for deriving respective error signals from the detection signals produced by the respective photodetectors, each error signal being either (i) a focus error signal indicative of focus error of the associated scanning spot with respect to the track being scanned thereby, or (ii) a tracking error signal indicative of tracking error of the associated scanning spot with respect to the track being scanned thereby; the respective error signals relating to respective ones of said tracks; and

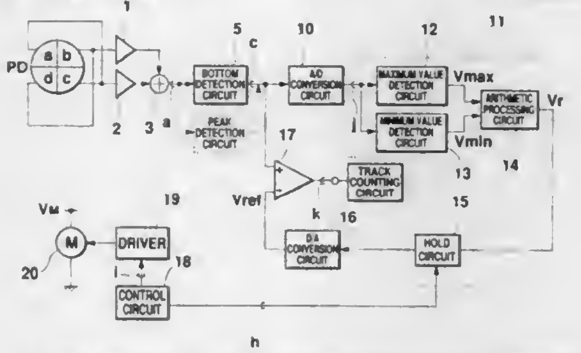
signal combining means coupled to at least two of the error signal generating circuits for combining the error signals produced thereby so as to derive a control signal for control of at least one of (1) focus of each of the scanning beams, (2) tracking of each of the scanning beams, and (3) tilt of the record carrier relative to the scanning beams.

5,854,781
TRACK DETECTION CIRCUIT FOR OPTICAL DISC PLAYBACK APPARATUS

Shinji Kurihara, Gunma-ken, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 31, 1997, Ser. No. 962,053
Claims priority, application Japan, Oct. 31, 1996, 8-290692
Int. Cl.^{6} G11B *7/00*

U.S. Cl. 369—124 **10 Claims**



1. A track detection circuit for an optical disc playback apparatus for detecting tracks on an optical disc crossed by a spot of light moving in the radial direction over the optical disc, comprising:

a detection circuit for detecting either the bottom or peak of a signal obtained by reading the above-mentioned optical disc;

an analog/digital conversion circuit for converting the output signal of said detection circuit to a digital signal;

a digital processing circuit for obtaining a reference value according to the digital signal from said analog/digital conversion circuit;

a digital/analog conversion circuit for generating a reference signal by performing digital/analog conversion on the reference value from said digital processing circuit; and

a comparison circuit that compares the output signal from said detection circuit with said reference signal supplied from said digital/analog conversion circuit; wherein,

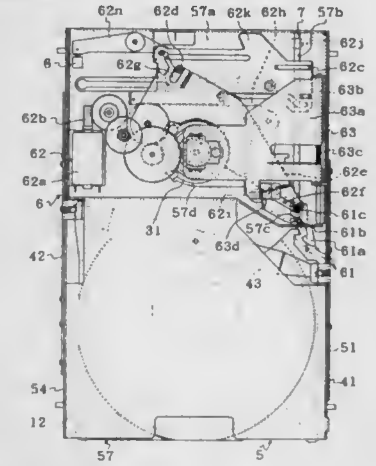
tracks that are crossed are detected based on the comparison output signal from said comparison circuit.

5,854,782
MULTI-DISK PLAYER

Tadanori Tamiya, and Takumi Oota, both of Tottori, Japan, assignors to Sanyo Electric Co. Ltd, Tottori, and Tottori Sanyo Elec. Co. Ltd, Osaka-fu, both of Japan

Filed Nov. 9, 1995, Ser. No. 556,213
Claims priority, application Japan, Nov. 12, 1994, 6-303121
Int. Cl.^{6} G11B *17/22;17/04*

U.S. Cl. 369—192 **7 Claims**



1. A multi-disk player comprising:

a magazine having a plurality of trays stacked in a case, each of said trays being adapted to receive a disk;

a magazine containing portion of the player in which the magazine is adapted to be inserted and pulled out of the player in a particular direction;

a recording and/or playing portion of the player arranged to be aligned with the magazine containing portion in said particular direction;

an elevator mechanism to adjust relative locations of said recording and/or playing portion with the trays of the magazine being generally perpendicular to said particular direction; and

a loading mechanism which reciprocates a tray holding a selected disk between the magazine, when contained in said magazine containing portion, and the recording and/or playing portion, said loading mechanism comprising:

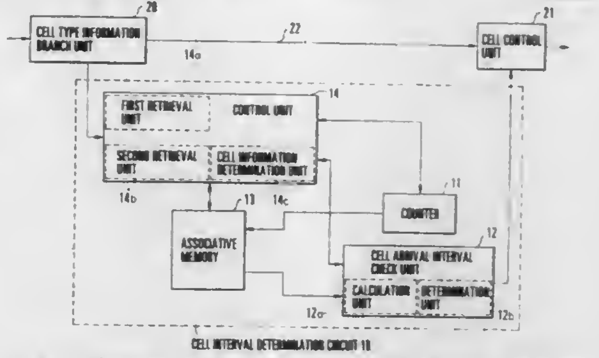
- a hook having a portion which engages with an engaging portion of the tray holding the selected disk in the magazine when contained in the magazine containing portion, a first projection and a second projection provided on the hook,
- a first guiding groove which guides said first projection so as to selectively guide the engaging portion of said hook between a locking position in which the engaging portion on a point of the hook engages with the engaging portion of said tray, and a shunting position in which the hook engaging portion does not engage with the engaging portion of said tray,
- a second guiding groove connected with the first guiding groove which guides said first projection and second projection so said hook is guided in a straight line from said locking position to a position in which said disk is loaded, and
- a driving means which moves said hook along said second guiding groove.

5,854,783
CELL INTERVAL DETERMINATION APPARATUS FOR USAGE PARAMETER CONTROL

Teruo Kaganoi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 674,759
Claims priority, application Japan, Jul. 10, 1995, 7-198009
Int. Cl.^{6} H04J *3/14;* H04L *12/56*

U.S. Cl. 370—232 **7 Claims**



1. A cell interval determination apparatus for usage parameter control, comprising:

count means which is incremented every time a cell has arrived in an asynchronous mode to represent a cell arrival time;

memory means for storing, in units of cell type information, cell information consisting of cell type information included in the cell, the cell arrival time counted by said count means, a cell arrival interval defined value which is set in units of cell type information, and flag information representing a retrieval target/non-retrieval target;

cell arrival interval check means for calculating a time difference between the cell arrival time stored in said memory means and the cell arrival time represented by said count means and determining a cell which violates the cell arrival interval defined value stored in said memory means; and

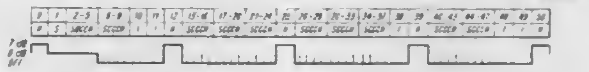
control means for retrieving, from said memory means in accordance with the flag information, cell information having the same cell type information as that extracted from the arriving cell, designating to start said cell arrival interval check means in accordance with a retrieval result, and storing the cell information associated with the arriving cell in said memory means in accordance with the retrieval result and a determination result of said cell arrival interval check means.

5,854,784
POWER-SAVING METHOD FOR PROVIDING SYNCHRONIZATION IN A COMMUNICATIONS SYSTEM

Torbjörn Wilson Sölve, Cary, and Larry William Massingill, Selma, both of N.C., assignors to Ericsson, Inc., Research Triangle Park, N.C.

Filed Nov. 5, 1996, Ser. No. 743,189
Int. Cl.^{6} G08C *17/00;* H04J *3/06*

U.S. Cl. 370—311 **19 Claims**



7. A method of exchanging communication signals between a first communication device and a second communication device, comprising the steps of:

establishing a communications link between the first communication device and the second communication device, the communications link including at least one control channel for exchanging first and second types of control information between the first communication device and the second communication device during first and second intervals, respectively; and

selectively providing transmitter power for transmitting over the at least one control channel such that transmitter power is

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provided during the first intervals, and not provided during the second intervals, when the second type of control information is not required.

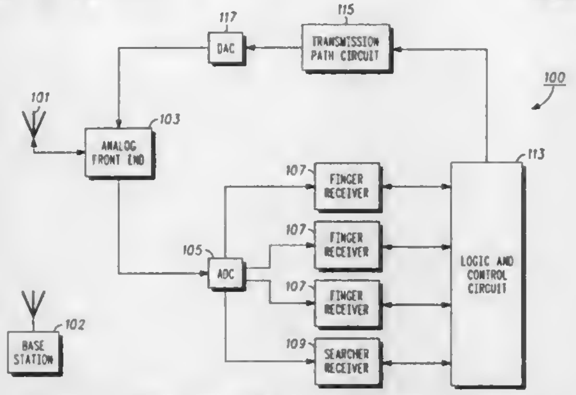
5,854,785
SYSTEM METHOD AND WIRELESS COMMUNICATION DEVICE FOR SOFT HANDOFF

William Daniel Willey, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1996, Ser. No. 772,665

Int. Cl.^{6} H04B *7/216*

U.S. Cl. 370—332 **5 Claims**



1. A method of handing off a wireless communication device in the System Access State of a Code-Division Multiple Access communication system, the method comprising the steps of:

- a) determining at least one neighboring pilot whose Paging Channel could be successfully demodulated;
- b) creating an Access Channel Message that includes an identity of the at least one neighboring pilot;
- c) transmitting the Access Channel Message;
- d) assigning a first finger receiver to an active pilot and a second finger receiver to the at least one neighboring pilot whose identity was included in the Access Channel Message; and
- e) simultaneously demodulating the Paging Channel of the active pilot and the at least one neighboring pilot while the wireless communication device is in the System Access State.

5,854,786
METHOD AND APPARATUS FOR DISTRIBUTION/CONSOLIDATION (DISCO) INTERFACE UNITS FOR PACKET SWITCHED INTERCONNECTION SYSTEM

Eric L. Henderson; Houtan Dehesh; Farrokh Khatibi, all of San Diego; Richard Larson, Los Gatos; Todd R. Sutton, San Diego, all of Calif.; Lindsay A. Weaver, Jr., Boulder, Colo., and Kendrick Hoy Leong Yuen, San Diego, Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Filed Aug. 9, 1995, Ser. No. 513,306

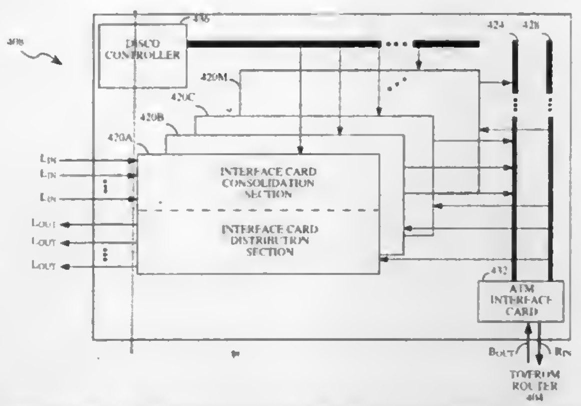
Int. Cl.^{6} H04B *7/216*

U.S. Cl. 370—335 **15 Claims**

4. In a communication system within which is disposed an interconnection subsystem for routing data packets between a plurality of signal lines, said interconnection subsystem including a plurality of packet consolidation interfaces for multiplexing said data packets from a plurality of said signal lines into a higher-rate signal line, a method of testing said packet consolidation interfaces comprising the steps of:

connecting first and second of said packet consolidation interfaces to a selected one of said signal lines in order that said first and second packet consolidation interfaces receive an identical sequence of said data packets;

equalizing said first and second packet consolidation interfaces in order that said first packet consolidation interface accumulates a first set of said data packets and said second packet consolidation interface accumulates a second set of data packets identical to said first set of data packets; and



latching, at output ports of said first and second packet consolidation interfaces, selected information included within corresponding ones of said data packets from said first and second sets of said data packets and comparing said selected information latched from said corresponding ones of said data packets;

wherein a difference between said selected information latched from said corresponding ones of said data packets indicates said first packet consolidation interface differs from said second packet consolidation interface.

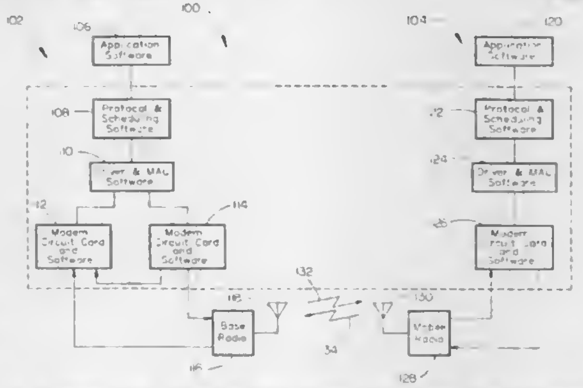
5,854,787
METHOD FOR REDUCING MESSAGE ERROR RATE WITHIN REAL-TIME EXCHANGE RADIO-FREQUENCY COMMUNICATIONS SYSTEMS

Robert D. Dodge, Cedar Rapids; James P. Hubert, Robins; Ricky D. Wash, Cedar Rapids; James A. Minnick, Central City, and Scott J. F. Zogg, Cedar Rapids, all of Iowa, assignors to Rockwell International, Costa Mesa, Calif.

Filed Dec. 13, 1996, Ser. No. 766,910

Int. Cl.^{6} H04L *12/64*

U.S. Cl. 370—349 **11 Claims**



1. A method for receiving data within a real-time data exchange radio-frequency communications network, comprising:

receiving a potential message including a frame header having frame header control data with a radio-frequency modem;

reading the number of packets of the potential message from the control data of the received frame header;

verifying the message by comparing the frame header to message format information indicated by a status register;

ignoring the message if the status cannot be verified;

otherwise, converting the packets into a message by performing the steps of: building a modem header and moving the modem header to a buffer for storage of received data;

reading a packet from the radio-frequency modem; moving the read packet to the buffer;

repeating said packet reading step and said packet moving step until all packets have been read and moved into the buffer; and

thereafter, sending an interrupt signal to a main processor thereby indicating the presence of a new message in the buffer.

5,854,788

Patent Not Issued For This Number

5,854,789
ATM COMMUNICATION SYSTEM WITH A MODULAR STRUCTURE AND COMMUNICATION MODULES

Hilmar Lesch, Wolfratshausen; Klaus Kirchberger, München; Werner Stöckl, Baierbrunn, and Horst Rombach, München, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

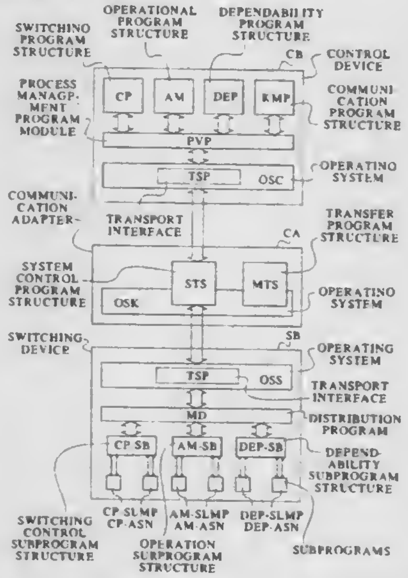
PCT No. PCT/DE95/00342, § 371 Date Sep. 13, 1996, § 102(e) Date Sep. 13, 1996, PCT Pub. No. WO95/25411, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 13, 1995, Ser. No. 704,645

Claims priority, application Germany, Mar. 16, 1994, 44 08 974.0

Int. Cl.^{6} H04L *12/28;12/56*

U.S. Cl. 370—395 **5 Claims**


OPERATIONAL PROGRAM STRUCTURE
DEPENDABILITY PROGRAM STRUCTURE
SWITCHINO PROGRAM STRUCTURE
CB
CONTROL DEVICE
PROCESS MANAGP-MENT PROGRAM MODULE
CP
AM
DEP
KMP
COMMUNI-CATION PROGRAM STRUCTURE
PVP
TSP
OSC
OPERATINO SYSTEM
COMMUNI-CATION ADAPTER
TRANSPORT INTERFACE
CA
TRANSFER PROGRAM STRUCTURE
SYSTEM CONTROL PROGRAM STRUCTURE
STS
MTS
OSK
OPERATINO SYSTEM
SWITCHING DEVICE
SB
OPERATING SYSTEM
TSP
OSS
TRANSPORT INTERFACE
MD
DISTRIBUTION PROGRAM
CP-SB
AM-SB
DEP-SB
DEPEND-ABILITY SUBPROGRAM STRUCTURE
SWITCHING CONTROL SUBPROGRAM STRUCTURE
CP-SLMP CP-ASN
AM-SLMP AM-ASN
DEP-SLMP DEP-ASN
OPERATION SUBPROGRAM STRUCTURE
SUBPROGRAMS

1. An ATM communication system with a modular structure for connection of ATM communication terminals, comprising:

a switching device with at least one first multi-tasking operating system;

a control device with a second multi-tasking operating system, the control device having components;

the switching system having components, and the switching device having and managing a transport program module, realizing a message transport interface between the operating system and a message distribution program module;

the switching device having a dependability subprogram structure, monitoring the components of the switching device and configuring the components in the event of an error;

the switching device having an operation subprogram structure, controlling virtual connections for message traffic in the switching device;

the switching device having a switching control subprogram structure, controlling switching aspects of the connections with the control device and adapting switching messages to a physical switching system;

messages within the program structures of the switching device and to and from the control device being controlled by the message distribution program module;

the control device having a transport program module, realizing a message transport interface between the operating system and a process management program module;

the control device having a switching program structure, effecting the switching control of the switching device;

the control device having a dependability program structure, monitoring the components of the control device and configuring the components in the event of an error;

the control device having an operation program structure, administering the switching device and control device;

the control device having a communication program structure that effects access to a switching Asynchronous Transfer Mode (ATM) communication network;

a communication adaptor, realizing the connection between the control device and the switching device and having a third multi-tasking operating system;

the adaptor having a system control program structure, monitoring the communication adaptor; and

the adaptor having a message transfer program structure, controlling and monitoring message transfer in Asynchronous Transfer Mode.

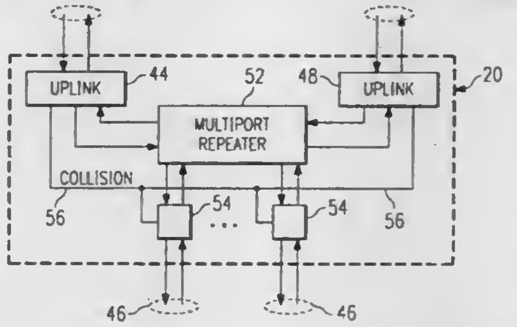
5,854,790
METHOD AND APPARATUS FOR NETWORKING DATA DEVICES USING AN UPLINK MODULE

Craig M. Scott, Irving; Li Tung Wang, Arlington; Arthur T. Bennett, and Ahmad Nouri, both of Carrollton, all of Tex., assignors to Compaq Computer Corp., Houston, Tex.

Continuation of Ser. No. 403,206, Mar. 13, 1995, Pat. No. 5,796,738. This application Jul. 11, 1997, Ser. No. 891,511

Int. Cl.^{6} H04L *12/28;12/56;12/413;* **G06F** *15/16*

U.S. Cl. 370—401 **13 Claims**



1. An apparatus for communicating data between a transmitting data device and a receiving data device in a collision domain at a first data rate and a second data rate, the collision domain having a distance dependent upon the data rate, the transmitting and receiving data devices being capable of operating at least at a first data rate, the apparatus comprising:

a first repeater operable to receive and transmit data at a first data rate and a second data rate and connectable to a second repeater, the first and second repeaters positioned between the transmitting data device and the receiving data device to form a collision domain having a first maximum transmission distance at a first data rate and a second maximum transmission distance at a second data rate, the first transmission distance being greater than the second transmission distance,

a buffer positioned between the first and second repeaters to form a second collision domain, the buffer being operable to store data for transmission between the collision domains, the first repeater being operable to detect a saturated condition of the buffer, and said first repeater, in response to the saturated condition, further operable to transmit to the transmitting device a collision indication without storing the message in the buffer;

wherein, when data is transmitted at the second data rate, the transmitting data device is positioned from the receiving data device at a distance not greater than the first transmission distance.

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5,854,791

COMMUNICATION CONTROL APPARATUS

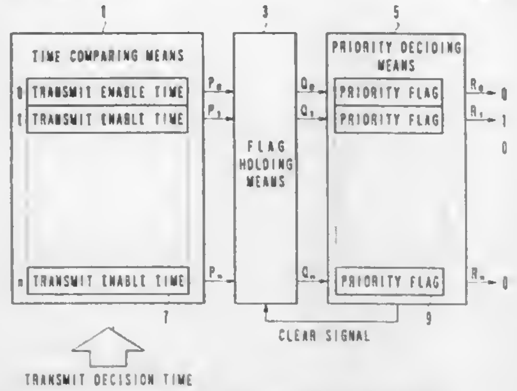
Kohei Abe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 2, 1996, Ser. No. 595,783

Claims priority, application Japan, Feb. 3, 1995, 7-017186

Int. Cl.^{6} H04J *3/02*

U.S. Cl. 370—412 **24 Claims**



1. A communication control apparatus, comprising:

time comparing means for storing transmit enable times corresponding to a plurality of virtual lines respectively, the time comparing means simultaneously comparing all the stored transmit enable times with a transmit decision time inputted from outside of the time comparing means, and outputting match signals to all the virtual lines corresponding to all the transmit enable times which match the transmit decision time;

flag holding means having flags each corresponding to each of the virtual lines, for setting the flags corresponding to the match signals whenever the match signals are inputted from said time comparing means; and

priority deciding means having priority flags each corresponding to each of the virtual lines, each priority sequence data indicative of priority sequence of the virtual line being stored in each of the priority flags, the priority sequences of a plurality of the priority sequence data stored in the priority flags, which priority flags corresponding to the flags set by said flag holding means, being compared with each other to execute the transmit processing of the virtual lines in accordance with the priority sequences.

5,854,792

NETWORK CONNECTION APPARATUS

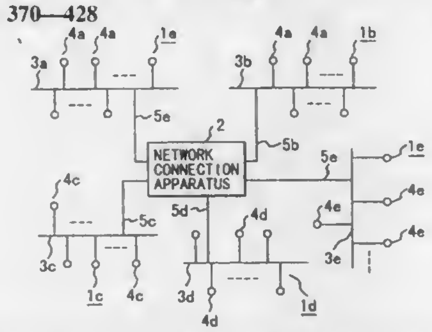
Kuniyoshi Konishi, Tokyo, and Toshifumi Shiba, Iruma, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1996, Ser. No. 712,645

Claims priority, application Japan, Sep. 12, 1995, 7-234028

Int. Cl.^{6} H04L *12/54*

U.S. Cl. 370—428 **16 Claims**



1. A network connection apparatus connected between a plurality of networks for transferring, to a destination node belonging to one of the networks, a transmission frame output from a sender node belonging to another network, the transmission frame including a destination address, a sender address and transmission data, comprising:

a common memory for temporarily storing transmission frames;

a plurality of network control sections each for writing into the common memory a transmission frame output from that one of the networks which is connected thereto, outputting a notification to notify start of writing and a notification to notify completion of normal writing, and reading the transmission frame written in the common memory in response to a transmission command, so as to transmit the transmission frame to the network connected thereto;

means for setting the operation mode of the network connection apparatus to a Cut Through Mode or a Store & Forward Mode;

means operative in the Cut Through Mode for receiving from each network control section the notification to notify start of writing, and transmitting the transmission command to that one of the network control sections which is connected to a destination network determined by the destination address included in a transmission frame; and

means operative in the Store & Forward Mode for receiving from each network control section the notification to notify completion of normal writing, and transmitting the transmission command to that one of the network control sections which is connected to the destination network determined by the destination address included in a transmission frame.

5,854,793

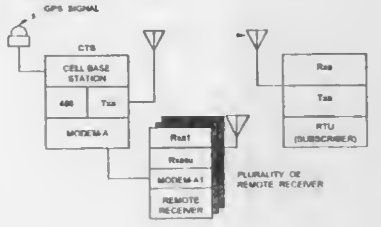
GPS SYNCHRONIZATION OF CTS TRANSMITTERS FOR AN INTERACTIVE NETWORK

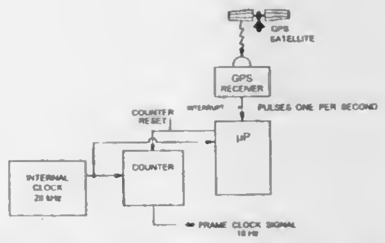
Gilbert M. Dinkins, Herndon, Va., assignor to EON Corporation, Reston, Va.

Continuation of Ser. No. 257,336, Jun. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 966,414, Oct. 26, 1992, Pat. No. 5,388,101. This application Feb. 27, 1996, Ser. No. 607,814

Int. Cl.^{6} H04N *7/56;7/14*

U.S. Cl. 370—503 **36 Claims**





15. A point-to-point communication network comprising:

a network hub switching station,

a plurality of central transmitter stations (CTSs),

a satellite station,

sets of remote transmitter stations (RTUs) located in a vicinity of each CTS, and

means for providing for two-way digital communication between two different RTUs by a serial communication path extending through one of said CTSs, said satellite, said network hub switching station, said satellite and back to said one of said CTSs, wherein at least some of said CTSs serve a set of RTUs that are dispersed over predetermined geographic areas and includes

communication means between said RTUs including a set of stationary receive only terminals, which are remote from said CTSs and which are coupled by a communication link with said CTS for conveying transmitted messages from RTUs in a subdivided portion of said geographic area in a vicinity of said receive only terminals to said CTS,

said CTSs including means for synchronizing said transmission facilities with a precision clock signal derived from an independent precision clock source;

said RTUs transmitting signals at a peak power in a milliwatt range, and

data processing means at said CTS for assembling and re-transmitting digital subscriber messages from said RTUs via said satellite to said CTS, said RTUs transmitting on a plurality of frequency bands.

5,854,794

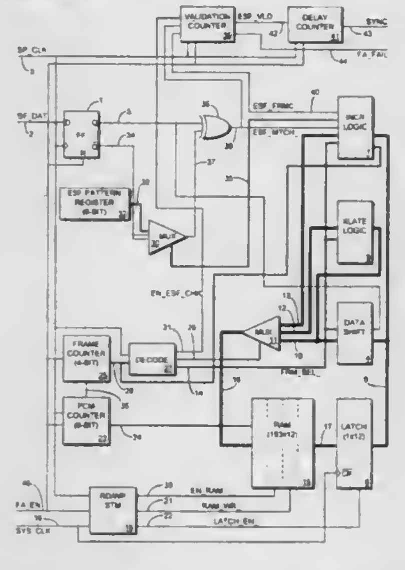
DIGITAL TRANSMISSION FRAMING SYSTEM

Christopher Andrew Pawlowski, Phoenix, Ariz., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 16, 1996, Ser. No. 767,558

Int. Cl.^{6} H04L *7/08*

U.S. Cl. 370—509 **6 Claims**



1. A digital transmission framing system including a source of a predetermined framing pattern, and a source of an input signal comprising data and framing information, said framing system comprising:

means for pattern matching connected to said input signal source and said predetermined framing pattern source, said pattern matching means operated to compare said input signal information to said predetermined framing pattern, and generate a match signal when a portion of said framing pattern matches a portion of said input signal;

means for storage connected to said pattern matching means, said storage means operative for storing a plurality of framing pattern pointer values, each pointer value indicating the portion of said framing pattern to which said input signal information corresponds;

means for pointer update connected to said pattern matching means and said storage means, said pointer update means operated in response to each match signal to update the framing pattern pointer value associated with said portion of said input signal to indicate the next contiguous portion of said framing pattern; and

a framing counter operated in response to said match signal to output a frame aligning signal thereby indicating which of said data and framing information is framing information.

5,854,795

MEMORY CAPACITY TEST METHOD AND COMPUTER SYSTEM

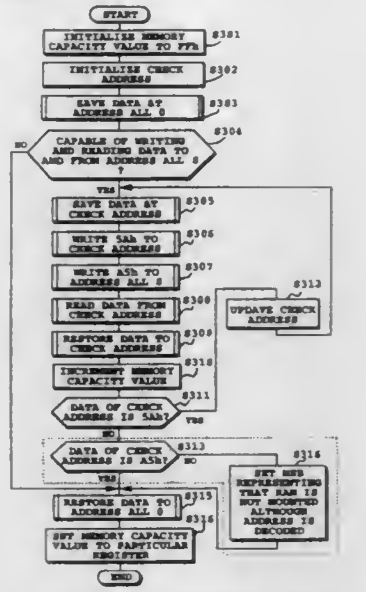
Yuichi Osano, Yokohama, Japan, assignor to Kikusui Electronics Corporation, Yokohama, Japan

Filed Feb. 14, 1997, Ser. No. 801,919

Claims priority, application Japan, Feb. 16, 1996, 8-029726

Int. Cl.^{6} G11C *29/00*

U.S. Cl. 371—21.1 **5 Claims**


START
INITIALIZE MEMORY CAPACITY VALUE TO FFh
S301
INITIALIZE CHECK ADDRESS
S302
SAVE DATA AT ADDRESS ALL 0
S303
CAPABLE OF WRITING AND READING DATA TO AND FROM ADDRESS ALL 0 ?
S304
NO
YES
SAVE DATA AT CHECK ADDRESS
S305
WRITE 5Ah TO CHECK ADDRESS
S306
WRITE A5h TO ADDRESS ALL 0
S307
READ DATA FROM CHECK ADDRESS
S308
UPDATE CHECK ADDRESS
S312
RESTORE DATA TO CHECK ADDRESS
S309
INCREMENT MEMORY CAPACITY VALUE
S310
DATA OF CHECK ADDRESS IS 5Ah?
S311
YES
NO
DATA OF CHECK ADDRESS IS A5h?
S313
NO
YES
SET MSB REPRESENTING THAT RAM IS NOT MOUNTED ALTHOUGH ADDRESS IS DECODED
S316
RESTORE DATA TO ADDRESS ALL 0
S315
SET MEMORY CAPACITY VALUE TO PARTICULAR REGISTER
S314
END

1. A memory capacity test method for testing capacity of a memory system which includes a memory mounted only on a portion of a memory space, and decodes only addresses of the portion of the memory space, said memory capacity test method comprising the steps of:

sequentially selecting a check address;

writing first data to said check address;

writing second data to an initial address of said portion on which said memory is mounted, said second data being different from said first data;

reading data on said check address;

checking whether said data read from said check address agrees with said first data; and

deciding that the memory is not mounted on said check address if said data read from said check address disagrees with said first data.

5,854,796

METHOD OF AND APPARATUS FOR TESTING SEMICONDUCTOR MEMORY

Shinya Sato, Tokyo, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 21, 1997, Ser. No. 861,344

Claims priority, application Japan, May 29, 1996, 8-135207

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 371—21.1 **3 Claims**

1. A method of testing a semiconductor memory, comprising the steps of:

dividing a failure analysis memory for storing failure information representative of a test result of a semiconductor memory under test, into a plurality of blocks with compacted addresses;

preparing a compaction memory having areas corresponding respectively to the blocks of the failure analysis memory;

writing data indicative of a failure cell in any one of the blocks of the failure analysis memory, in an area of said compaction memory which corresponds to said any one of the blocks;

determining minimum and maximum addresses of addresses at which failure cells are present in said blocks; and

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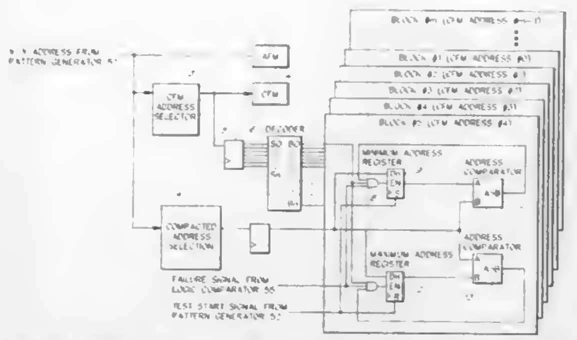

X, Y ADDRESS FROM PATTERN GENERATOR 51
AFM
CFM
CFM ADDRESS SELECTOR
DECODER
BLOCK #m (CFM ADDRESS #m-1)
BLOCK #1 (CFM ADDRESS #0)
BLOCK #2 (CFM ADDRESS #1)
BLOCK #3 (CFM ADDRESS #2)
BLOCK #4 (CFM ADDRESS #3)
BLOCK #5 (CFM ADDRESS #4)
MINIMUM ADDRESS REGISTER
ADDRESS COMPARATOR
COMPACTED ADDRESS SELECTION
MAXIMUM ADDRESS REGISTER
ADDRESS COMPARATOR
FAILURE SIGNAL FROM LOGIC COMPARATOR 55
TEST START SIGNAL FROM PATTERN GENERATOR 52

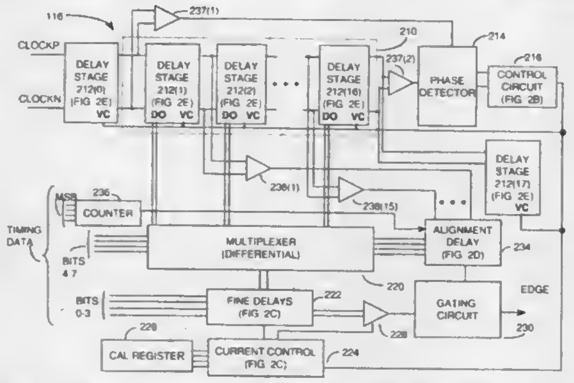
reading failure data from the failure analysis memory in a range between the minimum and maximum addresses of each of the blocks, which correspond to the areas of said compaction memory which store the data indicative of a failure cell.

5,854,797

TESTER WITH FAST REFIRE RECOVERY TIME

Martin J. Schwartz, Worcester, Mass., and Gerald F. Muething, Jr., Melbourne, Fla., assignors to Teradyne, Inc., Boston, Mass.

Filed Aug. 5, 1997, Ser. No. 906,533
Int. Cl.⁶ H04B *17/00*
U.S. Cl. 371—22.1 **17 Claims**



16. A method of operating automatic test equipment for testing semiconductor devices to generate edge signals in successive periods, comprising the steps of:

a) generating a plurality of periodic signals containing periodic pulses, the plurality of signals having different relative delays;

b) selecting, in response to a programmable value, one of the plurality of periodic signals;

c) further processing the selected periodic signal, said further processing including gating, in response to a gating signal, a portion of the selected periodic signal to make an edge signal, the portion falling between the leading and trailing edge of the gating signal, wherein the gating signal is generated using different circuitry in successive periods.

5,854,798

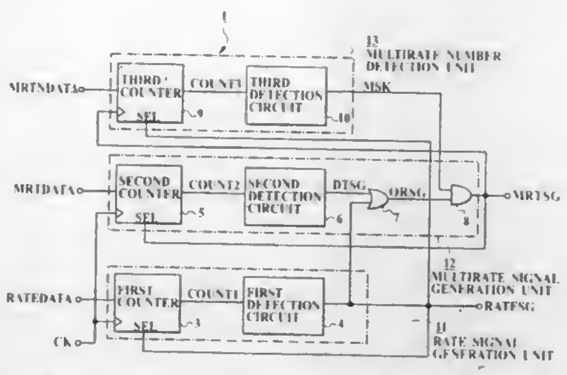
MULTIRATE GENERATOR AND MULTIRATE GENERATING METHOD

Takafumi Uehara, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1998, Ser. No. 14,263
Int. Cl.⁶ G06F *11/00*
U.S. Cl. 371—27.1 **8 Claims**

1. A multirate generator for generating a rate signal and a multirate signal having a subrate period and a subrate number which are set for each period of the rate signal, the multirate generator comprising:

a rate signal generation unit which takes the rate signal as a mode selection input, and in a load mode, counts down rate



data to specify a period with which the rate signal is to be generated on the basis of a timing of an inputted clock, and generates a rate signal which comes to be at a predetermined level each time an obtained first count value becomes a predetermined value;

a multirate signal generation unit which takes the multirate signal as a mode selection input, and in a load mode, counts down multirate data to specify a subrate period with which the multirate signal is to be generated on the basis of a timing of the inputted clock, outputs a detection signal by detecting that an obtained second count value becomes a predetermined value, makes the OR signal of the detection signal and the rate signal, and generates the multirate signal obtained by masking the OR signal with a mask signal; and

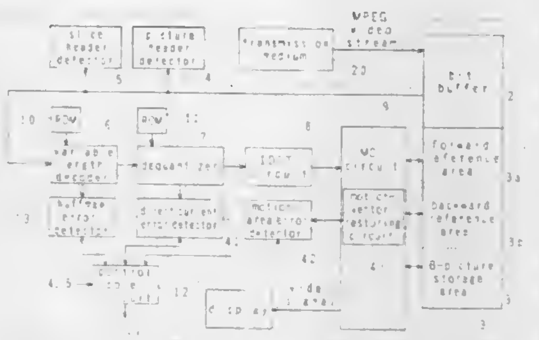
a multirate number detection unit which takes the rate signal as a mode selection input, and in a load mode, counts down multirate number data to specify a multirate number of the multirate signal to be generated on the basis of a timing of the multirate signal, detects that an obtained third count value becomes a predetermined value, and outputs the detection signal as the mask signal.

5,854,799

VIDEO DECODER WITH FUNCTIONS TO DETECT AND PROCESS ERRORS IN ENCODED VIDEO DATA

Shigeyuki Okada, Hashima; Naoki Tanabashi, Gifu, and Hayato Nakashima, Gifu-ken, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 29, 1995, Ser. No. 564,478
Claims priority, application Japan, Nov. 29, 1994, 6-295018; Nov. 15, 1995, 7-297122
Int. Cl.⁶ H03M *13/00*
U.S. Cl. 371—37.1 **23 Claims**



1. A video decoding apparatus for decoding encoded video data to continuously produce decoded pictures, said encoded video data including a series of pictures, with each picture including a plurality of slices, and each slice including a plurality of macroblocks, said video decoding apparatus comprising:

a dequantizer for performing dequantization on said encoded video data to produce dequantized data based on a quantization threshold value;

a first error detector for checking whether each of said slices of each of said pictures includes an erroneous macroblock, based on said dequantized data, said first error detector performs the checking macroblock by macroblock; and

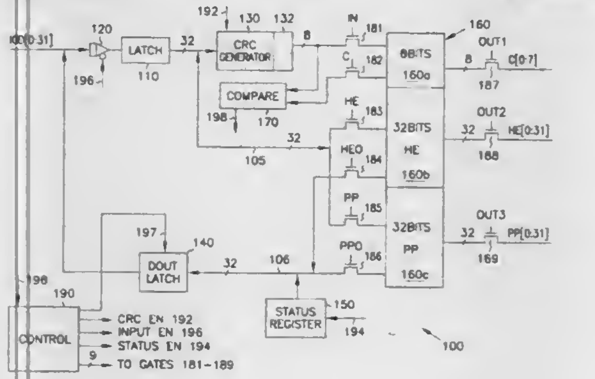
an error processing circuit for replacing an erroneous macrotlock with a preceding correct macroblock, wherein when a check target slice in a picture currently undergoing decoding includes an erroneous macroblock, said error processing circuit replaces said erroneous macroblock with a preceding correct macroblock, said preceding correct macroblock included in a preceding picture to be output from said video decoding apparatus prior to said picture currently undergoing decoding, and wherein a position of said preceding correct macroblock in said preceding picture corresponds to a position of said erroneous macroblock in said picture currently undergoing decoding.

5,854,800

METHOD AND APPARATUS FOR A HIGH SPEED CYCLICAL REDUNDANCY CHECK SYSTEM

Mark Thomann; Huy Thanh Vo, both of Boise, and Charles L. Ingalls, Meridian, all of Id., assignors to Micron Technlogy, Inc., Boise, Id.

Filed Jun. 7, 1995, Ser. No. 474,397
Int. Cl.⁶ H03M *13/00*
U.S. Cl. 371—37.7 **9 Claims**



1. A bidirectional error correction system for simultaneously detecting and correcting errors, and for generating error correction words, on data having multiple protocols, comprising:

an input buffer, connected to a first port;

a latch, connected to the input buffer, for latching data;

an edit buffer having an error portion for storing an error correction word and a data portion for storing a data word, and programmable to support multiple data protocols, wherein the edit buffer has an error word port for the error portion and a data word port for the data portion;

an error word generator having an input and an output, the input connected to the latch and the output connected to the edit buffer, for generating an error word based on data in the latch;

a compare circuit, connected to the error word generator and the error portion of the edit buffer, for generating an error signal based on the error word and the error correction word in the error portion of the edit buffer;

a first data bus, connecting the input of the error word generator to the data portion of the edit buffer; and

a second data bus, connecting the data portion of the edit buffer to an output latch and connecting the output latch to the first port;

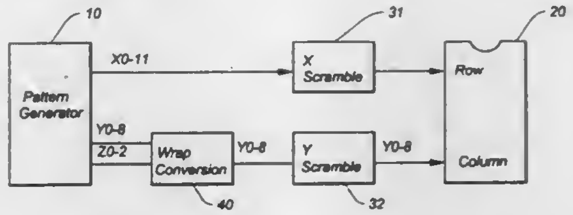
whereby, in a single cycle of the system, the error word is generated for data transmitted from the first port to the edit buffer on the first bus and error detection is performed on data transmitted from the edit buffer to the first port on the second bus.

5,854,801

PATTERN GENERATION APPARATUS AND METHOD FOR SDRAM

Osamu Yamada, Tokorozawa, and Koji Hara, Fujisawa, both of Japan, assignors to Advantest Corp., Tokyo, Japan

PCT No. PCT/JP95/01767, § 371 Date Jan. 20, 1998, § 102(e) Date Jan. 20, 1998
PCT Filed Sep. 6, 1995, Ser. No. 894,870
Int. Cl.⁶ G01K *31/28*
U.S. Cl. 371—27.1 **7 Claims**



1. A test pattern generation apparatus for generating a test pattern to test a synchronous dynamic random access memory (SDRAM) characterized in that:

a wrap conversion means (**40**) is provided which receives two kinds of data (Y0–Yn and Z0–Zn) from a pattern generator (**10**) and converts the data based on predetermined logic circuit information.

6. A test pattern generation method for generating a test pattern to test a synchronous dynamic RAM (SDRAM) characterized in that:

inputting column address data (Y0–Y2) from a pattern generator to a wrap address conversion circuit;

inputting wrap address data (Z0–Z2) from the pattern generator to the wrap address conversion circuit;

outputting a converted address (Y0–Y2) from the wrap address conversion circuit based on the following logic equations;

Y0=Y0. XOR. Z0

Y1=(Y0. AND. Z0). XOR. (Y1. XOR. Z1)

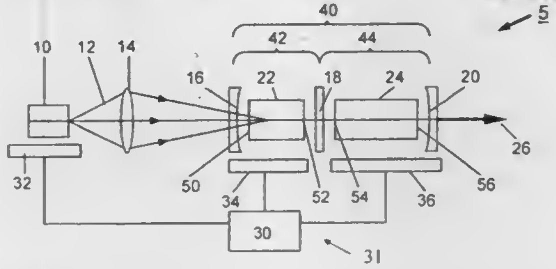
Y2=(((Y0. AND. Z0). AND. (Y1. XOR. Z1)). OR. (Y1. AND. Z1)). XOR. (Y2. XOR. Z2).

5,854,802

SINGLE LONGITUDINAL MODE FREQUENCY CONVERTED LASER

Tianfeng Jin, 3373 Gypsum Rd., and Reinhard F. Bruch, 709 Putnam Dr., both of Reno, Nev. 89503

Filed Jun. 3, 1997, Ser. No. 868,044
Int. Cl.⁶ H01S *3/10*
U.S. Cl. 372—22 **40 Claims**



1. A single longitudinal mode, frequency-converted solid-state laser comprising:

an optical pumping means for producing optical pumping radiation;

a coupled resonant cavity including a first resonant cavity and a second resonant cavity that share a common partially reflecting mirror;

a solid-state laser medium disposed within said first resonant cavity and being optically pumped by said optical pumping radiation, said solid-state laser medium generating a first laser radiation at a first wavelength;

an optical wavelength converting means disposed within said second resonant cavity for converting said first laser radiation at said first wavelength into a second laser radiation at a second wavelength; and

a temperature controlling means for controlling the temperature of said first resonant cavity and said second resonant cavity, whereby said first resonant cavity and said second resonant cavity are used for oscillating said first laser radiation at said first wavelength.

5,854,803

LASER ILLUMINATION SYSTEM

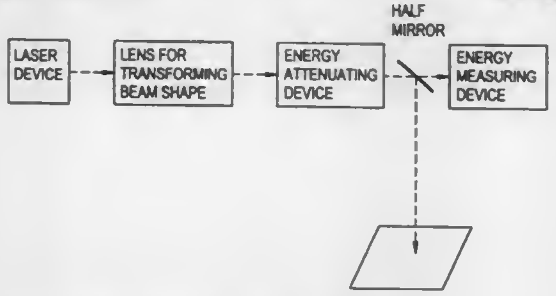
Shunpei Yamazaki, Tokyo, and Koichiro Tanaka, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Dec. 27, 1995, Ser. No. 579,396

Claims priority, application Japan, Jan. 12, 1995, 7-021011; Jan. 24, 1995, 7-027454

Int. Cl.^{6} H01S *3/13*

U.S. Cl. 372—31 **29 Claims**



1. A laser illumination system comprising:

an excimer laser producing a laser light;

means for irradiating said laser light to an object to be treated, and

an energy measuring device receiving at least a portion of said laser light,

wherein said energy measuring device measures an energy distribution of said laser light irradiated to a surface of said object being treated with said laser light.

5,854,804

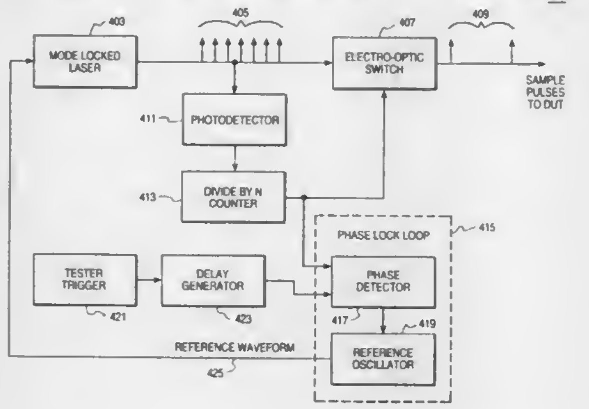
METHOD AND APPARATUS FOR SYNCHRONIZING A MODE LOCKED LASER WITH A DEVICE UNDER TEST

Paul Winer, and Mario J. Paniccia, both of Santa Clara, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 13, 1996, Ser. No. 766,018

Int. Cl.^{6} H01S *3/00*

U.S. Cl. 372—38 **28 Claims**



1. A method for synchronizing a mode locked laser generating repeating laser pulses having a fixed period with a device under test (DUT), the method comprising the steps of:

constructing a test pattern operating in M clocks when executed on the DUT, M being an integer and each one of the M clocks has a second period;

computing a time per test pattern, the time per test pattern being a common multiple of the fixed period and the second period such that N laser pulses are generated during the time per test pattern, N being an integer; and

looping the test pattern on the DUT with the mode locked laser such that the laser pulses remain in a fixed and stable phase relationship to the DUT clock.

5,854,805

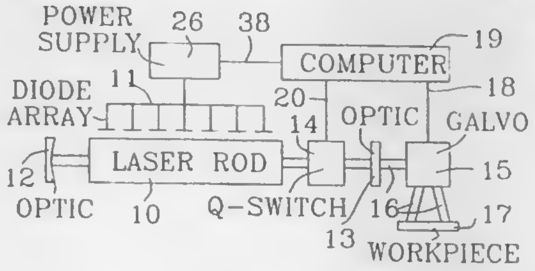
LASER MACHINING OF A WORKPIECE

John Reid, Stittsville, and David R. Walker, Ottawa, both of Canada, assignors to Lumonics Inc., Kanata, Canada

Filed Mar. 21, 1997, Ser. No. 821,545

Int. Cl.^{6} H01S *3/0933*

U.S. Cl. 372—70 **7 Claims**



1. A method of machining a workpiece with laser energy, comprising:

(a) generating a laser beam by pumping an active element of a solid state laser with a laser diode array, said active element having thermal characteristics including a thermal time constant limiting the output energy of the laser;

(b) directing said beam to a first impact location on a workpiece, and moving the beam relative to the workpiece among a plurality of further such impact locations to machine the workpiece in accordance with a predetermined program in which the beam has active machining periods alternating with inactive non-machining periods in a duty cycle that consists of the total lengths of the active periods of the beam as a percentage of the total combined lengths of the active and inactive periods of the beam;

(c) switching the diode array on and off in accordance with said program to render the laser inactive during said inactive periods of the beam and active during said active periods of the beam;

(d) ensuring that the lengths of the active and/or inactive periods in said program maintain said duty cycle at no more than approximately 75%; and

(e) ensuring that the individual length of each of the active periods in said program is no longer than approximately 50% of said thermal time constant.

5,854,806

MULTI-CHANNEL, RF-EXCITED GAS DISCHARGE LASER

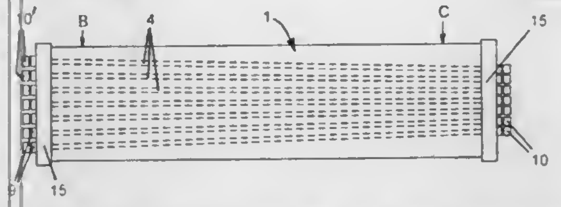
Leroy V. Sutter, Irvine, Calif., assignor to Domino Printing Sciences PLC, Cambridge, United Kingdom

Filed Apr. 10, 1997, Ser. No. 837,315

Claims priority, application United Kingdom, Apr. 17, 1996, 9607959

Int. Cl.^{6} H01S *3/097*

U.S. Cl. 372—82 **8 Claims**



1. A multi-channel RF-excited gas laser device comprising an elongate tubular dielectric housing having an inner and an outer surface;

an elongate ground electrode provided within said dielectric housing;

a plurality of laser channels defined within and extending along said ground electrode adjacent to the inner surface of said dielectric housing;

a laser gas provided within said dielectric housing; and

a plurality of RF electrodes disposed adjacent to and extending along the outer surface of said dielectric housing, each RF electrode being disposed in registration with a respective one of said laser channels, whereby placement of the RF electrodes along the outer surface of the dielectric housing stabilizes laser discharge and prevents electrical arcing between the electrodes.

5,854,807

ELECTRODE FOR SILICON ALLOYS AND SILICON METAL

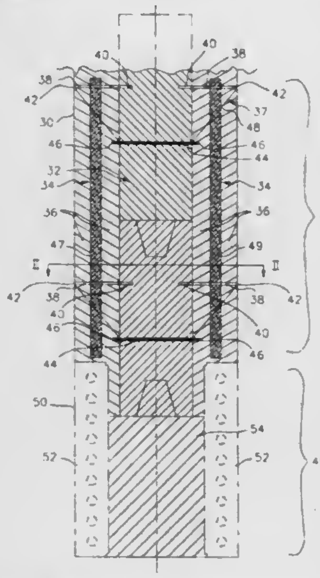
René Boisvert, Ste-Gertrude; Jacques Dostaler, Cap-de-la-Madeleine; Jacques Dubois, Trois-Riviéres, and Dieter W. Ksinsik, Town of Mount Royal, all of Canada, assignors to SKW Canada Inc., Ville St-Laurent, Canada

Filed Oct. 27, 1997, Ser. No. 958,323

Claims priority, application Canada, May 2, 1997, 2204425

Int. Cl.^{6} H05B *7/09*

U.S. Cl. 373—89 **15 Claims**



1. An in situ self-baking electrode suitable for use in an electric arc furnace, the electrode comprising:

an elongated open ended electrically conductive casing that extends generally vertically within a furnace;

a central core disposed within and spaced from the casing, the central core being made of a heat conductive material;

at least one framework within the casing, the framework securing the central core to an inner surface of the casing for holding centrally the central core within the casing and for preventing an extrusion of the central core downward; and

a carbonaceous electrode paste surrounding the central core, the paste being devised to cure into a solid electrode upon heating and to bond to the central core.

5,854,808

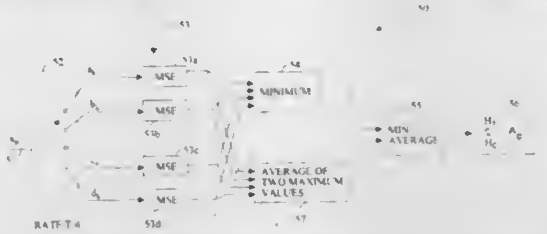
METHODS AND APPARATUS FOR DETECTING THE PRESENCE OF A PRESCRIBED SIGNAL IN A CHANNEL OF A COMMUNICATIONS SYSTEM

George Peponides, Encinitas, Calif., and Kumar Balachandran, Cary, N.C., assignors to Pacific Communication Sciences, San Diego, Calif.

Continuation-in-part of Ser. No. 121,339, Sep. 14, 1993, Pat. No. 5,574,750. This application Mar. 12, 1996, Ser. No. 614,327

Int. Cl.^{6} H04B *17/00*

U.S. Cl. 375—224 **30 Claims**



1. A method for detecting the presence of a prescribed signal type in a channel of a communications system having a plurality of channels in which the prescribed signal might be present at any given time, the method comprising the steps of:

(a) sampling a received signal in at least one channel to obtain a predetermined number of sampling sequences for said at least one channel;

(b) computing an error value for each sampling sequence, each said error value based on differences, if any, between each sample value of the sampling sequence and a predetermined value;

(c) determining a minimum error value;

(d) comparing a function of the minimum error value to a reference value; and

(e) making a decision as to whether the received signal is said prescribed signal on the basis of the comparison.

5,854,809

DATA RECOVERY METHOD AND APPARATUS FOR JITTER TOLERANT PEAK DETECTED CHANNELS

Robert Earl Swanson, Del Mar, and Thomas Daniel Carr, Leucadia, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1996, Ser. No. 640,985

Int. Cl.^{6} H04B *1/66*

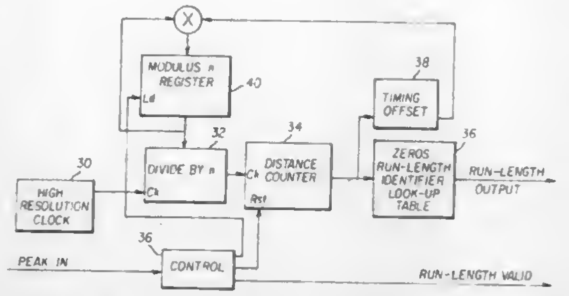
U.S. Cl. 375—240 **8 Claims**

1. A method of reproducing the number of consecutive zeros in a run-length coded peak detected channel, comprising the steps of:

measuring the interval between peaks of a run-length encoded digital data signal, wherein a peak represents a one and the absence of a peak represents a zero;

providing a look-up-table having entries for all possible intervals between peaks for the run-length code used and corresponding entries for the number of zeros between ones;

applying the measured interval to said look-up table to produce a string of zero bits between said one bits; and



comparing the interval between peaks measured in said measuring step with a predetermined interval and modifying said measured interval as a function of any difference found in said comparing step.

5,854,810
APPARATUS AND METHODS FOR USE IN TRANSMITTING AND RELIEVING A DIGITAL SIGNAL AND A RECORD CARRIER OBTAINED BY A TRANSMITTED APPARATUS OR METHOD

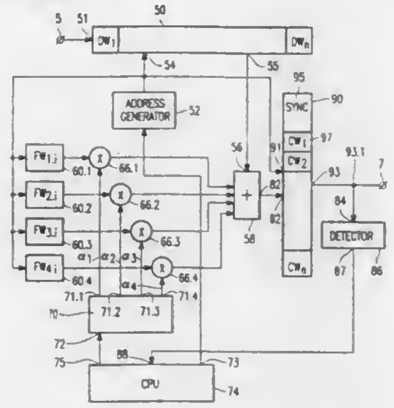
Adrianus J. M. Denissen, and Ludovicus M. G. M. Tolhuizen, both of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Sep. 4, 1996, Ser. No. 709,404

Claims priorily, application European Pat. Off., Sep. 8, 1995, 95202443

Int. Cl.^{6} H04B *14/04;* H03M *13/00*

U.S. Cl. 375—242 **19 Claims**



1. Transmitter apparatus, for transmitting a digital data signal via a transmission medium, the transmitter apparatus comprising:

input means for receiving the digital data signal;

error protection encoding means for carrying out an error protection encoding on the digital data signal to form an error protection encoded digital data signal;

channel encoding means for converting the error protection encoded digital data signal processed into a channel encoded digital data signal; and

transmission means for applying the channel encoded digital data signal to the transmission medium,

calculation means for calculating, in a Galois field GF(2^m), a converted digital word CW_i in accordance with the formula

$$CW_i=DW_i+\alpha_1\cdot FW+\alpha_2\cdot FW_{2,i}+\ldots.$$

where DW_i is the i-th digital word in the packet, $FW_{1,i}$, $FW_{2,i}$, . . . are the i-th digital words in the at least two fixed auxiliary packets, a are coefficient multipliers to be determined, and CW_i is the i-th converted digital word in the converted packet of digital words, where i is an integer value running from 1 to n.

5,854,811
CIRCUIT AND METHOD FOR COMPENSATING FOR NONLINEAR DISTORTION OF INPUT SIGNAL

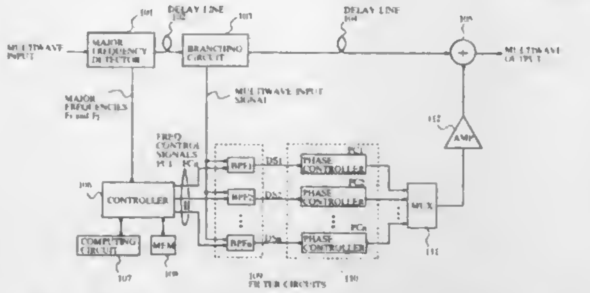
Chiharu Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,377

Claims priority, application Japan, Nov. 7, 1994, 6-296022

Int. Cl.^{6} H04K *1/02*

U.S. Cl. 375—296 **24 Claims**



1. A circuit for compensating for non-linear distortion of an input signal, said input signal including a major signal having a predetermined frequency, said circuit comprising:

a spectrum analyzer for analyzing said input signal and detecting said major signal and generating a detected major frequency signal representing said predetermined frequency;

a distortion frequency calculator for calculating a distortion frequency signal based on said detected major frequency signal and a predetermined formula representing said nonlinear distortion;

a branching circuit for branching said input signal into a first signal and a second signal;

an extractor, responsive to said distortion frequency signal, for extracting a frequency component having said distortion frequency from said first signal received from said branching circuit; and

an eliminator for eliminating a signal having said distortion frequency from said second signal based on said extracted frequency component.

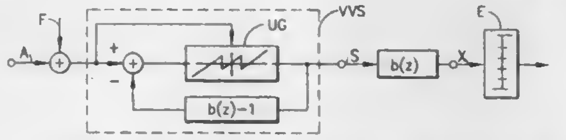
5,854,812
METHOD OF DIGITAL TRANSMISSION OF MESSAGES USING DYNAMIC-RANGE-LIMITED PRECODING

Johannes Huber, Langensendelbach, and Robert Fischer, Erlangen, both of Germany, assignors to ke Kommunikations-Elektronic GmbH & Co., Hanover, Germany

Filed Jan. 26, 1996, Ser. No. 592,808

Int. Cl.^{6} H04L *25/49;* H03K *7/02*

U.S. Cl. 375—296 **6 Claims**



1. A method for the digital transmission of messages along a transmission path, wherein each digital symbol in a data stream to be transmitted corresponds to a transmission symbol from a signal constellation and is represented by one or another of several different signal values, the method using a predistortion system to counteract distortion in the transmission path, the predistortion system providing a transmitted signal that is scanned at the end of the transmission path as a received signal and is then processed further and routed to a decoder, characterized in that the maximum amplitude of the received signal in the decoder on the receiving side is limited by limiting the number of possible signal values representing each transmission symbol to be transmitted, by use of a finite extension of the signal constellation.

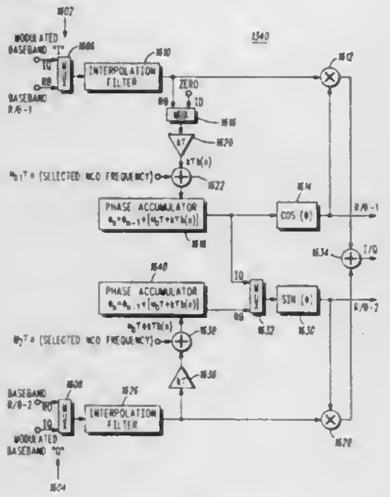
5,854,813
MULTIPLE ACCESS UP CONVERTER/MODULATOR AND METHOD

Alan P. Rottinghaus, Barrington; Daniel M. Lurey, Hoffman Estates, and Yuda Y. Luz, Prairie View, all of Ill., assignors to Motnrola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 415,387, Apr. 3, 1995, abandoned, which is a continuation-in-part of Ser. No. 366,283, Dec. 29, 1994, Pat. No. 5,579,341. This application Aug. 12, 1997, Ser. No. 912,300

Int. Cl.^{6} H04L *27/20*

U.S. Cl. 375—308 **13 Claims**



1. An up converter/modulator comprising:

a first selector and a second selector each having a plurality of inputs and an output, the outputs of each of the first and second selectors being coupled to a first interpolating filter and a second interpolating filter, respectively;

an output of the first interpolating filter being selectively coupled to a first mixer and a first adder, the first adder being further coupled to receive a first phase value and an output of which is coupled to a first phase accumulator;

an output of the first phase accumulator being coupled to a first sinusoid generator and selectively coupled to a second sinusoid generator;

an output of the second interpolating filter being coupled to a second mixer and a second adder, the second adder being further coupled to receive a second phase value and an output of which is coupled to a second phase accumulator;

an output of each of the first and second mixers being coupled to an output adder; and

an output of the second phase accumulator being selectively coupled to the second sinusoid generator.

5,854,814
DIGITAL TRANSMISSION SYSTEM WITH IMPROVED DECODER IN THE RECEIVER

Rudolf Hofmann, Forchheim, and Wolfgang Brox, Kalchreuth, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/IB95/01134, § 371 Date Aug. 23, 1996, § 102(e) Date Aug. 23, 1996, PCT Pub. No. WO96/20546, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 15, 1995, Ser. No. 696,938

Claims priority, application Germany, Dec. 27, 1994, 44 46 558.0

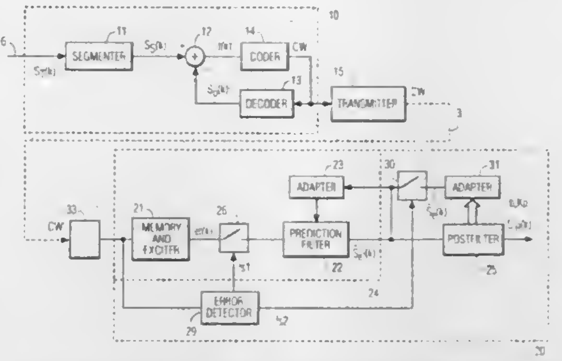
Int. Cl.^{6} H03D *1/00*

U.S. Cl. 375—340 **12 Claims**

1. A digital transmission system comprising:

a transmitter, having an input for receiving a digital signal, for transmitting codewords derived from the digital signal, and

a receiver, comprising an input for receiving codewords transmitted by the transmitter, and a decoder for decoding the received codewords, the decoder including a prediction filter,



the prediction filter being excited by an input signal based on the received codewords and producing an estimated digital signal, characterized in that the decoder comprises:

first switching means for switching off the input signal excitation to the prediction filter when a disturbed codeword is received at the receiver input, and

second switching means for substituting substitute values formed from previous values of the estimated digital signal, instead of an estimated digital signal based on the disturbed codeword, when the input signal excitation is switched off.

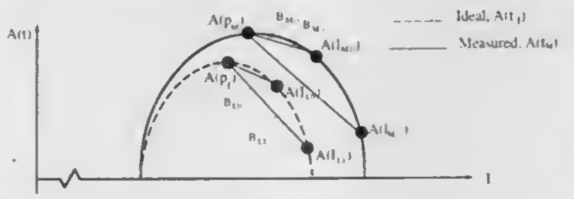
5,854,815
CODE PHASE SIGNAL MULTIPATH COMPENSATION

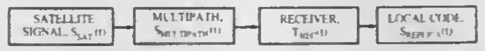
Gary R. Lennen, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 353,498, Dec. 9, 1994, Pat. No. 5,493,588. This application Feb. 16, 1996, Ser. No. 602,442

Int. Cl.^{6} H04L *27/06;7/00*

U.S. Cl. 375—343 **12 Claims**





1. A method of synchronizing to a reference signal the timing of a received composite, code phase SATPS signal, the composite signal consisting of a preferred, interference-free signal distorted by at least one interfering signal, to determine an undistorted timing point of the preferred signal, the method comprising the steps of:

(1) generating a first correlation function $A_I(t)$ representing a timing relationship between a selected reference signal and the reference signal, where the reference signal is a digital signal with a timing cycle of selected length, and where $A_I(t)$ has a peak amplitude at an unknown code phase shift value $t=p_I$;

(2) receiving a composite code phase SATPS signal consisting of a preferred, interference-free signal distorted by at least one interfering signal;

(3) generating a second correlation function $A_M(t)$ representing a timing relationship between the composite signal and the reference signal;

(4) determining a nominal peak amplitude $A_M(p_M)$ and the corresponding code phase shift value $t=p_M$ of the second correlation function;

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(5) determining a sequence of U early code phase shift values $e_{l,i}<p_l (i=1, \ldots, U; U \geqq 2)$ for the first correlation function $A_l(t)$ for which the code phase shift differences $p_l - e_{l,i} = \Delta_{l,e,i}$ have selected values;

(6) determining a sequence of U early code phase shift values $e_{M,i}<p_M (i=1, \ldots, U)$ for the second correlation function $A_M(t)$ for which the code phase shift differences $p_M - e_{M,i} = \Delta_{M,e,i}$ have selected values;

(7) forming a sequence of U functions of correlation amplitude ratios defined by the relations $x_{e,i} = G_{e,i}(A_M(e_{M,i})/A_M(p_M)) - G_{e,i}(A_l(e_{l,i})/A_l(p_l))$ for $i=1, \ldots, U$, where $G_{e,i}(y)$ is a selected function of a variable y;

(8) determining a difference in punctual code phase shift between the first and second correlation functions by a relation

$$p_M - p_l = F_e(x_{e,1}, x_{e,2}, \ldots, x_{e,U}),$$

where F_e is a selected function of at least one of the variables $x_{e,i} (i=1, \ldots, U)$; and

(9) subtracting the difference $p_M - p_l$ from an apparent time of arrival of the composite code phase SATPS signal to determine a modified time of arrival of the composite signal.

5,854,816

LOOP BACK DEVICE OF PACKET COMMUNICATION T1 NETWORK

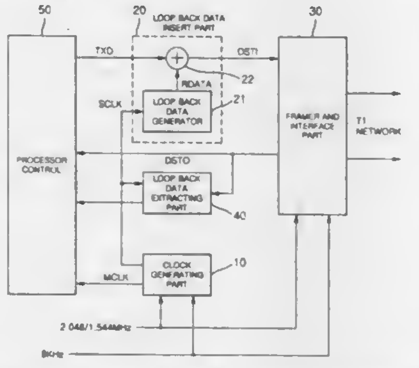
Si-Deog Kim, Seoul, and Hyun-Woo Ha, Kyoungki-do, both of Rep. of Korea, assignors to Hyundai Electronics Ind. Co., Ltd., Rep. of Korea

Filed Oct. 14, 1997, Ser. No. 950,035

Claims priority, application Rep. of Korea, Oct. 14, 1996, 96-45680

Int. Cl.^{6} H03D *3/24*

U.S. Cl. 375—376 **14 Claims**



1. A loop back device of a packet communication T1 network, said device comprising:

a clock generating part for receiving a frame divisional clock and a reference clock, for inserting a transformed clock at a predetermined position of said reference clock to thereby generate a main clock, and being synchronous to a position of the transformed clock to thereby generate a system clock which generates and extracts loop back data;

a loop back data inserting part for generating said loop back data and being synchronous to said system clock generated from said clock generating part to thereby insert said loop back data into first transmission data;

a framer and interface part for receiving second transmission data including said loop back data output from said loop back data inserting part to transmit the input data to the T1 network and for receiving data which is transmitted from an opposite station from the T1 network;

a loop back data extracting part being synchronous to said system clock generated in said clock generating part to extract said loop back data from reception data output from said framer and interface part; and

a processor for outputting said first transmission data to said loop back data inserting part and for receiving said loop back data extracted from said loop back data extracting part, to thereby output network testing data.

5,854,817

FAST SHUTDOWN SYSTEM AND PROCESS FOR FAST SHUTDOWN OF A NUCLEAR REACTOR

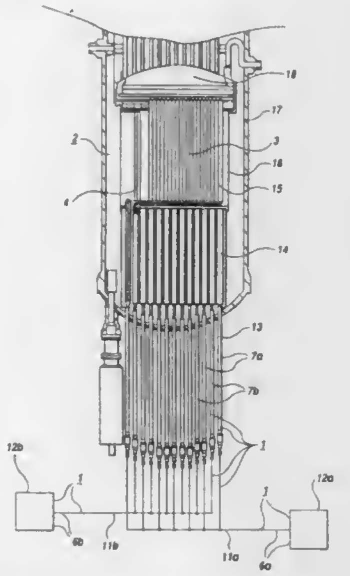
Joachim Schulze, Frankfurt, Germany, assignor to Siemens Aktiengesellscaft, Munich, Germany

Filed May 23, 1997, Ser. No. 862,464

Claims priority, application Germany, Nov. 23, 1994, 44 41 751.9

Int. Cl.^{6} G21C *9/027*

U.S. Cl. 376—237 **17 Claims**



1. A fast shutdown system of a nuclear reactor, comprising:

a reactor core; and

a plurality of control rods disposed side by side for insertion into and withdrawal from said reactor core;

said plurality of control rods being categorized into a number of operating groups for power regulation of the nuclear reactor;

said plurality of control rods being categorized into a number of shutdown groups for a fast shutdown of the nuclear reactor; and

said control rods of at least two of said operating groups being allocated to each of said shutdown groups.

5,854,818

ZIRCONIUM TIN IRON ALLOYS FOR NUCLEAR FUEL RODS AND STRUCTURAL PARTS FOR HIGH BURNUP

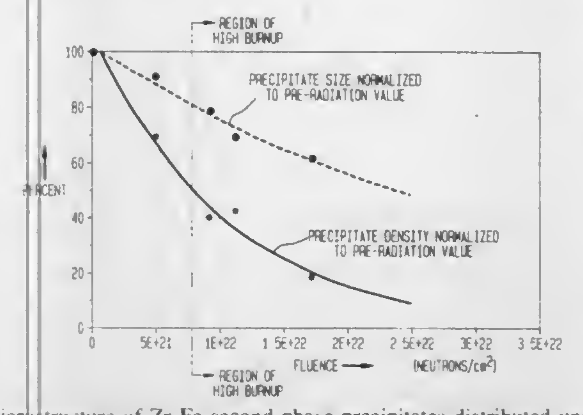
Leonard F. P. Van Swam, Richland, Wash.; Friedrich Garzarolli, Höchstadt, Germany, and Heinrich Ruhmann, Herzogenaurach, Germany, assignors to Siemens Power Corporation, Richland, Wash.

Filed Aug. 28, 1997, Ser. No. 919,452

Int. Cl.^{6} G21C *3/07;* C22C *16/00*

U.S. Cl. 376—409 **15 Claims**

1. Corrosion resistant nuclear reactor components comprising an alloy consisting essentially of 0.3 to 1.8 weight percent tin, 0.1 to 0.65 weight percent iron, 0.003 to 0.015 weight percent of silicon, 0.005 to 0.02 weight percent carbon, and 0.09 to 0.22 weight percent oxygen, the balance of said alloy being essentially nuclear grade zirconium with incidental impurities and imparted with a microstructure of Zr_3Fe second phase precipitates distributed uniformly intragranularly and intergranularly forming radiation resistant second phase precipitates in the alloy matrix so as to result in increased resistance to aqueous corrosion to that of Zircaloy when irradiated to high fluence, and wherein the second phase Zr_3Fe precipitates in said alloy have an average diameter of from about 40 to 300 nm.



5,854,819

MASK SUPPORTING DEVICE AND CORRECTION METHOD THEREFOR, AND EXPOSURE APPARATUS AND DEVICE PRODUCING METHOD UTILIZING THE SAME

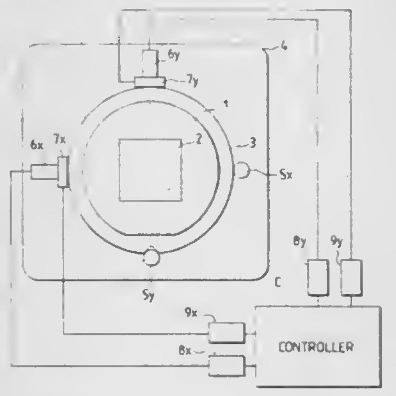
Shinichi Hara, Kita Kawabemachi; Takeshi Miyachi, Utsunomiya; Nobutoshi Mizusawa, Yamato; Yuji Chiba, and Kazuyuki Kasumi, both of Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1997, Ser. No. 797,467

Claims priority, application Japan, Feb. 7, 1996, 8-045495; Sep. 25, 1996, 8-252953; Sep. 25, 1996, 8-253215

Int. Cl.^{6} H01L *21/30*

U.S. Cl. 378—34 **14 Claims**



1. A mask supporting device comprising:

a chuck mechanism for supporting an X-ray mask having a mask substrate provided with a rectangular window on which a mask pattern is formed and a frame for reinforcing said mask substrate; and

a mechanism for applying loads to said frame of the mask from mutually orthogonal directions in a plane parallel with a surface of the mask pattern for deforming and correcting the mask pattern.

5,854,820

METHOD AND METER FOR MEASURING THE COMPOSITION OF A MULTIPHASE FLUID

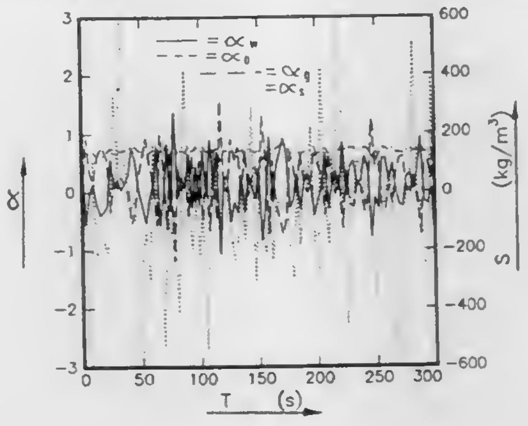
Walter Fredericus Johannes Slijkerman, and Alexander Meijnhart Scheers, both of Volmerlaan 6, 2288 GD Rijswijk, Netherlands

Continuation of Ser. No. 726,499, Oct. 7, 1996. This application Apr. 21, 1998, Ser. No. 63,083

Claims priority, application European Pat. Off., May 2, 1996, 96201214

Int. Cl.^{6} G01N *23/06*

U.S. Cl. 378—51 **7 Claims**



1. A method for measuring the composition of a multiphase fluid by radiating a photon beam therethrough and measuring the level of radiation absorption by the fluid at at least three radiation energy levels; and feeding the measured radiation absorption data to a data processing unit which is programmed such that it performs calculations in accordance with a phase fraction calculation scheme on the basis of said radiation absorption data and that it generates data concerning fluid composition, including its salt content, if any, on the basis of said calculations, wherein the level of radiation absorption by the fluid is measured by measuring the transmitted radiation count rate at three radiation energy levels:

the logarithms of the measured count rates at said three energy levels are expressed as I_1, I_2 and I_3 and the calculation scheme comprises the following matrix equation scheme:

$$\begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix} = \begin{bmatrix} \mu_{w1}\rho_{w,ini} & \mu_{o1}\rho_o & \mu_{g1}\rho_g & \mu_{s1} + (R-1)\mu_{h_2o1} \\ \mu_{w2}\rho_{w,ini} & \mu_{o2}\rho_o & \mu_{g2}\rho_g & \mu_{s2} + (R-1)\mu_{h_2o2} \\ \mu_{w3}\rho_{w,ini} & \mu_{o3}\rho_o & \mu_{g3}\rho_g & \mu_{s3} + (R-1)\mu_{h_2o3} \\ 1 & 1 & 1 & 0 \end{bmatrix} \begin{bmatrix} \alpha_w \\ \alpha_o \\ \alpha_g \\ \Delta S\alpha_w \end{bmatrix}$$

where:

ρ refers to the density of a fluid fraction in kg/m^3

μ refers to the mass absorption coefficient in m^2/kg

α refers to the mass fraction of a component in the fluid

R refers to the rate of water density increase per unit increase of salinity

ΔS refers to change in salinity in kg/m^3

the subscript w refers to saline water

the subscript s refers to salt

the subscript o refers to crude oil

the subscript h_2o refers to fresh water and

the subscript ini refers to an initial state; and

the data processing unit is programmed to solve said matrix equation scheme.

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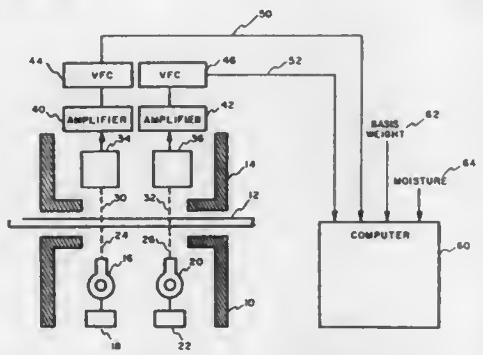
5,854,821
SYSTEM AND PROCESS FOR MEASURING ASH IN PAPER

Lee Chase, Los Gatos; John Goss, and Philip Hegland, both of San Jose, all of Calif., assignors to Honeywell-Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 9,406, Jan. 27, 1993, Pat. No. 5,778,041, which is a continuation of Ser. No. 892,595, May 28, 1992, abandoned, which is a continuation of Ser. No. 552,338, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 274,645, Nov. 17, 1988, abandoned, which is a continuation of Ser. No. 541,622, Oct. 13, 1983, abandoned. This application Jun. 2, 1995, Ser. No. 458,174

Int. Cl.⁶ G01N *23/06*

U.S. Cl. 378—53 **11 Claims**



1. A process for determining the concentration of a first component of a mixture wherein the first component includes at least three materials that each have a mass absorption coefficient and K-edges, said process comprising:

a) simultaneously directing two beams of x-rays into the mixture, at least one beam having a spectrum of x-rays having a plurality of different energies, the first beam including x-rays having an energy above the K-edges of at least two of the materials and the second beam including x-rays having an energy below the K-edges of the same at least two materials, wherein the energy distributions of the two beams are different and are such that, for each beam, the mass absorption coefficient for the same two materials is substantially equal, but different from the mass absorption coefficient for the third material;

b) simultaneously receiving portions of said two beams which are transmitted through the mixture; and

c) determining the concentration of the first at least three material component based upon the two directed beams and the simultaneously received portions of the two beams, and not based upon any other x-ray beams.

5,854,822
MINIATURE X-RAY DEVICE HAVING COLD CATHODE

Victor I. Chornenky, Minnetonka; Dale L. Schreiner, Cologne, and Michael R. Forman, Vadnais Heights, all of Minn., assignors to XRT Corp., St. Paul, Minn.

Filed Jul. 25, 1997, Ser. No. 900,609

Int. Cl.⁶ A61N *5/10*

U.S. Cl. 378—122 **18 Claims**

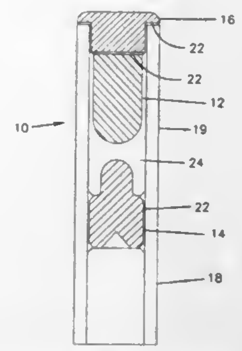
1. A device suitable for insertion into a body and for delivery of x-ray radiation, comprising:

a connector, including a proximal and a distal portion;

a vacuum housing coupled to the distal portion of the connector;

an anode disposed within the vacuum housing; and

a cathode disposed within the vacuum housing and having a granular surface, the cathode being operative with the anode and the connector to produce the x-ray radiation, the cathode being composed of a material that also allows it to act as a getter.



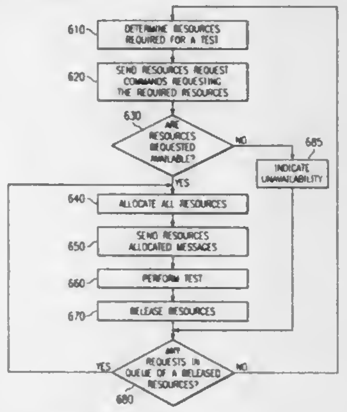
5,854,823
SYSTEM AND METHOD FOR PROVIDING RESOURCES TO TEST PLATFORMS

Brian S. Badger, Dallas, and Craig E. Newman, Wylie, both of Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Sep. 29, 1996, Ser. No. 721,407

Int. Cl.⁶ H04M *1/24;3/08;3/22*

U.S. Cl. 379—15 **16 Claims**


610
DETERMINE RESOURCES REQUIRED FOR A TEST
620
SEND RESOURCES REQUEST COMMANDS REQUESTING THE REQUIRED RESOURCES
630
ARE RESOURCES REQUESTED AVAILABLE?
NO
685
INDICATE UNAVAILABILITY
YES
640
ALLOCATE ALL RESOURCES
650
SEND RESOURCES ALLOCATED MESSAGES
660
PERFORM TEST
670
RELEASE RESOURCES
ANY REQUESTS IN QUEUE OF A RELEASED RESOURCES?
YES
NO
680

1. A test system comprising:

a plurality of switches including a bridging switch and a non-bridging switch, wherein an operator services trunk originates from the non-bridging switch;

a test platform for performing a test on said bridging switch and said non-bridging switch, said test platform being coupled to a pair of test trunks comprising a first test trunk and a second test trunk, said test platform sending a first command requesting a connection to each of said bridging switch and said non-bridging switch, and a second command requesting that said operator services trunk point to the bridging switch;

a cross-connect coupled to said test platform by said pair of test trunks, said cross-connect also being connected to each of said plurality of switches by a switch trunk; and

a manager coupled to said cross-connect and said test platform, said manager receiving said first command and said second command from said test platform, said manager sending a plurality of connect commands to said cross-connect to process said first command, said manager configuring said operator services trunk to point to said bridging switch to process said second command,

wherein said cross-connect connects said switch trunk coupled to said bridging switching to said first test trunk, and said switch trunk coupled to said non-bridging switching to said second test trunk in response to said plurality of connect commands, and

wherein said test platform performs said test after said manager completes processing said first command and said second command.

5,854,824
CONNECTIVITY SCANNER

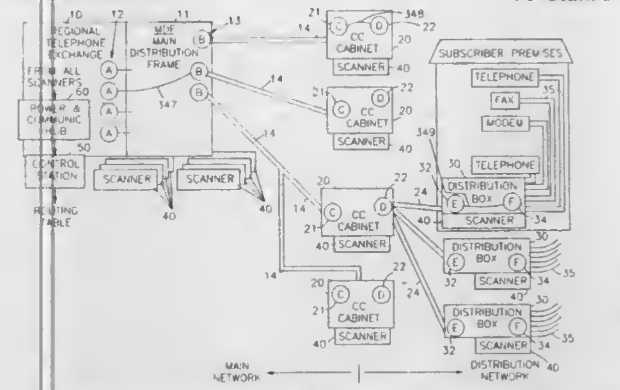
Ofer Bengal, Herzliva, and David Pincu, Holon, both of Israel, assignors to Rit Technologies Ltd., Tel Aviv, Israel

Filed Aug. 30, 1995, Ser. No. 521,599

Claims priority, application Israel, Sep. 4, 1994, 110859

Int. Cl.⁶ H04M *1/24;3/08;3/22*

U.S. Cl. 379—34 **31 Claims**



1. An interconnection monitoring system for use with a multiple node wired network, the system comprising:

a plurality of transmitters, each located at a node of the network for transmitting a transmission from said node;

a plurality of receivers, each located at a node of the network, for receiving a transmission at said node; and

a connectivity status accumulator in communication with said plurality of receivers, wherein:

said plurality of transmitters are operative to transmit along said network a signal bearing a multiple element identification code identifying the node from which a transmission takes place,

each of said plurality of receivers is operative to receive said transmission from a corresponding one of said plurality of transmitters bearing said multiple element identification code and thus indicating the interconnection status of said nodes, and;

said connectivity status accumulator is operative to accumulate said interconnection status from each of said plurality of receivers and maintain an integrated connectivity status of all of said nodes.

5,854,825
METHOD OF CONTROLLING SILENT MONITORING OF A GROUP

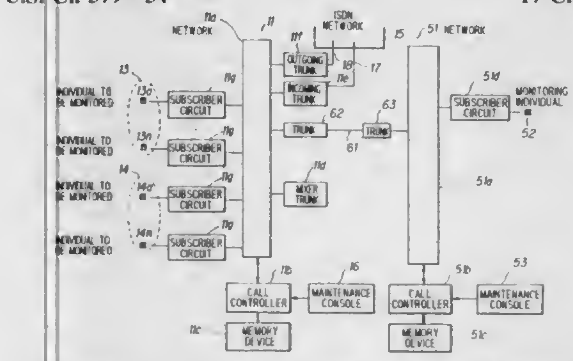
Masataka Mukaihara; Takeshi Fumeno; Takaki Nakamatsu, and Miwa Kususe, all of Fukuoka, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 7, 1996, Ser. No. 726,752

Claims priority, application Japan, Apr. 26, 1996, 8-107249

Int. Cl.⁶ H04M *1/24;3/00;5/00*

U.S. Cl. 379—34 **17 Claims**



1. A method of controlling silent monitoring of a group in an electronic exchange accommodating a terminal of a monitoring individual and terminals of individuals to be monitored and having a silent monitoring function which allows the monitoring individual to monitor a call between a prescribed individual to be monitored and a customer, the method comprising the steps of:

forming the individuals to be monitored into groups;

allocating monitoring target groups to the monitoring individual;

observing, group by group, call-in-progress/call-not-in-progress status of individuals to be monitored belonging to the monitoring target group; and

allowing the monitoring individual to automatically monitor, in succession, calls between customers and call-in-progress individuals to be monitored belonging to the monitoring target groups allocated to said monitoring individual.

5,854,826
RING VOICE MESSAGE GENERATING DEVICE AND METHOD OF AUTOMATIC ANSWERING TELEPHONE

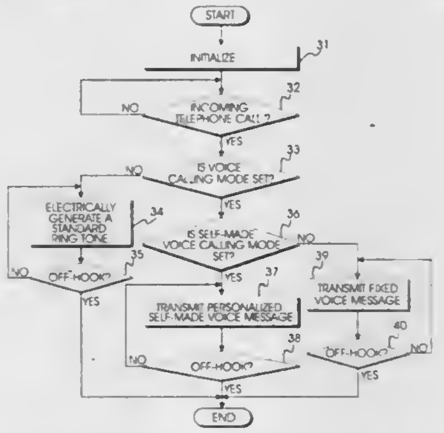
Dong-Woo Kim, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 15, 1996, Ser. No. 635,217

Claims priority, application Rep. of Korea, Apr. 13, 1995, 1995 8697

Int. Cl.⁶ H04M *1/64*

U.S. Cl. 379—68 **18 Claims**


START
INITIALIZE
31
INCOMING TELEPHONE CALL ?
32
NO
YES
IS VOICE CALLING MODE SET?
33
ELECTRICALLY GENERATE A STANDARD RING TONE
34
IS SELF-MADE VOICE CALLING MODE SET?
36
OFF-HOOK?
35
TRANSMIT PERSONALIZED SELF-MADE VOICE MESSAGE
37
TRANSMIT FIXED VOICE MESSAGE
39
OFF-HOOK?
38
OFF-HOOK?
40
END

1. A ring voice message generating device in an automatic answering telephone system, comprising:

key input means including a voice calling mode key and a self-made voice calling mode key;

control means for allowing a user to set the telephone system in the voice calling mode in response to input of said voice calling mode key and in the self-made voice calling mode key in response to input of said self-made voice call mode key, for controlling generation of one of a standard ring tone and a pre-recorded voice message for announcement to inform a user of an incoming call;

ring detecting means connected to an incoming telephone line from a central exchange, for detecting the incoming telephone call;

hook switch means for forming a telephone conversation path when the user picks up a telephone handset to answer the incoming telephone call;

voice storing means for storing a plurality of pre-recorded voice messages;

ring generating means for generating the standard ring tone when the telephone system has not been set in the voice calling mode; and

mode selecting means for selectively enabling said voice storing means to reproduce one of a personalized self-made voice message and a fixed voice message as said pre-recorded voice message for announcement of the incoming telephone call in dependence upon whether the telephone system is set in the self-made voice calling mode after the telephone system has been set in the voice calling mode, and for alternatively enabling said ring generating means to generating the stan-

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dard ring tone for announcement of the incoming telephone call when the telephone system has not been set in the voice calling mode.

5,854,827
PROCESS FOR ACTIVATING A MAILBOX MESSAGE NOTIFICATION IN A COMMUNICATIONS TERMINAL

Gerald Maurer, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

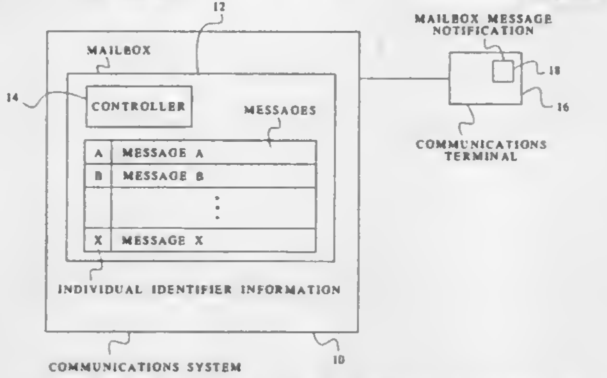
PCT No. PCT/DE95/00534, § 371 Date Oct. 29, 1996, § 102(e) Date Oct. 29, 1996, PCT Pub. No. WO95/30299, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 18, 1995, Ser. No. 732,298

Claims priority, application Germany, Apr. 29, 1994, 44 15 168.3

Int.Cl.^{6} H04M *1/64*

U.S. Cl. 379—88.02 **6 Claims**



1. A process for activating a mailbox message notification at a communications terminal of a communications system having at least one electronic mailbox for storing messages which can be issued at the communications terminal, comprising:

respectively assigning an item of individual identifier information to each message stored in the electronic mailbox;

transmitting during a connection set-up to the electronic mailbox, an item of identification information to the controller of said electronic mailbox;

comparing the transmitted identification information by the controller with individual items of identifier information of messages stored in the electronic mailbox; and

activating the mailbox message notification, for acceptance of a respective stored message at an arbitrary point in time, only when correspondence occurs between the transmitted identification information and identification information of a stored message, the correspondence being a result of said comparing.

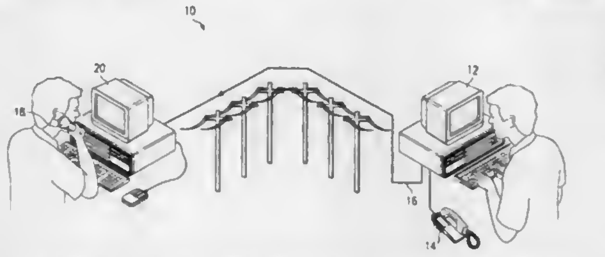
5,854,828
TELEPHONE CUSTOMER SUPPORT UTILITY

Thomas J. Kocis; Mark Larson, both of Austin; Charles W. Morrison, Terrell, and Stephen K. Smith, Spicewood, all of Tex., assignors to Dell U.S.A., L.P., Round Rock, Tex.

Filed Aug. 20, 1996, Ser. No. 699,845

Int. Cl.^{6} H04M *11/00;* **G06F** *11/00*

U.S. Cl. 379—93.31 **16 Claims**



1. A method for providing diagnostic support of a customer's computer using a standard telephone handset to communicate over a telecommunications network with a remote support computer, the method comprising:

encoding an operational status of the customer's computer in a manner capable of producing audible tones indicative of such operational status;

producing the audible tones on an audio speaker of the customer's computer in proximity to the telephone handset for communicating the audible tones over the telecommunications network to the remote support computer; and

receiving the audible tones communicated over the telecommunications network by the remote support computer, the remote support computer including a receiver for receiving the audible tones communicated over the telecommunications network and a decoder for decoding the audible tones into data representing the operational status of the customer's computer for enabling appropriate diagnostic functions to be determined with the remote support computer;

wherein the receiver comprises a microphone electrically connected to a sound card, wherein the microphone receives the audible tones transmitted by the telephone and the sound card generates at least one file comprising the data representative of the operational status of the customer computer.

5,854,829
ISDN FAX ROUTING

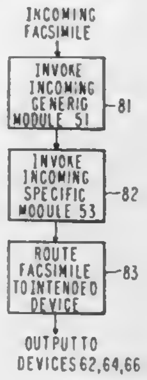
Dirk Hughes-Hartogs, Morgan Hill, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 458,892, Jun. 2, 1995, Pat. No. 5,657,381. This application Mar. 14, 1997, Ser. No. 818,324

Claims priority, application European Pat. Off., Apr. 30, 1996, 963030168

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—100.12 **10 Claims**


INCOMING FACSIMILE
INVOKE INCOMING GENERIC MODULE 51
81
INVOKE INCOMING SPECIFIC MODULE 53
82
ROUTE FACSIMILE TO INTENDED DEVICE
83
OUTPUT TO DEVICES 62,64,66

1. A method for routing incoming facsimiles arriving over an ISDN line to a plurality of facsimile devices, said method comprising the steps of:

invoking an incoming generic module that interacts with all incoming facsimiles;

invoking an incoming specific module that interacts with incoming facsimiles that are addressed to selected ones of said facsimile devices; and

routing said incoming facsimiles to intended ones of said facsimile devices.

5,854,830
CONCURRENT VOICE AND DATA COMMUNICATION

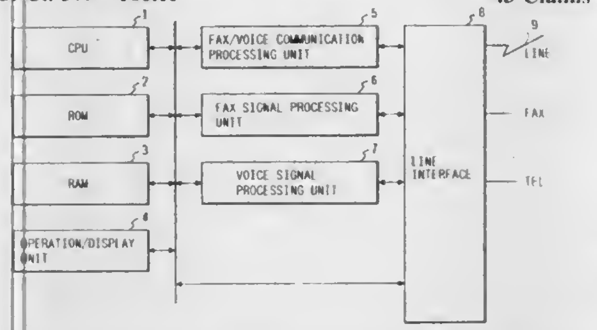
Toshio Kenmochi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 458,843, Jun. 2, 1995, abandoned. This application Dec. 4, 1997, Ser. No. 985,239

Claims priority, application Japan, Jun. 3, 1994, 6-145701

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—100.15 **43 Claims**


1
CPU
2
ROM
3
RAM
4
OPERATION/DISPLAY UNIT
5
FAX/VOICE COMMUNICATION PROCESSING UNIT
6
FAX SIGNAL PROCESSING UNIT
7
VOICE SIGNAL PROCESSING UNIT
8
LINE INTERFACE
9
LINE
FAX
TEL

1. A communication apparatus connectable to a communication line, comprising:

first communication means for performing voice communication via the communication line;

second communication means for performing data communication via the communication line;

third communication means for concurrently performing the voice communication and the data communication via the communication line;

designation means for designating any one of a voice communication mode for performing the voice communication, a data communication mode for performing the data communication, and a concurrent communication mode for concurrently performing the voice communication and the data communication; and

switch means for connecting the communication line to said first communication means, said second communication means or said third communication means in accordance with the mode designated by said designation means.

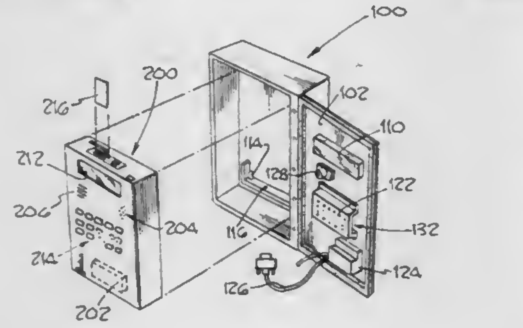
5,854,831
ACCESS CONTROL APPARATUS FOR USE WITH BUILDINGS, GATED PROPERTIES AND THE LIKE

Alex Parsadayan, and Walter Parsadayan, both of Laguna Niguel, Calif., assignors to Elite Entry Phone Corporation, Lake Forest, Calif.

Filed Jul. 29, 1996, Ser. No. 681,615

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 379—102.06 **29 Claims**



21. An access control apparatus for use with a security system, comprising:

an outer housing including a door and defining an interior and an exterior, the exterior of the outer housing including a plurality of depressible outer keys arranged in predetermined locations and having respective portions extending into the interior of the outer housing; and

a substantially closed inner housing defining an interior and an exterior, the interior of the inner housing including a communication device therewithin adapted to be operably connected to a telephone system and the exterior of the inner housing including a plurality of depressible inner keys, the inner housing being removably mounted within the interior of the outer housing such that the inner keys are substantially aligned with the outer keys when the inner housing is mounted within the interior of the outer housing.

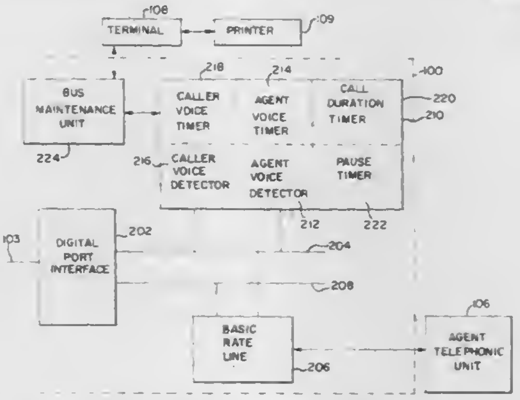
5,854,832
MONITORING SYSTEM AND METHOD USED IN AUTOMATIC CALL DISTRIBUTOR FOR TIMING INCOMING TELEPHONE CALLS

Anthony J. Dezonno, Downers Grove, Ill., assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Jun. 26, 1995, Ser. No. 494,898

Int. Cl.^{6} H04M *15/00;3/00*

U.S. Cl. 379—111 **31 Claims**



1. A monitoring system for an automatic call distributor which selectively interconnects an incoming telephone call from a caller and one of a plurality of agents, the monitoring system comprising:

agent detection means for detecting when the one of the agents is talking during the incoming telephone call; and

agent duration means responsive to the agent detection means for timing a length of time the one of the agents is talking during the incoming telephone call.

5,854,833
PROCESSING USING DEF RECORDS

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock; David J. Vercande, and Michael R. Tangeman, all of Cedar Rapids, Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Division of Ser. No. 136,211, Oct. 15, 1993, Pat. No. 5,590,181. This application Jun. 6, 1995, Ser. No. 468,412

Int. Cl.^{6} H04M *15/20*

U.S. Cl. 378—112 **25 Claims**

1. A system for call processing in an operator console, comprising:

means for receiving operator control data for a call, said operator control data comprising a base process number and a data record number;

means for retrieving a data record identified by said data record number; and

means for executing a base process identified by said base process number to process said call, wherein said base process is a process template that identifies steps to be followed by the operator console in processing said call, said base process

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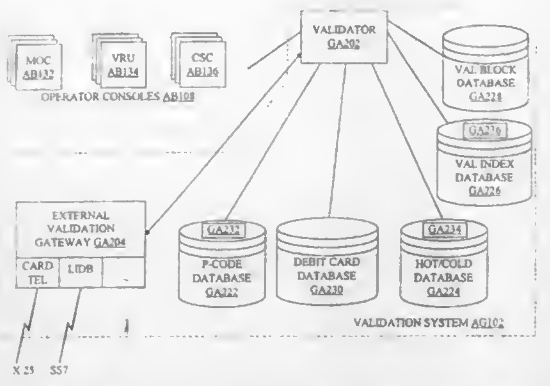


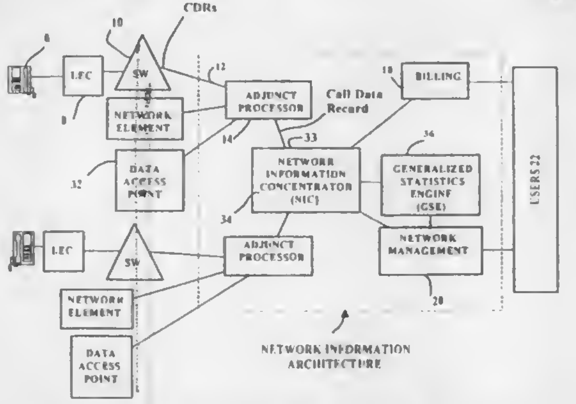
being coded to look for information within said data record that indicates how said call should be processed by said base process.

5,854,834
NETWORK INFORMATION CONCENTRATOR

Louis G. Gottlieb; Isaac K. Elliott; Kevin F. James, all of Colorado Springs, and Kevin R. Witzman, Monument, all of Colo., assignors to MCI Communications Corporation, Washington, D.C.

Filed Apr. 21, 1995, Ser. No. 426,256
Int. Cl.^{6} H04M *15/00;7/00*

U.S. Cl. 379—113 **17 Claims**



1. In a telephone network having switches, other network elements, and data access points, all located at inputs of respective adjunct processors for collecting and storing call detail records presented at the inputs, the call detail records being utilized by a plurality of downstream application subsystems, the data from the records being useful to end users, a consolidated feed comprising:

network information concentration means for providing single point access between outputs of each adjunct processor and downstream application subsystems, the network information concentration means selecting data fields from call detail records supplied by the adjunct processors, as required by the subsystems; and

means for connecting the applications subsystems to end users requiring data from corresponding selected fields and processed by selected subsystems;

wherein the network information concentration means further includes

means for receiving call records from the adjunct processors;

distributor means for detecting the type of call record being received;

means for detecting anomalies in the call records being received;

means for generating a request for retransmission of call records, to a respective adjunct processor, when a missing record is detected;

means for processing the call records in accordance with a selected application; and

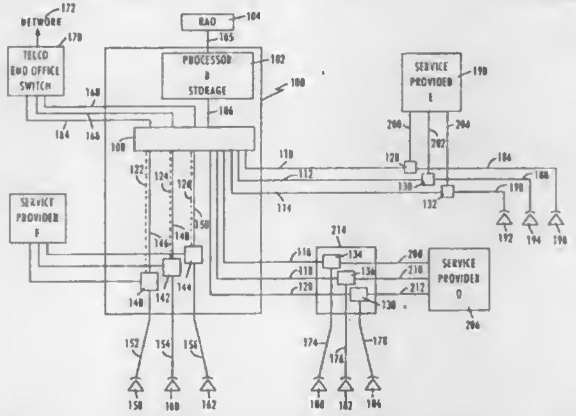
means for sending processed call records to a downstream user of the processed call records.

5,854,835
TELECOMMUNICATIONS NETWORK CIRCUIT USAGE MEASUREMENT

Robert H. Montgomery, Herndon; J. Alfred Baird, Fairfax, and Robert D. Farris, Sterling, all of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 598,772, Feb. 9, 1996, and Ser. No. 598,869, Feb. 9, 1996. This application Feb. 9, 1996, Ser. No. 598,768
Int. Cl.^{6} H04M *15/00;3/00*

U.S. Cl. 379—119 **37 Claims**



15. In a communication system comprising a pair of switched communication networks each including trunked together switches controlled by separate data switched networks having a central controller and storage, said communication system including in each of said communication networks at least one end office switch having access to communication with its data switched network and central controller, and local loop lines for connecting the end office switch in a first of said networks through a distribution frame interface to customer premises, local loop lines having said distal ends connected to customer premises terminals and having near ends connected to said interface for connection to said switch, at least one of said local loop lines connected to customer premises being disconnected from said end office switch at said interface; the method comprising:

transmitting a service provider signal via a second of said networks to said disconnected local loop line in said first network and over that line to customer premises;

said data switched networks being connected together for exchange of data therebetween;

transmitting from said data switched network of said second network to said data switched network of said first network data signals indicative of commencement and discontinuance of service provider signals to said disconnected local loop line to permit storage of data regarding the times of commencement and discontinuance of service provider signals on said line as a measure of usage thereof by said service provider.

5,854,836
METHOD AND SYSTEM FOR UTILIZING AN INFORMATION DELIVERY SERVICE IN A LOCAL NUMBER PORTABILITY ENVIRONMENT

Prasad V. Nimmagadda, Norcross, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Oct. 25, 1996, Ser. No. 738,009
Int. Cl.^{6} H04M *1/64;3/42;7/00;3/00*

U.S. Cl. 379—207 **19 Claims**

1. In an Advanced Intelligent Network (AIN) and with respect to receiving an incoming call at an origination switch, a method for delivering, to a destination switch, information obtained from an information delivery service database with a location routing number obtained from a local number portability database, the information delivery service database and the local number portability database located remotely from the origination switch, the method comprising the steps of:

(a) receiving, at the origination switch, the incoming call from an originating user number and directed to an end user number, the end user number having a portable NPA-NXX;

(b) at the origination switch, provisioning a trigger with respect to the portable NPA-NXX;

(c) in response to the trigger,

i. sending a query to the remote local number portability database,

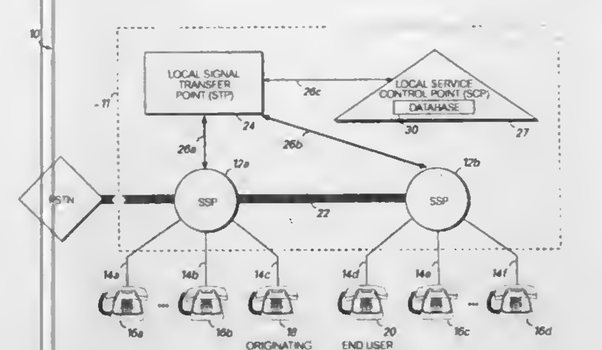
ii. obtaining a location routing number corresponding to the end user number from the remote local number portability database,

iii. consulting the remote information delivery service database, and

iv. obtaining a name corresponding to the originating user number from the remote information delivery service database;

(d) populating alpha-numeric fields in a signaling message with the location routing number corresponding to the end user number and the name corresponding to the originating user number; and

(e) based on the location routing number, transmitting, from the origination switch to the destination switch, the name in the signaling message.

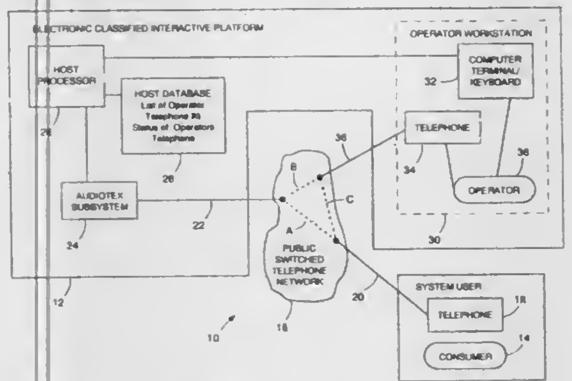


5,854,837
METHOD AND SYSTEM FOR PROVIDING INTERACTIVE DATA EXCHANGE BETWEEN AN INTERACTIVE PLATFORM AND A CALLER

Terry F. Trader, Castle Rock, and Leslie Darrell Cox, Arvada, both of Colo., assignors to U S West, Inc., Denver, and MediaOne Group, Inc., Englewood, both of Colo.

Filed Jan. 9, 1996, Ser. No. 587,115
Int. Cl.^{6} H04M *3/58*

U.S. Cl. 379—265 **19 Claims**


ELECTRONIC CLASSIFIED INTERACTIVE PLATFORM
OPERATOR WORKSTATION
HOST PROCESSOR
HOST DATABASE
List of Operator Telephone #s
Status of Operators Telephone
COMPUTER TERMINAL/ KEYBOARD
32
TELEPHONE
34
36
38
OPERATOR
28
26
B
C
AUDIOTEX SUBSYSTEM
22
A
24
30
PUBLIC SWITCHED TELEPHONE NETWORK
20
SYSTEM USER
TELEPHONE
18
12
10
16
CONSUMER
14

1. A method for providing interactive data exchange between a caller and an interactive platform having at least one operator associated therewith, the method comprising:

providing a public switched telephone network having a call transfer feature, the public switched telephone network for connecting the caller to the interactive platform and for utilizing the call transfer feature for connecting the caller to the at least one operator in response to an operator assistance signal while maintaining the connection between the caller and the interactive platform;

providing the interactive platform operatively connected to the public switched telephone network for responding to a plurality of telephone signals received from the caller and for facilitating interactive data exchange with the caller by providing audio output signals to the caller in response to the plurality of telephone signals, the interactive platform further for storing an interactive data exchange record representing the interactive data exchange between the caller and the interactive platform and for generating the operator assistance signal in response to the caller requesting assistance from the operator; and

providing the at least one operator operatively connected to the public switched telephone network for transmitting and receiving telephone signals to and from the caller and for receiving at least a portion of the interactive data exchange record stored by the interactive platform in response to the operator assistance signal.

5,854,838

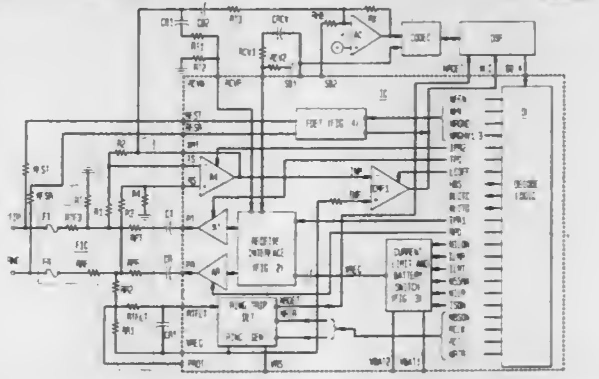
Patent Not Issued For This Number

5,854,839
DUAL VOLTAGE, SELF-MONITORING LINE CIRCUIT

Robert Kuo-Wei Chen, North Andover, Mass.; John C. Gammel, Marion Township, Berks County, Pa., and Dewayne Alan Spires, Plaistow, N.H., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 7, 1996, Ser. No. 693,426
Int. Cl.^{6} H04M *19/00*

U.S. Cl. 379—413 **10 Claims**



1. In a telephone line circuit having a battery switch for selecting either a high voltage or a lower voltage battery to be connected to a loop, the improvement comprising:

a current mirror circuit, said battery switch connecting said current mirror circuit to limit the output current drawable by said loop from the selected battery;

a reference current source for providing a constant input reference current to said current mirror circuit, and

means for selectively controlling said current mirror circuit to limit the current drawable from said selected battery by said loop to a low value during a normal talk state and to a higher value during other states.

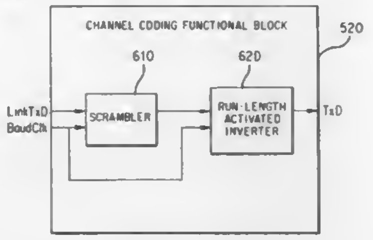
5,854,840
DATA TRANSMISSION PROTOCOL METHOD AND APPARATUS

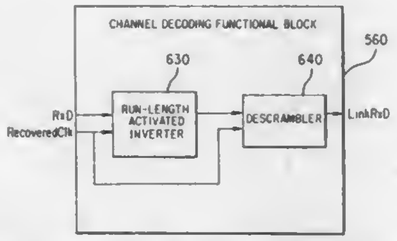
James E. Cannella, Jr., Roswell, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Division of Ser. No. 429,160, Apr. 26, 1995, Pat. No. 5,668,810. This application May 20, 1997, Ser. No. 859,262

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—9 **4 Claims**


CHANNEL CODING FUNCTIONAL BLOCK
520
610
620
LinkTxD
BaudClk
SCRAMBLER
RUN-LENGTH ACTIVATED INVERTER
TxD


CHANNEL DECODING FUNCTIONAL BLOCK
560
630
640
RxD
RecoveredClk
RUN-LENGTH ACTIVATED INVERTER
DESCRAMBLER
LinkRxD

1. Physical layer data signal originating apparatus for application with a single optical fiber comprising

a time base generator for generating a signal at a predetermined signaling rate,

a channel coder comprising a data scrambler and a run-length activated inverter coupled to the time base and to an output of the scrambler, and

a transmitter including an LED optical source and driver circuitry responsive to the output of the channel coder for outputing a signal to the optical fiber.

5,854,841
COMMUNICATION SYSTEM

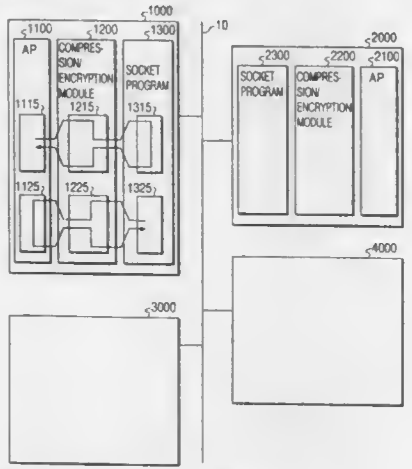
Yukio Nakata; Susumu Matsui, both of Machida; Yasuhiro Takahashi, Sagamihara; Takeshi Kondou, Fujisawa, and Yutaka Otsu, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1996, Ser. No. 755,594

Claims priority, application Japan, Nov. 24, 1995, 7-305503

Int. Cl.^{6} H04L *9/00*

U.S. Cl. 380—49 **15 Claims**



1. A communication system comprising:

a plurality of communication lines; and

a plurality of personal computers connected to each other via said communication lines,

a personal computer of the plurality of personal computers having a communication program and an application program and said application program executes transmission and reception of data with other ones of the plurality of personal computers using commands offered by said communication program, said application program including a hooking program which discriminates a data communication command issued thereby and which compresses or encrypts data,

wherein, after said hooking program has compressed or encrypted data of said application program depending on a type of received command, said command is transferred to said communication program.

5,854,842

Patent Not Issued For This Number

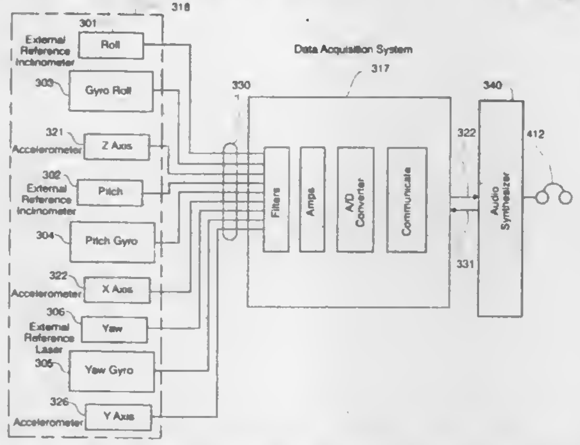
5,854,843
VIRTUAL NAVIGATOR, AND INERTIAL ANGULAR MEASUREMENT SYSTEM

Lawrence Jacknin, Yellow Springs, and Mark A. Ericson, Columbus, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 481,945, Jun. 7, 1995. This application Dec. 18, 1996, Ser. No. 769,294

Int. Cl.^{6} H04R *5/00*

U.S. Cl. 381—25 **6 Claims**



6. An audio system apparatus providing audio signals to a human operator, said audio signals perceived to originate from a particular fixed location around the human operator and updated upon movement of said human operator in a virtual reality environment comprising:

operator head to aircraft sensing means including a first solid state gyrochip angular rate sensor for sensing head roll angular rate, a second solid-state gyrochip angular rate sensor for sensing head pitch angular rate and a third solid state gyrochip angular rate sensor for sensing head azimuth angular rate; said first, second and third solid-state gyrochips receiving power from two aircraft connected 12 V direct current converters and providing linear output voltage proportional to angular velocity, and first, second and third accelerometers for sensing, respectively, x, y and z coordinate system linear rate and providing linear output voltage proportional thereto;

first, second and third connectors connected to outputs of said first second and third solid-state gyrochip angular rate sensors;

a plurality of analog filters connected to said first second and third connectors for receiving and filtering noise from outputs of said first, second and third solid-state gyrochip angular rate sensors;

operational amplifiers connected to said first, second and third analog filters and said first, second and third accelerometers, respectively, for receiving and amplifying outputs therefrom;

8-channel analog-to-digital converter means for converting analog outputs from said operational amplifiers into digital form, said 8-channel analog-to-digital converter means including a data selector and a 4 MHZ clock for controlling rate of sampling outputs from said operational amplifiers;

a plurality of optical couplers connected to said 8-channel analog-to-digital converter means for receiving control signals from said 8-channel analog-to-digital converter means;

a fourth connector connected to said optical couplers;

audio synthesizer means connected to said fourth connector for integrating digital output of said 8-channel analog-to-digital converter means into digital position data and encoding said angular position data into an audio signal; and

means for providing said audio signal to said human operator wherein said audio signal is perceived to originate from a particular location in 3D space around the listener, said audio signal updated upon movement of said human operator.

5,854,844
COMMENTARY SYSTEMS

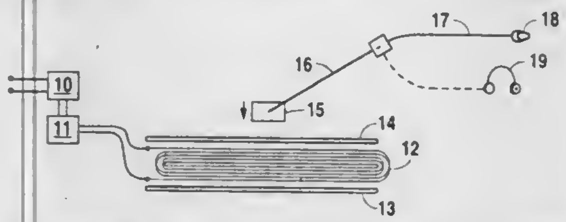
Bruce Samuel Sedley, 30 Broadway, 5th floor, Flat C, Mei Foo Sun Chuen, Kowloon, Hong Kong

Filed Sep. 10, 1996, Ser. No. 711,819

Claims priority, application United Kingdom, Sep. 12, 1995, 9518601

Int. Cl.^{6} H04B *5/00*

U.S. Cl. 381—79 **6 Claims**



1. A commentary system for individual exposition of exhibits to visitors at an exhibition comprising a commentary arranged to be broadcast by an aerial which has a highly localized electric signal field disposed adjacent said exhibit, a pick-up coil closely adjacent said aerial inductively coupled thereto, and a loudspeaker directly connected to said coil for converting said broadcast into audio signals, said audio signals generated solely by energy derived from said broadcast without the need for any additional amplification.

5,854,845
METHOD AND CIRCUIT FOR VOICE AUTOMATIC GAIN CONTROL

Tarek A. Itani, Collin, Tex., assignor to InterVoice Limited Partnership, Reno, Nev.

Continuation of Ser. No. 999,018, Dec. 31, 1992, abandoned. This application Feb. 21, 1996, Ser. No. 604,361

Int. Cl.^{6} H03G *3/00*

U.S. Cl. 381—108 **58 Claims**

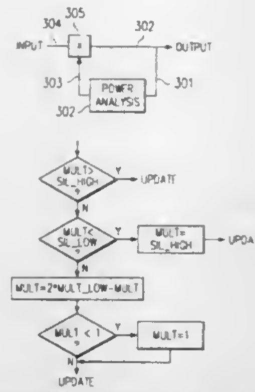
1. In an amplifier using automatic gain control, a method of minimizing distortion of an output signal from said amplifier in response to wide level variations in a source signal, said method comprising the steps of:

monitoring the source signal level;

calculating an initial gain factor required to modify the source signal level according to said automatic gain control; and

gradually modifying the initial gain factor to within a preselected band of allowable values when the source signal is monitored above a preselected minimum level and the initial gain factor is monitored above said preselected band;

periodically sampling aid source signal to detect instantaneous power levels at particular times; and



calculating a windowed average power level at a particular point in time by averaging a predetermined number of said instantaneous power levels detected during a predetermined period of time.

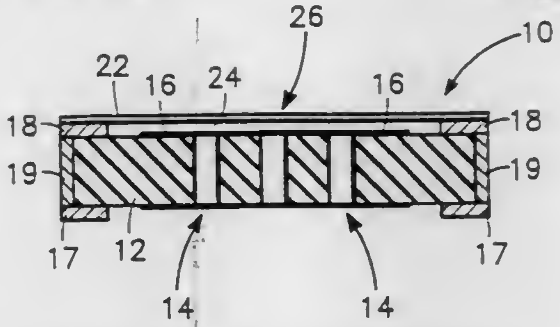
5,854,846
WAFER FABRICATED ELECTROACOUSTIC TRANSDUCER

Bob Ray Beavers, Vista, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Sep. 6, 1996, Ser. No. 711,444

Int. Cl.^{6} H04R *25/00*

U.S. Cl. 381—174 **26 Claims**



1. A capacitive electroacoustic transducer comprising:

(a) an electrically insulative substrate;

(b) a layer of conductive material disposed on a portion of a top surface of the substrate forming a first electrode of the transducer;

(c) a conductive diaphragm forming a second electrode of the transducer, the diaphragm being deflectable in relation to the first electrode;

(d) a diaphragm mounting ring made of electricity conductive material, said diaphragm mounting ring disposed about the periphery of the top surface of the substrate and separated from the first electrode for electrically and physically separating the first and second electrodes in a spaced relationship so as to constitute a capacitor, such that an electric field formed between the first and second electrodes varies in relationship with deflections of the second electrode to permit conversion between electrical and acoustic signals, said ring being thicker than the first electrode by an amount corresponding to a desired separation between the diaphragm and the first electrode and said ring being bonded to a periphery of the diaphragm; and,

(e) a compensation ring disposed on an opposite side of the substrate in an area corresponding to the diaphragm mounting ring on the top surface of the substrate, the compensation ring having the same physical size as the diaphragm mounting ring and being made of the same electrically conductive material.

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5,854,847

SPEAKER SYSTEM FOR USE IN AN AUTOMOBILE VEHICLE

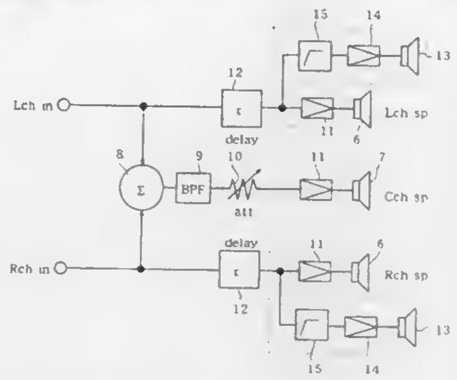
Minoru Yoshida; Keishi Saito; Fumio Matsushita; Katsumi Amano; Satoshi Kumada, and Yoshiki Ohta, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Jan. 29, 1998, Ser. No. 15,796

Claims priority, application Japan, Feb. 6, 1997, 9-024081

Int. Cl.^{6} H04B *1/00*

U.S. Cl. 381—302 **5 Claims**



1. A speaker system for use in an automobile vehicle, said speaker system comprising:

a pair of side speakers disposed on left and right sides in a front section within the automobile vehicle, said side speakers being provided to convert electric signals transmitted through left and right channels into sound signals;

a central speaker disposed in a middle position between the two side speakers, said central speaker being provided to convert into sound signal a sum signal obtained by adding together the electric signals transmitted through the left and right channels;

a pair of delay circuits connected on two signal lines leading to the side speakers disposed on the left and right sides within the vehicle, said delay circuits being provided to render the sound signals from the two side speakers to be emitted at a later time than the sound signal from the central speaker;

an adder connected between the left and right channels to add together the electric signals transmitted from the left and right channels so as to produce a sum signal; and

a band pass filter connected on a signal line leading to the central speaker, said band pass filter being constructed and adjusted to eliminate a high frequency signal component,

wherein the sum signal fed from the adder is passed through the band pass filter to extract a middle frequency signal component which is then applied to the central speaker.

5,854,848

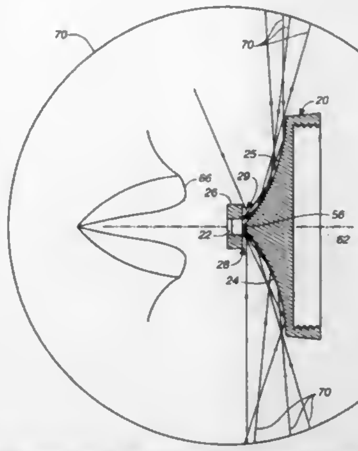
NOISE CONTROL DEVICE

Joseph B. Tate, Sausalito, and Steve B. Wolff, Woodacre, both of Calif., assignors to UmeVoice, Inc., Novato, Calif.

Continuation-in-part of Ser. No. 60,838, Oct. 8, 1996. This application Jan. 12, 1997, Ser. No. 787,010

Int. Cl.^{6} H04R *1/34;1/38*

U.S. Cl. 381—357 **24 Claims**



1. A noise-controlling apparatus for use with a directional microphone comprising:

a housing having a first sound opening located in a front side of a barrier element and a second sound opening located in a back side of the barrier element, the housing having a curved reflector extending from the back side of the barrier element which deflects a user's voice away from the second sound opening and deflects ambient noise directed at the front side of the barrier toward the second sound opening.

5,854,849

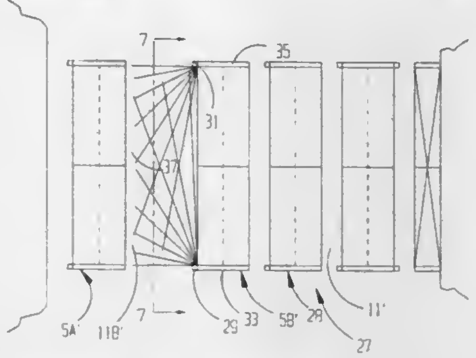
MOBILE FILING SYSTEM WITH ACTIVE-PASSIVE OPERATOR SAFETY

David R. Eaton, Lomira, Wis., assignor to Tab Products Company, Palo Also, Calif.

Filed Mar. 5, 1997, Ser. No. 811,634

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—100 **15 Claims**



1. A mobile filing system comprising:

a. carriage means rollable along a floor for selectively and closing an aisle;

b. camera means for continuously viewing and producing images of the aisle;

c. grabber means for capturing selected first and second images from the camera means; and

d. computer means for instructing the grabber means to capture the first and second images, storing the first image, comparing the second image with the first image, and preventing rolling of the carriage means to close the aisle in response to the first and second images having more than a predetermined difference between them.

5,854,850

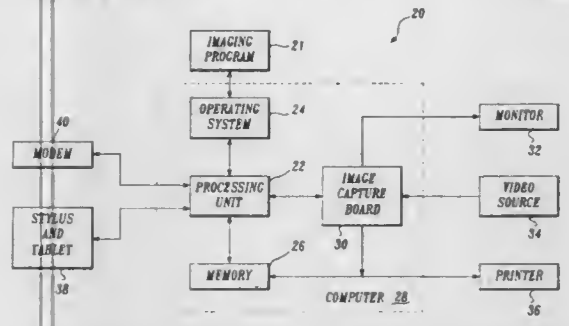
METHOD AND APPARATUS FOR SELECTIVELY ILLUSTRATING IMAGE MODIFICATIONS IN AN AESTHETIC IMAGING SYSTEM

Ray A. Linford, Kirkland, and Perin Blanchard, Woodinville, both of Wash., assignors to Mirror Software Corporation, Kirkland, Wash.

Division of Ser. No. 617,439, Mar. 18, 1996, which is a continuation-in-part of Ser. No. 406,201, Mar. 17, 1995, Pat. No. 5,687,259. This application Dec. 31, 1997, Ser. No. 1,886

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—128 **9 Claims**



1. In an aesthetic imaging system allowing the manipulation of digital images comprised of a plurality of pixels, a method of displaying an edited digital image corresponding to an original digital image wherein the edited digital image differs from the original digital image by at least one edit made to the original digital image, the aesthetic imaging system including a processor, a memory, a monitor, and means for controlling a cursor displayed on the monitor, the method comprising:

(a) defining a plurality of regions in said edited digital image, each of the plurality of regions containing at least one edit that distinguishes each of the plurality of regions from a corresponding region in said original digital image;

(b) allowing a user to select from the plurality of regions a subset of regions; and

(c) displaying a prioritized digital image containing only the edits of the original digital image that are present in the subset of regions.

5,854,851

SYSTEM AND METHOD FOR DIAGNOSIS OF LIVING TISSUE DISEASES USING DIGITAL IMAGE PROCESSING

Philippe Bamberger; Isaac Leichter, and Scott Fields, all of Jerusalem, Israel, assignors to Sophis View Technologies Ltd., Jerusalem, Israel

Filed Aug. 11, 1994, Ser. No. 289,381

Claims priority, application Israel, Aug. 13, 1993, 106691

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—132 **61 Claims**

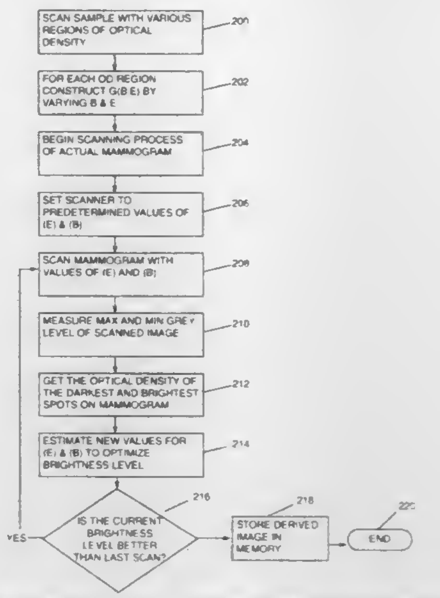
1. A system for diagnosis of living tissue diseases, comprising:

a computer device for controlling the operation of said system;

an operator control device coupled to said computer device;

a viewing screen coupled to said computer device for displaying digitized images of said living tissue, said operator control device selecting desired portions of said digitized image for further image enhancement according to a desired image enhancement feature selectable from a plurality of image enhancement features;

said plurality of image enhancement features including any combination of grey scale stretching using an S-shaped grey scale conversion curve, contrast enhancement based on logarithmic histogram equalization, and spot enhancement.


SCAN SAMPLE WITH VARIOUS REGIONS OF OPTICAL DENSITY
200
FOR EACH OD REGION CONSTRUCT G(B E) BY VARYING B & E
202
BEGIN SCANNING PROCESS OF ACTUAL MAMMOGRAM
204
SET SCANNER TO PREDETERMINED VALUES OF (E) & (B)
206
SCAN MAMMOGRAM WITH VALUES OF (E) AND (B)
208
MEASURE MAX AND MIN GREY LEVEL OF SCANNED IMAGE
210
GET THE OPTICAL DENSITY OF THE DARKEST AND BRIGHTEST SPOTS ON MAMMOGRAM
212
ESTIMATE NEW VALUES FOR (E) & (B) TO OPTIMIZE BRIGHTNESS LEVEL
214
216
218
YES
IS THE CURRENT BRIGHTNESS LEVEL BETTER THAN LAST SCAN?
STORE DERIVED IMAGE IN MEMORY
END

5,854,852

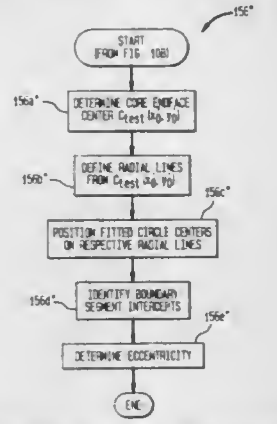
ECCENTRICITY DETERMINATION SYSTEM AND METHOD FOR ACCURATELY COMPUTING AN OFFSET OF A CENTRAL FEATURE OF AN OBJECT

Andrei Csipkes, Lawrenceville, and John Mark Palmquist, .Lilburn, both of Ga., assignors to Lucent Technologies Inc., Murry Hill, N.J.

Filed Aug. 2, 1995, Ser. No. 510,225

Int. Cl.^{6} G06K *9/00;9/36;* **G01B** *11/24*

U.S. Cl. 382—151 **16 Claims**


156"
START (FROM FIG 10B)
156a"
DETERMINE CORE ENDFACE CENTER C_test (x0, y0)
156b"
DEFINE RADIAL LINES FROM C_test (x0, y0)
156c"
POSITION FITTED CIRCLE CENTERS ON RESPECTIVE RADIAL LINES
156d"
IDENTIFY BOUNDARY SEGMENT INTERCEPTS
156e"
DETERMINE ECCENTRICITY
END

1. An offset determination method for determining an offset of a central feature of an object, comprising the steps of:

capturing a feature image of said feature and a plurality of boundary segment images of respective boundary segments of said object;

combining said feature image and said boundary segment images to produce a combined image;

locating a feature center of said feature within said combined image;

locating said boundary segments in said combined image;

fitting a curves to each of said boundary segments;

identifying curve centers of said curves;

defining radial lines outwardly from said feature center;

positioning each said curve center upon a corresponding one of said radial lines;

determining intercept locations between said radial lines and said curves; and

determining said offset by comparing said intercept locations to predefined intercept locations.

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5,854,853

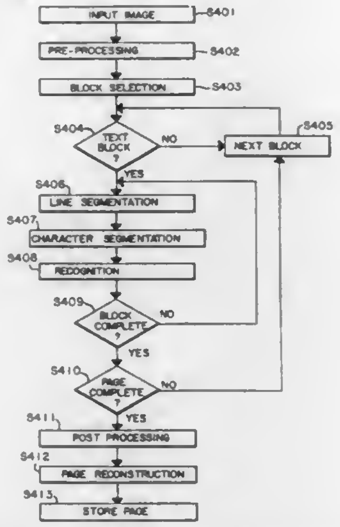
METHOD AND APPARATUS FOR SELECTING BLOCKS OF IMAGE DATA FROM IMAGE DATA HAVING BOTH HORIZONTALLY- AND VERTICALLY-ORIENTED BLOCKS

Shin-Ywan Wang, Tustin, Calif., assignor to Canon Kabushika Kaisha, Tokyo, Japan

Continuation of Ser. No. 171,720, Dec. 22, 1993, Pat. No. 5,588,072. This application Feb. 5, 1996, Ser. No. 596,716

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—176 **35 Claims**



1. A method of separating blocks of text areas and non-text areas of a stored document comprising:

an identifying step in which connected pixel components in the stored document are identified;

a separating step in which the identified pixel components are separated into text and non-text components;

a searching step in which said document is searched for visible lines and for invisible lines along edges of non-text components;

a forming step in which text and non-text blocks are formed using the identified text components and the visible and invisible lines;

a detecting step in which a text orientation for a formed text block is detected, the text orientation including horizontal text orientation and vertical text orientation;

an extracting step in which text lines are extracted from the formed text block based on the detected text orientation;

a detecting step in which a skew angle for the stored document is detected based on the extracted text lines; and

a modifying step in which the formed text blocks are modified based on the detected skew angle.

5,854,854

SKEW DETECTION AND CORRECTION OF A DOCUMENT IMAGE REPRESENTATION

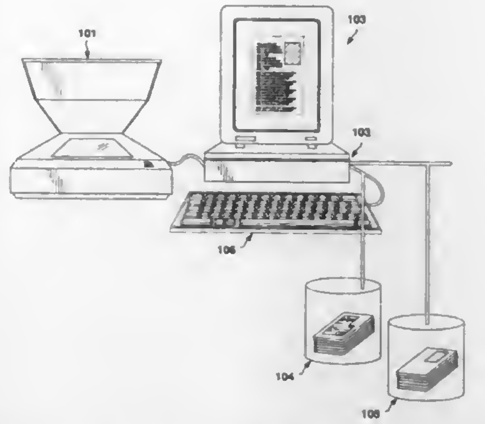
John F. Cullen, Palo Alto, Calif., and Koichi Ejiri, Narashino, Japan, assignors to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company Ltd., Tokyo, Japan

Continuation of Ser. No. 483,993, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 863,948, Apr. 6, 1992, Pat. No. 5,452,374. This application Sep. 24, 1997, Ser. No. 937,098

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—176 **11 Claims**

1. A method for correcting a skewed document image in a documentation system, said documentation system including a memory and a processor, said memory being coupled to said processor, said document image having one or more portions being stored in said memory, each of said one or more portions being represented by a set of rectangles, said method comprising the steps of:



said processor accessing said set of rectangles from said memory, wherein the size of each of the set of rectangles varies in response to the number of characters that said each rectangle represents;

said processor creating a column from said set of rectangles;

said processor identifying a column edge from said set of rectangles based on a histogram representation of positions of said set of rectangles;

said processor identifying a skew angle from a subset of said set of rectangles using said column edge, said subset of said set of rectangles comprising rectangles that are in said column;

for each rectangle (Ri) of said set of rectangles representing each one or more portions of said document image:

constructing a skewed rectangle from said skew angle and said rectangle Ri;

rotating said skewed rectangle based on said skew angle to correct skew for said rectangle Ri, such that a corrected skew image is generated.

5,854,855

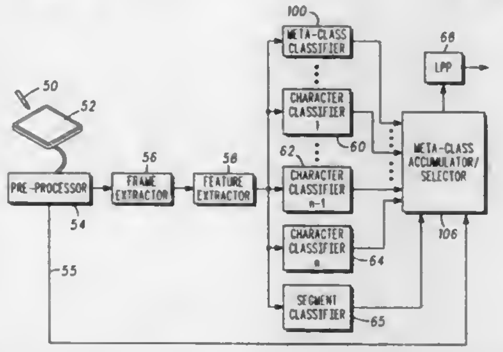
METHOD AND SYSTEM USING META-CLASSES AND POLYNOMIAL DISCRIMINANT FUNCTIONS FOR HANDWRITING RECOGNITION

James H. Errico, Palatine; Nicholas M. Labun, Chicago; John J. Loda, Carol Stream; Michael C. Murdock, Lake In The Hills, and Shay-Ping T. Wang, Long Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 304,008, Sep. 9, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,328

Int. Cl.^{6} G06K *9/00;9/46;9/48*

U.S. Cl. 382—187 **33 Claims**



1. In a computer, a method of identifying text in a handwriting input, the method comprising the following steps:

extracting a plurality of features from the handwriting input;

generating a meta-class signal by distributing the plurality of features to a meta-class classifier for identifying a meta-class comprising a plurality of meta-class characters that are not easily discernible from one another;

distributing the plurality of features to a plurality of character classifiers for distinguishing between the meta-class characters;

generating a plurality of character classifier output signals based on a plurality of polynomial discriminant functions, each of the polynomial discriminant functions having a form

$$y = \sum_{i=0}^{m} w_i \left(\prod_{j=0}^{n} x_j g_{ji} \right);$$

wherein x_j represents the plurality of features; wherein i, j, m and n are integers; wherein y represents one of the character classifier output signals; wherein w_i represents a coefficient; and wherein g_{ji} represents an exponent; and

identifying the handwritten text as a function of the meta-class signal and the plurality of character classifier output signals.

5,854,856

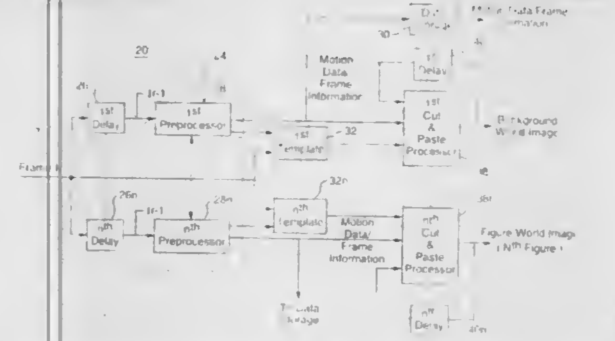
CONTENT BASED VIDEO COMPRESSION SYSTEM

Jose M. F. Moura, and Radu S. Jasinschi, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Jul. 19, 1995, Ser. No. 504,379

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—232 **13 Claims**


20
30
1st Delay
1st Preprocessor
1st Template
32
Motion Data Frame Information
1st Delay
1st Cut & Paste Processor
Background World Image
Frame
26n
28n
nth Delay
nth Preprocessor
32n
nth Template
Motion Data/ Frame Information
nth Cut & Paste Processor
Figure World Image (Nth Figure)
nth Delay

1. A method of compressing a video segment comprised of a series of frames, comprising the steps of:

preprocessing a frame to obtain figure motion data for each moving figure, said preprocessing comprising the steps of:

comparing said frame to another frame;

estimating image velocity at certain locations;

estimating background velocity of said frame;

adjusting said image velocity to compensate for said background velocity;

segmenting each said moving figure; and

estimating figure velocity of each segmented moving figure of said frame;

tessellating any moving figures to produce an instance of a template for each moving figure and an instance of a background template;

storing said figure motion data in a manner so as to associate said figure motion data with said frame;

storing frame information representative of the size and position of said frame with respect to a background world image;

comparing each of said instances of a template to a world image for that template to cut material common to both from one and to add the remaining material to form a new world image;

repeating each step until all the frames in the series are processed; and

outputting each world image, said figure motion data, and said frame information.

5,854,857

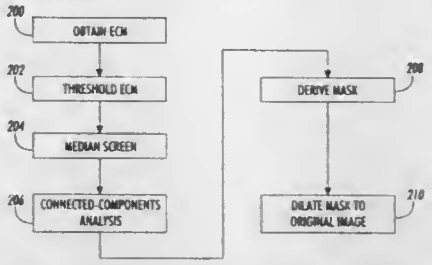
USING ENCODING COST DATA FOR SEGMENTATION AND BACKGROUND SUPPRESSION IN JPEG-COMPRESSED IMAGES

Ricardo L. de Queiroz, Fairport, and Reiner Eschbach, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 26, 1996, Ser. No. 721,074

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—232 **7 Claims**



1. A method of processing compressed digital data derived from an original image, the data being organized as a set of blocks, each block comprising a string of bits corresponding to an area of the original image, comprising the steps of:

counting a number of bits in each string of bits;

deriving a cost function for each string of bits, said cost function being a number related to the number of bits in each string of bits;

deriving an encoding cost map from the cost functions of the original image;

applying an image segmentation technique to the encoding cost map; and

interpolating the encoding cost map to the original image, thereby identifying a first portion of the original image as being of a first type and identifying a second portion of the original image as being of a second type.

5,854,858

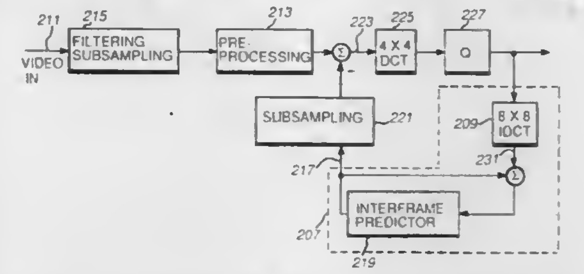
IMAGE SIGNAL CODER OPERATING AT REDUCED SPATIAL RESOLUTION

Bernd Girod, Köhlerhof 6, 91080 Spardorf, Germany, and Staffan Ericsson, 61 Longwood Ave., Brookline, Mass. 02146

Filed Jun. 7, 1995, Ser. No. 504,631

Int. Cl.^{6} G06K *9/36*

U.S. Cl. 382—250 **20 Claims**



1. A motion-compensated digital signal encoder compatible with a decoder have a predetermined spatial resolution defined by a predetermined number of transform coefficient's in each transform block, comprising:

a spatial lowpass filter having an input adapted to receive a digital image signal and producing a filtered image signal at an output;

a first subsampling system operating at a 2:1 ratio horizontally and vertically, for receiving the filtered image signal and producing a subsampled signal at an output;

a subtractor having a first input connected to receive the subsampled signal, a second input connected to receive a subsampled prediction signal and an output carrying a difference signal representative of the difference between the signals received at the first and second inputs;

a signal transformer operating at a reduced spatial resolution defined by a number smaller than the predetermined number of transform coefficients in each transform block, the reduced spatial resolution corresponding to the subsampled signal, having an input connected to receive the subsampled signal and an output carrying a transformed signal;

a quantizer having an input connected to receive the transformed signal and an output carrying a quantized output signal;

means for encoding as zero those transform coefficients of a full-resolution transform corresponding to the reduced spatial resolution transform, but not computed by the signal transformer;

a decoder having an input connected to receive the quantized output signal and an output carrying a prediction signal; and

a second subsampling system having an input connected to receive the prediction signal and an output carrying the subsampled prediction signal; wherein,

the signal transformer performs a 4×4 transform.

5,854,859

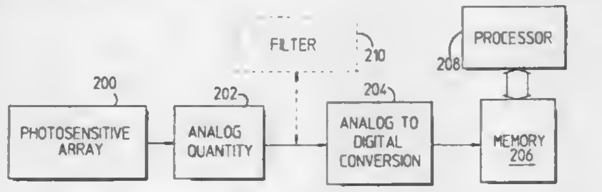
IMAGE SHARPENING FILTER PROVIDING VARIABLE SHARPENING DEPENDENT ON PIXEL INTENSITY

Robert E. Sobol, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 27, 1996, Ser. No. 775,068

Int. Cl.^{6} G06T *5/00*

U.S. Cl. 382—261 **6 Claims**



1. A method of spatially filtering an array of pixel values, where each pixel value is a measure of light intensity of an image, the method comprising the following steps:

(a) defining at least one threshold;

(b) defining first and second Laplacian filters;

(c) reading a pixel value;

(d) determining whether the pixel value is greater than the threshold;

(e) applying the first Laplacian filter to the pixel value when it is determined in step (d) that the pixel value is greater than the threshold and otherwise applying the second Laplacian filter to the pixel value, the choice of applying the first or second Laplacian filter determined solely by the outcome of step (d); and

(f) repeating steps (c) through (e) for all pixels in the array.

4. A method of spatially filtering an array of pixel values, where each pixel value is a measure of light intensity of an image, the method comprising the following steps:

(a) defining at least one pixel value threshold corresponding to a light intensity threshold;

(b) defining first and second Laplacian filters, the first Laplacian filter exaggerating a spatial step in pixel values less than the second Laplacian filter exaggerates the spatial step in pixel values;

(c) reading a pixel value;

(d) applying the second Laplacian filter to the pixel value when the pixel value corresponds to a light intensity that is greater than the light intensity threshold;

(e) applying the first Laplacian filter to the pixel value when the pixel value corresponds to a light intensity that is less than the light intensity threshold; and

(f) repeating steps (c) through (e) for all pixels in the array.

5,854,860

IMAGE FILING APPARATUS HAVING A CHARACTER RECOGNITION FUNCTION

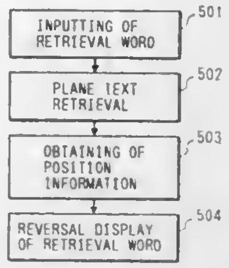
Shigetada Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,455

Claims priority, application Japan, Dec. 26, 1994, 6-322399

Int. Cl.^{6} G06K *9/00*

U.S. Cl. 382—305 **11 Claims**


INPUTTING OF RETRIEVAL WORD
501
PLANE TEXT RETRIEVAL
502
OBTAINING OF POSITION INFORMATION
503
REVERSAL DISPLAY OF RETRIEVAL WORD
504

1. An image filing apparatus comprising:

image input means for inputting an image;

recognition means for recognizing characters in the image input by said image input means;

detection means for detecting a character code for each of the characters recognized by said recognition means and position information for each of the characters;

storage means for storing the image and the character codes and position information of each character detected by said detection means, so as to maintain correspondence therebetween;

retrieval means for retrieving a desired image stored in said storage means;

display means for displaying the desired image retrieved by said retrieval means;

designation means for designating an area on the desired image displayed by said display means; and

output means for outputting the character codes for characters contained in the designated area of the desired image based on coordinates of the area designated by said designation means and based on the position information stored by said storage means.

5,854,861

IMAGE INPUT APPARATUS

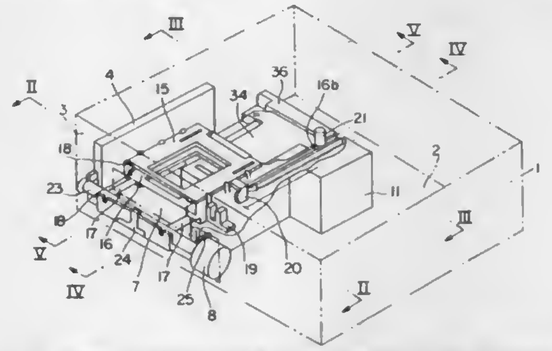
Masashi Tazawa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 569,864, Dec. 8, 1995, Pat. No. 5,790,716, Division of Ser. No. 202,010, Feb. 25, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,678

Claims priority, application Japan, Feb. 26, 1993, 5-063160; Oct. 13, 1993, 5-255390

Int. Cl.^{6} G06K *7/00*

U.S. Cl. 382—312 **2 Claims**



1. An image reading apparatus for reading light reflected or passed through an original to thereby output image signals corresponding to the original, the apparatus comprising:

a holder holding the original; and

a compression unit to elastically bias both a first side and a second side of the original in the holder towards each other so as to sandwich and compress the first and second sides so that the original is approximately centrally supported in the holder and in the direction of the optical axis of the light used to illuminate the original;

the holder includes a first plate and a second plate parallel to each other in a direction perpendicular to the optical axis of the light used to illuminate the original; and

the compression unit comprises biasing means mounted on the holder, for applying a compressing force in the direction of the optical axis of the light used to illuminate the original, wherein the biasing means includes at least one plate spring mounted on the first plate to bias the original in a first direction that the light is received parallel to the optical axis and at least one plate spring mounted on the second plate to bias the original in a second direction opposite the first direction and parallel to the optical axis.

5,854,862

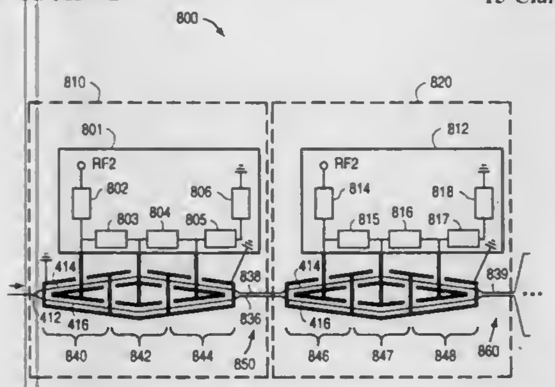
LINEARIZED OPTIC MODULATOR WITH SEGMENTED ELECTRODES

Halvor Skeie, San Jose, Calif., assignor to Crystal Technology, Inc., Palo Alto, Calif.

Continuation of Ser. No. 624,162, Mar. 29, 1996, Pat. No. 5,671,302. This application May 29, 1997, Ser. No. 865,532

Int. Cl.^{6} G02F *1/01*

U.S. Cl. 385—2 **15 Claims**



1. An electro-optic modulator for providing a linearly modulated light signal, comprising:

a substrate of an electro-optic material;

a plurality of interferometric electro-optic modulators formed on said substrate and coupled in cascade, each of the plurality of electro-optic modulators including,

i. a pair of first and second waveguide segments formed in said substrate and extending substantially coextensively with one another in a longitudinal direction, the first and second waveguide segments being separated by a transverse distance that gradually varies along a substantial portion of the course of the first and second waveguide segments;

ii. an outer electrode assembly, substantially surrounding the first and second waveguide segments, the outer electrode assembly including a plurality of outer electrode segments, the plurality of outer electrode segments forming a plurality of n compartments through which the pair of first and second waveguide segments extend; and

iii. a plurality of n inner electrode assemblies, one of the n inner electrode assemblies being located in each one of the n compartments, at least a portion of each one of the inner electrode assemblies being positioned between the portion of the first and second waveguide segments which extends through the compartment in which the one of the inner electrode assemblies is located;

a modulating voltage source coupled to a first set of the inner electrode assemblies of each of the plurality of electro-optic modulators;

a direct current bias voltage source coupled to at least one of the inner electrode assemblies of each of the plurality of electro-optic modulators;

a first one in a chain of said cascaded electro-optic modulators further including an input waveguide coupler means for receiving an input light signal;

a last one in the chain of said cascaded electro-optic modulators further including an output waveguide coupler means for providing a modulated light output signal; and

means for controlling the bias voltage supplied by the direct current bias source to the inner electrode assemblies such that the bias voltage supplied to the inner electrode assemblies are maintained at predetermined levels for maximizing the linearity of the modulated light output signal.

5,854,863

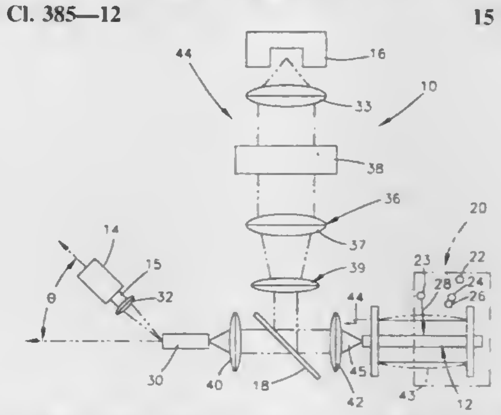
SURFACE TREATMENT AND LIGHT INJECTION METHOD AND APPARATUS

Judith Erb, and James Downward, IV, both of 2740 Lowell Rd., Ann Arbor, Mich. 48103

Filed Mar. 15, 1996, Ser. No. 616,576

Int. Cl.^{6} G01N *21/63*

U.S. Cl. 385—12 **15 Claims**



12. A fiber optic biosensor assembly for use in detecting, in a liquid medium, the presence of a constituent capable of forming an affinity complex,

one member of said affinity complex bearing a tag which is fluorescent, said tagged member being added to the liquid containing the constituent the presence of which is to be detected by said biosensor assembly, said biosensor assembly comprising:

a means for generating light energy;

an optical fiber having a surface to which a chemical from the group consisting of amorphous copolymers of perfluoro (2,2 dimethyl—1,3 dioxole) and tetrafluoroethylene is applied to said optical fiber and baked and subsequently and at least partially being removed, said optical fiber being adapted to receive said generated light energy and to generate an evanescent energy field around said surface;

a means for causing said generated light energy to enter said optical fiber;

a second constituent of said affinity complex which is constrained to remain within 1000 angstroms (the effective distance of said evanescent field) of said surface of said optical fiber and which forms an affinity complex with said fluorescently tagged constituent within said evanescent energy field to generate fluorescence;

a sensor cell which holds said optical fiber within a tube through which said liquid medium can be injected or flowed; and

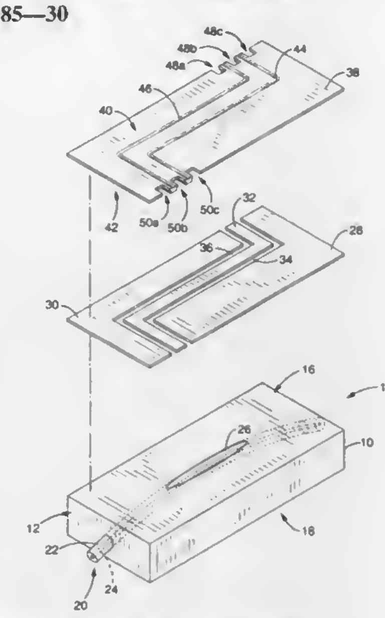
detector means, in optical communication with said optical fiber, for receiving and detecting the presence of said evanescent light energy, and for using said detected evanescent light energy to determine the presence of said constituent occurring in said liquid medium.

5,854,864
IN-LINE POLYMERIC CONSTRUCT FOR MODULATORS, FILTERS, SWITCHES AND OTHER ELECTRO-OPTIC DEVICES

Andre Knoesen; Diego Yankelevich; Scott A Hamilton; Nicholas L. Abbott, all of Davis; Richard A. Hill, Campbell, and Gary Bjorklund, Los Altos Hills, all of Calif., assignors to The Regents of the University of California, Oakland, and Optical Networks, Incorporated, Palo Alto, both of Calif.

Filed Jul. 16, 1996, Ser. No. 683,056
Int. Cl.^{6} G02B *6/26*

U.S. Cl. 385—30 **18 Claims**



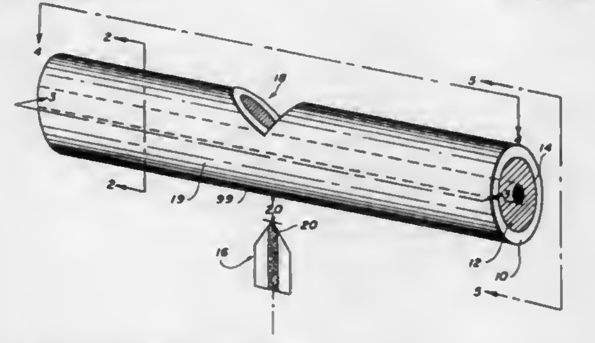
1. An electro-optic construct, comprising:
(a) an optical fiber base having a surface with an evanescent coupling region;
(b) at least two coplanar electrodes that are spaced apart by a gap aligned over said evanescent coupling region; and
(c) a compliant electro-optic waveguide adjacent to said electrodes, said waveguide and electrodes supported by said optical fiber base.

5,854,865
METHOD AND APPARATUS FOR SIDE PUMPING AN OPTICAL FIBER

Lew Goldberg, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1995, Ser. No. 568,859
Int. Cl.^{6} G02B *6/26*; H01S *3/30*

U.S. Cl. 385—31 **25 Claims**



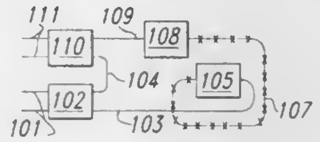
1. An optical fiber, comprising:
a cladding;
a core disposed within said cladding, said core comprising an outer core and an inner core, said inner core being disposed within said outer core, said inner core being doped with a preselected gain material;
a groove extending through said cladding into said outer core, said groove having a surface disposed effective to specularly reflect light from a preselected direction and of a preselected frequency, into said outer core, wherein said light passes through said cladding is reflected by said groove surface and propagates down said outer core facilitating absorption of said light into said inner core.

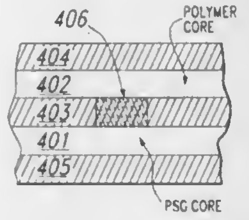
5,854,866
MULTI-LEVEL ARCHITECTURE FOR OPTICAL TIME DELAYS IN INTEGRATED CIRCUITS

Jerry Leonard, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 404,070, Mar. 14, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 479,315
Int. Cl.^{6} G02B *6/26;6/12*

U.S. Cl. 385—39 **12 Claims**





1. An optical time delay structure in an integrated optical circuit comprising:
(a) a first delay loop in a first optical waveguide layer;
(b) a second delay loop in a second optical waveguide layer stacked on said first optical waveguide layer, wherein a substantial portion of said second delay loop occupies a plane vertically adjacent to said first delay loop and in at least one region said second delay loop crosses over said first delay loop; and
(c) a vertical coupler connecting said first delay loop to said second delay loop, such that a signal can be coupled to the second delay loop subsequent to traversing said first delay loop.

5,854,867
OPTICAL MODULE HAVING LENSES ALIGNED ON LENS-POSITIONING V-GROOVE AND FABRICATION METHOD THEREOF

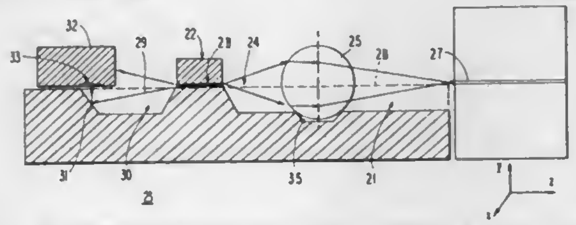
Sang-Hwan Lee, Daejeon; Jong-Tae Moon, Seoul; Min-Kyu Song, Daejon; Nam Hwang, Daejeon, and Seong-Su Park, Daejeon, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecom, Seoul, both of Rep. of Korea

Filed Apr. 25, 1997, Ser. No. 846,154

Claims priority, application Rep. of Korea, Oct. 29, 1996, 96-49493

Int. Cl.^{6} G02B *6/30*

U.S. Cl. 385—49 **23 Claims**



1. An optical module having lenses aligned on a V-groove, comprising:

a substrate having a top and a bottom surface, said substrate having formed therein first and second optical transferring V-grooves and an optical receiving V-groove, said grooves defining a light transferring path and defining the position for at least one lens disposed in said light transferring path;
an optical transferring module disposed on the top surface of the substrate and including a laser flip-chip-bonded to the substrate, an optical transferring lens attached at the first optical transferring V-groove for condensing light from the laser, and a laser monitoring optical detector flip-chip-bonded to the substrate and disposed proximate an edge of a side wall of the second optical transferring V-groove and opposite the laser such that an active region of the laser monitoring optical detector is disposed over the second optical transferring V-groove for detecting light from the laser reflecting off the side wall of the second optical transferring V-groove so as to monitor the laser; and
an optical receiving module disposed on the top surface of the substrate and including an optical receiving lens attached at the optical receiving V-groove of the substrate for condensing light externally transferred thereto, and a light receiving optical detector flip-chip-bonded to the substrate and disposed proximate an edge of a side wall of the light receiving V-groove so that an active region of the light receiving optical detector is disposed over the side wall of the light receiving V-groove for detecting the condensed light reflecting off the side wall of the light receiving V-groove from the optical receiving lens.

5,854,868
OPTICAL DEVICE AND LIGHT WAVEGUIDE INTEGRATED CIRCUIT

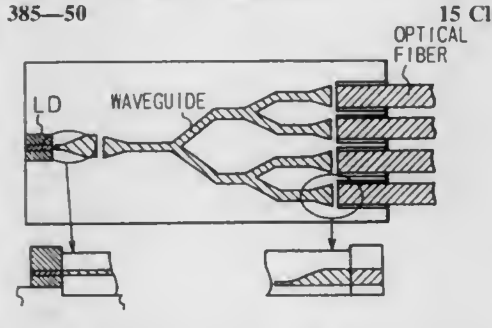
Tetsuzo Yoshimura, and Wataru Sotoyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation-in-part of Ser. No. 493,751, Jun. 22, 1995. This application Aug. 9, 1996, Ser. No. 694,705

Claims priority, application Japan, Jun. 22, 1994, 6-140502; Aug. 25, 1994, 6-200974; Aug. 30, 1994, 6-204922; Mar. 17, 1995, 7-59240; Mar. 20, 1995, 7-61092; Feb. 14, 1996, 8-026888

Int. Cl.^{6} G02B *6/30*

U.S. Cl. 385—50 **15 Claims**



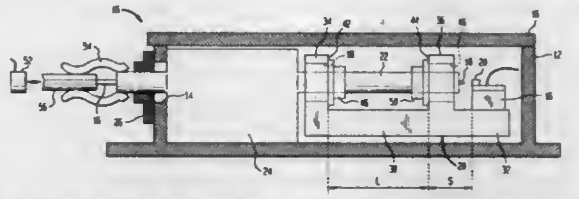
1. A process for integrating optical devices and optical waveguides which comprises: first mounting one or more optical devices on a substrate, and then forming a refractive index distribution pattern and/or waveguide pattern on said substrate, by the steps of coating a material for forming said refractive index distribution pattern and/or waveguide pattern on said substrate and then patterning the material to form said refractive index distribution pattern and/or waveguide pattern, to form an optical coupling path communicating with said one or more optical devices.

5,854,869
STRESS REDUCED LASER MODULE

William B. Joyce, Basking Ridge, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 3, 1997, Ser. No. 887,916
Int. Cl.^{6} G02B *6/42*

U.S. Cl. 385—92 **5 Claims**



1. A module for holding an optical fiber and a laser in alignment to couple light energy emitted from said laser into an end of said fiber, the module comprising:
a housing having a first opening along one side of said housing for providing access to the interior of said housing and a second opening through an end of said housing for allowing passage of said fiber into said housing interior;
a cover for sealing said first opening of said housing;
a metal ferrule surrounding said fiber and extending through said housing second opening to the interior of said housing, said ferrule being secured to said housing;
a metal platform supported by said ferrule so that said platform is not directly secured to said housing, said platform having a base portion extending substantially parallel to said fiber and a support portion extending from said base portion beyond the end of said fiber; and
laser support structure secured to said platform support portion for supporting said laser in alignment with the end of said fiber;
whereby said platform and the alignment of said laser with said fiber are isolated from mechanical stresses induced in said housing.

5,854,870
SHORT-WAVELENGTH LASER LIGHT SOURCE

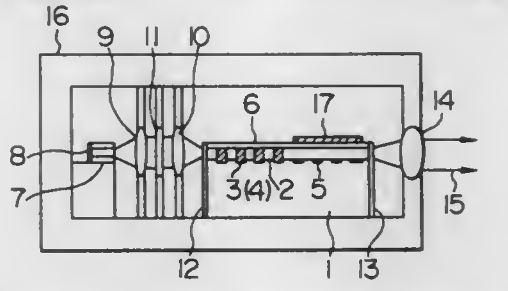
Sten Helmfrid, Musashino; Kenchl Ito, Kokubunji; Kimio Tatsuno, Tokyo; Kazumi Kawamoto, Kokubunji; Tetsuo Andou, Kokubunji; Hiroshi Momiji, Kokubunji; Osamu Komoda, Kokubunji; Hisao Kurosawa, Fukaya; Masayoshi Sato, Fukaya; Fumio Nitanda, Fukaya, and Kohei Ito, Fukaya, all of Japan, assignors to Hitachi, Ltd., and Hitachi Metals, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 705,956, May 28, 1991, Pat. No. 5,268,912, and Ser. No. 879,361, May 7, 1992, Pat. No. 5,274,727. This application Mar. 4, 1993, Ser. No. 27,724

Claims priority, application Japan, May 25, 1990, 2-133821; Mar. 4, 1992, 4-046686; Apr. 2, 1992, 4-080675; Aug. 24, 1992, 4-224063; Feb. 3, 1993, 5-016149

Int. Cl.^{6} G02B *6/43*; G02F *1/37*

U.S. Cl. 385—122 **34 Claims**



14. A waveguide SHG light source of internal resonance type for inputting a fundamental wave component of semiconductor laser light to an optical waveguide including, in an optical substrate having spontaneous polarization, a polarization inversion portion having a periodically inverted direction of spontaneous polariza-

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tion and for converting said fundamental wave component to a second harmonic, said SHG light source comprising:

a diffraction grating disposed in the optical waveguide of the second harmonic output side of said polarization inversion portion to reflect said fundamental wave component of the semiconductor laser light toward said semiconductor laser;

a pair of electrodes disposed on said diffraction grating to adjust a refractive index of said optical waveguide by applying a direct current voltage through an optical transparent thin film;

means disposed in an end face of said optical substrate for inputting said semiconductor laser light or between said optical substrate and said semiconductor laser to transmit only the fundamental wave of said semiconductor laser light and reflect the second harmonic of said semiconductor laser light; and

means for reflecting the fundamental wave of said semiconductor laser light, said reflecting means being disposed in an end face of said optical substrate opposite to said end face for inputting said semiconductor laser light.

5,854,871

DISPENSION SHIFT OPTICAL FIBER AND WAVELENGTH DIVISION MULTIPLEX TRANSMISSION SYSTEM USING THE SAME

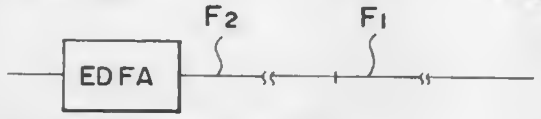
Youichi Akasaka, 133 .G.F. Furukawa, 4.Totsumidaihigado 3 chome, Ichihara-shi, Chiba, Japan

Filed Mar. 27, 1997, Ser. No. 826,220

Claims priority, application Japan, Mar. 28, 1996, 8-099373

Int. Cl.^{6} G02B *6/02;6/16;* **H04B** *10/12*

U.S. Cl. 385—123 **9 Claims**



1. A optical fiber system comprising:

a dispersion shift optical fiber connected to and for use with a positive dispersion slope optical fiber which has a positive dispersion slope and a zero dispersion wavelength band of 1500 nm to 1600 nm, wherein the mean dispersion slope of the dispersion shift optical fiber in the range of the wavelength of 1530 nm to 1560 nm is negative and the chromatic dispersion of a wavelength which is substantially coincident with the zero dispersion wavelength of said positive dispersion slope optical fiber is substantially 0 ps/nm/km.

5,854,872

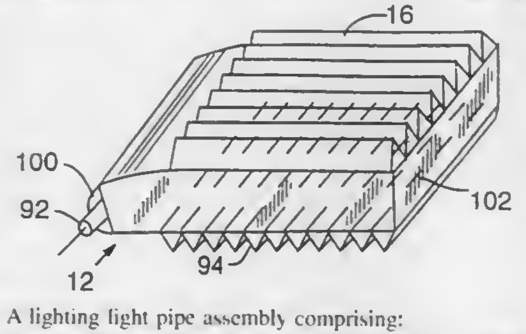
DIVERGENT ANGLE ROTATOR SYSTEM AND METHOD FOR COLLIMATING LIGHT BEAMS

Chen-Yu Tai, Toleda, Ohio, assignor to Clio Technologies, Inc., Holland, Ohio

Filed Oct. 8, 1996, Ser. No. 725,942

Int. Cl.^{6} G02B *6/34*

U.S. Cl. 385—133 **49 Claims**



29. A lighting light pipe assembly comprising:

(a) opposing top and bottom surfaces which define the thickness of said lighting light pipe, opposing sides which define the width of said lighting light pipe, and opposing ends which define the length of said lighting light pipe, said length further defining a mean light propagation direction;

(b) means for directing light into said lighting pipe assembly;

(c) elongated microstructures extending approximately in said mean light propagation direction on said top surface configured to rotate the divergent angles of light beams in a predetermined way; and

(d) said lighting light pipe having a lengthwise axis and an arrangement of immediately adjacent microprisms in rows extending normal to said lengthwise axis of said lighting light pipe on the bottom surface of said lighting light pipe, each of said microprisms having its vertex extending downward from a rectangular base so as to define said vertex an upwardly angled light reflecting surface segment for reflecting light within said lighting light pipe upwards through its top surface in a generally collimated manner.

5,854,873

METHOD AND AN APPARATUS FOR ENCODING A BITSTREAM WITH PLURAL POSSIBLE SEARCHING REPRODUCTION PATHS INFORMATION

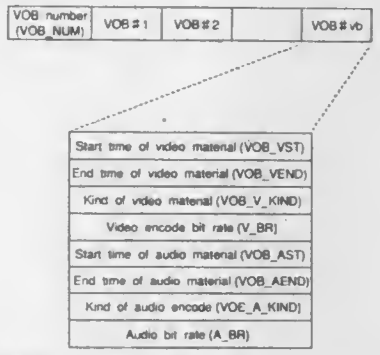
Yoshihiro Mori, Hirakata; Kazuhiro Tsuga, Takarazuka; Takumi Hasebe, Yawata; Kazuhiko Nakamura, Hirakata; Yoshihisa Fukushima, Osaka; Masayuki Kozuka, Neyagawa; Chieko Matsuda, Hirakata, and Yasuhiko Yamane, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 27, 1996, Ser. No. 721,735

Claims priority, application Japan, Sep. 29, 1995, 7-276574

Int. Cl.^{6} H04N *5/91;7/08;5/781*

U.S. Cl. 386—92 **9 Claims**


VOB number (VOB_NUM)
VOB # 1
VOB # 2
VOB # vb
Start time of video material (VOB_VST)
End time of video material (VOB_VEND)
Kind of video material (VOB_V_KIND)
Video encode bit rate (V_BR)
Start time of audio material (VOB_AST)
End time of audio material (VOB_AEND)
Kind of audio encode (VOE_A_KIND)
Audio bit rate (A_BR)

1. An optical disc comprising:

a data region for storing a plurality of system streams; and

a management information region for storing program chain information entries each of which defines a sequence of system streams,

wherein each of the system streams contains video object units each including a navigation pack and a video segment, the navigation pack being placed at a beginning of a corresponding video object unit and carrying next and previous position data respectively indicative of positions of next and previous video object units in a corresponding system stream, and

wherein each of the program chain information entries carries first and last position data respectively indicative of positions of first and last video object units in each system stream in a corresponding sequence.

5,854,874

IMAGE RECORDING/REPRODUCING SYSTEM

Tomishige Yatsugi, and Masayuki Kimura, both of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

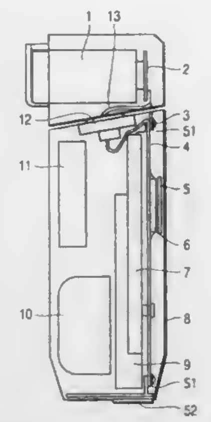
Filed Sep. 20, 1996, Ser. No. 717,235

Claims priority, application Japan, Sep. 26, 1995, 7-247916

Int. Cl.^{6} H04N *5/225*

U.S. Cl. 386—118 **25 Claims**

1. An image recording/reproducing system comprising:



an external housing for accommodating components of said image recording/reproducing system;

an optical lens for providing an image signal; and

a semiconductor chip mounting a digital signal processing integrated circuit for compressing said image signal, a major planar surface of the semiconductor chip adjoins a predetermined opposing internal surface of the external housing in comparison to other surfaces of the semiconductor chip and other internal surfaces of the external housing,

wherein the adjoining said major planar surface of said semiconductor chip is arranged for transferring heat generated thereby to outside of the external housing through said predetermined opposing internal surface of said external housing for heat dissipation thereof.

5,854,875

INFORMATION RECORDING APPARTUS CONNECTABLE TO PLURAL TYPES OF INFORMATION RECORDING MEDIA FOR RECORDING INFORMATION

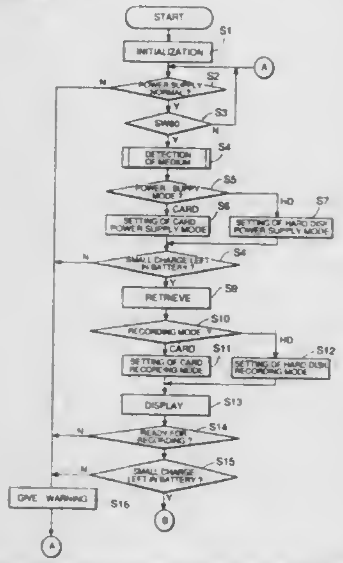
Yoichi Yamagishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 45,256, Apr. 13, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 402,306

Claims priority, application Japan, Apr. 16, 1992, 4-096704

Int. Cl.^{6} H04N *5/781*

U.S. Cl. 386—120 **32 Claims**



1. An image information recording apparatus for inputting image information and recording the input image information, connectable to plural types of recording media having different power consumption characteristics, operated by a power supplied from a system power source, and recording the image information on a connected recording medium, said image information recording apparatus comprising:

input means for inputting the image information;

recording means for recording on the connected recording medium the image information input by said input means;

detecting means for detecting a status of a system power supply in the system power source prior to a recording operation of the image information by said recording means;

determination means for determining a type of the recording medium connected to said image information recording apparatus from among the plural types of recording media; and

control means for controlling a detecting operation of the status of the system power supply in the system power source by said detecting means in accordance with the determination by said determination means.

5,854,876

CIRCUIT AND METHOD FOR SYNC DETECTION AND PROTECTION

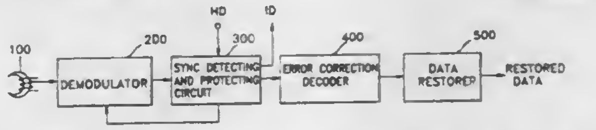
Yong-je Kim, Kunpo, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed May 31, 1996, Ser. No. 655,936

Claims priority, application Rep. of Korea, Sep. 6, 1995, 1995 29164

Int. Cl.^{6} H04N *5/926;5/932*

U.S. Cl. 386—124 **18 Claims**



1. A sync detecting and protecting circuit for use in a reproducing apparatus for reproducing digital data from a recording medium, wherein a plurality of areas for recording said digital data are arranged in sequential tracks, wherein each area comprises a plurality of sync blocks and a pre-amble pattern, said sync detecting and protecting circuit comprising:

first detecting means for detecting a pre-amble pattern of said digital data and for outputting digital data for a plurality of area signals, each corresponding to a respective area;

second detecting means for detecting a sync pattern of said digital data, for comparing said detected sync pattern and a predetermined sync pattern, and for outputting a sync detection signal;

control signal generating means for generating a sync control signal based on said sync detection signal, and for generating a pseudo-sync control signal if said detected sync pattern has one or more errors; and

an ID separating means, responsive to an output of said second detecting means, for separating an ID code recorded after said detected sync pattern, for comparing said separated ID code with an ID of at least one of a previous track and sync block, and for outputting an ID comparison signal.

5,854,877

ECONOMICAL WIDE RANGE SPEED CONTROL SYSTEM

Martyn A. Lewis, Pacific Palisades, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 337,803, Nov. 14, 1994, Pat. No. 5,642,461. This application Oct. 16, 1996, Ser. No. 732,069

Int. Cl.^{6} G05B *19/40*

U.S. Cl. 388—812 **8 Claims**

1. A speed control system, comprising:

a signal source for producing a modulation frequency signal;

an encoder having a moveable member operatively connected to a device whose speed is to be controlled, said encoder coupled to said signal source, said encoder including means for converting said modulation frequency signal into a phase variable signal having a phase which is varied as a function of the position of said moveable member;

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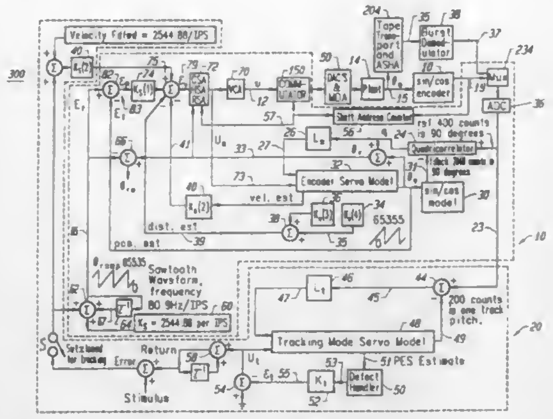


- a reference frequency signal generator coupled to said modulation frequency signal source for generating a variable reference frequency signal;
- a comparator operatively connected to said modulation frequency signal and said reference frequency signal for generating an error signal; and
- a plurality of filters in communication with said encoder, each of said plurality of filters including a notch filter operative to remove DC and frequency based distortions from said error signal, said plurality of filters providing a control signal used to control said device at low speeds.

5,854,878

Patent Not Issued For This Number

5,854,879
METHOD AND APPARATUS FOR MULTI-LEVEL TONE DISPLAY FOR LIQUID CRYSTAL APPARATUS

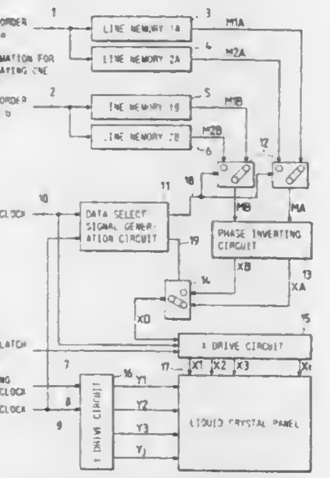
Tatsuhiro Inuzuka; Hiroyuki Mano; Kazuhiro Fujisawa; Satoshi Konuma, all of Kanagawa-ken; Kiyoshige Kinugawa, Chiba-ken, and Satoru Tsunekawa, Tokyo-to, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Video Engineering, Inc., Yokohama, both of Japan

Division of Ser. No. 472,306, Jan. 30, 1990, Pat. No. 5,206,635. This application Jan. 12, 1993, Ser. No. 3,448

Claims priority, application Japan, Jan. 30, 1989, 1-17658

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—89 7 Claims



1. A liquid crystal display apparatus, comprising:

- a liquid crystal panel of a plurality of dots arranged in rows and columns of a matrix;
- Y drive circuit means for successively energizing and selecting each row having a plurality of said dots of said matrix during each horizontal period of one frame; and
- X drive circuit means for supplying display information including an ON pulse for a first half of a horizontal period and an ON pulse for a second half of said horizontal period to each of said dots in said selected row, said X drive circuit means supplying said first half ON pulse to one of an adjacent two of said dots in a row direction of said matrix and said second half ON pulse to the other of said adjacent two dots during said horizontal period of one frame.

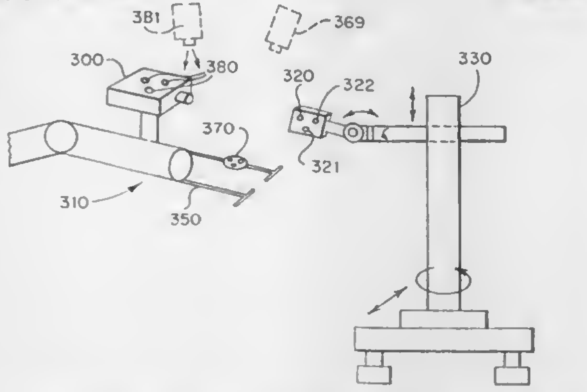
5,854,880
TARGET BASED DETERMINATION OF ROBOT AND SENSOR ALIGNMENT

Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 358,882, Dec. 19, 1994, which is a division of Ser. No. 170,988, Dec. 21, 1993, Pat. No. 5,374,830, which is a continuation of Ser. No. 733,035, Jul. 22, 1991, which is a continuation of Ser. No. 481,155, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 291,692, Dec. 29, 1988, abandoned, which is a division of Ser. No. 104,517, Sep. 28, 1987, Pat. No. 4,796,200, which is a continuation of Ser. No. 940,153, Dec. 9, 1986, abandoned, which is a continuation of Ser. No. 660,043, Oct. 12, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 465,742

Int. Cl.^{6} G06F *15/46*

U.S. Cl. 395—94 15 Claims



1. An apparatus for determining the position of at least one member comprising:

- a computer containing information related to a math data base of an object to be worked or positioned by the member;
- a sensor which senses a separate position of the member;
- a sensor positioning means positionable in multiple degrees of freedom for positioning said sensor with respect to the data base of the object and separate from said member such that the separate position of the member is sensed by the sensor; and
- an analysis means for determining, from the position of said sensor with respect to the data base and from the sensed position of the member by said sensor, a position of the member with respect to the data base.

5,854,881
COORDINATE DETECTION DEVICE CAPABLE OF DETECTING COORDINATES USING DISPLAY PANEL PROVIDED SPECIALLY FOR DISPLAY

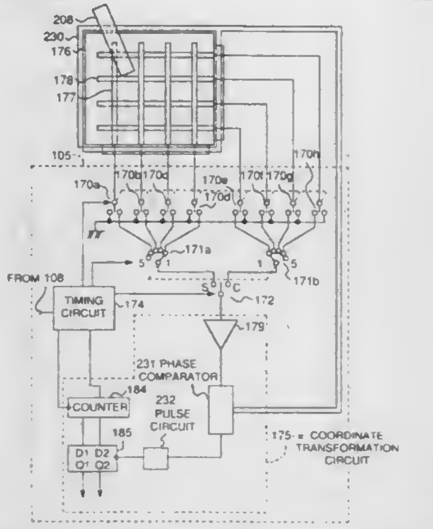
Yasuhiro Yoshida; Kengo Takahama, both of Nara, and Takao Tagawa, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1995, Ser. No. 444,894

Claims priority, application Japan, May 31, 1994, 6-118764; Mar. 22, 1995, 7-062643

Int. Cl.^{6} G09G *3/36*

U.S. Cl. 345—104 12 Claims



1. A coordinate detection device performing a coordinate detection operation by an electromagnetic induction method, the coordinate detection device comprising:

- a flat display panel in which a material having an electro-optical effect characteristic is sealedly filled in a space between two substrates, and a plurality of x-axis electrodes and a plurality of y-axis electrodes which are intersecting each other on the substrates;
- x-axis drive circuit and y-axis drive circuit which are provided for image display use and electrically drive the x-axis electrodes and the y-axis electrodes of the flat display panel respectively;
- a wireless coordinate pointing device including alternating current magnetic field generating means having therein an alternating current power source and an electrode connected to an output terminal of the alternating current magnetic field generating means;
- a coordinate detection circuit including a differential amplifier, a connection switching circuit which selects two adjoining x-axis electrodes or a pair of x-axis electrodes constituted by two adjoining electrode groups of the x-axis electrodes as well as two adjoining y-axis electrodes or a pair of y-axis electrodes constituted by two adjoining electrode groups of the y-axis electrodes, connects the selected electrodes to the differential amplifier, and shifts the selected electrodes one by one in a direction in which the selected electrodes are arranged, peak detection means which obtains a signal which is supplied from the wireless coordinate pointing device to the electrodes by shifting the selected electrodes as a single-humped signal from the differential amplifier and detects a peak portion of the single-humped signal, and position coordinate specifying means for specifying coordinates based on a time at which the peak portion detecting means detects the peak portion and a timing at which the electrodes are selected;
- wherein one end of each of the plurality of x-axis electrodes and one end of each of the plurality of y-axis electrodes are always open, including during a time when the coordinate detection circuitry is being operated; and
- a display-coordinate detection changeover circuit which time-sharingly complementarily operates the x-axis drive circuit, the y-axis drive circuit, and the coordinate detection circuit.

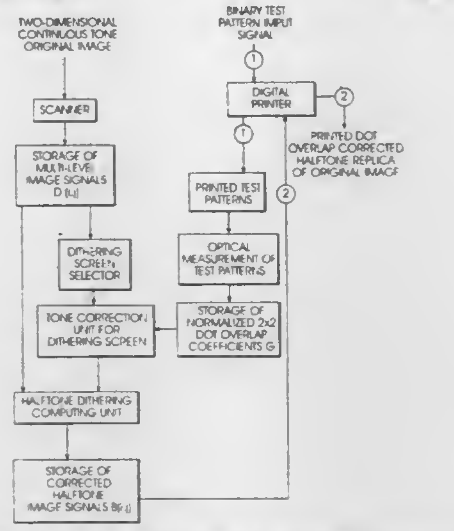
5,854,882
HALFTONE CORRECTION SYSTEMS

Shenge Wang, Fairport, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Continuation-in-part of Ser. No. 225,121, Apr. 8, 1994, Pat. No. 5,469,267. This application Nov. 7, 1995, Ser. No. 554,876

Int. Cl.^{6} G06F *15/00;* H04N *1/40;* G03F *3/08*

U.S. Cl. 395—109 56 Claims


TWO-DIMENSIONAL CONTINUOUS TONE ORIGINAL IMAGE
BINARY TEST PATTERN INPUT SIGNAL
①
SCANNER
DIGITAL PRINTER
②
STORAGE OF MULTI-LEVEL IMAGE SIGNALS D(i,j)
PRINTED TEST PATTERNS
PRINTED DOT OVERLAP CORRECTED HALFTONE REPLICA OF ORIGINAL IMAGE
DITHERING SCREEN SELECTOR
OPTICAL MEASUREMENT OF TEST PATTERNS
TONE CORRECTION UNIT FOR DITHERING SCREEN
STORAGE OF NORMALIZED 2x2 DOT OVERLAP COEFFICIENTS G
HALFTONE DITHERING COMPUTING UNIT
STORAGE OF CORRECTED HALFTONE IMAGE SIGNALS B(i,j)

1. A system for producing dot overlap corrected halftone images on a digital printer comprising:

- means for calibrating said printer with a set of test patterns to provide halftone correction information;
- means for receiving multi-level digital image signals representing a continuous-tone image;
- means for storing said multi-level digital image signals; and
- means for halftoning said multi-level digital image signals of the continuous-tone image using a screen corrected according to said halftone correction information to provide an overlap corrected halftone image at said digital printer, wherein said test patterns are independent of the screen corrected.

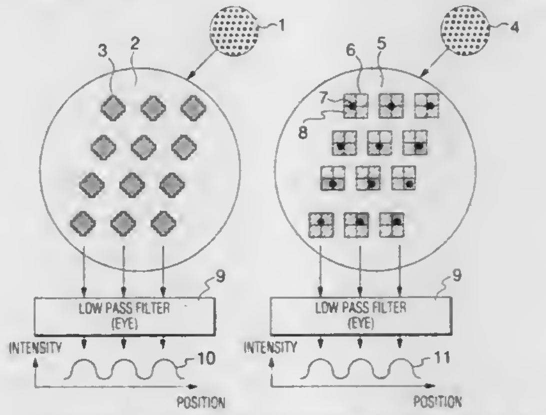
5,854,883
COLOR PROOFING METHOD PROVIDING ACCURATE VISUAL SIMULATION OF SCREENS

James Arthur Madeley, 4125 Trinity St., Burnaby, British Columbia, Canada, V5C-1N9

Filed Apr. 4, 1996, Ser. No. 630,914

Int. Cl.^{6} H04N *1/52*

U.S. Cl. 395—109 5 Claims



1. A color proofing method for pre-press proofing of binary halftone color printing capable of displaying artifacts caused by the halftoning process using halftone screens, comprising of the following steps:

- generating one electronic screen for each color used, using a sampling grid of lower resolution than said halftone screens, said samples on lower resolution grid having more than two density levels, while maintaining at least the fundamental frequency of said halftone screen and generating color composite proof from said electronic screens.

5,854,884
CHARACTER INFORMATION PROCESSOR FOR PRINTING CHARACTERS

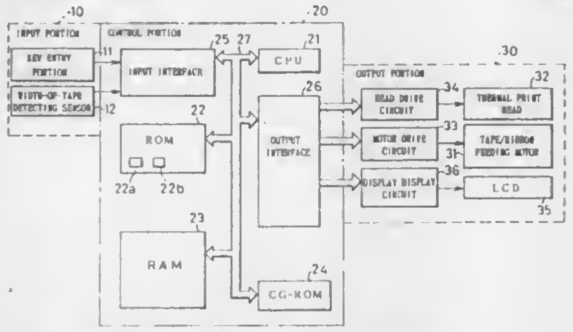
Kenji Watanabe; Takanobu Kameda; Chieko Aida; Tomoyuki Shimmura, all of Tokyo; Yoshiya Toyosawa, Suwa; Hiroyasu Kurashina, Suwa, and Takeshi Hosokawa, Suwa, all of Japan, assignors to King Jim Co., Ltd., and Seiko Epson Corporation, both of Japan

Division of Ser. No. 831,217, Apr. 2, 1997, Pat. No. 5,778,161, which is a division of Ser. No. 568,448, Dec. 7, 1995, Pat. No. 5,680,520. This application Oct. 1, 1997, Ser. No. 942,125

Claims priority, application Japan, Dec. 7, 1994, 6-303356; Dec. 7, 1994, 6-303357; Dec. 7, 1994, 6-303667; Dec. 7, 1994, 6-303669

Int. Cl.^{6} G06K *15/00*

U.S. Cl. 395—110 **1 Claim**



1. A character information processor comprising:

enclosing pattern designating means for designating one of a border enclosing pattern, which is used to enclose all of character strings of a paragraph, and a tabular-frame enclosing pattern consisting of a ruled line portion, which encloses all of the character strings of the paragraph, and a lateral ruled line, which extends along the character strings and is placed between the character strings, correspondingly to the paragraph;

storage means for storing a kind of the enclosing pattern, which is designated by the enclosing pattern designating means, and the character strings of the paragraph therein;

identification means for identifying kinds of the enclosing patterns stored in the storage means; and

print means for printing a predetermined connecting ruled line without individually printing a rear ruled line of a first paragraph and a front ruled line of a second paragraph subsequent to the first paragraph, when it is judged by the identification means that the enclosing patterns respectively corresponding to the first and second paragraphs are of a same kind.

5,854,885
TERMINAL APPARATUS

Koichi Abe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1996, Ser. No. 677,395

Claims priority, application Japan, Jul. 19, 1995, 7-205233

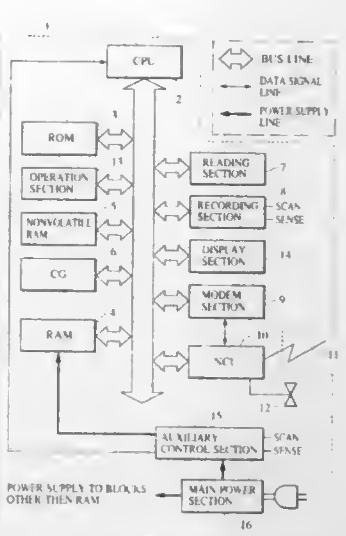
Int. Cl.^{6} B41B *15/00;* **H04N** *1/00*

U.S. Cl. 395—113 **24 Claims**

1. A terminal apparatus having at least one section, comprising:

a main power unit for supplying power to the at least one section of said apparatus;

an auxiliary power unit for supplying power to the at least one section of said apparatus;



storage means for storing information with the use of power supplied by at least one of said main power unit and said auxiliary power unit;

recording means provided with a detachable cartridge;

power supply control means for controlling said main power unit to supply power to said storage means in a normal operating state in which said main power unit operates, and for controlling said auxiliary power unit to supply power to said storage means in a backup operating state when said main power unit stops its operation;

monitoring means for monitoring a mounting state of the cartridge in the backup operating state in which said main power unit stops operating and said auxiliary power unit supplies power to said storage means, thereby generating information concerning the mounting state of the cartridge and whether the cartridge is changed; and

central control means for receiving the information concerning the mounting state of the cartridge and whether the cartridge is changed and for controlling said recording means in accordance with the received information and an operating state, wherein said central control means receives said information concerning the mounting state of the cartridge and whether the cartridge is changed after the backup operating state is terminated.

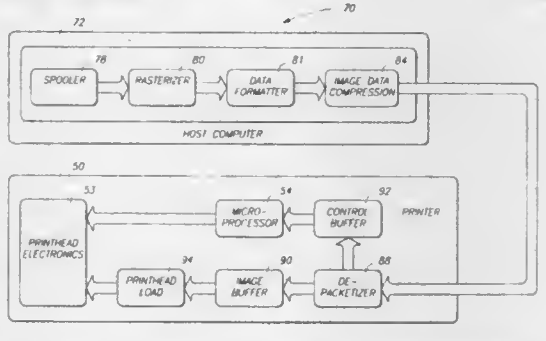
5,854,886
METHOD AND SYSTEM FOR PRINTING RASTERIZED DOCUMENTS

Leann M. MacMillan, West Linn, Oreg.; Huston W. Rice, Vancouver, Wash.; Bimal Pathak, Camas, Wash., and Mark R. Thackray, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 29, 1996, Ser. No. 626,223

Int. Cl.^{6} G06F *15/00*

U.S. Cl. 395—114 **5 Claims**



1. A method of printing a document image with a host computer and an associated printer, the printer having a printhead, the method comprising the following steps:

rasterizing the document image in the host computer to produce raster-formatted data representing the document image;

segregating the raster-formatted data into data swaths corresponding to swaths of the printer's printhead;

within each data swath, segregating the raster-formatted data into dot-column data blocks corresponding to printhead dot columns, wherein the printer accesses the dot-column data blocks in a particular order;

the host computer performing the segregating steps;

sending the dot-column data blocks to the printer in the particular order in which they are accessed by the printer; and

passing the dot-column data blocks to the printhead in the printer to control firing of the printhead without significantly reformatting the dot-column data blocks within the printer.

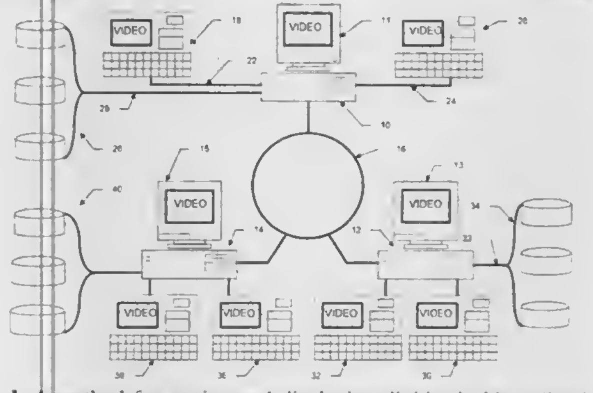
5,854,887
SYSTEM FOR THE MANAGEMENT OF MULTIPLE TIME-CRITICAL DATA STREAMS

Craig N. Kindell, Delray Beach; Kenneth L. Milsted; Michael P. Vogt, both of Boca Raton; Susan E. Waefler, Delray Beach, and Brian E. Yoder, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 283,030, Jul. 29, 1994. This application Oct. 24, 1996, Ser. No. 738,063

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.13 **1 Claim**



1. A method for storing and displaying digitized video clips in full motion on display devices coupled to computer systems connected to a distributed network, each computer system including a storage device and a plurality of components, each of said components being utilized in said storing and displaying of digitized video clips and having a current utilization level, the method comprising the steps of:

A. storing some of said digitized video clips on each storage device included in said computer systems coupled to said network;

B. storing a maximum utilization level for each computer system component included in a computer system in a configuration table located in a storage device included in said computer systems coupled to said network;

C. receiving a request to display a specific video clip on a specific display device;

D. determining a portion of each system component required to display said specific video clip on said specific display device;

E. adding the portion determined in step D to the current utilization level of said each system component to generate an adjusted current utilization level;

F. comparing said adjusted current utilization level to a maximum utilization level stored in step B; and

G. denying the request for said specific video clip if said adjusted current utilization level of any system component required to display said specific video clip exceeds a stored maximum utilization level for said required system component.

5,854,888
APPARATUS FOR DECODING CODE DATA AND PRINTING PIXEL DATA IN PARALLEL

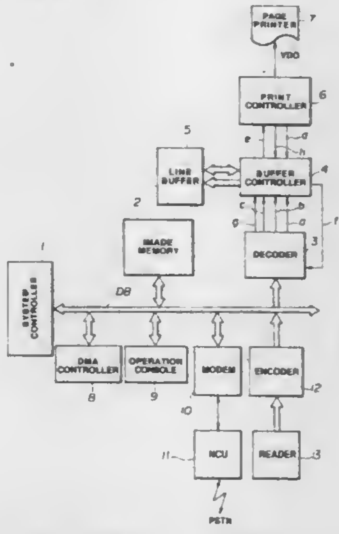
Yuji Ishikawa; Masao Kiguchi, both of Yokohama; Atsushi Ohtani; Nobuyuki Hirai, both of Tokyo, and Takeshi Toyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 22,699

Claims priority, application Japan, Mar. 31, 1992, 4-077363; May 21, 1992, 4-128859

Int. Cl.^{6} H04N *1/419*

U.S. Cl. 395—116 **14 Claims**



1. Image processing apparatus comprising:

decoding means for decoding code data to generate pixel data;

line buffer memory means for storing a plurality of lines of the pixel data from said decoding means; and

page printing means for printing each line of the pixel data, read from said line buffer memory means, for a page of an image, said page printing means printing each line in a constant time per line regardless of an information content of each line, wherein the decoding means decodes the code data for each line within a respective time shorter than the constant time regardless of the information content of each line.

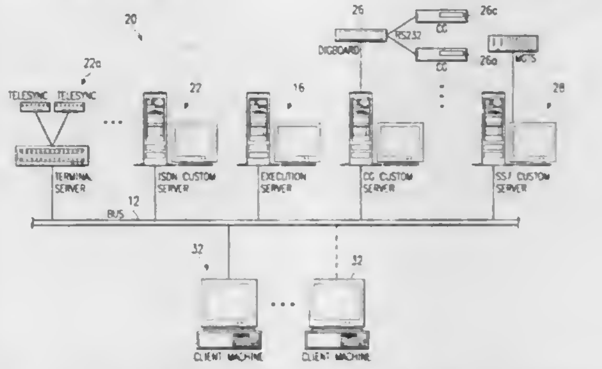
5,854,889
METHOD AND SYSTEM FOR HETEROGENEOUS TELECOMMUNICATIONS NETWORK TESTING

William R. Liese, Allen; Kevin K. Watson, Flower Mound, and David L. Florcik, Allen, all of Tex., assignors to MCI Worldcom, Inc., Ga.

Filed Jun. 26, 1996, Ser. No. 673,630

Int. Cl.^{6} G06F *11/263*

U.S. Cl. 395—183.19 **55 Claims**



55. A system for testing of a heterogeneous network, comprising:

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- a plurality of client machines on a network wherein each client machine of the plurality of client machines is capable of generating a plurality of test case requests to execute one or more test cases;
- an execution server on the network having a communications link with each of the plurality of client machines, wherein the plurality of client machines communicate with the execution server over the communications links; and
- at least one test equipment capable of performing testing of a heterogeneous network-under-test;
- a plurality of custom servers on the network having a communications link with the execution server and communicably linked to the at least one test equipment, wherein a custom server of the plurality of custom servers is capable of executing one or more test case types and each custom server of the plurality of custom servers is managed by the execution server,
- wherein the execution server selects a custom server of the plurality of custom servers to execute a requested test case of the plurality of test case requests by the at least one test equipment in order to perform a test of a heterogeneous network-under-test and routes the requested test case to the selected custom server for execution.

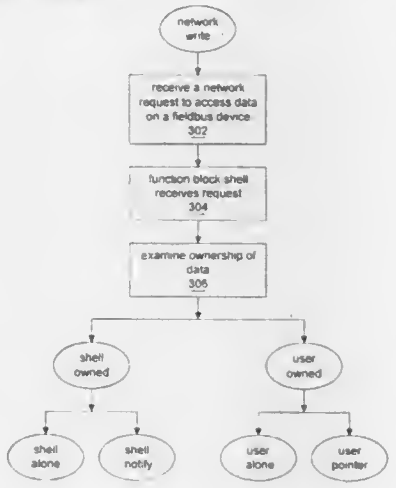
5,854,890
FIELDBUS FUNCTION BLOCK SHELL WITH USER SELECTABLE DATA OWNERSHIP

Ram Ramachandran; Sherwin Su; Mike Klopfer, and Donald B. Goff, all of Austin, Tex., assignors to National Instruments Corporation, Austin, Tex.

Filed Oct. 18, 1996, Ser. No. 730,909

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—187.01 **28 Claims**


network write
receive a network request to access data on a fieldbus device
302
function block shell receives request
304
examine ownership of data
306
shell owned
user owned
shell alone
shell notify
user alone
user pointer

1. A method for accessing data on a fieldbus device in a fieldbus network, wherein the fieldbus device includes a user application executing on the fieldbus device, wherein the user application comprises a function block application executing on the fieldbus device, wherein the fieldbus device stores a plurality of block parameters, wherein the fieldbus device further includes a shell executing on the fieldbus device, the method comprising:

- the user application registering an ownership attribute with each of the block parameters with the shell;
- receiving a request to access data on a fieldbus device after said registering;
- determining an ownership attribute of the data, wherein possible ownership attributes include user owned or shell owned;
- the shell accessing the data in response to determining that the ownership attribute of the data is shell owned; and
- the user application accessing the data in response to determining that the ownership attribute of the data is user owned.

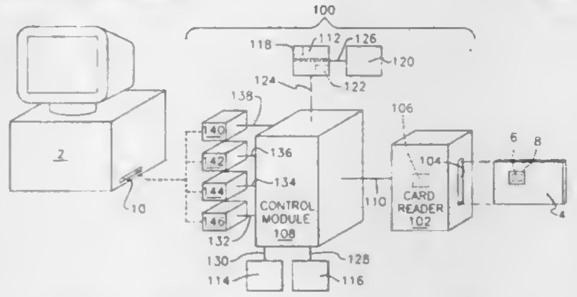
5,854,891
SMART CARD READER HAVING MULTIPLE DATA ENABLING STORAGE COMPARTMENTS

William M. Postlewaite; Kim J. Vogel, both of Tarpon Springs; Jason Maynard, and Vincent Poole, both of Tampa, all of Fla., assignors to Tritheim Technologies, Inc., Tarpon Springs, Fla.

Filed Aug. 9, 1996, Ser. No. 694,882

Int. Cl.^{6} G06F *11/00*

U.S. Cl. 395—188.01 **9 Claims**



1. A security device for enabling selected functions to be performed to protected programs or data contained in memory in computers, or other functions performed by or within a computer connected to said security device, said security device comprising:

- a smart card reader having means for communicating with a smart card having memory;
- a control module having a segmented non-volatile memory, said segmented non-volatile memory including a plurality of segments of non-volatile memory, means for selectively entering enabling data into said plurality of segments of non-volatile memory from a plurality of smart cards, through said smart card reader, recognition means for detecting enabling data entered into each segment of said plurality of segments of non-volatile memory, processing means for enabling execution commands to be operably communicated to selected protected programs or data contained in the memory of a computer connected to said security device responsive to detection of enabling data by said recognition means, processing means for enabling execution commands to allow operation of a computer or specific functions of the computer connected to said security device, and disabling means for preventing execution commands originating at the connected computer to be recognized by said processing means absent detection of enabling data by said recognition means; and
- interface means for enabling communication between said control module, said interface means, and a computer connected to said interface means, said interface means including at least one type of interface apparatuses connectable to computers;
- whereby a computer user having multiple protected application programs that will not run, unless a physical smart card carrying unlocking means is physically inserted into a smart card reader, may successively physically insert a plurality of physical smart cards into said smart card reader a single time because said unlocking means of each physical smart card is copied and stored in a segment of non-volatile memory in said control module as a virtual smart card and is activated when needed in the absence of a need to reinsert its associated physical smart card.

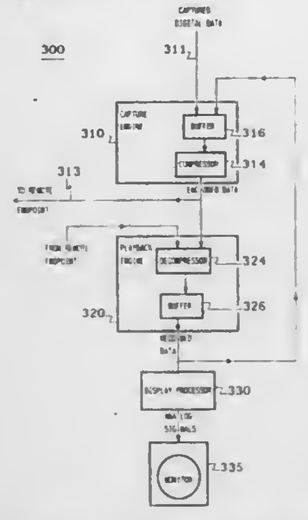
5,854,892
VIDEO CONFERENCING DECODER ENGINE WITH DIRECT SIGNALING TO ENCODER ENGINE FOR RELAYING OF DECODED DATA

Christina K. Liu, Oakland, Calif.; Yung D. Nguyen, Portland, and Judith A. Goldstein, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 3, 1996, Ser. No. 642,328

Int. Cl.^{6} H04M *3/56*

U.S. Cl. 395—200.34 **12 Claims**



1. A method for processing data, the method comprising the steps of:

- (a) receiving encoded video conference data from a remote computer system over a network with a playback engine of a computer system participating with the remote computer system in a video conference over the network;
- (b) decoding the encoded data with a decoder of the playback engine and storing the decoded data in a playback engine buffer;
- (c) notifying, with the playback engine, a capture engine of the computer system to encode the decoded data;
- (d) copying the decoded data in the playback engine buffer into a capture engine buffer in response to the notification;
- (e) encoding the decoded data in the capture engine buffer with an encoder of the capture engine; and
- (f) retransmitting, with the capture engine, the encoded data encoded by the encoder of the capture engine to a second remote computer system participating in the video conference over the network.

5,854,893
SYSTEM FOR TELECONFERENCING IN WHICH COLLABORATION TYPES AND PARTICIPANTS BY NAMES OR ICONS ARE SELECTED BY A PARTICIPANT OF THE TELECONFERENCE

Lester F. Ludwig, Foster City; J. Chris Lauwers, Menlo Park; Keith A. Lantz, Los Altos; Gerald J. Burnett, Atherton, all of Calif., and Emmett R. Burns, Incline Village, Nev., assignors to Collaboration Properties, Inc., Incline Village, Nev.

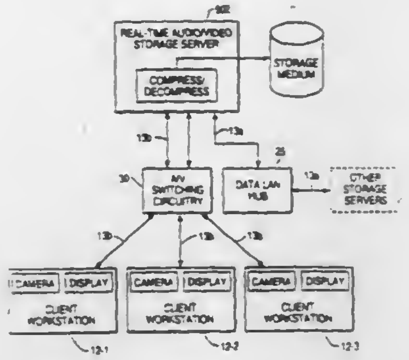
Division of Ser. No. 131,523, Oct. 1, 1993, Pat. No. 5,689,641. This application Jun. 10, 1996, Ser. No. 660,880

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.34 **24 Claims**

1. A teleconferencing system for conducting a teleconference among a plurality of participants comprising:

- (a) a plurality of video display devices each having associated
  - (i) participant video capture capabilities, and
  - (ii) participant audio
    - (1) capture and
    - (2) reproduction capabilities; and
- (b) at least one communication path



  - (i) along which signals
    - (1) representing participant audio and video
  - (ii) can be transmitted; wherein the system is configured to display,
  - (i) a first and a second set of potential participants in which
    - (1) the first set includes names of potential participants and
    - (2) the second set includes icons representing potential participants, and
  - (ii) a set of collaboration types; wherein the system is further configured to allow a selecting participant
  - (i) to initiate
    - (1) collaboration
  - (ii) by selecting
    - (1) one or more participants
      - i. from the displayed sets of potential participants, and
    - (2) at least one collaboration type
      - i. from the displayed set of collaboration types, and thereby
  - (iii) establish communication
    - (1) of the selected type,
    - (2) with each selected participant.

5,854,894
MULTI-MEDIA SERVICES SYSTEM

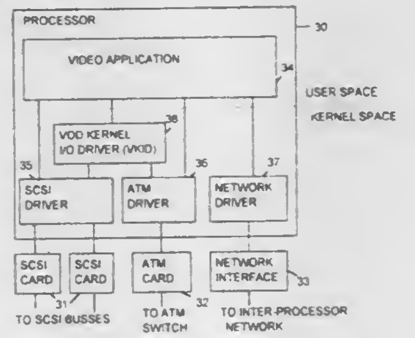
Rodney Peter Lancaster, Heaton Mersey; Ian Lowrey, Burnage; Paul Jason Rogers, Rawtenstall, and Nigel Kenneth Sinfield, Hadfield, all of Great Britain, assignors to International Computers Limited, London, United Kingdom

Filed Jul. 10, 1996, Ser. No. 677,770

Claims priority, application United Kingdom, Jul. 26, 1995, 9515336

Int. Cl.^{6} G06F *9/06*

U.S. Cl. 395—200.43 **9 Claims**



1. A multi-media services system comprising at least one server and a plurality of subscriber units connected to the server by way of a network, wherein the server comprises a processing unit, data storage means, and service supply means for responding to requests from subscribers by dispatching sequences of data from said storage means over the network to said subscribers, characterised in that said service supply means comprises a controlling application running in user space in the processing unit, and a pseudo device driver running in kernel space in the processing unit, for reading data from said data storage means and dispatching

the data to said network, in response to commands from said controlling application, without copying the data to and from user space.

5,854,895
NETWORK DISTRIBUTION INFORMATION MANAGEMENT SYSTEM

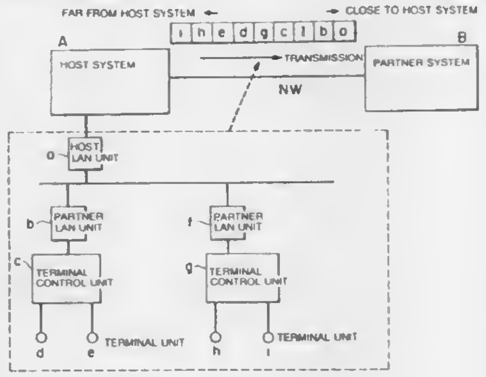
Toshihide Nishina; Haruo Makimoto; Yasuhiro Okazaki, and Hidehiko Kanayama, all of Kobe, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 7, 1995, Ser. No. 418,678

Claims priority, application Japan, Jul. 6, 1994, 6-154436

Int. Cl.^{6} G06F *15/177*

U.S. Cl. 395—200.51 **32 Claims**



32. A communication system comprising:

a network; and

a plurality of information processing units connected to the network, each information processing unit including a database for storing information, a duplicate of the information being distributed to each of the other information processing units, wherein each respective information processing unit modifies the information in its database,

extracts a differential of the information before modification and the information after modification, and

transfers the differential to each of the other information processing units in accordance with a hierarchical positional relationship of said other information processing units and a proximity, along the network, of each of said other information processing units to the respective information processing unit wherein the differential is definition information.

5,854,896
SYSTEM FOR PRESERVING LOGICAL PARTITIONS OF DISTRIBUTED PARALLEL PROCESSING SYSTEM AFTER RE-BOOTING BY MAPPING NODES TO THEIR RESPECTIVE SUB-ENVIRONMENTS

Larry Bert Brenner, Austin, Tex.; Kenneth Charles Briskey, Hyde Park, and Krystal Kay Rothaupt, Rhinebeck, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

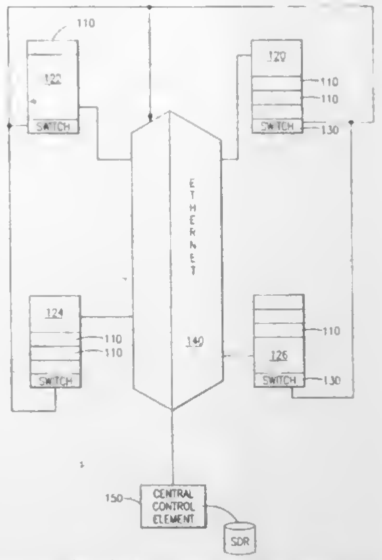
Filed Jun. 17, 1996, Ser. No. 664,577

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.51 **25 Claims**

1. In a distributed parallel processing system environment having a plurality of nodes connected to one another via a network in a manner as to form a single system unit initially, said environment being then logically partitioned into at least two sub-environments, a method of preserving said logical partitions after re-booting, said method comprising the steps of:

controlling and maintaining all communications and status information between nodes through a central control element connected to said nodes via said network;



storing all system data in a system data repository located in said central control element;

using said stored data, creating a special configuration object class file in said system data repository, said object class file mapping said nodes to their respective sub-environments; and

retrieving any portion of said system data relating to configuration and providing it to each node after rebooting completion.

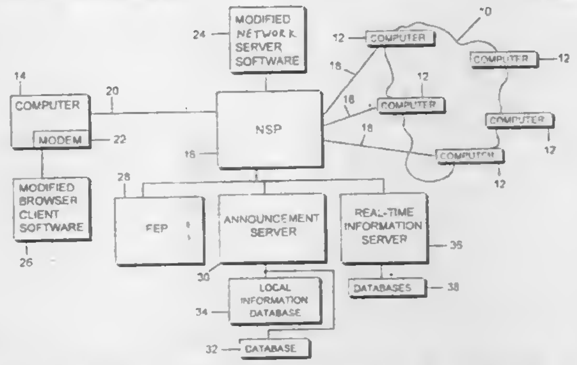
5,854,897
NETWORK COMMUNICATIONS MARKETING SYSTEM

Clifford J. Radziewicz, Belle Mead; Mark R. Gregorek, Mahwah, and Jeffrey C. Dillow, Sparta, all of N.J., assignors to Quantum Systems, Inc., Ramsey, N.J.

Filed Dec. 27, 1996, Ser. No. 774,985

Int. Cl.^{6} G06F *15/16*

U.S. Cl. 395—200.54 **71 Claims**



1. A marketing system for displaying an announcement at a network terminating device connected to a communications network by way of a network service provider (NSP), the system comprising:

browser client program including a display window executing on the network terminating device for allowing the network terminating device to communicate with other devices on the communications network, the NSP providing the network terminating device access to the communications network;

a network server program operating on the NSP for handling communications with the network terminating device and other devices on the communications network;

a connection path for connecting the network terminating device with the NSP and allowing communications therebetween;

a traffic monitor for monitoring the connection path to determine when the connection path is idle, the connection path being idle when the network terminating device is not sending or receiving any information over the connection path; and

an announcement server connected to the NSP for transmitting at least one announcement to the network terminating device by way of the NSP, wherein the network server program transmits the at least one announcement from the announcement server to the network terminating device when the connection path is idle as determined by the traffic monitor.

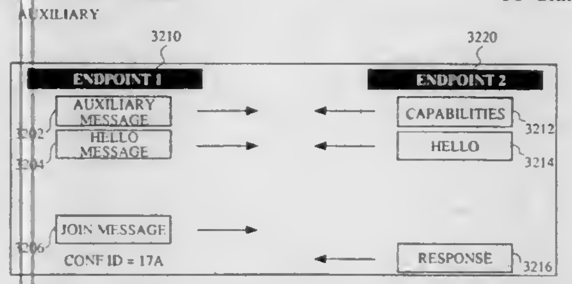
5,854,898
SYSTEM FOR AUTOMATICALLY ADDING ADDITIONAL DATA STREAM TO EXISTING MEDIA CONNECTION BETWEEN TWO END POINTS UPON EXCHANGE OF NOTIFYING AND CONFIRMATION MESSAGES THEREBETWEEN

Guy G. Riddle, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 24, 1995, Ser. No. 396,198

Int. Cl.^{6} G06F *15/16*

U.S. Cl. 395—200.61 **38 Claims**



1. An automatic method for adding an additional data stream to an existing media source between two endpoints comprising the following steps:

a. a first endpoint identifying the availability of said additional data stream to a second endpoint via a first message containing a reference to said existing media source;

b. said first endpoint notifying said second endpoint of the desire to connect to provide said additional data stream via a second message;

c. said second endpoint notifying said first endpoint of confirmation to connect via a third message; and

d. said first and said second endpoint establishing communication to provide said additional data stream to said second endpoint, said additional data stream being associated in said first endpoint and said second endpoint with said existing media source.

5,854,899
METHOD AND APPARATUS FOR MANAGING VIRTUAL CIRCUITS AND ROUTING PACKETS IN A NETWORK/SUBNETWORK ENVIRONMENT

Ross W. Callon, Bedford; William M. Salkewicz, Chelmsford, both of Mass.; Andrew H. Smith, and Asher Waldfogel, both of Palo Alto, Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Filed May 9, 1996, Ser. No. 647,295

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.68 **15 Claims**

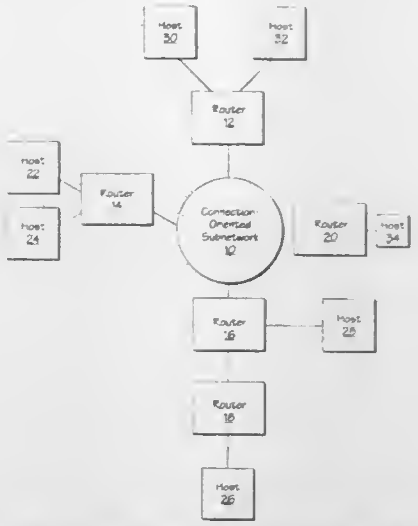
1. A method for managing virtual circuits in a network having a connection-oriented subnetwork, said method comprising the steps of:

determining existing paths to an exit router;

determining existing path qualities associated with each of said paths to said exit router;

determining an optimal path quality associated with an optimal path to said exit router; and

determining a benefit and a cost associated with rerouting an existing virtual circuit; and



rerouting said existing virtual circuit if said optimal path quality exceeds said existing path qualities and said benefit exceeds said cost associated with modifying an existing virtual circuit.

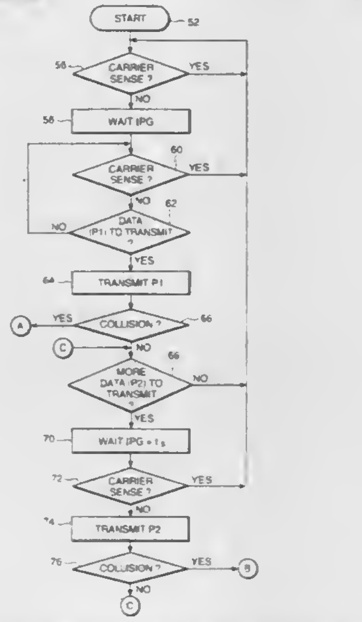
5,854,900
METHOD AND APPARATUS AVOIDING CAPTURE EFFECT BY ADDING A SLOT TIME TO AN INTERPACKET GAP INTERVAL IN A STATION ACCESSING AN ETHERNET NETWORK

Mohan Kalkunte, Sunnyvale, and Jim Mangin, San Ramon, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 31, 1996, Ser. No. 656,491

Int. Cl.^{6} H04L *12/413*

U.S. Cl. 395—200.68 **17 Claims**



1. A method of accessing media of an Ethernet network, comprising:

transmitting a first data packet from a network station onto the media;

detecting if the network station has a second data packet for transmission onto the media upon successful completion of the first packet transmission;

waiting after the transmitting step a delay time, including a predetermined interpacket gap interval and one slot time, if the detecting step detects said second data packet; and

attempting access of the media by the network station in response to the delay time.

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5,854,901

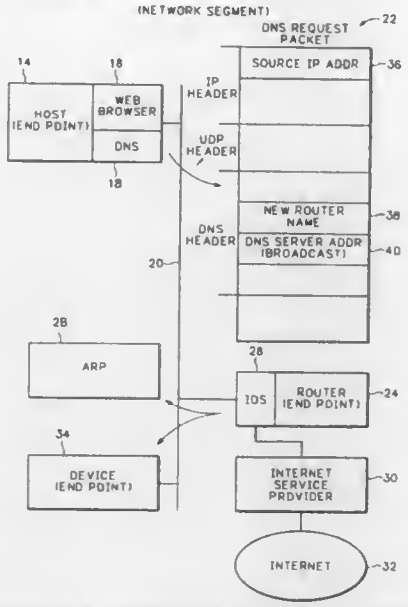
METHOD AND APPARATUS FOR SERVERLESS INTERNET PROTOCOL ADDRESS DISCOVERY USING SOURCE ADDRESS OF BROADCAST OR UNICAST PACKET

Bruce A. Cole, Mountain View, and James Ronald Forster, Los Altos, both of Calif., assignors to Cisco Systems, Inc., San Jose, Calif.

Filed Jul. 23, 1996, Ser. No. 685,043

Int. Cl.^{6} H04L *12/00*

U.S. Cl. 395—200.75 **22 Claims**



1. A method for an endpoint on a network to self-discover an unused address on a network segment and self-assign the unused address to itself, comprising:

listening for a network packet broadcast or unicast from a host system, the host system being another endpoint on the network, the network packet including a source address of the host system wherein the network packet is a type of packet that is predefined in an internet operating system of the network;

using the source address of the host system as a seed for generating a proposed address for the endpoint;

requesting an address resolution response from any device on the network having an assigned address matching the proposed address; and

assigning the proposed network address to the endpoint when no device on the network responds to the address resolution request.

5,854,902

VIDEO DATA CAPTURE AND FORMATTING IN INTELLIGENT VIDEO INFORMATION MANAGEMENT SYSTEM

Charles Park Wilson; Chris Harvey Pedersen, Jr., both of Santee; Alex Kamlun Auyeung, Poway, and David Ross MacCormack, San Diego, all of Calif., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Oct. 31, 1996, Ser. No. 741,983

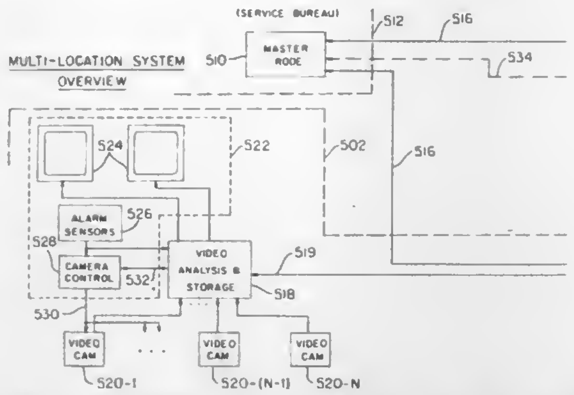
Int. Cl.^{6} H04N *9/79*

U.S. Cl. 395—200.77 **51 Claims**

1. Apparatus for storing video signals, comprising:

a plurality of video cameras, including at least four video cameras;

first, second and third video decoding circuits each for receiving a field of a video signal generated by a respective one of said video cameras currently connected to the video decoding circuit and for extracting luminance, chrominance and reference signal components from the received video signal;



means for selectively connecting each of said video decoding circuits to every one of said plurality of video cameras;

first and second signal conversion circuits, each for converting into digital form the luminance and chrominance signal components extracted by a respective one of said video decoding circuits currently connected to the signal conversion circuit;

means for selectively connecting each of said signal conversion circuits to every one of said first, second and third video decoding circuits;

first storage means connected to said first signal conversion circuit for sequentially storing fields of said luminance and chrominance signal components converted into digital form by said first conversion circuit; and

second storage means connected to said second signal conversion circuit for sequentially storing fields of said luminance and chrominance signal components converted into digital form by said second conversion circuit.

5,854,903

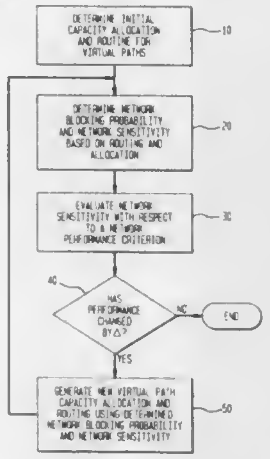
OPTIMIZATION METHOD FOR ROUTING AND LOGICAL NETWORK DESIGN IN MULTI-SERVICE NETWORKS

John A. Morrison, New Providence; Kajamalal Goplaswamy Ramakrishnan, Berkeley Heights, and Debasis Mitra, Summit, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 7, 1995, Ser. No. 554,502

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—200.79 **54 Claims**


DETERMINE INITIAL CAPACITY ALLOCATION AND ROUTINE FOR VIRTUAL PATHS
10
DETERMINE NETWORK BLOCKING PROBABILITY AND NETWORK SENSITIVITY BASED ON ROUTING AND ALLOCATION
20
EVALUATE NETWORK SENSITIVITY WITH RESPECT TO A NETWORK PERFORMANCE CRITERION
30
40
HAS PERFORMANCE CHANGED BY Δ?
NO
END
YES
GENERATE NEW VIRTUAL PATH CAPACITY ALLOCATION AND ROUTING USING DETERMINED NETWORK BLOCKING PROBABILITY AND NETWORK SENSITIVITY
50

1. A method for logical network design in a multi-service communications network, said network including a set of switching nodes and a set of connecting links disposed to interconnect at least some of said nodes, comprising the steps of:

determining blocking probabilities of a plurality of services for a subset of said set of links;

determining sensitivities of network performance as a function of offered loads for a plurality of services and transmission rates: and

adjusting said network performance based on said sensitivities and said blocking probabilities;

wherein said steps of determining blocking probabilities and determining network performance sensitivities include a computational substep of applying successive asvmptotic approximations, said substep operating to reduce computational complexity for said steps.

5,854,904

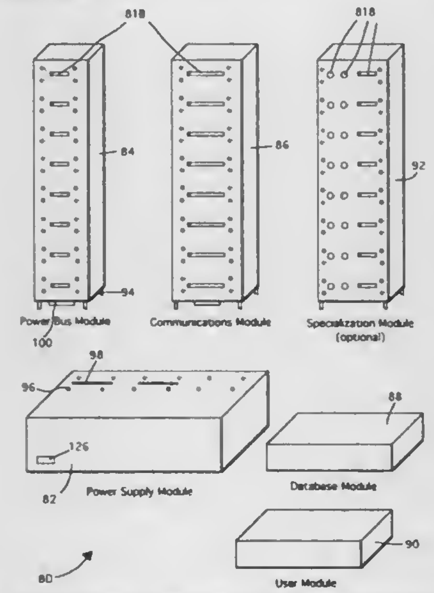
OBJECT-ORIENTED MODULAR ELECTRONIC COMPONENT SYSTEM

Erik Lee Brown, 1584 Hartford Turnpike Apt. #2, Oakdale, Conn. 06370

Filed Oct. 15, 1996, Ser. No. 730,180

Int. Cl.^{6} G06F *1/16*

U.S. Cl. 395—280 **17 Claims**



1. An object-oriented modular electronic component system comprising:

a plurality of self-contained operating modules, each having internal electronic apparatus and external mechanical and electromagnetic means for interconnecting said internal electronic apparatus to said internal electronic apparatus of others of said operating modules including:

a user module for performing a specific end function;

a database module for identifying the presence, location, and function of each of said operating modules of said system;

a communications module for transmitting digital electromagnetic messages among said operating modules;

a power supply module for providing electrical power to said operating modules; and

power bus means for delivering power from said power supply module to said operating modules, said power bus means including a power bus module having external mechanical and electromagnetic interconnecting means for mechanical and electromagnetic interconnection with said power supply module, with said database module, and with each of said user modules;

said communications module and said power bus module being integrated as a unit and having external mechanical and electromagnetic interconnecting means for mechanical and electromagnetic interconnection with said power supply module, with said database module, and with each of said user modules;

said communications module, said power supply module, said data base module, and said user module all being capable of being selectively operatively releasably connected as a unit. mechanically and electromagnetically, said modules all being electromagnetically disconnected in an inoperative mode and being electromagnetically connected in an operative mode:

whereby configuration and operation of said modular object-oriented electronic component system may be achieved without accessing said internal electronic apparatus of any of said operating modules.

5,854,905

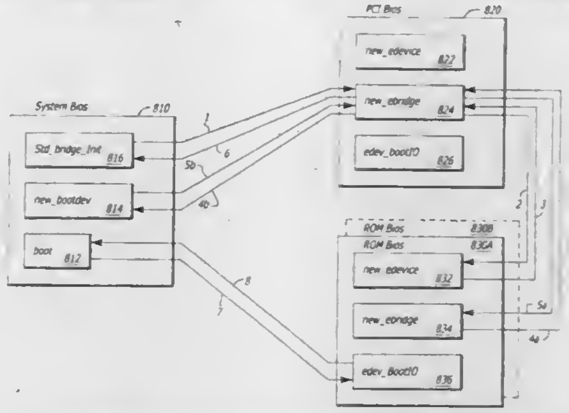
EXTENSIBLE BIOS FOR BOOT SUPPORT OF DEVICES ON MULTIPLE HIERARCHICAL BUSES

John I. Garney, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 3, 1996, Ser. No. 707,333

Int. Cl.^{6} G06F *9/24*

U.S. Cl. 395—284 **15 Claims**



1. A computer system having a system BIOS, a CPU, a first bus, an add-in bus and an extended bridge coupling said add-in bus and said first bus, an apparatus for extending boot support to devices connected to said add-in bus, said apparatus comprising:

an extensible BIOS support coupled to said system BIOS: and

a bus-specific extensible BIOS coupled to said system BIOS, wherein said bus-specific extensible BIOS carries specifications unique to said add-in bus enabling said system BIOS and said extensible BIOS support to identify and initialize boot devices coupled to said add-in bus, said boot devices not requiring modification to support said extensible BIOS support.

5,854,906

METHOD AND APPARATUS FOR FAST-FORWARDING SLAVE REQUEST IN A PACKET-SWITCHED COMPUTER SYSTEM

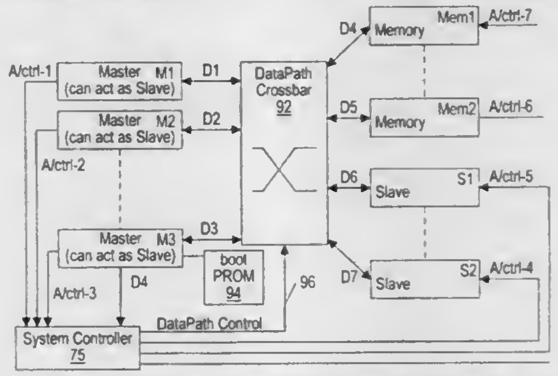
William C. Van Loo, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Moutainview, Calif.

Continuation of Ser. No. 498,729, Jul. 6, 1995, abandoned.

This application Oct. 30, 1997, Ser. No. 960,999

Int. Cl.^{6} G06F *13/00*

U.S. Cl. 395—290 **4 Claims**



1. A control system for controlling transaction flow in a computer system having at least one processor with at least one master device. a main memory. and a plurality of slave devices. each said

slave device being coupled to said at least one processor via at least one address bus, the control system including:

first logic configured to process transaction requests according to predetermined criteria and to forward said transaction requests to respective designated slave devices whenever said predetermined criteria are met wherein said predetermined criteria include whether each of said respective designated slave devices has available space in an associated input request queue to receive a particular transaction request; and

second logic configured to determine whether a first said transaction request is directed to a first said slave device on the same address bus as the processor issuing said first transaction request, and if so to issue a validity signal to said first slave device indicating, if said predetermined criteria are met, that said first transaction request is valid for said first slave device to process, where the first transaction request is provided to said first slave device when said first request is being provided to said first logic, to avoid delay in processing once the validity signal is received by said first slave device.

5,854,907

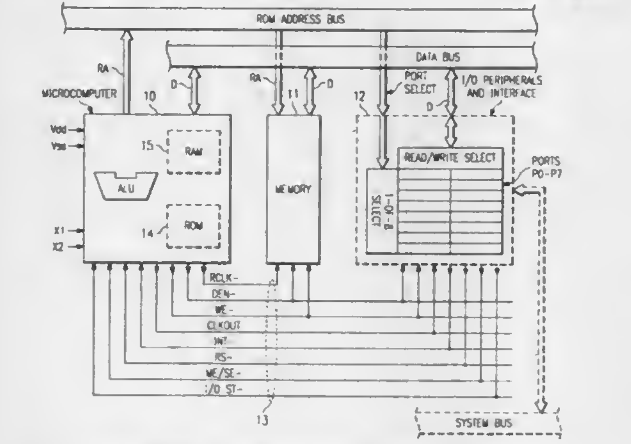
MICROCOMPUTER FOR DIGITAL SIGNAL PROCESSING HAVING ON-CHIP MEMORY AND EXTERNAL MEMORY ACCESS

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 797,854, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 468,490, Jan. 23, 1990, abandoned, which is a division of Ser. No. 841,123, Mar. 18, 1986, abandoned, which is a continuation of Ser. No. 350,852, Feb. 22, 1982, Pat. No. 4,577,282. This application Jul. 8, 1994, Ser. No. 272,729

Int. Cl.^{6} G06F *13/36*

U.S. Cl. 395—308 **10 Claims**



1. A microcomputer for processing comprising:

a semiconductor substrate having terminals for connecting to external circuitry;

a first bus extending across a portion of said semiconductor substrate and including plural conductors operative to carry data bits in parallel;

a data memory connected to said first bus and located on said semiconductor substrate;

a second bus including plural conductors for carrying address bits in parallel and for connection to said external circuitry by said terminals;

an instruction memory connected to said second bus and located on said semiconductor substrate;

a third bus including plural conductors for carrying bits in parallel and for connection to said external circuitry by said terminals separate from said second bus;

a hardware multiplier and an arithmetic logic unit, both located on said semiconductor substrate and both having inputs and outputs interconnected with each other and said first bus; and

a control circuit located on said semiconductor substrate and coupled to said memories, said hardware multiplier and said arithmetic logic unit, and wherein said control circuit has a first mode and a second mode and includes an input for receiving a mode signal for selecting between said first mode and second mode, and said control circuit in said first mode sends an address to access said instruction memory for an instruction and decodes said instruction and in said second mode sends said address to said second bus independent of said first and third busses and receives from said third bus any externally supplied instruction, instead of accessing said instruction memory.

5,854,908

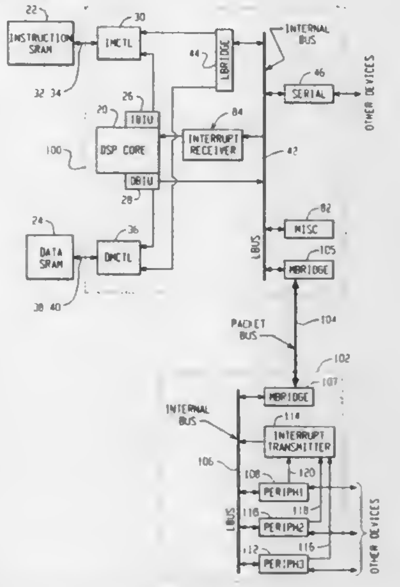
COMPUTER SYSTEM GENERATING A PROCESSOR INTERRUPT IN RESPONSE TO RECEIVING AN INTERRUPT/DATA SYNCHRONIZING SIGNAL OVER A DATA BUS

Clarence Rosser Ogilvie, Huntington, and Paul Colvin Stabler, South Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1996, Ser. No. 732,790

Int. Cl.^{6} H01J *13/00*

U.S. Cl. 395—308 **20 Claims**



10. A processing system, comprising:

(a) a processor;

(b) a memory circuit in circuit communication with said processor

(c) a first bridge circuit in circuit communication with said memory circuit and a bus, said first bridge circuit interfacing between said memory circuit and said bus;

(d) at least one peripheral circuit in circuit communication with said bus, said at least one peripheral circuit for receiving data from an external circuit, said at least one peripheral circuit transmitting the received data across said bus to said memory circuit via at least said first bridge circuit, said at least one peripheral circuit transmitting said received data across said bus in at least one portion including a final portion, said at least one peripheral circuit transmitting a predetermined interrupt data signal onto said bus after transmitting the final portion of the received data onto said bus;

(e) an interrupt circuit in circuit communication with said processor via an interrupt bus; and

(f) a second bridge circuit in circuit communication with said interrupt circuit and said bus, said second bridge circuit interfacing between said interrupt circuit and said bus; and

wherein said interrupt circuit generates an interrupt signal to said processor across said interrupt bus responsive to receiving the predetermined interrupt data signal from said bus via said second bridge circuit, thereby assuring that said processor is interrupted after the final portion of the received data is stored in said memory circuit;

wherein said first and second bridge circuits have different addresses on said bus, said at least one portion of the received data is addressed to said first bridge circuit to be sent to said memory circuit, and said predetermined interrupt data signal is addressed to said second bridge circuit to be sent to said interrupt circuit;

wherein said bus includes a data acknowledge protocol in which said first bridge will not acknowledge a transfer of the final portion of the received data until said final portion can be contemporaneously written to said memory circuit;

wherein said interrupt bus comprises a plurality of bus lines;

wherein said at least one peripheral device comprises a plurality of peripheral circuits in circuit communication with said bus, with each of said peripheral devices transmitting data to said memory circuit across said bus;

wherein each of said peripheral devices transmits the received data across said bus to said memory circuit via at least said first bridge circuit, each of said peripheral circuits transmits said received data across said bus in at least one portion including a final portion, and each of said peripheral circuits transmits a predetermined interrupt data signal onto said bus after transmitting the final portion of the received data onto said bus;

wherein said interrupt bus comprises a plurality of interrupt bus lines and, responsive to receiving a most recently received predetermined interrupt data signal transmitted by one of said peripheral circuits, said interrupt circuit generates on said plurality of interrupt bus lines a distinctive predetermined interrupt signal corresponding to the one of said peripheral circuits that transmitted the most recently received predetermined interrupt data signal;

wherein there is another bus and an associated other bridge between said at least one peripheral circuit and said bus; and

wherein the at least one portion of received data is at least partially pipelined between said peripheral device and said memory circuit.

5,854,909

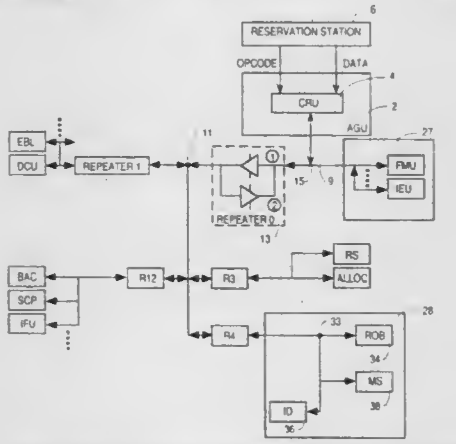
TEST AND CONTROL ACCESS ARCHITECTURE FOR AN INTEGRATED CIRCUIT

Sumeet Agrawal, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 1995, Ser. No. 535,979

Int. Cl.^{6} G06F *13/38;15/00*

U.S. Cl. 395—309 **19 Claims**



19. A pipelined data processing apparatus having a central logic unit and one or more peripheral logical units, said data processing apparatus comprising:

bidirectional data bus for coupling said central logic unit to said peripheral logic units;

a first pipelined stage, coupled to said bidirectional bus device, said first stage further being coupled to an instruction memory device for storing source instructions, said first stage including a device for fetching and decoding each source instruction stored in said instruction memory device and generating an address signal, a CR read signal, and a CR write signal;

a second pipelined stage, coupled to said first pipeline stage, said second pipelined stage having a device for coupling said CR read signal onto a data bus, first multiplexer for selecting between a control register data and source 1 data, said second pipelined stage further having means for generating a control register read signal

a third pipelined stage having means for coupling a CR write to said data bus and write control register signal to an address bus.

5,854,910

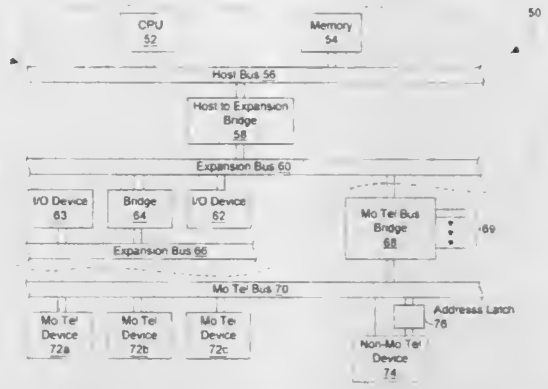
METHOD FOR ACCESSING CONTROL AND STATUS REGISTERS ACROSS A PEER-PEER BUS

Dale E. Gulick, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 21, 1996, Ser. No. 733,941

Int. Cl.^{6} G06F *13/00;13/38*

U.S. Cl. 395—309 **30 Claims**



1. A method for performing a data transfer to one of a plurality of peripheral devices in a computer system, the computer system comprising a first bus, a bus bridge for coupling to the first bus and for interfacing to a second bus, the second bus coupled to the bus bridge, and a plurality of peripheral devices connected to the second bus, the method comprising:

activating a register access source port in the bus bridge to configure the register access source port in the bus bridge for a transfer, wherein said register access source port is used for transfers from the bus bridge to a target peripheral device;

the bus bridge receiving an address from the first bus, wherein said receiving an address includes storing said address in a register, wherein said address is a target address identifying a target register in said target peripheral device;

the bus bridge transmitting one or more command messages to the target peripheral device including the address of the target register in the target peripheral device;

the bus bridge receiving data from the first bus, wherein said receiving data includes storing said data in a buffer in the bus bridge, wherein said data is intended for said target register in said target peripheral device; and

the bus bridge transmitting one or more address/data pairs to a destination port of said target peripheral device, wherein said one or more address/data pairs each includes an address of said destination port in said target peripheral device and said data received from the first bus, wherein said transmitting is performed in response to storing said data in said buffer in the bus bridge.

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5,854,911

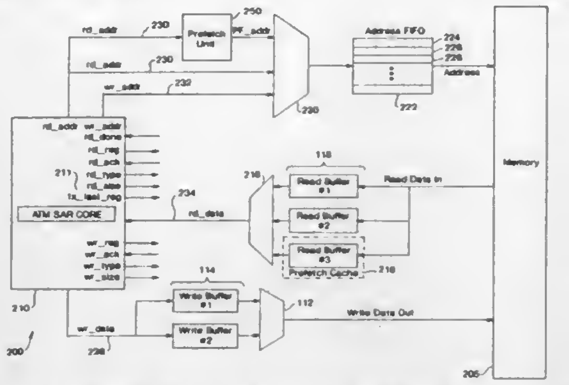
DATA BUFFER PREFETCH APPARATUS AND METHOD

John E. Watkins, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 1, 1996, Ser. No. 675,263

Int. Cl.^{6} G06F *13/12;13/14*

U.S. Cl. 395—383 **22 Claims**



1. In a computer network, a prefetch apparatus for optimizing data block access bandwidth by prefetch accessing a data block prior to demand, the prefetch apparatus comprising:

- circuitry configured to compute a prefetch address of a next sequential data block given an address of a requested data block;
- circuitry configured to compare a current request address against a previously computed prefetch address;
- circuitry configured to generate a hit/miss indication corresponding to whether the current request address matches the previously computed prefetch address
- circuitry configured to retain prefetched data in at least one of a plurality of read data buffers; and
- circuitry configured to control one of said plurality of read data buffers to allow said prefetched data retaining circuitry to have access to said controlled read data buffer,
- said controlled read data buffer rotating its position amongst said plurality of read data buffers.

5,854,912

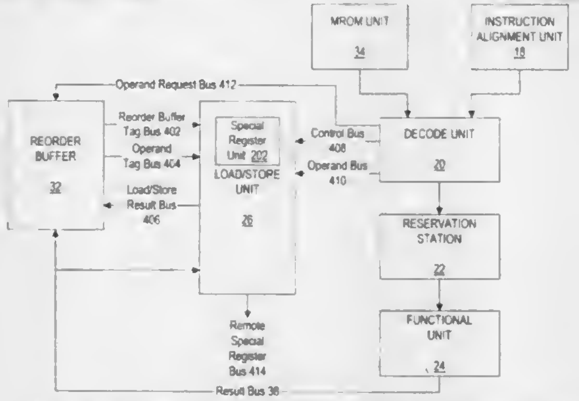
FLEXIBLE RESOURCE ACCESS IN A MICROPROCESSOR

Rupaka Mahalingaiah, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 12, 1997, Ser. No. 874,031

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—384 **21 Claims**



1. A microprocessor with flexible resource access comprising:

- a decode unit configured to decode a first operand field of an instruction, wherein said first operand field identifies a primary register or a pointer to a plurality of special registers; and
- a special register unit coupled to said decode unit wherein if said first operand field identifies said pointer to said plurality of special registers:
  - said decode unit is configured to convey instruction information to said special register unit,
  - said special register unit is configured to decode a second operand field, and
  - said special register unit is configured to access a special register identified by said second operand field.

5,854,913

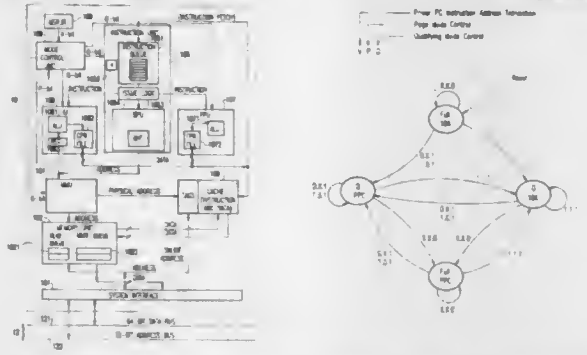
MICROPROCESSOR WITH AN ARCHITECTURE MODE CONTROL CAPABLE OF SUPPORTING EXTENSIONS OF TWO DISTINCT INSTRUCTION-SET ARCHITECTURES

John W. Goetz, Jericho; Stephen W. Mahin, and John J. Bergkvist, both of Chittenden, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 480,105, Jun. 7, 1995, abandoned. This application Jun. 10, 1997, Ser. No. 872,370

Int. Cl.^{6} G06F *9/22;9/455*

U.S. Cl. 395—386 **28 Claims**



1. A processor which supports first and second architectures having separate and distinct modes of operation and separate and distinct instruction sets and memory management schemes, said processor running under a single multitasking operating system and comprising:

- an instruction decoder directly receiving instructions from memory and decoding said received instructions as being in a first instruction set of said first architecture or being in a second instruction set of said second architecture depending on an architectural context for each said received instruction;
- a memory management unit determining and indicating to which of said first and second architectures each of said directly received instructions belongs and said memory management unit performing address translation from virtual to real addresses for said first and second architectures; and
- control means for detecting and indicating said architectural context of a program responsive to a processor state, an initial state change indication, said memory management unit indication and said control means indication combining to indicate said processor state, said program being read from memory as being either code for said first architecture or code for said second architecture, said control unit controlling said instruction decoder and said memory management unit to dynamically switch between address translation for a mode of operation corresponding to the first or second architectures and executing one or more decoded instructions according to said mode of operation.

5,854,914

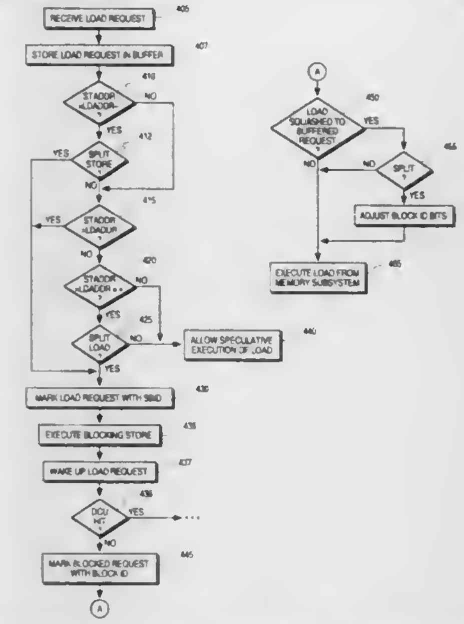
MECHANISM TO IMPROVED EXECUTION OF MISALIGNED LOADS

Milind Bodas, Santa Clara, Calif.; Glenn J. Hinton, Portland, and Andrew F. Glew, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 603,124, Feb. 13, 1996, abandoned. This application Sep. 10, 1996, Ser. No. 711,096

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—392 **26 Claims**


RECEIVE LOAD REQUEST
STORE LOAD REQUEST IN BUFFER
STADDR =LOADDR?
NO
YES
SPLIT STORE
YES
SPLIT LOAD
ALLOW SPECULATIVE EXECUTION OF LOAD
MARK LOAD REQUEST WITH SBID
EXECUTE BLOCKING STORE
WAKE UP LOAD REQUEST
DCU HIT
MARK BLOCKED REQUEST WITH BLOCK ID
A
LOAD SQUASHED TO BUFFERED REQUEST
ADJUST BLOCK ID BITS
EXECUTE LOAD FROM MEMORY SUBSYSTEM

1. A method of executing a misaligned load comprising the steps of:

(a) receiving a load request to load data from a first memory location;

(b) testing an entry in a store buffer to determine whether the entry corresponds to either of the first memory location and a second memory location which is subsequent to the first memory location;

(c) blocking the load request if the entry corresponds to the first memory location, or if the entry corresponds to the second memory location and the load request is a misaligned load request.

5,854,915

KEYBOARD CONTROLLER WITH INTEGRATED REAL TIME CLOCK FUNCTIONALITY AND METHOD THEREFOR

Lonnie C. Goff; David R. Evoy; Mark Eidson, all of Tempe, Ariz., and Brian Logsdon, Akron, Ohio, assignors to VLSI Technology, Inc., San Jose, Calif.

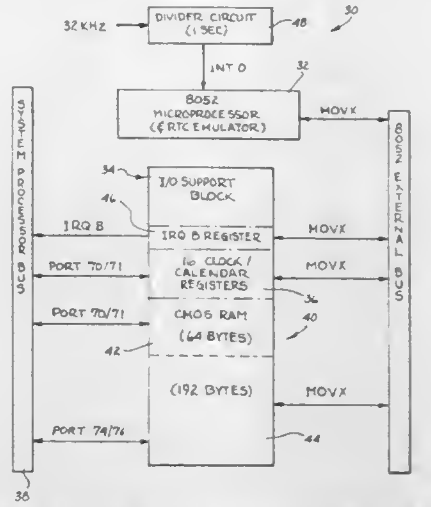
Filed Nov. 22, 1996, Ser. No. 755,202

Int. Cl.^{6} H03K *17/94*

U.S. Cl. 395—500 **20 Claims**

1. A keyboard controller for a computer system with integrated Real Time Clock (RTC) functionality comprising, in combination:

- processor means for controlling peripheral device traffic and for emulating RTC functions;
- I/O support block means coupled to said processor means for storing current data related to said RTC functions emulated by said processor means; and
- divider circuit means coupled to said processor means for providing a pulse rate to said processor means for allowing said processor means to function and to emulate said RTC functions.



5,854,916

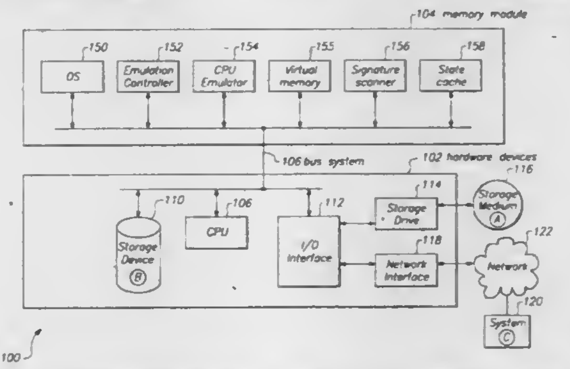
STATE-BASED CACHE FOR ANTIVIRUS SOFTWARE

Carey S. Nachenberg, Northridge, Calif., assignor to Symantec Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 684,580, Jul. 19, 1996, Pat. No. 5,765,030, Ser. No. 605,285, Feb. 9, 1996, and Ser. No. 535,340, Sep. 28, 1995, Pat. No. 5,696,822. This application Nov. 27, 1996, Ser. No. 757,935

Int. Cl.^{6} G06F *9/455*

U.S. Cl. 395—500 **5 Claims**



1. A computer-implemented method for detecting computer viruses in a computer file, the method comprising:

- simulating execution of the computer file by a CPU emulator in a computer memory for a first predetermined number of instructions;
- suspending the simulated execution;
- constructing a current state record of the CPU emulator;
- comparing the current state record to state records previously stored in a state-based cache;
- indicating that no virus is detected when the current state record matches one of the previously stored state records;
- wherein each state record includes a total number of data writes to a virtual memory performed during the simulated execution of the computer file by the CPU emulator; and
- wherein each state record includes a cyclic redundancy check value calculated from the data writes to the virtual memory.

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5,854,917

Patent Not Issued For This Number

5,854,918

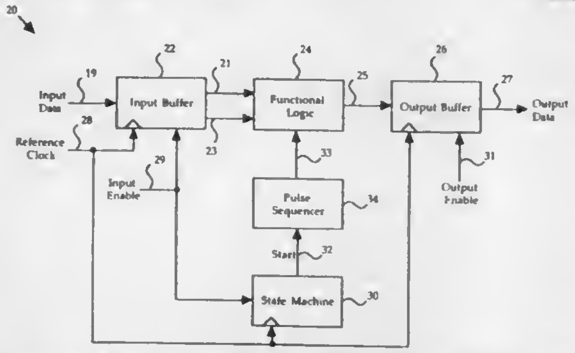
APPARATUS AND METHOD FOR SELF-TIMED ALGORITHMIC EXECUTION

Michael A. Baxter, Sunnyvale, Calif., assignor to Ricoh Company Ltd., Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,499

Int. Cl.^{6} G06F *1/04*

U.S. Cl. 395—555 **21 Claims**



1. An apparatus for self-timed algorithmic execution in a globally synchronous, locally asynchronous system, the apparatus comprising:

a functional logic set coupled to receive input data at a first rate, for generating output data at a second rate independent of the first rate, and coupled to transmit the output data at the first rate; and

a self-timed pulse sequencer, for generating a self-timed pulse sequence corresponding to the second rate, the pulse sequencer coupled to control the functional logic;

wherein:

the functional logic set and the self-timed pulse sequencer operate in a globally synchronous, locally asynchronous manner; and

the timing of the pulse sequence is independent of the timing of the functional logic set.

5,854,919

PROCESSOR AND ITS OPERATION PROCESSING METHOD FOR PROCESSING OPERATION HAVING BIT WIDTH EXCEEDING DATA WIDTH OF BIT STORAGE UNIT

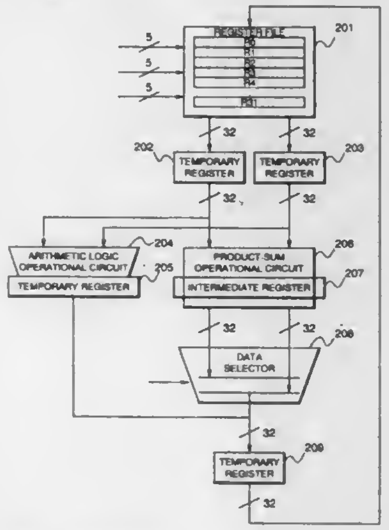
Hideo Mochizuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 12, 1997, Ser. No. 910,027

Claims priority, application Japan, Aug. 16, 1996, 8-234741

Int. Cl.^{6} G06F *9/30*

U.S. Cl. 395—561 **14 Claims**



1. A processor, comprising:

operation data storing means for storing data required for operations and operation results;

operation executing means for processing an operation using the operation data read from said operation data storing means; and

means for storing an operation result from said operation executing means having a bit width greater than the bit width of said operation data storing means directly in said operation data storing means, a part of the data of said operation result being stored as a bit width less than OR equal to the bit width of said data storing means and being required for a subsequent operation.

5,854,920

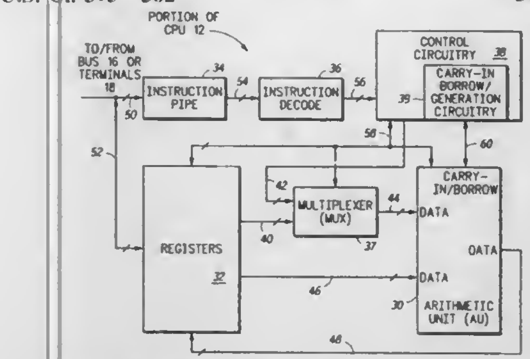
METHOD AND APPARATUS FOR MANIPULATING A CARRY/BORROW BIT TO NUMERICALLY ADJUST AND IMMEDIATE VALUE OF AN INSTRUCTION DURING EXECUTION

Brian G. Lucas, Barrington, Ill., and William C. Moyer, Dripping Springs, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1997, Ser. No. 835,371

Int. Cl.^{6} G06F *9/302*

U.S. Cl. 395—562 **30 Claims**



11. A data processing system responsive to a processor instruction containing an immediate value field that represents an effective immediate value differing by a predetermined nonzero integer from a binary value encoded in the immediate value field, said data processing system comprising:

means for accepting the effective immediate value and altering the effective immediate value to the binary value that is to be encoded in the immediate value field;

an instruction decode circuitry for identifying the processor instruction from an opcode field in the processor instruction and decoding the processor instruction to identify the immediate value field and a nonimmediate operand field when the processor instruction has been selected for execution by the data processing system,

an immediate value provision circuitry that provides the binary value encoded in the immediate value field;

a plurality of registers that provides contents of a selected one of the plurality of registers as a set of nonimmediate operand signals in response to a register select signal generated from the nonimmediate operand field;

a carry-in/borrow generation circuitry that generates a carry-in/borrow signal based on which instruction is identified; and

an arithmetic unit operating responsively to the binary value encoded in the immediate value field, the set of nonimmediate operand signals, and the carry-in/borrow signal, wherein the effective immediate value is generated from the binary value encoded in the immediate value field and the carry-in/borrow signal and wherein this effective immediate value is processed with the nonimmediate value to provide a set of output data signals.

5,854,921

STRIDE-BASED DATA ADDRESS PREDICTION STRUCTURE

James K. Pickett, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

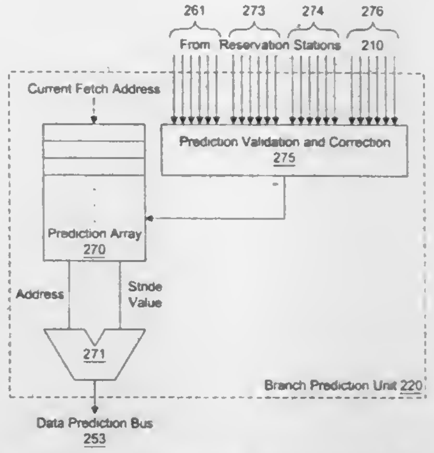
Filed Aug. 31, 1995, Ser. No. 525,310

Int. Cl.^{6} G06F *9/37*

U.S. Cl. 395—586 **8 Claims**

1. A method for predicting a data address which will be referenced by a plurality of instructions when said plurality of instructions are fetched, comprising:

generating a data prediction address from a base address and a stride value during a clock cycle in which a data prediction counter indicates that said base address and said stride value are valid, wherein said base address, said stride value, and said data prediction counter are stored in a prediction array;



fetching data associated with said data prediction address from a data cache;

storing said data within a plurality of reservation stations;

updating said prediction array with a new base address during a second clock cycle in which a second data address is generated by executing said plurality of instructions;

incrementing said data prediction counter during said second clock cycle if said data prediction address is correctly predicted; and

updating said prediction array with a new stride value during said second clock cycle if said data prediction counter indicates that said stride value is invalid.

5,854,922

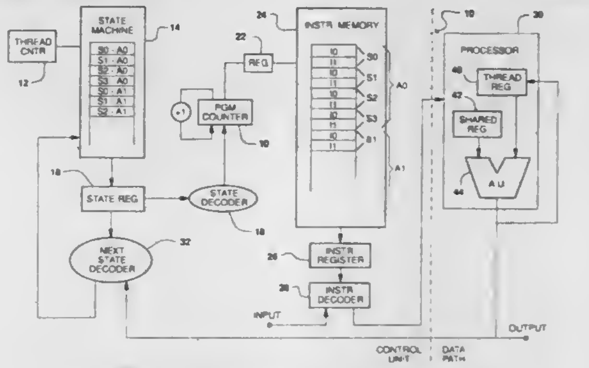
MICRO-SEQUENCER APPARATUS AND METHOD OF COMBINATION STATE MACHINE AND INSTRUCTION MEMORY

Martin G. Gravenstein; Michael A. Vigil, and Silvia E. Jaeckel, all of Colorado Springs, Colo., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1997, Ser. No. 784,884

Int. Cl.^{6} G06F *9/22*

U.S. Cl. 395—595 **17 Claims**



1. A micro-sequencer apparatus comprising:

a state machine controller (**14**) for storing a plurality of states and identifying a state as a current state with current state instruction;

a program counter (**20**) for receiving said current state and producing a program count based thereon identifying a location of associated instruction;

an instruction memory (**24**) for storing a plurality of instructions and for receiving said program count to identify one set of said instructions as a current instruction set, said instruction memory being reprogrammable;

a processor (**30**) for performing functions of said current instruction set and for producing an output;

next state decoder (**32**) containing a plurality of branch conditions for receiving said current state and said output to deter-

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mine branching to one of said plurality of states as a next state and transferring same to said state machine controller (**14**); and

an instruction decoder (**28**) receiving said current instruction set for decoding said current instruction set for said processor (**30**).

5,854,923

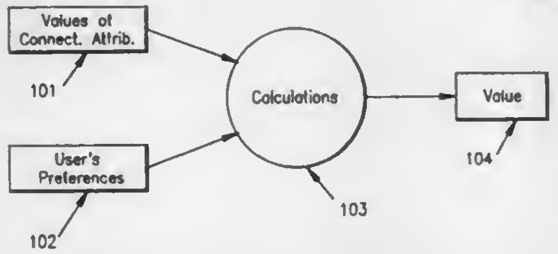
FACILITY FOR THE INTELLIGENT SELECTION OF INFORMATION OBJECTS (PERSONA)

Michael J. Dockter, Hollister; Joel F. Farber, San Jose, both of Calif., and Kevin D. Seppi, Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 21, 1994, Ser. No. 262,834

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 395—605 **12 Claims**



1. A computer-based method for ordering information objects for presentation to a requester, comprising the steps of:

receiving a set of information objects, connections between the information objects, and attributes associated with the connections;

receiving a first profile descriptor representing a first user's information preferences and predetermined characteristics;

said first profile descriptor including a preference field and a confidence field associated with said preference field;

determining a subset of the information objects, connections, and attributes based on said first profile descriptor;

computing at least first utility values for the connections in the determined subset as a function of the connection attributes and the first profile descriptor;

normalizing the utility values, and

wherein the preferences of the information objects identified by the connections are ordered according to the normalized utility values computed for the connections.

5,854,924

STATIC DEBUGGING TOOL AND METHOD

David Rickel, Sunnyvale, Calif., and James B. McBeath, Bellevue, Wash., assignors to GLOBEtrotter Software, Inc., Campbell, Calif.

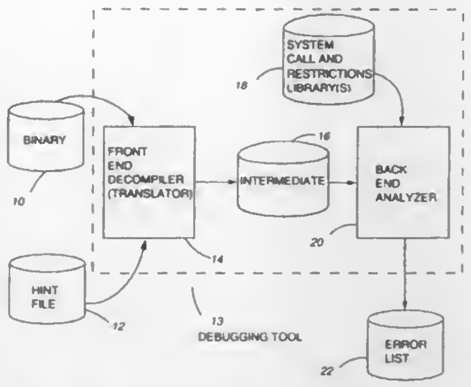
Filed Aug. 8, 1996, Ser. No. 689,458

Int. Cl.^{6} G06F *9/44; 11/00*

U.S. Cl. 395—704 **24 Claims**

1. A static debugging tool for use with a computer and for debugging a binary program file without requiring the execution of the binary program file in order to detect the presence of program errors and potential program errors, the static debugging tool comprising:

an analyzer for causing die computer to statically analyze a representation of the binary program file to detect the presence of program errors or potential program errors in the representation of the binary program file without executing the binary program file, wherein the representation of the binary program file is an intermediate file; and



an output arrangement for causing the computer to output an error list of the errors or potential errors detected by the analyzer.

5,854,925

AUTOMATIC BUG LOCATOR FOR AUTOMATICALLY LOCATING BUGS THROUGH INTERACTION WITH AN OPERATOR

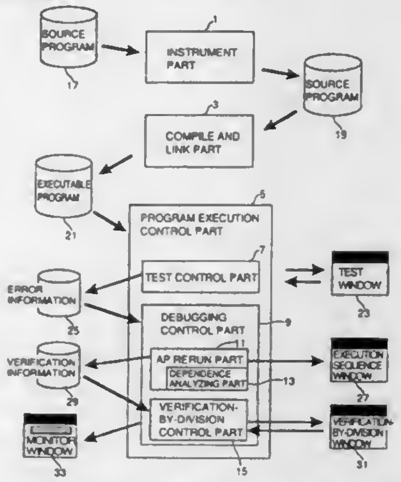
Takao Shimomura, Tokushima, Japan, assignor to ATR Communication Systems Research Laboratories, Kyoto, Japan

Filed Jan. 10, 1997, Ser. No. 781,796

Claims priority, application Japan, May 17, 1996, 8-123086

Int. Cl.^{6} G06F *9/45*

U.S. Cl. 395—704 **1 Claim**



1. An automatic bug locator for locating a bug in a program being described in a procedural language, comprising:

test control means for causing said program to be executed, letting an operator point out an error from output information from said program, and recording an instruction part being provided with an instruction outputting said error;

program rerun means for causing said program to rerun from an execution start point up to a first instruction part; and

dependence analyzing means for causing selection of a third instruction part, between a second instruction part and said first instruction part, for finding an instruction at an instruction part causing transition of control to said third instruction part and a result of execution of said instruction while finding a variable influencing said error and a value of said variable at said third instruction part on the basis of a data dependence, a control dependence, a control definition dependence and an omissive condition dependence, in a rerun of said program by said program rerun means, wherein

said first instruction part is said instruction part being provided with said instruction outputting said error, and

said second instruction part is an instruction part being provided with an instruction executed first in said program,

said automatic bug locator further comprising:

verification-by-division control means for enabling said operator to determine whether or not the value of a variable being used in said instruction causing said transition of control is wrong if said result of execution of said instruction causing said transition of control to said third instruction part is wrong while making said operator determine whether or not a value of said variable influencing said error at said third instruction part is wrong if said result of execution of said instruction causing said transition of control to said third instruction part is correct, wherein

said instruction part causing said transition of control to said third instruction part is regarded as said first instruction part when said operator determines that the value of said variable being used in said instruction causing said transition of control to said third instruction part is wrong so that said program rerun means and said dependence analyzing means perform processing,

said verification-by-division control means determines said instruction causing said transition of control is a bug when said operator determines that the value of said variable being used in said instruction causing said transition of control to said third instruction part is correct,

said third instruction part is regarded as said first instruction part when said operator determines that the value of said variable influencing said error at said third instruction part is wrong so that said program rerun means and said dependence analyzing means perform processing,

said third instruction part is regarded as said second instruction part when said operator determines that the value of said variable influencing said error at said third instruction part is correct so that said program rerun means and said dependence analyzing means perform processing,

processing by said program rerun means, said dependence analyzing means and said verification-by-division control means is repeated so that said verification-by-division control means determines an instruction in an instruction part being finally present between said first and second instruction parts is a bug,

processing by said program rerun means, said dependence analyzing means and said verification-by-division control means is subsequently repeated so that said verification-by-division control means determines that a bug related to omission of an instruction is present between said first and second instruction parts if no instruction part having a data dependence, a control dependence, a control definition dependence or an omissive condition dependence on said first instruction part is present between said first and second instruction parts,

an instruction part, preceding a certain instruction part and finally defining a variable being used in an instruction being present in said certain instruction part, has a data dependence on said certain instruction part,

an instruction part being provided with a conditional instruction or a loop instruction has a control dependence on a certain instruction part in the branch of said condition instruction or the loop of said loop instruction,

an instruction part being provided with a conditional instruction or a loop instruction has a control definition dependence on a certain instruction part when an instruction part, preceding said certain instruction part and finally defining a variable being used in an instruction being present in said certain instruction part, is included in the branch of said conditional instruction or the loop of said loop instruction and said certain instruction part is present outside the branch of said conditional instruction or the loop of said loop instruction, and

an instruction part being provided with a conditional instruction or a loop instruction has an omissive condition dependence on a certain instruction part, provided that an instruction part, preceding said certain instruction part and finally defining a variable used by an instruction being present in said certain instruction part, is present before said conditional instruction or said loop instruction, said variable is defined when a result of execution of said conditional instruction or said loop instruction changes, and said certain instruction part is present outside the branch of said conditional instruction or the loop of said loop instruction.

5,854,926

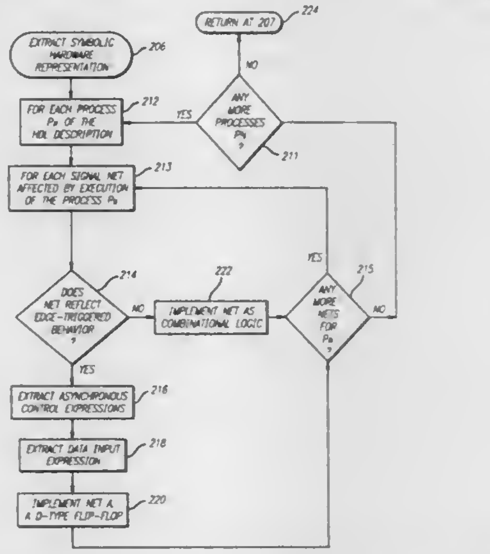
METHOD AND APPARATUS FOR IDENTIFYING FLIP-FLOPS IN HDL DESCRIPTIONS OF CIRCUITS WITHOUT SPECIFIC TEMPLATES

Christopher H. Kingsley, San Jose, and Balmukund K. Sharma, Santa Clara, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 23, 1995, Ser. No. 376,491

Int. Cl.^{6} G06F *9/45*

U.S. Cl. 395—705 **19 Claims**


RETURN AT 207
224
EXTRACT SYMBOLIC HARDWARE REPRESENTATION
206
NO
ANY MORE PROCESSES Pn ?
211
YES
FOR EACH PROCESS Pn OF THE HDL DESCRIPTION
212
FOR EACH SIGNAL NET AFFECTED BY EXECUTION OF THE PROCESS Pn
213
YES
215
222
214
DOES NET REFLECT EDGE-TRIGGERED BEHAVIOR ?
NO
IMPLEMENT NET AS COMBINATIONAL LOGIC
ANY MORE NETS FOR Pn ?
NO
YES
EXTRACT ASYNCHRONOUS CONTROL EXPRESSIONS
216
EXTRACT DATA INPUT EXPRESSION
218
IMPLEMENT NET A A D-TYPE FLIP-FLOP
220

1. A method for detecting edge-sensitive behavior from a functional description of a circuit and inferring a hardware implementation of the detected edge-sensitive behavior, the functional description comprising one or more processes, execution of each of the one or more processes affecting one or more nets, each of the one or more nets represented by a directed acyclic graph (DAG), said method comprising the steps of:

for each of the one or more nets affected by each of the one or more processes:

using the DAG representing a current one of the one or more nets affected by a current one of the one or more processes, determining whether the behavior of the current net is edge-sensitive; and

when the behavior of the current net is determined to be edge-sensitive by said determining step:

extracting an asynchronous control expression from the DAG representing the current net by rebuilding the DAG representing the current net either

to remove operators that select a value for the current net based on asynchronous control, or

with all event operators set equal to false;

extracting a data input expression from the DAG representing the current net; and

implementing the current net as a flip-flop using the extracted asynchronous control expression and the extracted data input expression.

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5,854,927

MULTIMEDIA SYSTEM RECEPTIVE FOR PRESENTATION OF MASS DATA COMPRISING AN APPLICATION PROGRAM INCLUSIVE OF A MULTIPLATFORM INTERPRETER, AND A PLATFORM SUBSYSTEM ARRANGED FOR INTERACTION WITH SAID MULTIPLATFORM INTERPRETER AND MASS MEMORY FOR USE WITH SUCH SYSTEM OR SUBSYSTEM

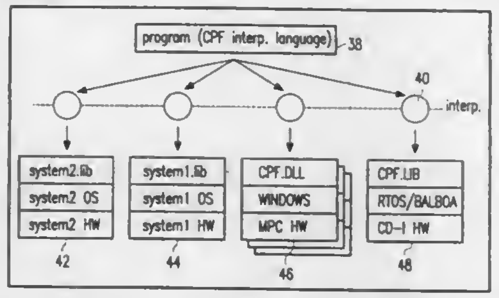
Johan H. A. Gelissen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 25, 1995, Ser. No. 533,030

Claims priority, application European Pat. Off., Sep. 30, 1994, 94202839; Oct. 13, 1994, 94202961

Int. Cl.⁶ G06F *9/44*

U.S. Cl. 395—705 **16 Claims**



1. Multimedia system receptive for mass data presentation thereto, said data comprising an application program inclusive of a multiplatform interpreter; said system furthermore having a platform subsystem,

being arranged for interaction with said multiplatform interpreter,

comprising processing means for executing said multiplatform interpreter driven by said application program and under control of user input means,

and furthermore having user output means controllable by said multiplatform interpreter,

characterized in that said application program is based on a predetermined instruction set that is interpreted by said processing means for said executing, whereby said platform subsystem is an instance of a prespecified abstract machine having said predetermined instruction set,

and a predetermined data type set, and said subsystem furthermore comprising resource facilities according to predetermined quantitative minimum requirements.

5,854,928

USE OF RUN-TIME CODE GENERATION TO CREATE SPECULATION RECOVERY CODE IN A COMPUTER SYSTEM

William B. Buzbee, Half Moon Bay, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

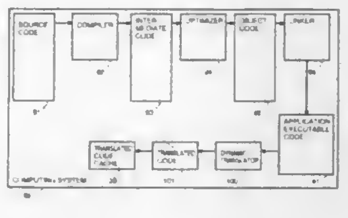
Filed Oct. 10, 1996, Ser. No. 726,760

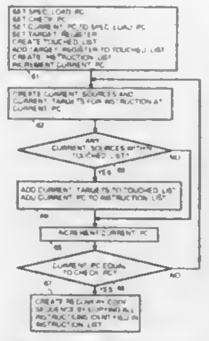
Int. Cl.⁶ G06F *9/46;9/40*

U.S. Cl. 395—705 **18 Claims**

1. A method for executing on a computing system, programming code which includes speculative code which is speculatively executed, the method comprising the steps of:

- (a) executing a speculative sequence of code, including the following substep:
  - (a.1) for instructions within the speculative sequence of code which include memory accesses, ignoring memory faults; and,
- (b) when utilizing data generated during the speculative sequence of code at runtime, performing the following substeps:
  - (b.1) determining whether any memory fault occurred when the speculative sequence of code was executed, and
  - (b.2) when in substep (b.1) it is determined that a memory fault occurred when the speculative sequence of code was executed, performing the following substep:





    - (b.2.1) generating recovery code which when executed performs a recovery from the memory fault.

5,854,929

METHOD OF GENERATING CODE FOR PROGRAMMABLE PROCESSORS, CODE GENERATOR AND APPLICATION THEREOF

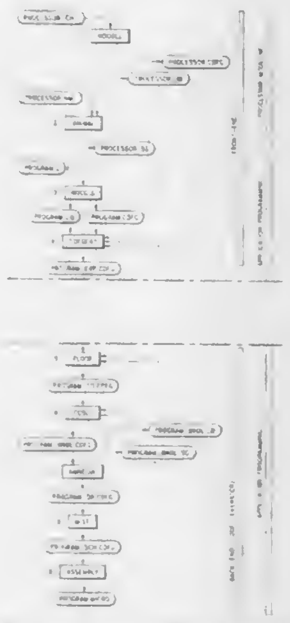
Johan Roland Van Praet, Wemmel; Dirk Lanneer, Landen; Werner Gustaaf Theresia Geurts, Rijkevorsel, and Gert Lodewijk Huibrecht Goossens, Leuven, all of Belgium, assignors to Interuniversitair Micro-Elektronica Centrum (IMEC vzw), Belgium

Filed Nov. 18, 1996, Ser. No. 751,337

Claims priority, application European Pat. Off., Mar. 8, 1996, 96 870 0302

Int. Cl.⁶ G06F *3/00*

U.S. Cl. 395—705 **44 Claims**



15. A retargetable code generator for generating code for programmable processors being embedded in an electronic system comprising:

an electronic system with an embedded programmable processor, first tools to build a directed bipartite graph with vertices and edges which internally represents said programmable processor, said graph comprising essentially all information about the instruction set and the hardware of said processor and having first and second sets of vertices, said first set of vertices representing storage elements in said processor, and said second set of vertices representing micro-operations in said processor, said edges represent valid connections between said micro-operations and said storage elements,

second tools and libraries required to generate code for said processor, and

means to link said graph to said second tools and said libraries, whereby the information about said processor required during code generation is extracted from said graph.

5,854,930

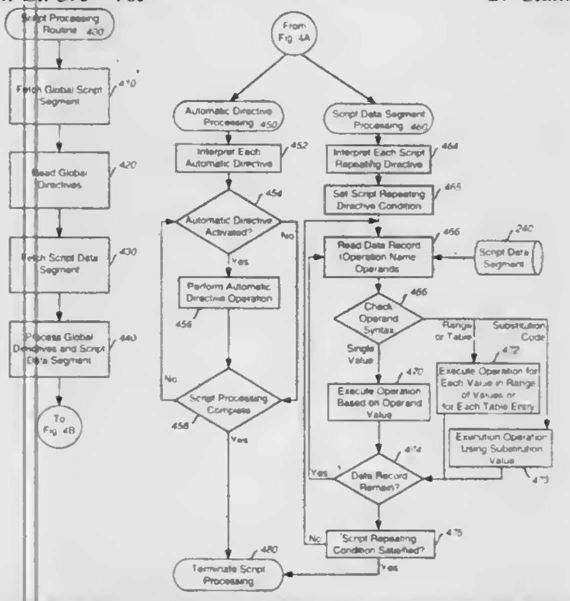
SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR SCRIPT PROCESSING

John V. McLain, Jr., Colorado Springs, Colo., and Dale W. Harris, Jr., Richardson, Tex., assignors to MCI Communications Corporations, Washington, D.C.

Filed Dec. 30, 1996, Ser. No. 774,651

Int. Cl.⁶ G06F *9/44*

U.S. Cl. 395—705 **27 Claims**


Script Processing Routine 400
Fetch Global Script Segment 410
Read Global Directives 420
Fetch Script Data Segment 430
Process Global Directives and Script Data Segment 440
To Fig 4B
From Fig 4A
Automatic Directive Processing 450
Script Data Segment Processing 460
Interpret Each Automatic Directive 452
Automatic Directive Activated? 454
Yes
No
Perform Automatic Directive Operation 456
Script Processing Complete 458
Interpret Each Script Repeating Directive 464
Set Script Repeating Directive Condition 465
Read Data Record (Operation Name Operands) 466
Script Data Segment 240
Check Operand Syntax 468
Single Value
Range or Table
Substitution Code
Execute Operation Based on Operand Value 470
Execute Operation for Each Value in Range of Values or for Each Table Entry 472
Execution Operation Using Substitution Value 473
Data Record Remain? 474
Script Repeating Condition Satisfied? 475
Terminate Script Processing 480

1. A method for processing a script, the script includes at least one global script segment associated with a script data segment, the global script segment includes at least one global directive and the script data segment includes at least one command record, the method comprising the steps of:

reading each global directive in the global script segment included in script;

fetching the associated script data segment which includes the command record; and

processing the script data segment based on each global directive read in said reading step.

5,854,931

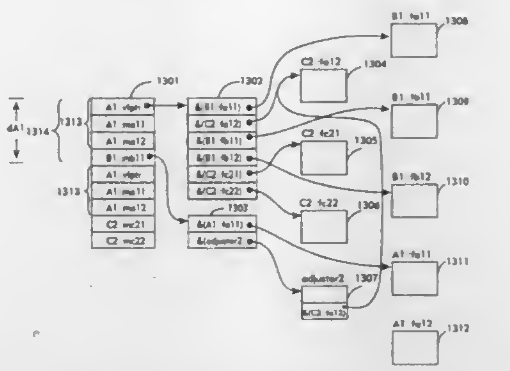
METHOD AND SYSTEM FOR ACCESSING VIRTUAL BASE CLASSES

David T. Jones, Preston; Martin J. O'Riordan, Redmond, and Mark J. Zbikowski, Woodinville, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 369,936, Jan. 9, 1995, which is a division of Ser. No. 163,846, Dec. 7, 1993, Pat. No. 5,410,705, which is a division of Ser. No. 682,537, Apr. 9, 1991, Pat. No. 5,297,284. This application Jan. 22, 1997, Ser. No. 788,080

Int. Cl.⁶ G06F *9/45;15/00*

U.S. Cl. 395—705 **15 Claims**



1. A method in a computer system for generating an object data structure layout for a derived class, the derived class inheriting a base class, the base class virtually inheriting a virtual base class, the virtual base class having a virtual function member that is overridden by an overriding virtual function member in the base class but not overridden in the derived class, the method comprising the steps of:

allocating an occurrence of the base class, the base class having a virtual base table pointer that points to a virtual base table for the base class, the virtual base table having an entry referencing an occurrence of the virtual base class within the derived class;

allocating an occurrence of the virtual base class, the occurrence of the virtual base class having a pointer to a virtual function table for the virtual base class, the virtual function table having an entry for the virtual function member, the overriding virtual function member having been compiled to locate the virtual base table pointer at a predetermined location relative to a this pointer that is passed to the overriding virtual function member; and

setting the entry for the overriding virtual function member in the virtual function table to point to an adjustor thunk, the adjustor thunk for adjusting the this pointer passed to the overriding virtual function member that initially points to the virtual base class so that the overriding virtual function member can correctly access the virtual base table pointer within the derived class and for invoking the overriding virtual function member using the adjusted this pointer whereby the virtual base class, the base class, and the derived call share the virtual function table in that when the virtual function member is invoked from the virtual base class, the base class, or the derived class with the object data structure layout, the entry for the virtual function member in the shared virtual function table is used to invoke the virtual function member.

5,854,932

COMPILER AND METHOD FOR AVOIDING UNNECESSARY RECOMPILATION

Rico Mariani, Kirkland; Daniel R. Spalding, Redmond; Jonathan E. Caves, Redmond; Jan Gray, Redmond, and Scott Randell, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Aug. 17, 1995, Ser. No. 516,321

Int. Cl.⁶ G06F *9/45*

U.S. Cl. 595—709 **21 Claims**

15. In a compiler, a method of minimizing rebuilding of an executable program, comprising the steps of:

storing information indicative of any dependencies of an object module on any of a plurality of classes declared in any header files used in last compiling the object module;

detecting any changes made since last compiling the object module to said any header files and to any source files that were used in last compiling the object module; and

recompiling the object module except at least where said detected changes are solely to parts of said classes which are

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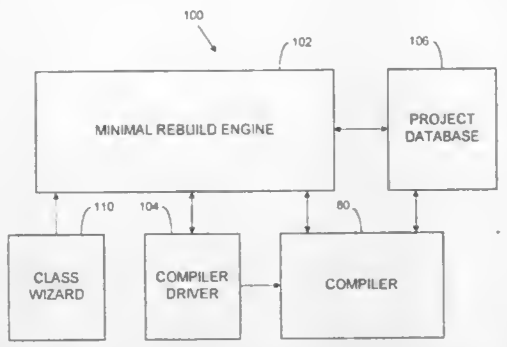


not indicated by the stored information as dependencies of the object module.

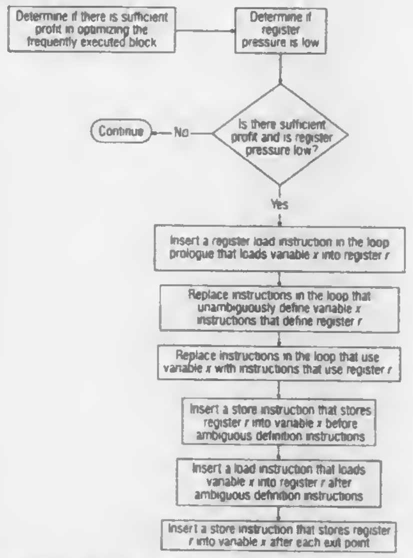
5,854,933
METHOD FOR OPTIMIZING A COMPUTER PROGRAM BY MOVING CERTAIN LOAD AND STORE INSTRUCTIONS OUT OF A LOOP

Po-Hua Chang, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 20, 1996, Ser. No. 700,034

Int. Cl.⁶ G06F *12/00;9/45*

U.S. Cl. 395—709 **24 Claims**


Determine if there is sufficient profit in optimizing the frequently executed block
Determine if register pressure is low
Continue
No
Is there sufficient profit and is register pressure low?
Yes
Insert a register load instruction in the loop prologue that loads variable x into register r
Replace instructions in the loop that unambiguously define variable x instructions that define register r
Replace instructions in the loop that use variable x with instructions that use register r
Insert a store instruction that stores register r into variable x before ambiguous definition instructions
Insert a load instruction that loads variable x into register r after ambiguous definition instructions
Insert a store instruction that stores register r into variable x after each exit point

22. A computer-readable storage medium encoded with instructions that, when executed by a computer, perform a method for optimizing a computer program, the method comprising:

- (a) determining if there is sufficient profit in optimizing a frequently executed block in a plurality of instructions that form a loop, the loop comprising at least one exit point, the frequently executed block, and a less frequently executed block, the frequently executed block including at least one unambiguous definition instruction for defining a variable and at least one instruction for using the variable, and the less frequently executed block including an ambiguous definition instruction;
- (b) determining if register pressure is low; and
- (c) if there is sufficient profit in assigning the variable to a register and register pressure is low, then
  - i) inserting a load instruction for loading the variable into a register, the load instruction being inserted prior to the plurality of instructions that form the loop,
  - ii) replacing the at least one instruction for unambiguously defining the variable with an instruction for defining the register,
  - iii) replacing the at least one instruction for using the variable with an instruction for using the register,
  - iv) inserting a store instruction for storing the register into the variable before the at least one ambiguous definition instruction,
  - v) inserting a load instruction for loading the variable into the register after the at least one ambiguous definition instruction, and
  - vi) inserting an instruction for storing the register into the variable after each exit point.

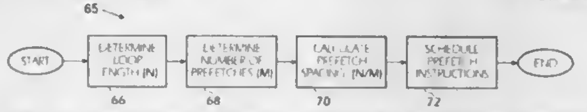
5,854,934
OPTIMIZING COMPILER HAVING DATA CACHE PREFETCH SPREADING

Wei Hsu, Cupertino, and Loren Staley, Cool, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1996, Ser. No. 702,359

Int. Cl.⁶ G06F *9/45;12/08*

U.S. Cl. 395—709 **19 Claims**


65
START
DETERMINE LOOP LENGTH (N)
DETERMINE NUMBER OF PREFETCHES (M)
CALCULATE PREFETCH SPACING (N/M)
SCHEDULE PREFETCH INSTRUCTIONS
END
66
68
70
72

10. An optimizing compiler stored in a computer-readable memory device and executable by a computer system having a data cache or data cache hierarchy, the compiler comprising:

- means for identifying a loop;
- means for determining a length of the loop;
- means for generating a plurality (M) of prefetch instructions; and
- means for spacing out the prefetch instructions throughout the length of the loop.

5,854,935
PROGRAM TRANSFORMATION SYSTEM FOR MICROCOMPUTER AND MICROCOMPUTER EMPLOYING TRANSFORMED PROGRAM

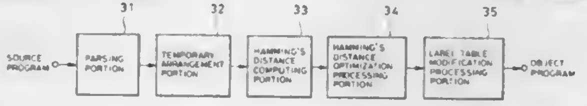
Toshio Enomoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1996, Ser. Nn. 729,853

Claims priority, application Japan, Oct. 18, 1995, 7-268912

Int. Cl.⁶ G06F *9/45*

U.S. Cl. 395—709 **9 Claims**


31
32
33
34
35
SOURCE PROGRAM
PARSING PORTION
TEMPORARY ARRANGEMENT PORTION
HAMMING'S DISTANCE COMPUTING PORTION
HAMMING'S DISTANCE OPTIMIZATION PROCESSING PORTION
LABEL TABLE MODIFICATION PROCESSING PORTION
OBJECT PROGRAM

1. A program transformation system for a microcomputer for performing transformation of a source program into an object program by performing temporary arrangement of program modules depending upon results of parsing of the source program, comprising:

- hamming's distance computing means for computing hamming's distances between respective instructions of a temporarily arranged program string;
- local instruction modifying means for optimizing hamming's distance of the instruction by modifying instruction corresponding to a portion of the program string having an address distance smaller than a predetermined value; and
- global instruction modifying means for optimizing hamming's distance of the instruction by modifying instruction corresponding to a portion of the program string having an address distance greater than or equal to the predetermined value.

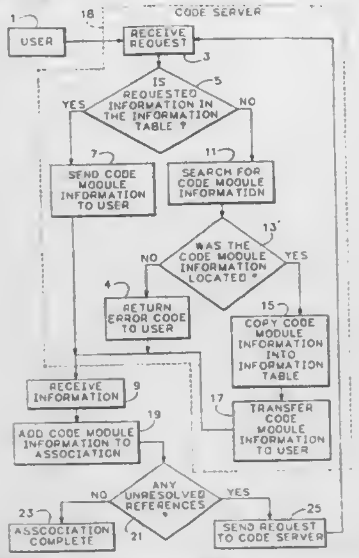
5,854,936
CODE SERVER

Stephen F. B. Pickett, Vancouver, Canada, assignor to REC Software, Inc., Vancouver, Canada

Continuation of Ser. No. 748,462, Aug. 22, 1991, Pat. No. 5,649,204. This application Apr. 11, 1997, Ser. No. 840,197

Int. Cl.⁶ G06F *9/30*

U.S. Cl. 395—710 **22 Claims**


CODE SERVER
1
18
USER
RECEIVE REQUEST
3
IS REQUESTED INFORMATION IN THE INFORMATION TABLE ?
5
YES
NO
7
SEND CODE MODULE INFORMATION TO USER
11
SEARCH FOR CODE MODULE INFORMATION
13
WAS THE CODE MODULE INFORMATION LOCATED ?
NO
YES
4
RETURN ERROR CODE TO USER
15
COPY CODE MODULE INFORMATION INTO INFORMATION TABLE
RECEIVE INFORMATION
9
17
TRANSFER CODE MODULE INFORMATION TO USER
19
ADD CODE MODULE INFORMATION TO ASSOCIATION
ANY UNRESOLVED REFERENCES ?
NO
YES
21
23
ASSCOCIATION COMPLETE
25
SEND REQUEST TO CODE SERVER

1. A method of providing information to a first program that is executing on a computer for forming an association for a second multi-module program which includes an embedded reference to a discrete module, said method comprising the steps of:

- (a) receiving in a code server from said first program, at a point prior to execution-time of said multi-module program being associated, a request associated with said discrete module;
- (b) searching a module information table for module information in response to said request associated with said discrete module;
- (c) in response to finding said module information in said module information table, reading said module information;
- (d) providing said module information in a response to said first program; and
- (e) forming an association of said multi-module program by said first program.

5,854,937
METHOD FOR REPROGRAMMING FLASH ROM IN A PERSONAL COMPUTER IMPLEMENTING AN EISA BUS SYSTEM

James S. Woodward, Austin, Tex., assignor to Dell U.S.A., L.P., Round Rock, Tex.

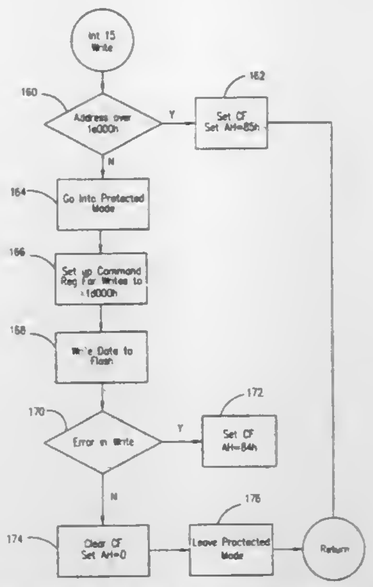
Continuation of Ser. No. 223,890, Apr. 6, 1994. This application Sep. 11, 1996, Ser. No. 712,382

Int. Cl.⁶ G06F *12/00*

U.S. Cl. 395—800.01 **18 Claims**

16. A method of reprogramming EISA configuration code in an AMD flash ROM device, wherein the flash ROM is divided into eight memory array sectors, and said EISA configuration code is stored in a single sector of the flash ROM together with boot code and Ediags instruction code, said method comprising the steps of:

- (a) initializing an Interrupt **15** routine;
- (b) determining if the flash ROM is reprogrammable using five volts;
- (c) modifying the Interrupt **15** routine in response to an affirmative determination in step b;
- (d) monitoring Interrupt **15** requests for the presence of an erase or a write function to EISA configuration code;
- (e) entering a 32 bit protective mode in response to the presence of an erase or write function in the Interrupt **15** request;



- (f) placing the flash ROM in a Command Mode by transmitting a sequence of command signals to various addresses in the flash ROM device;
- (g) erasing or writing to the EISA configuration code in the designated sector.

5,854,938
PARALLEL PROCESSOR APPARATUS IN WHICH DATA IS DIVIDED IN SEQUENTIAL STAGES

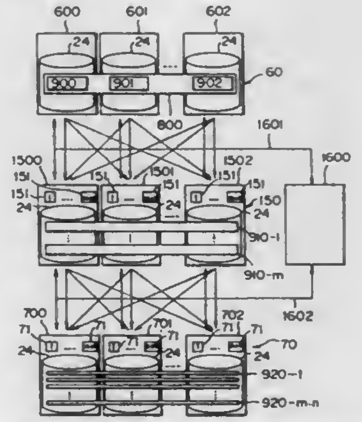
Yoshifumi Ogi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 12, 1996, Ser. No. 614,045

Claims priority, application Japan, Jun. 14, 1995, 7-147863

Int. Cl.⁶ G06F *17/30*

U.S. Cl. 395—800.3 **32 Claims**



1. A parallel processor apparatus having plural processors operating in parallel, said plural processors joining to one task to execute said task as a whole, and data that is an object of a process for said task being handled as a data unit (hereinafter called a tuple) being able to be processed individually and separately in each of said processors, said parallel processor apparatus comprising:

- a first processor group for distributing said data that is an object of the process to store said data in advance;
- a second processor group for storing said data that is an object of the process sent from said first processor group in a state where said data is divided into buckets each of which is a set of tuples of the same sort;
- an intermediate processor group included in said plural processors for receiving said data that is an object of the process from said first processor group to temporarily store said data therein, then sending said data to said second processor group;

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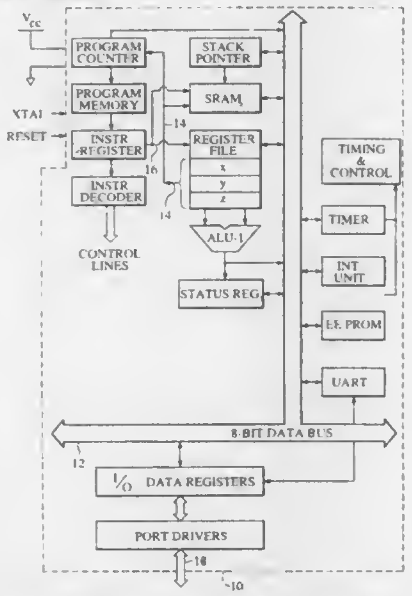
- a first dividing means for dividing said data that is an object of the process into plural sets of bucket groups each of which is a set of tuples of plural sorts when said data is transmitted from said first processor group to said intermediate processor group to temporarily store said data in said intermediate processor group; and
- a second dividing means for reading each of said plural sets of bucket groups divided by said first dividing means and temporarily stored in said intermediate processor group, dividing each of said bucket groups into buckets each of which is a set of tuples of the same sort when said data is transmitted from said intermediate processor group to said second processor group to store said buckets in said second processor group.

5,854,939
EIGHT-BIT MICROCONTROLLER HAVING A RISC ARCHITECTURE

Vegard Wollan, Flataasen; Alf-Egil Bogen; Gaute Myklebust, both of Trondheim, all of Norway, and John D. Bryant, Los Altos, Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Nov. 7, 1996, Ser. No. 745,098
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—800.41 20 Claims

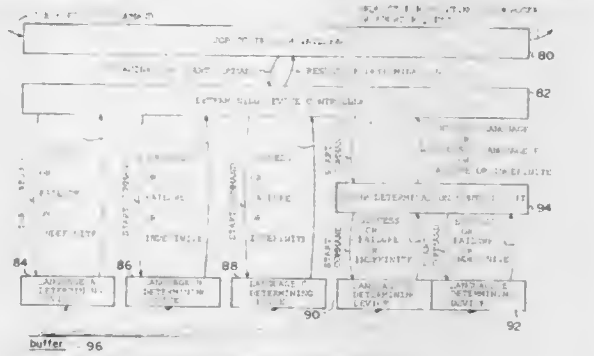


1. A microcontroller having a Harvard architecture, comprising:
- a program bus;
- a program memory store for storing programs;
- an instruction decoder unit coupled to said program store via said program bus;
- an eight-bit data bus separate from said program bus;
- randomly accessible memory separate from said program store coupled to said eight-bit data bus;
- a register file coupled to said eight-bit data bus, said register file having a plurality of eight-bit registers, said register file further having means for combining two of said eight-bit registers to be accessed as a single logical sixteen-bit register;
- a general purpose ALU coupled to receive the contents of two of said eight-bit registers, said general purpose ALU having an output coupled to said eight-bit data bus;
- a direct-address bus coupling said program execution unit to directly access said data store and said register file during program execution; and
- an indirect-address bus providing said register file with indirect data access to said randomly accessible memory during program execution;
- said register file further including a dedicated ALU coupled to said means for combining in order to perform arithmetic functions on a logical sixteen-bit register accessed through said combining means;
- said indirect-address bus having address-receiving means for receiving a sixteen-bit value from said combining means, thereby providing sixteen-bit indirect addressing.

5,854,940
OUTPUT CONTROL SYSTEM FOR INTERPRETING INPUT DATA ACCORDING TO A SPECIFIC CONTROL LANGUAGE BASED UPON OUTPUTS FROM A PLURALITY OF CONTROL LANGUAGE DETERMINING DEVICES

Katsuhisa Niihara; Koichi Miyazaki; Yoshinori Gunji; Ichiro Konno, and Yuji Shiomi, all of Iwatsuki, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Apr. 23, 1996, Ser. No. 636,438
Claims priority, application Japan, Apr. 24, 1995, 7-098953; Apr. 24, 1995, 7-098954
Int. Cl.^{6} G06F *13/00*
U.S. Cl. 395—825 5 Claims

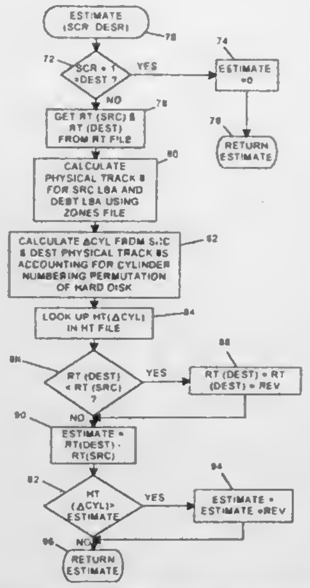


2. An output controlling device comprising:
- storage means for storing input data;
- a plurality of control-language determining means each adapted to determine that a control language of the input data is particular control language;
- deciding means for deciding the control language of the input data on the basis of a result of determination by said plurality of control-language determining means; and
- output means for interpreting the input data on the basis of the control language decided by said deciding means, and for outputting the input data,
- wherein in a case in which a control-language determining means of said plurality of control-language determining means succeeds in determining the control language of input data, said control-language determining means sends a result of success in the determination of the control language of the input data to said deciding means, said deciding means causes said plurality of control-language determining means to effect determination processing in decreasing order of determining speed and said deciding means decides that the control language of the input data is the control language based on the result of success sent to said deciding means by said control-language determining means in the determination of the control language of the input data.

5,854,941
SYSTEM FOR ESTIMATING ACCESS TIME BY DERIVING FROM FIRST AND SECOND ROTATIONAL TIME FROM ROTATIONAL TIME TABLE BASED ON LOGICAL ADDRESS AND HEAD MOVEMENT TIME

Clinton L. Ballard, Suquamish, and Timothy W. Smith, Seattle, both of Wash., assignors to Acceleration Software International Corporation, Poulsbo, Wash.

Filed May 31, 1996, Ser. No. 656,372
Int. Cl.^{6} G06F *3/00*
U.S. Cl. 395—825 14 Claims

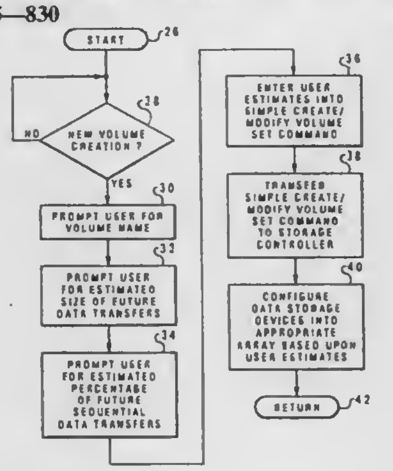

ESTIMATE (SCR DESR)
70
72
SCR = 1 =DEST ?
YES
NO
74
ESTIMATE =0
76
78
RETURN ESTIMATE
GET RT (SRC) & RT (DEST) FROM RT FILE
80
CALCULATE PHYSICAL TRACK # FOR SRC LBA AND DEST LBA USING ZONES FILE
82
CALCULATE ΔCYL FROM SRC & DEST PHYSICAL TRACK #S ACCOUNTING FOR CYLINDER NUMBERING PERMUTATION OF HARD DISK
84
LOOK UP HT(ΔCYL) IN HT FILE
86
88
RT (DEST) < RT (SRC) ?
RT (DEST) = RT (DEST) + REV
90
ESTIMATE = RT(DEST) - RT(SRC)
92
94
HT (ΔCYL)> ESTIMATE
ESTIMATE = ESTIMATE +REV
96
RETURN ESTIMATE

1. A method for estimating access time of a rotating storage disk between a source logical block address and a destination logical block address, the disk comprising a plurality of tracks, each track comprising a plurality of sectors, a given sector addressed by a host computer using a logical block address, wherein the plurality of sectors for a given track have consecutively numbered logical block addresses starting from a first logical block address for the given track, the method comprising the steps of:
- looking up a first rotational time estimate for the source logical block address and a second rotational time estimate for the destination logical block address from a table of rotational time estimates accessed by logical block address number, each entry in the table of rotational time estimates having a value not more than one rotational time of the disk;
- estimating radial distance between a first track having the source logical block address and a second track having the destination logical block address based upon the source logical block address and the destination logical block address;
- looking up a head movement time estimate corresponding to the calculated radial distance in a head movement time estimate table; and
- deriving the estimated access time from the first rotational time estimate, second rotational time estimate and head movement time estimate.

5,854,942
METHOD AND SYSTEM FOR AUTOMATIC STORAGE SUBSYSTEM CONFIGURATION

George Oliver Penokie, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1996, Ser. No. 711,695
Int. Cl.^{6} G06F *11/20*
U.S. Cl. 395—830 8 Claims

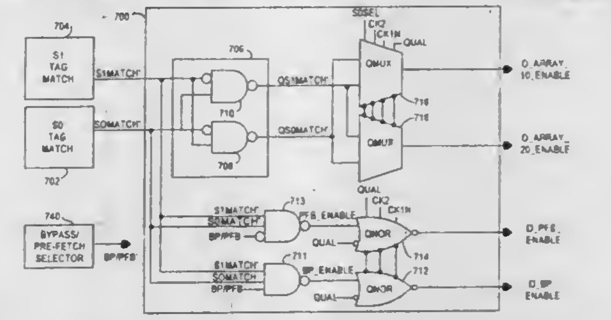

START
26
28
NEW VOLUME CREATION ?
NO
YES
30
PROMPT USER FOR VOLUME NAME
32
PROMPT USER FOR ESTIMATED SIZE OF FUTURE DATA TRANSFERS
34
PROMPT USER FOR ESTIMATED PERCENTAGE OF FUTURE SEQUENTIAL DATA TRANSFERS
36
ENTER USER ESTIMATES INTO SIMPLE CREATE/ MODIFY VOLUME SET COMMAND
38
TRANSFER SIMPLE CREATE/ MODIFY VOLUME SET COMMAND TO STORAGE CONTROLLER
40
CONFIGURE DATA STORAGE DEVICES INTO APPROPRIATE ARRAY BASED UPON USER ESTIMATES
RETURN
42

1. A method for efficiently operating a storage subsystem in conjunction with a computer system, said storage subsystem including a storage controller communicating with said computer system and a plurality of data storage devices communicating with said storage controller, wherein said plurality of data storage devices are configurable in a plurality of diverse arrays, said method comprising the steps of:
- prompting a user to specify within said computer system at least one data transfer parameter which sets forth an estimated size of future data transfers;
- coupling said at least one data transfer parameter to said storage controller; and
- automatically configuring at least certain of said plurality of data storage devices into an appropriate array for future data transfers in response to receipt of said at least one data transfer parameter.

5,854,943
SPEED EFFICIENT CACHE OUTPUT SELECTOR CIRCUITRY BASED ON TAG COMPARE AND DATA ORGANIZATION

John G. McBride, Fort Collins, and Ted B. Ziemkowski, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1996, Ser. No. 689,173
Int. Cl.^{6} G06F *15/02*
U.S. Cl. 395—871 18 Claims



1. A cache output selector for a multi-way set-associative cache memory, said cache memory for storing a plurality of lines of data, each line data containing a plurality of words of data, and for providing for simultaneous access of words grouped as a multiple-word, said cache memory comprising a plurality of data arrays wherein consecutive multiple-words of each line of data in the plurality of lines of data reside in different data arrays in the plurality of data arrays, said cache memory comprising a switchably selectable output path for outputting an addressed multiple-word either via a pre-fetch buffer path from a set of pre-fetch latches or via a bypass path which bypasses said set of pre-fetch latches said cache output selector comprising:
- for each data array of the plurality of data arrays, a tag matching circuit for checking whether an addressed multiple-word resides in the data array and for producing a tag match signal to indicate whether the addressed multiple-word resides in the data array;
- a qualifying tag match circuit which receives the respective tag match signals from each of the tag matching circuits and produces respective qualified tag match signals for each of the tag matching signals;
- for each data array of the plurality of data arrays, a qualifying multiplexor which receives the respective qualified tag match signals from the qualifying tag matching circuit as data inputs, a set selector signal which selects one of said data inputs for output, and at least one qualifying signal used to qualify when said qualifying multiplexor outputs said selected data input as a qualified data array output enable signal; and
- a qualifying output path select circuit which receives said respective tag match signals from each of said tag matching circuits as data input, said at least one qualifying signal as a qualifying input, and an output path select signal as a select

input, said qualifying output path select circuit selecting one of said prefetch path or said bypass path from which to output said addressed multiple-word and qualifying an output enable signal.

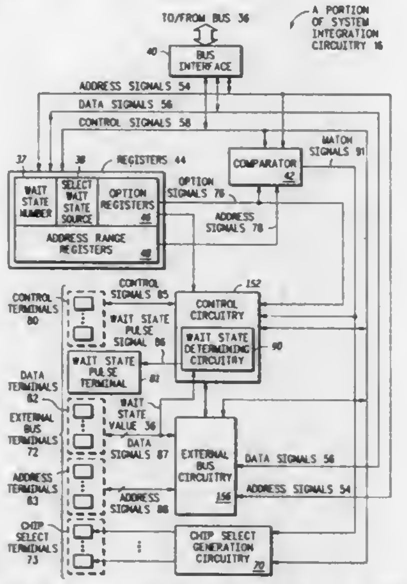
5,854,944
METHOD AND APPARATUS FOR DETERMINING WAIT STATES ON A PER CYCLE BASIS IN A DATA PROCESSING SYSTEM

Michael I. Catherwood, Austin, Tex.; Norrie R. Robertson, Clarkston, and Gordon W. McKinnon, Haxelwood, both of Scotland, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1996, Ser. No. 645,014

Int. Cl.^{6} G06F ***13/00***

U.S. Cl. 395—879 **22 Claims**



1. A method for determining wait states in a data processor having a plurality of address bus terminals and a plurality of data bus terminals, the method comprising the steps of:

providing a first address value external to the data processor by way of the plurality of address bus terminals during a bus cycle;

receiving a first wait state value from external to the data processor; and

in response to receiving the first wait state value, providing by way of the data processor a first number of wait states corresponding to the first wait state value,

wherein the first wait state value is received from external to the data processor by way of at least one of the plurality of data bus terminals.

5,854,945
BAR CODE SCANNER WITH KEYBOARD SIMULATION

Herbert V. Criscito, Denville; Xin Zheng, Northvale, and Brian Zhang, Riveredge, all of N.J., assignors to Opticon, Inc., Orangeburg, N.Y.

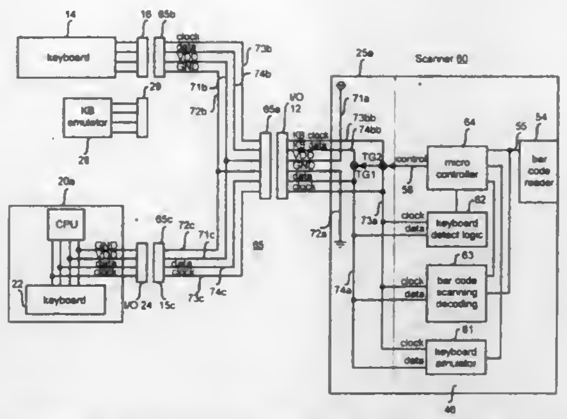
Filed Jan. 21, 1997, Ser. No. 781,345

Int. Cl.^{6} G06F ***13/00***

U.S. Cl. 395—882 **16 Claims**

1. In a bar code scanner having means for reading and processing bar code data and including a data line and a clock for either supplying signals to a computer or for receiving signals frorn the computer, means for interconnecting the scanner and a computer comprising:

an interface circuit including: (a) means for direct current connecting the signal lines of the scanner to the signal lines of a computer; and (b) selectively enabled gating means for coupling the signal lines of an external keyboard to the signal lines of the computer and the scanner;



said scanner including means for enabling said gating means whereby signals produced by an external keyboard, if present, are coupled to said signal lines;

keyboard dectect means in said scanner for sensing whether any signals indicative of the presence of an external keyboard are produced on said signal;

means in said scanner for producing signals similar to those produced by a keyboard; and

means for supplying to the data and clock lines of a computer the scanner generated signals which are similar to those produced by an external keyboard in response to the scanner sensing that a keyboard is not present in order to establish and maintain communication between the scanner and the computer.

5,854,946
LENS-FITTED PHOTO FILM UNIT AND ELECTRONIC FLASH DEVICE FOR USE THEREWITH

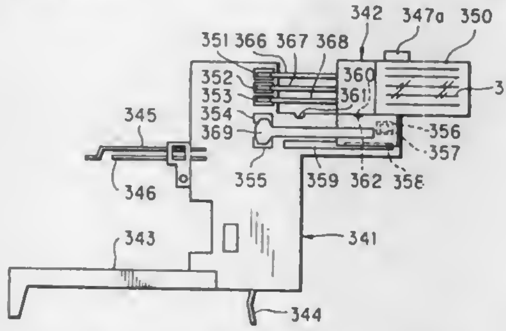
Katsumi Motomura, Saitama; Keiji Uchiyama, Kanagawa; Nobuyuki Kameyama, Kanagawa; Takashi Imamura, Kanagawa; Mitsuyoshi Mochida, Tokyo; Yukitsugu Hata, and Junichi Takagi, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 443,980, May 18, 1995, abandoned. This application Jul. 11, 1997, Ser. No. 893,665

Claims priority, application Japan, May 18, 1994, 6-103532; Aug. 22, 1994, 6-196658; Aug. 24, 1994, 6-199670; Oct. 13, 1994, 6-247465; Oct. 17, 1994, 6-250980; Oct. 17, 1994, 6-250985

Int. Cl.^{6} G03B ***17/02***

U.S. Cl. 396—6 **4 Claims**



1. A lens-fitted photo film unit, in which a film housing is pre-loaded with unexposed photo film, said film housing including a photograph-taking device including a taking lens and a shutter mechanism, said flash device including a flash-emitting section driven in response to actuation of said shutter mechanism for emitting flash light toward a photographic field within a predetermined range, a main capacitor for storing charge to be discharged in said flash-emitting section, and a flash circuit board having a flash circuit for controlling charging of said main capacitor and flash emission of said flash-emitting section,

wherein said flash-emitting section is slidably attached to said flash circuit board, said flash-emitting section including two rails arranged parallel to one another, said flash circuit board including a projecting portion, said flash-emitting section and said flash circuit board being arranged such that said rails are slidably disposed on opposite sides of said protecting portion.

5,854,947
VIBRATION REDUCING APPARATUS

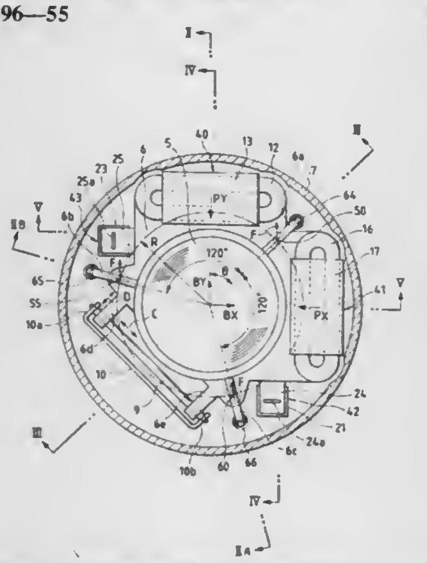
Yoshio Imura, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 16, 1997, Ser. No. 876,594

Claims priority, application Japan, Jun. 18, 1996, 8-156700; Jun. 18, 1996, 8-156723

Int. Cl.^{6} G03B ***17/00***

U.S. Cl. 396—55 **9 Claims**



1. A vibration reducing apparatus comprising:

a vibration reducing optical system for reducing vibrations;

a frame for holding said vibration reducing optical system;

a first driving force generation device for driving said frame in a first direction on a plane substantially perpendicular to an optical axis of a main optical system;

a second driving force generation device for driving said frame in a second direction perpendicular to the first direction on the plane; and

a guide portion for guiding said frame in a guide direction that is skewed relative to the first and second directions at predetermined angles, and moving said frame in a direction perpendicular to the guide direction.

5,854,948
PHOTOGRAPHIC LENS FOCUSING SYSTEM AND METHOD WHICH COMPENSATES FOR SIZE OF APERTURE

Shinichi Tsukada, Toride, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 20, 1997, Ser. No. 859,213

Claims priority, application Japan, May 20, 1996, 8-148660

Int. Cl.^{6} G03B ***13/22***

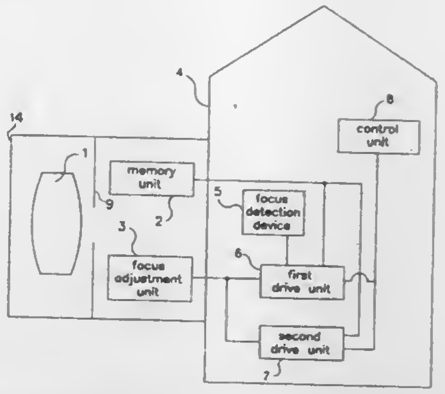
U.S. Cl. 396—93 **13 Claims**

1. A focusing system for a lens comprising:

a memory storing focusing error data indicating an amount of focus error between an open aperture and a predetermined aperture;

a focus detector which detects a focused state of the lens;

a first drive unit which calculates a focus drive amount which focuses the lens for an open aperture, based on the focus error data and the focused state detected by said focus detector, and drives the lens based on the first focus drive amount; and



a second drive unit which calculates a second focus drive amount which focuses the lens at the predetermined aperture, based on the focus error data and the focus state detected by said focus detector, and drives the lens based on the second focus drive amount.

5,854,949
FLASHER CAPABLE OF VARYING A LIGHT DISTRIBUTION ANGLE

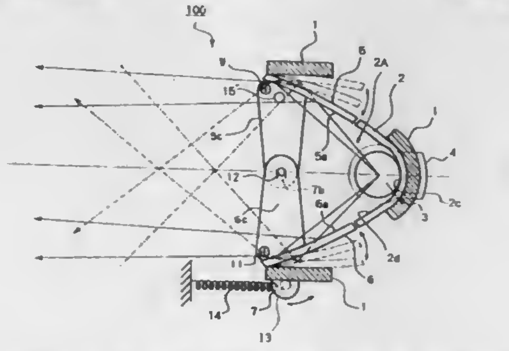
Akio Furukawa, and Toshiaki Nakahira, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 18, 1996, Ser. No. 732,710

Claims priority, application Japan, Oct. 20, 1995, 7-297623

Int. Cl.^{6} G03B ***15/06***

U.S. Cl. 396—200 **14 Claims**



3. A flasher for use in a camera with varifocal photographic lenses comprising:

a reflecting assemblage for receiving light emitted from a flash source and irradiating reflected light toward an object to be photographed wherein a distribution angle of the light that is irradiated toward said object is varied with a change in focal length of said varifocal photographic lens,

said reflecting assemblage comprising a stationary reflecting mirror where a distribution angle of the light reflected toward said object is constant, said stationary reflecting mirror having an upper portion, lower portion and depth portion with a reflecting surface positioned in the upper portion, lower portion and depth portion,

a movable reflecting mirror having an upper reflector plate disposed above said stationary mirror and a separate lower reflector plate disposed below said stationary mirror, each of said upper and lower reflector plates being separate from the stationary reflecting mirror, wherein said upper and lower reflector plates are interlocked and configured to rotate about an axis of said stationary mirror, where a distribution angle of the light reflected toward said object is variable, and

a drive mechanism for driving said movable reflecting mirror in interlock with a change in said focal length.

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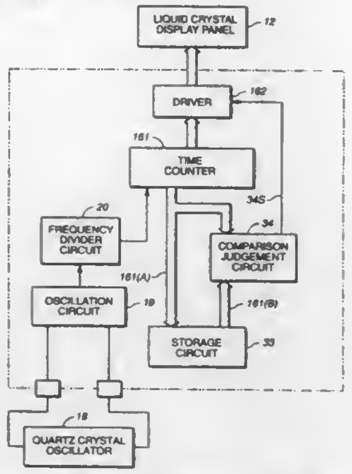
5,854,950
DATA RECORDING DEVICE FOR CAMERA AND FILM TYPE CAMERA WITH LENS

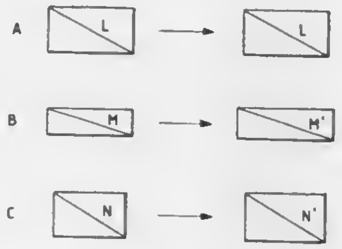
Masaaki Handa, and Masao Akaiwa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Aug. 13, 1997, Ser. No. 910,872
Claims priority, application Japan, Aug. 30, 1996, 8-229724; Jun. 9, 1997, 9-151394
Int. Cl.^{6} G03B *17/24*
U.S. Cl. 396—310 **12 Claims**


LIQUID CRYSTAL DISPLAY PANEL
12
DRIVER
162
161
TIME COUNTER
34S
20
FREQUENCY DIVIDER CIRCUIT
34
COMPARISON JUDGEMENT CIRCUIT
161(A)
OSCILLATION CIRCUIT
19
161(B)
STORAGE CIRCUIT
33
18
QUARTZ CRYSTAL OSCILLATOR

1. A data recording device for recording data on a recording medium comprising:
- a recording element;
- a time counter for providing an output to said recording element to record on the recording medium;
- a storage circuit for storing, during an updating operation, the output of said time counter as stored data; and
- a comparison judgment circuit that judges when said time counter malfunctions if at least one of:
  - 1) the output from said time counter having a first count value corresponding to the data and the store data stored in said storage circuit having a second count value are compared before the update operation are unequal; and
  - 2) the first count value and the second count value are compared -after completion of the update operation and a difference between the first and second count value exceeds a predetermined threshold.

5,854,951
FINDER

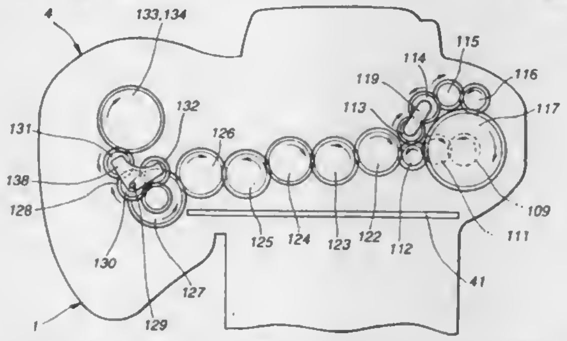
Kazumi Ito, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1997, Ser. No. 796,022
Claims priority, application Japan, Feb. 6, 1996, 8-020102
Int. Cl.^{6} G03B *13/10*
U.S. Cl. 396—378 **8 Claims**



1. A finder for a camera, wherein said camera has a first picture-framing format, a second picture-framing format and a third picture framing format that are alternatively selected, said finder comprising:
- a frame shape changing means for changing a frame shape of a finder view in accordance with alternation between said first picture-framing format, said second picture-framing format, and said third picture-framing format; and
- a finder magnification changing means for changing a magnification of said finder and functioning in association with alternation between said first, second and third picture-framing formats so as to set said finder, when said first picture-framing format is selected, in a position for a first magnification, and to set said finder, when one of said second and third picture-framing formats is selected, in a position for a second magnification.

5,854,952
CAMERA

Hiroshi Terada, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1997, Ser. No. 835,256
Claims priority, application Japan, Apr. 18, 1996, 8-097202
Int. Cl.^{6} G03B *17/24*
U.S. Cl. 396—413 **18 Claims**

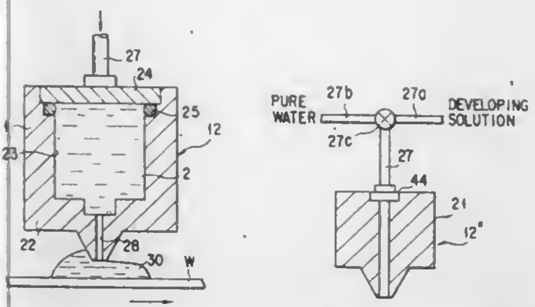


1. A camera having a winding drive system and a rewinding drive system which transfer power of a single electric motor, said camera comprising:
- a first planetary clutch mechanism for releasing power transfer within said winding drive system by rotation of said motor in a first direction and further for establishing power transfer within said winding drive system by rotation of said motor in a second direction;
- a second planetary clutch mechanism for releasing power transfer within said rewinding drive system by the rotation of said motor in said second direction and further for achieving power transfer within said rewinding drive system by the rotation of said motor in said first direction; and
- a reduction mechanism for accomplishing a differential reduction of a planetary gear of said first planetary clutch mechanism upon revolution of said planetary gear.

5,854,953
METHOD FOR DEVELOPING TREATMENT

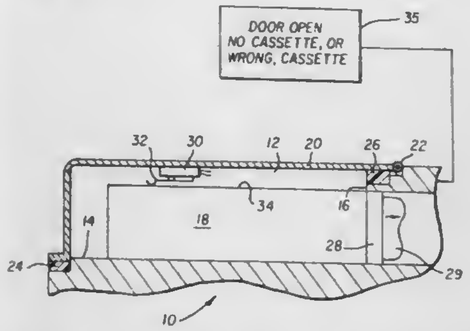
Norio Semba, Kumamoto, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Filed May 7, 1997, Ser. No. 852,698
Claims priority, application Japan, May 8, 1996, 8-113772; Apr. 24, 1997, 9-107167
Int. Cl.^{6} G03D *5/04;* **B08B** *3/02*
U.S. Cl. 396—611 **18 Claims**

1. A method for developing treatment in which a developing solution is supplied to an object to be treated for performing a developing treatment, using developing treatment apparatus comprising a nozzle for supplying said treatment solution and a pure water to said object to be treated, nozzle moving means for moving said nozzle between a first position as a starting point and a second position for supplying said treatment solution and said pure water to said object to be treated, treatment solution supply means for supplying said treatment solution to said nozzle, pure water supply means for supplying said pure water to said nozzle and control means for controlling the operation of said nozzle moving means, said treatment solution supply means and said pure water supply means, comprising the steps of:
- said control means making said nozzle moving means move said nozzle from a first position to a second position in WAIT mode;
- said control means changing a control mode of said nozzle from a WAIT mode to a NON-WAIT mode;
- said control means making said pure water supply means supply said pure water to said nozzle to supply pure water from said nozzle onto the surface of said object to be treated so as to form a liquid film of a pure water on the surface of said object to be treated; and
- said control means making said treatment solution supply means supply said treatment solution to said nozzle to supply said treatment solution from said nozzle.



5,854,954
LIGHT TIGHT CHAMBER WITH CLOSURE AND SENSOR FOR POSITION OF CLOSURE AND CASSETTE IN CHAMBER

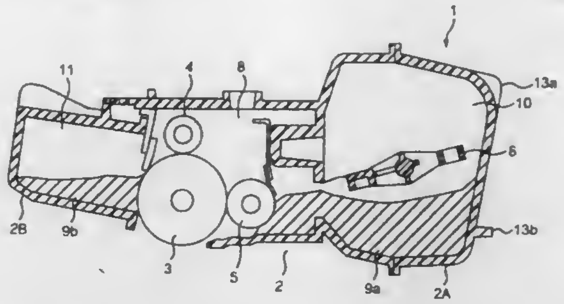
Jeffrey Charles Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 22, 1996, Ser. No. 620,431
Int. Cl.^{6} G03B *17/02*
U.S. Cl. 396—535 **7 Claims**



1. Apparatus for using light-sensitive web material, comprising:
- a chamber in the apparatus, for receiving a cassette of the material;
- a light-tight closure for the chamber;
- only one sensor, actuated by cooperation of both the closure and a cassette upon closing of the closure, for sensing both that the cassette is present in the chamber and that the chamber is closed by the closure and for producing a signal; and
- an indicator responsive to the signal to indicate either that the cassette is not present, or that the chamber is not closed, or both;
- wherein the sensor is a micro-switch mounted on the closure, the micro-switch having an actuator arm which contacts a surface of a cassette when the chamber is closed.

5,854,955
PROCESS CARTRIDGE

Katumi Yawata; Shuichi Goi, and Eiji Kurosawa, all of Ueda, Japan, assignors to Matsushita Graphic Communications Systems, Inc., Japan
Filed Jun. 25, 1997, Ser. No. 882,072
Claims priority, application Japan, Jan. 16, 1997, 9-005184
Int. Cl.^{6} G03G *21/16*
U.S. Cl. 399—111 **7 Claims**



1. A process cartridge comprising:
- a photoconductive drum disposed in a drum-housing formed in a process cartridge case;
- a toner hopper and a discharged toner box formed in said process cartridge case, so that said drum housing is interposed between said toner hopper and said discharged toner box; and
- at least one leg provided on an outer surface of said process cartridge case at a region corresponding to said toner hopper, so that said leg supports said process cartridge case in an upright condition where said discharged toner box is positioned at a top of said process cartridge case and said toner hopper is positioned at a bottom of said process cartridge case;
- wherein said process cartridge case comprises a plurality of parts separable along a border in a region of said drum housing.

5,854,956

Patent Not Issued For This Number

5,854,957
IMAGE FORMATION APPARATUS THAT CAN HAVE WAITING TIME BEFORE IMAGE FORMATION REDUCED

Takeshi Morikawa, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan
Filed May 19, 1997, Ser. No. 858,148
Claims priority, application Japan, May 22, 1996, 8-151623
Int. Cl.^{6} G03G *15/00*
U.S. Cl. 399—38 **57 Claims**

1. An image formation apparatus comprising:
- designation means for providing designation to carry out an image formation operation,
- read out means for initiating a readout operation of a document according to designation of said designation means,
- memory means for storing image data output from said readout means,
- image forming means for carrying out an image formation operation according to image data stored in said memory means,
- calculation means for calculating start timing of a first image formation operation in response to designation of said designation means,
- a member to be heated for operating at a predetermined temperature,
- switch means for switching between a standby mode in which said member to be heated is maintained at a standby tempera-

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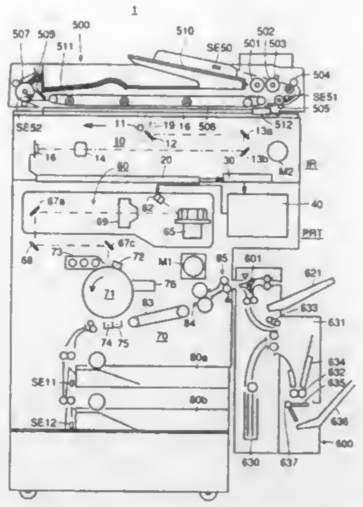


ture lower than said predetermined temperature and an operation mode in which said member to be heated is maintained at said predetermined temperature, and

control means for controlling switching timing of said switch means so that said member to be heated arrives at said predetermined temperature at said start timing of an image formation operation.

5,854,958
IMAGE FORMING APPARATUS HAVING TEST PATTERNS FOR CORRECTING COLOR DISCREPANCY

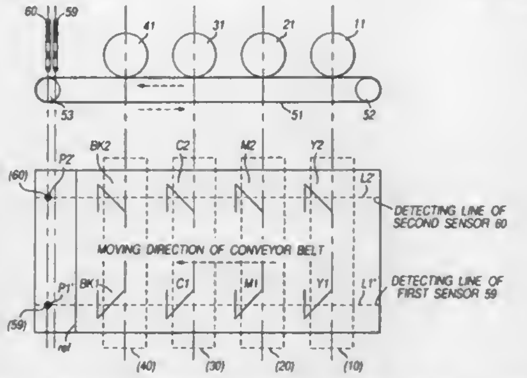
Koji Tanimoto; Kenichi Komiya, both of Kanagawa-ken, and Naoaki Ide, Shizuoka-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 1, 1996, Ser. No. 625,310

Claims priority, application Japan, Apr. 5, 1995, 7-080531

Int. Cl.⁶ G03G *15/00;15/01*

U.S. Cl. 399—49 **21 Claims**


60
59
41
31
21
11
53
51
52
BK2
C2
M2
Y2
P2
L2'
(60)
DETECTING LINE OF SECOND SENSOR 60
MOVING DIRECTION OF CONVEYOR BELT
P1
BK1
C1
M1
Y1
L1'
DETECTING LINE OF FIRST SENSOR 59
(59)
ref
(40)
(30)
(20)
(10)

19. In an image forming apparatus including means for conveying an image receiving medium in a prescribed direction and at least first, second and third image forming means for forming an image on the image receiving medium conveyed by the conveying means, a method for correcting a shift of the image formed by the image forming means in the prescribed direction from a proper position, comprising the steps of:

forming first, second and third test patterns by the first, second and third image forming means on the conveying means or the image receiving medium;

detecting a first spacing time between the first and the third test patterns, and a second spacing time between the first and the second test patterns;

obtaining image forming timings of the first, second and third image forming means using the first spacing time and the second spacing time; and

changing image forming positions so that the first, second and third image forming means form images according to the image forming timings.

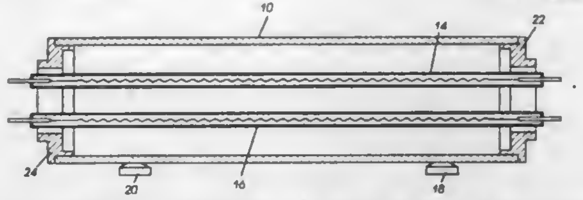
5,854,959
ADAPTIVE FUSER CONTROL FOR 180 CPM

Charles J. Mirabella, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 14, 1996, Ser. No. 749,308

Int. Cl.⁶ G03G *15/20*

U.S. Cl. 399—69 **20 Claims**



1. A method of controlling the operation of a heated fuser member, said method including the steps of:

detecting voltages applied to said heated fuser member;

detecting elapsed time in a print cycle of a printer in which said heated fuser member is utilized;

storing voltage values and corresponding fuser operating parameters;

using operating parameters corresponding to a detected voltage for controlling operation of said heated fuser member during one portion of said print cycle in accordance with elapsed time; and

determining the difference between a detected voltage and a predetermined voltage value and using the fuser operating parameters corresponding to said difference for controlling operation of said fuser member during another portion of said print cycle in accordance with elapsed time.

5,854,960
SQUEEGEE ROLLER FOR IMAGING SYSTEMS

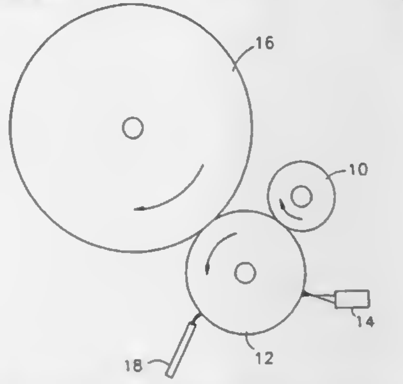
Boaz Tagansky, Rishon Lezion, and Yossi Rosen, Moshav Sytriya, both of Israel, assignors to Indigo N.V., Maastricht, Netherlands

Filed Apr. 25, 1997, Ser. No. 840,664

Claims priority, application Israel, Oct. 28, 1994, 111441

Int. Cl.⁶ G03G *15/10*

U.S. Cl. 399—239 **58 Claims**



1. Imaging apparatus including squeegee apparatus for squeegeeing excess liquid from a surface, comprising:

a first surface, having a central portion and two end portions having recessed surfaces and having material thereon at least in said central portion, said surface moving in a given direction at a squeegee region, said material comprising at least a liquid; and

a second, squeegee, surface, urged against at least the central portion of the first surface at the squeegee region, such that the squeegee surface removes at least a portion of the liquid on the first surface, said squeegee surface being formed with contiguous end portions which mate with the recessed end surfaces of the first surface,

wherein at least a portion of the material remaining on the first surface after removal of a portion of the liquid by the squeegee surface is transferred from the first surface to another surface.

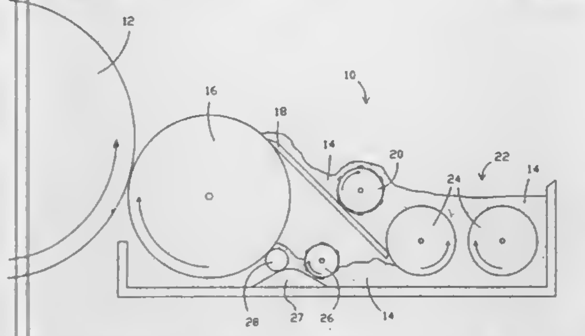
5,854,961
ELECTROPHOTOGRAPHY DEVELOPER CANISTER WITH MATERIAL-MOVING ROLLER

Mark Wibbels; Gar P. Kelly, both of Boise, and Richard L. Swantner, Meridian, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 504,164, Jul. 19, 1995, abandoned. This application Jul. 21, 1997, Ser. No. 898,023

Int. Cl.⁶ G03G *15/08*

U.S. Cl. 399—281 **18 Claims**



1. An electrophotographic developer canister for handling toner, the developer canister comprising:

a reservoir at a first end of the canister, the reservoir receiving toner and having a bottom region and a top region;

a mixing roller rotatably mounted in said reservoir for mixing the toner;

a developer sleeve rotatably mounted at a second end of the canister, the developer sleeve having an upper area and a lower area;

a lower roller rotatably mounted in the canister between the mixing roller and the developer sleeve near the bottom region of the reservoir and adapted to move toner from the bottom region of the reservoir toward the developer sleeve;

a residual toner removal means contacting the upper area of the developer sleeve for removing residual toner from the developer sleeve as the developer sleeve rotates against the removal means; and

an upper roller having an axial length rotatably mounted in the canister generally parallel to the developer sleeve, between the residual toner removal means and the mixing roller, and in contact with residual toner removed from the developer sleeve, wherein the upper roller has an outer surface having ridges positioned substantially at lead angles in the range of 45–75 degrees and extending along the axial length of the roller for moving the residual toner away from the removal means, radially over the upper roller, and into the reservoir top region generally above the mixing roller, and wherein the upper roller outer surface is a soft surface exhibiting a durometer reading in the range of 35–60 Shore A.

5,854,962
ELECTROPHOTOGRAPHIC COMPONENT CLEANING APPARATUS

Darius Boockholdt, Eagle; Howard G. Hooper, Boise, and Quintin T. Phillips, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 23, 1997, Ser. No. 936,096

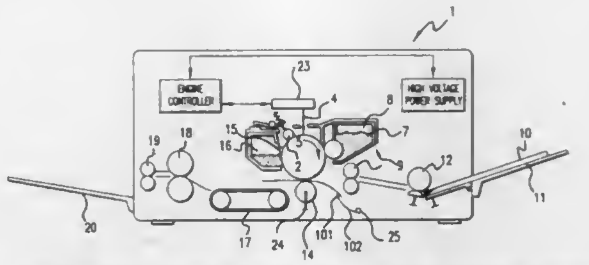
Int. Cl.⁶ G03G *21/00*

U.S. Cl. 399—343 **17 Claims**

1. An apparatus for cleaning an electrophotographic component in an electrophotographic imaging device having a media path, said apparatus comprising:

a sheet of cleaning media for insertion into said media path and for contact with said electrophotographic component; and

a retaining device coupled to said sheet of cleaning media, said retaining device for retaining said sheet of cleaning media in said media path during movement of said electrophotographic component.



5,854,963
APPARATUS AND METHOD FOR THE HANDLING OF LIGHT-SENSITIVE LAYER CARRIERS

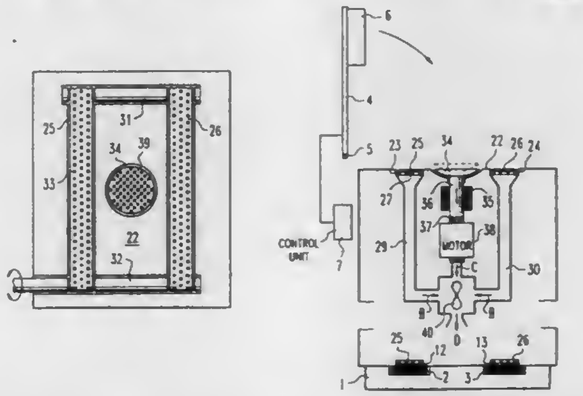
Wilfried Hehn, München, Germany, assignor to Agfa-Gevaert AG, Leverkusen, Germany

Filed May 22, 1997, Ser. No. 862,063

Claims priority, application Germany, Jun. 28, 1996, 196 25 963.0

Int. Cl.⁶ G03G *21/00;* **G03B** *27/60*

U.S. Cl. 399—345 **8 Claims**



1. A method of operating with a carrier for photographic material, comprising the steps of attracting at least one article of photographic material to said carrier; moving said carrier during the attracting step to displace said one article; removing said one article from said carrier; attracting a second article to said carrier; and cleaning said carrier automatically, the cleaning step being performed between the removing step and the step of attracting said second article.

5,854,964
IMAGE READING APPARATUS HAVING AN AUTO DOCUMENT FEEDER

Tomoyuki Atsumi, Toyohashi, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 23, 1997, Ser. No. 842,039

Claims priority, application Japan, Apr. 24, 1996, 8-102142

Int. Cl.⁶ G03G *15/00*

U.S. Cl. 399—371 **32 Claims**

1. An image reading apparatus comprising:

an image reading unit for reading the image of an original placed in an original reading area to generate image data;

an original conveying unit for conveying an original to said original reading area of said image reading unit in a sub-scan direction;

an original position detecting unit for detecting the position of an original conveyed to said original reading area by said original conveying unit;

an operation unit for calculating a dislocation amount between said detected original position and a standard original reading position in said original reading area;

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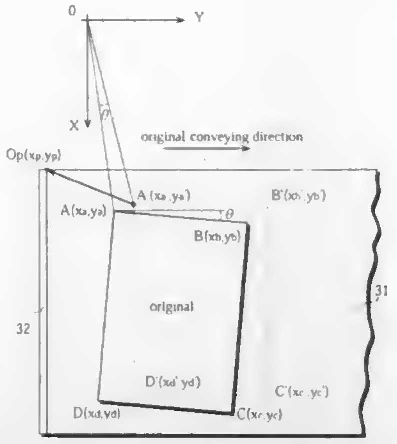


a dislocation display unit for displaying an operation result of said operation unit; and

an adjustment device for changing the position of said original in response to said dislocation amount.

5,854,965
DUPLEX IMAGE FORMING APPARATUS WITH FRONT SURFACE UP DISCHARGE CONTROL

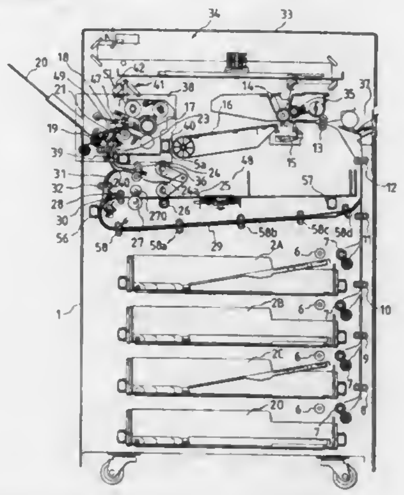
Akihiro Kasiwabara, Tokyo, and Mitsuhiro Mukasa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 598,282, Feb. 8, 1996, abandoned, which is a continuation of Ser. No. 167,142, Dec. 16, 1993, abandoned. This application Jun. 6, 1997, Ser. No. 870,592

Claims priority, application Japan, Dec. 18, 1992, 4-355745; Oct. 25, 1993, 5-289878; Oct. 25, 1993, 5-289879; Oct. 29, 1993, 5-272118

Int. Cl.^{6} G03G *15/00*

U.S. Cl. 399—381 **25 Claims**



1. An image forming apparatus, comprising:

image forming means for forming an image on a sheet;

discharge means for discharging a sheet from the image forming apparatus;

a convey path for guiding the sheet;

switching means for selectively introducing the sheet on which the image was formed by the image forming means to said discharge means or said convey path; and

support means for supporting said discharge means, said convey path and said switching means as a unit drawable in a substantially horizontal direction intersecting with the discharging direction of said discharge means.

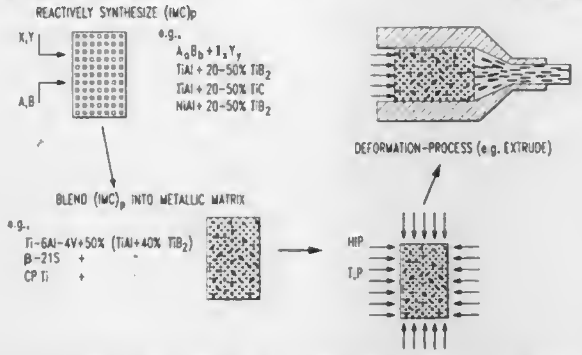
5,854,966
METHOD OF PRODUCING COMPOSITE MATERIALS INCLUDING METALLIC MATRIX COMPOSITE REINFORCEMENTS

Stephen L. Kampe, Alum Ridge, Va., and Leontios Christodoulou, London, England, assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 448,858, May 24, 1995, Pat. No. 5,744,254. This application Aug. 12, 1997, Ser. No. 909,651

Int. Cl.^{6} B22F *3/20*

U.S. Cl. 419—67 **4 Claims**


REACTIVELY SYNTHESIZE (IMC)p
X,Y
A,B
e.g.,
AaBb+IxYy
TiAl + 20–50% TiB2
TiAl + 20–50% TiC
NiAl + 20–50% TiB2
DEFORMATION-PROCESS (e.g. EXTRUDE)
BLEND (IMC)p INTO METALLIC MATRIX
e.g.,
Ti-6Al-4V+50% (TiAl+40% TiB2)
β-21S +
CP Ti +
HIP
T,P

1. A method for making a composite material, the method comprising:

a) mixing metal, metal alloy or intermetallic powder with composite powder comprising an intermetallic matrix with ceramic particles dispersed therein; and

b) consolidating the mixture to form a composite material comprising a continuous matrix having composite reinforcements dispersed therein.

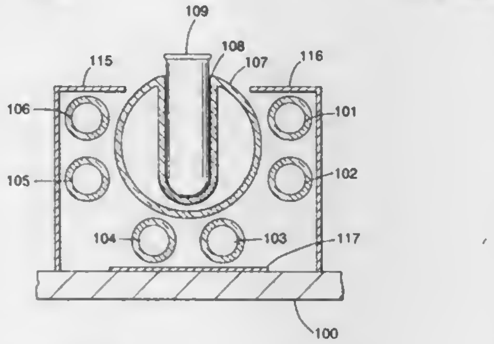
5,854,967
DEVICE AND METHOD FOR PHOTOACTIVATION

David P. Hearst, Redwood City; George D. Cimino, Lafayette; John E. Hearst, Berkeley, and Stephen T. Isaacs, Orinda, all of Calif., assignors to Cerus Corporation, Concord, Calif.

Continuation of Ser. No. 477,670, Jun. 7, 1995, Pat. No. 5,683,661, which is a continuation of Ser. No. 320,126, Oct. 7, 1994, Pat. No. 5,503,721, which is a continuation of Ser. No. 965,083, Oct. 22, 1992, abandoned, which is a continuation of Ser. No. 732,750, Jul. 18, 1991, abandoned, which is a division of Ser. No. 428,570, Oct. 30, 1989, Pat. No. 5,021,894. This application Feb. 25, 1997, Ser. No. 805,456

Int. Cl.^{6} B01J *19/12*

U.S. Cl. 422—186.3 **10 Claims**



1. A device, comprising:

a. means for providing electromagnetic radiation;

b. means for supporting a liquid sample in a fixed relationship with said radiation providing means during irradiation;

c. an opaque housing for containing said radiation providing means; and

d. means for maintaining the temperature of said liquid sample within a desired temperature range during said irradiation comprising a chamber positioned interior to said housing and in a fixed relationship to said radiation providing means.

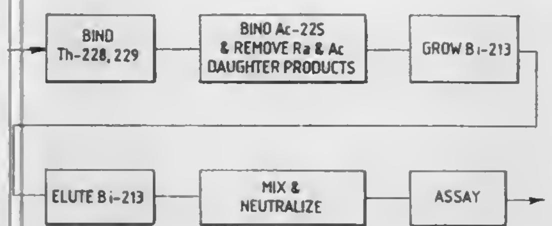
5,854,968
PROCESS AND APPARATUS FOR THE PRODUCTION OF BI-213 CATIONS

E. Philip Horwitz, Naperville; John J. Hines, Newark; Renato Chiarizia, and Mark Dietz, both of Elmhurst, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Jun. 9, 1997, Ser. No. 871,517

Int. Cl.^{6} C01G *29/00*

U.S. Cl. 423—2 **14 Claims**



1. A process for producing substantially impurity-free Bi-213 cations comprising the steps of:

(a) contacting an acidic feed solution containing Ac-225 cations with an ion exchange medium having a plurality of binding sites thereon adapted to bind said Ac-225 thereto to form an Ac-225-laden ion exchange medium;

(b) maintaining said Ac-225-laden ion exchange medium for a predetermined period of time so as to form Bi-213 cations from Ac-225 by radioactive decay;

(c) contacting an acid solution with said Ac-225-laden ion exchange medium to release said Bi-213 therefrom, to form a Bi-213 cations acid solution; and

(d) recovering said Bi-213 acid solution from said Ac-225-laden ion exchange medium to form a substantially impurity-free Bi-213 acid solution.

5,854,969
STEREO APPARATUS THAT INCLUDES A MASTER UNIT AND A SLAVE UNIT

Sven-Åke Gullner, Västra Frölunda, Sweden, assignor to AB Volvo, Göteborg, Sweden

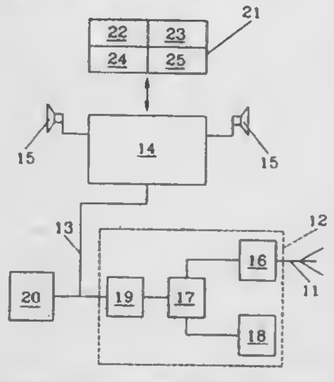
PCT No. PCT/SE94/00785, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO95/06360, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 25, 1994, Ser. No. 602,827

Claims priority, application Sweden, Aug. 25, 1993, 9302741

Int. Cl.^{6} H04B *1/06*

U.S. Cl. 455—68 **8 Claims**



1. Stereo apparatus for providing sound in vehicles comprising a receiving means for radio-frequency waves with frequency selection, an antenna connected to said receiving means, an operating means located in the vehicle close to the driver's seat including a power amplifier with controls for sound adjustment, and loudspeakers connected to said power amplifier, wherein said receiving means is divided into a master unit close to the driver's seat in the vehicle, and a slave unit which is located together with the antenna remotely from said master unit, said slave unit comprising a circuit controlled from said master unit for selecting a desired transmitter frequency signal that includes a stereo signal, a mixer, an oscillator, and a circuit including an intermediate frequency amplifier for converting the selected stereo signal into a signal of intermediate frequency with mainly a constant frequency, and said master unit comprising a detector, a stereo decoder and a pre-amplifier.

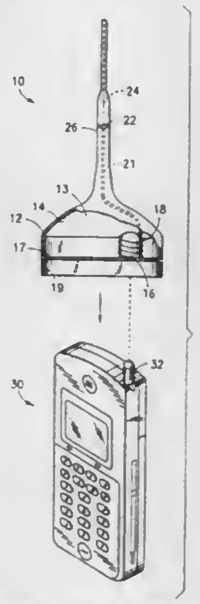
5,854,970
ACCESSORY RF UNIT FOR HAND-HELD WIRELESS TELEPHONE SYSTEMS

Seppo Kalervo Kivela, Salo, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland

Filed Oct. 8, 1996, Ser. No. 730,458

Int. Cl.^{6} H04B *1/38*

U.S. Cl. 455—90 **17 Claims**



1. An accessory RF unit used in combination with a hand-held wireless telephone, comprising:

a housing, wherein said housing contains a recess to accept an antenna of said wireless telephone;

means for coupling said housing to said wireless telephone such that said antenna of said wireless telephone is at least partially disposed within said recess;

a coil disposed about said recess, wherein said coil electromagnetically couples an RF signal to and from said antenna of said wireless telephone;

an accessory antenna mounted to said housing; and

an electrical conductor that electrically couples said coil to said accessory antenna; wherein said coil is tuned to match the transmitted frequency of said antenna of said wireless telephone, and wherein said coil is tuned at least in part using an external reactance disposed parallel to or in series with said coil.

5,854,971
OUTPUT-CONTROLLED POWER AMPLIFIER, RADIO COMMUNICATION TERMINAL AND RADIO COMMUNICATION BASE STATION

Yoshinori Nagoya, Yokohama; Takashi Sakai, Fujisawa; Yuji Ishida, Machida, and Ken Takei, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,135

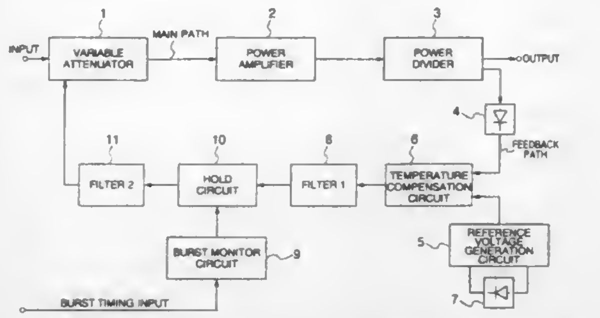
Claims priority, application Japan, Mar. 31, 1995, 7-075487

Int. Cl.^{6} H01Q *11/12*

U.S. Cl. 455—126 **49 Claims**

1. An output-controlled power amplifier comprising:

a variable attenuator inputted with an input signal for attenuating the power of said input signal to output the attenuated signal;



a power amplifier connected to said variable attenuator for amplifying an output signal of said variable attenuator to output the amplified signal;

a power divider connected to said power amplifier for dividing an output signal of said power amplifier into a plurality of outputs to provide the plurality of outputs;

an envelope detector connected to said power divider for envelope-detecting an output signal provided by said power divider to output the envelope-detected signal;

a temperature compensation circuit connected to said envelope detector for holding the conversion gain of said envelope detector for temperature change constant;

a filter connected to said temperature compensation circuit for waveform-shaping an output signal of said temperature compensation circuit to output the waveform-shaped signal;

a reference voltage generation circuit connected to said temperature compensation circuit for generating a reference voltage and supplying said reference voltage to said temperature compensation circuit;

a hold circuit connected to said filter for extracting and holding an output signal of said filter; and

a burst monitor circuit connected to said hold circuit for controlling said hold circuit on the basis of a burst timing signal inputted from the exterior; wherein said hold circuit is connected to said variable attenuator so that said variable attenuator attenuates the power of said input signal on the basis of an output signal of said hold circuit.

5,854,972

CIRCUIT FOR ADJUSTING TRANSMIT POWER

Mark A. Pennock, Lake Zurich, and David C. Thompson, Grayslake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 16, 1996, Ser. No. 648,847

Int. Cl.^{6} H01Q *11/12;* **H04B** *1/04*

U.S. Cl. 455—126 **5 Claims**

5. A radiotelephone comprising:

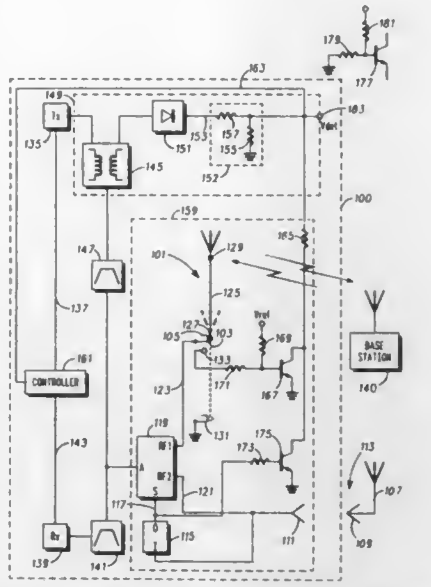
a transmitter for outputting a transmit power of the radiotelephone;

a power-level detector including a rectifier outputting a rectified voltage that is proportional to a power level of the transmit power, and a voltage-divider network including a detector resistor to which a portion of the rectified voltage is applied;

a shunt resistor coupled in a parallel configuration with the detector resistor;

a first switch, coupled in series with the shunt resistor, having an open position and a closed position and responsive to the rectified voltage; and

a second switch, coupled in series with the first switch, having an open position and a closed position, wherein when the first switch is in the open position, indicative of the rectified voltage below a predetermined value, the second switch is disabled thereby preventing adjustment of the transmit power, and wherein when the first switch is in the closed position, indicative of the rectified voltage exceeding a predetermined value, the second switch is enabled thereby allowing adjustment of the transmit power.



5,854,973

RADIO RECEIVERS

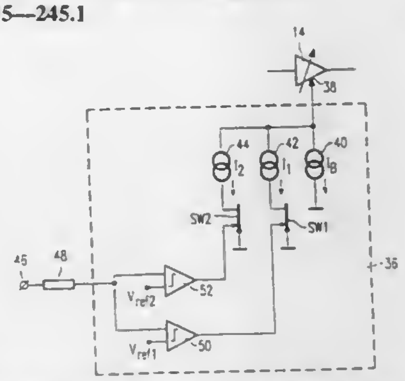
Knud Holtvoeth, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1997, Ser. No. 810,901

Claims priority, application European Pat. Off., Mar. 6, 1996, 96301543

Int. Cl.^{6} H04B *1/06*

U.S. Cl. 455—245.1 **6 Claims**



1. A receiver including an rf amplifier having an input,an output and a gain control input, and gain control means for applying a gain setting signal to said gain control input, the gain control means comprising at least 2 parallel arranged bias current means, at least one of said at least 2 bias current means including switching means responsive to a control signal varying by at least a predetermined amount relative to a reference signal for actuating the switching means to connect or disconnect the bias current means to or from the gain control input.

5,854,974

COMPENSATED RING MIXERS

Xiaohui Li, San Jose, Calif., assignor to Watkins Johnson Company, Palo Alto, Calif.

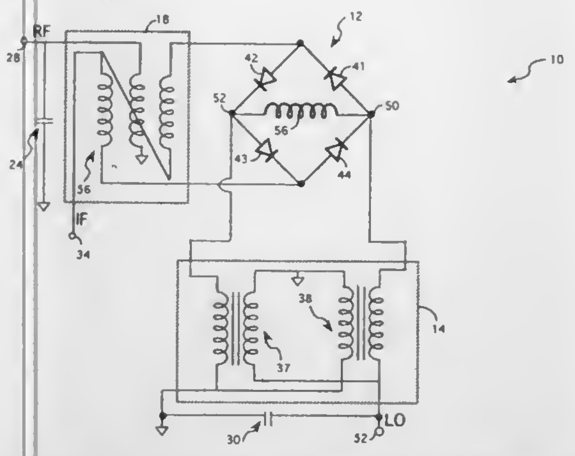
Filed Apr. 11, 1995, Ser. No. 420,249

Int. Cl.^{6} H04B *1/26*

U.S. Cl. 455—330 **39 Claims**

11. A mixer, comprising:

an RF balun coupled to an RF port having first and second RF terminals for receiving an RF signal;



an LO balun for receiving an LO signal of an LO frequency and for generating a first switching signal at said LO frequency and a second switching signal at the LO frequency but out-of-phase with said first switching signal;

switching ring means for mixing said RF signal with said LO signal, said switching ring means comprising a plurality of switching elements each exhibiting individual switching element capacitive reactances varying as a function of switching signal phase and amplitude at said LO frequency, said switching elements connected between a first node and a second node so that as the capacitive reactance of one or more of said plurality of switching elements increases in response to a first switching signal applied thereto, the capacitive reactance of another one or other ones of said plurality of switching elements decreases in response to a second switching signal applied thereto so that the variation in the resultant capacitive reactance presented between said first and second nodes is substantially constant; and

a compensation element having an inductive reactance value selected to resonate with said resultant substantially constant capacitive reactance and connected between said first and second nodes, said first and second nodes being at virtual signal ground with respect to said first and second RF port terminals, said compensation element becoming resonant at the frequency of said LO signal with said resultant substantially constant capacitive reactance so as to cancel said resultant substantially constant capacitive reactance and thereby prevent said resultant substantially constant capacitive reactance from adversely degrading mixer performance.

5,854,975

PREPAID SECURITY CELLULAR TELECOMMUNICATIONS SYSTEM

Douglas V. Fougnies, and Dan B. Harned, both of Tempe, Ariz., assignors to Freedom Wireless, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 364,479, Dec. 23, 1994, Pat. No. 5,722,067. This application Nov. 15, 1995, Ser. No. 559,283

Int. Cl.^{6} H04Q *7/00;* **H04M** *15/00*

U.S. Cl. 455—408 **12 Claims**

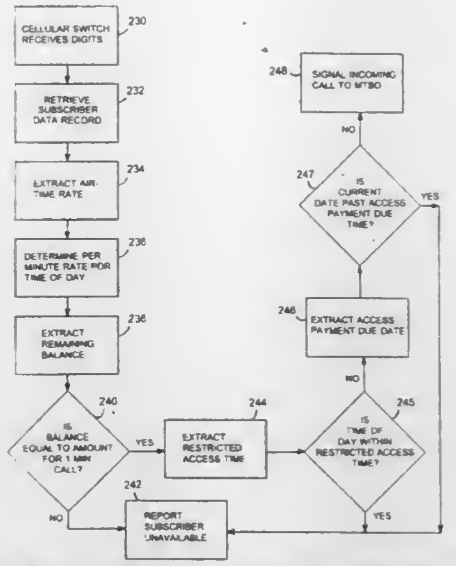
10. A method of cellular telecommunications comprising the steps of:

establishing a prepaid subscriber account balance linked to a predetermined cellular telephone number assigned to a subscriber;

writing the established prepaid subscriber account balance to a database;

initiating a cellular telecommunications event by calling a subscriber's cellular telephone number;

receiving the subscriber's cellular telephone number at a cellular switch from a local exchange carrier, the cellular switch recognizing the subscriber's cellular telephone number as belonging to a pre-paid subscriber;


CELLULAR SWITCH RECEIVES DIGITS
230
RETRIEVE SUBSCRIBER DATA RECORD
232
EXTRACT AIR-TIME RATE
234
DETERMINE PER MINUTE RATE FOR TIME OF DAY
236
EXTRACT REMAINING BALANCE
236
IS BALANCE EQUAL TO AMOUNT FOR 1 MIN CALL?
240
YES
NO
EXTRACT RESTRICTED ACCESS TIME
244
REPORT SUBSCRIBER UNAVAILABLE
242
IS TIME OF DAY WITHIN RESTRICTED ACCESS TIME?
245
YES
NO
EXTRACT ACCESS PAYMENT DUE DATE
246
IS CURRENT DATE PAST ACCESS PAYMENT DUE TIME?
247
YES
NO
SIGNAL INCOMING CALL TO MTBO
248

sending a first signal from the cellular switch indicating readiness to receive digits comprising the subscriber's cellular telephone number that was called;

receiving the first signal at the local exchange carrier and sending a multi-frequency digit string comprising at least a portion of the subscriber's cellular telephone number to the cellular switch;

receiving the multi-frequency digit string at the cellular switch and accessing a host computer which is in communication with the subscriber database;

validating existence of a pre-determined subscriber account balance in the subscriber database that is not subject to any current restrictions based upon the time of day of the telecommunications event;

establishing communications between the host computer and the cellular carrier to obtain an available telecommunications line and out pulsing the called subscriber's cellular telephone number only if an affirmative validation at step (h) occurs;

checking for a connection with the subscriber's cellular telephone number and, upon occurrence thereof, decrementing the subscriber account balance at regular intervals during the telecommunications event until there is a disconnection with the subscriber's cellular telephone number; and

disconnecting the telecommunications event at the host computer upon occurrence of a negative validation at step (h) or a disconnection condition at step (j).

5,854,976

SUBSCRIBER IDENTITY AUTHENTICATION IN FIXED CELLULAR TERMINALS

Jose Maria Garcia Aguilera, and Jose Maria Rodrigo Sanchez, both of Madrid, Spain, assignors to Alcatel N.V., Rijswijk, Netherlands

PCT No. PCT/EP95/05077, § 371 Date Nov. 13, 1996, § 102(e) Date Nov. 13, 1996, PCT Pub. No. WO96/21377, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 21, 1995, Ser. No. 700,535

Claims priority, application Spain, Dec. 30, 1994, 9402693

Int. Cl.^{6} H04B *1/38;* **H04M** *11/00*

U.S. Cl. 455—411 **4 Claims**

1. A procedure for authentication of subscriber identity for a fixed cellular terminal (TCF) so as to allow the fixed cellular terminal to be used by a subscriber, said procedure implemented by a subscriber identity module (SIM) incorporated in the fixed cellular terminal (TCF) by making use of a subscriber identification number and by use of an internal memory within the TCF, characterized in that the fixed cellular terminal (TCF) performs the following steps:

storing a first subscriber identification number in the subscriber identity module (SIM),

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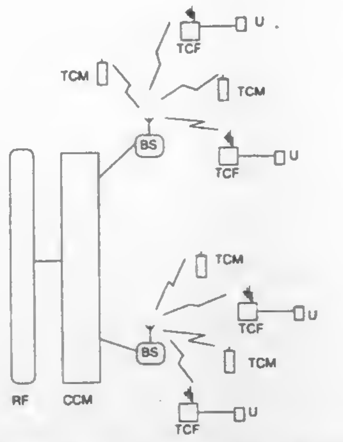


supplying to the subscriber identity module (SIM) a second subscriber identification number,

fully activating the subscriber identity module (SIM) so as to allow the TCF to be used by the subscriber in the event that the first and second subscriber identification numbers coincide, and

generating a new subscriber identification number and storing this new subscriber identification number in both the internal memory and in the subscriber identity module (SIM) if the first and second subscriber identification numbers coincide.

5,854,977

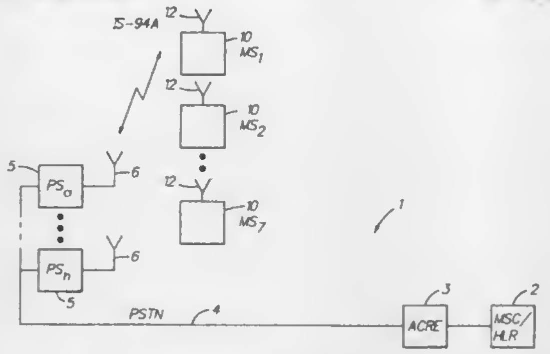
CALL TRANSFER AND SIMPLEX CALL CAPABILITY IN A RESIDENTIAL SYSTEM USING WIRELESS RESIDENTIAL EXTENSION HANDSETS

Markku Oksanen, Salo, Finland; Juha Peranto, Irving, Tex.; Seppo Alanara, Hallituskatu, Finland; Teppo Jylankl, Oulu, Finland; Pekka Llukkonen, Euless, Tex., and Kalevi Malmi, Salo, Finland, assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Jan. 11, 1996, Ser. No. 584,333

Int. Cl.^{6} H04Q *7/38*

U.S. Cl. 455—417 **49 Claims**



1. A method of operating a wireless communications system having at least one base station and a plurality of mobile stations capable of wireless communications with the at least one base station, comprising the steps of:

in response to input from a user of a first mobile station, transmitting a message from the first mobile station to the base station, the message including a request for service;

receiving the message at the base station and interpreting the request for service as being one of a first type of request and a second type of request in accordance with a state of the first mobile station at a time that the message was transmitted; and

performing the requested service in cooperation with at least one second mobile station.

5,854,978

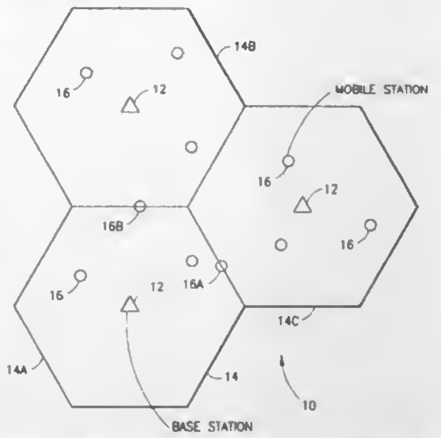
REMOTELY PROGRAMMABLE MOBILE TERMINAL

Alireza Ryan Heidari, Encinitlas, Calif., assignor to Nokia Mobile Phones, Ltd., Salo, Finland

Filed Apr. 16, 1996, Ser. No. 632,910

Int. Cl.^{6} H04Q *7/14;7/18*

U.S. Cl. 455—418 **13 Claims**



1. A system for programming a telephone comprising:

a base station, and a plurality of mobile stations which communicate via said base station;

wherein each of said mobile stations comprises a telephone including a digital signal processor (DSP) having compression means for compressing outgoing voice signals, expansion means for expanding incoming voice signals, and a computer forming a part of said compression means and said expansion means;

wherein said telephone further comprises a memory for storing a first program, said first program serving to direct said computer in accordance with a predetermined protocol to accomplish said compressing and said expanding of voice signals;

wherein said system further comprises means for downloading said first program from said base station to each of said mobile stations, and means for substituting a second program in place of said first program to alter said protocol; and

wherein the DSP in one of said mobile stations differs from the DSP in another of said mobile stations and, in each of said mobile stations, said telephone is operative to transmit to said base station an identification of a type of said telephone's DSP prior to a downloading of said first program, said base station stores a plurality of versions of said first program and of said second program, and said downloading is accomplished by matching a version of each of said first and said second programs to a type of DSP at each of said mobile stations.

5,854,979

PAGING SIGNAL TRANSMISSION EQUIPMENT FOR THE RADIO PAGING SYSTEM AND ITS SIGNAL TRANSMISSION METHOD

Yuuichi Iwajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,259

Claims priority, application Japan, Nov. 22, 1994, 6-287881

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—426 **16 Claims**

1. A paging signal transmission equipment having a capability of an alternate paging signal transmission which transmits a plurality of data in different transmission speeds to each other in a period of same transmission cycle, comprising:

a paging request receiving part for receiving paging request signals from a telephone network;

a plurality of queuing buffers, each storing different forms of said paging request signals;

a buffer selecting part for sorting said paging request signals received at said paging request receiving part to each form of said paging request signals and for distributing each form of said paging request signals to a corresponding one of said plurality of queuing buffers;

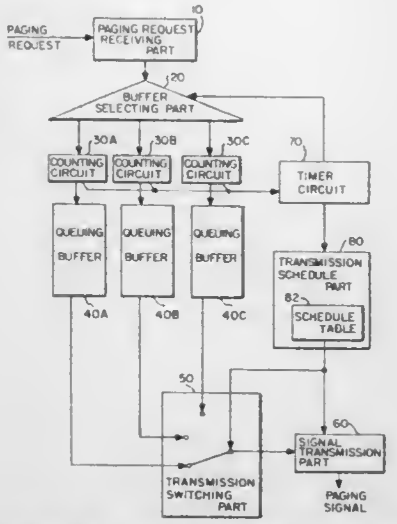
a plurality of counting circuits, each being provided in correspondence with each one of said plurality of queuing buffers, for counting the number of said paging request signals stored in each of said corresponding queuing buffers;

a timer circuit for calculating a time period required for transmitting paging signals corresponding to said paging request signals being stored in each of said queuing buffers and for instructing said buffer selecting part to stop reception of said paging request signals when a time period calculated has reached a time period of one transmission cycle;

a transmission schedule part for receiving forms of said paging request signals to be transmitted in a period of the same transmission cycle from said timer circuit in each transmission cycle, for aligning each form of said paging request signals in a sequence to minimize insertion of dummy signals for removing synchronization;

a transmission switching part for outputting said paging request signals stored in each of said plurality of queuing buffers in the scheduled sequence indicated by said transmission schedule part; and

a signal transmission part for converting said paging request signals, output through said transmission switching part, to a paging signal to be transmitted.



5,854,980

RADIO COMMUNICATION APPARATUS CONNECTED WITH A BASE STATION USED IN A SERVICE AREA PRIOR TO THE OTHERS

Shinya Takahashi, and Munehisa Tomioka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

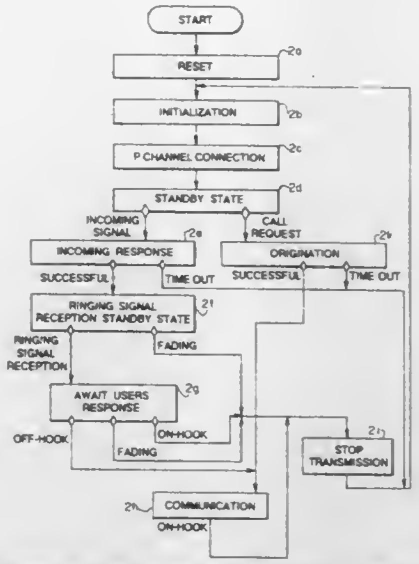
Filed Mar. 16, 1995, Ser. No. 405,204

Claims priority, application Japan, Mar. 18, 1994, 6-048867

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—434 **30 Claims**

5. A radio communication apparatus for use in a radio communication system, wherein a plurality of radio channels in a predetermined band of frequencies include a first group of channels used for initializing operation of the apparatus, a second group of channels used while awaiting a call origination or a call reception, and a third group of channels having at least one channel in common with each of the first and second groups of channels, the third group of channels being used in response to the call origination or the call reception, the system including a plurality of service areas, each of the service areas being assigned a system identification number which is broadcast by one or more base stations over at least one of the radio channels, the radio communication apparatus comprising:



storing means for storing at least one stored system identification number corresponding to a service area:

receiving means for receiving a plurality of signals, each of the signals being transmitted over at least one of the radio channels, each of the signals including a system identification number;

listing means for listing at least one of the channels of the first group, wherein the system identification number included in the signals transmitted over each channel listed by the listing means coincides with the stored system identification number;

first selecting means for selecting one of the channels of the second group from the channels listed by the listing means, the channel of the second group selected by the first selecting means being a channel over which signals are received by the receiving means; and

second selecting means for selecting one of the channels of the third group, the channel selected by the second selecting means being coincident with the channel of the second group selected by the first selecting means, the channel of the third group selected by the second selecting means being a channel over which signals are received by the receiving means,

and wherein the channel selected by the second selecting means is used for the call origination or the call reception.

5,854,981

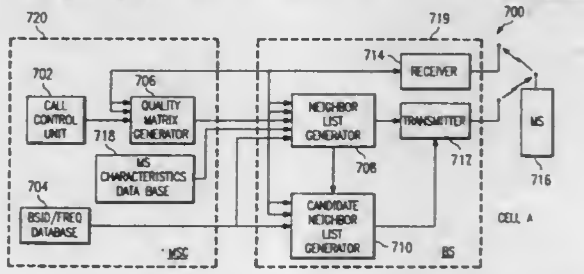
ADAPTIVE NEIGHBOR CELL LIST

Kenneth Yngve Wallstedt, Solna; Carl Magnus Frodigh, Kista; Håkan Gunnar Olofsson, Stockholm; Knut Magnus Almgren, Sollentuna, all of Sweden; Francois Sawyer, St. Hubert, and Andre Beliveau, Laval, both of Canada, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 512,449, Aug. 8, 1995. This application Mar. 1, 1996, Ser. No. 609,422

Int. Cl.^{6} H04Q *7/20*

U.S. Cl. 455—439 **48 Claims**



1. In a mobile telecommunications system comprising a plurality of mobile stations and a fixed network comprising a first base station and a first plurality of neighboring base stations, each of said first base station and first plurality of neighboring base stations

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having a coverage area, a method for creating a neighbor cell list for use in determining a handoff target base station in handoff of communications with a selected mobile station from the first base station to a neighboring base station, said method comprising the steps of:

collecting data at a call control unit, the data associated with the first base station and each of the first plurality of neighboring base stations;

providing the data collected during said step of is collecting to a quality matrix generator;

determining, responsive to the data provided during said step of providing the data, at the quality matrix generator, a plurality of parameters, each of said parameters associated with the first base station and one of the plurality of neighboring base stations;

providing the plurality of parameters, determined during said step of determining, to a neighbor cell list generator; and

generating, responsive to said parameters provided to the neighbor cell list, a neighbor cell list, said neighbor cell list including a channel identifier of a channel of each of a second plurality of neighboring base stations of the first plurality of neighboring base stations.

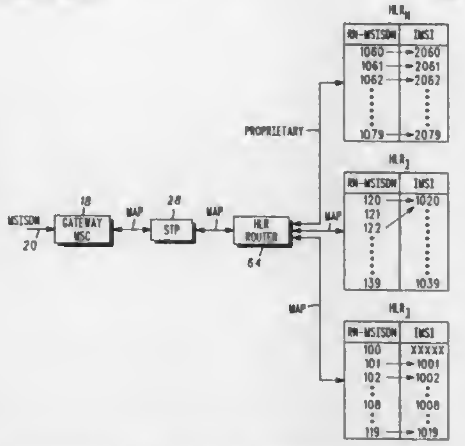
5,854,982
COMMUNICATION SYSTEM ARCHITECTURE AND METHOD OF ROUTING THEREFOR

David Chambers, Winchester, United Kingdom; Kenneth A. Gustafson, Schaumburg, Ill.; Paul Crichton, Newbury, United Kingdom; Karen E. Hathaway-Norman, Palatine, Ill.; Sue Ellen Schroeder, Streamwood, Ill., and Dennis E. Vogt, South Elgin, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 21, 1995, Ser. No. 517,515

Int. Cl.^{6} H04Q *7/20;7/22;7/24*

U.S. Cl. 455—445 **20 Claims**



1. A communication system having a range of Mobile Subscriber Integrated Service Digital Network (MSISDN) addresses and a range of International Mobile Subscriber Identities (IMSIs) assigned thereto for storing subscription information, the communication system comprising at least two distinct databases having a different format and content and separated from one another and indexed in terms of said ranges of MSISDN addresses and said ranges of IMSIs, wherein a cross-reference is both stored within a particular MSISDN and a particular IMSI to maintain an association therebetween, thereby allowing access to subscription information stored in at least one of the particular MSISDN and the particular IMSI.

5,854,983
DIGITAL CORDLESS TELEPHONE SYSTEM

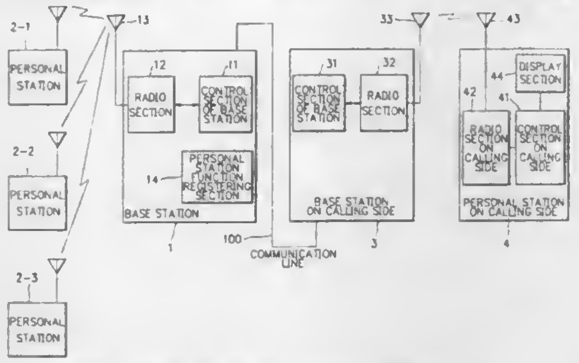
Masataka Goto; Tetsuya Kato, both of Tokyo; Kazuyuki Tate, Gifu, and Yoichi Ogawa, Kanagawa, all of Japan, assignors to NEC Corporation; Oki Electric Industry Co., Ltd., and Nippon Telegraph and Telephone Corporation, all of Tokyo, Japan

Filed Jun. 6, 1996, Ser. No. 659,399

Claims priority, application Japan, Jun. 7, 1995, 7-139774

Int. Cl.^{6} H04M *11/00*

U.S. Cl. 455—462 **6 Claims**


2-1
PERSONAL STATION
13
12
RADIO SECTION
11
CONTROL SECTION OF BASE STATION
2-2
PERSONAL STATION
14
PERSONAL STATION FUNCTION REGISTERING SECTION
BASE STATION
2-3
PERSONAL STATION
1
100
COMMUNICATION LINE
33
31
CONTROL SECTION OF BASE STATION
32
RADIO SECTION
BASE STATION ON CALLING SIDE
3
43
44
DISPLAY SECTION
42
41
RADIO SECTION ON CALLING SIDE
CONTROL SECTION ON CALLING SIDE
PERSONAL STATION ON CALLING SIDE
4

5. A digital cordless telephone system comprising:

a base station connectable via a service channel with a call sending station; and

a plurality of personal stations of which a respective one is linked by radio waves with the base station so that it is responsible for a call received from the call sending station via the base station, to be operative into an off-hook state thereof, where it is connectable for a talk with the call sending station via the base station, the respective personal station having at least one of a talk reservation function, a private talk function and a hand-free function preset thereto to be effective in the off-hook state thereof,

wherein the base station comprises:

a radio section for the linking with the plurality of personal stations;

a registration means for storing therein a first data on a description of the one or more functions of the respective personal station; and

a control means cooperative with the radio section to be responsive to the off-hook state of an arbitrary one of the plurality of personal stations for reading the first data on the description of the one or more functions of the arbitrary personal station from the registration means to send the read data as a second data to the call sending station, which is responsive to the second data to display the description of the one or more functions of the arbitrary personal station before sending back a third data representative of a complete display of the same,

the control means being further cooperative with the radio section to be responsive to the third data for connecting the arbitrary personal station in the off-hook state for a talk with the call sending station via the base station and the service channel.

5,854,984
RADIO TELEPHONE WITH DETACHABLE PAGER

Michael Buhrmann, Redmond, and Jane Montemayor, Bellevue, both of Wash., assignors to AT&T Wireless Services Inc, Middletown, N.J.

Filed Dec. 21, 1995, Ser. No. 576,385

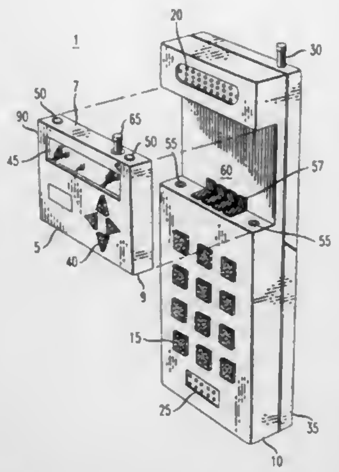
Int. Cl.^{6} H04Q *7/08*

U.S. Cl. 455—550 **22 Claims**

1. A radio telephone and pager system comprising:

a radio telephone having at least one contact; and

a pager having at least one mounting mechanism to detachably mount the pager to the handset, the pager having at least one contact corresponding to the handset contact to provide a signal interface between the pager and the handset, the pager further having a transceiver coupled to the pager contact wherein the transceiver is operable to provide messaging signals to the pager, and when the pager is mounted to the handset, the transceiver is operable to provide radio telephone signals to the handset and messaging signals to the pager.



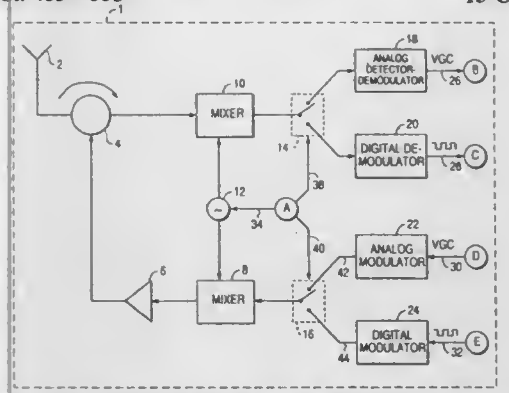
5,854,985
ADAPTIVE OMNI-MODAL RADIO APPARATUS AND METHODS

Joseph B. Sainton, Allen, Tex.; Charles M. Leedom, Jr., Falls Church, and Eric J. Robinson, Ashburn, both of Va., assignors to Spectrum Information Technologies, Inc., Purchase, N.Y.

Continuation of Ser. No. 167,003, Dec. 15, 1993, abandoned. This application Sep. 4, 1996, Ser. No. 707,262

Int. Cl.^{6} H04Q *7/32*

U.S. Cl. 455—553 **15 Claims**



1. A multi-modal device for facilitating wireless communication over any one of a plurality of wireless communication networks at least some of which may be available and operating at a given time and location using differing radio frequency modulation protocols and over differing radio frequencies, comprising:

a frequency agile radio transceiver operating at any one frequency of a plurality of radio frequencies appropriate for each of the plurality of wireless communication networks, said one frequency selected in response to a frequency control signal,

a digital interface circuit for interconnecting said frequency agile radio transceiver with external digital signal processing devices to allow digital signal information to be sent and received over said frequency agile radio transceiver,

protocol agile operating circuit means for operating said frequency agile radio transceiver and said digital interface circuit in accordance with any one modulation protocol of a plurality of modulation protocols, said one modulation protocol selected in response to a protocol control signal,

adaptive control means for determining which wireless communications networks are available at a given location and time, for accessing a selected wireless communication network, for communicating with said selected wireless communication network to determine on a real time basis the operating characteristics of the wireless communication network, and for generating the frequency control signal and the protocol control signal in response to a user defined criteria to cause the device to communicate with the selected wireless communication network using a frequency and modulation protocol suitable for transmission of said digital signal information over said selected wireless communications network, and

input means for receiving said user defined criteria, said user defined criteria comprising at least one of the cost of using the wireless communication network, the quality of the wireless communication network, the potential for being dropped by the wireless communication network, and the security of the wireless communication network;

wherein said adaptive control means operates to generate said frequency control signal and said modulation protocol control signal by comparing said operating characteristics with said user defined criteria.

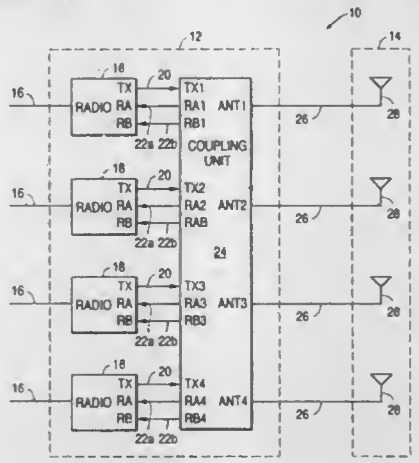
5,854,986
CELLULAR COMMUNICATION SYSTEM HAVING DEVICE COUPLING DISTRIBUTION OF ANTENNAS TO PLURALITY OF TRANSCEIVERS

Bradley John Dorren; Dwayne Erik Shaw, both of Alberta, Canada, and Tai Won Youn, Vancouver, Wash., assignors to Northern Telecom Limited, Montreal, Canada

Filed May 19, 1995, Ser. No. 446,212

Int. Cl.^{6} H04B *1/48*

U.S. Cl. 455—562 **20 Claims**



1. A device for communicatively coupling a plurality of transmitters and receivers to a plurality of antennas, comprising:

a plurality of transmit ports adapted to be connected to respective transmitters;

a plurality of receive ports adapted to be connected to respective receivers;

a plurality of antenna ports adapted to be connected to respective physically remote, duplexed antennas, each antenna being located in and providing coverage to a different zone;

first coupling means having inputs connected to respective transmit ports and outputs connected to respective antenna ports, for combining individual transmit signals received at the transmit ports to form a combined transmit signal and outputting in parallel the combined transmit signal to each respective antenna port; and

second coupling means having inputs connected to respective antenna ports and outputs connected to respective receive ports, for combining individual receive signals received at the antenna ports to form a combined receive signal and outputting the combined receive signal to the receive ports,

wherein said device passively couples the plurality of transmitter and receivers to the plurality of antennas for transmission of radio frequency signals therebetween.

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5,854,987

VEHICLE STEERING CONTROL SYSTEM USING NAVIGATION SYSTEM

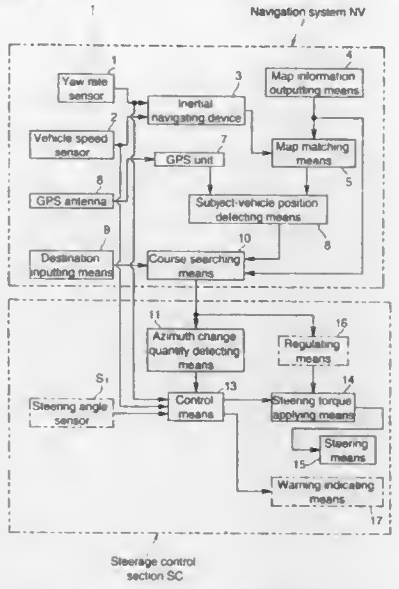
Hiroshi Sekine, and Nobuyoshi Asanuma, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1996, Ser. No. 620,193

Claims priority, application Japan, Mar. 23, 1995, 7-064584; Mar. 23, 1995, 7-064585; Mar. 24, 1995, 7-066247

Int. Cl.^{6} G01C *21/20;* B62D *6/00*

U.S. Cl. 701—41 **18 Claims**



1. A vehicle control system comprising:

a map information outputting means for outputting map information including a road on which a subject vehicle travels;

a subject-vehicle position detecting means for detecting a subject-vehicle position on a map;

a steering means for steering a steering control wheel of the vehicle;

a steering-torque applying means for applying a steering torque to said steering means;

means for determining an azimuth change quantity of the road on which the vehicle is traveling;

means for determining an azimuth change quantity of the vehicle;

means for determining a deviation between a determined azimuth change quantity of the road on which the vehicle is traveling and a determined azimuth change quantity of the vehicle, and for driving said steering-torque applying means such as to decrease said deviation;

a yaw rate detecting means for detecting a yaw rate of the vehicle; and

a vehicle speed detecting means for detecting a vehicle speed, wherein

said azimuth change quantity of the vehicle is determined based on the yaw rate and the vehicle speed.

5,854,988

METHOD FOR CONTROLLING AN EXCAVATOR

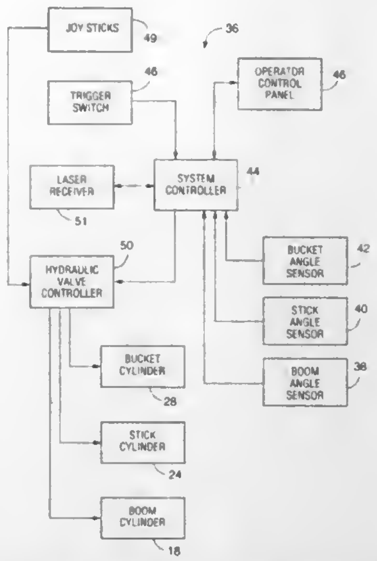
Richard W. Davidson, Danville, and Vernon J. Brabec, Livermore, both of Calif., assignors to Topcon Laser Systems, Inc., Pleasanton, Calif.

Filed Jun. 5, 1996, Ser. No. 658,702

Int. Cl.^{6} G06F *19/00;* E02F *3/34*

U.S. Cl. 701—50 **34 Claims**

34. A method for inputting commands for controlling an excavator to excavate a surface to a desired slope or depth, wherein the excavator has an excavator bucket, and wherein the method comprises the steps of:



providing a display panel with a touch-sensitive screen at a position accessible to an operator, wherein the display panel provides a means for inputting control data to a machine control system coupled to the excavator;

providing a trigger switch;

selecting between a slope-control mode and a depth-control mode by touching the display panel;

if slope-control mode is selected, then:

- inputting data by touching the display panel to define a desired slope of the excavated surface;
- displaying on the display panel information representing the desired slope of the excavated surface;
- actuating the trigger switch;
- displaying on the display panel information representing the position of the excavator bucket relative to the desired slope; and
- automatically controlling the path of the excavator bucket to match the desired slope;

if depth control mode is selected, then:

- inputting data by touching the display panel to define a desired depth of the excavated surface;
- displaying on the display panel information representing the desired depth of the excavated surface;
- actuating the trigger switch;
- displaying on the display panel information representing the position of the excavator bucket relative to the desired depth; and
- automatically controlling the path of the excavator bucket to match the desired depth.

5,854,989

METHOD AND APPARATUS FOR MAINTAINING A PRESET VELOCITY OF A VEHICLE

Hans-Reimer Speck, Stuttgart; Christian Weber, Schwieberdingen, and Thomas Huber, Beilstein, all of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

PCT No. PCT/DE94/01414, § 371 Date Jun. 7, 1996, § 102(e) Date Jun. 7, 1996, PCT Pub. No. WO95/15868, PCT Pub. Date Jun. 15, 1995

PCT Filed Nov. 29, 1994, Ser. No. 652,582

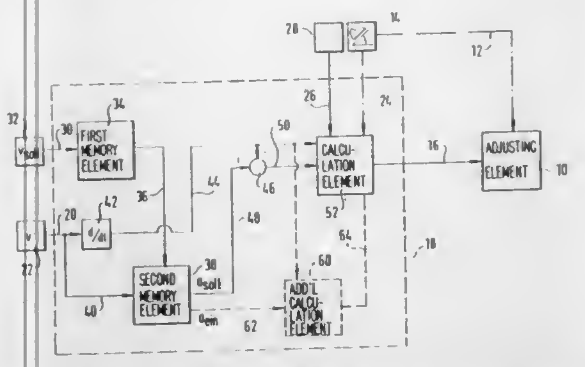
Claims priority, application Germany, Dec. 7, 1993, 43 41 585.7

Int. Cl.^{6} B60K *31/10*

U.S. Cl. 701—93 **10 Claims**

9. Apparatus for maintaining a velocity of a vehicle at a specified velocity, said vehicle having a drive system delivery power for moving the vehicle, said apparatus comprising:

an adjusting element which influences the power of the drive system of the vehicle;



an operating element actuating said adjusting element responsive to operation of the operating element by a driver;

an automatic acceleration controller actuating the adjusting element so as to control acceleration of the vehicle to match a specified acceleration value and to maintain the specified velocity, said specified acceleration value being predetermined as a function of the vehicle velocity; and p1 the automatic acceleration controller actuating the adjusting element for a first acceleration beginning at a first velocity, and for a second acceleration with a smaller absolute value than the first acceleration beginning at a second velocity, the absolute value of the difference between the first velocity and the specified velocity being greater than the absolute value of the difference between the second velocity and the specified velocity.

5,854,990

PROCESS AND APPARATUS FOR CONTROLLING THE COMBUSTION COURSE IN AN OTTO COMBUSTION ENGINE

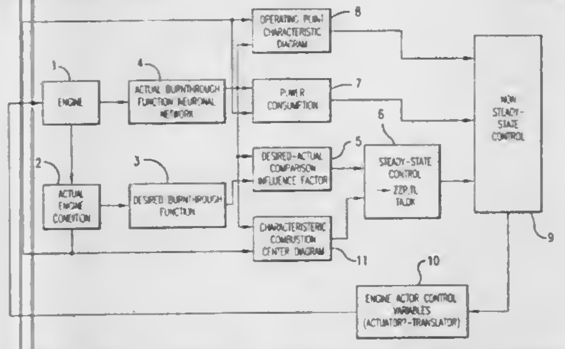
Christoph Reckzügel, Hohenstedt; Hans-Hubert Hemberger, Notzingen, and Winfried Stiltz, Weinstadt, all of Germany, assignors to Daimler-Benz AC, Germany

Filed Jun. 6, 1996, Ser. No. 659,516

Claims priority, application Germany, Jun. 6, 1995, 195 20 605.3

Int. Cl.^{6} G06G *9/10*

U.S. Cl. 701—101 **7 Claims**


OPERATING POINT CHARACTERISTIC DIAGRAM
8
1
4
ENGINE
ACTUAL BURNTHROUGH FUNCTION NEURONAL NETWORK
POWER CONSUMPTION
7
6
NON STEADY-STATE CONTROL
2
3
DESIRED-ACTUAL COMPARISON INFLUENCE FACTOR
5
STEADY-STATE CONTROL
ZZP.IL TALK
ACTUAL ENGINE CONDITION
DESIRED BURNTHROUGH FUNCTION
CHARACTERISTIC COMBUSTION CENTER DIAGRAM
9
11
10
ENGINE ACTOR CONTROL VARIABLES (ACTUATOR?-TRANSLATOR)

1. Process for controlling combustion in an Otto combustion engine, wherein control variables for controlling a combustion course for a particular power cycle are determined using a control device, as a function of a detected combustion course of a preceding power cycle, said process comprising the steps of:

precalculating a desired value for a burn-through function for a particular power cycle during its charge cycle phase, based on actual values of burn-through function influence factors detected during a preceding power cycle, by integrating the combustion course during the preceding power cycle with respect to either time or crank angle;

determining in real time an actual burn-through function value during a high-pressure phase of a particular power cycle using a neuronal network which receives as inputs one or several quantities representative of the combustion course;

comparing the precalculated desired burn-through function value with the actual burn-through function value; and

based on a result of said comparing, controlling combustion in the Otto combustion engine based on determined actualized values for the burn-through function influence factors on which a combustion-controlling determination of control variable values for a subsequent power cycle is based.

5,854,991

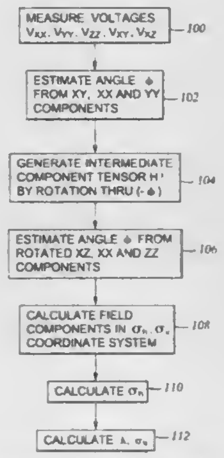
METHOD FOR INVERSION PROCESSING OF TRANSVERSE ELECTROMAGNETIC INDUCTION WELL LOGGING MEASUREMENTS

Pravin Gupta; Berthold F. Kriegshauser; Zeljko Jericevic, and Otto N. Fanini, all of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 686,848, Jul. 26, 1996, Pat. No. 5,781,436. This application Apr. 28, 1998, Ser. No. 67,567

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 702—7 **39 Claims**


MEASURE VOLTAGES Vxx, Vyy, Vzz, Vxy, Vxz
100
ESTIMATE ANGLE φ FROM XY, XX AND YY COMPONENTS
102
GENERATE INTERMEDIATE COMPONENT TENSOR H' BY ROTATION THRU (-φ)
104
ESTIMATE ANGLE φ FROM ROTATED XZ, XX AND ZZ COMPONENTS
106
CALCULATE FIELD COMPONENTS IN σh, σv COORDINATE SYSTEM
108
CALCULATE σh
110
CALCULATE λ, σv
112

1. A method for determining distribution of horizontal and vertical electrical conductivities of earth formations surrounding a wellbore using measurements made by a transverse electromagnetic induction well logging instrument, comprising:

generating a model of axial distribution of said horizontal and vertical conductivities from induction signals acquired by said instrument using two-frequency alternating current;

shoulder correcting measurements made by said instrument using single frequency alternating current;

generating an estimate of radial distribution of said horizontal and vertical conductivities from said shoulder corrected measurements;

constructing a 2-dimensional model of conductivity distribution from said model of axial distribution and from said estimate of radial distribution;

correcting said two-frequency induction signals for near wellbore effect using two-frequency whole space responses calculated using said 2-dimensional model;

generating a final model of said conductivity distribution by axially inverting said corrected two-frequency induction signals and combining with said estimate of radial distribution; and

using said corrected two-frequency signals in place of said acquired two-frequency signals, repeating said steps of shoulder correcting measurements, generating an estimate of radial distribution, constructing a 2-dimensional model, and correcting said two-frequency induction signals until differences between said corrected two-frequency induction signals calculated in successive repetitions of said steps fall below a predetermined threshold.

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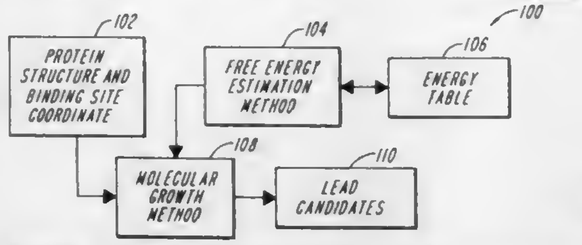
5,854,992
SYSTEM AND METHOD FOR STRUCTURE-BASED DRUG DESIGN THAT INCLUDES ACCURATE PREDICTION OF BINDING FREE ENERGY

Eugene I. Shakhnovich, Lexington, and Robert S. DeWitte, Wakefield, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Sep. 26, 1996, Ser. No. 741,866

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 702—27 **19 Claims**


100
102
PROTEIN STRUCTURE AND BINDING SITE COORDINATE
104
FREE ENERGY ESTIMATION METHOD
106
ENERGY TABLE
108
MOLECULAR GROWTH METHOD
110
LEAD CANDIDATES

1. A method for building molecules for binding at a receptor site, comprising the steps of:

(a) evaluating a receptor site for a molecular make up of at least a portion of the receptor site to which a molecule being grown will bind and generating at least a coordinate of at least a portion of the receptor site to which the molecule being grown will bind, and outputting, at least with respect to the molecular make up of the receptor site, the coordinate of the portion of the receptor site to which the molecule being grown will bind;

(b) estimating free energy of the molecule being grown using knowledge-based potential data to estimate free energy and outputting the estimated free energy; and

(c) building a molecule for binding to the receptor site using the outputs from steps (a) and (b), with the building step including building the molecule by selecting molecular fragments at orientations that will result in free energy estimates for the molecule that may be higher than a lowest free energy estimate possible for the molecule.

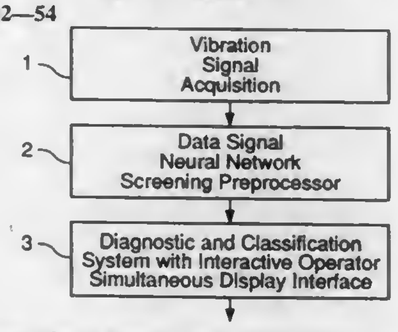
5,854,993
COMPONENT MACHINE TESTING USING NEURAL NETWORK PROCESSED VIBRATION DATA ANALYSIS

Anthony J. Grichnik, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 10, 1996, Ser. No. 763,965

Int. Cl.^{6} G01M *7/00*

U.S. Cl. 702—54 **15 Claims**


1
Vibration Signal Acquisition
2
Data Signal Neural Network Screening Preprocessor
3
Diagnostic and Classification System with Interactive Operator Simultaneous Display Interface

1. Apparatus for evaluation and diagnostics of a component machine that is part of a larger machine where the diagnostics and evaluation are through neural network analysis of a vibration data signal to identify abnormal signal patterns in said vibration data, comprising in combination:

first sensing means positioned for sensing vibration data signals produced by said component machine;

second sensing means positioned separate from said first sensing means for sensing background noise vibration data in the vicinity of said component machine;

first neural network preprocessing means for rendering as normal any influence of said sensed background noise in said sensed component machine vibration data signals; and

a processing stage for evaluation and diagnostics, said processing stage including:

an interactive interface member having at least the features of simultaneous multiple signal display and operator input and means for receiving said preprocessed component machine vibration data signal, and,

a second neural network with associated diagnostic technology operating systems and supporting data bases for evaluation and processing determinations based on signal patterns in said component machine vibration data signal identified in said second neural network.

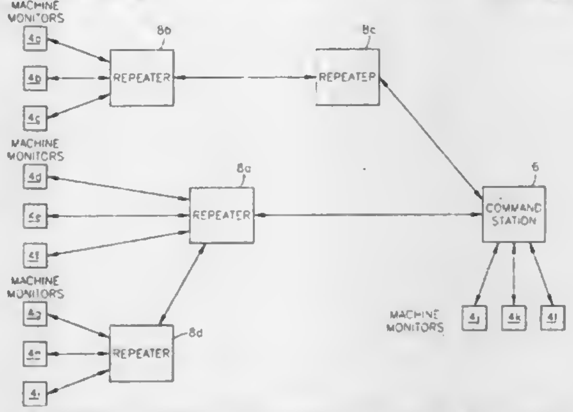
5,854,994
VIBRATION MONITOR AND TRANSMISSION SYSTEM

Ronald G. Canada; James W. Pearce, and James C. Robinson, all of Knoxville, Tenn., assignors to CSI Technology, Inc., Wilmington, Del.

Filed Aug. 23, 1996, Ser. No. 697,372

Int. Cl.^{6} H04Q *9/00;* **G08B** *21/00;* **G06F** *11/30*

U.S. Cl. 702—56 **42 Claims**



1. A wireless monitoring system for monitoring a plurality of machines, the system comprising:

a plurality of machine monitors mounted on a plurality of machine measuring points, each machine monitor including:

at least one sensor for sensing a characteristic of the machine at the machine measuring point and generating at least one sensor signal corresponding to the machine characteristic that was sensed;

a data processor for receiving and analyzing the sensor signals and producing analyzed sensor signals; and

transmitter means for producing wireless transmission signals corresponding to the analyzed sensor signals; and

a command station including receiver means for receiving said transmission signals and storing data corresponding to said transmission signals and the sensed characteristics of the machines, whereby characteristics of the plurality of machines at the plurality of measuring points are sensed and stored at said command station.

5,854,995
VECTOR ELECTRICITY METERS AND ASSOCIATED VECTOR ELECTRICITY METERING METHODS

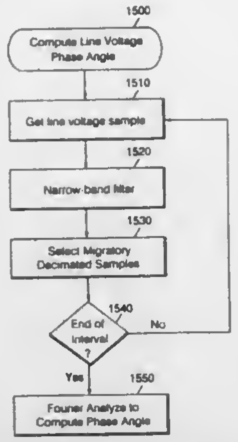
Mark J. Plis, Barrinton, and David D. Elmore, Somersworth, both of N.H., assignors to General Electric Company, Plainville, Conn.

Division of Ser. No. 564,543, Nov. 30, 1995, Pat. No. 5,673,196. This application Jun. 10, 1997, Ser. No. 872,033

Int. Cl.^{6} G01R *25/00*

U.S. Cl. 702—72 **2 Claims**

1. A method for computing a phase angle between a fundamental frequency component of a sensed voltage on a power line and a periodic reference signal, the method comprising the steps of:


1500
Compute Line Voltage Phase Angle
1510
Get line voltage sample
1520
Narrow-band filter
1530
Select Migratory Decimated Samples
1540
End of Interval ?
No
Yes
1550
Fourier Analyze to Compute Phase Angle

sampling the sensed voltage at a plurality of consecutive sampling times separated by a predetermined sampling interval to thereby obtain a plurality of voltage samples;

converting each voltage sample into a corresponding digital voltage sample;

narrow-band filtering digital voltage samples to obtain a series of digital fundamental frequency digital voltage samples representing the fundamental frequency component of the sensed voltage;

selecting a set of migratory decimated digital fundamental frequency voltage samples from the series of digital fundamental frequency voltage samples, each migratory decimated digital fundamental frequency voltage sample corresponding to a sampling time delayed a predetermined migratory decimation interval from the sample time of the preceding migratory decimated fundamental frequency voltage sample with respect to the passage of the periodic reference signal through a predetermined value so that the set of migratory decimated fundamental frequency digital voltage samples approximately represents the fundamental frequency component of the sensed voltage; and

Fourier analyzing the set of migratory decimated digital fundamental frequency voltage samples to thereby determine a phase angle between the fundamental frequency component of the sensed voltage and the periodic reference signal.

5,854,996
LOGIC SIGNAL EXTRACTION

Craig Overhage, Beaverton, and Richard Austin, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 135,099, Oct. 12, 1993, Pat. No. 5,446,650. This application Dec. 2, 1994, Ser. No. 348,389

Int. Cl.^{6} G01R *13/20*

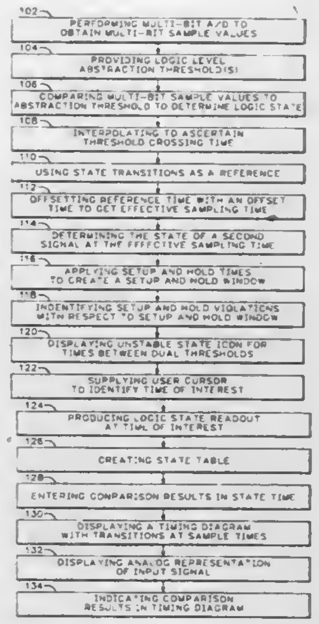
U.S. Cl. 702—189 **9 Claims**

1. A method for obtaining and presenting digital data comprising the steps of:

performing multi-bit A/D conversion on an input signal at a plurality of sample times to obtain a series of multi-bit digital sample values with each sample value being associated with a corresponding sample time;

providing a logic level abstraction threshold as a reference; and

comparing sample values to the logic level abstraction threshold


102
PERFORMING MULTI-BIT A/D TO OBTAIN MULTI-BIT SAMPLE VALUES
104
PROVIDING LOGIC LEVEL ABSTRACTION THRESHOLD(S)
106
COMPARING MULTI-BIT SAMPLE VALUES TO ABSTRACTION THRESHOLD TO DETERMINE LOGIC STATE
108
INTERPOLATING TO ASCERTAIN THRESHOLD CROSSING TIME
110
USING STATE TRANSITIONS AS A REFERENCE
112
OFFSETTING REFERENCE TIME WITH AN OFFSET TIME TO GET EFFECTIVE SAMPLING TIME
114
DETERMINING THE STATE OF A SECOND SIGNAL AT THE EFFECTIVE SAMPLING TIME
116
APPLYING SETUP AND HOLD TIMES TO CREATE A SETUP AND HOLD WINDOW
118
INDENTIFYING SETUP AND HOLD VIOLATIONS WITH RESPECT TO SETUP AND HOLD WINDOW
120
DISPLAYING UNSTABLE STATE ICON FOR TIMES BETWEEN DUAL THRESHOLDS
122
SUPPLYING USER CURSOR TO IDENTIFY TIME OF INTEREST
124
PRODUCING LOGIC STATE READOUT AT TIME OF INTEREST
126
CREATING STATE TABLE
128
ENTERING COMPARISON RESULTS IN STATE TIME
130
DISPLAYING A TIMING DIAGRAM WITH TRANSITIONS AT SAMPLE TIMES
132
DISPLAYING ANALOG REPRESENTATION OF INPUT SIGNAL
134
INDICATING COMPARISON RESULTS IN TIMING DIAGRAM

to establish whether each sample value is in a first logic state or a second logic state.

5,854,997
ELECTRONIC INTERPRETER UTILIZING LINKED SETS OF SENTENCES

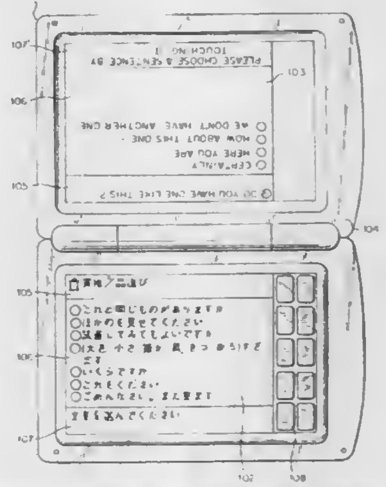
Hiroko Sukeda, Tokorozawa; Yoshiyuki Kaneko, Hachioji; Tetsuya Nakagawa, Koganei; Muneaki Yamaguchi, Kokubunji, and Toshihisa Tsukada, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,836

Claims priority, application Japan, Sep. 7, 1994, 6-213437

Int. Cl.^{6} G06F *17/28*

U.S. Cl. 704—3 **30 Claims**



1. An electronic interpreter for interpreting sentences between a first person and a second person, comprising:

a memory for storing sentence data in a data structure having a plurality of sets of sentences including translations of said sentences, wherein each sentence of each set of sentences is linked to another of said sets of sentences; and

a data processing unit for:

(a) retrieving a set of sentences from said memory in response to a keyword input from said first person using an input device,

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(b) displaying said retrieved set of sentences on a display,

(c) selecting a sentence from said displayed set of sentences in response to an input from said first person using said input device,

(d) displaying a translation of said selected sentence on said display along with another set of sentences linked to the selected sentence,

(e) selecting another sentence from said another set of sentences in response to an input from said second person using said input device,

(f) displaying a translation of said another selected sentence on said display along with yet another set of sentences linked to said another selected sentence, and

(g) repeating steps (c)–(f) until a keyword has been input from said first person using said input device.

5,854,998

SPEECH PROCESSING SYSTEM QUANTIZER OF SINGLE-GAIN PULSE EXCITATION IN SPEECH CODER

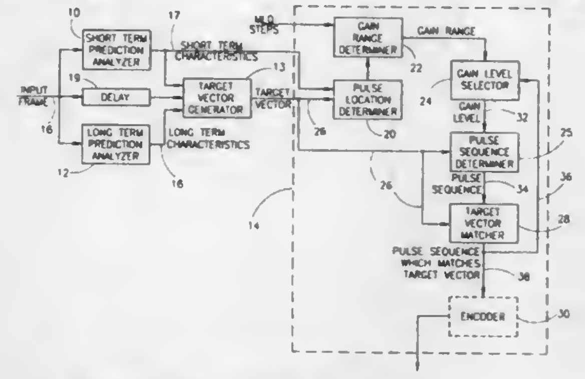
Felix Flomen, and Leon Bialik, both of Rishon Lezion, Israel, assignors to AudioCodes Ltd., Or Yehuda, Israel

Continuation-in-part of Ser. No. 236,764, Apr. 29, 1994, Pat. No. 5,568,588. This application Oct. 18, 1996, Ser. No. 733,406

Claims priority, application Israel, Oct. 19, 1995, 115698

Int. Cl.^{6} G10L *5/00*

U.S. Cl. 704—223 **18 Claims**



1. A speech processing system comprising:

a. a short-term analyzer connected to an input and an output line wherein, in response to an input speech signal on said input line, said short-term analyzer generates short-term characteristics of said input speech signal;

b. a target vector generator for generating a target vector from at least said input speech signal and, optionally, said short-term characteristics; and

c. a multi-pulse analyzer connected to an output line of said target vector generator, wherein said multi-pulse analyzer generates a plurality of sequences of equal amplitude, variable sign, variably spaced pulses, each of said sequences having a different amplitude value, each of said pulses within each sequence having equal amplitudes but variable signs, said multi-pulse analyzer for outputing a signal corresponding to the sequence of equal amplitude, variable sign, variably spaced pulses which, according to maximum likelihood criteria, most closely represents said target vector,

wherein said maximum likelihood criteria are based on the cross-correlation of said target vector with an impulse response for the pulses in each sequence and on a covariance matrix of said impulse response.

5,854,999

METHOD AND SYSTEM FOR SPEECH RECOGNITION WITH COMPENSATION FOR VARIATIONS IN THE SPEECH ENVIRONMENT

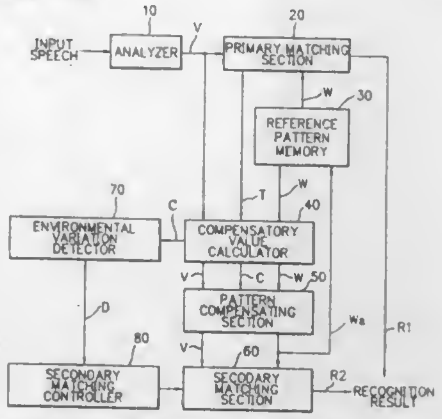
Hiroshi Hirayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 24, 1996, Ser. No. 669,239

Claims priority, application Japan, Jun. 23, 1995, 7-180734

Int. Cl.^{6} G01L *5/06*

U.S. Cl. 704—226 **8 Claims**


10
20
INPUT SPEECH
ANALYZER
V
PRIMARY MATCHING SECTION
W
30
REFERENCE PATTERN MEMORY
70
C
T
W
40
ENVIRONMENTAL VARIATION DETECTOR
COMPENSATORY VALUE CALCULATOR
V
C
W
50
PATTERN COMPENSATING SECTION
D
Wa
R1
80
V
60
SECONDARY MATCHING CONTROLLER
SECODARY MATCHING SECTION
R2
RECOGNITION RESULT

1. A speech recognition method comprising:

storing a set of first patterns of which a respective pattern represents a set of characters of a corresponding one of a set of recognition objects in a first utterance environment;

converting an input speech representative of a speech uttered in a second utterance environment into a second pattern representative of a set of characters of the input speech;

estimating a magnitude of an environmental difference between the first and second utterance environments checking the set of first patterns for a first match with the second pattern if the magnitude of the environmental difference does not exceed a first threshold;

outputting a recognition result representative of one of the set of recognition objects corresponding to the first match;

compensating at least one of the set of first patterns and the second pattern to effect a cancellation of the environmental difference if the magnitude of the environmental difference exceeds the first threshold, so that a set of third patterns and a fourth pattern represent the set of first patterns and the second pattern, respectively;

checking the set of third patterns for a second match with the third pattern; and

outputting a recognition result representative of one of the set of recognition objects corresponding to the second match.

5,855,000

METHOD AND APPARATUS FOR CORRECTING AND REPAIRING MACHINE-TRANSCRIBED INPUT USING INDEPENDENT OR CROSS-MODAL SECONDARY INPUT

Alexander Waibel; Bernhard Suhm, and Arthur McNair, all of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 525,921, Sep. 8, 1995, Pat. No. 5,712,957. This application Oct. 1, 1996, Ser. No. 724,420

Int. Cl.^{6} G10L *9/18;* G06K *9/03*

U.S. Cl. 704—235 **113 Claims**

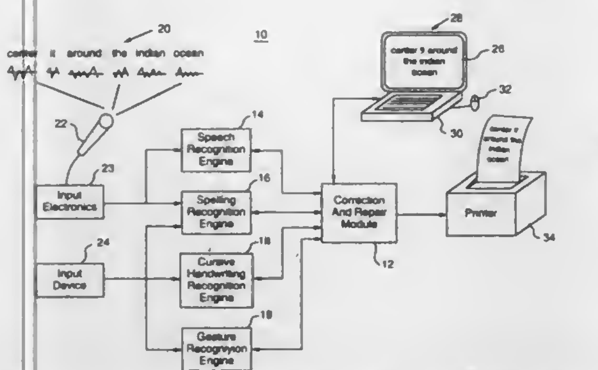
1. A method of repairing the output from a recognition engine generating at least one recognition hypothesis from a primary input signal including an utterance, comprising:

locating an error within the recognition hypothesis;

generating a repair hypothesis for said located error from a secondary input signal including a paraphrasing of at least a portion of the utterance;

correlating at least a portion of the recognition hypothesis with said repair hypothesis to produce a new hypothesis; and

replacing said located error with the new hypothesis.


20
10
center it around the indian ocean
22
23
Input Electronics
24
Input Device
14
Speech Recognition Engine
16
Spelling Recognition Engine
18
Cursive Handwriting Recognition Engine
18
Gesture Recognition Engine
Correction And Repair Module
12
28
center 9 around the indian ocean
26
32
30
Printer
34

49. A method of repairing the output from a recognition engine generating at least one recognition hypothesis from a primary input signal including a utterance comprising:

locating an error within the recognition hypothesis:

generating a repair hypothesis for said located error from a secondary input signal of different modality than the primary input signal, said secondary input signal including a paraphrasing of at least a portion of the utterance; and

replacing said located error with the repair hypothesis.

5,855,001

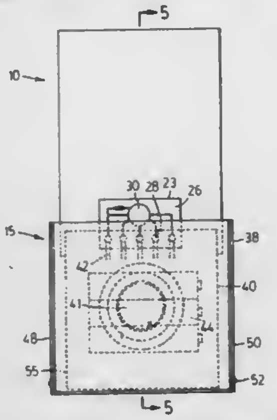
TALKING TRADING CARD PLAYER SYSTEM

Dieter D. Doederlein, Mississauga; G. Dale Newman, Unionville; Anthony C. Sharp, Agincourt, all of Canada, and Michael E. Lucas, Cupertino, Calif., assignors to Micra SoundCards, Inc., Richardmond Hill, Canada

Filed Aug. 25, 1995, Ser. No. 519,839

Int. Cl.^{6} G10L *3/00*

U.S. Cl. 704—270 **27 Claims**



1. A portable pocket-sized trading card playing system capable of generating sounds, comprising a card player and a plurality of cards, wherein each card of the plurality of cards comprises a card body of predetermined dimensions and having a bottom edge, a front surface and a back surface, a front and back surfaces permanently displaying graphics and text of interest to card traders, a voice chip located between the front surface and the back surface of the card body having permanently stored thereon digital sound pattern data representative of preselected patterns of sound correlated with the graphics and text, the voice chip including processing means for receiving sound pattern data from the voice chip and generating electrical analogue signals correlatable therewith, and card contact means located near the bottom edge and electrically connected to the processing means for enabling electrical contact with the card player, wherein the card player comprises a player housing dimensioned to removably receive the bottom edge of the card, the player housing containing sound generating means for generating sounds, power means for supplying electrical power to the processing means and to the sound generating means, and player contact means for making electrical contact with the card contact means.

5,855,002

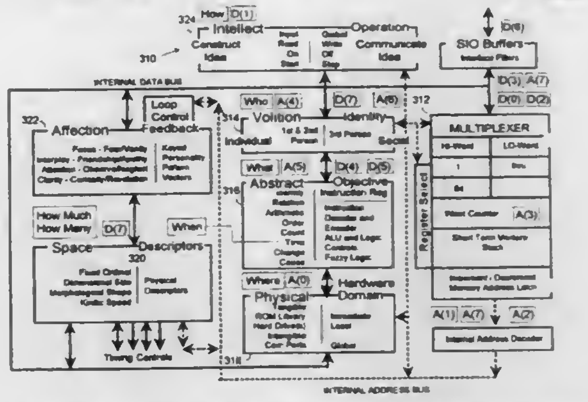
ARTIFICIALLY INTELLIGENT NATURAL LANGUAGE COMPUTATIONAL INTERFACE SYSTEM FOR INTERFACING A HUMAN TO A DATA PROCESSOR HAVING HUMAN-LIKE RESPONSES

Alan A. Armstrong, Cushing, Tex., assignor to Pegasus Micro-Technologies, Inc., Allen, Tex.

Filed Jun. 11, 1996, Ser. No. 661,433

Int. Cl.^{6} G10L *9/00*

U.S. Cl. 704—270 **8 Claims**



1. A system for interfacing a human user to a data processor, the data processor receiving inputs from the user and includes associated stored resource information, and which generates outputs to the user and associated output devices, the system comprising:

means for receiving a statement generated by the human user in natural language on a word-by-word basis;

means for analyzing the statement to identify a subject;

means for searching the stored resource information for data related to said identified subject;

means for providing to the users data from the stored resource information related to the identified subject;

means for determining a mood of a user from the statements generated by the user and for creating a human-like response; and

means for providing an output to the user, the output being responsive to the user based upon an analysis of the data from the stored resource information to provide an answer to the user, thereby providing new data to the user which is not directly stored in the resource information.

5,855,003

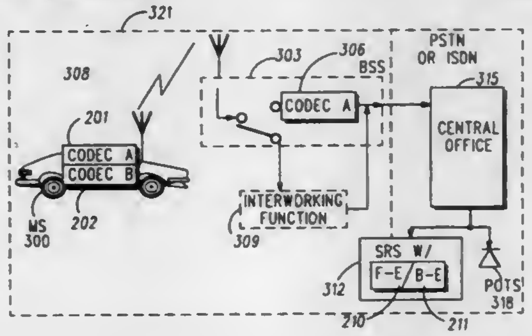
METHOD AND APPARATUS FOR ESTABLISHING A LINK IN A WIRELESS COMMUNICATION SYSTEM

Gregory C. Ladden, Vernon Hills, and Eugene J. Bruckert, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 11, 1996, Ser. No. 728,731

Int. Cl.^{6} G10L *3/00*

U.S. Cl. 704—270 **19 Claims**



8. A wireless communication system interfacing with a speech recognition system, the wireless communication system comprising:

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means for establishing a speech communication between a base station system within the wireless communication system and a mobile station compatible with the wireless communication system, the speech communication implementing speech coding functions in the base station system and a codec in the mobile station compatible with speech;

means for determining that the mobile station requires connection to the speech recognition system;

means for instructing the mobile station to change from the codec in the mobile station compatible with speech to a codec compatible with speech recognition; and

means for coupling the mobile station to the speech recognition system after the mobile station has been instructed to change from the codec compatible with speech to the codec compatible with speech recognition.

5,855,004

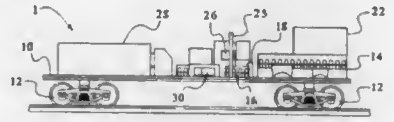
SOUND RECORDING AND REPRODUCTION SYSTEM FOR MODEL TRAIN USING INTEGRATED DIGITAL COMMAND CONTROL

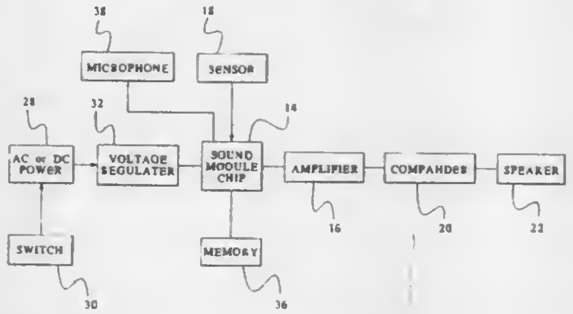
Michael J. Novosel, 4220 N. Marmora, Chicago, Ill. 60634; Vincent S. Fleszewski, III, 11352 Hobart Pl., Crown Point, Ind. 46307, and Kelly Boles, 1407-48th St. N.W., Rochester, Minn. 55901

Continuation-in-part of Ser. No. 289,257, Aug. 11, 1994, abandoned. This application May 5, 1997, Ser. No. 851,200

Int. Cl.^{6} G10L *9/18;* A63H *19/14*

U.S. Cl. 704—272 **20 Claims**





1. A sound reproducing system for a model train traveling on a plurality of rails that uses a amplified digital control signal for propulsion and control, the system comprising:

a sound memory storing a plurality of sound effects at predetermined addresses;

a controller connected to the sound memory for recalling the sound effects of either one or a plurality of sound effects in a predetermined sequence or a random sequence;

a sound memory containing multiple samples that emulate a model locomotive at various speeds and work loads;

an integrated sound, motor and special effects controller controlled by a bi-polar digital signal, the motor and special effects controller re-producing the stored sounds contained in the model train; and

a digital packet triggering a sound effect for automatic playback of a sound effect.

5,855,005

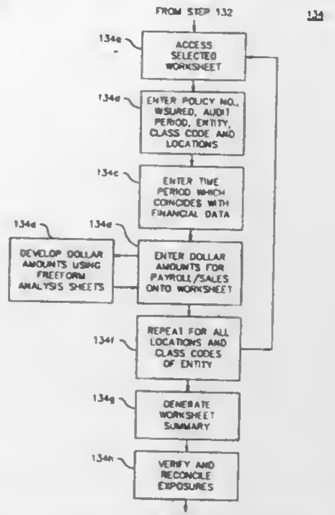
SYSTEM FOR ELECTRONICALLY AUDITING EXPOSURES USED FOR DETERMINING INSURANCE PREMIUMS

Michael S. Schuler, Pitman; Kristin Ford, Delran, and George Snyder, Williamstown, all of N.J., assignors to Insurance Company of North America, Philadelphia, Pa.

Filed Jun. 24, 1996, Ser. No. 672,111

Int. Cl.^{6} G06F *19/00*

U.S. Cl. 705—4 **10 Claims**


FROM STEP 132
134
134a
ACCESS SELECTED WORKSHEET
134b
ENTER POLICY NO., INSURED, AUDIT PERIOD, ENTITY, CLASS CODE AND LOCATIONS
134c
ENTER TIME PERIOD WHICH COINCIDES WITH FINANCIAL DATA
134e
134d
DEVELOP DOLLAR AMOUNTS USING FREEFORM ANALYSIS SHEETS
ENTER DOLLAR AMOUNTS FOR PAYROLL/SALES ONTO WORKSHEET
134f
REPEAT FOR ALL LOCATIONS AND CLASS CODES OF ENTITY
134g
GENERATE WORKSHEET SUMMARY
134h
VERIFY AND RECONCILE EXPOSURES
TO STEP 132

1. A computer-implemented system for auditing a total exposure of an entity, said total exposure forming the basis of a premium amount to be charged to said entity for an insurance policy, comprising:

(A) means for receiving a plurality of exposure information records from a first source, each of said exposure information records from said first source corresponding to a location of said entity and a class code associated with said location of said entity;

(B) a database, coupled to said means for receiving, for storing said plurality of exposure records from said first source, each of said plurality of exposure records from said first source being stored in said database as a datastructure

(C) totaling means for determining a first total exposure amount associated with said entity from said plurality of exposure records from said first source;

(D) means for determining a second total exposure amount associated with said entity from a second source different from said first source; and

(E) reconciliation means for reconciling said first total amount by comparing said first total amount to said second total amount, said reconciliation means including means for determining a deviation amount between said first total amount and said second total amount, said reconciliation means for including means for entering into said system an explanation of said deviation amount between said first total amount and said second total amount.

5,855,006

PERSONAL ACTIVITY SCHEDULING APPARATUS

Mark Alan Huemoeller, Arvada, and John Walter Huemoeller, II, Golden, both of Colo., assignors to Humware, Golden, Colo.

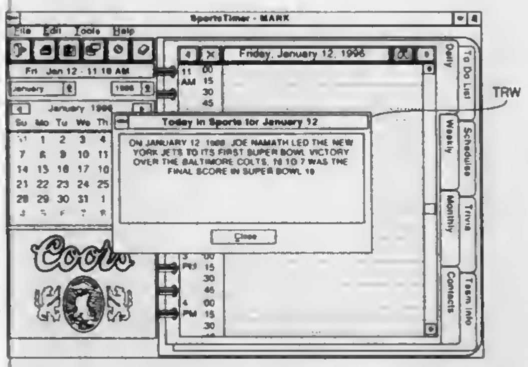
Filed Mar. 1, 1996, Ser. No. 609,847

Int. Cl.^{6} G04B *19/24;* G06F *15/21*

U.S. Cl. 705—9 **40 Claims**

1. A calendar system executing on a processor, which has a real-time clock, for temporally coordinating application data, comprising:

means, responsive to said real-time clock, for maintaining a time scheduling calendar;



Today in Sports for January 12

ON JANUARY 12 1969 JOE NAMATH LED THE NEW YORK JETS TO ITS FIRST SUPER BOWL VICTORY OVER THE BALTIMORE COLTS. 16 TO 7 WAS THE FINAL SCORE IN SUPER BOWL III

at least one application which produces application data, comprising at least one of:

1.) trivia means comprising:
  means for storing data indicative of date based trivia,
  means, responsive to data output by said real-time clock indicative of a present date, for retrieving data from said means for storing corresponding to at least one of said date based trivia,
  means for displaying said date based trivia;

2.) trivia quiz program means, comprising:
  means for enabling a user to be tested on trivia knowledge,
  means, responsive to a user scoring greater than a predetermined score in said trivia quiz program, for printing a predetermined coupon for redemption at a predetermined commercial establishment;

3.) means for displaying advertising, including at least one of:
  coupon means, comprising:
    means for storing data indicative of predetermined coupons,
    means, responsive to data output by said real-time clock indicative of a present date, for retrieving data from said means for storing corresponding to at least one of said predetermined coupons,
    means for transmitting said retrieved data to a printer for printing said predetermined coupon;
    means for loading said advertising into said calendar system from an external interface;

means for integrating said application data into said time scheduling calendar; and

means for displaying said time scheduling calendar, containing said application data, to a user.

5,855,007

ELECTRONIC COUPON COMMUNICATION SYSTEM

Neboisa Jovicic, New Hampshire College, Box 984, 2500 N. River Rd., Manchester, N.H. 03106, and Gene A. Rosov, 13 Chester Sq., Annisquam, Mass. 01930

Filed Nov. 15, 1995, Ser. No. 559,777

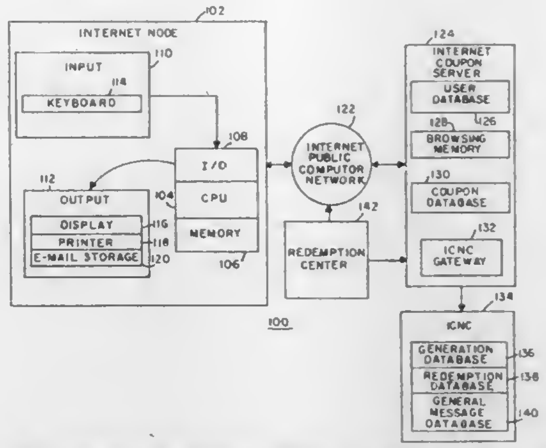
Int. Cl.^{6} G06F *17/60*

U.S. Cl. 705—14 **9 Claims**

1. An electronic computer coupon communication system, comprising:

(a) a network node for selecting, receiving and printing electronic coupons over a public computer network such as the Internet, said node including:
  (1) a display coupled to a control processing unit for displaying at least one electronic coupon;
  (2) a memory for storing electronic coupons received through electronic transmission from an Internet Coupon Server, which memory permits browsing on said display;
  (3) a user input device coupled to said central processing unit to permit a user to make an on-line selection of one of a plurality of electronic coupons collectively stored in said Internet Coupon Server's memory;

(b) said Internet Coupon Server being coupled to the Internet Coupon Notification Center, said Internet Coupon Server comprising:



  (1) a memory for storing electronic coupons received from an Internet Coupon Server's supplier:
  (2) a central processing unit for generating and transmitting electronic coupons and for recording and transmitting electronic coupon transactions;
  (3) an Internet Coupon Notification Center Gateway for enabling communication with said Internet Coupon Notification Center;

(c) an Internet Coupon Notification Center, including:
  (1) means for recording serial numbers of coupons generated by an Internet Coupon Server;
  (2) means for recording and updating transactions pertaining to redeemed electronic coupons; and

(d) an electronic coupon, comprising:
  (1) a plurality of digital representations of product image and uniform product bar code;
  (2) a plurality of digital representations of indicia identifying discount information, product title, coupon owner's title, redemption specification, uniform product code, expiration date, coupon serial number, user's name, user's identification number, user's Internet address and user's personalized message.

5,855,008

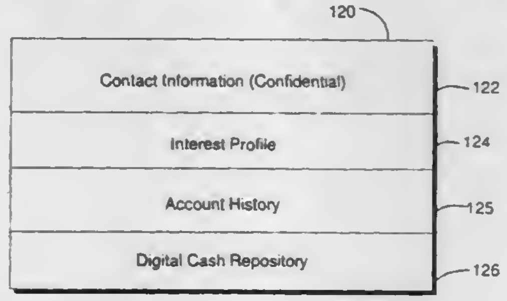
ATTENTION BROKERAGE

A. Nathaniel Goldhaber, and Gary Fitts, both of Berkeley, Calif., assignors to Cybergold, Inc., Berkeley, Calif.

Continuation of Ser. No. 570,510, Dec. 11, 1995, Pat. No. 5,794,210. This application Aug. 28, 1997, Ser. No. 919,444

Int. Cl.^{6} G06F *17/60*

U.S. Cl. 705—14 **9 Claims**



Example Consumer Database

1. In an arrangement comprising at least one computer network, said network connecting at least one personal computer to at least one information-provider computer, said personal computer being associated with at least one user, a method for managing personal privacy in the computer network, the method comprising:

(1) gathering personal data, including data for which privacy is to be managed, for at least one user;

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(2) storing at least part of said data in at least one data structure on at least one computer connected to said network;

(3) receiving a request from said information provider computer to access to at least part of said personal data via said network, said request including the requester's identity and a description of the data requested, and further including at least one of the requester's intentions with respect to the use of said data and an offer of compensation in return for access to said data;

(4) permitting or denying said access based at least in part on at least one of the expressed consent of said user and an automated decision made on behalf of said user; said consent being expressed via an interaction of said user with said personal computer, said interaction including the presentation to said user of at least one of the request elements from step (**3**); said automated decision being based on at least one criterion set in advance by said user, said automated decision further being based on an examination of this criterion in connection with at least one of the request elements from step (**3**); and

(5) conditionally communicating the requested data to said information provider computer via said computer network, based on the result of step (**4**).

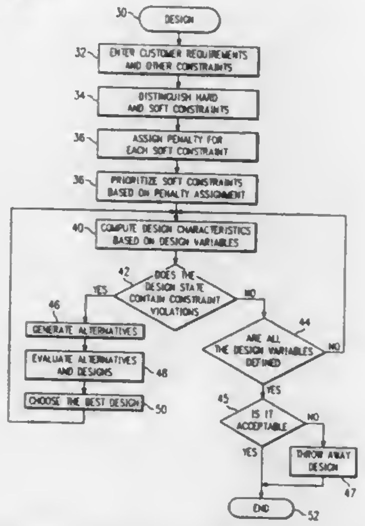
5,855,009
CONCURRENT DESIGN TRADEOFF ANALYSIS SYSTEM AND METHOD

Fred A. Garcia, Somerville, Mass., and Krishnan Srinivasan, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1992, Ser. No. 927,543

Int. Cl.^{6} G06F *17/50;15/18*

U.S. Cl. 706—45 **39 Claims**


30
DESIGN
32
ENTER CUSTOMER REQUIREMENTS AND OTHER CONSTRAINTS
34
DISTINGUISH HARD AND SOFT CONSTRAINTS
36
ASSIGN PENALTY FOR EACH SOFT CONSTRAINT
36
PRIORITIZE SOFT CONSTRAINTS BASED ON PENALTY ASSIGNMENT
40
COMPUTE DESIGN CHARACTERISTICS BASED ON DESIGN VARIABLES
42
DOES THE DESIGN STATE CONTAIN CONSTRAINT VIOLATIONS
YES
NO
46
GENERATE ALTERNATIVES
EVALUATE ALTERNATIVES AND DESIGNS
48
CHOOSE THE BEST DESIGN
50
44
ARE ALL THE DESIGN VARIABLES DEFINED
NO
YES
45
IS IT ACCEPTABLE
NO
YES
THROW AWAY DESIGN
47
END
52

21. A system for concurrent tradeoff analysis, comprising:

a knowledge source having information of a predetermined knowledge domain;

a developer for receiving a set of constraints, and receiving said information from said knowledge source to compute values for a set of variables and characteristics representing a solution state in response to said constraints and information from said knowledge source;

an alternative generator for generating a set of at least one alternative from alternatives to said solution state in response to said computed variables and said characteristics being inconsistent with said constraints; and

an evaluator for evaluating said set of solution states and said, ranking said solution states and said alternatives in response to said evaluation, and selecting a satisficing solution to satisfy all said constraints.

5,855,010
DATA PROCESSING APPARATUS

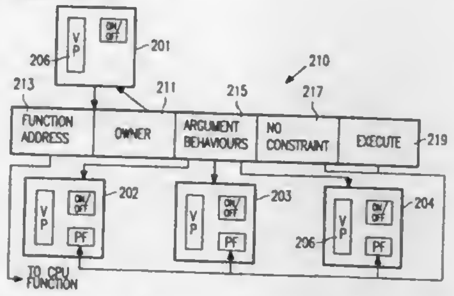
Peter R. Wavish, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1995, Ser. No. 498,280

Claims priority, application United Kingdom, Jun. 30, 1994, 9413126

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 706—45 **7 Claims**



1. A data processing apparatus comprising: means arranged to model an asynchronous logic circuit as a plurality of circuit elements (behaviours) each having a respective internal state and the functions of which are governed by a set of rules each defining a response to a given condition and the apparatus comprising means for responding to any said condition being satisfied by generating the associated response, said logic circuit including a pair of modules with each module comprising a plurality of interconnected behaviors; a further behaviour external to the pair of modules and containing information denoting the behaviours of a first one of the pair of modules; a behaviour within the second of the modules identified as a marker; and means for establishing an identify link between the marker and the external behaviour whereby said respective internal states are constrained to be the same, such that the marker is able to access a behaviour within the first module via the identify link and from the information denoting that behaviour within the external behaviour.

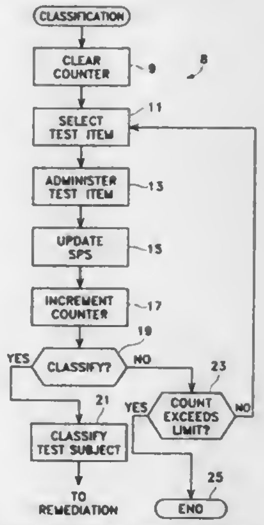
5,855,011
METHOD FOR CLASSIFYING TEST SUBJECTS IN KNOWLEDGE AND FUNCTIONALITY STATES

Curtis M. Tatsuoka, 21 Crown Rd., Trenton, N.J. 08638

Filed Sep. 13, 1996, Ser. No. 712,110

Int. Cl.^{6} G06F *15/18*

U.S. Cl. 706—45 **101 Claims**



1. A method for classifying a test subject in one of a plurality of states in a domain, a domain being a set of facts, a quality measure having a range of values, or a combination of a set of facts and a quality measure, the set of facts for a knowledge domain being any set of facts, the set of facts for a functionality domain being a set of facts relating to the functionality of a test subject, a state being

characterized by a subset of facts, a value in the range of values for a quality measure, or a combination of a subset of facts and a value for a quality measure, a first state being higher than or equal to a second state and a second state being lower than or equal to a first state if (1) the subset of facts or the quality measure value associated with the first state respectively includes the subset of facts or is greater than or equal to the quality measure value associated with the second state or (2) the subset of facts and the quality measure value associated with the first state respectively includes the subset of facts and is greater than or equal to the quality measure value associated with the second state, a test subject being classified in the highest state of which he has the knowledge or functionality, the method comprising the steps:

specifying a domain comprising a plurality of states and determining the higher-lower-neither relationships for each state, the higher-lower-neither relationships for a state being a specification of which states are higher, which states are lower, and which states are neither higher or lower, the plurality of states including a first, second, and third fact state characterized by subsets of facts wherein (1) the first and second fact states are higher than the third fact state and the first fact state is neither higher nor lower than the second fact state or (2) the first fact state is higher than the second and third fact states and the second fact state is neither higher nor lower than the third fact state;

specifying a test item pool comprising a plurality of test items, a test item engendering a response when administered to a test subject;

specifying an initial state probability set (SPS) for the test subject to be classified, each member of the initial SPS being an initial estimate of the probability density value that the test subject is associated with a particular state in the domain;

specifying a class conditional density $f_i(x|s)$ for each test item i in the test item pool for each state s in the domain, a class conditional density being a specification of the probability of a test subject in state s providing a response x to the test item i, each item partitioning the domain of states into a plurality of partitions according to the class conditional densities associated with the item, a partition being a subset of states for which the class conditional densities are the same or the union of such subsets;

determining the classification of the test subject.

5,855,012
SIMPLIFICATION OF SQL QUERIES USING GENERALIZED INFERENCE PROPAGATION AND GENERALIZED TRANSITIVE CLOSURE

Gautam Bhargava, Cupertino; Piyush Goel, Monte Sereno, and Balakrishna Ragmavendra Iyer, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 373,562, Jan. 17, 1995, Pat. No. 5,701,454. This application Jul. 31, 1997, Ser. No. 904,414

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—2 **48 Claims**

1. A method of simplifying a query in a computer, the query being performed by the computer to retrieve data from a database stored in a electronic storage device coupled to the computer, the method comprising the steps of:

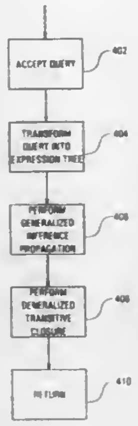
(a) accepting the query into a computer; and

(b) replacing a first expression in the query with a second expression, wherein the first expression comprises:

$$X_1 \overset{p}{\bowtie} ((X_2 \rightarrow X_3) \cap X_4)$$

and the second expression comprises:

$$X_1 \overset{p}{\bowtie} ((X_2 \bowtie X_3) \cap X_4)$$


ACCEPT QUERY
402
TRANSFORM QUERY INTO EXPRESSION TREE
404
PERFORM GENERALIZED INFERENCE PROPAGATION
406
PERFORM GENERALIZED TRANSITIVE CLOSURE
408
RETURN
410

wherein $X_i=(R_i, V_i, E_i)$ are relational expressions for $1 \leqq i \leqq 4$, p is a null-intolerant predicate, $sch(p) \cap R_3 \neq \emptyset$,

$$\bowtie$$

is a join operator, → is a left outer join operator, $\cap_a$ is an intersect all operator, $\cap_d$ is an intersect distinct operator, and $\cap \in \{\cap_a, \cap_d\}$.

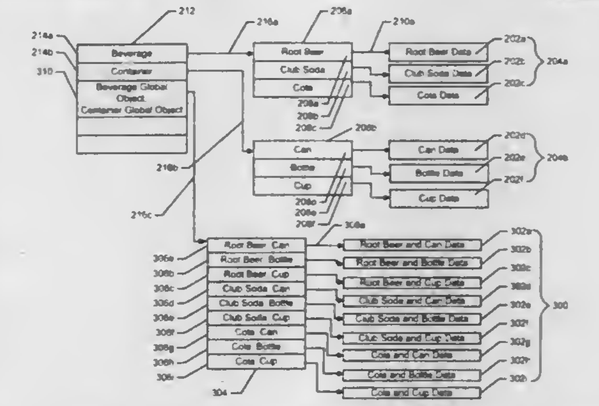
5,855,013
METHOD AND APPARATUS FOR CREATING AND MAINTAINING A COMPUTER DATABASE UTILIZING A MULTI-PURPOSE DATA FORMAT

Dave C. Fisk, Redondo Beach, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 671,312

Int. Cl.^{6} G06F *7/49*

U.S. Cl. 707—3 **17 Claims**



1. A method for storing data objects in the memory of a data processing system, the method performed by the data processing system and comprising the following steps:

grouping the data objects to form object classes:

creating an instance descriptor table for each object class, each instance descriptor table having one entry for each data object in the associated object class, each entry being a poly radix bit string containing data which describes the corresponding data object, each poly radix bit string also being hashable to return a pointer to the corresponding data object; and

creating a global object table having one entry for each object class, each entry being a poly radix bit string containing data which describes the corresponding object class, each poly radix bit string also being hashable to return a pointer to the instance descriptor table associated with the object class.

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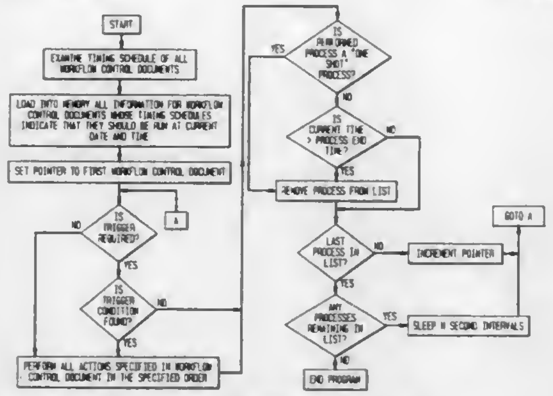
5,855,014
GETFIELD FUNCTION FOR A RELATIONAL WORKGROUP PLATFORM USING KEYWORD AND WORKFLOW DATABASES

Gordon Samuel Smith, New York, N.Y., assignor to Application Partners, Inc., Edison, N.J.

Filed Oct. 31, 1996, Ser. No. 739,864

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—3 **14 Claims**


START
EXAMINE TIMING SCHEDULE OF ALL WORKFLOW CONTROL DOCUMENTS
LOAD INTO MEMORY ALL INFORMATION FOR WORKFLOW CONTROL DOCUMENTS WHOSE TIMING SCHEDULES INDICATE THAT THEY SHOULD BE RUN AT CURRENT DATE AND TIME
SET POINTER TO FIRST WORKFLOW CONTROL DOCUMENT
IS TRIGGER REQUIRED?
A
IS TRIGGER CONDITION FOUND?
PERFORM ALL ACTIONS SPECIFIED IN WORKFLOW CONTROL DOCUMENT IN THE SPECIFIED ORDER
IS PERFORMED PROCESS A "ONE SHOT" PROCESS?
IS CURRENT TIME > PROCESS END TIME?
REMOVE PROCESS FROM LIST
LAST PROCESS IN LIST?
INCREMENT POINTER
GOTO A
ANY PROCESSES REMAINING IN LIST?
SLEEP N SECOND INTERVALS
END PROGRAM
YES
NO

1. A Relational Workgroup Platform comprising:
a workgroup platform; and
a @WITGetField( ) function; and
wherein:
said workgroup platform comprises:
a server functionality comprising means of storing databases for and amongst a network of computer workstations, said databases comprising data fields;
functions for manipulating data and data fields within said databases, and for writing data to and retrieving data from said data fields from within any one or more of said databases;
said @WITGetField( ) function comprises:
means of retrieving data from a data field of one said database and transferring same to another said database; and
wherein said @WITGetField( ) functionality is usable as an argument in one or more other functions.

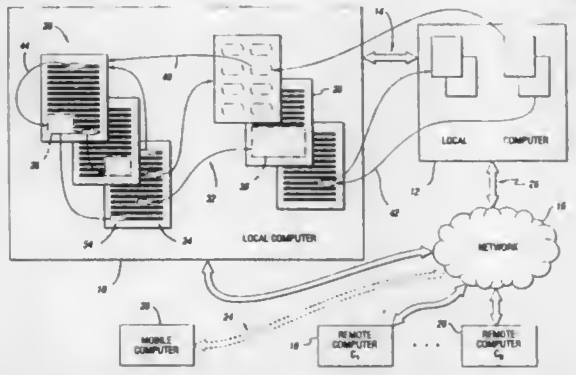
5,855,015
SYSTEM AND METHOD FOR RETRIEVAL OF HYPERLINKED INFORMATION RESOURCES

Yoav Shoham, Palo Alto, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 406,681, Mar. 20, 1995, abandoned. This application May 12, 1995, Ser. No. 440,206

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—5 **38 Claims**



1. A system for retrieval of hyperlinked information resources, the system comprising:
a user interface for selecting system parameters, for providing system output to a user, and for accepting input from the user;
a processor in communication with the user interface, the microprocessor being operative to explore the hyperlinked information resources using a first heuristic to select at least one information resource, to present the at least one information resource to the user via the user interface based on a second heuristic, to obtain feedback from the user via the user interface corresponding to a period of time during which the user views each of the at least one information resources to determine relevance of the at least one information resource, and to modify the first and second heuristics based on the feedback.

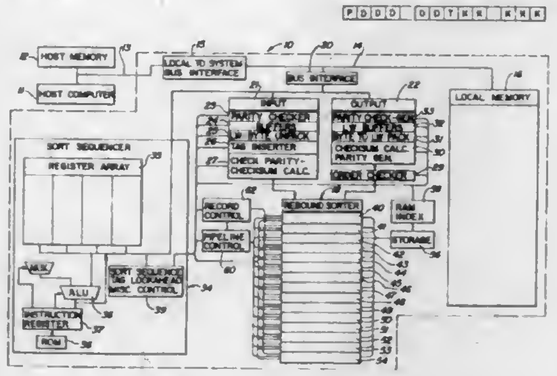
5,855,016
SORTING SYSTEM FOR SERIALLY PROCESSING RECORDS

Brian Charles Edem, San Jose, Calif.; Richard Perham Helliwell, Colorado Springs, Colo.; John Thomas Johnston, San Jose, Calif., and Richard Franklin Lary, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass., and National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 225,751, Apr. 11, 1994, abandoned, which is a division of Ser. No. 918,871, Jul. 22, 1992, Pat. No. 5,349,684, which is a continuation of Ser. No. 374,342, Jun. 30, 1989, abandoned. This application Oct. 30, 1995, Ser. No. 550,515

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—7 **2 Claims**



1. A sorting system for serially processing records comprising:
input means for serially supplying groups of input records;
sorting means for serially receiving said groups of input records from said input means and serially outputting more than N+1 of said input records in sorted order;
said sorting means comprising a plurality of N processing elements and a plurality of storage elements, each of said plurality of N processing elements being connected to at least two of said plurality of storage elements, each of said N processing elements being able to concurrently transfer two of said records to be sorted to two of said storage elements connected thereto, each of said storage elements comprising a RAM section and variable length counter means to control indexing of said RAM during sorting of said input records.

5,855,017

Patent Not Issued For This Number

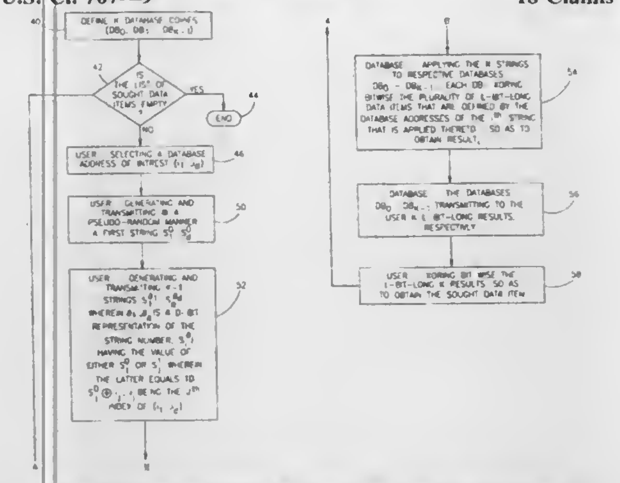
5,855,018
PRIVATE INFORMATION RETRIEVAL

Ben-Zion Chor; Oded Goldreich, both of Tel-Aviv, and Eyal Kushilevitz, Haifa, all of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Oct. 18, 1996, Ser. No. 733,994

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—9 **18 Claims**


DEFINE K DATABASE COPIES
IS THE LIST OF SOUGHT DATA ITEMS EMPTY?
END
USER SELECTING A DATABASE ADDRESS OF INTEREST
USER GENERATING AND TRANSMITTING IN A PSEUDO-RANDOM MANNER A FIRST STRING
USER GENERATING AND TRANSMITTING K-1 STRINGS
REPRESENTATION OF THE STRING NUMBER
DATABASE APPLYING THE K STRINGS TO RESPECTIVE DATABASES
EACH DB XORING BITWISE THE PLURALITY OF L-BIT-LONG DATA ITEMS THAT ARE DEFINED BY THE DATABASE ADDRESSES OF THE STRING THAT IS APPLIED THERETO SO AS TO OBTAIN RESULT
DATABASE THE DATABASES TRANSMITTING TO THE USER K L-BIT-LONG RESULTS, RESPECTIVELY
USER XORING BIT WISE THE L-BIT-LONG K RESULTS SO AS TO OBTAIN THE SOUGHT DATA ITEM
40
42
44
46
50
52
54
56
58
YES
NO

1. A method for retrieving at least one sought l-bit-long ($l \geqq 1$) data item from a database whilst essentially assuring the user's privacy;
the database having k ($k \geqq 2$) database copies designated as $DB0_0$–DB_{k-1} having respective k indices 0 . . . k-1; each of said database copies includes a plurality of l-bit-long data items associated, each, with a unique database address;
the method comprising the following steps executed with respect to each one of said at least one sought l-bit-long data item:
(i) providing a database address of said sought l-bit-long data item;
(ii) generating k strings $S_0 \ldots S_{k-1}$, which when applied, each, to the respective databases DB_0 to DB_{k-1}, define in each one of them, a respective plurality of database addresses of a plurality of l-bit-long data items; the plurality of database addresses that is defined by each one of said $S_0 \ldots S_{k-1}$ containing a common subset and a complementary subset of database addresses; the respective complementary subsets of database addresses of S_0–S_{k-1}, being distinguishable, one with respect to the other, contingent upon the database address stipulated in step (i);
(iii) calculating for each database DB_i, from among said databases $DB_0 \ldots DB_{k-1}$, $result_i$ as a function of the plurality of l-bit-long data items of step (ii), giving rise to the generation of k results from $DB_0 \ldots DB_{k-1}$, respectively;
(iv) communicating the k results of (iii) to the user; and
(v) calculating the sought l-bit-long item as a function of said k results.

5,855,019
ENUMERATING PROJECTIONS IN SQL QUERIES CONTAINING OUTER AND FULL OUTER JOINS IN THE PRESENCE OF INNER JOINS

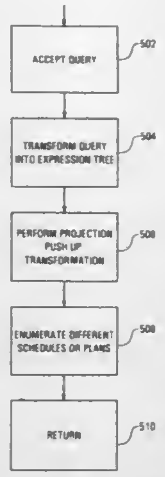
Gautam Bhargava, Cupertino; Piyush Goel, Monte Sereno, and Balakrishna Raghavendra Iyer, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 379,891, Jan. 30, 1995, Pat. No. 5,687,362. This application Jul. 31, 1997, Ser. No. 904,172

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—9 **18 Claims**

1. A method of simplifying a query in a computer, the query being performed by the computer to retrieve data from a database stored in a electronic storage device coupled to the computer, the method comprising the steps of:


ACCEPT QUERY
502
TRANSFORM QUERY INTO EXPRESSION TREE
504
PERFORM PROJECTION PUSH UP TRANSFORMATION
506
ENUMERATE DIFFERENT SCHEDULES OR PLANS
508
RETURN
510

(a) accepting the query into the computer; and
(b) replacing a first expression in the query with a second expression, wherein the first expression comprises:

$$\delta_{X_1}(e_x)\odot\delta_{Y_1}(e_y)$$

and the second expression comprises:

$$\delta_{X_1\ Y_1}(e_x\odot e_y)$$

wherein:
$e_X=(R_X, V_X, E_X)$ is a relation, where R_X is a non-empty set of real attributes, V_X is a non-empty set of virtual attributes, E_X, an extension of the relation, also denoted as $ext(e_X)$, is a set of tuples, $X_1 \subseteq R_X$, and $X_2 \subseteq X_1$,
$e_Y=(R_Y, V_Y, E_Y)$ is a relation, where R_Y is a non-empty set of real attributes, V_Y is a non-empty set of virtual attributes, E_Y, an extension of the relation, also denoted as $ext(e_Y)$, is a set of tuples, $Y_1 \subset R_Y$, and $Y_2 \subset Y_1$,
$\delta_X(r)$ is a distinct projection operation of relation r onto attributes X, and

$\odot \epsilon \{\overset{p}{\bowtie}, \leftarrow, \rightarrow, \longleftrightarrow\}$, wherein $\overset{p}{\bowtie}$ represents a join operation, $\longleftrightarrow$ represents a full outer join operation, $\leftarrow$ represents a left outer join operation, and $\rightarrow$ represents a right outer join operation.

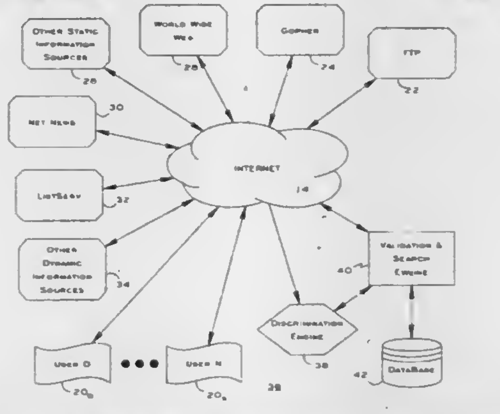
5,855,020
WEB SCAN PROCESS

Steven T. Kirsch, Los Altos, Calif., assignor to Infoseek Corporation, Sunnyvale, Calif.

Filed Feb. 21, 1996, Ser. No. 604,584

Int. Cl.^{6} G06F *17/30*

U.S. Cl. 707—10 **10 Claims**



1. A system of autonomously maintaining a searchable database of information accessible over the Internet, said system comprising:
a) a discrimination system coupleable to the Internet to receive messages including electronic mail messages and network

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news messages, said discrimination processing said electronic mail and network news messages to identify embedded URLs; and

b) a validation system coupleable to the Internet, said validation system coupled to said discrimination system to receive a predetermined embedded URL, said validation system enabling an access of the Internet to retrieve Web page information associated with said predetermined embedded URL; and

c) a database for searchably storing said predetermined embedded URL in association with the Web page information associated with said predetermined embedded URL.

PATENTS

GRANTED December 29, 1998

ERRATA

Designs

For CLASS	See PATENT NO.
D13—119	D403,265
D24—101	D403,396
D24—112	D403,397
D24—112	D403,398
D24—120	D403,399
D24—126	D403,400
D24—126	D403,401
D24—126	D403,403
D24—130	D403,404
D26—037	D403,405
D25—156	D403,448
D25—136	D403,449

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DESIGNS

DECEMBER 29, 1998

403,135

HANDLE FOR FROZEN CONFECTIONS

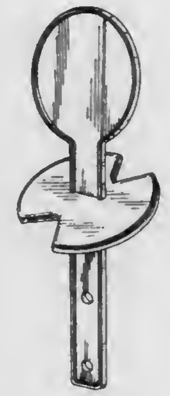
Piaras V. de Cleir, Tarrytown; John R. Tulloch, Malone, both of N.Y., and Donald R. Turner, Shelbyville, Ind., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Mar. 4, 1998, Ser. No. 84,530

Term of patent 14 years

LOC (6) Cl. 01 - *01*

U.S. Cl. D1—105



403,136

LOLLIPOP

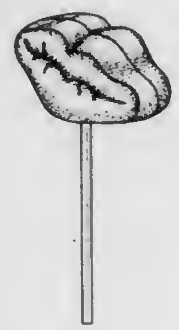
Luis Rafael Ibarra Robles, Andres Teran #1348 Sector Hidalgo, Chapultepec, Guadalajara Jalisco, Mexico

Filed Feb. 2, 1998, Ser. No. 83,608

Term of patent 14 years

LOC (6) Cl. 01 - *01*

U.S. Cl. D1—106



403,137

COLLAR

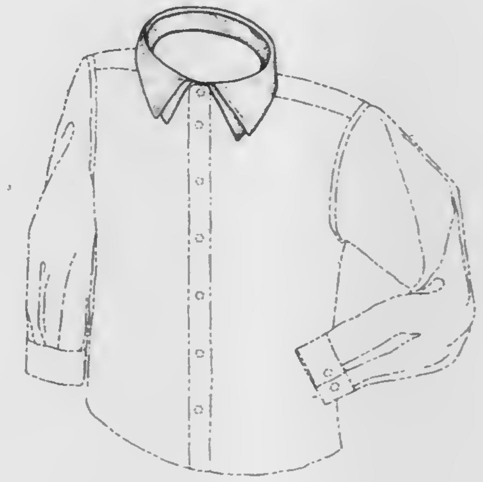
Michael A. Howard, 64 Park End Pl., East Orange, N.J. 07018-1114

Filed Nov. 13, 1997, Ser. No. 79,422

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—602



403,138

EXTERIOR FINGERTIP PROTECTORS FOR A GLOVE

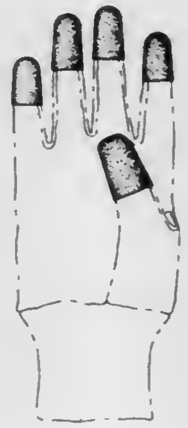
Elizabeth C. Wilmot, 4 Ambergate Rise, Pittsford, N.Y. 14534

Filed Dec. 18, 1995, Ser. No. 48,030

Term of patent 14 years

LOC (6) Cl. 02 - *06*

U.S. Cl. D2—623

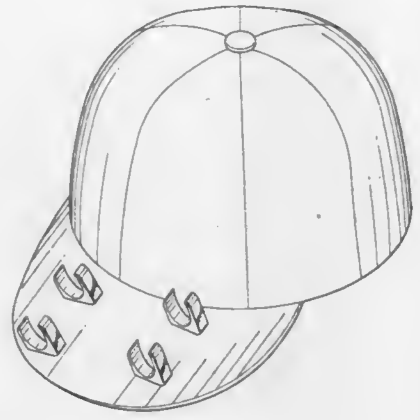


403,139
NOVELTY CAP

James Dayle Hunter, 2110 Adamsville Rd., Zanesville, Ohio 43701

Filed Nov. 4, 1997, Ser. No. 78,842
Term of patent 14 years
LOC (6) Cl. 02 - *03*

U.S. Cl. D2—866

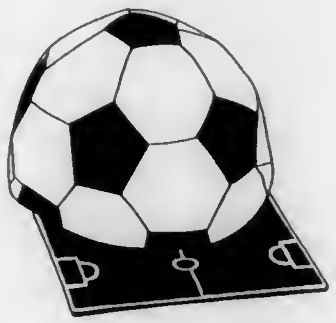


403,140
SPORTS CAP

Goran Goranovic, Picmanova 2, 10000 Zagreb, Croatia

Filed Mar. 27, 1997, Ser. No. 69,308
Term of patent 14 years
LOC (6) Cl. 02 - *03*

U.S. Cl. D2—872

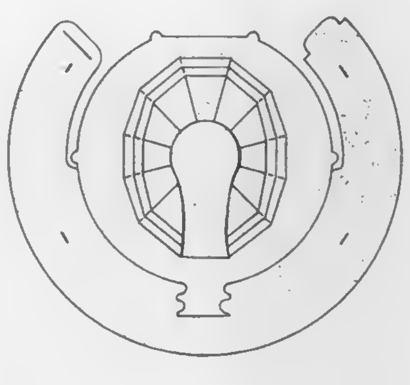


403,141
SUNSHINE HAT

Rudy De Lozada, and Sylvie Hernandez, both of 1437 Clement St., San Francisco, Calif. 94118

Filed Oct. 28, 1997, Ser. No. 78,588
Term of patent 14 years
LOC (6) Cl. 02 - *03*

U.S. Cl. D2—875



403,142
BOOT

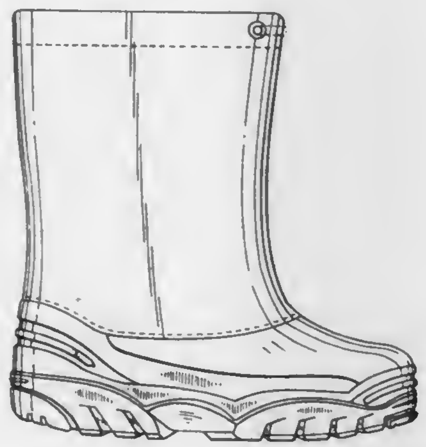
Gordon N. Cook, 780 Laird Blvd., Montreal, Quebec, Canada, H3B 1Y6

Filed Feb. 3, 1997, Ser. No. 66,031

Claims priority, application Canada, Dec. 12, 1996, 1996-2882

Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—910

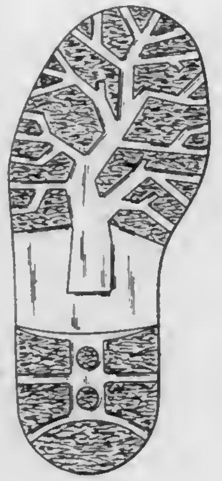


403,143
SHOE SOLE DESIGN

Kevin H. Gillespie, Jamaica Plain, Mass., assignor to SRL, Inc., Wilmington, Del.

Filed Feb. 13, 1998, Ser. No. 83,827
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—952



403,144
SHOE SOLE

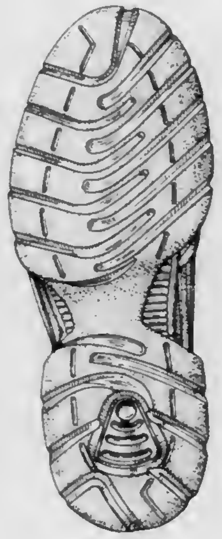
Ejnar Truelsen, Tonder, Denmark, assignor to A/S Eccolet Sko, Denmark

Filed Feb. 10, 1998, Ser. No. 83,980

Claims priority, application Denmark, Aug. 13, 1997, 0824/1997

Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—953



403,145
SHOE SOLE

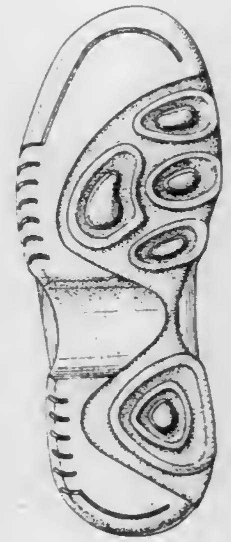
Ejnar Truelsen, Tonder, Denmark, assignor to A/S Eccolet Sko, Denmark

Filed Feb. 10, 1998, Ser. No. 83,979

Claims priority, application Denmark, Aug. 13, 1997, 0825/1997

Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—957

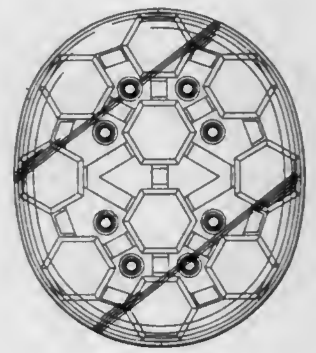


403,146
SHOE INSERT

K. Chee Wong, Kowloon, Hong Kong, assignor to Fila U.S.A., Inc., Sparks, Md.

Filed Jul. 21, 1997, Ser. No. 74,850
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—961



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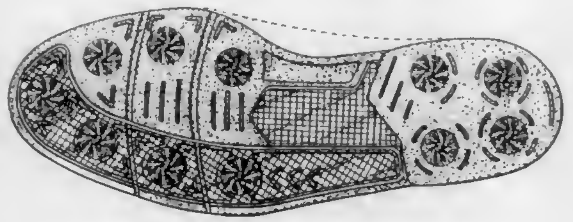
403,147
GOLF SHOE SOLE

John J. Erickson, Brockton, Mass., assignor to Acushnet Company, Fairhaven, Mass.

Continuation-in-part of Ser. No. 52,183, Mar. 25, 1996, Pat. No. Des. 384,496. This application Apr. 29, 1997, Ser. No. 69,579

Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—962

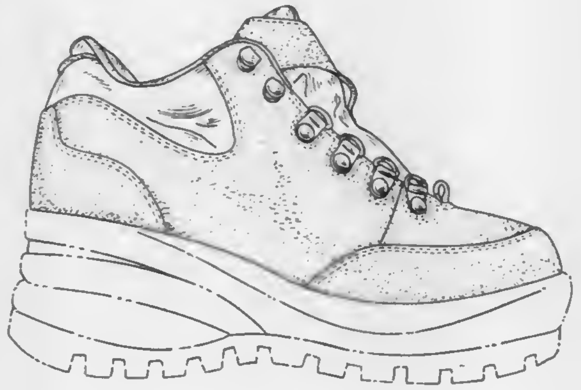


403,148
SHOE UPPER

Michelle Kelchak, Manhattan Beach, Calif., assignor to Skechers U.S.A., Inc., Manhattan Beach, Calif.

Filed May 23, 1998, Ser. No. 88,461
Term of patent 14 years
LOC (6) Cl. 02 - *04*

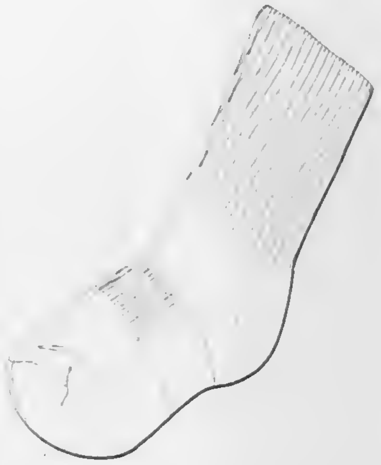
U.S. Cl. D2—970



403,149
SORTABLE SOCK

Veronica Fincher, 5358 Drew Rd., Alpharetta, Ga. 30201
Filed Nov. 18, 1997, Ser. No. 79,950
Term of patent 14 years
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—989

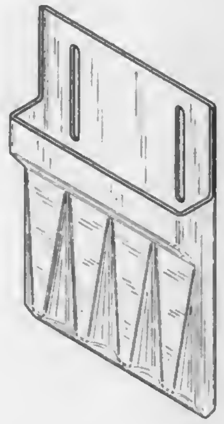


403,150
TOOL HOLSTER

Lawrence R. Diener, Fenton, Mo.; Dawn M. France, Marine, Ill., and Timothy K. Dolan, Florissant, Mo., assignors to Sinclair & Rush, Inc., St. Louis, Mo.

Filed Feb. 4, 1998, Ser. No. 83,058
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—228



403,151
HANDBAG

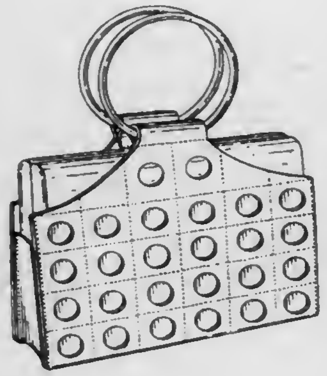
Katherine Heredos-Formby, New York, N.Y., assignor to Tanner Krolle & Company Limited, London, England

Filed Sep. 10, 1997, Ser. No. 76,564

Claims priority, application United Kingdom, Mar. 15, 1997, 2064133

Term of patent 14 years
LOC (6) Cl. 03 - *01*

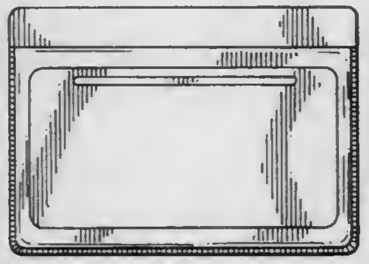
U.S. Cl. D3—246



403,152
CARD CARRIER

Boris Parad, 440 Westley Rd., Glencoe, Ill. 60022
Filed Jul. 8, 1996, Ser. No. 56,742
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—247

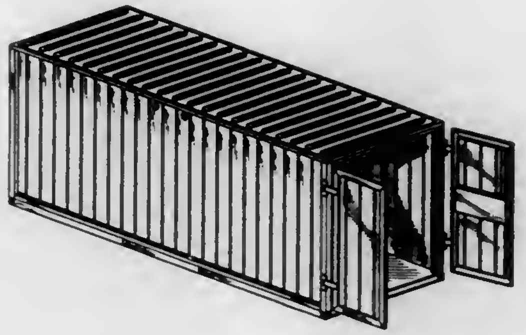


403,153
STORAGE CONTAINER WITH DOORS AT ONE END

Dennis Martineau, San Antonio, Tex., assignor to Saf-T-Box, Inc., San Antonio, Tex.

Filed Sep. 25, 1997, Ser. No. 77,039
Term of patent 14 years
LOC (6) Cl. 03 - *01*

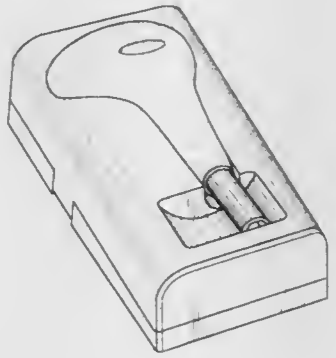
U.S. Cl. D3—272



403,154
TOOL BOX

Yao-Ju Huang, P.O. Box 10780, Taipei, Taiwan
Filed Dec. 9, 1997, Ser. No. 81,596
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—274

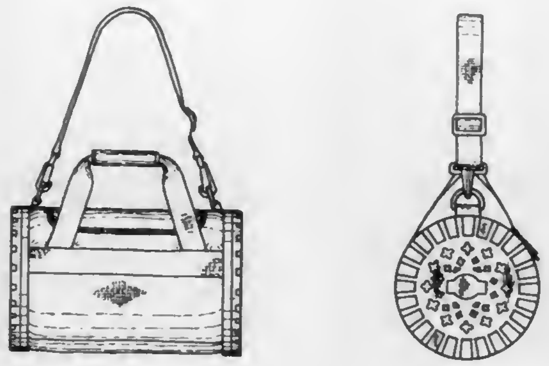


403,155

CYLINDRICAL CARRYING BAG

Angela W. Liu, 330 Fifth Ave., Suite 504, New York, N.Y. 10001
Filed Jan. 30, 1998, Ser. No. 82,785
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—289

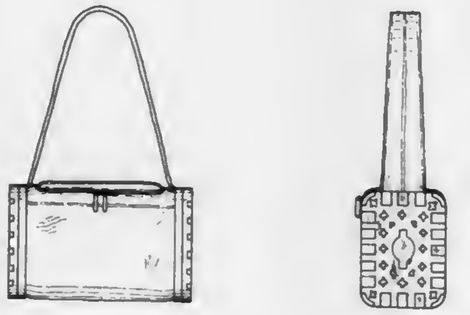


403,156

RECTANGULAR CARRYING BAG

Angela W. Liu, 330 Fifth Ave., Suite 504, New York, N.Y. 10001
Filed Jan. 30, 1998, Ser. No. 82,786
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—289

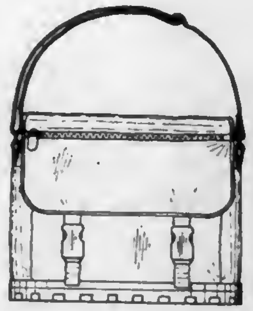


403,157

CARRYING BAG

Angela W. Liu, 330 Fifth Ave., Suite 504, New York, N.Y. 10001
Filed Jan. 5, 1998, Ser. No. 81,489
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—287

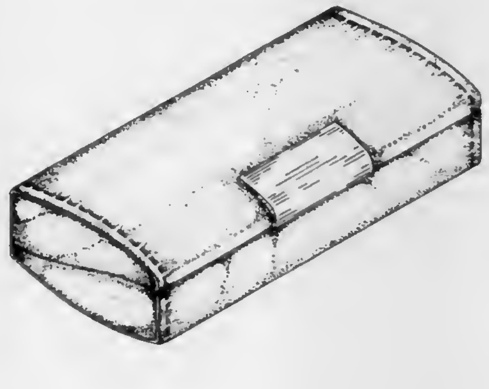


403,158

CONTAINER FOR JEWELRY, WATCHES, AND GLASSES

Ho Ching Au, Blk. A, 9/F., Goodview Ind. Bldg., 11 Kin Fat St., Tuen Mun, N.T., Hong Kong
Filed Jan. 20, 1998, Ser. No. 82,293
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—294

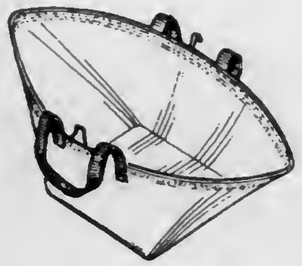


403,159

BAG

Djamal Bellehchili, 21 rue du Depart, 75014 Paris, France
Filed Dec. 27, 1996, Ser. No. 64,299
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—303

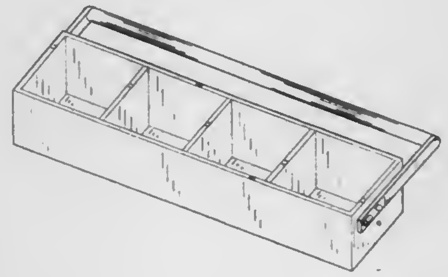


403,160

CARRIER FOR SEVERAL PAINT CANS

Curtis R. Hill, 310 Petersburg Rd., Powhatan, Va. 23139
Filed Nov. 7, 1996, Ser. No. 62,113
Term of patent 14 years
LOC (6) Cl. 03 - *01*

U.S. Cl. D3—315

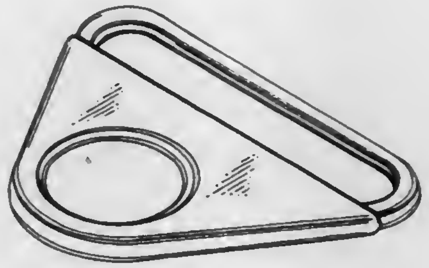


403,161

STRAP LUG

Shin-Fu Eiken Lin, Taipei, Taiwan, assignor to Paragon Luggage, Inc., Tustin, Calif.
Division of Ser. No. 70,876, Feb. 14, 1997, Pat. No. Des. 394,553. This application Jan. 9, 1998, Ser. No. 81,792
Term of patent 14 years
LOC (6) Cl. 03 - *99*

U.S. Cl. D3—318

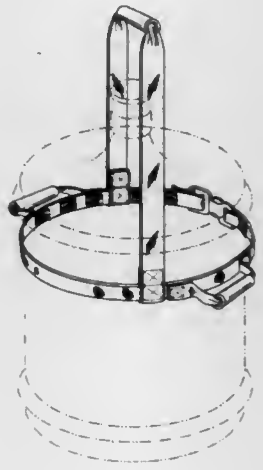


403,162

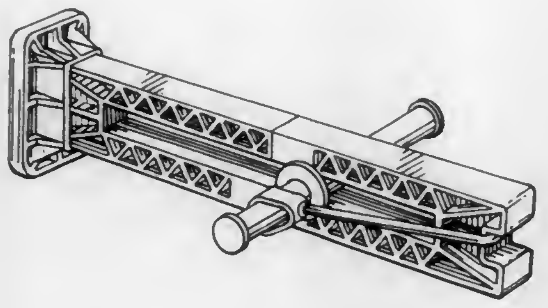
HARNESS FOR CARRYING A FIVE GALLON WATER BOTTLE

Felix R. Williams, 5055 Parkglen Ave., Los Angeles, Calif. 90043
Continuation-in-part of Ser. No. 60,220, Sep. 24, 1996, abandoned. This application Oct. 17, 1997, Ser. No. 77,979
Term of patent 14 years
LOC (6) Cl. 03 - *99*

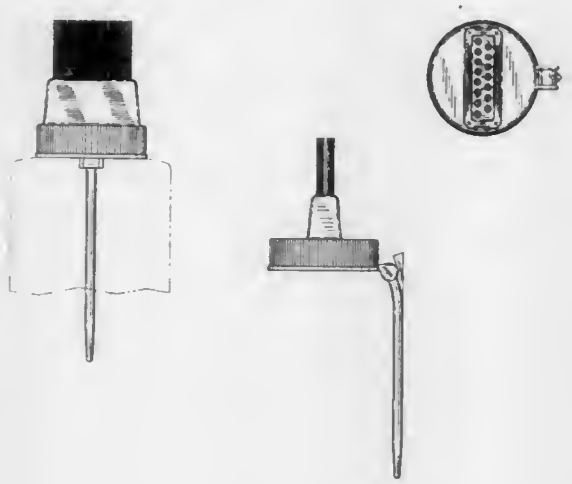
U.S. Cl. D3—327



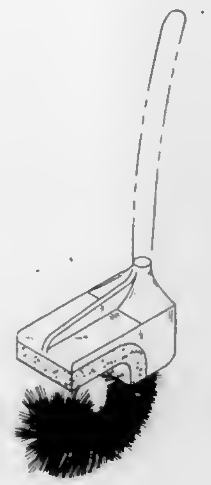
403,163
EXERCISE DEVICE
John D. Lipps, 1514 Ridgecrest Dr., Kent, Ohio 44240
Filed Feb. 13, 1998, Ser. No. 83,637
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D3—692



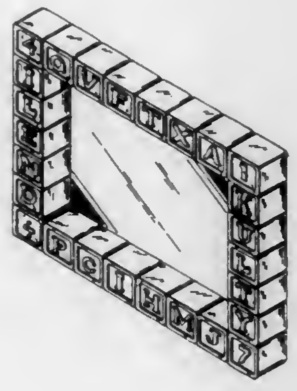
403,164
LIQUID HAIR TREATMENT DISPENSER HEAD
Fredrick Daughtry, 1621 18th Ave W, Bradington, Fla. 34205
Filed Sep. 2, 1997, Ser. No. 76,087
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—114



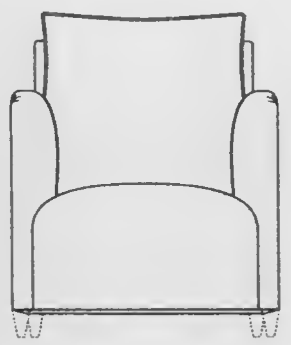
403,165
TOILET BOWL BRUSH
Peter Ferrante, and Jennie M. Kapinos, both of 105 S. Hercules Ave., Clearwater, Fla. 33765
Filed Apr. 28, 1998, Ser. No. 87,265
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D4—119



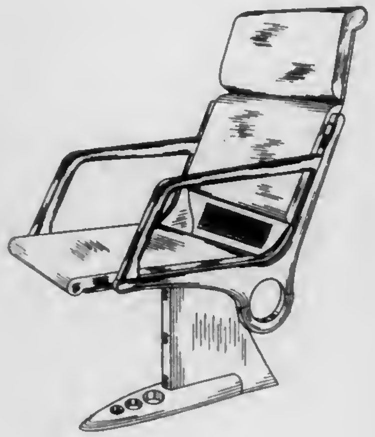
403,166
MIRROR WITH A BLOCK FRAME
Scott W. Parker, 328 S. Jefferson, Chicago, Ill. 60661
Filed Dec. 22, 1997, Ser. No. 81,108
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—307



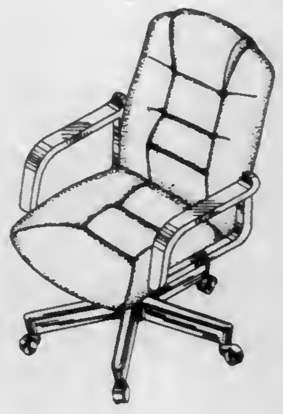
403,167
SEAT
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Dec. 29, 1997, Ser. No. 81,285
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



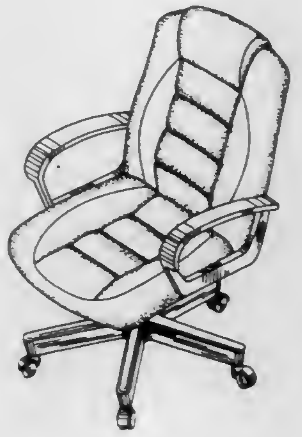
403,168
SEAT
Jesus Maria Guibelalde, Vitoria, Spain, assignor to Imat Mobiliario y Diseno, S.A., Spain
Filed Dec. 30, 1996, Ser. No. 64,378
Claims priority, application Spain, Jul. 2, 1996, 137.847
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—364



403,169
CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taiwan
Filed Jan. 12, 1998, Ser. No. 81,916
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



403,170
CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taiwan
Filed Jan. 12, 1998, Ser. No. 81,917
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



403,171
SEAT

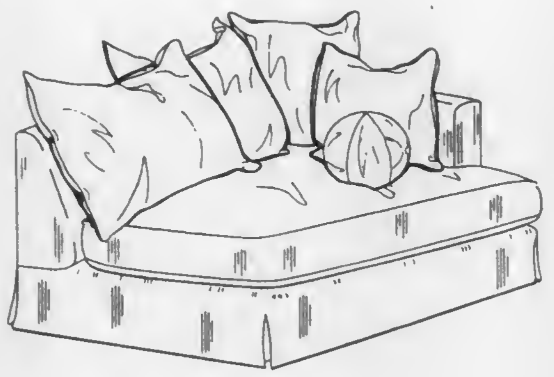
Andrew C. Gibson, Greensboro, N.C., assignor to Marge Carson, Inc., Rosemead, Calif.

Filed Aug. 19, 1997, Ser. No. 75,669

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—377



403,172
SEAT

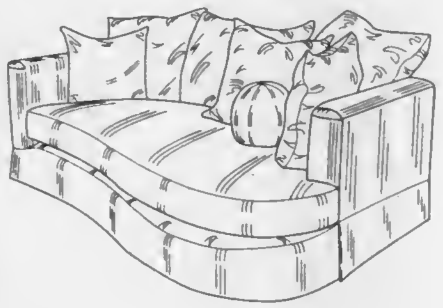
Andrew C. Gibson, Greensboro, N.C., assignor to Marge Carson, Inc., Rosemead, Calif.

Filed Aug. 19, 1997, Ser. No. 75,670

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—377



403,173
SEAT

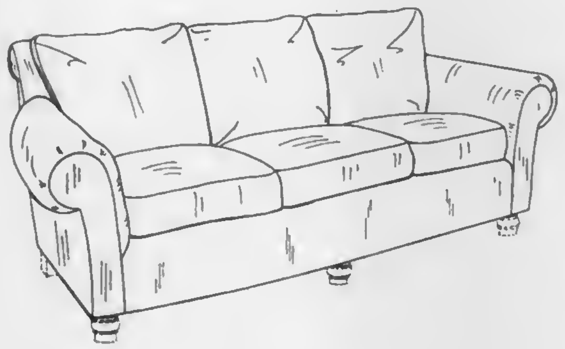
Darrell C. Ferguson, Charleston, S.C., and David H. Vanderbloemen, Morgantown, N.C., assignors to Ferguson Copeland, LLC, Charleston, S.C.

Filed Apr. 9, 1997, Ser. No. 69,086

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—381



403,174
CRIB

Judson Beaumont, Burnaby, Canada, assignor to Straight Line Designs, Inc., Vancouver, Canada

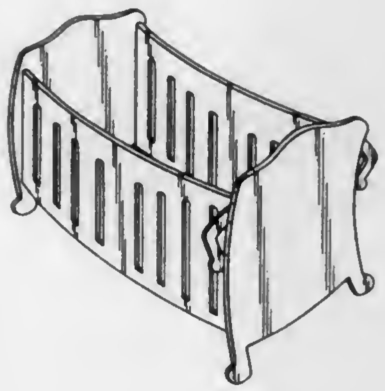
Filed Dec. 15, 1997, Ser. No. 82,410

Claims priority, application Canada, Nov. 5, 1997, 1997-2851

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—390



403,175
STORAGE AND DISPLAY STAND

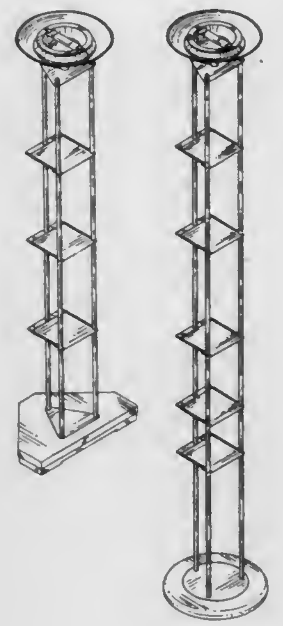
Shahriar Dardashti, c/o Atlantic Representations, Inc., P.O. Box 2399, Santa Fe Springs, Calif. 90670

Division of Ser. No. 50,639, Feb. 20, 1996, Pat. No. Des. 387,226. This application Aug. 6, 1996, Ser. No. 58,034

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—399



403,176
ORGANIZER WITH COVER

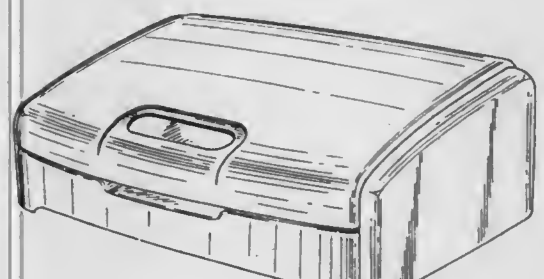
Dale Harper, 51705 Avenida Villa, La Quinta, Calif. 92253

Filed May 7, 1997, Ser. No. 70,415

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—440



403,177
ORGANIZER WITH SHELF

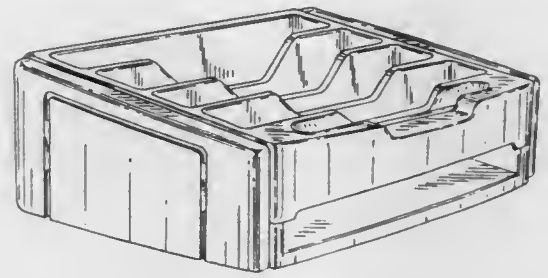
Dale Harper, 51705 Avenida Villa, La Quinta, Calif. 92253

Filed May 7, 1997, Ser. No. 70,416

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—467



403,178
LOTTERY TICKET DISPLAY CASE

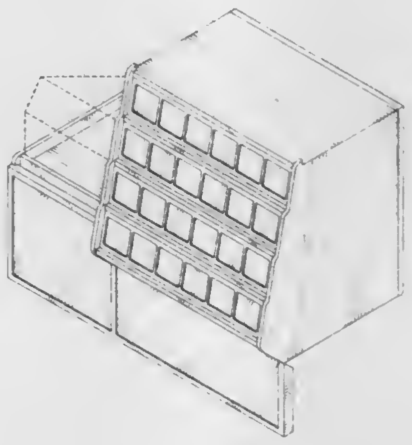
Arthur Capeto, 24 Brackett Ave., Tiverton, R.I. 02878

Filed Apr. 20, 1998, Ser. No. 86,758

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D6—471

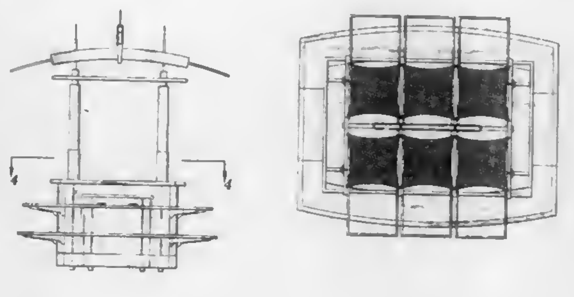


403,179
KIOSK

Tony L. Horton, Dallas, Tex., assignor to T L Horton Design, Inc., Dallas, Tex.

Filed Aug. 20, 1997, Ser. No. 75,184
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—474

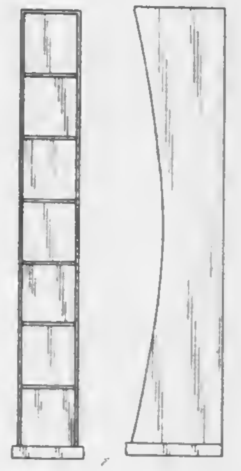


403,180
SHELVING UNIT

Rebecca Josephine Gelman, 350 S. Main St., Suite 200, Ann Arbor, Mich. 48104-1923

Filed Feb. 20, 1998, Ser. No. 83,933
Term of patent 14 years
LOC (6) Cl. 06 - *04*

U.S. Cl. D6—478

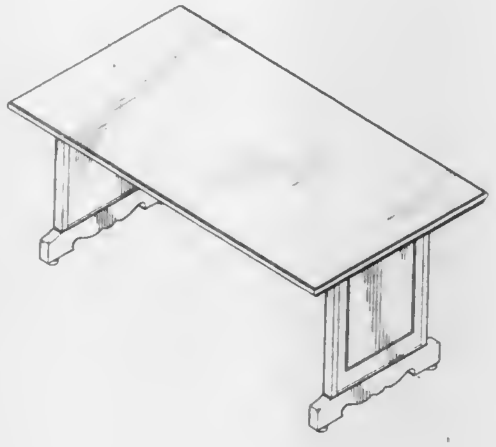


403,181
TABLE

William Keith Kelly, Troutman, N.C., assignor to Cherokee Products, Inc., Barium Springs, N.C.

Division of Ser. No. 59,907, Sep. 17, 1996, which is a division of Ser. No. 33,294, Jan. 9, 1995, Pat. No. Des. 376,056. This application Oct. 24, 1997, Ser. No. 78,221
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—480

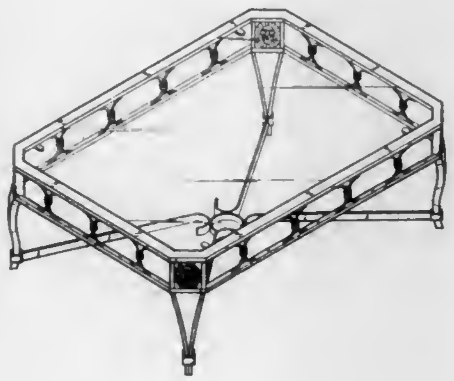


403,182
TABLE

Li Fu, 11th Floor—3, No. 492, Section 1, Tai Yuan Road, Taichung, Taiwan

Filed Nov. 3, 1997, Ser. No. 78,901
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—480

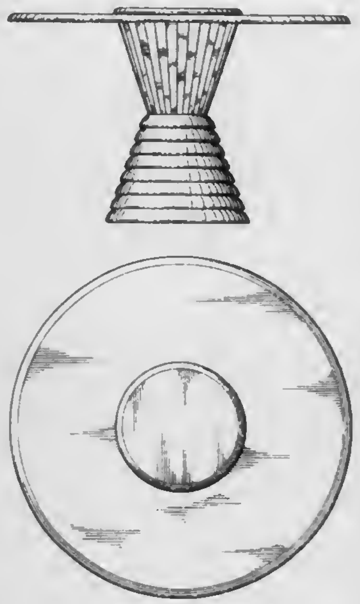


403,183
TABLE

Sally Sirkin Lewis, 715 N. Canon Dr., Beverly Hills, Calif. 90210

Filed Mar. 17, 1998, Ser. No. 85,187
Term of patent 14 years
LOC (6) Cl. 06 - *03*

U.S. Cl. D6—486

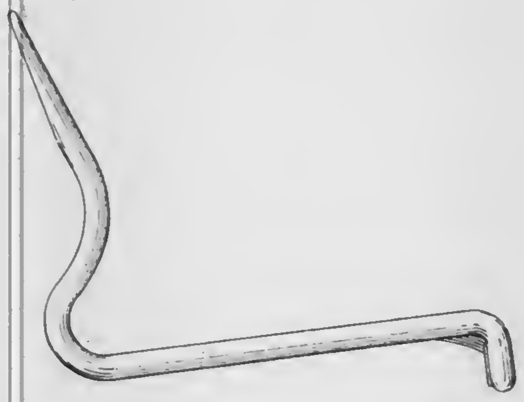


403,184
UTILITY CHAIR SUPPORT-FRAME

Roger K. Leib, Los Angeles, Calif., assignor to Ki-Add Specialized Support Technology, Inc., Green Bay, Wis.

Filed Aug. 19, 1997, Ser. No. 75,546
Term of patent 14 years
LOC (6) Cl. 06 - *06*

U.S. Cl. D6—500

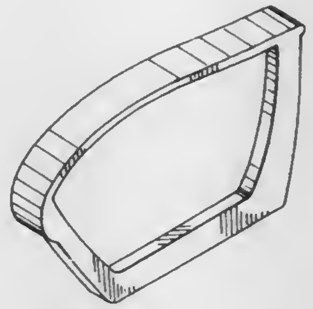


403,185
CHAIR ARMREST

Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taiwan

Filed Jan. 12, 1998, Ser. No. 81,942
Term of patent 14 years
LOC (6) Cl. 06 - *06*

U.S. Cl. D6—501

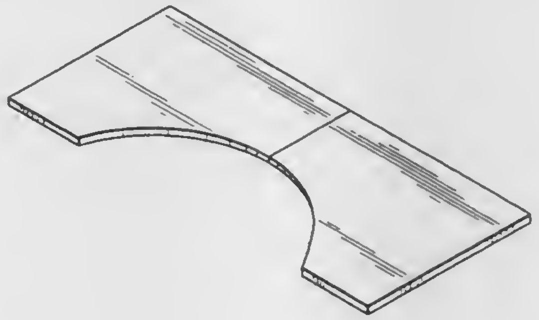


403,186
WORKSURFACE TOP

Andrew J. Kopish, Green Bay, Wis., assignor to Krueger International, Inc., Green Bay, Wis.

Filed Aug. 29, 1996, Ser. No. 58,654
Term of patent 14 years
LOC (6) Cl. 06 - *06*

U.S. Cl. D6—511



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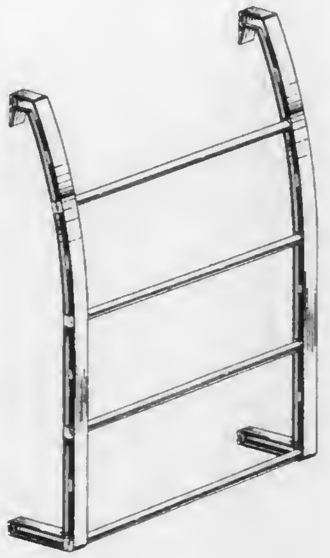
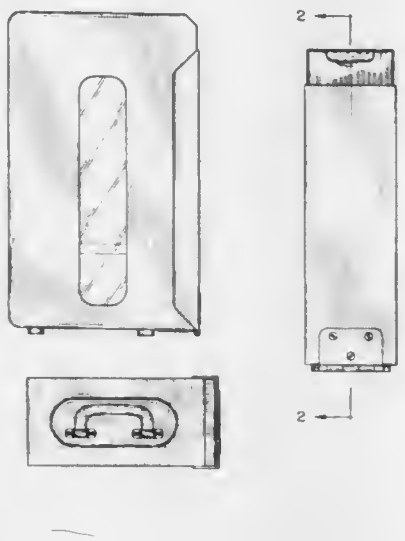
403,187
HANGING TOWEL RACK

Richard B. Klein, Overland Park; Chris Serslev, Leawood, both of Kans., and Farid Nedjam, Kansas City, Mo., assignors to Lynk, Inc., Lenexa, Kans.
Filed Oct. 14, 1997, Ser. No. 77,821
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—513



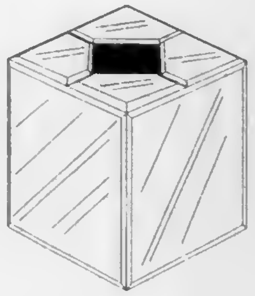
403,188
DIAPER DISPENSER

Gina M Kancso, 1576 E. 37th St., Brooklyn, N.Y. 11234
Filed Sep. 25, 1997, Ser. No. 77,042
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—515



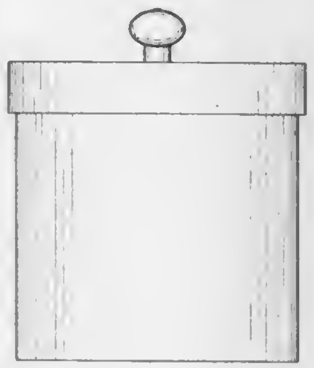
403,189
BEVELED GLASS TISSUE DISPENSER

Howard Isaacson, 77 St. George Pl., Palm Beach Gardens, Fla. 33418
Filed May 10, 1994, Ser. No. 22,661
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D6—518



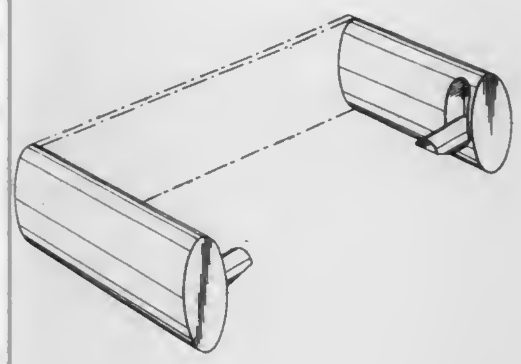
403,190
TISSUE COVERING DEVICE

Frances E. Turner, 105 Hickory Dr., Sewickley, Pa. 15143
Filed Mar. 5, 1997, Ser. No. 67,358
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D6—518



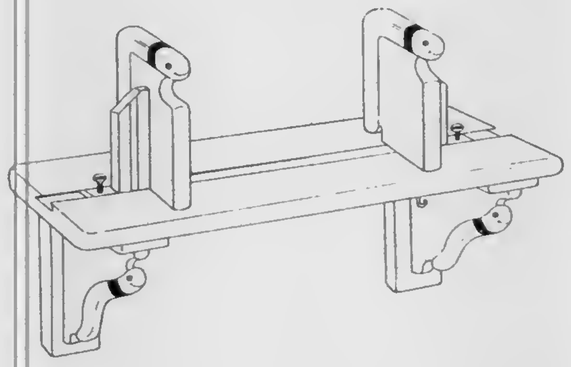
403,191
ROLL HOLDER

Gary A. Paul, Ossining; Jonathan B. Paul, Scarsdale, both of N.Y., and Richard J. Paul, Teaneck, N.J., assignors to Paul Decorative Products, Inc., Bronx, N.Y.
Filed Aug. 19, 1997, Ser. No. 75,508
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—523



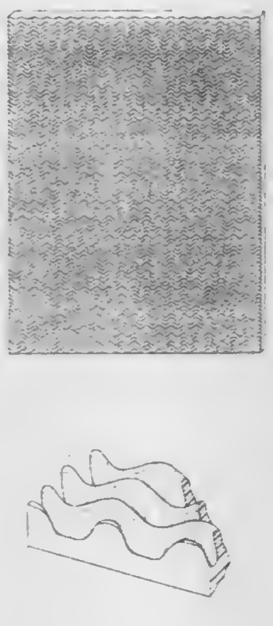
403,192
BOOKWORM BOOKSHELF

William Charles Papke, 1811 Midway Dr., Rockford, Ill. 61103
Filed Jul. 25, 1996, Ser. No. 57,444
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—574



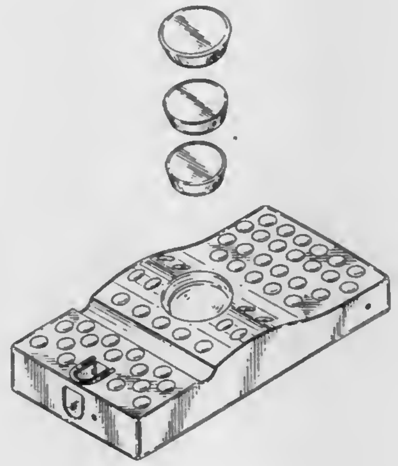
403,193
CONVOLUTED FOAM PAD

Dennis L. Felter, Jr., and Steve Hawkins, both of Midlothian, Va., assignors to Carpenter Company, Richmond, Va.
Filed Mar. 10, 1998, Ser. No. 84,747
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



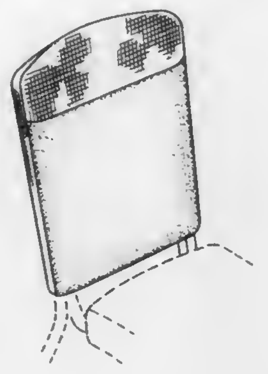
403,194
AIR MATTRESS FOR PREGNANT WOMEN

Diane Thurston, 10455 Oakdale Ave., Chatsworth, Calif. 91311
Filed Mar. 16, 1998, Ser. No. 85,048
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—604



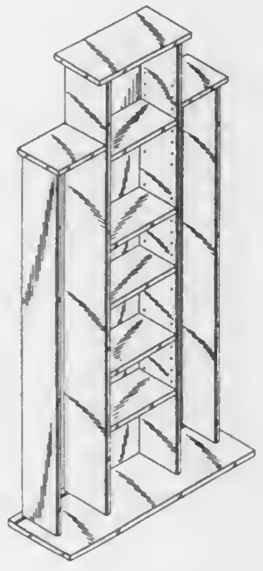
403,195
CHAIRBACK SLIPCOVER

Cheryl Irwin-Tesmer, Carlsbad, Calif., assignor to Irwin Productions Inc., Carlsbad, Calif.
Filed Sep. 2, 1997, Ser. No. 76,322
Term of patent 14 years
LOC (6) Cl. 06 - *61*
U.S. Cl. D6—611



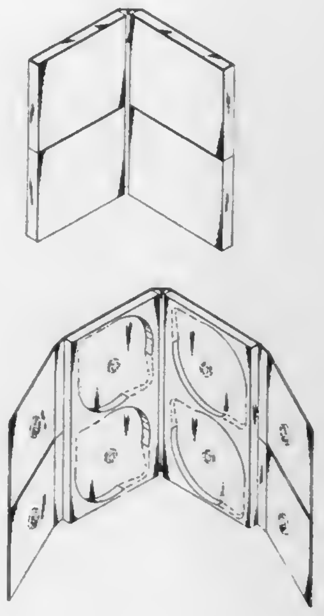
403,196
CD STORAGE TOWER WITH CENTRAL STORAGE UNIT

David M. Stravitz, 16 Park Ave. Suite 14A, New York, N.Y. 10016
Continuation-in-part of Ser. No. 51,743, Mar. 18, 1996, Pat. No. Des. 381,236. This application Nov. 4, 1996, Ser. No. 62,424
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—630



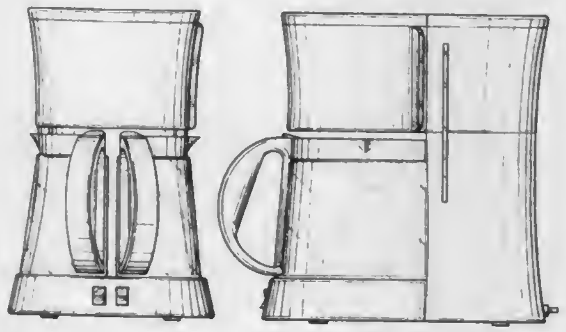
403,197
HOLDER FOR MULTIPLE COMPACT DIGITAL DISKS

Gregory S. Bandy, Mercer Island, and Kevin D. Keierleber, Kirkland, both of Wash., assignors to Source Three, Inc., Kirkland, Wash.
Filed Jul. 26, 1996, Ser. No. 57,505
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—634



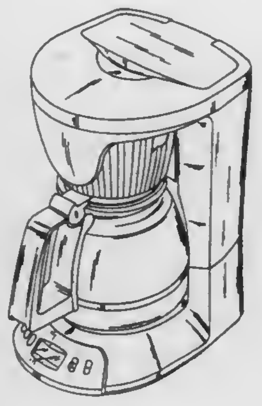
403,198
DUAL CARAFE COFFEE BREWER

Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367
Filed Mar. 9, 1998, Ser. No. 84,700
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



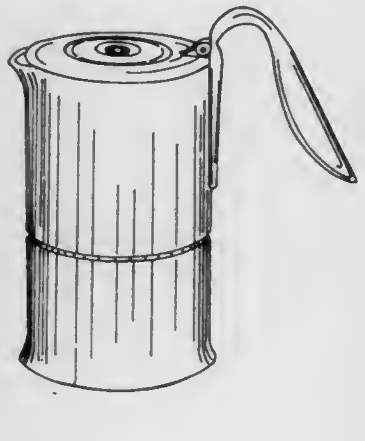
403,199
COFFEEMAKER

Scott H. Micoley, Cedarburg, Wis., assignor to The West Bend Company, West Bend, Wis.
Filed Jun. 27, 1997, Ser. No. 73,044
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



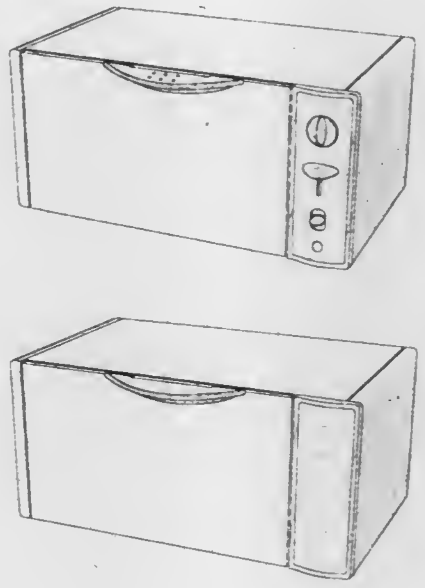
403,200
ESPRESSO COFFEE MAKER

Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Oct. 17, 1997, Ser. No. 78,094
Claims priority, application Denmark, Apr. 21, 1997, MA 0420/97
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—317



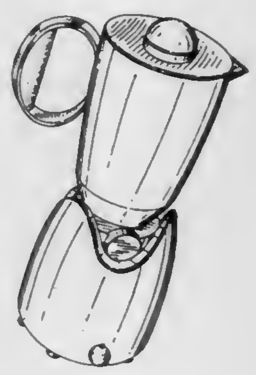
403,201
TOASTER OVEN

Anthony V. Cruz, Richmond, and Steven W. Ashworth, Glenn Allen, both of Va., assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Pa.
Filed Jan. 9, 1997, Ser. No. 64,700
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—350



403,202
FOOD BLENDER

Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Orlando, Fla.
Filed Mar. 17, 1998, Ser. No. 85,118
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—378



403,203
BLENDER LID

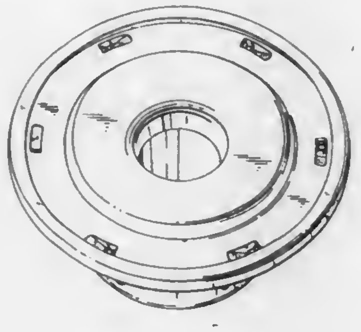
Robin W. Ruck, Southbury, and James F. Podpolucha, Ansonia, both of Conn., assignors to Conair Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 34,838, Feb. 13, 1995. This application May 16, 1996, Ser. No. 54,524

Term of patent 14 years

LOC (6) Cl. 31 - *00*

U.S. Cl. D7—391



403,204
HANDLE FOR KITCHEN TOOLING

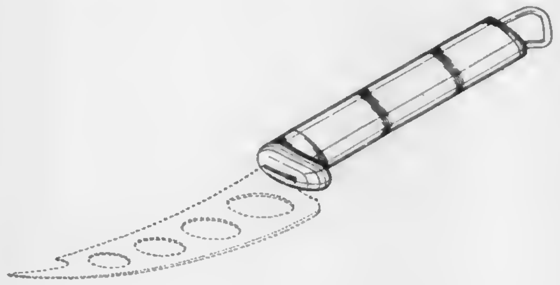
Jimmy N. W. Kwok, Hong Kong, Hong Kong, assignor to Golden Sun Housewares Manufacturing Ltd., Kowloon, Hong Kong

Filed Jan. 13, 1998, Ser. No. 82,015

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—401.2



403,205
FLATWARE HANDLE

Andrew John Stokes, Sheffield, England, assignor to McPherson's Limited, Victoria, Australia

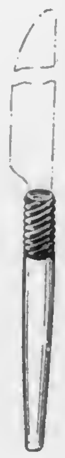
Filed Feb. 3, 1998, Ser. No. 83,045

Claims priority, application United Kingdom, Aug. 23, 1997, 2068526

Term of patent 14 years

LOC (6) Cl. 07 - *03*

U.S. Cl. D7—401.2



403,206
IGNITER

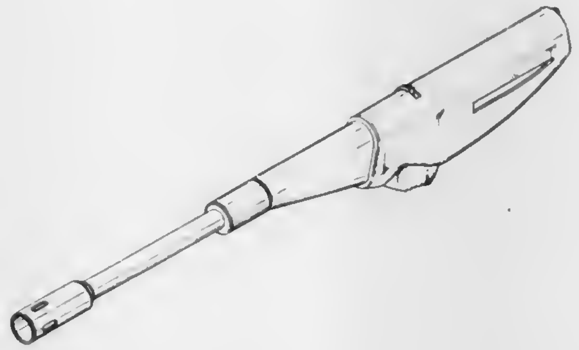
Kun-Chung Hsu, Hsien, Taiwan, assignor to Chien Sheng Machine Industrial Co., Ltd., Taiwan

Filed Jan. 7, 1998, Ser. No. 81,656

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D7—416



403,207
CONTAINER WITH LID

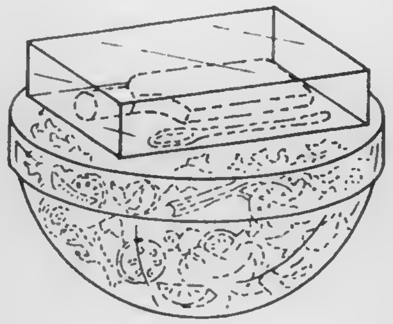
Tammy Moffat, 1536 W. Glenlake, Chicago, Ill. 60660

Filed Mar. 17, 1998, Ser. No. 85,191

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—538



403,208
COASTER SET

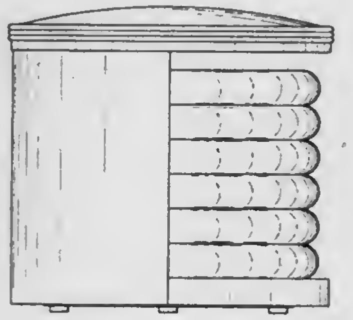
David W. Tisdale, Southport, Conn., assignor to M. Kamenstein, Inc., Elmsford, N.Y.

Filed Jan. 30, 1998, Ser. No. 83,380

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—624



403,209
DECORATIVE BOTTLE COVERING

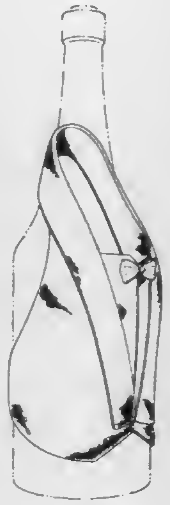
Mary C. Zigterman, 169 S. Hametown Rd., Copley, Ohio 44321

Filed Jan. 30, 1998, Ser. No. 83,305

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—625



403,210
COLANDER

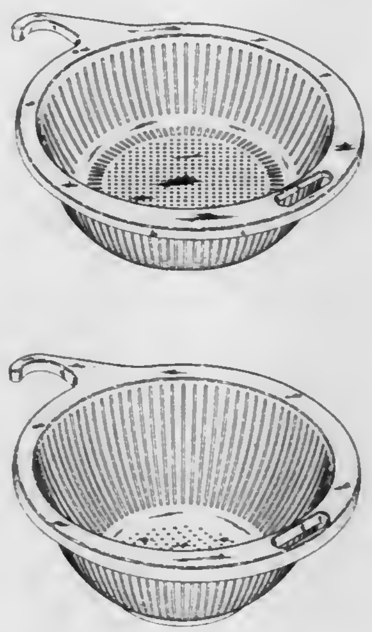
Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740

Filed Sep. 27, 1995, Ser. No. 44,637

Term of patent 14 years

LOC (6) Cl. 07 - *04*

U.S. Cl. D7—667



403,211

ADJUSTABLE SCOOP

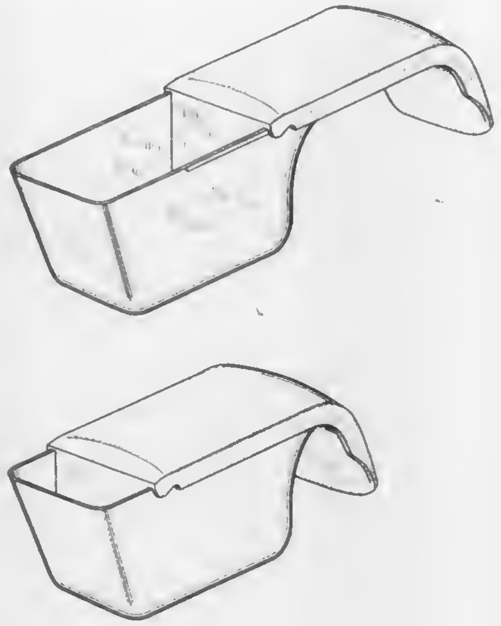
Frans M. Weterrings, Florence, Ala., assignor to Robbins Industries, Inc., Florence, Ala.

Filed Feb. 24, 1998, Ser. No. 84,111

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—691



403,212

SPICE RACK

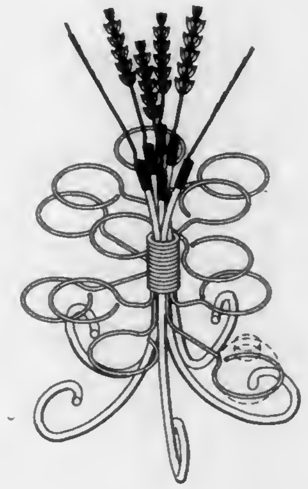
Edese A. Doret, Jr., Bronx, N.Y., assignor to M. Kamenstein, Inc., Elmsford, N.Y.

Filed Jan. 10, 1998, Ser. No. 81,897

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—702



403,213

ANVIL BLOCK OF GARDENING SCISSORS

Yeo-Tan Lin, No. 21, Wan Feng Lane, Wan Feng Village, Fu Hsing Hsian, Chang Hua Hsien, Taiwan

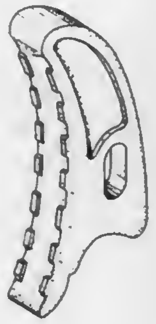
Filed Feb. 25, 1998, Ser. No. 84,163

Claims priority, application Taiwan, Feb. 9, 1998, 87300794

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—5



403,214

COMBINATION RIP FENCE AND WRENCH

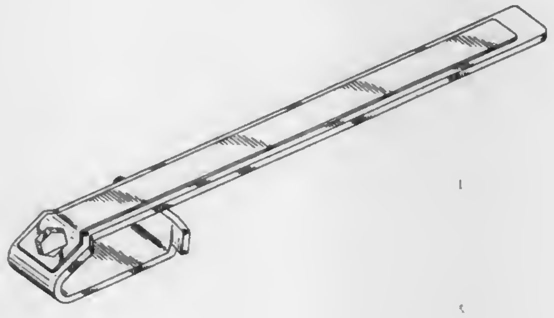
P. Sean Gallagher, Des Plaines, Ill.; Dale M. Flowers, Ballwin, Mo., and Jun G. Wong, Villa Park, Ill., assignors to S-B Power Tool Company, Chicago, Ill.

Filed May 2, 1997, Ser. No. 70,224

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—26



403,215

WRENCH

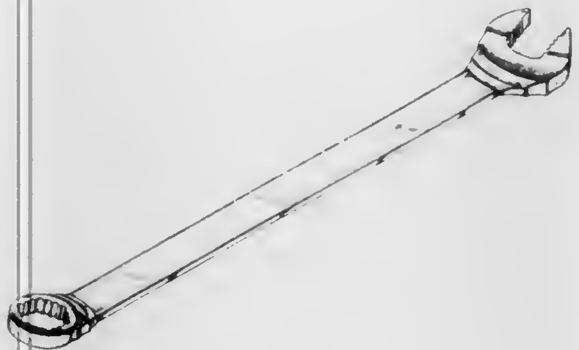
Chih-Ching Hsieh, No. 64, Lane 107, Liang Tsun Rd., Fong Yuan City, Taichung Hsien, Taiwan

Filed Dec. 3, 1997, Ser. No. 80,674

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—28



403,216

WELDING GUN HANDLE AND HOUSING

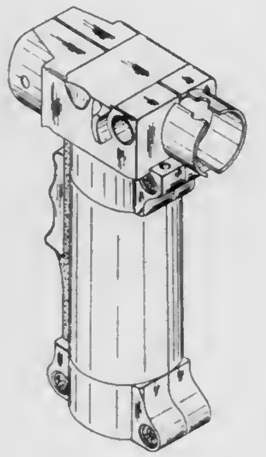
Gary L. Romine, Emporia, and Dale Robert Bervig, Wichita, both of Kans., assignors to Tweco Products, Inc., Wichita, Kans.

Filed Sep. 5, 1997, Ser. No. 76,234

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—30



403,217

CAN OPENER

Friedrich Wilhelm Usbeck, Marburg, Germany, assignor to Monopolwerk Usbeck & Sohne GmbH & Co., Marburg, Germany

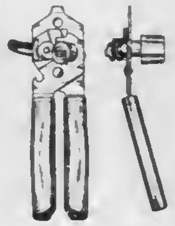
Filed Oct. 17, 1997, Ser. No. 77,981

Claims priority, application Hague Agreement, Apr. 18, 1997, DM 039917

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D8—39



403,218

STAPLE EXTRACTOR

Maria Benktzon, Sollentuna, and Sven-Eric Juhlin, Stockholm, both of Sweden, assignors to Isaberg Rapid AB, Hestra, Sweden

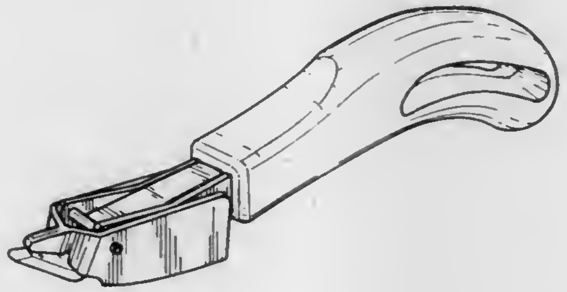
Filed Aug. 19, 1997, Ser. No. 75,507

Claims priority, application United Kingdom, Feb. 21, 1997, 2063474

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D8—48



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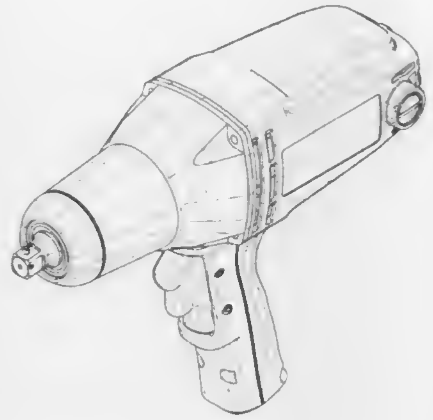
403,219

IMPACT WRENCH

Donald Robert Bosten, Jackson; Randy Glen Cooper, Milan, and Mark A. Etter, Jackson, all of Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed Jul. 31, 1997, Ser. No. 74,471
Term of patent 14 years
LOC (6) Cl. 08 - *02*

U.S. Cl. D8—68

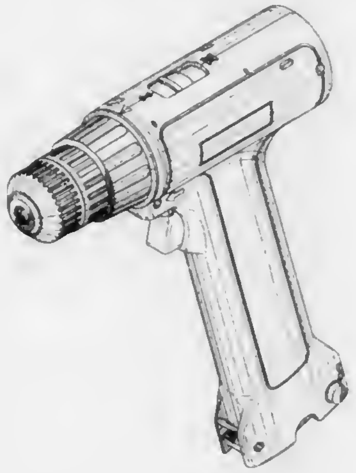


403,220

PORTABLE ELECTRIC DRILL

Akinori Kimata, and Naohiro Hayakawa, both of Anjo, Japan, assignors to Makita Corporation, Aichi-ken, Japan
Filed Mar. 10, 1998, Ser. No. 84,752
Claims priority, application Japan, Sep. 10, 1997, 9-67499
Term of patent 14 years
LOC (6) Cl. 08 - *03*

U.S. Cl. D8—68

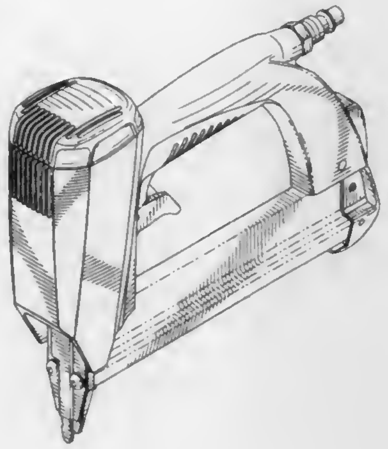


403,221

PNEUMATIC FASTENER DRIVING TOOL

Jim F. Warner, Hoboken, and Robert J. Croft, Jersey, both of N.J., assignors to Senco Products, Inc., Cincinnati, Ohio
Filed Aug. 8, 1997, Ser. No. 74,927
Term of patent 14 years
LOC (6) Cl. 08 - *02*

U.S. Cl. D8—69



403,222

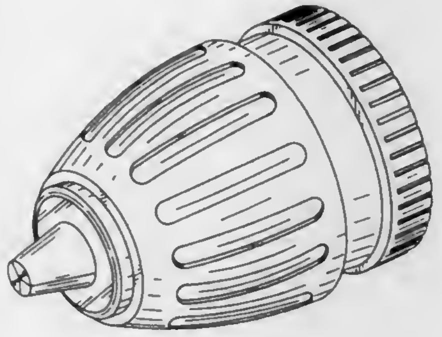
CHUCK FOR ELECTRIC DRILL

Tat Nin Lui, Hong Kong, Hong Kong, assignor to Choon Nang Electrical Appliance Mfty., Ltd., Aberdeen, Hong Kong
Filed Jul. 24, 1997, Ser. No. 73,927

Claims priority, application Hong Kong, Mar. 7, 1997, 2063879

Term of patent 14 years
LOC (6) Cl. 08 - *01*

U.S. Cl. D8—70

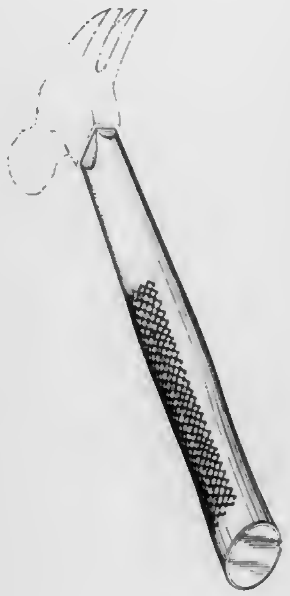


403,223

HAMMER HANDLE

Richard Jacoff, Mineola, N.Y., assignor to Great Neck Saw Manufacturers, Inc., Mineola, N.Y.
Filed Mar. 21, 1997, Ser. No. 68,486
Term of patent 14 years
LOC (6) Cl. 08 - *02*

U.S. Cl. D8—80

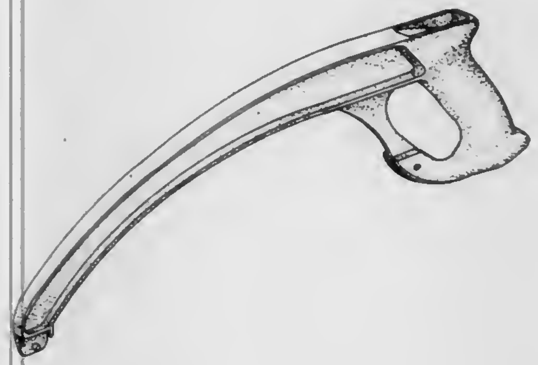


403,224

HACKSAW FRAME

James A. Martin, Baltimore, Md., and Gregory J. Erisoty, Riverton, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Jan. 6, 1998, Ser. No. 81,671
Term of patent 14 years
LOC (6) Cl. 08 - *03*

U.S. Cl. D8—96

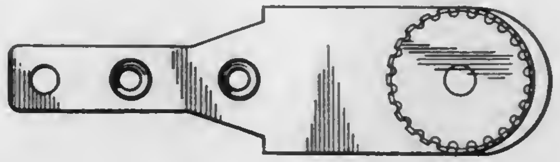


403,225

HOLDING MEANS FOR BLADE OF HANDSAW

Tamotsu Okada, Miki, Japan, assignor to Okada Metal Industries Co., Ltd., Hyogo, Japan
Filed Dec. 2, 1997, Ser. No. 80,181
Term of patent 14 years
LOC (6) Cl. 08 - *03*

U.S. Cl. D8—97

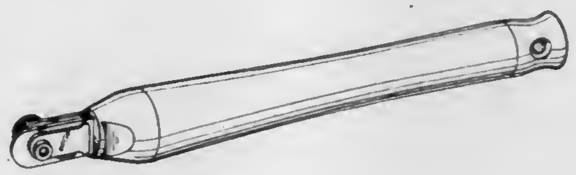


403,226

HANDLE OF HANDSAW

Tamotsu Okada, Hyogo, Japan, assignor to Okeda Metal Industries Co., Ltd, Hyogo, Japan
Filed Dec. 2, 1997, Ser. No. 80,355
Term of patent 14 years
LOC (6) Cl. 08 - *03*

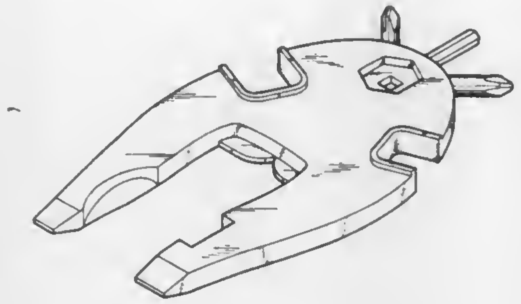
U.S. Cl. D8—97



403,227

TOOL ASSEMBLY

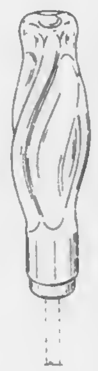
Chun-Li Tseng, P.O. Box 63-247, Taichung, Taiwan
Filed Mar. 9, 1998, Ser. No. 84,683
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—105



403,228

TOOL HANDLE

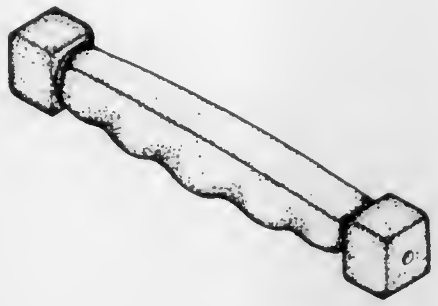
Kenneth Halls, 6972 W. 76th Ave., Arvada, Colo. 80003, and Daniel J. Cisneros, 5401 W. 10th Ave., Lakewood, Colo. 80214
Continuation-in-part of Ser. No. 71,479, May 30, 1997, Pat. No. Des. 393,791. This application Jan. 14, 1998, Ser. No. 82,065
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—107



403,229

GRIP

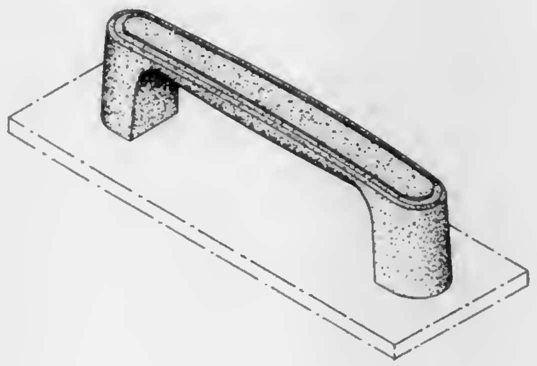
Cheng-Tsan Chou, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jan. 3, 1998, Ser. No. 81,476
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—316



403,230

HANDLE

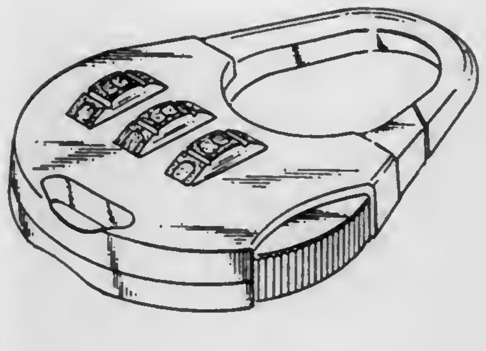
Lynn B. Ziemer, Ridley Park, Pa.; Andres A. Bolinas, Claymont, Del., and Stefan Matthew Koveal, Glen Mills, Pa., assignors to Southco, Inc., Concordville, Pa.
Filed Sep. 12, 1997, Ser. No. 76,525
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—317



403,231

COMBINATION LOCK

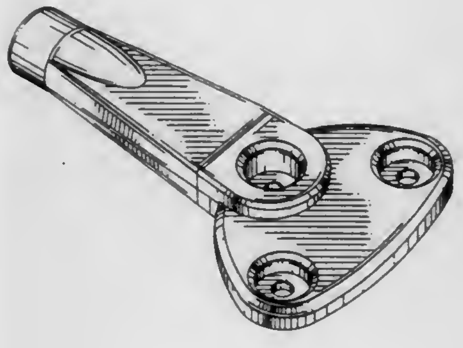
Chun-Te Yu, P.O. Box 55-175, Taichung, Taiwan
Filed Oct. 27, 1997, Ser. No. 78,496
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—334



403,232

ARM FOR BRACKET UNIT

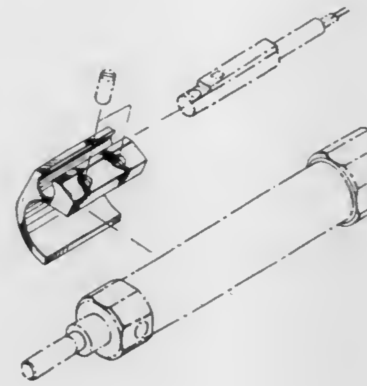
Roy Fischer, 7641 E. Gray Rd., Scottsdale, Ariz. 85260
Filed Jun. 6, 1997, Ser. No. 71,768
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—349



403,233

PROXIMITY-SENSOR MOUNT FOR A FLUID PRESSURE CYLINDER

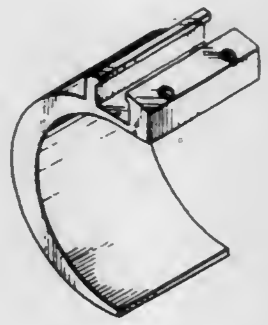
Yasuhiro Nagato, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Jan. 2, 1998, Ser. No. 81,461
Claims priority, application Japan, Jul. 4, 1997, 9-60613
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



403,234

PROXIMITY-SENSOR MOUNT FOR A FLUID PRESSURE CYLINDER

Yasuhiro Nagato, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Jan. 5, 1998, Ser. No. 81,486
Claims priority, application Japan, Jul. 4, 1997, 9-60611
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



403,235
TERMINAL WIRE HOLDER

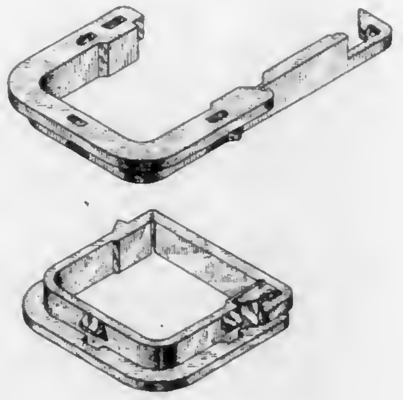
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1997, Ser. No. 77,131

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—356



403,236
HANGER FOR WIRE FENCE

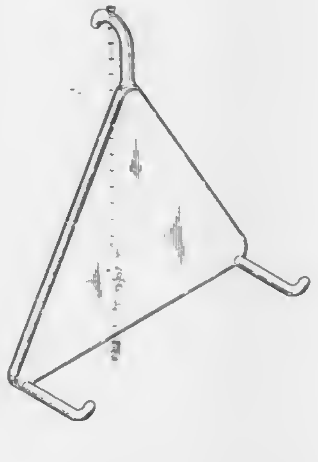
Cathy McBarnette, 174 Kingsberry Dr., Somerset, N.J. 08873

Filed Nov. 6, 1997, Ser. No. 79,011

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—372



403,237
WINDOW ATTACHMENT CLIP COMPONENT

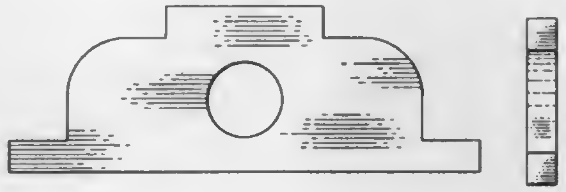
Brian C. Opielski, Malvern, Pa., and Jerome C. Habeck, Holt, Mich., assignors to CertainTeed Corporation, Valley Forge, Pa.

Filed Jul. 1, 1996, Ser. No. 56,502

Term of patent 14 years

LOC (6) Cl. 08 - *09*

U.S. Cl. D8—400



403,238
ROTTWEILER DOOR KNOCKER

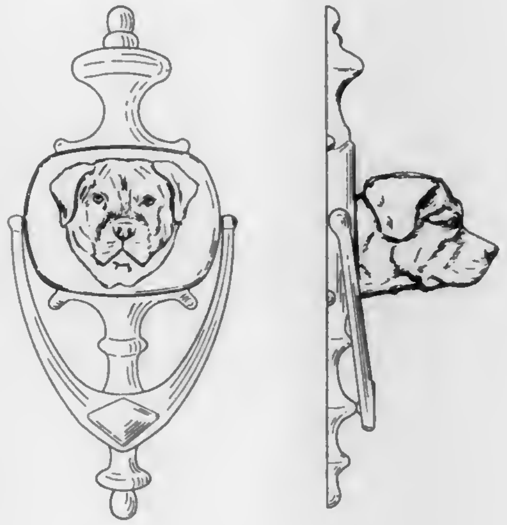
Adam S. Burris, 606½ W. Liberty St., Rome, N.Y. 13440

Filed Aug. 28, 1996, Ser. No. 58,931

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D8—401



403,239
JEWELRY BOX

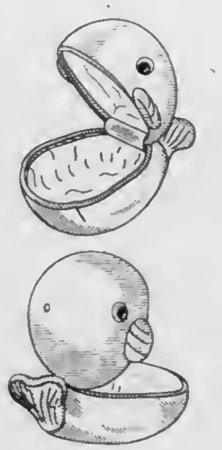
Ho Yuet Ying, New Territories, Hong Kong, assignor to Hee Tak LAU, Hong Kong

Filed Sep. 18, 1997, Ser. No. 76,815

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D9—307



403,240
BOTTLE

Wolfgang Zoller, Paris, France, assignor to Primalco Ltd, Helsinki, Finland

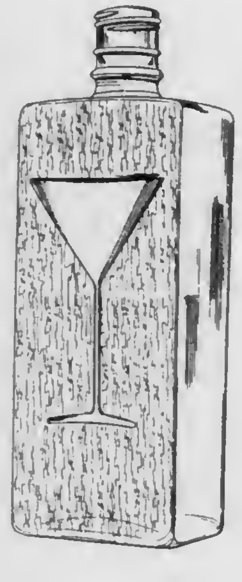
Filed Feb. 2, 1998, Ser. No. 83,320

Claims priority, application Finland, Jul. 31, 1997, 559/97

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—307



403,241
CONTAINER COVER ASSEMBLY

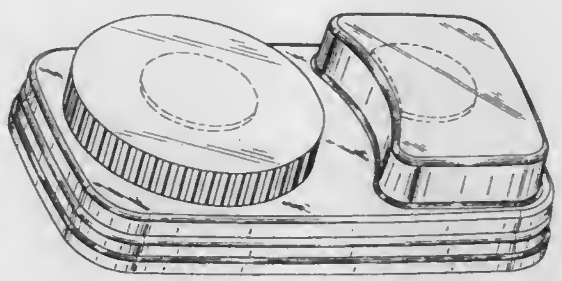
Aleene F. Nask, West Harrison, N.Y.; Timmy L. Willett, Waverly, Ky., and Richard Rhodes, Northport, N.Y., assignors to Olin Corporation, Cheshire, Conn., and Berry Plastics Corporation, Evansville, Ind.

Filed Jul. 24, 1997, Ser. No. 74,255

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—435



403,242
CONTAINER

Norman Edwards, Stevenage, United Kingdom, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

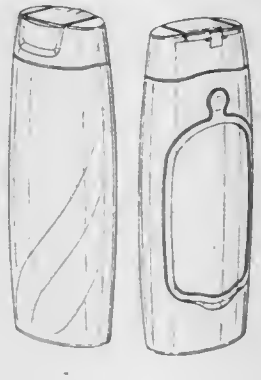
Filed Sep. 23, 1997, Ser. No. 77,104

Claims priority, application United Kingdom, Mar. 25, 1997, 2064499

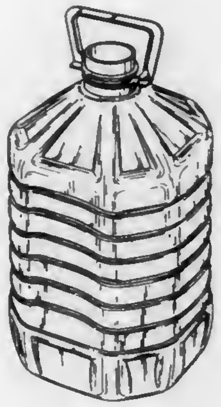
Term of patent 14 years

LOC (6) Cl. 09 - *01*

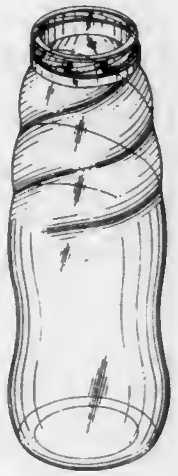
U.S. Cl. D9—529



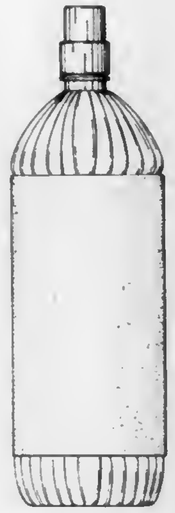
403,243
BOTTLE FOR PACKAGING
Setsuyuki Takeuchi, and Nobukuni Ibe, both of Nagano-ken, Japan, assignors to A. K. Technical Laboratory, Inc., Nagano-ken, Japan
Filed Jul. 17, 1997, Ser. No. 73,809
Claims priority, application Japan, Jan. 20, 1997, 9-1111
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—532



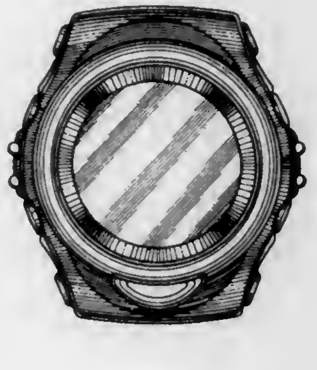
403,244
BOTTLE
Thomas Van Dyk, Ramsey, N.J., and M. Gary Grossman, Riverside, Conn., assignors to Snapple Beverage Corp., White Plains, N.Y.
Filed Mar. 31, 1998, Ser. No. 85,844
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—552



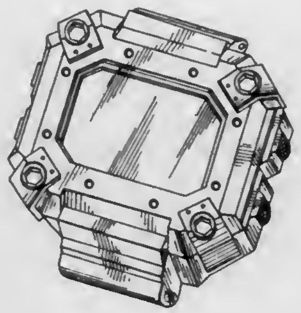
403,245
COMBINED LIQUID CONTAINER AND CAP
Kevin P. Martin, 4150 W. Woodridge Dr., Glendale, Ariz. 85308
Filed Mar. 12, 1998, Ser. No. 84,854
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—556



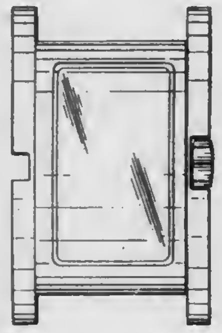
403,246
WATCH CASE
Shigeru Hanagata, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 12, 1996, Ser. No. 62,251
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



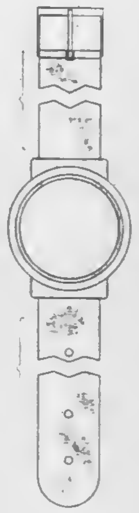
403,247
BEZEL AND CASING FOR A WATCH
John T. Houlihan, Southbury, and David Quinlan, Marion, both of Conn., assignors to Timex Corporation, Middlebury, Conn.
Filed Jul. 23, 1997, Ser. No. 74,027
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



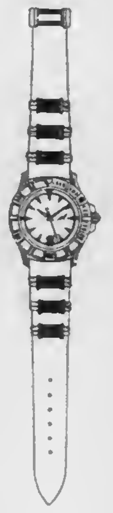
403,248
WATCH
Michel Magninat, Paris, France, assignor to Fred, Paris, France
Filed Feb. 6, 1998, Ser. No. 83,331
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



403,249
FACELESS WATCH SYSTEM
Patrick J. Murphy, 133 S. 25th, and A. Matthew Dudish, 1900 Howard Ave., both of Pottsville, Pa. 17901
Filed Mar. 13, 1997, Ser. No. 68,000
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



403,250
WATCH WITH BRACELET
Serge Rabassa, Geneva, Switzerland, assignor to S.A. Ancienne Fabrique Georges Piaget & Cie, La Cote-Aux-Fees, Switzerland
Filed Oct. 3, 1997, Ser. No. 77,524
Claims priority, application Hague Agreement, Apr. 4, 1997, DMA/003676
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32

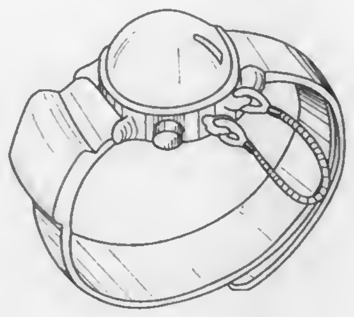


403,251
WATCH

Michael Yuill, 18, Glenwood Gardens, Lenzie, Glasgow, United Kingdom, G66 4JP

Filed Oct. 23, 1997, Ser. No. 78,433
Term of patent 14 years
LOC (6) Cl. 10 - *02*

U.S. Cl. D10—32

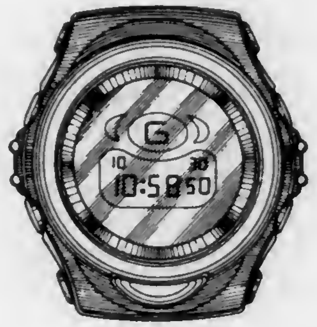


403,252
WRIST WATCH

Shigeru Hanagata, Kodaira, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1996, Ser. No. 62,292
Term of patent 14 years
LOC (6) Cl. 10 - *02*

U.S. Cl. D10—38

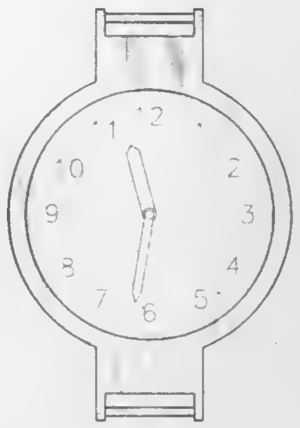


403,253
MIRROR WATCH SYSTEM

Eric N. Owen, 4143 Stonecroft Dr., Austin, Tex. 78749

Filed Mar. 5, 1998, Ser. No. 84,589
Term of patent 14 years
LOC (6) Cl. 10 - *02*

U.S. Cl. D10—39



403,254

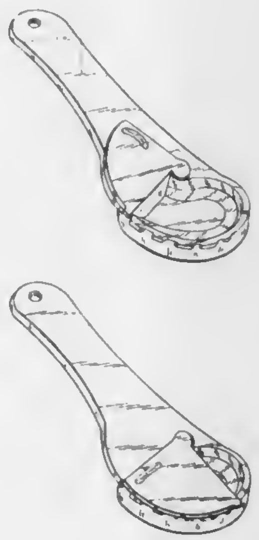
Patent Not Issued For This Number

403,255
ADJUSTABLE MEASURING SPOON

Steven L. Molenaar, 601 W. Highway 40, Willmar, Minn. 56201

Filed Feb. 9, 1998, Ser. No. 83,373
Term of patent 14 years
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—46.3

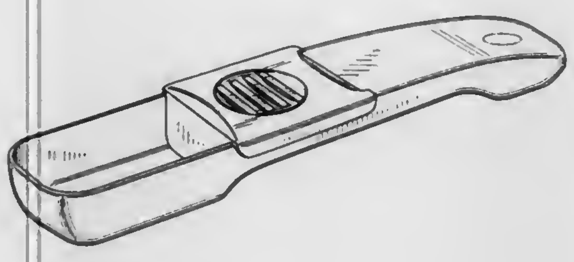


403,256
ADJUSTABLE SPOON

Frans M. Weterrings, Florence, Ala., assignor to Robbins Industries, Inc., Florence, Ala.

Filed Feb. 24, 1998, Ser. No. 84,108
Term of patent 14 years
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—46.3

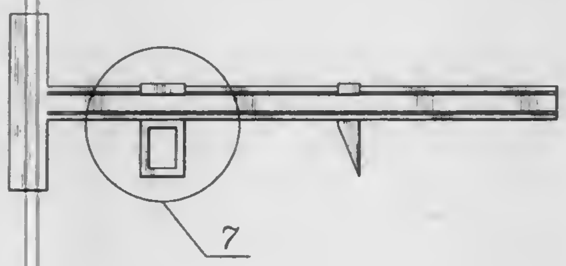


403,257
OUTLET BOX STENCILER

David Hunter, 309 26th Ave. West, Cordele, Ga. 31015

Continuation of Ser. No. 928,231, Aug. 12, 1992, abandoned. This application May 3, 1994, Ser. No. 22,278
Term of patent 14 years
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—65

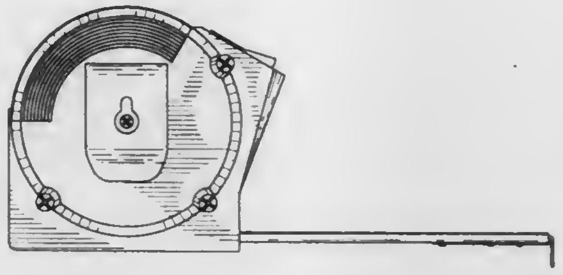


403,258
MEASURING TAPE

Delbert Bearden, 992 McClelland St., Salt Lake City, Utah 84105

Filed Mar. 19, 1998, Ser. No. 85,249
Term of patent 14 years
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—72

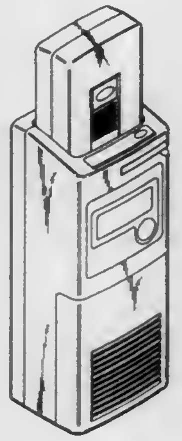


403,259
COLORIMETER

Yoshitami Tsubota; Sadatoshi Takechi; Katsufumi Isshiki; Takeshi Fukumura, all of Matsuyama, and Tomisada Kubota, Tokyo, all of Japan, assignors to Miura Co., Ltd., Ehime-ken, Japan

Filed Dec. 5, 1997, Ser. No. 80,245
Claims priority, application Japan, Jun. 6, 1997, 9-57064
Term of patent 14 years
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—81



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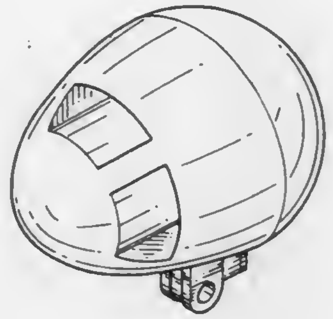
403,260

ALARM UNIT

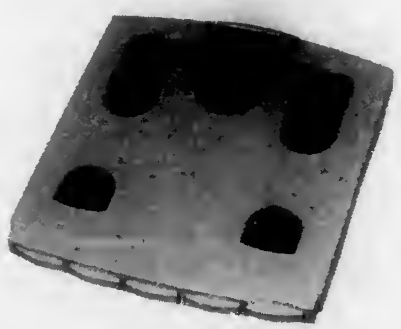
Charles Chu, 15F-1., No. 170,Sec.2, Nan Ya Nan Rd., Panchioao City, Taipei Hsien, Taiwan
Filed Mar. 30, 1998, Ser. No. 85,766
Claims priority, application Taiwan, Nov. 17, 1997, 86309857
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106



403,261

SCALE

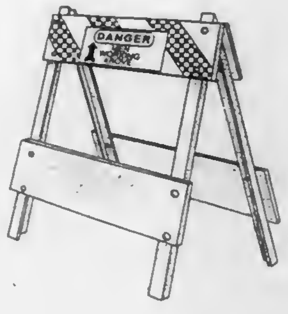
Soji Kurata, Tsurugashima, Japan; Hiroshi Ariyama, and Daniel Perez, both of Chicago, Ill., assignors to Tanita Corporation, Tokyo, Japan
Filed Apr. 10, 1997, Ser. No. 69,384
Claims priority, application Japan, Oct. 21, 1996, 8-31163
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—92



403,262

TEMPORARY SAFETY BARRIER

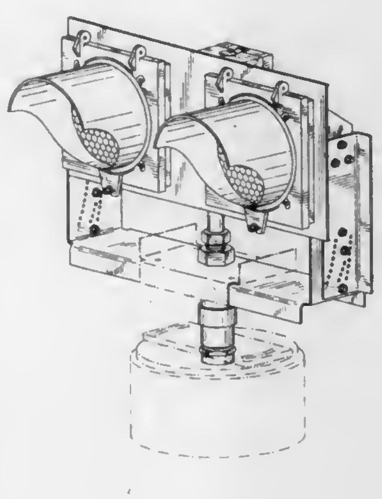
Bill Vigus, 24213 Clawiter Rd., Hayward, Calif. 94545
Filed Apr. 1, 1998, Ser. No. 85,883
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—109



403,263

AIRPORT RUNWAY GUARD LIGHT

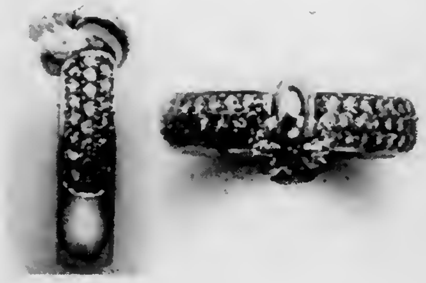
Douglas Michael Giardini, Shelton; Paul John Gongola, and Robert E. Lambert, both of Enfield, all of Conn., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Mar. 3, 1998, Ser. No. 84,413
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—114



403,264

RING

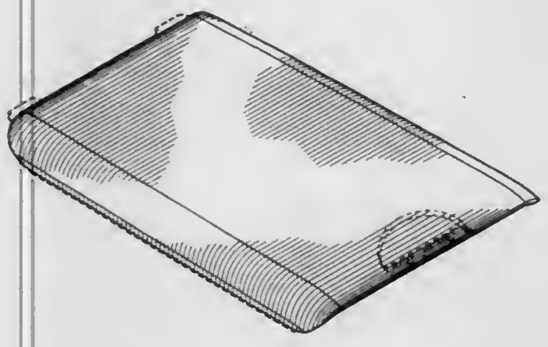
Eran Shenhav, Teich, Germany, assignor to Feeling the Collection Schmuckwaren GmbH, Pforzheim, Germany
Filed Nov. 25, 1996, Ser. No. 62,798
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—34



403,265

BATTERY COVER FOR A WIRELESS COMMUNICATION DEVICE

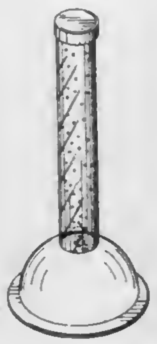
Albert Leo Nagele, Wilmette; Brian Jon Hassemer, West-Gurnee, and Mark Daniel Janninck, Elmhurst, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 78,010, Oct. 15, 1997. This application Feb. 23, 1998, Ser. No. 84,024
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—119



403,266

RISING BUBBLE DISPLAY DEVICE

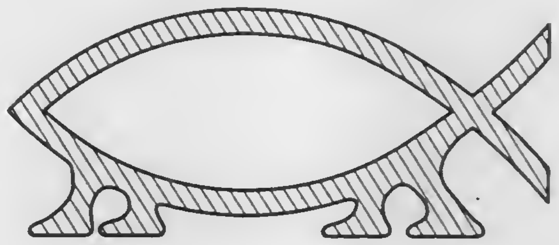
Kenneth A. Burnett, Lincolnwood, Ill., assignor to Midwest Tropical, Inc., Lincolnwood, Ill.
Filed Feb. 3, 1998, Ser. No. 82,987
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—131



403,267

NOVELTY FISH PLAQUE

Cynthia Burke, 5856 Fossil Dr., Colorado Springs, Colo. 80918
Filed Dec. 18, 1997, Ser. No. 80,785
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—134



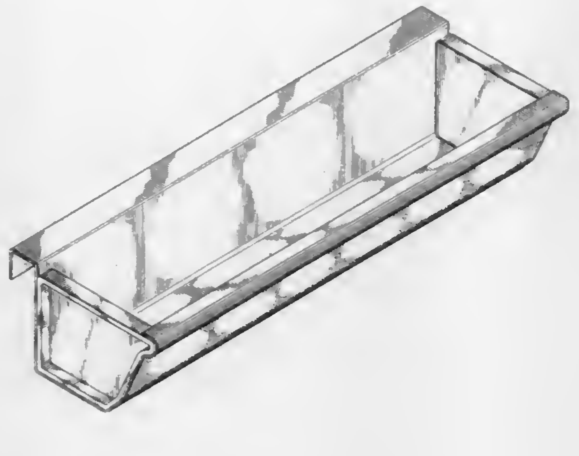
403,268
RAIL-MOUNTABLE PLANTER

Donna Dignam, 2202 E. Scyene Rd. Bldg. B, Mesquite, Tex. 75181

Filed Oct. 20, 1994, Ser. No. 30,942

Term of patent 14 years

U.S. Cl. D11—156



403,269
FLOWER POT COVER

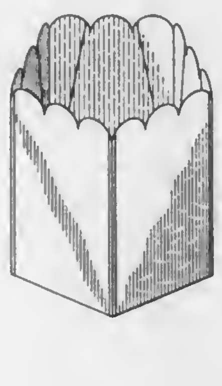
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.

Division of Ser. No. 54,026, May 6, 1996, Pat. No. 8,387,012, which is a division of Ser. No. 3,869, Jan. 21, 1993, Pat. No. Des. 371,521, which is a continuation-in-part of Ser. No. 808,548, Dec. 16, 1991, Pat. No. Des. 355,395, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jun. 20, 1997, Ser. No. 72,641

Term of patent 14 years

LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



403,270
FLOWER POT COVER

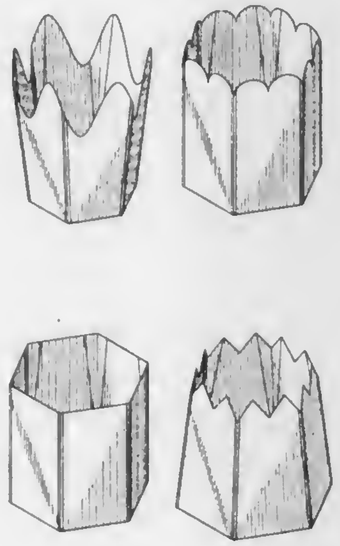
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.

Division of Ser. No. 45,909, Nov. 2, 1995, Pat. No. Des. 388,738, which is a division of Ser. No. 3,557, Jan. 12, 1993, Pat. No. Des. 364,119, which is a continuation-in-part of Ser. No. 808,357, Dec. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272 is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, said Ser. No. 710,272 and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, said Ser. No. 710,272 and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jun. 20, 1997, Ser. No. 72,643

Term of patent 14 years

LOC (6) Cl. 11 - *02*

U.S. Cl. D11—164



403,271
PULL TAB FOR SLIDE FASTENER SLIDERS

Yasuhiro Ishii, Ishioka, and Atsushi Arai, Kokubunji, both of Japan, assignors to YKK Corporation, Tokyo, Japan

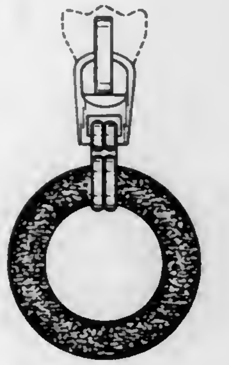
Filed Feb. 20, 1998, Ser. No. 84,036

Claims priority, application Japan, Aug. 22, 1997, 9-65634

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D11—221



403,272
SNOWMOBILE HOOD

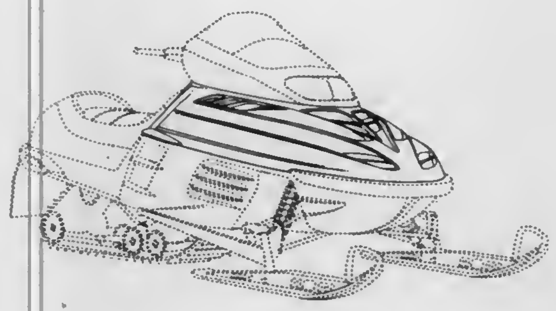
Germain Cadotte, 389 des Bois Francs, St-élie d'Orford, Quebec, Canada, J0B 2S0, and Martin Aube, 3790 Monseigneur Moisan, Sherbrooke, Quebec, Canada, J1L 2O1

Filed Nov. 7, 1997, Ser. No. 79,076

Term of patent 14 years

LOC (6) Cl. 12 - *14*

U.S. Cl. D12—7



403,273
SIDE PANEL FOR SNOWMOBILE

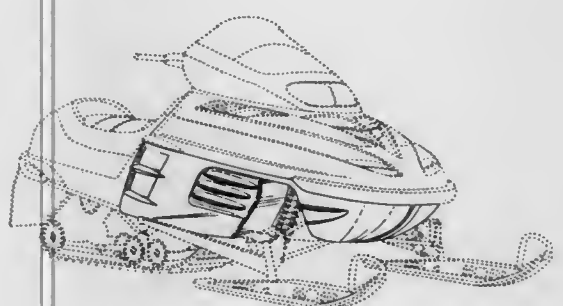
Germain Cadotte, 389 des Bois Francs, St-élie d'Orford, Quebec, Canada, J0B 2S0, and Martin Aube, 3790 Monseigneur Moisan, Sherbrooké, Quebec, Canada, J1L 2C1

Filed Nov. 7, 1997, Ser. No. 79,078

Term of patent 14 years

LOC (6) Cl. 12 - *14*

U.S. Cl. D12—7



403,274
AUTOMOBILE BODY

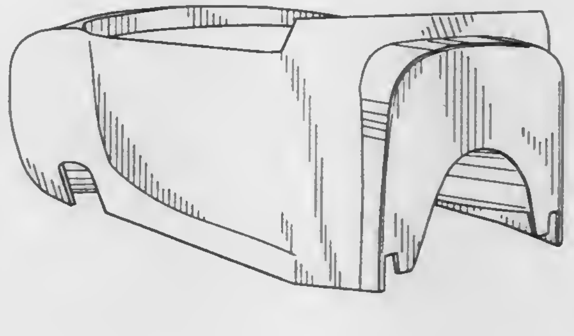
Scott R. Silva, 23 Colby Rd., Weare, N.H. 03281

Filed Oct. 14, 1997, Ser. No. 77,965

Term of patent 14 years

LOC (6) Cl. 12 - *08*

U.S. Cl. D12—86



403,275
TIRE TREAD

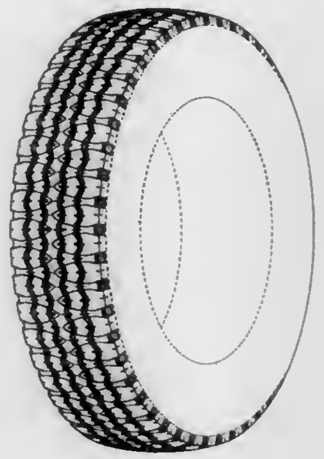
Jean-Michel Gillard, Mersch, and Georges Gaston Feider, Bettborn, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 3, 1997, Ser. No. 80,369

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Ci. D12—143



403,276

TRAILER

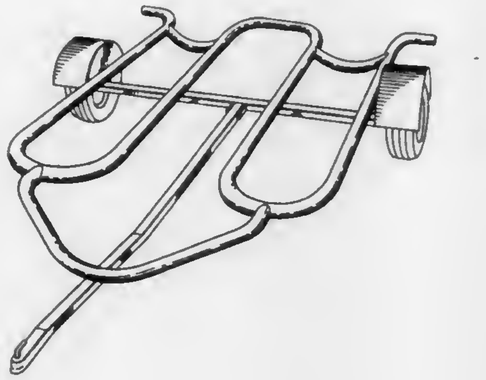
Michel Neault, 583, St. Ovide, Ste-Sophie-de-Lévrard, Québec, Canada, G0X 3C0, and René Bellerose, 4455 Gatineau, Rock Forest, Québec, Canada, J1N 3B4

Division of Ser. No. 59,563, Sep. 13, 1996, Pat. No. Des. 392,598. This application Sep. 11, 1997, Ser. No. 76,445

Term of patent 14 years

LOC (6) Cl. 12 - *10*

U.S. Cl. D12—101



403,277

MOTORCYCLE

Takahiro Kokubu, and Toshio Kurihara, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

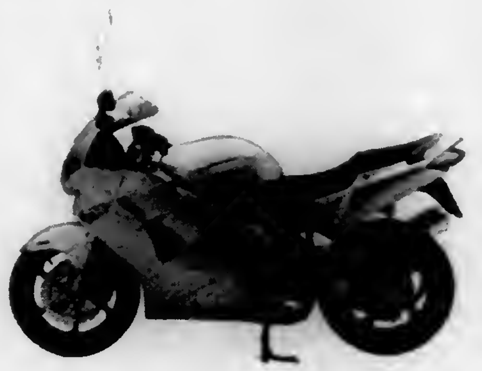
Filed Oct. 30, 1997, Ser. No. 78,550

Claims priority, application Japan, Apr. 30, 1997, 9-53030

Term of patent 14 years

LOC (6) Cl. 12 - *11*

U.S. Cl. D12—110



403,278

STROLLER FRAME

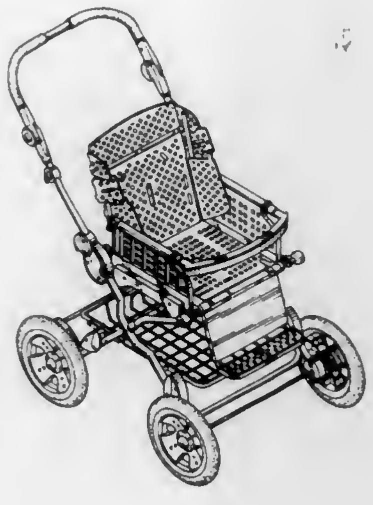
Red Lan, 17-22 Liu-An, Liu-An Li, Chia-Li Chen, Tainan Hsien, Taiwan

Filed Mar. 20, 1998, Ser. No. 85,366

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—129



403,279

ELECTRIC MEDICAL SCOOTER

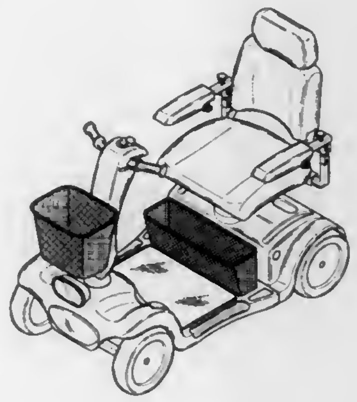
Donald P. H. Wu, No. 169, Ken Tzu Ku, Sheng Ken Tsun,Hsin Feng Hsiang, Hsinchu Hsien, Taiwan

Filed Oct. 8, 1997, Ser. No. 78,401

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—131



403,280

TRAY FOR PLACEMENT ACROSS ARMRESTS OF A WHEELCHAIR

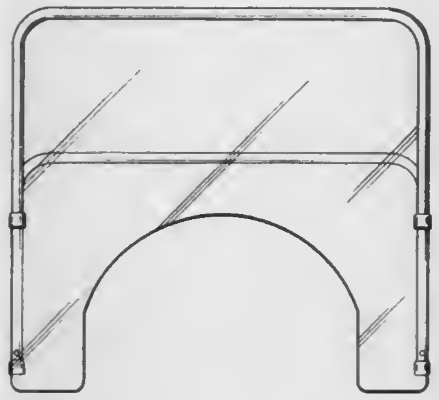
Daniel G. Diestel, 1265 E. 5th Ave., and John M. Onnen, 897 E. 1st Ave., both of Chico, Calif. 95926

Filed Nov. 10, 1997, Ser. No. 79,286

Term of patent 14 years

LOC (6) Cl. 12 - *12*

U.S. Cl. D12—133



403,281

TIRE TREAD

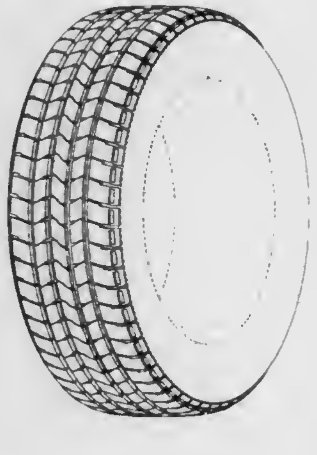
Walter Dale Allen, Akron; Keith Eric Grabo, Brecksville; Warren Lee Croyle, Wadsworth; Marc Christopher Nowacki, Uniontown, and David Ray Hubbell, Jr., Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 57,242, Jul. 19, 1996. This application Feb. 13, 1998, Ser. No. 83,745

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



403,282

TIRE TREAD

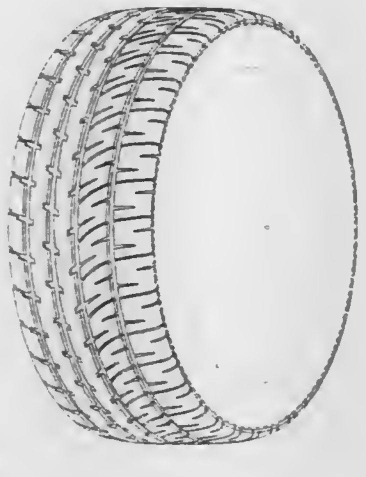
Joseph Louis Aull, New Philadelphia; Jeffrey Joe McElfresh, Raveona; Karl Eric Sundkvist, Akron; Piotr Janusz Wesolowski, Cuyahoga Falls, all of Ohio, and Wolfgang Gnoerich, Mersch, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 63,989, Dec. 20, 1996. This application Aug. 28, 1997, Ser. No. 75,992

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—147



403,283

TIRE TREAD

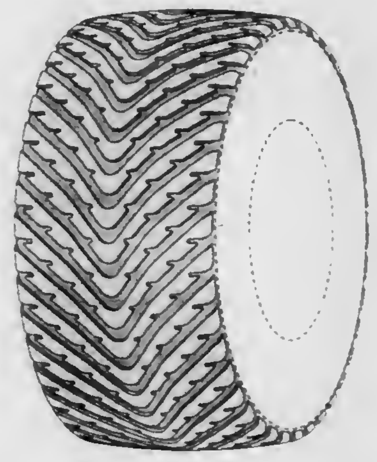
Graham Stanley Ball; Christopher Paul Johenning; John Janis Taube; Janet Lynn Melia, and Christopher Alan Mantheiy, all of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 68,883, Apr. 7, 1997, Pat. No. Des. 395,627. This application Aug. 28, 1997, Ser. No. 76,007

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—149



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403,284

TIRE TREAD

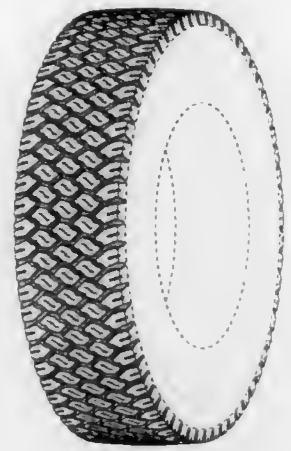
Phuoc Thuan Le, Attert, Bulgaria, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 22, 1997, Ser. No. 79,960

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—151



403,285

EXTERIOR OF A GRILLE AND GRILLE INSERT FOR A TRUCK

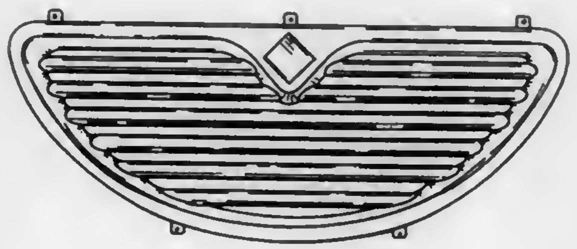
Santiago C. Abalos, and Franz Mueller, both of Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Dec. 10, 1997, Ser. No. 80,499

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—163



403,286

TWO-PART REARVIEW MIRROR FOR AUTOMOTIVE VEHICLES

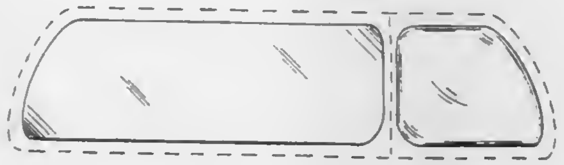
Richard H. Kim, 10075 E. Warren Ave., Denver, Colo. 80231, and Bobby Kim, 12331 E. Arkansas Ave., Aurora, Colo. 80012

Division of Ser. No. 69,653, Mar. 31, 1997, Pat. No. Des. 397,658. This application Mar. 26, 1998, Ser. No. 85,599

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—187



403,287

TWO-PART REARVIEW MIRROR FOR AUTOMOTIVE VEHICLES

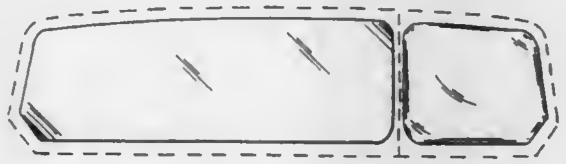
Richard H. Kim, 10075 E. Warren Ave., Denver, Colo. 80231, and Bobby Kim, 12331 E. Arkansas Ave., Aurora, Colo. 80012

Division of Ser. No. 69,653, Mar. 31, 1997. This application Mar. 26, 1998, Ser. No. 85,601

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—187



403,288

VEHICLE-WHEEL FRONT FACE

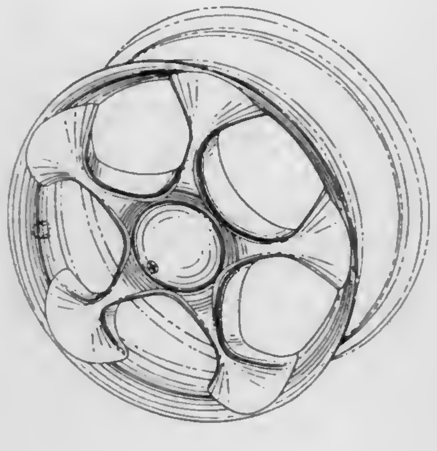
Murray S. Cullen, Irvine, Calif., assignor to Mobile Hi-Tech Wheels, Torrance, Calif.

Continuation-in-part of Ser. No. 80,176, Dec. 2, 1997, Pat. No. Des. 397,077. This application May 15, 1998, Ser. No. 88,135

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



403,289

AUTOMOBILE WHEEL

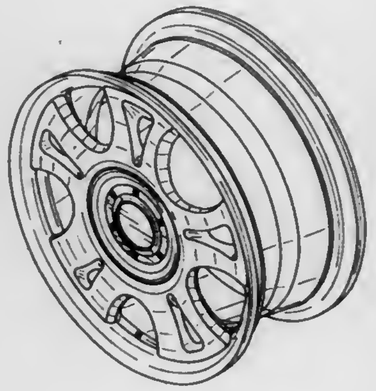
Motoyoshi Watanabe, Osaka, Japan, assignor to ATC International Japan Co., Ltd., Osaka, Japan

Filed Jan. 16, 1997, Ser. No. 66,404

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



403,290

WHEEL

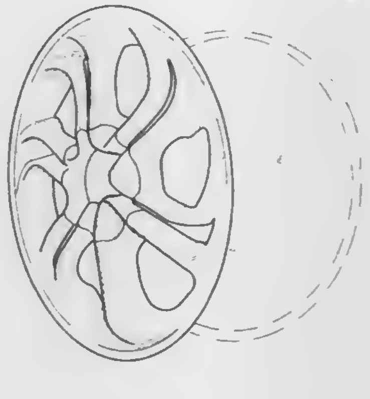
Catherine C. Hodges; Frank J. Hodges, and Michael Y. Kim, all of Yorba Linda, Calif., assignors to Lexani Wheel Corporation, Garden Grove, Calif.

Filed Nov. 3, 1997, Ser. No. 78,808

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—209



403,291

VEHICLE-WHEEL FRONT FACE

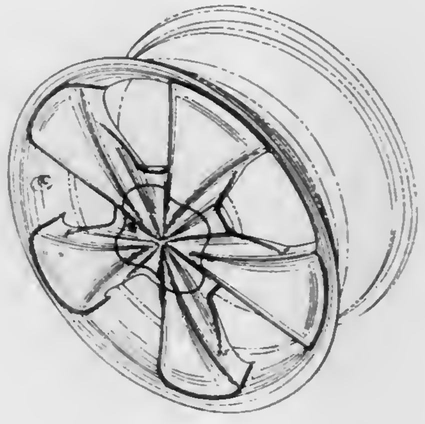
Murray S Cullen, Irvine, Calif., assignor to Mobile HI-Tech Wheels, Torrance, Calif.

Continuation-in-part of Ser. No. 80,175, Dec. 2, 1997, Pat. No. Des. 396,839. This application May 15, 1998, Ser. No. 88,134

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—211



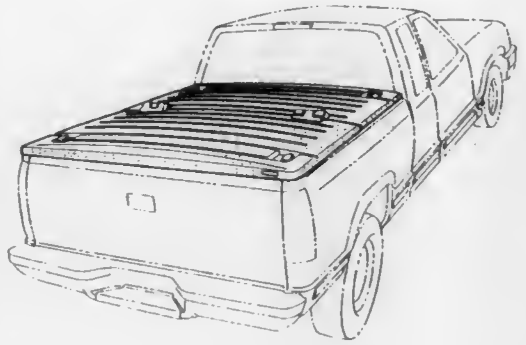
403,292

PICK-UP TRUCK TONNEAU COVER

Donald E. Bogard, 22204 Dolphin Ct., Dearborn Heights, Mich. 48127

Filed Nov. 29, 1996, Ser. No. 63,160
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D12—401



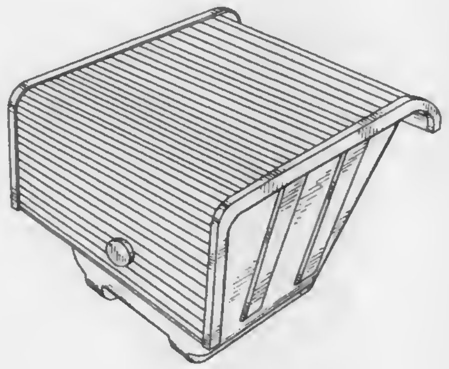
403,293

TRANSPORT BOX FOR USE WITH BICYCLES

Sven-Eric Söderström, Älgvägon 16, S 199 71 Enköpinc, Sweden

Filed Dec. 9, 1997, Ser. No. 79,646
Claims priority, application Sweden, Jun. 11, 1997, 97-1362
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D12—410



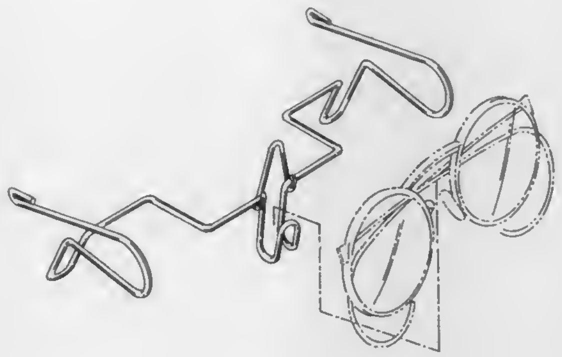
403,294

HOLDER FOR SECURING EYEGLASSES TO A SUNVISOR

Joseph R. Baldwin, Hempstead, and Flavio Rivera, Brooklyn, both of N.Y., assignors to Creative Minds of Long Island, Inc., Hempstead, N.Y.

Filed Jan. 13, 1998, Ser. No. 82,009
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D12—417



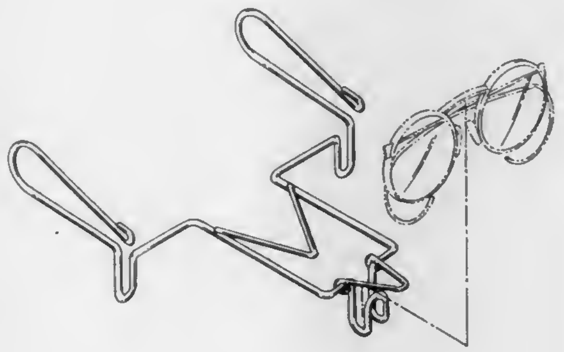
403,295

HOLDER FOR SECURING EYEGLASSES TO A SUNVISOR

Joseph R. Baldwin, Hempstead, and Flavio Rivera, Brooklyn, both of N.Y., assignors to Creative Minds Of Long Island, Inc., Hempstead, N.Y.

Filed Jan. 13, 1998, Ser. No. 82,026
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D12—417



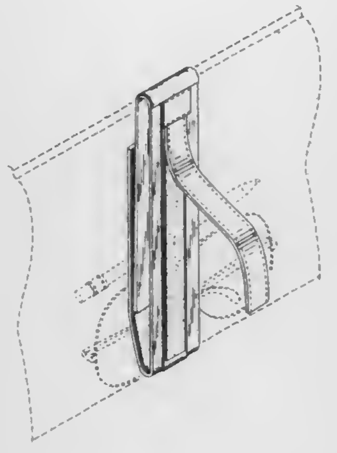
403,296

SUNGLASS CADDY

Charlie F. Thomas, P.O. Box 1179, Darby, Mont. 59829

Filed Jun. 25, 1997, Ser. No. 72,817
Term of patent 14 years
LOC (6) Cl. 12 - *16*

U.S. Cl. D12—417



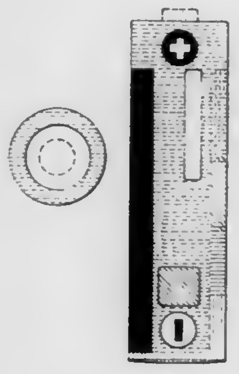
403,297

BATTERY

Manami Nakazawa, Tokyo, Japan, assignor to Toshiba Battery Co., Ltd., Japan

Filed Apr. 21, 1997, Ser. No. 69,381
Term of patent 14 years
LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



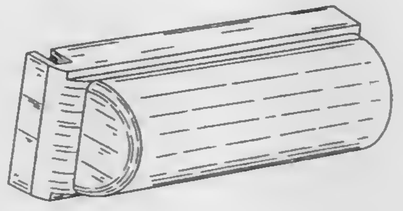
403,298

BATTERY

Ronald W. Hall, Stillwater, Minn.; Harry B. Taylor, Lafayette, and Edward L. Flick, Denver, both of Colo., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 17, 1997, Ser. No. 77,359
Term of patent 14 years
LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



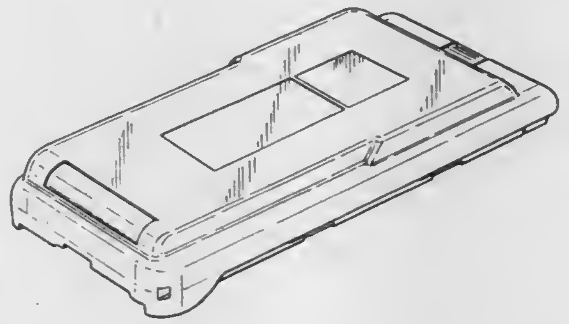
403,299

BATTERY CASE

Richard B. Smith; David Suske, both of Bethel, and Cely O'Brien, Danbury, all of Conn., assignors to Duracell Inc., Bethel, Conn.

Filed Jan. 23, 1998, Ser. No. 82,527
Term of patent 14 years
LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



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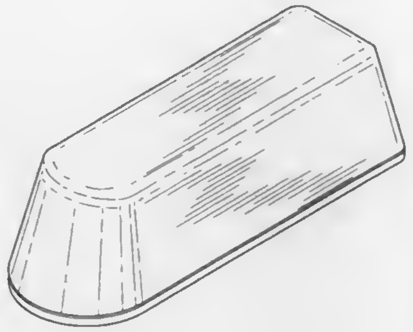
403,300
BATTERY

Thomas Edward Renk, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Mar. 6, 1998, Ser. No. 84,627
Term of patent 14 years
LOC (6) Cl. 13 - *02*

U.S. Cl. D13—103



403,301
BOX FOR A FREQUENCY CONVERTER

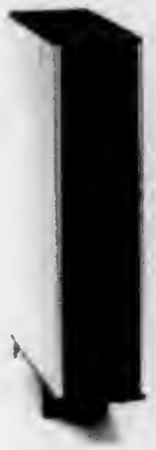
Kjeld Lehmann; Jorgen Jessen Moller, and Jesper Sobygaard Nielsen, all of Sonderborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 6, 1996, Ser. No. 64,981

Claims priority, application Germany, Feb. 8, 1996, M 96 01 178.5

Term of patent 14 years
LOC (6) Cl. 13 - *01*

U.S. Cl. D13—110

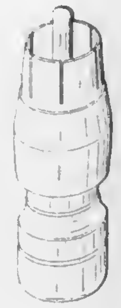


403,302
ELECTRICAL CONNECTOR

Jerry Awbrey, Winder, Ga., assignor to Esoteric Audio U.S.A., Inc., Winder, Ga.

Filed Jan. 9, 1998, Ser. No. 81,856
Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—133



403,303
MULTI-PLATE ELECTRICAL CONNECTOR

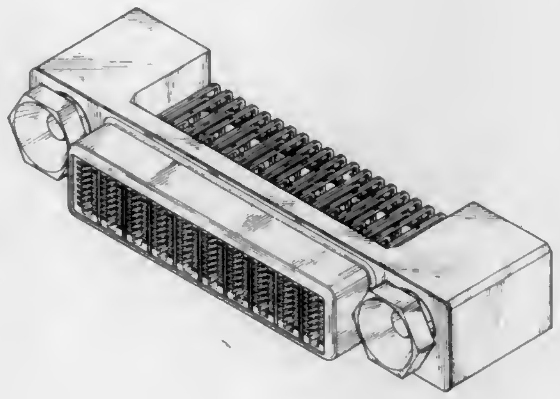
Chin-Yi Lai, and Kun-Tsan Wu, both of Tu-Chen, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei, Taiwan

Filed Nov. 24, 1997, Ser. No. 79,843

Claims priority, application Taiwan, May 30, 1997, 86304709

Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—147

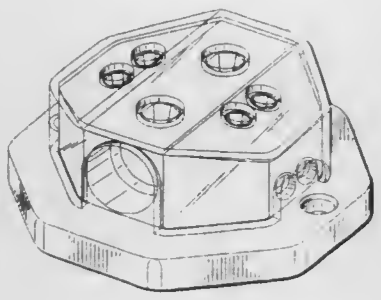


403,304
EXPANDABLE POWER BLOCK

Jerry Awbrey, Winder, and Michael Dewayne Brown, Bethlehem, both of Ga., assignors to Esoteric Audio U.S.A., Inc., Winder, Ga.

Filed Jan. 9, 1998, Ser. No. 81,883
Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—151



403,305
HOUSING FOR A PUSH-BUTTON SWITCH

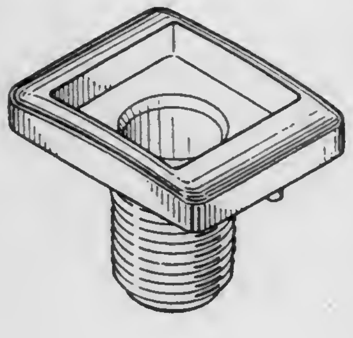
Angel Lorenzo Regidor, Barcelona, Spain, assignor to Industrias Lorenzo, S.A., Sant Climent de Llobregat, Spain

Filed Dec. 22, 1995, Ser. No. 48,240

Claims priority, application Spain, Jun. 26, 1995, 135.331; Dec. 15, 1995, 136.486

Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—158

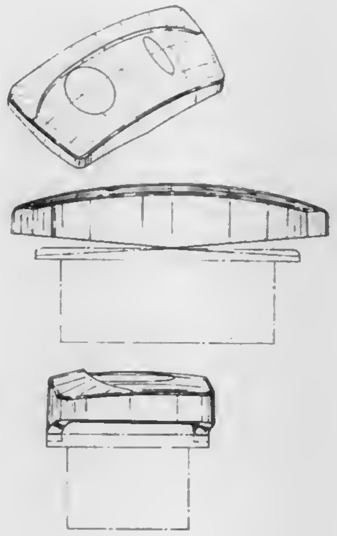


403,306
ROCKER SWITCH ACTUATOR

Joseph L. LeClair, Waterbury, and Teresa Jo Errato, Higganum, both of Conn., assignors to Carlingswitch, Inc., Plainville, Conn.

Filed Aug. 22, 1997, Ser. No. 75,751
Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—169

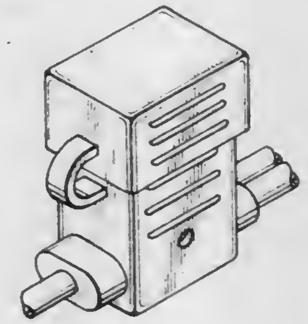


403,307
IN-LINE MULTIPLE FUSE HOLDER

Allen S. Arzoumanian, 24326 Caris St., Woodland Hills, Calif. 91367

Filed Jan. 5, 1995, Ser. No. 33,226
Term of patent 14 years
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—178



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403,308
NOTEBOOK WORD PROCESSOR

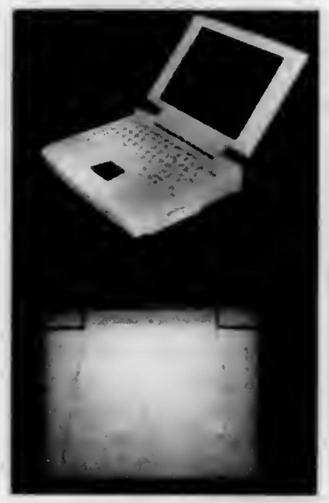
Yuzo Fukunaga, Cordova, Tenn., assignor to Brother International Corporation, Somerset, N.J.

Continuation of Ser. No. 62,085, Nov. 7, 1996, abandoned. This application Nov. 26, 1997, Ser. No. 79,747

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—106



403,309
DISPLAY

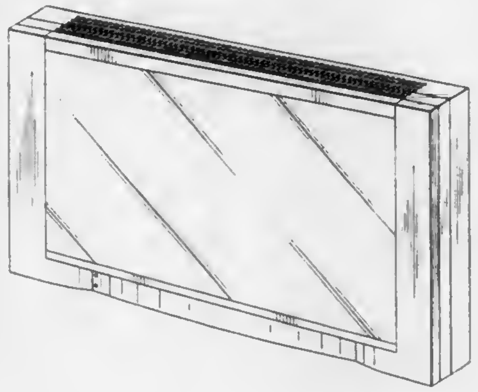
Hirofumi Takemasa, Osaka; Mitsunari Fujii, Hyogo, and Noriaki Mori, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 30, 1997, Ser. No. 78,734

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—113



403,310
COMPUTER DISPLAY

Hirofumi Takemasa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

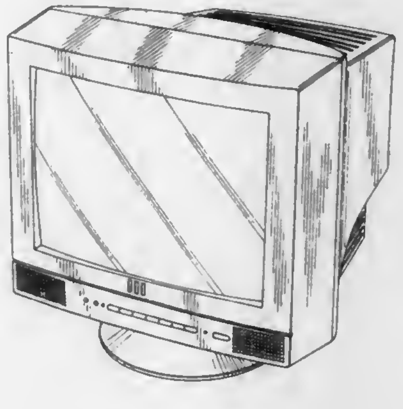
Filed Oct. 29, 1997, Ser. No. 79,193

Claims priority, application Japan, May 16, 1997, 9-54649

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—113



403,311
MOUSE CONTROLLER

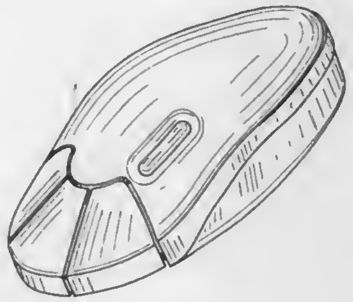
John D. Couch, San Jose, and Sara Mason Richmond, Foster City, both of Calif., assignors to Sega of America, Inc., Redwood City, Calif.

Filed Aug. 30, 1994, Ser. No. 27,819

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



403,312
CHAIR-MOUNTED MOUSE PAD ASSEMBLY

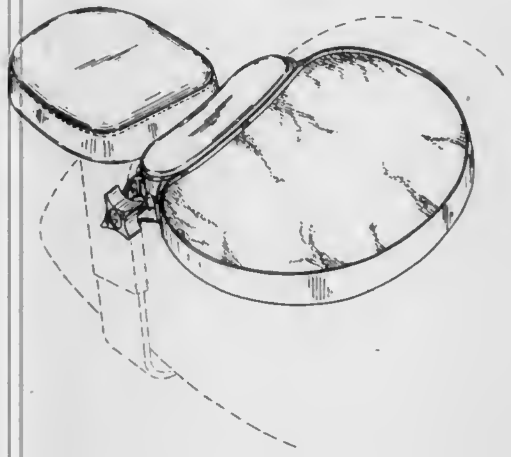
Cathy Mishek O'Brien, 21 Hilltop La., Houlton, Wis. 54082; J. Craig Paulson, 2909 Itasca, St. Mary's Point, Wis. 55043, and Howard S. Balch, 2410 Patton Ave. South, San Pedro, Calif. 90732

Filed Mar. 25, 1997, Ser. No. 69,290

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



403,313
CUSTOM INFORMATION DELIVERY SYSTEM ON A COMPUTER SCREEN

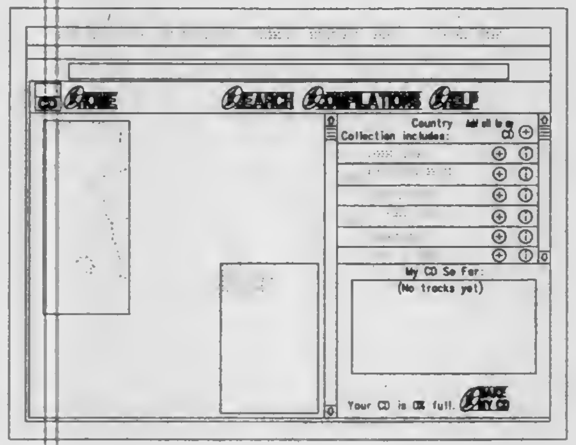
Tyler Peppel, Sausalito, Calif., assignor to MY-CD, Inc., New York, N.Y.

Filed Aug. 14, 1997, Ser. No. 75,038

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114.2



403,314
DESKTOP COMPUTER FRONT PANEL

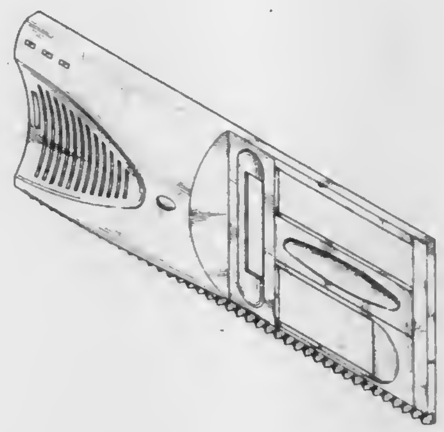
Jason Ji, Diamond Bar, and Richard C. Y. Fu, Cerritos, both of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Oct. 16, 1997, Ser. No. 78,293

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



403,315
TOWER COMPUTER FRONT PANEL

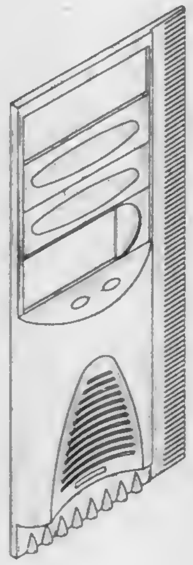
Richard C. Y. Fu, Cerritos; Jason Ji, Doamond Bar, both of Calif., and Yu-Jung Lo, Tu-Cheng, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Feb. 6, 1998, Ser. No. 83,334

Term of patent 14 years

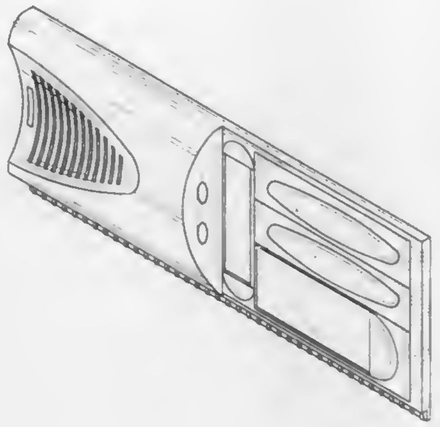
LOC (6) Cl. 14 - *02*

U.S. Cl. D14—115



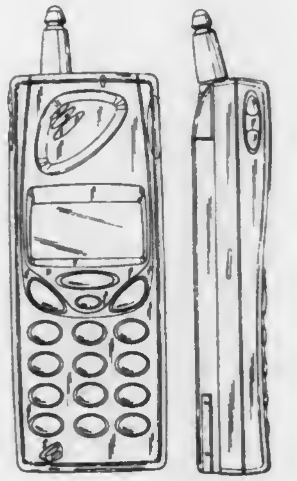
403,316
DESKTOP COMPUTER FRONT PANEL

Richard C. Y. Fu, Cerritos; Jason Ji, Diamond Bar, both of Calif., and Yu Jung Lo, Tu-Cheng, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed Feb. 6, 1998, Ser. No. 83,338
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



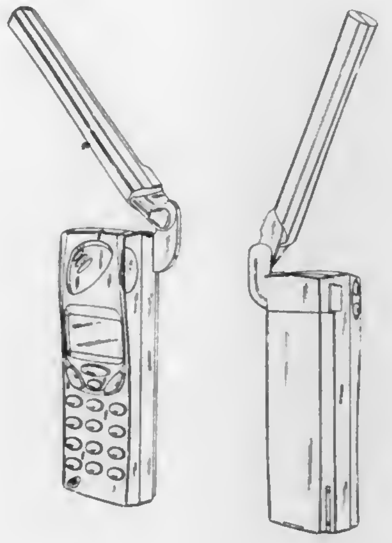
403,317
MOBILE TELEPHONE

Thomas William Waldner, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Aug. 11, 1997, Ser. No. 77,016
Claims priority, application Sweden, Feb. 10, 1997, 97-0302
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



403,318
CELLULAR TELEPHONE

Haruo Kurokawa, Morrisville, N.C., and Thomas Waldner, Malmö, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Dec. 5, 1997, Ser. No. 80,251
Claims priority, application Sweden, Jun. 6, 1997, 971325
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138

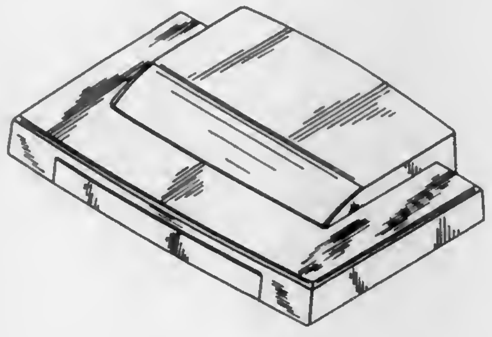


403,319

Patent Not Issued For This Number

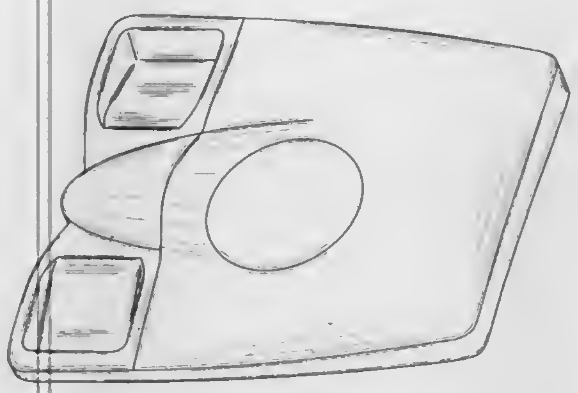
403,320
DISC PLAYER COMBINED WITH RADIO TUNER AND AMPLIFIER

Takuya Niitsu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 55,332, Jun. 3, 1996, Pat. No. Des. 389,480. This application Dec. 30, 1997, Ser. No. 81,305
Claims priority, application Japan, Dec. 4, 1995, 736319
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



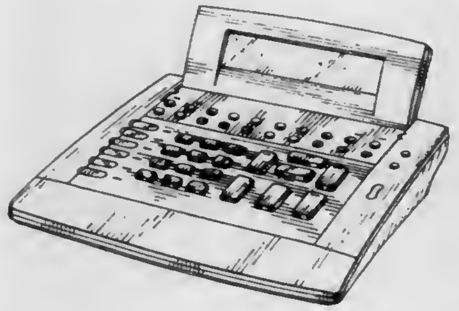
403,321
TELEPHONE CONSOLE

Benjamin Beck, Boston, and Glen Walter, Middleton, both of Mass., assignors to NBX Corporation, Andover, Mass.
Filed Feb. 27, 1998, Ser. No. 84,316
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



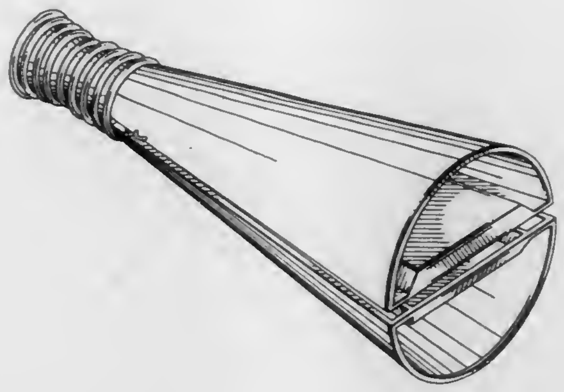
403,322
CONSOLE

Mitsuhiro Umezu; Kazuo Ikeda; Masakatsu Takizawa, and Toru Ichihashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 23, 1997, Ser. No. 76,771
Claims priority, application Japan, Apr. 15, 1997, 9-51310
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—150



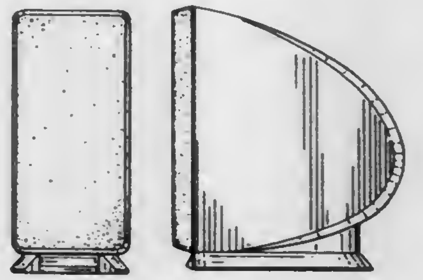
403,323
CLAPPER MEGAPHONE

Holly Patricia Davies, 110 Calle Resplendor, Tucson, Ariz. 85716
Filed Jun. 13, 1997, Ser. No. 85,300
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—187



403,324
AUDIO SPEAKER

Tatsuo Horikoshi, Sayama, Japan, assignor to Nakamichi Corporation, Tokyo, Japan
Filed Jan. 2, 1998, Ser. No. 81,432
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—214

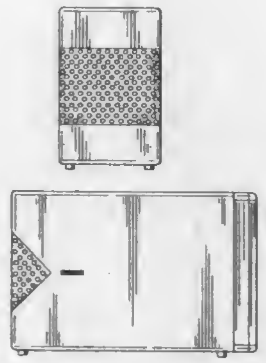


403,325
AUDIO SPEAKER

Tatsuo Horikoshi, Sayama, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed Jan. 2, 1998, Ser. No. 81,433
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—214

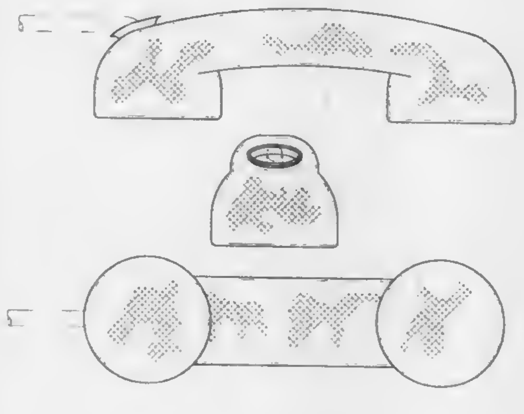


403,326
TELEPHONE RECEIVER COVER

Jacqueline Wise Stewart, and Sedric Stewart, Jr., both of 2917 Indiana Ave. Apt. A, Kenner, La. 70065

Filed Apr. 17, 1997, Ser. No. 69,812
Term of patent 14 years
LOC (6) Cl. 14 - *03*

U.S. Cl. D14—250

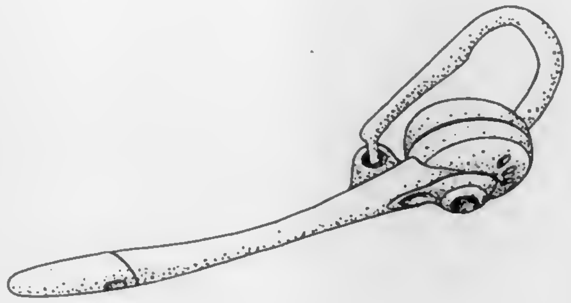


403,327
CONVERTIBLE EARHOOK HEADSET

Gregory E. Landreth, and Fred I. Polito, both of Santa Cruz, Calif., assignors to Plantronics, Inc., Santa Cruz, Calif.

Filed Sep. 23, 1997, Ser. No. 77,105
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—223

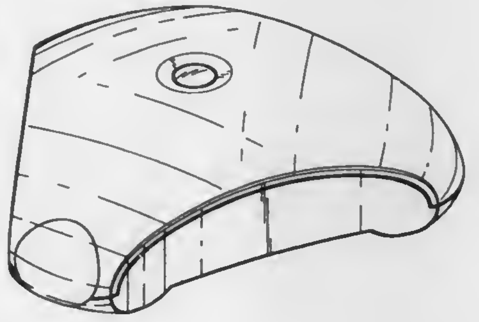


403,328
MICROPHONE POD

Scott H. Wakefield, Andover, Mass., assignor to Polycom, Inc., San Jose, Calif.

Filed Oct. 17, 1997, Ser. No. 77,993
Term of patent 14 years
LOC (6) Cl. 14 - *01*

U.S. Cl. D14—229

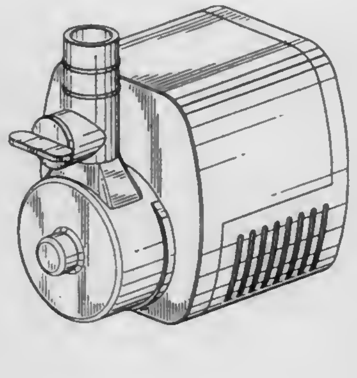


403,329
PUMP

John Miles Walker, Grapevine, and Douglas Brent Enns, Plano, both of Tex., assignors to Beckett Corporation, Irving, Tex.

Filed Dec. 19, 1997, Ser. No. 80,928
Term of patent 14 years
LOC (6) Cl. 15 - *02*

U.S. Cl. D15—7

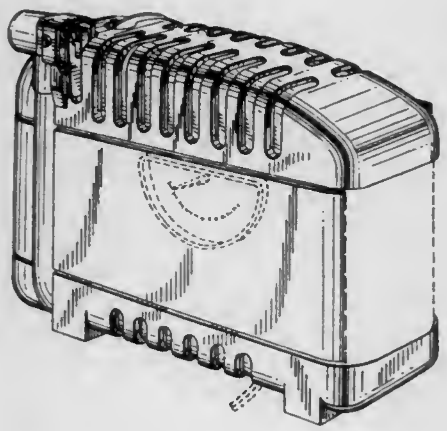


403,330
AIR COMPRESSOR

Kevin Williams, Brooklyn, N.Y., assignor to Interdynamics, Inc., Brooklyn, N.Y.

Filed Oct. 31, 1997, Ser. No. 78,717
Term of patent 14 years
LOC (6) Cl. 12 - *02*

U.S. Cl. D15—9

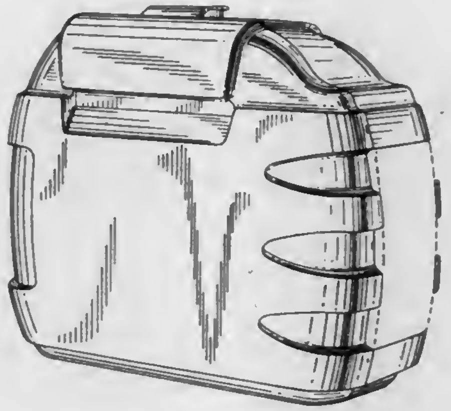


403,331
AIR COMPRESSOR

Kevin Williams, Brooklyn, N.Y., assignor to Interdynamics, Inc., Brooklyn, N.Y.

Filed Nov. 3, 1997, Ser. No. 78,721
Term of patent 14 years
LOC (6) Cl. 15 - *02*

U.S. Cl. D15—9

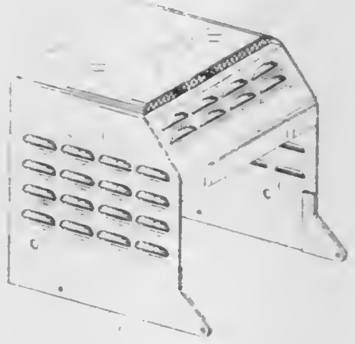


403,332
VENTILATED QUICK ACCESS SUPPORT HOOD SYSTEM FOR RIDING TROWELS

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corp., Paragould, Ark.

Filed Dec. 15, 1997, Ser. No. 80,716
Term of patent 14 years
LOC (6) Cl. 15 - *04*

U.S. Cl. D15—31



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403,333

SEWING MACHINE

Sanae Takada; Shigemasa Kato, and Shigemi Yamamoto, all of Chofu, Japan, assignors to Juki Corporation, Chofu, Japan

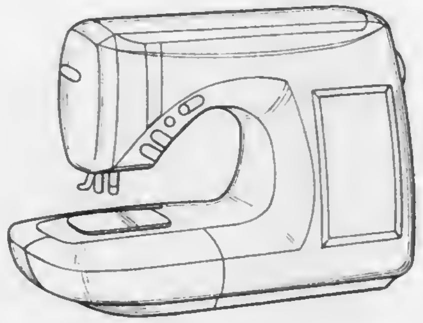
Filed Oct. 14, 1997, Ser. No. 78,303

Claims priority, application Japan, Apr. 15, 1997, 9-51334

Term of patent 14 years

LOC (6) Cl. 15 - *06*

U.S. Cl. D15—70



403,334

SHIELD AND COVER FOR TARGET OF SPUTTER COATING APPARATUS

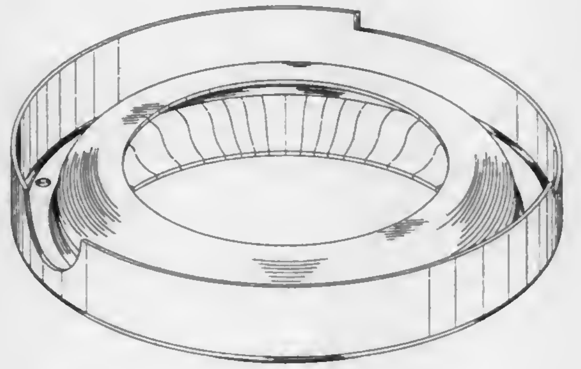
Andrew William Tudhope, Danville; David Bruce Jordan, San Jose, and Josè Luis Gonzalez, Redwood City, all of Calif., assignors to Semiconductor Equipment Technology, Inc, San Jose, Calif.

Filed Jan. 27, 1998, Ser. No. 82,713

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—138



403,335

FOUR BLADE DRILL BIT

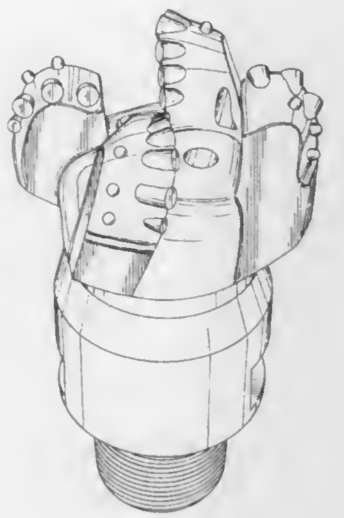
Robert W. Arfele; George A. Espiritu, both of Houston, and Ed R. Martin, Jr., Spring, all of Tex., assignors to Dresser Industries, Inc., Houston, Tex.

Filed Dec. 1, 1997, Ser. No. 80,142

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—139



403,336

FIVE BLADE DRILL BIT

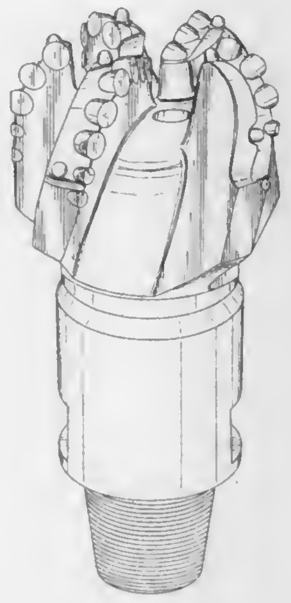
Robert W. Arfele; George A. Espiritu, both of Houston, and Ed R. Martin, Jr., Spring, all of Tex., assignors to Dresser Industries, Inc., Houston, Tex.

Filed Dec. 2, 1997, Ser. No. 80,371

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—139



403,337

HIGH CONDUCTANCE LOW WALL DEPOSITION UPPER SHIELD

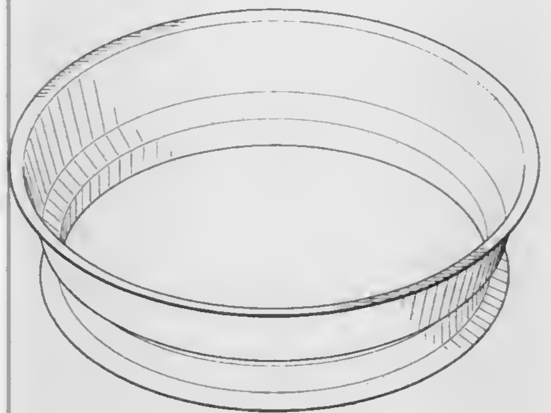
David Tsuenwai Or, Sunnyvale, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 5, 1997, Ser. No. 74,544

Term of patent 14 years

LOC (6) Cl. 15 - *99*

U.S. Cl. D15—199



403,338

VIDEO MICROSCOPE

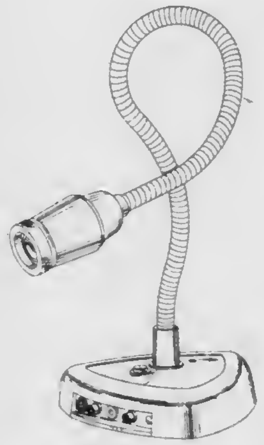
Thomas M. Dunn, 3916 W. 142 Dr., Leawood, Kans. 66224

Filed Jun. 3, 1997, Ser. No. 71,609

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—131



403,339

COMBINED MAGNIFIER AND RULER

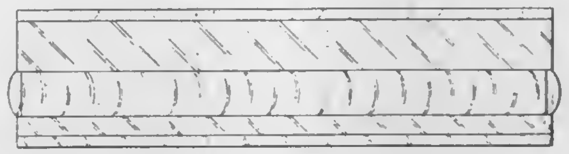
Steven L. Molenaar, 601 W. Highway 40, Willmar, Minn. 56201

Filed Jan. 26, 1998, Ser. No. 82,590

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—135



403,340

CAMERA ENCLOSURE

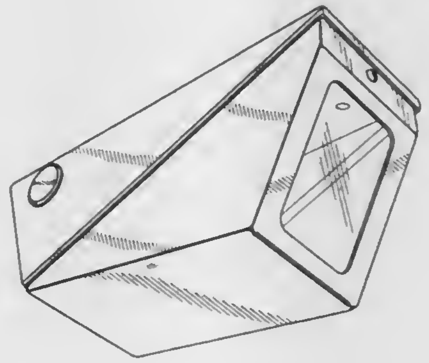
James F. Arbuckle, Fresno, Calif., assignor to Pelco, Clovis, Calif.

Filed Jan. 26, 1998, Ser. No. 82,535

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—203



403,341

CAMERA

Byungwook Chin, and Jung Yun Han, both of Seoul, Rep. of Korea, assignors to Samsung Aerospece Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

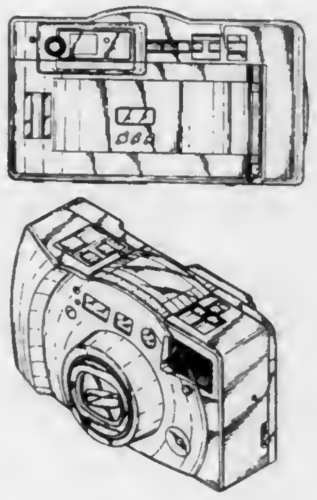
Filed Feb. 5, 1998, Ser. No. 83,231

Claims priority, application Rep. of Korea, Aug. 7, 1997, 97-16726

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—209



403,342

EYEWEAR

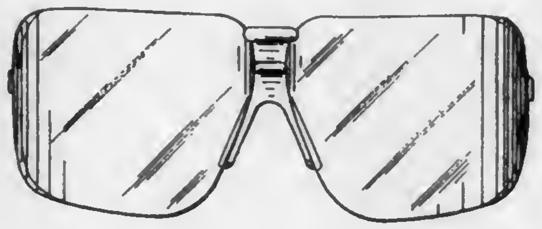
James Hall, Lincoln, R.I.; Keith Fecteau, Wilbraham, Mass.; Raoul Desy, Sturbridge, Mass., and John Salce, Auburn, Mass., assignors to Cabot Safety Intermediate Corporation, Newark, Del.

Continuation-in-part of Ser. No. 54,494, May 2, 1996. This application Jul. 26, 1997, Ser. No. 75,176

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D16—315



403,343

EYEWEAR

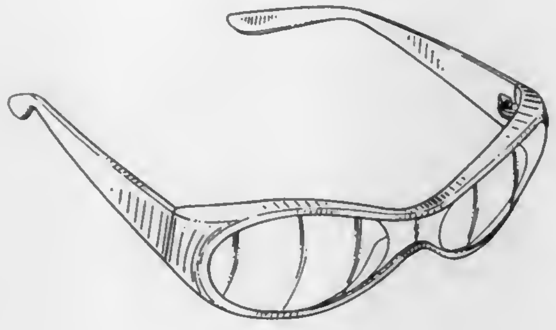
Mark J. Flanagan, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 10, 1998, Ser. No. 84,819

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



403,344

EYEWEAR

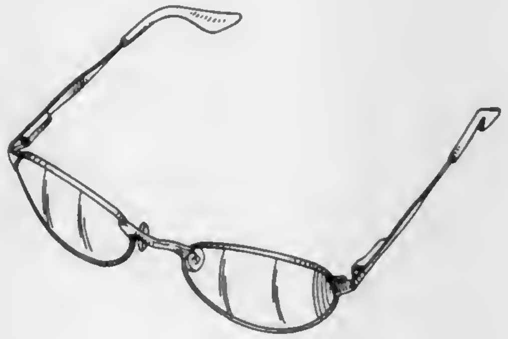
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 1, 1997, Ser. No. 70,193

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—327



403,345

EYEWEAR

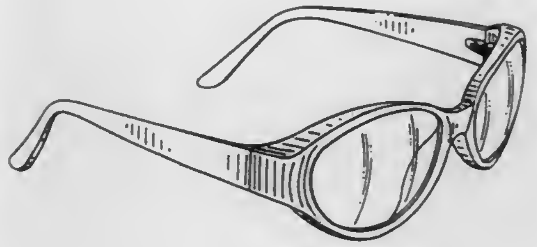
Mark J. Flanagan, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 1, 1997, Ser. No. 70,164

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—327



403,346

EYEGLASS RETAINER

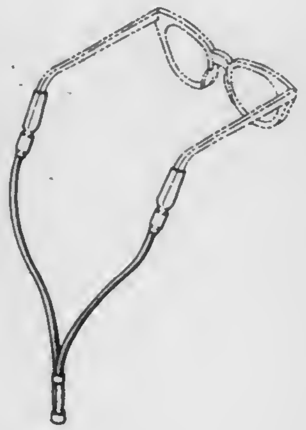
Nathan Roberts, 2251 W. 200 South, Box 390-8, Hurricane, Utah 84737

Filed May 12, 1997, Ser. No. 70,660

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—339



403,347

BINGO MARKER

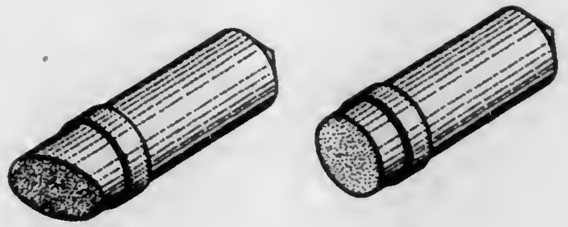
Allan Cockram, 797 Lee Ridge Road, Edmonton, Alberta, Canada, T6K 0P6

Filed Oct. 22, 1996, Ser. No. 61,344

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—18



403,348

TONER CONTAINER

Isao Matsuoka, Hachioji; Ryo Takimura, Tokyo; Yozo Fujii, Hachioji, and Takashi Tamura, Akishima, all of Japan, assignors to Konica Corporation, Tokyo, Japan

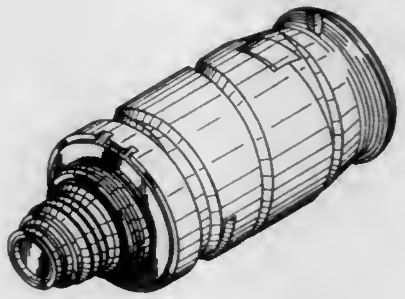
Filed Dec. 8, 1997, Ser. No. 80,389

Claims priority, application Japan, Jun. 10, 1997, 9-57379

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—43

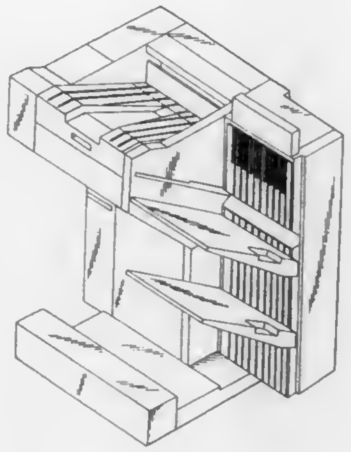


403,349
SHEET HANDLING APPARATUS

Tomoyuki Hirose; Toyoaki Nanba; Kyousuke Taka, all of Osaka; Kazuyuki Kubota, and Hideki Mimura, both of Yamanashi-Ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka-fu, and Nisca Corporation, Yamanashi-ken, both of Japan

Filed Dec. 23, 1997, Ser. No. 81,217
Term of patent 14 years
LOC (6) Cl. 18 - *99*

U.S. Cl. D18—46

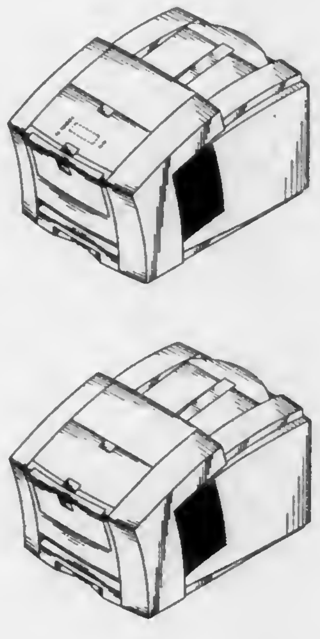


403,350
COLOR PRINTER FOR USE WITH SOLID INK STICKS

Richard G. Chambers, and Greg Hinzmann, both of Portland, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Sep. 18, 1997, Ser. No. 76,798
Term of patent 14 years
LOC (6) Cl. 14 - *02*

U.S. Cl. D18—55

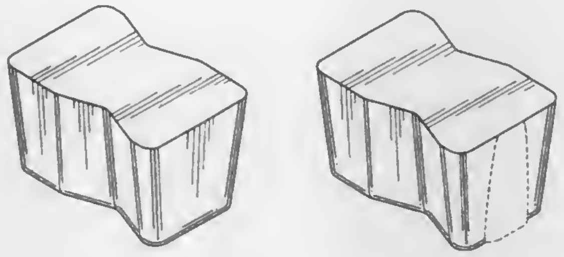


403,351
SOLID INK STICK FOR A COLOR PRINTER

Penelope C. Yao, Evanston, Ill.; David L. Brown, Milwaukie, and Henry Y. Chin, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Mar. 10, 1997, Ser. No. 67,475
Term of patent 14 years
LOC (6) Cl. 18 - *02*

U.S. Cl. D18—56

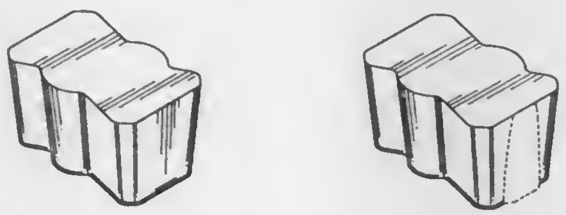


403,352
SOLID INK STICK FOR A COLOR PRINTER

David L. Brown, Milwaukie; Henry Y. Chin, Portland, both of Oreg., and Penelope C. Yao, Evanston, Ill., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Mar. 10, 1997, Ser. No. 67,478
Term of patent 14 years
LOC (6) Cl. 18 - *02*

U.S. Cl. D18—56



403,353
TAPE CARTRIDGE FOR TAPE PRINTER

Yoichi Uchiyama, Nagoya; Koshiro Yamaguchi, Kasugai, and Kiyoshi Sugimoto, Kuwana, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 52,848, Apr. 10, 1996, Pat. No. Des. 389,179. This application Mar. 24, 1997, Ser. No. 68,500

Claims priority, application Japan, Nov. 8, 1995, 7-33887; Nov. 8, 1995, 7-33888; Nov. 8, 1995, 7-33889

Term of patent 14 years
LOC (6) Cl. 18 - *02*

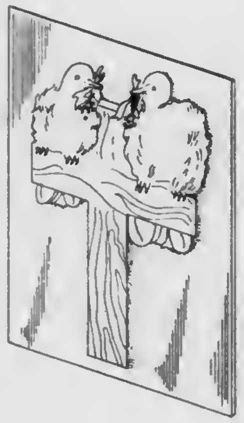
U.S. Cl. D18—56

403,354
GREETING CARD

Phyllis Francis, 146-78 182nd St., Springfield Gardens, N.Y. 14854

Filed May 4, 1998, Ser. No. 87,490
Term of patent 14 years
LOC (6) Cl. 19 - *01*

U.S. Cl. D19—7

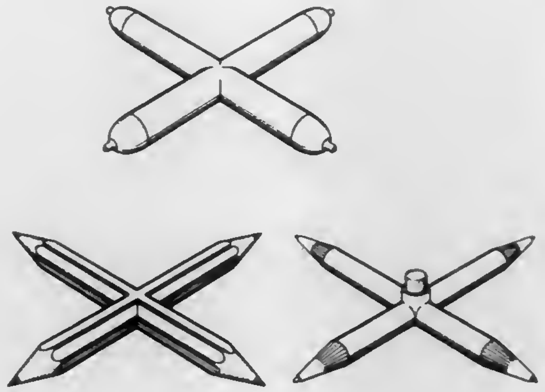


403,355
MULTI-HEADED WRITING INSTRUMENT

Cumi G. Fillion, 606 Mack Dr., Valdosta, Ga. 31602

Filed Mar. 12, 1998, Ser. No. 84,940
Term of patent 14 years
LOC (6) Cl. 19 - *06*

U.S. Cl. D19—36

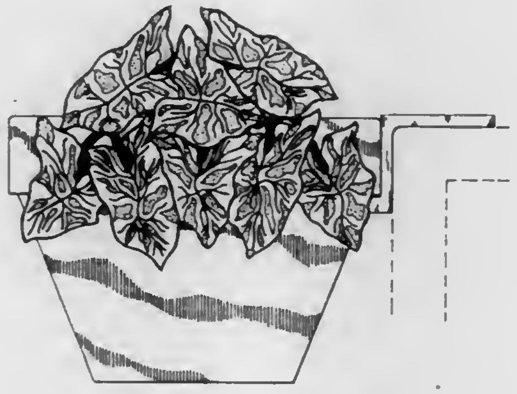


403,356
COMPUTER COPY HOLDER WITH A FLORAL POT MOTIF

Beth A. Canale, 1399 County Rte. 1, Oswego, N.Y. 13126

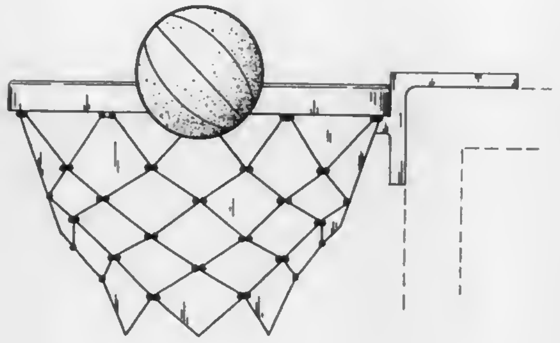
Filed Mar. 9, 1998, Ser. No. 84,739
Term of patent 14 years
LOC (6) Cl. 19 - *02*

U.S. Cl. D19—88



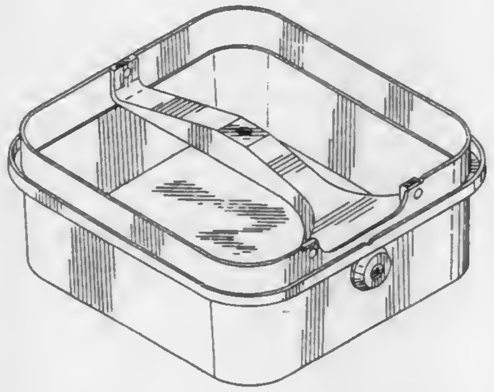
403,357
COMPUTER COPY HOLDER WITH A BASKETBALL MOTIF

Beth A. Canale, 1399 County Rte. 1, Oswego, N.Y. 13126
Filed Mar. 9, 1998, Ser. No. 84,740
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—88



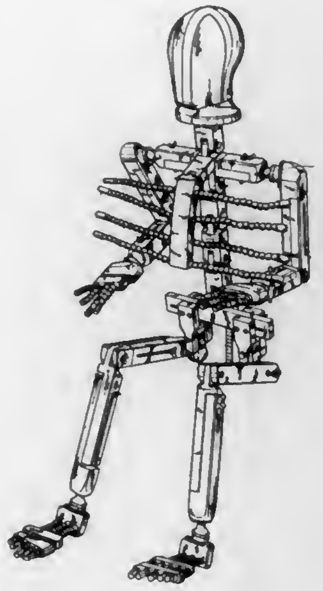
403,358
VENDING MACHINE BASE

Josef W. Schwarzli, Stouffville, Canada, assignor to Machine-O-Matic Limited, Newmarket, Canada
Filed May 30, 1997, Ser. No. 71,501
Term of patent 14 years
LOC (6) Cl. 20 - *01*
U.S. Cl. D20—8



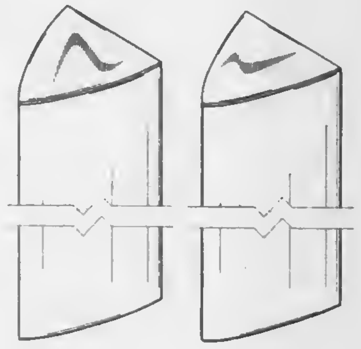
403,359
DUMMY

Sverker Dahl, Stenberget, 270 35 Blentarp, Sweden
Filed Oct. 14, 1997, Ser. No. 77,799
Claims priority, application Sweden, Apr. 16, 1997, 970890
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D20—31



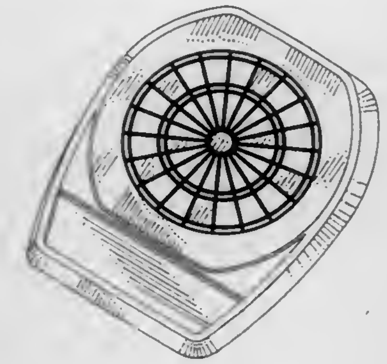
403,360
CONTOUR POST FOR SIGNS

Ronald W. Cobb, Atlanta; Benjamin H. Bell, Avondale Estates; Ray C. Bowling, Powder Springs, all of Ga., and Charles Nicolaides, Twickenham, England, assignors to APCO Graphics, Inc., Atlanta, Ga.
Filed Jun. 26, 1996, Ser. No. 56,315
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



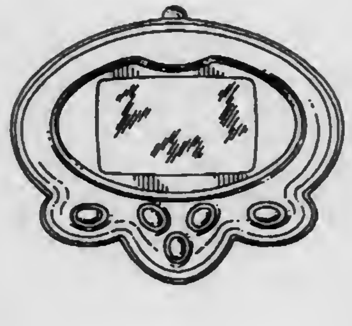
403,361
ELECTRONIC DART GAME

Chun-Mu Huang, 6F, No. 60-5, Cheng I S. Rd., Sanchung City, Taipei Hsien, Taiwan
Filed Jun. 26, 1995, Ser. No. 40,766
Term of patent 14 years
U.S. Cl. D21—6



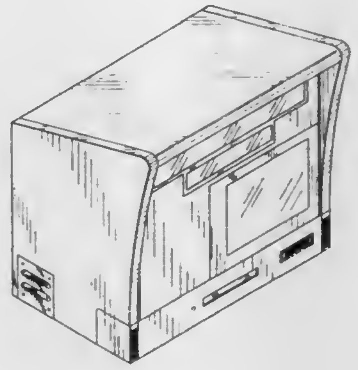
403,362
KEY-CHAIN ELECTRONIC GAME

Au Yeung Siu Fai, Kowloon, Hong Kong, assignor to Watercore Limited, Hong Kong
Filed Jun. 17, 1997, Ser. No. 72,431
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



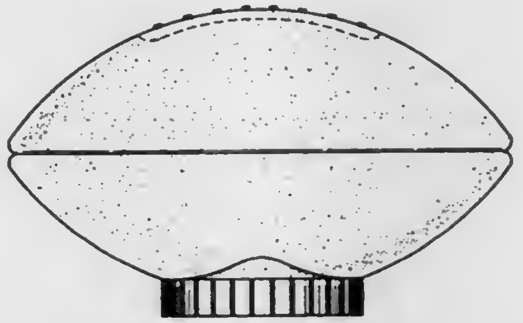
403,363
GAMING DEVICE WITH SPEAKERS

Steven P. McGahn, and Joseph R. Hedrick, both of Reno, Nev., assignors to International Game Technology, Reno, Nev.
Filed Sep. 2, 1997, Ser. No. 75,639
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—37



403,364
DICE CUP

Joseph Paolucci, 2302 Pacheco St., Concord, Calif. 94520
Division of Ser. No. 56,070, Jun. 21, 1996, Pat. No. Des. 393,288. This application Oct. 29, 1997, Ser. No. 81,818
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—41



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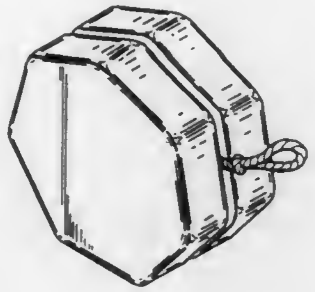
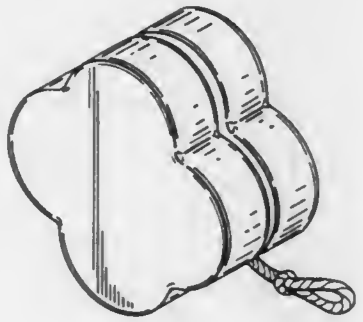
403,365
RETURN TOP

Richard F. Bly, 317 W. Hemlock Ave., Kane, Pa. 16735
Filed Jan. 16, 1998, Ser. No. 82,186
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—99



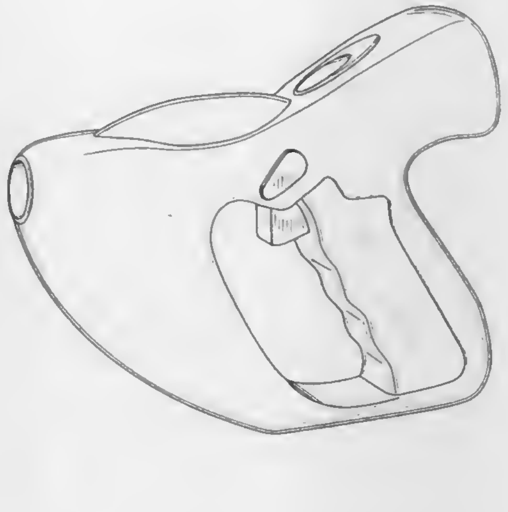
403,366
RETURN TOP

Richard F. Bly, 317 W. Hemlock Ave., Kane, Pa. 16735
Filed Jan. 16, 1998, Ser. No. 82,945
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—99



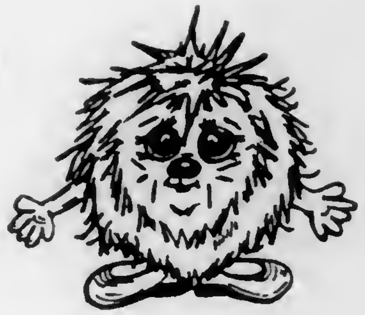
403,367
TOY GUN

Steven Lebensfeld, Laurel Hollow, and Frank Landi, Great Neck, both of N.Y., assignors to Toymax Inc., Plainview, N.Y.
Filed Nov. 26, 1996, Ser. No. 63,084
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—147



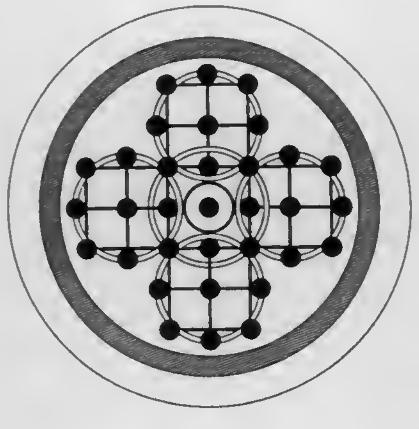
403,368
TOY

Dana Brown, 23 Veronica Crescent, Sharon, Ontario, Canada, L0G 1V0
Filed Dec. 31, 1996, Ser. No. 64,427
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—148



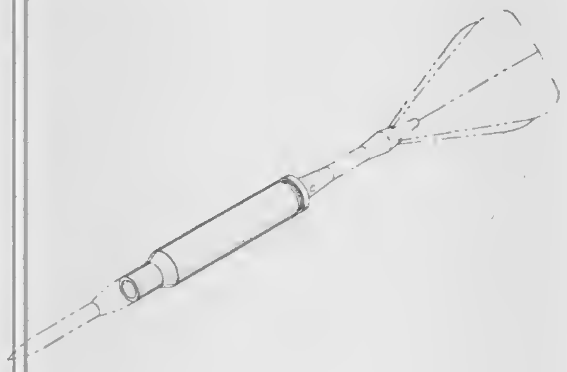
403,369
GAME BOARD

Andy Endre Berki, 651 Roselaire Trail, Mississauga, Ontario, Canada, L5R 3C6
Filed Jan. 26, 1998, Ser. No. 82,554
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—362



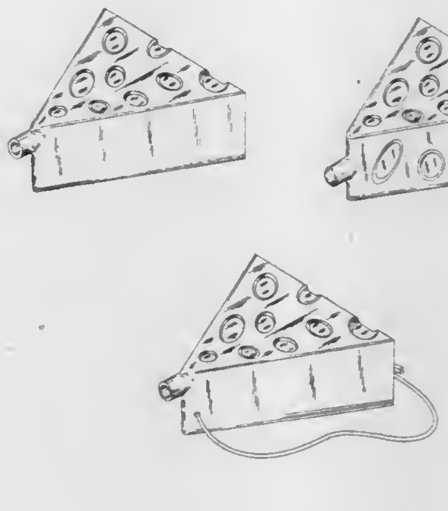
403,370
DART BODY

Walter E. Bottelsen, 945 W. McCoy La., Santa Maria, Calif. 93455
Filed Jul. 17, 1997, Ser. No. 73,278
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—387



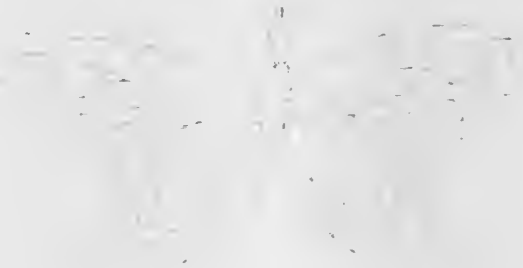
403,371
NOVELTY HORN

Brian Davis, Ripon, Wis., assignor to Davis Manufacturing, Inc., Brandon, Wis.
Filed Nov. 7, 1997, Ser. No. 79,531
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—411



403,372
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., and Maria A. Fernandez, Milford, Conn., assignors to Ark Foundation, Norwalk, Conn.
Filed Feb. 11, 1998, Ser. No. 83,528
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—480

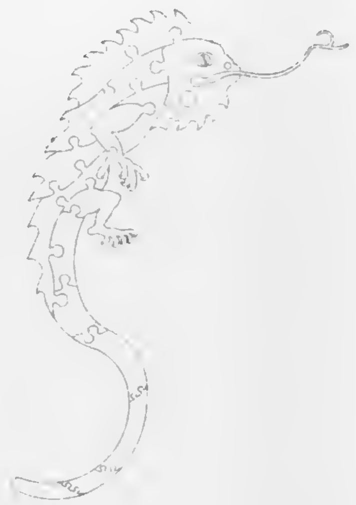


403,373
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., and Maria A. Fernandez, Milford, Conn., assignors to Ark Foundation, Norwalk, Conn.

Filed Feb. 11, 1998, Ser. No. 83,530
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—480

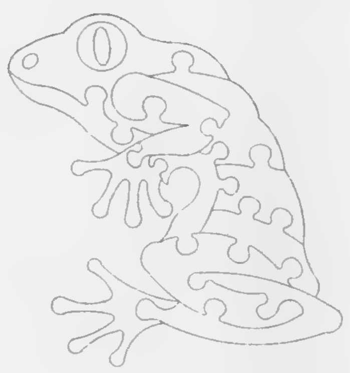


403,374
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., and Maria A. Fernandez, Milford, Conn., assignors to Ark Foundation, Norwalk, Conn.

Filed Feb. 11, 1998, Ser. No. 83,531
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—480

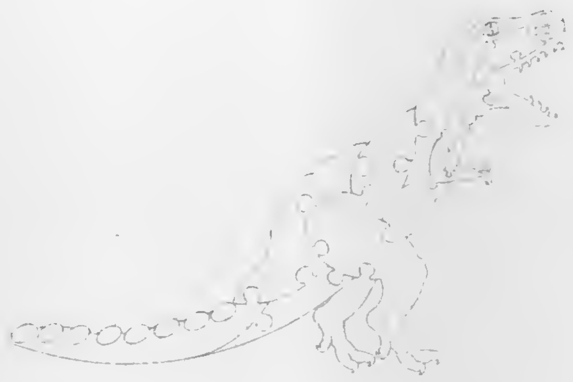


403,375
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., and Maria A. Fernandez, Milford, Conn., assignors to Ark Foundation, Norwalk, Conn.

Filed Feb. 11, 1998, Ser. No. 83,532
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—480

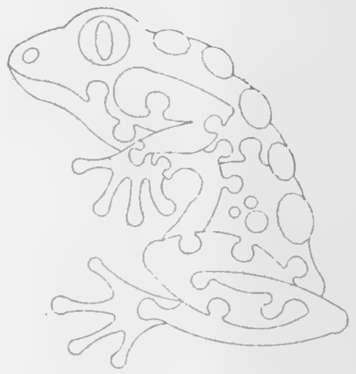


403,376
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., assignor to Ark Foundation, Norwalk, Conn.

Filed Feb. 11, 1998, Ser. No. 83,533
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—480



403,377
FRONT SURFACE OF A JIGSAW PUZZLE

Ofer Nissim, Pound Ridge, N.Y., and Maria A. Fernandez, Milford, Conn., assignors to Ark Foundation, Norwalk, Conn.

Filed Feb. 11, 1998, Ser. No. 83,534
Term of patent 14 years
LOC (6) Cl. 21 - *01*

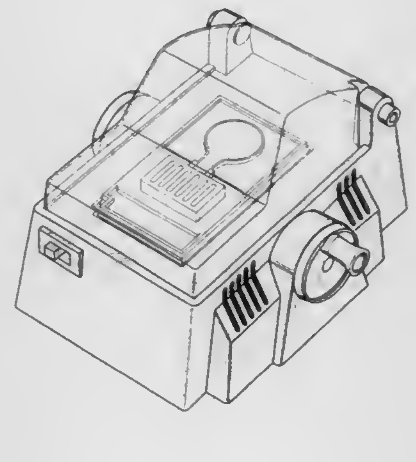
U.S. Cl. D21—480

403,378
TOY MOLDING DEVICE

Steven Lebensfeld, Laurel Hollow, and Frank Landi, New Rochelle, both of N.Y., assignors to Toymax Inc., Plainview, N.Y.

Filed Aug. 7, 1996, Ser. No. 58,090
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—528

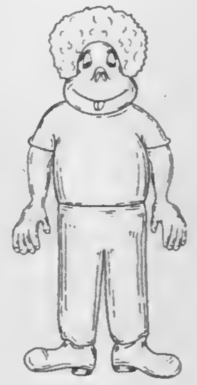


403,379
DOLL

Larry Winston Adams, 1217 Santa Clara Ave., Alameda, Calif. 94501

Filed Dec. 16, 1997, Ser. No. 80,805
Term of patent 14 years
LOC (6) Cl. 21 - *01*

U.S. Cl. D21—631

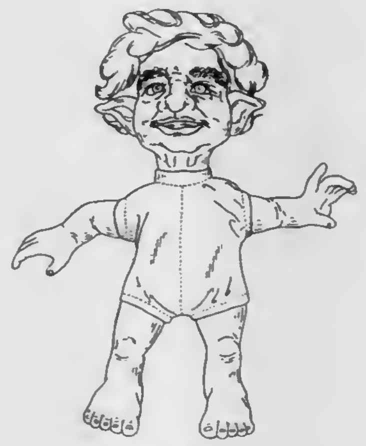


403,380
DOLL

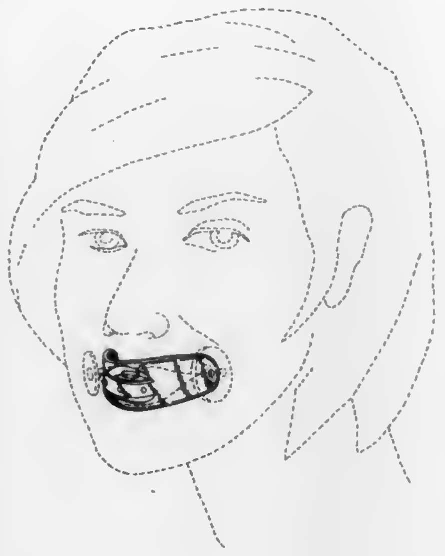
Juan L. Cerda, 2200 NW. 92nd Ave., Miami, Fla. 33172; Salvador Berenguer, Costeretes, 11 Onil, and Jose Berenguer, Cervantes, 2 Onil, both of Alicante, Spain

Filed Nov. 12, 1997, Ser. No. 79,279
Term of patent 14 years
LOC (6) Cl. 21 - *01*

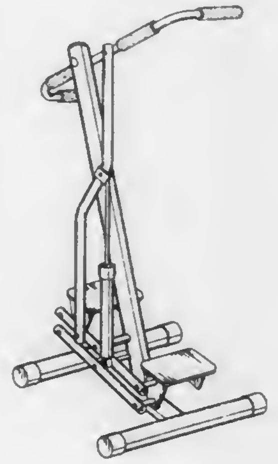
U.S. Cl. D21—633



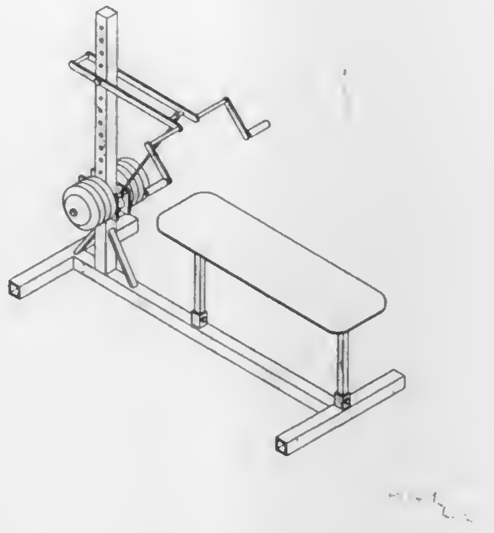
403,381
FACE, NECK AND CHIN EXERCISER
Beverly I. Hanna, 7954 Two Mile Rd., Lakeview, Mich. 48850
Filed Jun. 10, 1997, Ser. No. 71,985
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—662



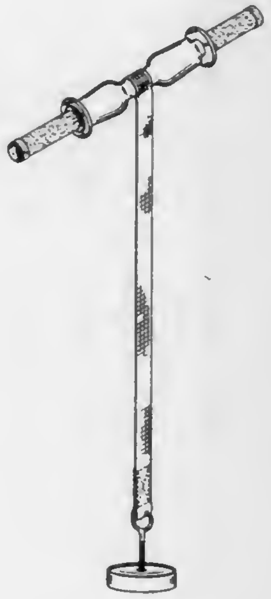
403,382
EXERCISE DEVICE
Gary D. Piaget, 3390 American Saddler Dr., Park City, Utah 84060
Filed Oct. 1, 1997, Ser. No. 77,287
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—670



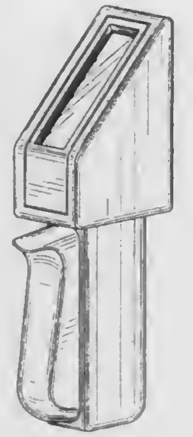
403,383
EXERCISE APPARATUS
Abe Gutierrez, 2607 Monroe Ave., San Diego, Calif. 92116
Filed Nov. 19, 1997, Ser. No. 79,829
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—675



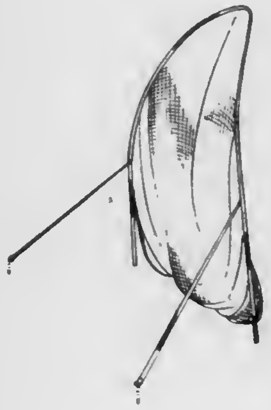
403,384
EXERCISE DEVICE
Ronald Clark, 6161 CR 207, Millersburg, Ohio 44654, and Frank Vranovich, 3737 Limdbergh Way, Weirton, W. Va. 26062
Filed Dec. 4, 1997, Ser. No. 80,317
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—684



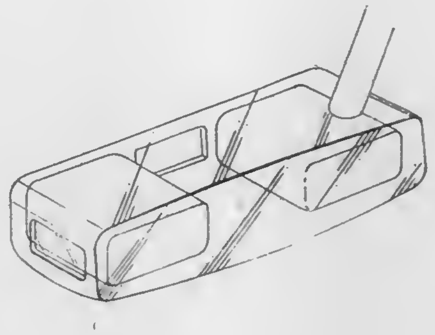
403,385
ISOMETRIC EXERCISE APPARATUS
Michael A. Smyser, Galena, and David W. Ferguson, Pickerington, both of Ohio, assignors to MD Systems, Westerville, Ohio
Filed Mar. 6, 1998, Ser. No. 84,614
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—684



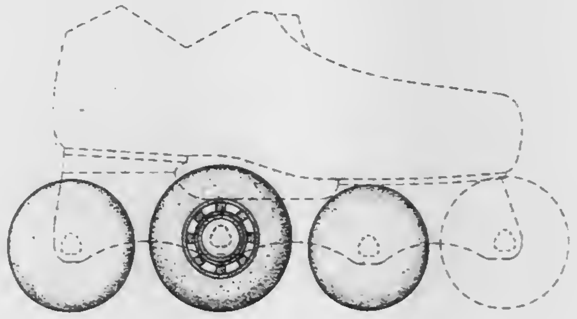
403,386
GOLF BALL NET
Kwang H. Cho, 148 S. Gramercy Pl. #16, Los Angeles, Calif. 90004
Filed Dec. 5, 1997, Ser. No. 80,323
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—704



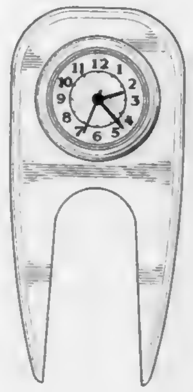
403,387
TRANSPARENT GOLF PUTTER HEAD
William Bloomer, 42110 8th St. East, Lancaster, Calif. 93535
Filed Mar. 23, 1998, Ser. No. 85,399
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—736



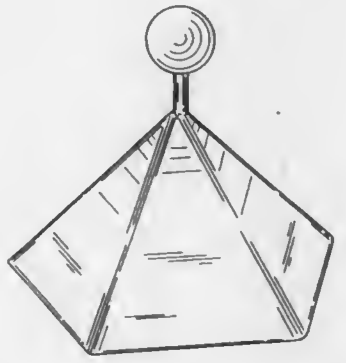
403,388
SET OF IN-LINE WHEELS
Duncan G. Robins, Woodland Hills, and Richard D. Grossman, Grenada Hills, both of Calif., assignors to Jas D. Easton, Inc., Van Nuys, Calif.
Filed Sep. 19, 1997, Ser. No. 76,950
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—779



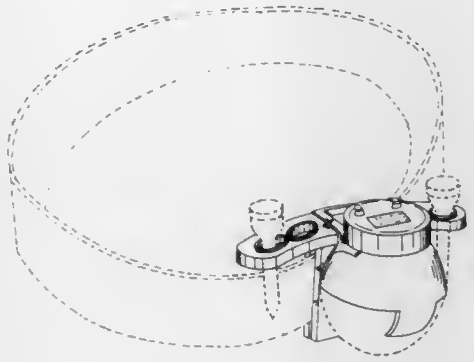
403,389
DIVOT REPAIR TOOL
Sean Sungho Kim, 17820-1 Devonshire Blvd., Northridge, Calif. 91326
Filed Mar. 9, 1998, Ser. No. 84,733
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—793



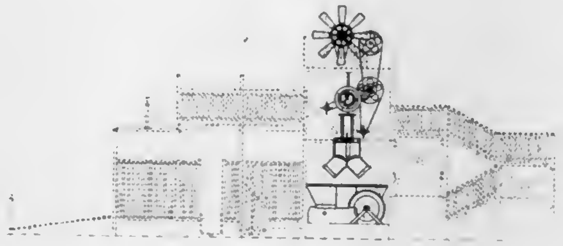
403,390
GOLF TEE MARKER
Jerome D. Lenz, 1262 Gambel Oaks Dr., Elizabeth, Colo. 80107
Filed Jan. 28, 1998, Ser. No. 82,728
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—794



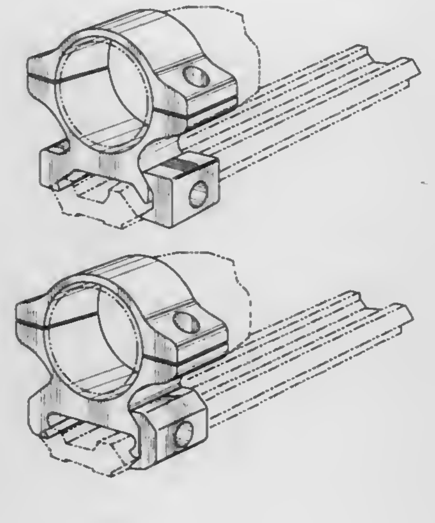
403,391
PERSONAL GOLF BALL AND TEE HOLDER WITH A TIME DISPLAY
David Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan
Filed Dec. 31, 1997, Ser. No. 81,380
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—796



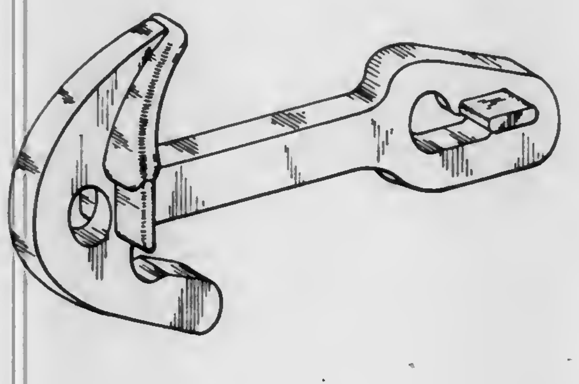
403,392
SAW MILL PLAY STRUCTURE
Rick A. Briggs, Springfield, Ill.; Mark Weston; Denise Weston, both of North Attleboro, Mass., and Brendon Cuddihee, Eureica, Mo., assignors to SCS Interactive, Inc., Springfield, Ill.
Filed Nov. 14, 1997, Ser. No. 79,378
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—814



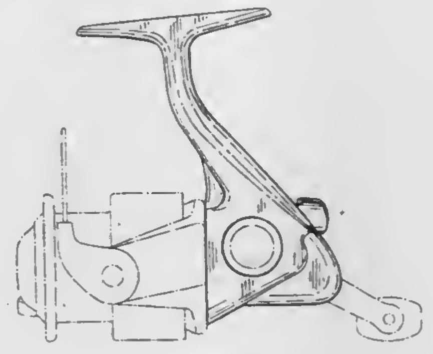
403,393
SCOPE RING
Gerald T. Weast, 900 W. Gardenia, Madison Heights, Mich. 48072
Filed Dec. 29, 1995, Ser. No. 48,370
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—110



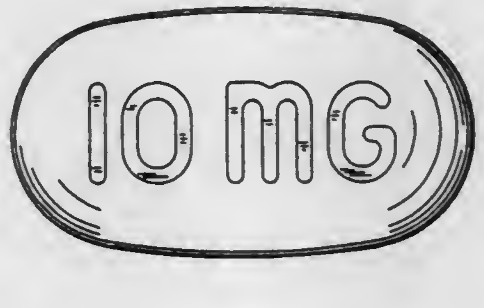
403,394
HOOK FOR CRAB FISH AND LOBSTER TRAPS
Donald G. Erlandson, and Claudette A. Erlandson, both of Topsham, Me., assignors to Top-Me Inc., Topsham, Me.
Filed Jun. 13, 1996, Ser. No. 55,772
Term of patent 14 years
LOC (6) Cl. 22 - *06*
U.S. Cl. D22—121



403,395
FISHING REEL BODY
Toshiaki Yoshikawa, Musashino; Shinji Murakami, and Muneaki Tsukihiji, both of Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Sep. 23, 1997, Ser. No. 76,842
Claims priority, application Japan, Mar. 25, 1997, 9-8399
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—141

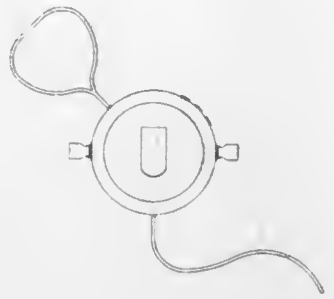


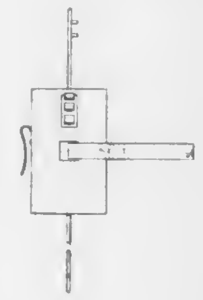
403,396
TABLET
Jan Lundbom, Södertälje, and Åsa Näslund, Strängnäs, both of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden
Filed Apr. 3, 1997, Ser. No. 68,861
Claims priority, application Sweden, Nov. 28, 1996, 96-2525
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—101



403,397
CANNULA REEL

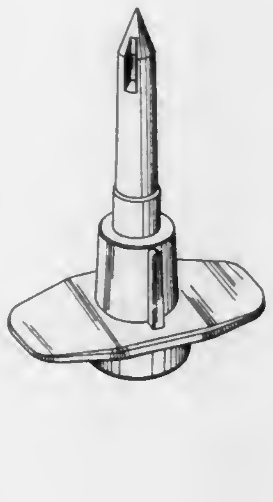
Michele L. Price, and Roland J. Price, Jr., both of 18 S. Nichols St., St. Clair, Pa. 17970
Filed Dec. 20, 1996, Ser. No. 64,016
Term of patent 14 years
LOC (6) Cl. 24 - 02
U.S. Cl. D24—112





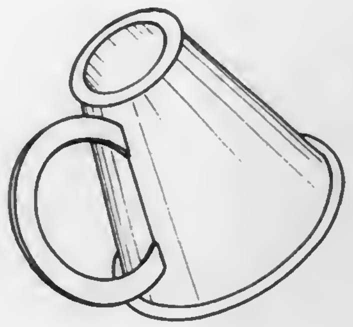
403,398
PIERCING CANNULA BODY FOR MEDICAL INFUSION OR TRANSFUSION LINES

Gianni Guala, and Ernesto Guala, both of Turin, Italy, assignors to Industrie Borla S.p.A., Turin, Italy
Filed Sep. 8, 1997, Ser. No. 76,199
Claims priority, application Italy, Mar. 10, 1997, T09700058
Term of patent 14 years
LOC (6) Cl. 24 - 02
U.S. Cl. D24—112



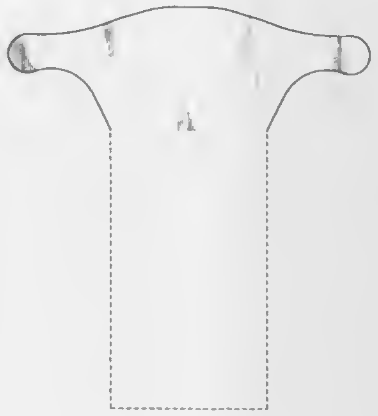
403,399
EYE DROP GUIDANCE DEVICE

Noel P. Montgomery, and Joseph G. George, both of 4009 Kent Ave., Metairie, La. 70006
Filed Jan. 9, 1997, Ser. No. 64,694
Term of patent 14 years
LOC (6) Cl. 24 - 02
U.S. Cl. D24—120



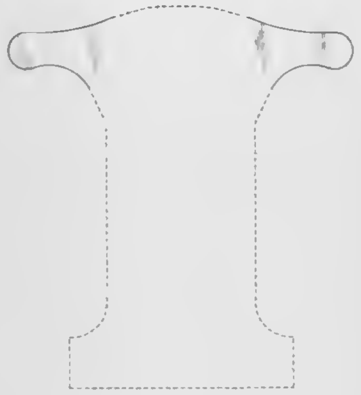
403,400
DISPOSABLE ABSORBENT ARTICLE WAISTBAND

Randy Levy Bernard, Oakley; Constance Lee Fisher, Cincinnati; Daniel Charles Peck, Cincinnati, and Kimberly Ann Dreier, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1997, Ser. No. 77,459
Term of patent 14 years
LOC (6) Cl. 24 - 04
U.S. Cl. D24—126



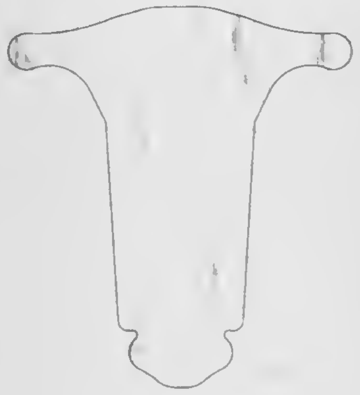
403,401
DISPOSABLE ABSORBENT ARTICLE SIDE PANEL

Randy Levy Bernard, Oakley; Constance Lee Fisher, Cincinnati; Daniel Charles Peck, Cincinnati, and Kimberly Ann Dreier, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1997, Ser. No. 77,460
Term of patent 14 years
LOC (6) Cl. 24 - 04
U.S. Cl. D24—126



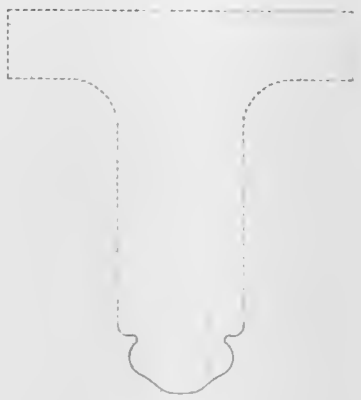
403,402
DISPOSABLE ABSORBENT ARTICLE CHASSIS

Kimberly Ann Dreier, Cincinnati; Randy Levy Bernard, Oakley; Constance Lee Fisher, and Daniel Charles Peck, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1997, Ser. No. 77,461
Term of patent 14 years
LOC (6) Cl. 24 - 04
U.S. Cl. D24—126



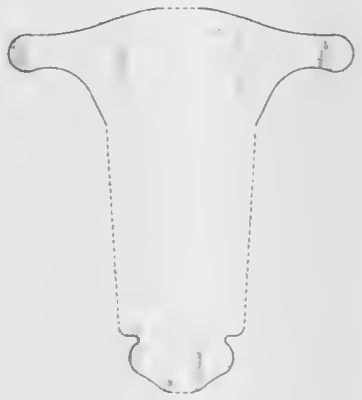
403,403
DISPOSABLE ABSORBENT ARTICLE FLAP

Randy Levy Bernard, Oakley; Constance Lee Fisher, and Kimberly Ann Dreier, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1997, Ser. No. 77,467
Term of patent 14 years
LOC (6) Cl. 24 - 04
U.S. Cl. D24—126



403,404
DISPOSABLE ABSORBENT ARTICLE CHASSIS

Randy Levy Bernard, Oakley; Constance Lee Fisher, Cincinnati; Daniel Charles Peck, Cincinnati, and Kimberly Ann Dreier, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1997, Ser. No. 77,636
Term of patent 14 years
LOC (6) Cl. 24 - 04
U.S. Cl. D24—126



403,405
BIOPSY NEEDLE SET

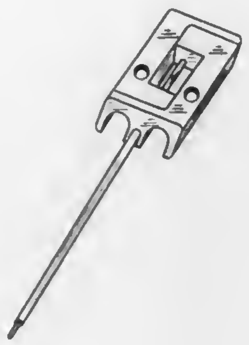
Richard A. Terwilliger, Estes Park, Colo., assignor to Medical Device Technologies, Inc., Gainesville, Fla.

Filed Jun. 24, 1996, Ser. No. 56,120

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—130



403,406
WATER PURIFICATION UNIT

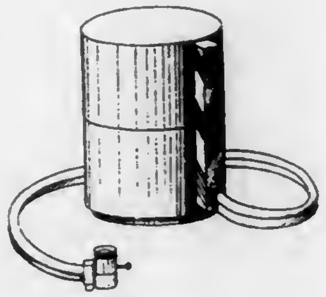
John Douglas, Clearwater, Fla., assignor to Paragon Water Systems, Inc., Clearwater, Fla.

Filed Nov. 14, 1996, Ser. No. 62,375

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—209



403,407
NOZZLE

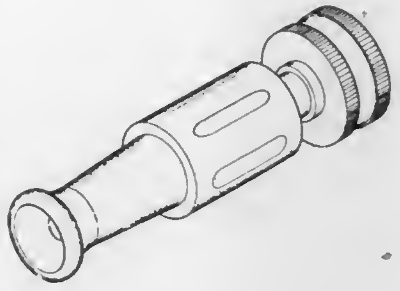
Chao Hui-Chen, P.O. Box 453, Taichung, Taiwan

Filed Oct. 30, 1997, Ser. No. 81,040

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—213



403,408
HAND HELD SHOWERHEAD

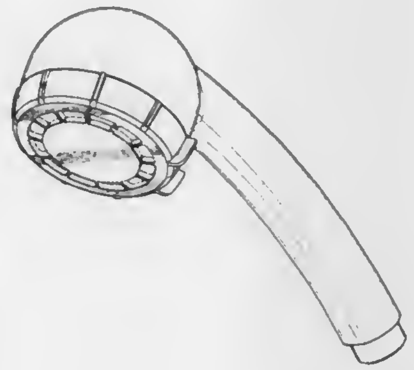
Leonard C. Andrus, Plymouth; Ronald D. Green, New Hudson, and Bruce Higgins, South Lyon, all of Mich., assignors to Brass-Craft Manufacturing Company, Novi, Mich.

Filed May 29, 1997, Ser. No. 71,443

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—223



403,409
SEISMICALLY TRIGGERED VALVE

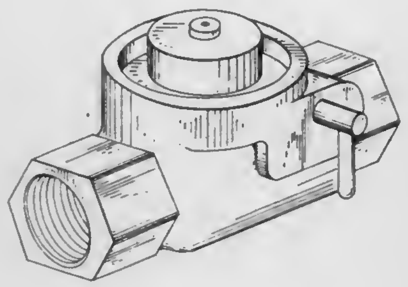
Dale Dean, 900 S. Victory Blvd., Burbank, Calif. 91502, and Ralph R. Swenson, P.O. Box 1249, Coulterville, Calif. 95311

Filed Oct. 17, 1997, Ser. No. 78,059

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—233



403,410
FAUCET

Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.

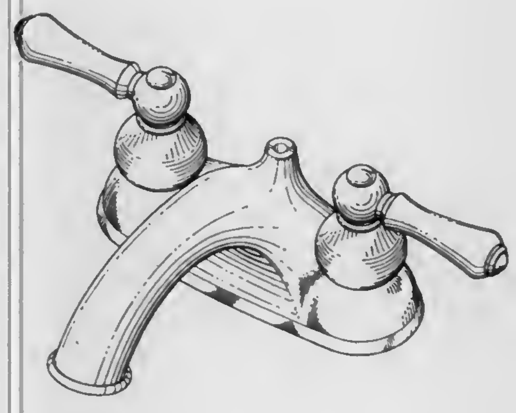
Filed Apr. 4, 1996, Ser. No. 52,688

The portion of the term of this patent subsequent to Sep. 30, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—241



403,411
FAUCET HANDLE

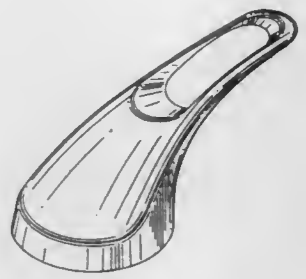
Paul P. Kolada, Bexley, Ohio, assignor to Symmons Industries, Inc., Braintree, Mass.

Filed Feb. 12, 1997, Ser. No. 72,140

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—252



403,412
PIPE AND DUCT FORMING MEMBER

Michael John McMahon, 24 Garden Avenue Uunderi, and Gregory Allan Newsome, Reserve Creek Road, Reserve Creek, both of Via Murwillumbah, New South Wales 2484, Australia

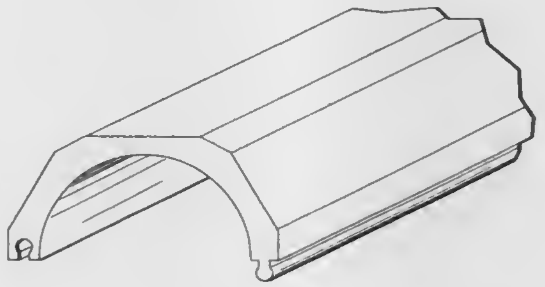
Filed Oct. 24, 1996, Ser. No. 61,495

Claims priority, application Australia, Apr. 27, 1996, 1227/96

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—266

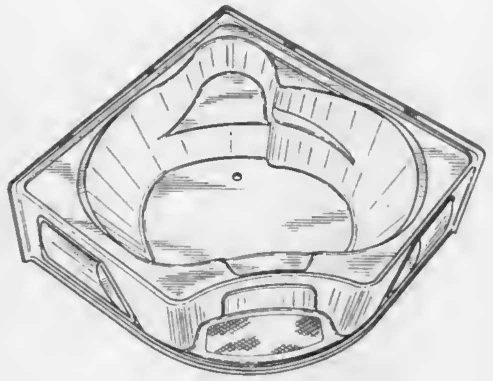


403,413
CORNER BATHTUB

Sam Richardson, III, El Dorado, Ark., assignor to Alltrista Plastics Corporation, Muncie, Ind.

Filed Jan. 31, 1997, Ser. No. 65,275
Term of patent 14 years
LOC (6) Cl. 23 - *02*

U.S. Cl. D23—280.4

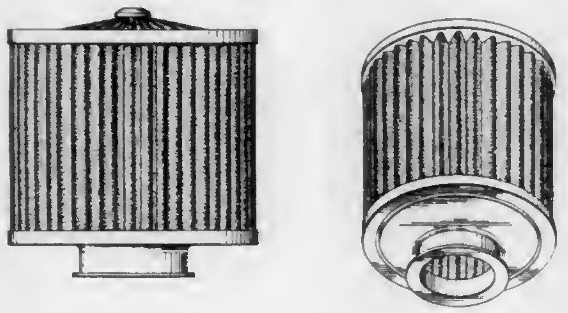


403,414
CYLINDRICAL PLEATED AIR FILTER WITH TOP AND SIDEWALL FILTERING AREAS

Nathan E. Shelton, Riverside, Calif., and Duncan Bickerton, Warrington, England, assignors to K & N Engineering, Inc., Riverside, Calif.

Filed Nov. 10, 1997, Ser. No. 79,234
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365



403,415
SHOWER UNIT

Jean-Bernard Valentin, Bourseville, France, assignor to Valentine S.A., Bourseville, France

Filed Aug. 15, 1996, Ser. No. 58,480
Term of patent 14 years
LOC (6) Cl. 23 - *02*

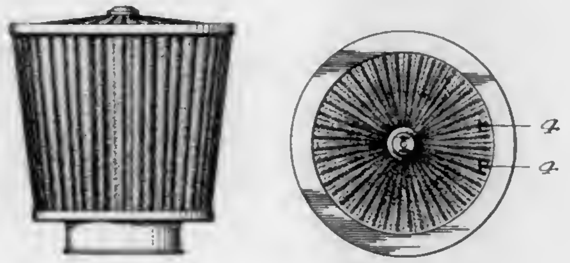
U.S. Cl. D23—304

403,416
AIR FILTER WITH TOP FILTERING AREA AND TAPERED SIDEWALL FILTERING AREA

Nathan E. Shelton, Riverside, Calif., and Duncan Bickerton, Warrington, England, assignors to K & N Engineering, Inc., Riverside, Calif.

Filed Nov. 12, 1997, Ser. No. 79,285
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365

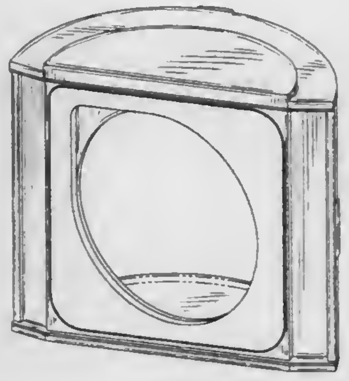


403,417
AIR FILTER HOUSING

William Rakocy, Madison, Conn., assignor to Holmes Products Corp., Milford, Mass.

Filed Jan. 2, 1998, Ser. No. 81,457
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365

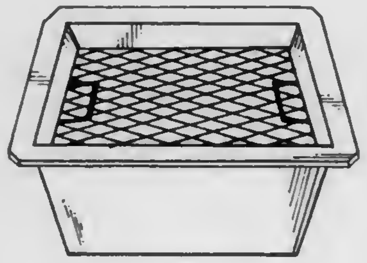


403,418
FILTER BASIN, WHICH CAN HOLD SILT-COLLECTING SOCK AND SORBENT MATERIAL

John S. Brinkman, London; Nicolo Flor, Oakville; Richard Kapuscinski, Burlington, and Harry F. Nicholson, Hamilton, all of Canada, assignors to Imbibitive Technologies Corp., Wilmington, Del.

Filed Oct. 31, 1997, Ser. No. 81,510
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—365

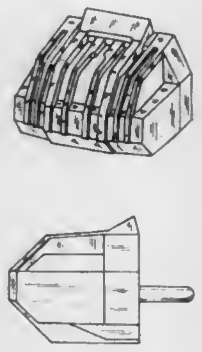


403,419
HEATED VOLATILE DISPENSER

Brian T. Davis, Burlington, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jan. 30, 1998, Ser. No. 83,303
Term of patent 14 years
LOC (6) Cl. 23 - *04*

U.S. Cl. D23—366

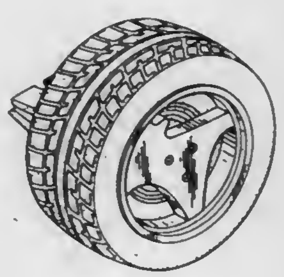


403,420
CONTAINER FOR ODORANT IN THE FORM OF A WHEEL TO BE FIXED ON THE VENTILATION GRILLE OF A CAR

Philippe Vullion, Biot, France, assignor to Philippe Vullion, S.P., France

Filed Dec. 29, 1994, Ser. No. 32,946
Term of patent 14 years

U.S. Cl. D23—367



403,421
ULTRASONIC APPLICATOR

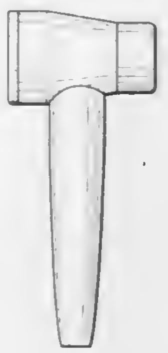
G. Lee Cody, Inola, and Kenneth W. Coffey, Tulsa, both of Okla., assignors to Rich-Mar Corporation, Inola, Okla.

Filed Mar. 29, 1995, Ser. No. 36,880

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—187



403,422
BELT FOR APPLYING BIOMAGNETIC TREATMENTS

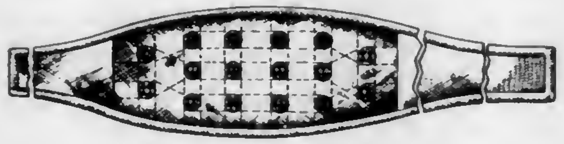
Erik Affholter, 1836 Mesa Ridge, Westlake Village, Calif. 91362

Filed Mar. 22, 1997, Ser. No. 68,259

Term of patent 14 years

LOC (6) Cl. 24 - *14*

U.S. Cl. D24—188



403,423
SPINE BOARD

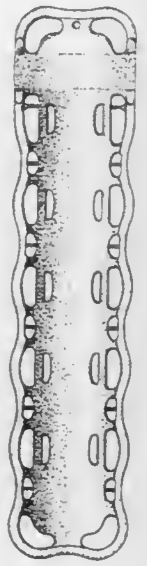
Michael Thomas Bologovsky, Millbrook; John Cline, Union Vale; Russell Ralph Mohberg, Mount Kisco, and Richard Sunderland, Hopewell Junction, all of N.Y., assignors to Laerdal Medical Corporation, Wappinger Falls, N.Y.

Filed Dec. 24, 1996, Ser. No. 64,207

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—190



403,424
SUPPORT BRACE FOR THE KNEE

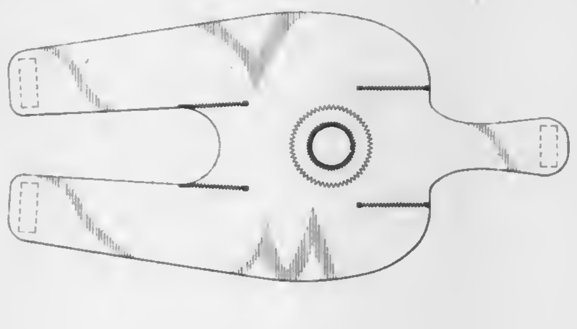
Richard A. Taylor, Cincinnati; Sherry A. Hinds, Goshen, and S. Michael Wiesemann, Cincinnati, all of Ohio, assignors to Beiersdorf AG, Unnastrasse, Germany

Filed Feb. 25, 1998, Ser. No. 84,150

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—190



403,425
SUPPORT BRACE FOR ANKLE OR WRIST

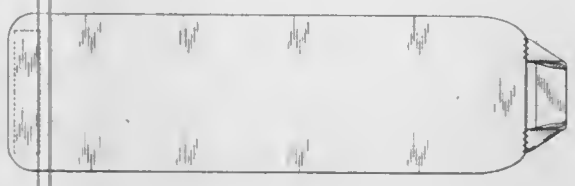
Richard A. Taylor, Cincinnati; Sherry A. Hinds, Goshen, and S. Michael Wiesemann, Cincinnati, all of Ohio, assignors to Beiersdorf AG, Unnastrasse, Germany

Filed Feb. 25, 1998, Ser. No. 84,331

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—192



403,426
THERMAL BABY BOTTLE

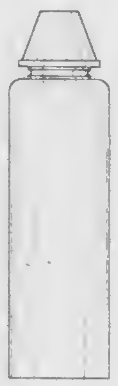
Gina Fiaschetti, 501 S. 2nd St., Steelton, Pa. 17113

Filed Jan. 29, 1998, Ser. No. 82,770

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D24—197



403,427
BABY BOTTLE HOLDER

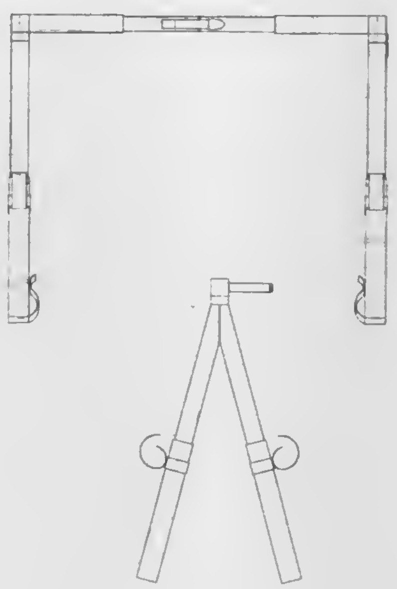
Dara Pring, 2 Ford Dr., North York, Ontario, Canada, M3N-2R3

Filed Jan. 22, 1998, Ser. No. 82,446

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—199



403,428
MASSAGER

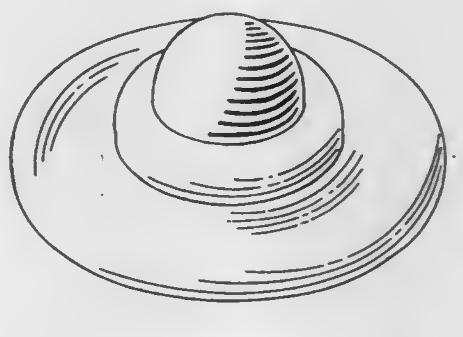
Joseph E. Russo, 300 1st Ave. #4G, New York, N.Y. 10009

Filed Nov. 5, 1997, Ser. No. 78,383

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—200



403,429
MASSAGER

Patricia Blanchard, 2341 Rindall Ave., Port Coquitlam BC, Canada, V3C 1V3

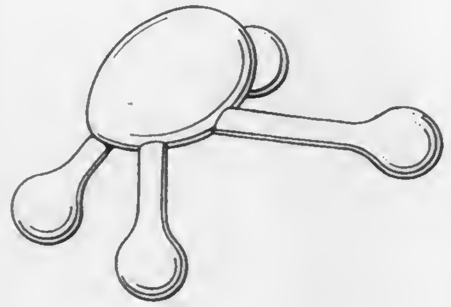
Filed Jun. 28, 1996, Ser. No. 56,434

Claims priority, application Canada, Apr. 25, 1996, 1996-0972

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—214



403,430
MASSAGER

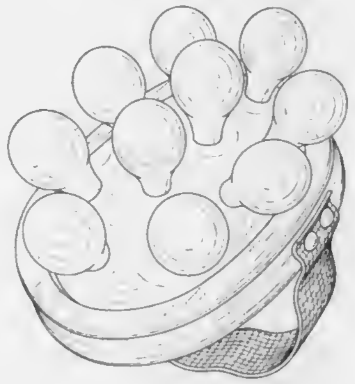
Kuo-Ching Chien, No. 7, Lane 74, Gong 5 Road, Lungtan Hsiang, Taoyuan Hsien, Taiwan

Filed May 5, 1998, Ser. No. 87,541

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D24—211



403,431
MASSAGER

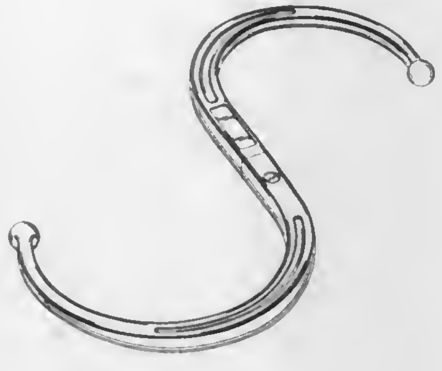
Bernard L. Gladieux, Jr., 128 Oberholtzer Rd., Gilbertsville, Pa. 19525

Filed Mar. 20, 1998, Ser. No. 85,336

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D24—215



403,432
MULTIPLE CHEMICAL REACTION WELL SHEET

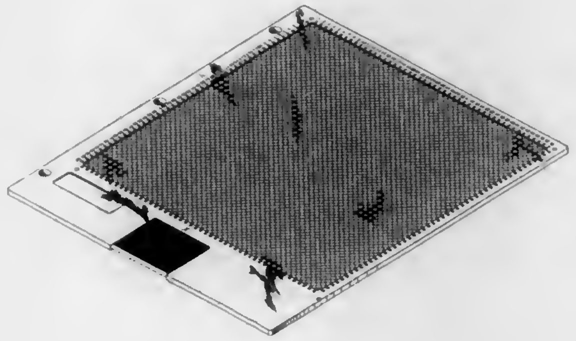
H. Mario Geysen, and Michael Green, both of Chapel Hill, N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Feb. 13, 1996, Ser. No. 50,265

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—225



403,433
STAND WITH MAGNETIC STRIP

Harald Lindén, Teatergatan 4, S-582 18 Linköping, Sweden

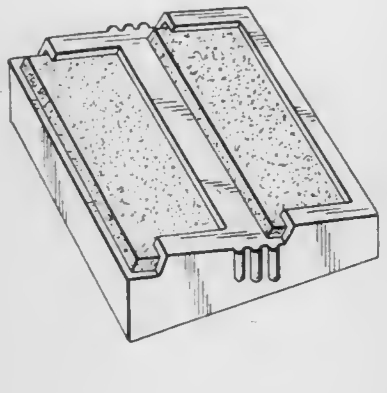
Filed Dec. 30, 1996, Ser. No. 64,371

Claims priority, application Sweden, Jul. 5, 1996, 961514

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—227



403,434
BUS SHELTER

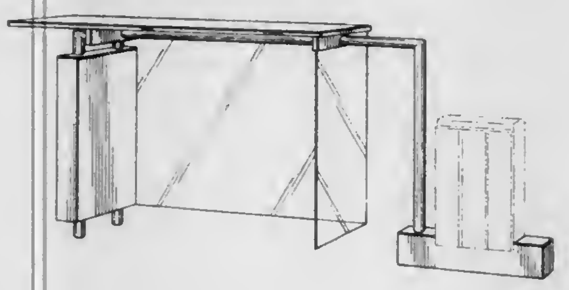
Claus Sander, Berlin, Germany, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Oct. 22, 1996, Ser. No. 49,209

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D25—1



403,435
FENCE UNIT

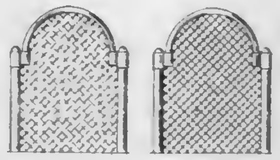
Jimmie L. Hill, Sr., Larmar Station 1458, Trezevant, Tenn. 38119, assignor to Jimmie L. Hill, Sr., Memphis, Tenn.

Filed Dec. 21, 1995, Ser. No. 48,139

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—38



403,436
BASEMENT WINDOW WELL COVER

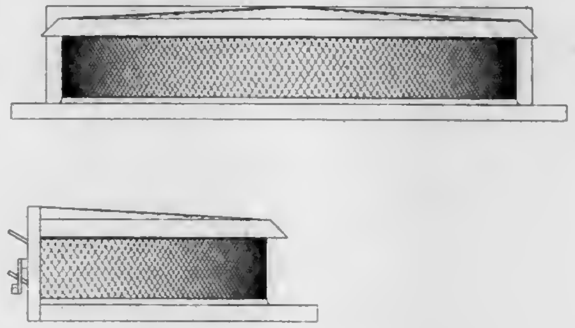
Bruce F. Gregory, 64 George St., Roslyn Heights, N.Y. 11577

Filed Nov. 19, 1997, Ser. No. 79,821

Term of patent 14 years

LOC (6) Cl. 25 - *02*

U.S. Cl. D25—54



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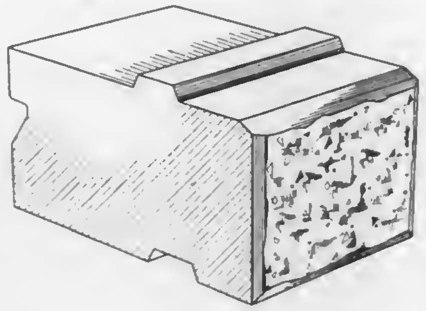
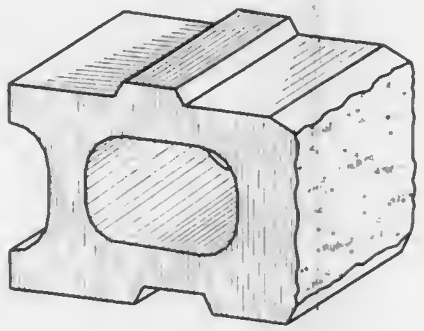
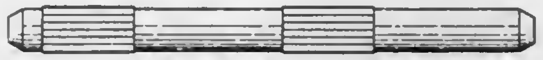
403,437
MODULAR BLOCK
Angelo Risi, and Antonio Risi, both of Richmond Hill, Canada, assignors to Rothbury International Inc., Thornhill, Canada
Filed Nov. 12, 1997, Ser. No. 79,269
Claims priority, application Canada, Jun. 3, 1997, 1997-1470
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—113



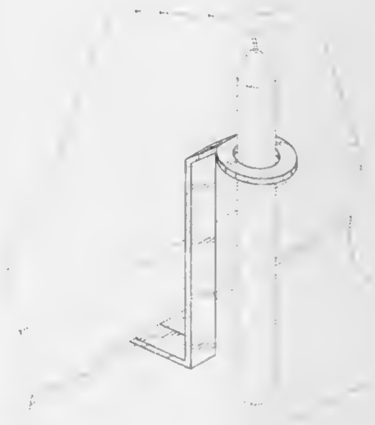
403,438
MODULAR BLOCK
Angelo Risi, and Antonio Risi, both of Richmond Hill, Canada, assignors to Rothbury International Inc., Thornhill, Canada
Filed Nov. 12, 1997, Ser. No. 79,268
Claims priority, application Canada, Jun. 3, 1997, 1997-1471
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—114



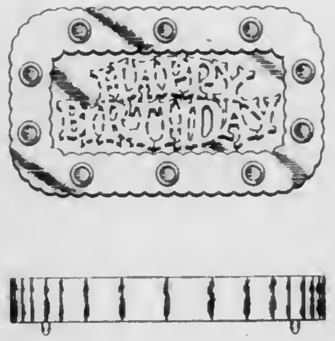
403,439
INTERSECTION PIN WINDOW COMPONENT
Brian C. Opielski, Malvern, Pa., and Jerome C. Habeck, Holt, Mich., assignors to Certainteed Corporation, Valley Forge, Pa.
Filed Jun. 28, 1996, Ser. No. 56,420
Term of patent 14 years
LOC (6) Cl. 25 - *99*
U.S. Cl. D25—199



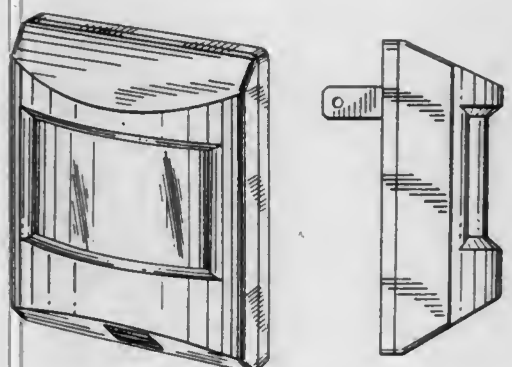
403,440
WINDOW CANDLE HOLDER
Anthony D. Holmes, and Bessie M. Holmes, both of 6705 Poplar Grove Trail, Greensboro, N.C. 27410
Filed Nov. 19, 1997, Ser. No. 79,524
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—9



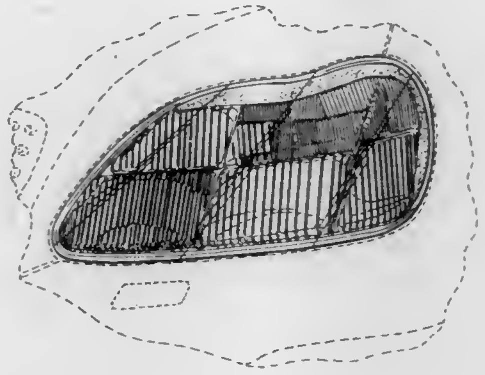
403,441
DISPLAY UNIT AND CANDLE HOLDER
John Joseph Lane, 7 Simpson Road, Wylde Green, Sutton Coldfield, B72 1EP, Great Britain
Filed Oct. 15, 1997, Ser. No. 77,943
Claims priority, application United Kingdom, Apr. 17, 1997, 2064968
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—10



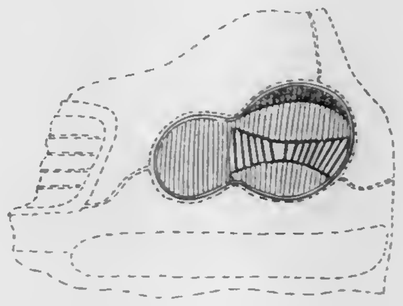
403,442
COMBINED ELECTRO LUMINESCENT LIGHT AND OUTLET
Michael S. Joss, Chicago, Ill., assignor to American Tack & Hardware Co., Inc., Monsey, N.Y.
Filed Jan. 5, 1998, Ser. No. 81,539
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26



403,443
EXTERIOR SURFACE CONFIGURATION OF A MOTOR VEHICLE FRONT LIGHT ASSEMBLY
Bruno Sacco; Harald Leschke, both of Sindelfingen, Germany; Olivier Pierre Boulay, and Anthony W. K. Lo, both of Tokyo, Japan, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Mar. 31, 1997, Ser. No. 68,761
Claims priority, application Germany, Sep. 30, 1996, 96 08 461.8
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



403,444
EXTERIOR SURFACE CONFIGURATION OF A FRONT LIGHT
Bruno Sacco, Sindelfigen, and Peter Pfeiffer, Boeblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Apr. 20, 1998, Ser. No. 86,742
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



403,445

BRAKE LIGHT

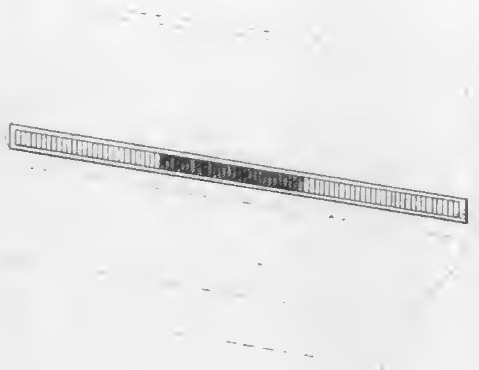
Sasha Talebi, 34 Toscany, Irvine, Calif. 92614

Filed Apr. 20, 1998, Ser. No. 86,779

Term of patent 14 years

LOC (6) Cl. 26 - *06*

U.S. Cl. D26—28



403,446

RECHARGEABLE FLASHLIGHT

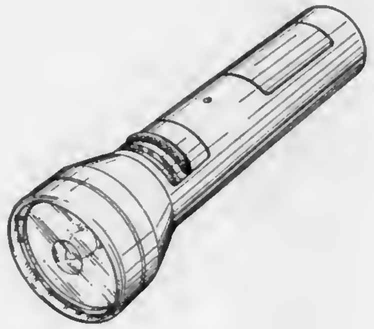
Peter F. Lynch, Skaneateles; Mark A. Ferguson, Jamesville, and David A. Furth, Skaneateles, all of N.Y., assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Filed May 24, 1996, Ser. No. 54,931

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



403,447

FLASHLIGHT

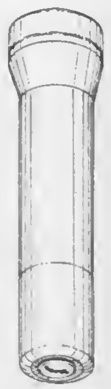
Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Oct. 24, 1997, Ser. No. 78,934

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



403,448

TREE GRATE

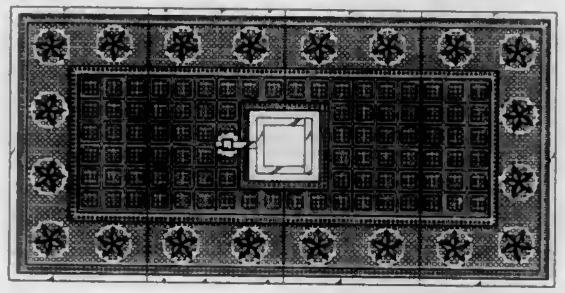
Park Olson, Seattle, Wash., assignor to Urban Accessories, Inc., Woodinville, Wash.

Filed Dec. 17, 1997, Ser. No. 80,820

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—156



403,449

COMBINED MOLDING AND MOLDING CAP

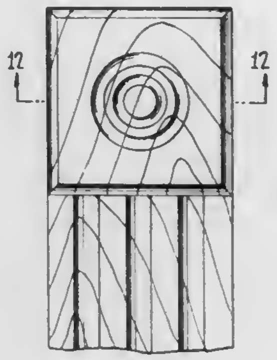
Floyd A. Searer, Elkhart, Ind., assignor to FAS Industries, Inc., Elkhart, Ind.

Filed Mar. 8, 1996, Ser. No. 51,284

Term of patent 14 years

LOC (6) Cl. 25 - *01*

U.S. Cl. D25—136



403,450

LASER POINTER

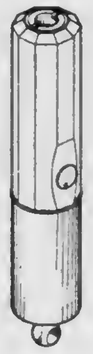
Jack Ting, Sanchung, Taiwan, assignor to OPCOM Inc., Taipei, Taiwan

Filed Nov. 24, 1997, Ser. No. 79,862

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—37



403,451

LASER POINTER

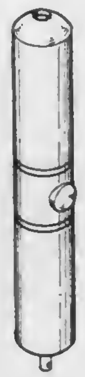
Jack Ting, Taipei, Taiwan, assignor to Opcom Inc., Taipei, Taiwan

Filed Nov. 24, 1997, Ser. No. 79,863

Term of patent 14 years

LOC (6) Cl. 20 - *02*

U.S. Cl. D26—37



403,452

EMERGENCY TOOL AND FLASHLIGHT

Tae Hyung Kim, 2-702, Sam bo Apartment, 580-4YunSun 1 dong,YunJae-Ku, Pusan, Rep. of Korea, 611-081

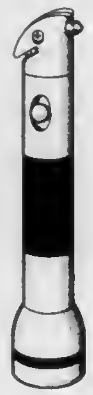
Filed Jan. 14, 1998, Ser. No. 82,075

Claims priority, application Rep. of Korea, Jul. 16, 1997, 1997-15227; Oct. 27, 1997, 1997-22724

Term of patent 14 years

LOC (6) Cl. 26 - *02*

U.S. Cl. D26—38



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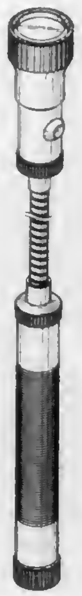
403,453

FLASHLIGHT

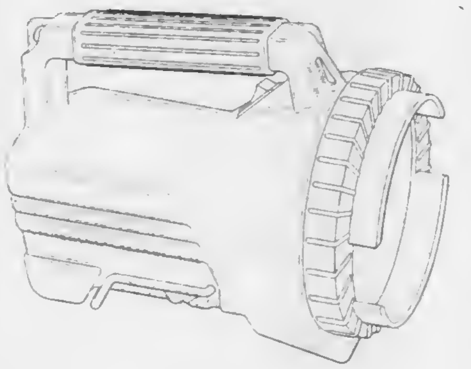
Shoei-Shuh Shiau, No. 10, Alley 1, Lane 551, Sec. 1, Wan-Shou Rd., Guei-Shan Hsiang, Tao-Yuan Hsien, Taiwan
Filed Sep. 30, 1996, Ser. No. 60,475
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



403,454

PORTABLE LIGHT

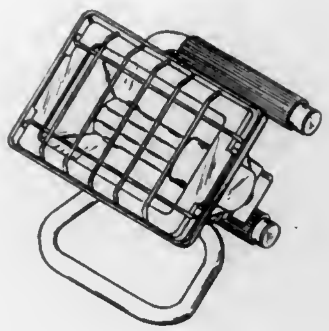
Thomas N. Zelina, Jr.; Jason Williams, both of Erie, Pa., and Charles Choi, Mount Prospect, Ill., assignors to Lectro Science, Inc., Erie, Pa.
Filed Feb. 17, 1998, Ser. No. 83,856
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—48



403,455

WORK LAMP

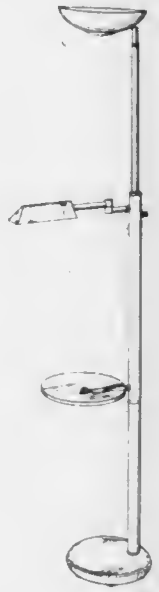
Mark Duennes, Glenview, Ill., assignor to S-B Power Tool Company, Chicago, Ill.
Filed Mar. 6, 1998, Ser. No. 84,922
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—50



403,456

COMBINED FLOOR LAMP, ADJUSTABLE READING LIGHT ON SWING ARM, AND TABLE

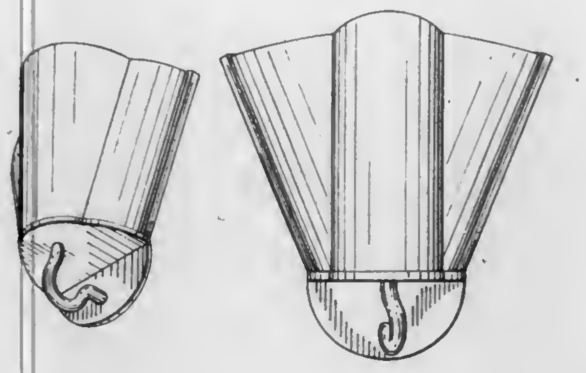
Thomas M Huang, 5649 N. Peck Rd., Arcadia, Calif. 91006
Filed Nov. 13, 1995, Ser. No. 46,764
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—58



403,457

WALL SCONCE

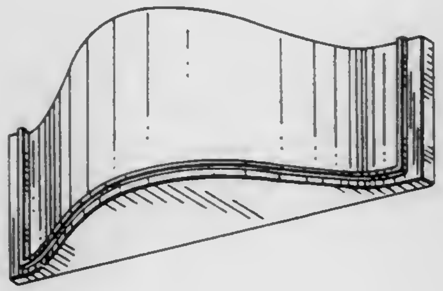
Kevin R. Walz, Via Giacito Carini, 11, 00152 Rome, Italy
Filed Jan. 15, 1998, Ser. No. 82,107
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



403,458

WALL SCONCE

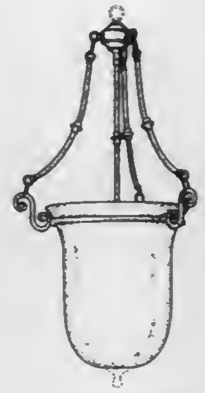
Kevin R. Walz, Via Giacinto Carini, 11, 00152 Rome, Italy
Filed Jan. 15, 1998, Ser. No. 82,119
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



403,459

CHANDELIER

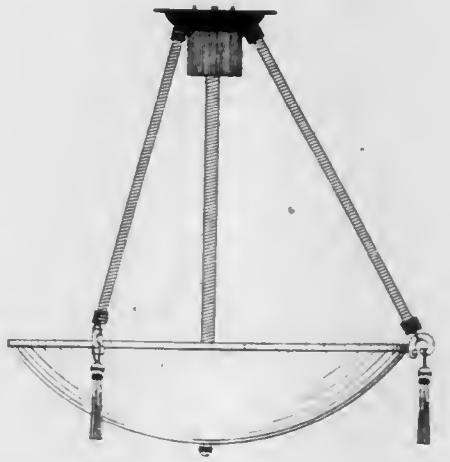
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Jan. 7, 1998, Ser. No. 81,611
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—88



403,460

LIGHTING FIXTURE

Sandra E. Littman, and Karina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, Inc., New York, N.Y.
Division of Ser. No. 72,048, Jun. 12, 1997, Pat. No. Des. 394,520, which is a division of Ser. No. 48,306, Dec. 26, 1995, Pat. No. Des. 386,282. This application Jan. 13, 1998, Ser. No. 82,027
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—90



403,461

ILLUMINATED HALLOWEEN DECORATION

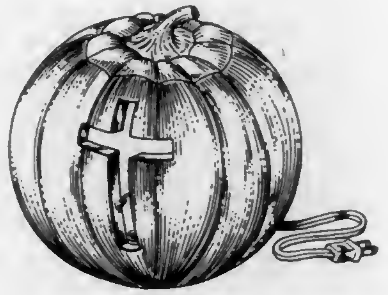
Janet L. Friedmann, 17628 Sharpsburg Ave., Baton Rouge, La. 70817

Filed Feb. 16, 1998, Ser. No. 83,832

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—101



403,462

FLOOR LAMP

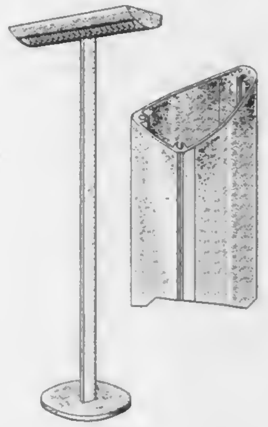
Gerard de Longcamp, Nantes, France, assignor to Radian, S.A., Bouaye, France

Filed Jul. 28, 1997, Ser. No. 75,199

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—107



403,463

LAMP SHADE

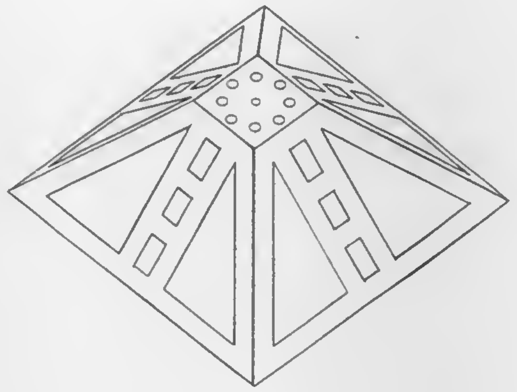
Scott Wallace, 962 Vetch Cir., Lafayette, Colo. 80026

Filed Aug. 27, 1997, Ser. No. 75,867

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—136



403,464

BACK PLATE FOR LIGHT FIXTURE

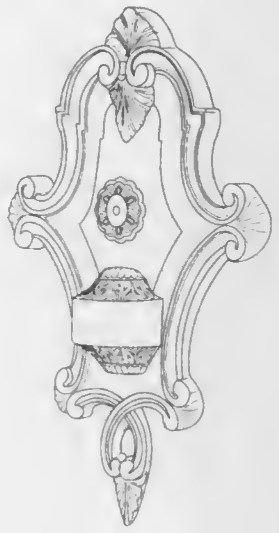
Luis Esteban Lopez Fraile, Valencia, Spain, assignor to Quorum International, Fort Worth, Tex.

Filed Jul. 9, 1997, Ser. No. 73,537

Term of patent 14 years

LOC (6) Cl. 26 - *99*

U.S. Cl. D26—142



403,465

LIGHTER

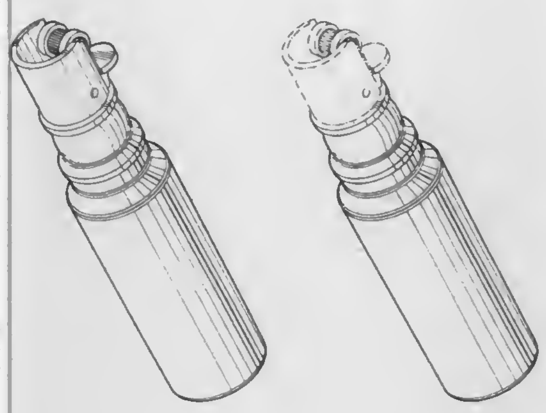
Qui Xin Zhuo, Guangdong Province, China, assignor to South East Imports Inc., Sunrise, Fla.

Filed Aug. 25, 1997, Ser. No. 75,342

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D27—156



403,466

Patent Not Issued For This Number

403,467

CIGARETTE TUBE CONTAINER

Marek S. Krawec, Richmond Hill, and Edward G.A. Simpson, Aurora, both of Canada, assignors to Rothmans, Benson & Hedges Inc., Ontario, Canada

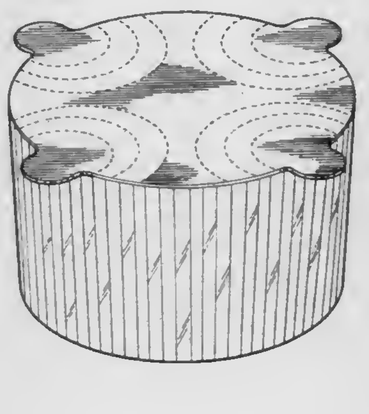
Filed Oct. 22, 1997, Ser. No. 79,142

Claims priority, application Canada, Apr. 24, 1997, 1997-1012

Term of patent 14 years

LOC (6) Cl. 27 - *06*

U.S. Cl. D27—190



403,468

BEARD TRIMMER

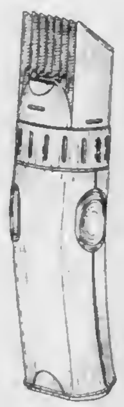
Lisa Tania Smith, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1998, Ser. No. 85,920

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—53



403,469

COSMETIC PACKAGE

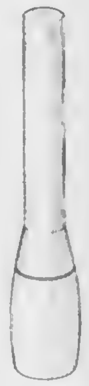
Justin Raymond Driscoll, Baltimore, Md., assignor to The Procter & Gamble Company

Filed Apr. 25, 1997, Ser. No. 70,053

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—76

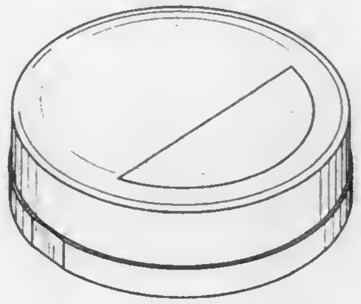


403,470
COMPACT CASE

Garfield Litton, Glenrock, and Douglas Brian Silady, Edison, both of N.J., assignors to Revlon Consumer Products corp, New York, N.Y.

Filed Oct. 20, 1997, Ser. No. 78,188
Term of patent 14 years
LOC (6) Cl. 28 - *03*

U.S. Cl. D28—82



403,471
DISHWASHER

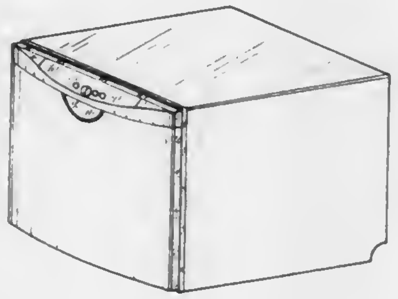
Philip John Brace, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand

Filed Jun. 6, 1997, Ser. No. 72,066

Claims priority, application New Zealand, Dec. 6, 1996, 28108

Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—2

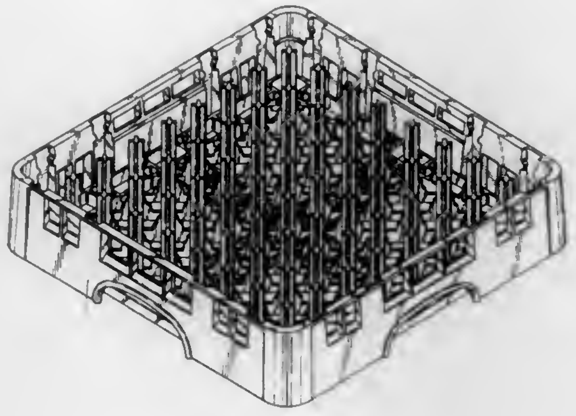


403,472
PRONGED BASE DISH RACK

John W. Goodin, Coto de Caza, and Charles W. Jarvis, Irvine, both of Calif., assignors to Cambro Manufacturing Company, Huntington Beach, Calif.

Filed Jan. 15, 1998, Ser. No. 82,129
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—3

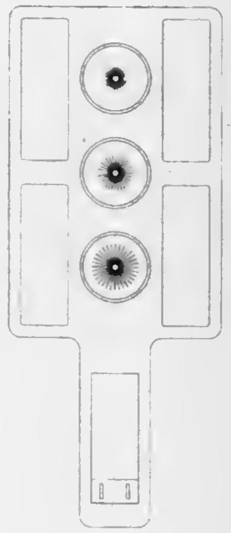


403,473
INNER/OUTER DIAMETER PIPE CLEANING SYSTEM

George F Hoppe, 270 Whipple Ave., Oakland, R.I. 02858-1019

Filed Mar. 5, 1997, Ser. No. 67,362
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—14

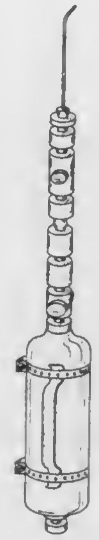


403,474
HAND HELD CO_2 SNOW CLEANER

Richard R. Zito, Tucson, Ariz., assignor to Richard R. Zito R & D Corp., Tucson, Ariz.

Filed Mar. 3, 1997, Ser. No. 67,645
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—15

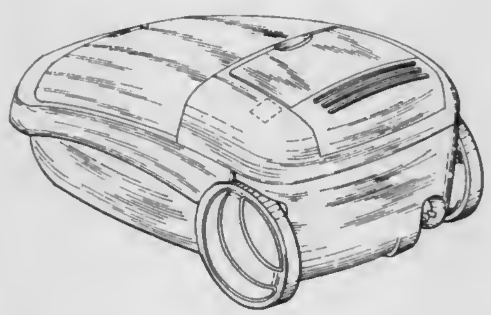


403,475
CANISTER VACUUM CLEANER

David E. Mehaffey, Danville, Ky.; Ty S. Rarick, Houston, Tex.; Toru Abe, Kawanishi, and Kazuhiro Fujita, Kobe, both of Japan, assignors to Matsushita Home Appliance Corporation of America, Danville, Ky.

Filed Jun. 16, 1997, Ser. No. 72,396
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—21

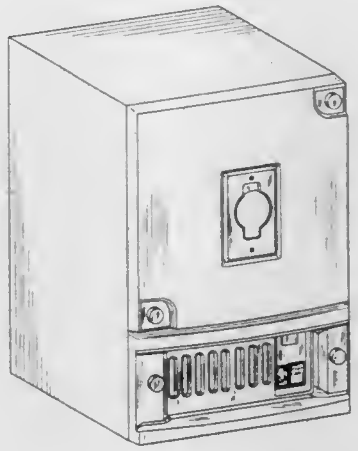


403,476
VACUUM CLEANER

James Vaughan, Johanneshov; Per-Olov Ryhr, Mellerud, and Erkki Järvelä , ÅmÅl, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jul. 1, 1997, Ser. No. 73,151
Claims priority, application Sweden, Jan. 17, 1997, 970108
Term of patent 14 years
LOC (6) Cl. 15 - *05*

U.S. Cl. D32—21

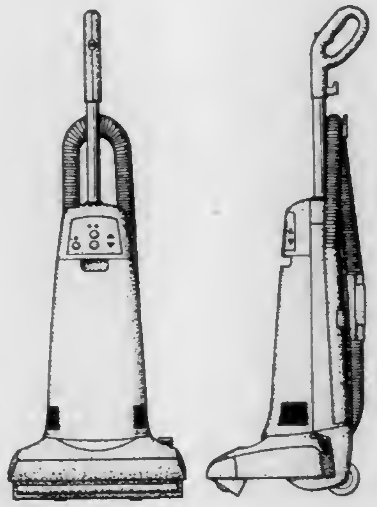


403,477
VACUUM CLEANER

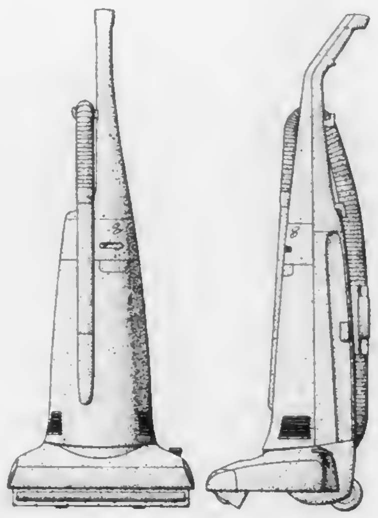
Taiji Tsujimoto, Osaka-fu, and Masafumi Yamagami, Nara-ken, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 19, 1997, Ser. No. 72,517
Claims priority, application Japan, Dec. 19, 1996, 8-38687
Term of patent 14 years
LOC (6) Cl. 15 - *05*

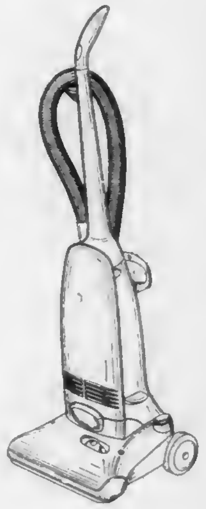
U.S. Cl. D32—22



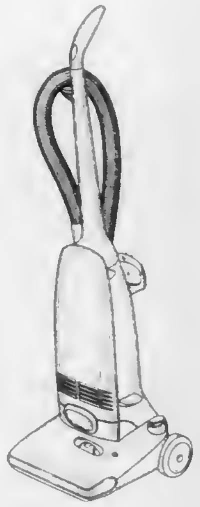
403,478
VACUUM CLEANER
Taiji Tsujimoto, Osaka-fu, and Masafumi Yamagami, Nara-ken, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 19, 1997, Ser. No. 72,588
Claims priority, application Japan, Dec. 19, 1996, 8-38686
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—22



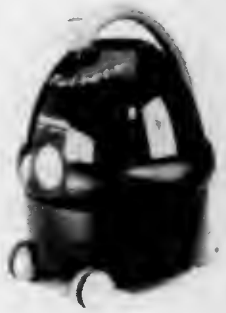
403,479
UPRIGHT VACUUM CLEANER
Markus Diebel, San Francisco, Calif., assignor to Oreck Holdings LLC, Cheyenne, Wyo.
Filed Oct. 15, 1997, Ser. No. 78,030
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—22



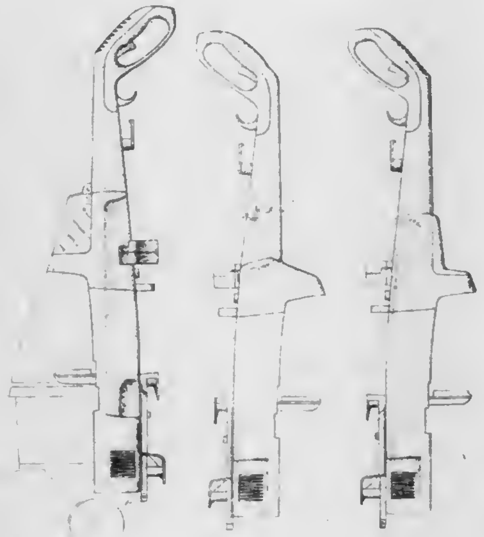
403,480
UPRIGHT VACUUM CLEANER
Markus Diebel, San Francisco, Calif., assignor to Oreck Holdings, LLC, Cheyenne, Wyo.
Filed Oct. 15, 1997, Ser. No. 78,034
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—22



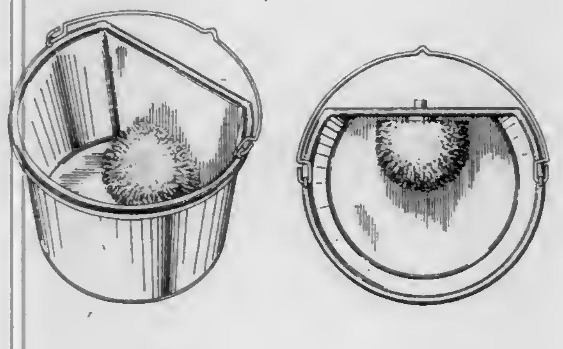
403,481
VACUUM CLEANER
Bernd Köhler, Hanau-Steinheim, Germany, assignor to Rowenta-Werke GmbH, Offenbach A.M., Germany
Filed Aug. 29, 1996, Ser. No. 58,983
Claims priority, application Germany, Feb. 29, 1996, M 96 01 934.4
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—23



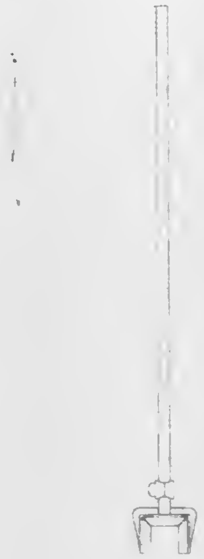
403,482
HANDLE PORTION OF AN UPRIGHT CARPET EXTRACTOR
John D. Essex, North Canton; Darwin T. McKnight, Louisville; David M. J. Allgeier, North Canton, and Kevin S. Waltz, Massillon, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed May 23, 1997, Ser. No. 71,248
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—331



403,483
NON-STACKABLE CONTAINER FOR CLEANING GOLF BALLS, AND GOLF EQUIPMENT
Thomas H. Bernatz, 2914 E. Katella Ave., Orange, Calif. 92667
Filed Nov. 21, 1997, Ser. No. 79,601
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—35



403,484
POST CLEANING TOOL
Gunter Schrader, 13 Broadmoor, Rotonda West, Fla. 33947
Filed Mar. 16, 1998, Ser. No. 85,040
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—35



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LIST OF PATENTEES

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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Hällde Maskiner: *See—*
Sundquist, Jarl, 5,852,968, Cl. 99-492.000.
AB Volvo: *See—*
Bellak, Gabor, 5,852,936, Cl. 60-534.000.
Gullner, Sven-Åke, 5,854,969, Cl. 455-68.000.
ABB Lummus Global Inc.: *See—*
Ichiki, Tatsumi; Hamashima, Nagato; Nakamura, Teiji; Asami, Masayuki; Suzuki, Sadakatsu; and Ueno, Hiroshi, 5,854,161, Cl. 502-41.000.
Abbasi, Fereidoun: *See—*
Gould, Nigel Paul; and Abbasi, Fereidoun, 5,854,300, Cl. 522-85.000.
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Casey, James M.; Bode, Suzanne L.; Zeck, Billy J.; Yamaguchi, Julie; Frail, Donald E.; Desai, Suresh M.; and Devare, Sushil G., 5,854,001, Cl. 435-7.100.
Clegg, Robert D.; Fleming, Matthew S.; Fortney, Clark E.; McAllister, Barbara J.; and Osborne, Robert S., 5,853,387, Cl. 606-67.000.
Lu, Mou-Ying Fu; Adjei, Akwete L.; and Johnson, Hillard W., 5,853,740, Cl. 424-400.000.
Abbott, Nicholas L.: *See—*
Knoesen, Andre; Yankelevich, Diego; Hamilton, Scott A; Abbott, Nicholas L.; Hill, Richard A.; and Bjorklund, Gary, 5,854,864, Cl. 385-30.000.
Abe, Kohei, to Kabushiki Kaisha Toshiba. Communication control apparatus. 5,854,791, Cl. 370-412.000.
Abe, Koichi, to Canon Kabushiki Kaisha. Terminal apparatus. 5,854,885, Cl. 395-113.000.
Abe, Naoto: *See—*
Watanabe, Kazumasa; Fujimoto, Shingo; Abe, Naoto; Yoshizawa, Hideo; Shimoda, Tsuyoshi; and Kitahara, Yohko, 5,853,934, Cl. 430-59.000.
Abe, Tetsuya: *See—*
Obara, Yuji; and Abe, Tetsuya, 5,853,898, Cl. 428-488.400.
Abe, Yoshiharu; and Sagane, Toshihiro, to Mitsui Petrochemical Industries, Ltd.; and Hoechst Aktiengesellschaft. Cycloolefin copolymer composition. 5,854,349, Cl. 525-98.000.
Abouzahr, Saad M.: *See—*
Mahmood, Mohammed; Shinedling, Michael M.; Abouzahr, Saad M.; Ehrhardt, Stuart A.; and Karolski, Dennis G., 5,853,857, Cl. 428-178.000.
Abraham, Carl J. Candle for dispersion of insect repellent based on DEET. 5,854,284, Cl. 514-511.000.
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Gunter, Charles E., 5,853,265, Cl. 405-118.000.
AC&R Components, Inc.: *See—*
Westermeyer, Gary; and Fink, Sean M., 5,852,937, Cl. 62-125.000.
Academy of Sciences of the Czech Republic, Institute of Organic Chemistry and Biochemistry of the: *See—*
Webb, Robert W., II; Bronson, Joanne J.; and Martin, John C., 5,854,228, Cl. 514-81.000.
Acceleration Software International Corporation: *See—*
Ballard, Clinton L.; and Smith, Timothy W., 5,854,941, Cl. 395-825.000.
Accrued, Inc.: *See—*
Green, John L., 5,853,263, Cl. 404-94.000.
Achelpohl, Fritz; Feldkämper, Richard; Kampschulte, Andreas; and Köhn, Uwe, to Windmöller & Hölscher. Apparatus for the transfer of flat workpieces from a first conveyor to a downstream second conveyor. 5,853,170, Cl. 271-69.000.
Ackerman, Daniel Whitney: *See—*
Gieskes, Koen A.; and Ackerman, Daniel Whitney, 5,852,869, Cl. 29-834.000.
Ackermann, Emil, to Oprel AG. Electrooptical filter cartridge and a method for manufacturing the same. 5,854,667, Cl. 349-187.000.
Ackermann, Manfred: *See—*
Schustek, Siegfried; and Ackermann, Manfred, 5,853,072, Cl. 192-42.000.
Ackerson, Michael D.; Arabshahi, Seyed-Hamid; and Babcock, Robert E., to University of Arkansas; and Advanced Refining Technologies, Inc. Petroleum-wax separation. 5,853,564, Cl. 208-33.000.
Ackley, H. Sprague: *See—*
Wright, George, IV; and Ackley, H. Sprague, 5,853,252, Cl. 400-103.000.
Acres Gaming Incorporated: *See—*
Forbes, Mark G., 5,854,542, Cl. 315-291.000.
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Straub, Julie Ann; Mathiowitz, Edith; Bernstein, Howard; Brush, Henry T.; and Wing, Richard E., 5,853,698, Cl. 424-9.520.
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  - Fukuzawa, Nobumasa, 5,854,688, Cl. 358-296.000.
  - Hanabusa, Tadashi, 5,854,648, Cl. 347-104.000.
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  - Kaneda, Nanya, 5,854,711, Cl. 359-697.000.
  - Kasiwabara, Akihiro; and Mukasa, Mitsuhiro, 5,854,965, Cl. 399-381.000.
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  - Kozaki, Shinya; Yano, Tetsuya; Mihara, Chieko; and Imamura, Takeshi, 5,854,059, Cl. 435-262.000.
  - Mikami, Fumio, 5,854,687, Cl. 358-296.000.
  - Nakazawa, Akihiko; and Okado, Kenji, 5,853,938, Cl. 430-110.000.
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  - Ohmi, Tadahiro; and Miyawaki, Mamoru, 5,854,097, Cl. 438-182.000.
  - Ohno, Manabu; Nakazawa, Akihiko; Okubo, Nobuyuki; Suzuki, Shunji; Suematsu, Hiroyuki; and Kato, Masayoshi, 5,854,365, Cl. 526-228.000.
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  - Collins, Terrence J.; and Horwitz, Colin P., 5,853,428, Cl. 8-107.000.
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  - Waibel, Alexander; Suhm, Bernhard; and McNair, Arthur, 5,855,000, Cl. 704-235.000.
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Liskowitz, John W.; Wecharatana, Methi; Jaturapitakkul, Chai; Cerkanowicz, Anthony E., deceased, 5,853,475, Cl. 106-705.000.

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Bartolone, John Brian; Penksa, Christine Marie; Santhanam, Uma; and Liang, Brian David, 5,853,742, Cl. 424-401.000.

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Reed, David E.; and Bliss, William G., 5,854,714, Cl. 360-51.000.
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Körte, Klaus, 5,853,431, Cl. 8-522.000.
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Clayton, Larry S. Hinge and window tool system. 5,852,862, Cl. 29-239.000.
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Clegg, Robert D.; Fleming, Matthew S.; Fortney, Clark E.; McAllister, Barbara J.; and Osborne, Robert S., to Abbott Laboratories. Pump with programmable hold. 5,853,387, Cl. 606-67.000.
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  - Khandros, Igor Y., 5,852,871, Cl. 29-843.000.
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  - Joshi, Vikram; Kimura, Kenichi; Paz de Araujo, Carlos A.; and Kiyokawa, Hiroshi, 5,853,889, Cl. 428-411.100.
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  - Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Peters, Michael G.; Roman, James J.; Swamy, Som S.; Wang, Wen-chou Vincent; Moresco, Larry L.; and Murase, Teruo, 5,854,534, Cl. 257-691.000.
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  - Takagi, Masahiro, 5,854,715, Cl. 360-53.000.
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  - Kido, Kenichi; Sano, Tetsuo; Sekiguchi, Yoshitaka; and Fukuda, Hiroyuki, 5,853,940, Cl. 430-110.000.
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  - Toyoshima, Hiroshi; Harada, Masashige; Nagano, Tomohiro; Nishio, Yoji; Hiraishi, Atsushi; Komiyaji, Kunihiro; Yahata, Hideharu; Fukui, Kenichi; Zushi, Hirofumi; Sonoda, Takahiro; Kawachino, Haruko; and Morita, Sadayuki, 5,854,562, Cl. 327-55.000.
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  - Gardner, Mark I.; Fulford, H. Jim; and Wristers, Derick J., 5,854,121, Cl. 438-425.000.
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  - Iwai, Norihiro; and Kasukawa, Akihiko, 5,854,090, Cl. 438-47.000.
- Furukimi, Osamu: *See—*
  - Sekita, Takashi; Yahiro, Taro; Matsuoka, Saiji; Fujimura, Toshio; Yamamoto, Takemi; Morita, Masahiko; Furukimi, Osamu; and Ueda, Arata, 5,853,659, Cl. 420-92.000.
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  - Ohno, Tsuneya; Matsuhisa, Akio; Uehara, Hirotsugu; and Eda, Soji, 5,853,998, Cl. 435-6.000.
- Fuss, Ivan: *See—*
  - Strober, Warren; Fuss, Ivan; and Neurath, Markus, 5,853,697, Cl. 424-9.200.
- Futaba Denshi Kogyo K.K.: *See—*
  - Kobori, Yoichi; Shimizu, Yukihiko; and Ueda, Kinya, 5,854,650, Cl. 347-122.000.
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  - Hallinan, Ann E.; Hansen, Donald W., Jr.; and Tsymbalov, Sofya, 5,854,251, Cl. 514-256.000.
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  - Ali, Amer F.; Gray, Kenneth P.; and Gaffaney, Daniel P., 5,853,507, Cl. 148-519.000.
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  - Matyus, Peter; Zara, Erzsebet; Farkas, Lajos; Papp, Agnes; Simay, Antal; Toldy, Lajos; Andrasi, Ferenc; Goldschmidt, Katalin; Hodula, Eszter; Mathe, Ildiko; Sutka, Klara; Fittler, Zsuzsanna; Vitkoczi, Valeria; Sebestyen, Laszlo; Sziraki, Istvan; Rusz, Marta; and Gal, Eva, 5,854,250, Cl. 514-255.000.
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  - Rissik, George Victor, 5,852,841, Cl. 15-1.700.
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- Galluzzo, Mose A. Beverage ice retaining apparatus. 5,853,106, Cl. 220-731.000.
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  - Berlin, Roger; Gates, Thomas N.; and Simon, Thomas, 5,854,267, Cl. 514-370.000.
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  - Eggert, John S.; Eggert, Michael S.; and Vallejo, Phillip, 5,853,292, Cl. 434-262.000.
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  - Knoll, Konrad; and Gausepohl, Hermann, 5,854,353, Cl. 525-314.000.
- Gausman, Harold W.: *See—*
  - Yokoyama, Henry; and Gausman, Harold W., 5,854,178, Cl. 504-326.000.
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  - Gavlin, Gilbert; and Goltsin, Boris, 5,853,458, Cl. 95-231.000.
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  - Schoeppel, Wolfgang G.; and Gayk, Oliver, 5,854,330, Cl. 524-495.000.
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  - Seaton, William Ernest; Fanning, Mark Joseph; Drager, Craig; Robinson, Ron; Morris, Roger James; Gayral, Jean-Pierre Bernard; and Gerst, JoAnne T., 5,853,667, Cl. 422-65.000.
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  - Kinghorn, Anthony Miles, 5,854,607, Cl. 343-853.000.
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  - Wydra, Neal E.; and Geick, David W., Jr., 5,853,178, Cl. 277-636.000.
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  - Kundu, Sourav K.; and Geiselman, Ted S., 5,854,076, Cl. 436-69.000.
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  - Arkles, Barry C.; Berry, Donald H.; and Figge, Lisa Kiernan, 5,853,808, Cl. 427-377.000.
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- Gellert, Jobst Ulrich. Nozzle retaining apparatus. 5,853,777, Cl. 425-549.000.
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  - Berman, Phillip W.; Capon, Daniel J.; and Lasky, Laurence A., 5,853,978, Cl. 435-5.000.
  - Cunningham, Brian C.; and Wells, James A., 5,854,026, Cl. 435-69.400.
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  - Chalek, Carl Lawrence; Leue, William Macomber; and Hatfield, William Thomas, 5,853,367, Cl. 600-437.000.
  - Graham, Eric J.; Rosen, Louis A.; Goldman, Ira; Berliner, Jeffrey Scott; Collins, Thomas D.; and Walker, Clarence W., 5,854,445, Cl. 174-99.00B.
  - Lorraine, Peter William; and Smith, Lowell Scott, 5,852,860, Cl. 29-25.350.
  - Miller, Frederick Martin; Walker, Roger Clayton; Glynn, Christopher Charles; and Hemsworth, Martin C., 5,853,285, Cl. 416-96.00R.
  - Plis, Mark J.; and Elmore, David D., 5,854,995, Cl. 702-72.000.
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- General Mills, Inc.: *See—*
  - Zoss, Robert A., 5,853,836, Cl. 428-40.100.
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  - McHugh, John Joseph; and Tibbetts, Gary George, 5,853,865, Cl. 428-297.400.
  - Sharma, Ram A., 5,853,560, Cl. 205-405.000.
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  - Deetz, Jeffrey S.; Germain, Bonnie; Hubbard, Brian; Shi, Lei; Spitznagel, Thomas; and Winters, Dwight, 5,853,714, Cl. 424-85.200.
  - Yang, Yu-Chung; Bennett, Frances K.; and Paul, Stephan R., 5,854,028, Cl. 435-69.520.
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  - Molin, Søren; Andersson, Poul Kirketerp; Gerdes, Kenn Axø; and Klemm, Per, 5,853,718, Cl. 424-93.200.
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  - Arnold, Lyle J., Jr.; Reynolds, Mark A.; Schwartz, David A.; and Daily, William J., 5,854,410, Cl. 536-23.100.
- Gentile, Frank T.: *See—*
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- Gerhardt, Robert: *See—*
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- Germain, Bonnie: *See—*
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- Geurts, Werner Gustaaf Theresia: *See—*
  - Van Praet, Johan Roland; Lanneer, Dirk; Geurts, Werner Gustaaf Theresia; and Goossens, Gert Lodewijk Huibrecht, 5,854,929, Cl. 395-705.000.
- Gho, Joseph Gock: *See—*
  - Garcia, Rodrigo A.; and Gho, Joseph Gock, 5,854,304, Cl. 523-124.000.
- Gia, Son M.: *See—*
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Rizkalla, Nabil; Klein, Rita; and Milne, Stephen Bruce, 5,854,167, Cl. 502-216.000.

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Molin, Søren; Andersson, Poul Kirketerp; Gerdes, Kenn Axø; and Klemm, Per, 5,853,718, Cl. 424-93.200.

Kleppestø, Harald; Olsbu, Øyvind; Huse, Erling; and Myklebust, Erling, to Den Norske Stats Oljeselskap A.S. Apparatus for storing ropes or the like. 5,853,134, Cl. 242-360.000.

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Haraldsson, N. Ulf A.; Huovila, Jyrki M.; Klerelid, Ingvar B. E.; and Törnefalk, Louise M., 5,853,545, Cl. 162-343.000.

Klimmek, Helmut: *See—*

Krause, Frank; and Klimmek, Helmut, 5,854,191, Cl. 510-276.000.

Krause, Frank; and Klimmek, Helmut, 5,854,321, Cl. 524-58.000.

Klingenstein, Werner M.: *See—*

Krautschneider, Wolfgang H.; and Klingenstein, Werner M., 5,854,112, Cl. 438-294.000.

Klippstein, Achim, to Air Products and Chemicals, Inc. Aqueous hardeners for epoxy resin systems. 5,854,312, Cl. 523-404.000.

Klopfer, Mike: *See—*

Ramachandran, Ram; Su, Sherwin; Klopfer, Mike; and Goff, Donald B., 5,854,890, Cl. 395-187.010.

Kluender, Harold Clinton Eugene; Benz, Guenter Hans Herbert Heinz; Bullock, William Harrison; Dixon, Brian Richard; VanZandt, Michael Christopher; Wilhelm, Scott McClelland; Wolanin, Donald John; Wood, Jill Elizabeth; and Brittelli, David Ross, to Bayer Corporation. Thiophenebutanoic acid derivatives as matrix metalloprotease inhibitors. 5,854,277, Cl. 514-448.000.

Klug, Thomas L., to Immuna Care Corporation. Method of detecting estrogen-sensitive pathologies. 5,854,009, Cl. 435-7.930.

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Cheng, Chieh-Min; and Kmiecik-Lawrynowicz, Grazyna E., 5,853,943, Cl. 430-137.000.

Knauss, Bryan M.: *See—*

Chambers, John S.; Knauss, Bryan M.; Yuh, Huoy-Jen; and Cosgrove, Robert T., 5,853,813, Cl. 427-430.100.

Knepper, Carl L.: *See—*

Oas, David C.; Knepper, Carl L.; Meiring, David P.; and Bright, Timothy L., 5,853,775, Cl. 425-145.000.

Kneubuhler, Thomas R., to Menziken Automation, Inc. Vibrating feeder bowl with annular rotating disk feeder. 5,853,078, Cl. 985-391.000.

Knipe, Richard E., Jr.; Jacob, Savarimuthu M.; and Mancini, Thomas, to DALCO Industries, Ltd. Water-based flushing for paints and other coatings. 5,854,190, Cl. 510-241.000.

Knoesen, Andre; Yankelevich, Diego; Hamilton, Scott A; Abbott, Nicholas L.; Hill, Richard A.; and Bjorklund, Gary, to University of California, The Regents of the; and Optical Networks, Incorporated. In-line polymeric construct for modulators, filters, switches and other electro-optic devices. 5,854,864, Cl. 385-30.000.

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Armitage, Bernard John; and Leslie, Bruce William, 5,854,257, Cl. 514-300.000.

Knoll, Konrad; and Gausepohl, Hermann, to BASF Aktiengesellschaft. Thermoplastic molding compound. 5,854,353, Cl. 525-314.000.

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Walter, Manfred; Knoll, Konrad; Schneider, Michael; and Wassmer, Karl-Heinz, 5,854,297, Cl. 521-146.000.

Knollman, Dieter J.H., to Lucent Technologies Inc. Transformerless digital-line battery feed circuit. 5,854,550, Cl. 320-127.000.

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Kamiya, Yukihiro; Nomoto, Shinichi; and Kobayashi, Hideo, 5,854,612, Cl. 342-383.000.

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Kobayashi, Kiyoshi: *See—*

Suga, Yasushi; Nakajima, Kenji; Kobayashi, Kiyoshi; Nawano, Takashi; and Itoh, Hidetomo, 5,853,801, Cl. 427-164.000.

Kobayashi, Koji: *See—*

Matsuyama, Aya; Kuramata, Rumi; Kobayashi, Koji; Miura, Yuuichi; Hirose, Naoya; Sasahara, Toshihiko; and Kai, Katsumi, 5,852,984, Cl. 114-222.000.

Kobayashi, Masayoshi: *See—*

Ito, Tsuyoshi; Ito, Tetsuro; and Kobayashi, Masayoshi, 5,853,079, Cl. 198-395.000.

Kobayashi, Masazumi; Kohara, Takeshi; Nagatani, Haruo; and Fukumura, Yoshikazu, to NTN Corporation. Power transmission device and constant velocity universal joint therefor. 5,853,328, Cl. 464-145.000.

Kobayashi, Shigetada, to Canon Kabushiki Kaisha. Image filing apparatus having a character recognition function. 5,854,860, Cl. 382-305.000.

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Gotoh, Shinichiro; Kobayashi, Takeshi; Ohnuma, Shujiro; and Ishizaki, Tatsuya, 5,854,537, Cl. 315-82.000.

Kobayashi, Toshiyuki: *See—*

Obata, Takao; Kumagai, Mitsuaki; Iura, Akihiko; Murata, Akio; Yamamoto, Shinji; Sato, Makoto; Okawado, Akira; Tsurumaru, Shinichiro; Miyata, Maki; Kobayashi, Toshiyuki; Akasawa, Nobuaki; Okano, Masahiko; and Miyanaga, Takao, 5,854,737, Cl. 361-686.000.

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Nagayama, Katsuhiro; Fujimaki, Masami; Takano, Shigeru; Matsumoto, Taiji; Ono, Tomoshige; Nagashima, Yukio; Masui, Syohei; Funakoshi, Satoru; Kobayashi, Yuji; Yoshitake, Hiroyuki; and Sunada, Mitsuaki, 5,854,149, Cl. 442-394.000.

Kobe Steel Europe Limited: *See—*

Buhaenko, David; Ellis, Peter John; Southworth, Paul; and Beer, Carolyn Elizabeth, 5,854,495, Cl. 257-77.000.

Kobori, Yoichi; Shimizu, Yukihiko; and Ueda, Kinya, to Futaba Denshi Kogyo K.K. Field emission print head. 5,854,650, Cl. 347-122.000.

Kobrehel, Gabrijela: *See—*

Kujundžić, Nedjeljko; Pavlović, Dina; Kobrehel, Gabrijela; Lazarevski, Gorjana; and Kelnerić, Željko, 5,854,219, Cl. 514-29.000.

Kochanski, Gregory Peter, to Lucent Technologies Inc. System and method for subtracting reflection images from a display screen. 5,854,661, Cl. 348-602.000.

Kocis, Thomas J.; Larson, Mark; Morrison, Charles W.; and Smith, Stephen K., to Dell U.S.A., L.P. Telephone customer support utility. 5,854,828, Cl. 379-93.310.

Kodama, Kunihiko; and Momota, Makoto, to Fuji Photo Film Co., Ltd. Method of synthesizing polyphenol compound and positive working photoresist composition comprising polyphenol compound. 5,853,949, Cl. 430-191.000.

Kodama, Kunio: *See—*

Motooka, Toshiyuki; Takahashi, Syuichirou; Matsuda, Tatsuharu; Kodama, Kunio; and Fujimori, Jouji, 5,854,558, Cl. 324-754.000.

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- Dalbøge, Henrik; Christgau, Stephan; Andersen, Lene Nonboe; Kofod, Lene Venke; Kauppinen, Markus Sakari; Nielsen, Jack Bech; and Dambmann, Claus, 5,854,050, Cl. 435-219.000.

Kogure, Masao: *See—*
- Takano, Akihiko; Morio, Sadakazu; Kogure, Masao; and Saitoh, Takanori, 5,853,876, Cl. 428-352.000.

Kogure, Naochika: *See—*
- Hirosawa, Kuninori; Ishihara, Yoshihisa; Aoki, Takeshi; Terui, Yasushi; Shimojo, Yoshinori; Gokuraku, Hiroyuki; and Kogure, Naochika, 5,854,294, Cl. 521-79.000.

Kohara, Hidekatsu: *See—*
- Sawano, Atsushi; Mizuta, Junichi; Doi, Kousuke; Kohara, Hidekatsu; and Nakayama, Toshimasa, 5,853,948, Cl. 430-166.000.

Kohara, Takeshi: *See—*
- Kobayashi, Masazumi; Kohara, Takeshi; Nagatani, Haruo; and Fukumura, Yoshikazu, 5,853,328, Cl. 464-145.000.

Kohler Co.: *See—*
- Husting, Thomas J., 5,852,837, Cl. 4-607.000.
- Steinhardt, Michael D.; Fiumefreddo, John A.; and Kurth, Michael J., 5,852,835, Cl. 4-541.600.

Kohli, Jeffrey T.; and Laborde, Pascale, to Corning Incorporated. Glasses for display panels. 5,854,152, Cl. 501-70.000.

Kohli, Jeffrey T., to Corning Incorporated. Glasses for display panels. 5,854,153, Cl. 501-70.000.

Köhn, Uwe: *See—*
- Achelpohl, Fritz; Feldkämper, Richard; Kampschulte, Andreas; and Köhn, Uwe, 5,853,170, Cl. 271-69.000.

Kohno, Hiroyuki; Nakamura, Yasuyuki; and Miki, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Current source for rapid switching and reduced oscillatory transients. 5,854,569, Cl. 327-543.000.

Kohno, Tatsuoki; Kanda, Motoya; and Tsuruta, Shinji, to Kabushiki Kaisha Toshiba. Hydrogen-absorbing alloy, electrode and alkaline secondary battery. 5,853,919, Cl. 429-223.000.

Koide, Masakazu: *See—*
- Takeuchi, Isamu; Yamanaka, Akihiro; Okamura, Kazuo; Simizu, Hiroyasu; Kanazawa, Takasi; Kumakura, Seiji; Koide, Masakazu; Murakami, Toshihiko; and Watanabe, Tadao, 5,853,043, Cl. 164-476.000.

Koike, Shoji; Haruta, Masahiro; and Yamamoto, Tomoya, to Canon Kabushiki Kaisha. Ink-jet printing cloth and ink-jet printing process. 5,854,649, Cl. 347-106.000.

Koike, Shoji: *See—*
- Takahashi, Kazuyoshi; and Koike, Shoji, 5,854,642, Cl. 347-40.000.

Koizumi, Junji; Mizutani, Haruyasu; and Shichida, Yoshiaki, to Toyoda Gosei Co., Ltd. Polyolefin elastomer composition. 5,854,328, Cl. 524-451.000.

Kojima, Eiichi: *See—*
- Watanabe, Toshiya; Kojima, Eiichi; Norimoto, Keiichiro; Kimura, Tamon; Machida, Mitsuyoshi; Hayakawa, Makoto; Kitamura, Atsushi; Chikuni, Makoto; Saeki, Yoshimitsu; Kuga, Tatsuhiko; and Nakashima, Yasushi, 5,853,866, Cl. 428-312.800.

Kojima, Naoya: *See—*
- Tsuji, Shuichi; Kurosawa, Nobuyuki; Hamamoto, Toshiro; Lee, Young-Choon; Nakaoka, Takashi; and Kojima, Naoya, 5,854,042, Cl. 435-193.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
- Kamiya, Yukihiro; Nomoto, Shinichi; and Kobayashi, Hideo, 5,854,612, Cl. 342-383.000.

Kollmann, Harald: *See—*
- Castor, Jürgen; Kollmann, Harald; and Jansen, Knut, 5,853,841, Cl. 428-99.000.

Kolter, Magnus: *See—*
- Beneking, Claus; Kubon, Marcus; and Kolter, Magnus, 5,853,498, Cl. 136-258.000.

Komatsu Electronic Metals Co., Ltd.: *See—*
- Kubota, Toshimichi; Kotooka, Toshiro; and Kamogawa, Makoto, 5,853,480, Cl. 117-217.000.

Komatsu, Toru; and Nakamura, Masatoshi, to Murakami Corporation. Anti-fog element. 5,854,708, Cl. 359-512.000.

Komatsu, Toshiyuki: *See—*
- Tatsuoka, Masahiko; and Komatsu, Toshiyuki, 5,854,446, Cl. 177-17.000.

Komatsubara, Michiro; Senda, Kunihiro; Suzuki, Takafumi; Toda, Hiroaki; and Yamaguchi, Hiroi, to Kawasaki Steel Corporation. Grain-oriented electrical steel sheet and method of manufacturing the same. 5,853,499, Cl. 148-113.000.

Komatsuda, Takashi: *See—*
- Kato, Hiroaki; Shimasaki, Yuichi; Komatsuda, Takashi; Aoki, Takuya; Muramatsu, Hiroaki; Uto, Hajime; and Ichitani, Toshiaki, 5,852,929, Cl. 60-274.000.

Komiya, Kenichi: *See—*
- Tanimoto, Koji; Komiya, Kenichi; and Ide, Naoaki, 5,854,958, Cl. 399-49.000.

Komiyaji, Kunihiro: *See—*
- Toyoshima, Hiroshi; Harada, Masashige; Nagano, Tomohiro; Nishio, Yoji; Hiraishi, Atsushi; Komiyaji, Kunihiro; Yahata, Hideharu; Fukui, Kenichi; Zushi, Hirofumi; Sonoda, Takahiro; Kawachino, Haruko; and Morita, Sadayuki, 5,854,562, Cl. 327-55.000.

Komoda, Osamu: *See—*
- Helmfrid, Sten; Ito, Kenchi; Tatsuno, Kimio; Kawamoto, Kazumi; Andou, Tetsuo; Momiji, Hiroshi; Komoda, Osamu; Kurosawa, Hisao; Sato, Masayoshi; Nitanda, Fumio; and Ito, Kohei, 5,854,870, Cl. 385-122.000:

Kompalik, Dieter: *See—*
- Heine, Michael; and Kompalik, Dieter, 5,853,429, Cl. 8-115.540.

Konapelsky, Richard S.: *See—*
- Wojtowicz, John; and Konapelsky, Richard S., 5,854,610, Cl. 342-372.000.

Konda, Kazumoto; Watanabe, Kunihiko; Sekimori, Toshiyuki; and Fukao, Yasuyoshi, to Sumitomo Wiring Systems, Ltd. Breaker device. 5,854,580, Cl. 335-132.000.

Kondo, Hidetoshi; and Sakuma, Atsushi, to Dow Corning Toray Silicone Co., Ltd. Water repellent agent for glass. 5,853,896, Cl. 428-429.000.

Kondo, Hirosato: *See—*
- Wong, Chi-Huey; and Kondo, Hirosato, 5,854,391, Cl. 530-345.000.

Kondo, Katsumi: *See—*
- Aratani, Sukekazu; Kondo, Katsumi; and Ohara, Shuichi, 5,854,139, Cl. 438-780.000.
- Ota, Masuyuki; Kondo, Katsumi; and Oh-e, Masahito, 5,854,616, Cl. 345-100.000.

Kondo, Kazuhiro: *See—*
- Kondo, Motohiro; Aono, Toshiya; Segawa, Masaya; Yamanishi, Koichi; Kondo, Kazuhiro; and Taya, Keiko, 5,853,981, Cl. 435-5.000.

Kondo, Motohiro; Aono, Toshiya; Segawa, Masaya; Yamanishi, Koichi; Kondo, Kazuhiro; and Taya, Keiko, to Toyo Boseki Kabushiki Kaisha. Oligonucleotides, methods and kits for amplifying and detecting a nucleic acid of cytomegalovirus (CMV) using nucleic acid sequence β2.7. 5,853,981, Cl. 435-5.000.

Kondo, Takayuki: *See—*
- Kumabe, Kiyoshi; Yanaka, Hiroyuki; Kondo, Takayuki; and Shirai, Jun, 5,853,761, Cl. 424-484.000.

Kondo, Toshiro; Oko, Makiko; Araki, Yutaka; and Fujioka, Hajime, to Mitsubishi Paper Mills Limited. Process for making lithographic printing plate. 5,853,950, Cl. 430-204.000.

Kondoh, Akihiro, to Sharp Kabushiki Kaisha. Electrophotographic photoconductors using bisazo compounds. 5,853,930, Cl. 430-58.000.

Kondou, Takeshi: *See—*
- Nakata, Yukio; Matsui, Susumu; Takahashi, Yasuhiro; Kondou, Takeshi; and Otsu, Yutaka, 5,854,841, Cl. 380-49.000.

Koneda, Phillip: *See—*
- Eggert, Ulrich; Koneda, Phillip; and Tibbles, Thomas Theodore, 5,853,343, Cl. 475-210.000.

Konica Corporation: *See—*
- Taguchi, Masaaki, 5,853,956, Cl. 430-491.000.
- Watanabe, Kazumasa; Fujimoto, Shingo; Abe, Naoto; Yoshizawa, Hideo; Shimoda, Tsuyoshi; and Kitahara, Yohko, 5,853,934, Cl. 430-59.000.

Koninklijke Emballage Industrie Van Leer B.V.: *See—*
- Kars, Herman P., 5,853,100, Cl. 220-254.000.

Konishi, Kuniyoshi; and Shiba, Toshifumi, to Kabushiki Kaisha Toshiba. Network connection apparatus. 5,854,792, Cl. 370-428.000.

Konishi, Tetsuya: *See—*
- Ogasawara, Kazuharu; Kato, Tomio; Okuda, Norikazu; Konishi, Tetsuya; and Kato, Kenji, 5,853,693, Cl. 423-588.000.

Konno, Ichiro: *See—*
- Niihara, Katsuhisa; Miyazaki, Koichi; Gunji, Yoshinori; Konno, Ichiro; and Shiomi, Yuji, 5,854,940, Cl. 395-825.000.

Kono, Koichi; and Takita, Kotaro, to Tonen Chemical Corporation. Method of producing microporous thermoplastic resin membrane. 5,853,633, Cl. 264-54.000.

Konuma, Satoshi: *See—*
- Inuzuka, Tatsuhiro; Mano, Hiroyuki; Fujisawa, Kazuhiro; Konuma, Satoshi; Kinugawa, Kiyoshige; and Tsunekawa, Satoru, 5,854,879, Cl. 345-89.000.

Kool, Dennis J.: *See—*
- Kuennen, Roy W.; Dykhouse, Robin M.; Kool, Dennis J.; Markham, Ronald C.; Pippel, Bradley J.; Kidd, Dennis E.; and Tiede, Merlin G., 5,853,572, Cl. 210-87.000.

Koponen, Ismo; Rintasalo, Iimari; Vainio, Jari; and Kaihovirta, Juha, to Valmet Corporation. Dryer section in a paper or board machine including an arrangement for cutting at least one of a leader of a web. 5,852,963, Cl. 83-53.000.

Kordis, Thomas F.: *See—*
- Whayne, James G.; Kordis, Thomas F.; Fleischman, Sidney D.; Panescu, Dorin; Swanson, David K.; Owens, Patrick M.; Jackson, Jerome; Thompson, Russell B.; and McGee, David, 5,853,411, Cl. 606-41.000.

Kordower, Jeffrey H.: *See—*
- Emerich, Dwaine F.; Aebischer, Patrick; and Kordower, Jeffrey H., 5,853,385, Cl. 604-49.000.

Korea Institute of Science and Technology: *See—*
- Oh, Myung Hwan; Lee, Yun Hi; Ju, Byeong Kwon; and Song, Man Ho, 5,853,795, Cl. 427-64.000.

Korea Telecom: *See—*
- Lee, Sang-Hwan; Moon, Jong-Tae; Song, Min-Kyu; Hwang, Nam; and Park, Seong-Su, 5,854,867, Cl. 385-49.000.

Korean Accelerator & Plasma Research Association: *See—*
- Chung, Kie-hyung; Yun, Kil-ju; Kim, Sang-young; and Kim, Tae-Young, 5,853,521, Cl. 156-345.000.

Körte, Klaus, to Clariant Finance (BVI) Limited. 1:2 Chromium complexes, their production and use. 5,853,431, Cl. 8-522.000.

Kosaki, Katsuya: *See—*
- Tamaki, Masahiro; and Kosaki, Katsuya, 5,853,559, Cl. 205-157.000.

Koshida, Yoshinori: *See—*
- Mori, Tohru; Yoshizawa, Seiji; Koshida, Yoshinori; Tanabe, Shusaku; Suto, Sinichi; and Hamasaki, Satoshi, 5,854,581, Cl. 235-379.000.

Koskan, Larry P.; Meah, Abdul Rehman Y.; Sanders, J. Larry; and Ross, Robert J., to Donlar Corporation. Method for enhanced hydroponic plant productivity with polymeric acids. 5,854,177, Cl. 504-320.000.

Kosuda, Tsukasa; Hayakawa, Motomu; and Nosaka, Naokatsu, to Seiko Epson Corporation; and Seiko Instruments, Inc. Fast fourier transformation computing unit and a fast fourier transformation computation device. 5,854,758, Cl. 364-726.020.

Kotake, Yoshihiko: *See—*
- Yoshino, Hiroshi; Ueda, Norihiro; Niijima, Jun; Haneda, Toru; Kotake, Yoshihiko; Yoshimatsu, Kentaro; Watanabe, Tatsuo; Nagasu, Takeshi; Tsukahara, Naoko; Koyanagi, Nozomu; and Kitoh, Kyosuke, 5,854,274, Cl. 514-290.000.

Kotani, Hisakazu: *See—*
- Nishi, Kazuyoshi; Akamatsu, Hironori; Tsuji, Toshiaki; and Kotani, Hisakazu, 5,854,767, Cl. 365-219.000.

Kotooka, Toshiro: *See—*
- Kubota, Toshimichi; Kotooka, Toshiro; and Kamogawa, Makoto, 5,853,480, Cl. 117-217.000.

Kotowski, Jeff. Tool for removing oil and hazardous fluid. 5,852,961, Cl. 81-180.100.

Kotowski, Olaf: *See—*
- Deter, Christhard; Hubrich, Dieter; Kotowski, Olaf; and Loeffer, Dirk, 5,854,659, Cl. 348-458.000.

Kouchi, Takao: *See—*
- Yamamoto, Kazuhiro; and Kouchi, Takao, 5,853,061, Cl. 180-190.000.

Koukol, Hubert: *See—*
- Dittrich, Stephan; Koukol, Hubert; and Koukol, Robert, 5,854,072, Cl. 436-24.000.

Koukol, Robert: *See—*
- Dittrich, Stephan; Koukol, Hubert; and Koukol, Robert, 5,854,072, Cl. 436-24.000.

Koutrakis, Petros: *See—*
- Wolfson, Jack Mikhail; and Koutrakis, Petros, 5,854,077, Cl. 436-110.000.

Kouyama, Toshitaka: *See—*
- Kawakami, Yukichika; Sato, Nobuo; Hoshino, Mitsuru; Kouyama, Toshitaka; and Shiiki, Zenya, 5,853,639, Cl. 264-177.190.

Koyanagi, Nozomu: *See—*
- Yoshino, Hiroshi; Ueda, Norihiro; Niijima, Jun; Haneda, Toru; Kotake, Yoshihiko; Yoshimatsu, Kentaro; Watanabe, Tatsuo; Nagasu, Takeshi; Tsukahara, Naoko; Koyanagi, Nozomu; and Kitoh, Kyosuke, 5,854,274, Cl. 514-290.000.

Koza, Kim J. Handrail assembly for children. 5,853,166, Cl. 256-59.000.

Kozaki, Shinya; Yano, Tetsuya; Mihara, Chieko; and Imamura, Takeshi, to Canon Kabushiki Kaisha. Biodegradation of an organic compound and process for upgrading the environment by removing the aforesaid compound. 5,854,059, Cl. 435-262.000.

Kozlowski, Michael R.: *See—*
- Manly, Susan P.; Kozlowski, Michael R.; and Neve, Rachael L., 5,854,392, Cl. 530-350.000.

Kozuka, Masayuki: *See—*
- Mori, Yoshihiro; Tsuga, Kazuhiro; Hasebe, Takumi; Nakamura, Kazuhiko; Fukushima, Yoshihisa; Kozuka, Masayuki; Matsuda, Chieko; and Yamane, Yasuhiko, 5,854,873, Cl. 386-92.000.

Kraemer, Wolfgang: *See—*
- Hackl, Matthias; and Kraemer, Wolfgang, 5,853,064, Cl. 180-422.000.

Kraft Foods, Inc.: *See—*
- Anbarci, Ahmet; Nassauer, Josef Sebastian; and Simburger, Stephan, 5,853,786, Cl. 426-582.000.
- Murphy, Sean Mackay; Sieling, Helmut; and Wasserman, Gerald Sigmund, 5,853,788, Cl. 426-595.000.
- Nayyar, Dalip K.; Schulok, Walter W.; Saleeb, Fouad Z.; and Modesta, Eileen M., 5,853,785, Cl. 426-565.000.
- Roman, Linda Carol; and Kurtz, Daniel Brian, 5,853,105, Cl. 220-575.000.

Krajci, Edward J.: *See—*
- Gershen, Bernard J.; Lombardi, Alfred J.; Krajci, Edward J.; and Shafir, Yevgeny, 5,854,519, Cl. 307-125.000.

Kramer, Kenneth A.: *See—*
- Katdare, Ashok V.; Kramer, Kenneth A.; and Gardner, Colin R., 5,853,759, Cl. 424-466.000.

Kramer, Steven W.: *See—*
- Hansen, Donald W., Jr.; Currie, Mark G.; Hallinan, E. Ann; Fok, Kam F.; Hagen, Timothy J.; Bergmanis, Arija A.; Kramer, Steven W.; Lee, Len F.; Metz, Suzanne; Moore, William M.; Peterson, Karen B.; Pitzele, Barnett S.; Spangler, Dale P.; Webber, R. Keith; Toth, Mihaly V.; Trivedi, Mahima; and Tjoeng, Foe S., 5,854,234, Cl. 514-212.000.

Kratz, Mark: *See—*
- Heinemann, Torsten; Scholl, Hans-Joachim; Dietrich, Manfred; Jacobs, Gundolf; Kratz, Mark; Sanders, Josef; and Woynar, Helmut, 5,854,358, Cl. 525-404.000.

Kraus-Berthier, Laurence: *See—*
- Lavielle, Gilbert; Hautefaye, Patrick; Atassi, Ghanem; Pierre, Alain; Kraus-Berthier, Laurence; and Leonce, Stéphane, 5,854,273, Cl. 514-410.000.

Krause, Frank; and Klimmek, Helmut, to Stockhausen GmbH & Co. KG, Graft copolymers of unsaturated monomers and sugars, a process for the production and the use thereof. 5,854,191, Cl. 510-276.000.

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Matsuyama, Masashi: *See—*
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  - Brissette, Ronald N.; and Baldwin, Kevin, 5,853,177, Cl. 277-559.000.
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Kawahata, Kazunari; and Yamaki, Kazuhisa, 5,854,606, Cl. 343-702.000.
Mizuguchi, Takashi; Saoshita, Shushi; and Sumita, Manabu, 5,853,805, Cl. 427-250.000.
Okaguchi, Kenjiro, 5,854,428, Cl. 73-504.120.
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Murdock, Douglas R.: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; Vercande, David J.; and Tangeman, Michael R., 5,854,833, Cl. 378-112.000.
Murdock, Michael C.: *See—*
Errico, James H.; Labun, Nicholas M.; Loda, John J.; Murdock, Michael C.; and Wang, Shay-Ping T., 5,854,855, Cl. 382-187.000.
Murdock, Thomas Owen, to ALZA Corporation. Preparation for formulations for electrotransport drug delivery. 5,853,383, Cl. 604-20.000.
Murphy, Michael J. Night at the races board game. 5,853,173, Cl. 273-246.000.
Murphy, Peter Michael, to Du Pont de Nemours, E. I., and Company. Process for foam treating pile fabrics. 5,853,814, Cl. 427-434.600.
Murphy, Sean Mackay; Sieling, Helmut; and Wasserman, Gerald Sigmund, to Kraft Foods, Inc. Densified flowable roasted and ground coffee. 5,853,788, Cl. 426-595.000.
Murphy, Willis A.; and Anderson, Peter J., to I Figments 5, LLC. Laminating machine. 5,853,531, Cl. 156-555.000.
Murray, George E., Jr. Binder labeling assembly. 5,853,259, Cl. 402-3.000.
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Murray, Steve. Rainfall detecting automatic sprinkler control system. 5,853,125, Cl. 239-63.000.
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Findeis, Mark A.; Benjamin, Howard; Garnick, Marc B.; Gefter, Malcolm L.; Hundal, Arvind; Kasman, Laura; Musso, Gary; Signer, Ethan R.; Wakefield, James; Reed, Michael; Molineaux, Susan; Kubasek, William; Chin, Joseph; Lee, Jung-Ja; and Kelley, Michael, 5,854,204, Cl. 514-2.000.
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Fuchs, Harold E.; Law, Henry Hon; and Muth, Daniel George, 5,853,797, Cl. 427-96.000.
Mychajlowskij, Walter: *See—*
Foucher, Daniel A.; Patel, Raj D.; Sacripante, Guerino G.; and Mychajlowskij, Walter, 5,853,944, Cl. 430-137.000.
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Wise, Joanne T.; and Peyton, Carolsue, 5,853,827, Cl. 428-23.000.
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Steennis, Evert Frederik; Pultrum, Edwin; Wouters, Petrus Arnoldus Antonius Francisca; and Van Heesch, Egbertus Johannes Maria, 5,854,556, Cl. 324-541.000.
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Nachenberg, Carey S., to Symantec Corporation. State-based cache for antivirus software. 5,854,916, Cl. 395-500.000.
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Lundgren, Karsten; Jakobsen, Palle; Kristiansen, Marit; Nørskov-Lauritsen, Leif; and Naerum, Lars, 5,854,272, Cl. 514-408.000.
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Nagai, Mototaka: *See*—
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Nagano, Tomohiro: *See*—
Toyoshima, Hiroshi; Harada, Masashige; Nagano, Tomohiro; Nishio, Yoji; Hiraishi, Atsushi; Komiyaji, Kunihiro; Yahata, Hideharu; Fukui, Kenichi; Zushi, Hirofumi; Sonoda, Takahiro; Kawachino, Haruko; and Morita, Sadayuki, 5,854,562, Cl. 327-55.000.
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Yoshimoto, Akihiro; Yoshinaga, Toshihiro; Nagaoka, Shigeru; and Morishita, Masayasu, 5,853,887, Cl. 428-404.000.
Nagashima, Yukio: *See*—
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Nagoya, Yoshinori; Sakai, Takashi; Ishida, Yuji; and Takei, Ken, to Hitachi, Ltd. Output-controlled power amplifier, radio communication terminal and radio communication base station. 5,854,971, Cl. 455-126.000.
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Kudert, Frederick G.; Latreille, Maurice G.; McHenry, Robert J.; Nahill, George F.; Pfutzenreuter, Henry, III; Tennant, William A.; Tung, Thomas T.; and Vella, John, Jr., 5,853,772, Cl. 425-130.000.
Nahill, Thomas E.: *See*—
Krishnakumar, Suppayan M.; Collette, Wayne N.; and Nahill, Thomas E., 5,853,829, Cl. 428-35.700.
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Nair, Smita K.; Boczkowski, David J.; and Gilboa, Eli, to Duke University. Methods for treating cancers and pathogen infections using antigen-presenting cells loaded with RNA. 5,853,719, Cl. 424-93.210.
Naito, Takuya: *See*—
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Nakayama, Yasukazu; Nishiyama, Shoji; Shimatani, Yoichi; Sawaki, Shigetoyo; Yamada, Katsuhisa; and Naitoh, Kazufumi, 5,853,705, Cl. 424-59.000.
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Nakagawa, Satoshi; Yoshimi, Shuji; and Kihara, Hayato, to Sumitomo Chemical Company, Limited. Styrene base random copolymer and process for producing the same. 5,854,366, Cl. 526-336.000.
Nakagawa, Tetsuya: *See*—
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Nakagawa, Yukihiro, to Fujitsu Limited. Window display processing method and apparatus. 5,854,628, Cl. 345-340.000.
Nakagome, Yoshinobu: *See*—
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Nakahama, Akiko; Harada, Koukichi; Yamauchi, Toshihiko; Yamanaka, Takashi; and Yamatsu, Isao, to Eisai Co., Ltd. Therapeutic agent for dermatosis. 5,854,279, Cl. 514-453.000.
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Nakai, Tetsuo: *See*—
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Nakaishi, Eiji: *See*—
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Nakamura, Hideo; and Matsuyama, Masashi, to Nissan Motor Co., Ltd. Throttle valve positioning control apparatus. 5,852,996, Cl. 123-399.000.
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Nakamura, Keiko; Hirano, Norihiro; and Shibuya, Kenichi, to Sakura Color Products Corporation. Water base erasable ink compositions. 5,854,320, Cl. 524-48.000.
Nakamura, Masatoshi: *See*—
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Nakamura, Osamu; Ichikawa, Shigeru; and Arai, Tsuneharu, to Kabushiki Kaisha Shinkawa. Wafer ring supply and return device. 5,853,532, Cl. 156-584.000.
Nakamura, Ryuji: *See*—
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Nakamura, Tadashi; and Ito, Kenzo, to Shiseido Company, Ltd. Water-in-oil emulsion cosmetic composition. 5,853,711, Cl. 424-78.030.
Nakamura, Takao; Inada, Hiroshi; and Iiyama, Michitomo, to Sumitomo Electric Industries, Ltd. Superconduting device having an extremely short superconducting channel formed of oxide superconductor material and method for manufacturing the same. 5,854,493, Cl. 257-39.000.
Nakamura, Teiji: *See*—
Ichiki, Tatsumi; Hamashima, Nagato; Nakamura, Teiji; Asami, Masayuki; Suzuki, Sadakatsu; and Ueno, Hiroshi, 5,854,161, Cl. 502-41.000.
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Nakamura, Yasuyuki: *See*—
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Nakanishi, Motoyasu; and Takayama, Akira, to Suzuki Sogyo Co., Ltd. Rugged shaped sheet and process for manufacturing same. 5,853,854, Cl. 428-172.000.
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Nakano, Shigeru: *See*—
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Nakao, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Phase shifting mask, manufacturing method thereof, and exposure method using such a phase shifting mask. 5,853,922, Cl. 430-5.000.
Nakaoka, Takashi: *See*—
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Nakashima, Hiroehi: *See*—
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Nakashima, Masato: *See*—
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Nakata, Yukio; Matsui, Susumu; Takahashi, Yasuhiro; Kondou, Takeshi; and Otsu, Yutaka, to Hitachi, Ltd. Communication system. 5,854,841, Cl. 380-49.000.
Nakatani, Hideyuki: *See*—
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Nakatani, Munehiro, to Minolta Camera Kabushiki Kaisha. Facsimile apparatus having control means for recording a prescribed page which has not been completely recorded when a trouble detected by detecting means is solved. 5,854,692, Cl. 358-468.000.
Nakato Laboratory, Inc.: *See*—
Yamamoto, Tohru; Yoshida, Shigeo; and Ikari, Hatsumi, 5,854,341, Cl. 524-767.000.
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Nakatsu, Hiroshi, to Sharp Kabushiki Kaisha. Semiconductor device by selectively controlling growth of an epitaxial layer without a mask. 5,854,089, Cl. 438-41.000.
Nakatsuji, Tadao: *See*—
Tabata, Mitsunori; Kawatsuki, Masaaki; Miyamoto, Katsumi; Tsuchida, Hiroshi; Yoshinari, Tomohiro; Usui, Kazushi; Suganuma, Fujio; Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Hamada, Hideaki; Ito, Takehiko; Kintaichi, Yoshiaki; and Sasaki, Motoi, 5,853,679, Cl. 423-213.200.
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Nakayama, Satoshi: *See*—
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Nakayama, Toshimasa: *See*—
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Nakayama, Yasukazu; Nishiyama, Shoji; Shimatani, Yoichi; Sawaki, Shigetoyo; Yamada, Katsuhisa; and Naitoh, Kazufumi, to Shiseido Company, Ltd. Anti-aging cosmetic composition. 5,853,705, Cl. 424-59.000.
Nakazawa, Akihiko; and Okado, Kenji, to Canon Kabushiki Kaisha. Toner for developing electrostatic image. 5,853,938, Cl. 430-110.000.
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Nakazawa, Yosuke, to Kabushiki Kaisha Toshiba. Control system for permanent magnet synchronous motor. 5,854,547, Cl. 318-716.000.
Nalco/Exxon Energy Chemicals, L.P.: *See*—
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Namco Ltd.: *See*—
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Nanami, Masayoshi; Nakase, Ryoichi; and Mashiko, Tetsuya, to Sanshin Kogyo Kabushiki Kaisha. Engine and exhaust system for watercraft. 5,853,308, Cl. 440-89.000.
Nanataki, Tsutomu: *See*—
Takeuchi, Yukihisa; Nanataki, Tsutomu; Kimura, Koji; and Takahashi, Nobuo, 5,853,514, Cl. 156-89.120.
Nanba, Hiroaki; and Kubo, Keiko, to Yukiguni Maitake Co., Ltd. Antitumor substance extracted from grifola. 5,854,404, Cl. 532-424.000.
Nankin, Morris, to Techtruss Holdings Pty. Ltd. Structural beam and web. 5,852,908, Cl. 52-729.200.
Nannetti, Carlo Alberto: *See*—
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Narayan, Opendra: *See*—
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Nassauer, Josef Sebastian: *See*—
Anbarci, Ahmet; Nassauer, Josef Sebastian; and Simburger, Stephan, 5,853,786, Cl. 426-582.000.
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National Institute of Sericultural and Entomological Science, Ministry of Agriculture, Forestry and Fisheries, Director General: *See*—
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National Institutes of Health: *See*—
Pastan, Ira H.; and Fitzgerald, David J., 5,854,044, Cl. 435-194.000.
National Institutes of Health Office of Technology Transfer: *See*—
Rollin, Pierre E.; Elliott, Luanne; Ksiazek, Thomas G.; Nichol, Stuart T.; Morzunov, Sergey; and Ravkov, Eugeny, 5,853,980, Cl. 435-5.000.
National Instruments Corporation: *See*—
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National Jewish Center for Immunology and Respiratory Medicine: *See*—
Johnson, Gary L., 5,854,043, Cl. 435-194.000.
National Science Council: *See*—
Wang, Chun-Shan; and Gu, Jen-Tau, 5,854,374, Cl. 528-196.000.
Wu, Tian-Shung; Teng, Che-Ming; and Yu, Sheu-Meei, 5,853,731, Cl. 424-195.100.
National Semiconductor Corporation: *See*—
Edem, Brian Charles; Helliwell, Richard Perham; Johnston, John Thomas; and Lary, Richard Franklin, 5,855,016, Cl. 707-7.000.
Farrenkopf, Douglas R., 5,854,099, Cl. 438-201.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Gormley, John L.; and Martino, Gary T., 5,853,700, Cl. 424-47.000.
Wu, Bing; Tong, Quinn K.; and Schultz, Rose Ann, 5,854,315, Cl. 523-427.000.
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Sriram, Subramaniam; Bright, John; Nag, Bishwajit; and Sharma, Somesh D., 5,854,285, Cl. 514-514.000.
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  - Sasaki, Chiharu, 5,854,811, Cl. 375-296.000.
  - Sekiguchi, Mitsuru, 5,854,766, Cl. 365-218.000.
  - Shoji, Hideyuki, 5,853,602, Cl. 216-46.000.
  - Suzu, Takayuki, 5,854,772, Cl. 365-230.060.
  - Yamamoto, Shinya, 5,853,931, Cl. 430-58.000.
  - Yamamoto, Yoshiaki, 5,853,317, Cl. 451-288.000.
  - Yoshida, Sadayoshi; and Sato, Kazunari, 5,854,577, Cl. 331-117.00D.
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  - McNay, Stephanie D.; Martin, Dustin B.; Marino, Thomas L.; and Neckers, Douglas C., 5,854,298, Cl. 522-25.000.
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  - Baker, Clark R., Jr.; and Yorkey, Thomas J., 5,853,364, Cl. 600-300.000.
- Nelson, Charles W., to Apollo Products, Inc. Scalp hair foundation to provide additional hair. 5,853,008, Cl. 132-53.000.
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  - Eggleston, Philip Wayne; Paullus, Steven Burl; Nelson, Danny Paul; Rasmussen, Kenneth Lemoyne; Hall, Randy Jerold; and Osgood, Melvin Lew, 5,853,022, Cl. 137-270.000.
- Nelson, John D., Jr., to Olin Corporation. Synergistic antimicrobial composition pyrithione and alcohol. 5,854,266, Cl. 514-345.000.
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  - Blum, Robert L.; Robbins, Michael H.; Hearn, Lynn M.; and Nelson, Shona L., 5,854,187, Cl. 510-197.000.
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  - Ritt, Robert T.; Nemeth, Steve J., Jr.; and Roslund, Richard N., Jr., 5,853,223, Cl. 297-411.360.
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  - Glamkowski, Edward J.; Chiang, Yulin; Strupczewski, Joseph T.; Bordeau, Kenneth J.; Nemoto, Peter A.; and Tegeler, John J., 5,854,243, Cl. 514-233.800.
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- Nesseth, Clinton A., to NTH, Inc. Rotary separator apparatus. 5,853,585, Cl. 210-394.000.
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  - Bergstrom, Christer; Jakobsson, Stefan; Markkula, Marja-Leena; Jafs, Ake; and Seppa, Inari, 5,854,356, Cl. 525-326.500.
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- Neugebauer, Harlan. Overcab carrier device. 5,853,279, Cl. 414-462.000.
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  - Liskowitz, John W.; Wecharatana, Methi; Jaturapitakkul, Chai; Cerkanowicz, Anthony E., deceased, 5,853,475, Cl. 106-705.000.
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- Newcastle University Ventures Limited: *See—*
  - Kupfer, Adrian; and Cerny, Thomas, 5,854,240, Cl. 514-224.800.
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  - Griffith, Richard Lee; Strowe, Robert J.; Newell, Jonathan C.; Edic, Peter M.; Messina, Ralph F.; and Houghton, Frederick Charles, 5,853,373, Cl. 600-554.000.
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  - Badger, Brian S.; and Newman, Craig E., 5,854,823, Cl. 379-15.000.
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  - Davis, Ken; Jayasena, Sumedha; and Gold, Larry, 5,853,984, Cl. 435-6.000.
- Neyrfor-Weir Limited: *See—*
  - Gilchrist, David Andrew; and Downie, Andrew McPherson, 5,853,053, Cl. 175-101.000.
- NGK Insulators, Ltd.: *See—*
  - Honda, Toshihiko; and Nonaka, Hisayoshi, 5,854,156, Cl. 501-97.100.
  - Kato, Nobuhide, 5,854,079, Cl. 436-152.000.
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- Nichimo Co., Ltd.: *See—*
  - Takebe, Minoru; Ando, Yoshio; and Kikushima, Sunao, 5,853,779, Cl. 426-20.000.
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  - Rollin, Pierre E.; Elliott, Luanne; Ksiazek, Thomas G.; Nichol, Stuart T.; Morzunov, Sergey; and Ravkov, Eugeny, 5,853,980, Cl. 435-5.000.
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  - Penkler, Lawrence J; Glintenkamp, Lueta A; Nicholson, Douglas G M; and Van Oudtshoorn, Michiel C B, 5,854,226, Cl. 514-58.000.
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  - Dalbøge, Henrik; Christgau, Stephan; Andersen, Lene Nonboe; Kofod, Lene Venke; Kauppinen, Markus Sakari; Nielsen, Jack Bech; and Dambmann, Claus, 5,854,050, Cl. 435-219.000.
- Nielsen, Jakob, to Sun Microsystems, Inc. Prospective view for web backtrack. 5,854,630, Cl. 345-352.000.
- Niemoller, Axel; Gotzen, Klaus; and Gold, Manuel, to SIHL GmbH. Water-resistant recording material for inkjet printing. 5,853,540, Cl. 162-135.000.
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  - Busson, Christian; and Nietsch, Thomas, 5,853,682, Cl. 423-237.000.
- Nihon Parkerizing Co., Ltd.: *See—*
  - Higuchi, Seijun; Nakano, Shigeru; and Aishima, Toshiyuki, 5,853,806, Cl. 427-310.000.
- Niihara, Katsuhisa; Miyazaki, Koichi; Gunji, Yoshinori; Konno, Ichiro; and Shiomi, Yuji, to Fuji Xerox Co., Ltd. Output control system for interpreting input data according to a specific control language based upon outputs from a plurality of control language determining devices. 5,854,940, Cl. 395-825.000.
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- Niimi, Tatsuya: *See—*
  - Suzuki, Tetsuro; Niimi, Tatsuya; and Shimada, Tomoyuki, 5,853,935, Cl. 430-859.000.
- Nikka Whisky Distilling Co., Ltd., The: *See—*
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- Nikon Corporation: *See—*
  - Ashizawa, Takatoshi; and Sugaya, Isao, 5,854,529, Cl. 310-323.000.
  - Imura, Yoshio, 5,854,947, Cl. 396-55.000.
  - Kaneko, Masanobu, 5,854,668, Cl. 351-206.000.
  - Nishi, Kenji, 5,854,671, Cl. 355-53.000.
  - Okano, Hiroshi, 5,854,712, Cl. 359-823.000.
  - Tazawa, Masashi, 5,854,861, Cl. 382-312.000.
  - Tsukada, Shinichi, 5,854,948, Cl. 396-93.000.

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  - Sugimori, Yoshiaki; Watanabe, Tadaharu; Kikuchi, Hitoshi; Endo, Fumitaka; Ichimura, Shinji; Yoshida, Megumi; and Imai, Hiroaki, 5,853,678, Cl. 423-210.000.
- Nippon Mektron, Ltd.: *See—*
  - Inaba, Masaichi; Matsumoto, Hirofumi; and Tanaka, Yasuyuki, 5,854,724, Cl. 360-104.000.
- Nippon Mining & Metals Co., Ltd.: *See—*
  - Watanabe, Sizuo; and Sakaki, Koji, 5,853,519, Cl. 156-247.000.
- Nippon Moli Energy Corp.: *See—*
  - Okutoh, Tadashi, 5,853,908, Cl. 429-7.000.
- Nippon Oil Co., Ltd.: *See—*
  - Hasegawa, Yukio; Takabe, Shinichi; Kinoshita, Hirotsugu; Nomura, Souichi; and Itano, Fumihiro, 5,854,183, Cl. 508-316.000.
- Nippon Paint Co., Ltd.: *See—*
  - Miyazoe, Seigo; Fushimi, Akira; and Inoue, Masanobu, 5,854,350, Cl. 525-100.000.
  - Odawa, Taketoshi; and Okai, Toshihiro, 5,853,890, Cl. 428-412.000.
- Nippon Shokubai Co., Ltd.: *See—*
  - Harada, Nobuyuki; Motono, Yoshihiro; Sakamoto, Shigeru; and Kitayama, Toshimasa, 5,853,867, Cl. 428-317.900.
- Nippon Shokubai Kagaku Kogyo Co, Ltd.: *See—*
  - Tahara, Hideyuki; Ito, Hiroshi; Mori, Yasuhiro; and Mizushima, Makoto, 5,854,318, Cl. 524-5.000.
- Nippon Steel Corporation: *See—*
  - Teraoka, Shin-ichi; and Ishimaru, Eiichiro, 5,853,501, Cl. 148-327.000.
- Nippon Telegraph and Telephone Corporation: *See—*
  - Goto, Masataka; Kato, Tetsuya; Tate, Kazuyuki; and Ogawa, Yoichi, 5,854,983, Cl. 455-462.000.
  - Ikenaga, Takeshi; and Ogura, Takeshi, 5,854,760, Cl. 365-49.000.
- Nippondenso Co., Ltd.: *See—*
  - Ishihara, Hajime; Hattori, Yutaka; Katayama, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,853,552, Cl. 204-192.260.
  - Izumi, Ryouiti; Ogura, Kenji; Tsuchiya, Soujiro; Kuroda, Yoshitaka; and Isogai, Keiiti, 5,853,201, Cl. 285-179.000.
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- Nishi, Kenji, to Nikon Corporation. Scanning exposure method and apparatus therefor and a projection exposure apparatus and method which selectively chooses between static exposure and scanning exposure. 5,854,671, Cl. 355-53.000.
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  - Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Nishida, Masaaki; Nomura, Kengo; and Morimoto, Takashi, 5,853,344, Cl. 475-269.000.
- Nishiguchi, Kenichi: *See—*
  - Kuroda, Takeshi; Takeya, Akito; Nishiguchi, Kenichi; and Ichikawa, Akira, 5,854,713, Cl. 359-850.000.
- Nishihara, Toshiyuki, to Sony Corporation. Non-volatile memory cell having floating gate electrode and reduced bird's beak portions. 5,854,502, Cl. 257-321.000.
- Nishihara, Yoshihiro; Masaoka, Hideo; Takemoto, Fumio; Oishi, Seizo; and Hosokawa, Hiroshi, to Mitsubishi Rayon Co., Ltd. Flat filaments provided with ribs and raw fibers for pile fabrics. 5,853,853, Cl. 428-167.000.
- Nishikata, Atsuhiro: *See—*
  - Shimizu, Yasutaka; Nishikata, Atsuhiro; and Tonami, Shigetaka, 5,854,527, Cl. 310-313.00A.
- Nishikawa, Hiroshi: *See—*
  - Kawasaki, Takashi; Kuroda, Yukio; Nishikawa, Hiroshi; and Hara, Hiroyuki, 5,854,155, Cl. 501-96.400.
- Nishikawa, Kikuyoshi. Tilting on-off switch. 5,854,457, Cl. 200-61.510.
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- Nishimura, Michiyo; Nomura, Ichiro; Banno, Yoshikazu; Tsukamoto, Takeo; Miyata, Hirokatsu; and Takada, Kazuhiro, to Canon Kabushiki Kaisha. Method of manufacturing electron-emitting device, electron source and image-forming apparatus. 5,853,310, Cl. 445-1.240.
- Nishimura, Takanobu, to Kabushiki Kaisha Toshiba. Material for lapping tools and lapping surface plate using the same. 5,853,504, Cl. 148-324.000.
- Nishimura, Tatsuya: *See—*
  - Ishikawa, Tomohisa; Hakomori, Katsuhiko; and Nishimura, Tatsuya, 5,854,702, Cl. 359-152.000.
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  - Toyoshima, Hiroshi; Harada, Masashige; Nagano, Tomohiro; Nishio, Yoji; Hiraishi, Atsushi; Komiyaji, Kunihiro; Yahata, Hideharu; Fukui, Kenichi; Zushi, Hirofumi; Sonoda, Takahiro; Kawachino, Haruko; and Morita, Sadayuki, 5,854,562, Cl. 327-55.000.
- Nishioka, Yasushiro, to Texas Instruments Incorporated. Ferroelectric film capacitor with intergranular insulation. 5,854,499, Cl. 257-295.000.
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- Nishiyama, Shigeki: *See—*
  - Ogawa, Tsuneshi; Haginoya, Teru; Maruyama, Toshiharu; Nishiyama, Shigeki; and Ozaki, Shintaro, 5,854,462, Cl. 219-137.0WM.
- Nishiyama, Shoji: *See—*
  - Nakayama, Yasukazu; Nishiyama, Shoji; Shimatani, Yoichi; Sawaki, Shigetoyo; Yamada, Katsuhisa; and Naitoh, Kazufumi, 5,853,705, Cl. 424-59.000.
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  - Urano, Yuichi; Nishizawa, Masato; Sakai, Yoshiyuki; Ito, Naoki; and Hashimoto, Shinichi, 5,854,120, Cl. 438-404.000.
- Nissan Chemical Industries Ltd.: *See—*
  - Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,854,259, Cl. 514-311.000.
- Nissan Diesel Motor Co., Ltd.: *See—*
  - Okamoto, Isao; Kajinami, Jun; and Imasato, Kazunari, 5,852,952, Cl. 74-473.110.
- Nissan Motor Co., Ltd.: *See—*
  - Nakamura, Hideo; and Matsuyama, Masashi, 5,852,996, Cl. 123-399.000.
  - Yamamura, Hideki; and Okamoto, Noriomi, 5,852,991, Cl. 123-195.00C.
  - Yamazaki, Shuichiro, 5,853,103, Cl. 220-562.000.
- Nisshinbo Industries Inc.: *See—*
  - Iwamura, Moritaka; Hamada, Toshihiro; and Ogino, Hiromitsu, 5,853,231, Cl. 303-119.200.
  - Saito, Kazuo; Mochizuki, Yasushi; and Yamamoto, Seiji, 5,853,840, Cl. 428-64.100.
- Nitanda, Fumio: *See—*
  - Helmfrid, Sten; Ito, Kenchi; Tatsuno, Kimio; Kawamoto, Kazumi; Andou, Tetsuo; Momiji, Hiroshi; Komoda, Osamu; Kurosawa, Hisao; Sato, Masayoshi; Nitanda, Fumio; and Ito, Kohei, 5,854,870, Cl. 385-122.000.
- Nitta, Kazuyuki: *See—*
  - Sato, Mitsuru; Nitta, Kazuyuki; Yamazaki, Akiyoshi; Iguchi, Etsuko; Sakai, Yoshika; Sato, Kazufumi; and Nakayama, Toshimasa, 5,854,357, Cl. 525-359.300.
- Nitto Boseki Co., Ltd.: *See—*
  - Fujiwara, Kyoji; Yamamura, Shinta; Furuta, Naoyuki; Mizukami, Tadanori; Tasaki, Yutaka; and Mikami, Takashi, 5,854,453, Cl. 181-293.000.
- Nitto Kogyo Co., Ltd.: *See—*
  - Ishikawa, Youichi, 5,853,832, Cl. 428-36.200.
- Nix, Robert J., to Illinois Tool Works Inc. Pneumatic circuit for strapping tool having adjustable tension control. 5,853,524, Cl. 156-358.000.
- NKK Corporation: *See—*
  - Hosoya, Yoshihiro; Kitano, Fusato; and Nagataki, Yasunobu, 5,853,903, Cl. 428-669.000.
- No, Young, to Eastman Kodak Company. Printer and method adapted to precisely position a dye receiver portion. 5,853,253, Cl. 400-120.020.
- Noble, Karl-Ludwig: *See—*
  - Hovestadt, Wieland; Schmalstieg, Lutz; Wamprecht, Christian; and Noble, Karl-Ludwig, 5,854,338, Cl. 524-591.000.
- Noble, Russell T.: *See—*
  - Hancock, R. Douglas; Romano, Andrew A.; and Noble, Russell T., 5,853,595, Cl. 210-698.000.
- Noelken, Gregory P.: *See—*
  - Bellos, Thomas J.; and Noelken, Gregory P., 5,853,592, Cl. 210-639.000.
- Noggle, Thomas Lynn, to Logitech, Inc. Non-uniform clocking system for area imaging device. 5,854,656, Cl. 348-311.000.
- Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Worldwide, Inc. Method for preparing polyolefin fibers containing antimicrobial siloxane quarternary ammonium salts. 5,853,641, Cl. 264-211.000.
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- Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Worldwide, Inc. Non-woven web containing antimicrobial siloxane quaternary ammonium salts. 5,854,147, Cl. 442-123.000.
- Nojima, Takashi: *See—*
  - Nishikura, Takahiro; Sumihara, Masanori; Nojima, Takashi; and Kawasaki, Osamu, 5,854,528, Cl. 310-323.000.
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Brauer, Dennis R.; Breedis, John F.; Caron, Ronald N.; and Deppisch, Carl, 5,853,505, Cl. 148-433.000.

Nelson, John D., Jr., 5,854,266, Cl. 514-345.000.

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Fukuoka, Morinao, 5,854,151, Cl. 501-68.000.

Ito, Kazumi, 5,854,951, Cl. 396-378.000.

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Omori, Akiko: *See—*

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Omori, Yoshimasa; Okumura, Hiroya; and Shibata, Takashi, to Takeda Chemical Industries, Ltd. Fine particles of high heat resistant polymer and epoxy esters. 5,854,313, Cl. 523-406.000.

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Nagayama, Katsuhiro; Fujimaki, Masami; Takano, Shigeru; Matsumoto, Taiji; Ono, Tomoshige; Nagashima, Yukio; Masui, Syohei; Funakoshi, Satoru; Kobayashi, Yuji; Yoshitake, Hiroyuki; and Sunada, Mitsuaki, 5,854,149, Cl. 442-394.000.

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Optical Networks, Incorporated: *See—*

Knoesen, Andre; Yankelevich, Diego; Hamilton, Scott A; Abbott, Nicholas L.; Hill, Richard A.; and Bjorklund, Gary, 5,854,864, Cl. 385-30.000.

Optical Specialties, Inc.: *See—*

Lin, Lawrence H., 5,854,674, Cl. 356-237.000.

Opticon, Inc.: *See—*

Criscito, Herbert V.; Zheng, Xin; and Zhang, Brian, 5,854,945, Cl. 395-882.000.

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Payne, Simon Graham; and Love, Stephen John, 5,854,694, Cl. 358-473.000.

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Worth, David Richard; Schnepple, Thomas; and Malss, Stephen Reinhard, 5,853,306, Cl. 440-1.000.

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Elmaleh, David R.; Madras, Bertha K.; Meltzer, Peter; and Hanson, Robert N., 5,853,696, Cl. 424-1.850.

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Gentner, Wolfgang; Kleb, Emmerich; Riehle, Joerg; and Riehle, Hans, 5,853,186, Cl. 280-491.300.

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Adachi, Kenji; Yamanaka, Atsushi; Toufuku, Atsushi; Iida, Sadahiro; Yukinobu, Masaya; Orita, Keiichi; Inage, Hiroko; and Takeda, Hiromitsu, 5,853,869, Cl. 428-325.000.

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Hamersma, Johannes Antonius Maria; Orlemans, Everardus Otto Maria; and Rewinkel, Johannes Bernardus Maria, 5,854,235, Cl. 514-173.000.

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Gallagher, Catherine; Matijasevic, Goran; and Capote, M. Albert, 5,853,622, Cl. 252-512.000.

Yablonsky, Albert; Bolo, Eugene R.; and Reggi, John D., 5,853,573, Cl. 210-96.100.

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Crisick, William E.; and Ortega, David F., 5,852,955, Cl. 74-594.600.

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Frechette, Roger; and Weidner-Wells, Michele Ann, 5,854,242, Cl. 514-230.500.

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Donato, Aldo; Nannetti, Carlo Alberto; Ortona, Alberto; Borsella, Elisabetta; Botti, Sabina; Casadio, Sergio; D'Alessandro, Gianni; Licciulli, Antonio Alessandro; Martelli, Stefano; and Masci, Amedeo, 5,853,653, Cl. 264-625.000.

Osan, Frank: *See—*

Eysmondt, Jörg; Osan, Frank; and Schleicher, Andreas, 5,853,457, Cl. 95-138.000.

Osano, Yuichi, to Kikusui Electronics Corporation. Memory capacity test method and computer system. 5,854,795, Cl. 371-21.100.

Osawa, Yukio: *See—*

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Osborn, Thomas Ward, III: *See—*

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Osborne, Geoffrey Edwin: *See—*

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Osborne, Robert S.: *See—*

Clegg, Robert D.; Fleming, Matthew S.; Fortney, Clark E.; McAllister, Barbara J.; and Osborne, Robert S., 5,853,387, Cl. 606-67.000.

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Eggleston, Philip Wayne; Paullus, Steven Burl; Nelson, Danny Paul; Rasmussen, Kenneth Lemoyne; Hall, Randy Jerold; and Osgood, Melvin Lew, 5,853,022, Cl. 137-270.000.

Oshima, Kazuyoshi: *See—*

Kajigaya, Kazuhiko; Miyazawa, Kazuyuki; Tsunozaki, Manabu; Oshima, Kazuyoshi; Yamazaki, Takashi; Sakai, Yuji; Sawada, Jiro; Yamaguchi, Yasunori; Matsumoto, Tetsurou; Udo, Shinji; Yoshioka, Hiroshi; Saito, Hirokazu; Takano, Mitsuhiro; Morino, Makoto; Miyatake, Sinichi; Miyamoto, Eiji; Kasama, Yasuhiro; Endo, Akira; Hori, Ryoichi; Etoh, Jun; Horiguchi, Masashi; Ikenaga, Shinichi; and Kumata, Atsushi, 5,854,508, Cl. 257-786.000.

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Appel, Peter Willem; Arts, Theodorus Johannes; Boskamp, Jelles Vincent; Chapple, Andrew Paul; Dobbe, Fredericus Cornelis; Joyeux, Christophe Michel; Lanceley, Carolyn Angela; Lempers, Edwin Leo; and Osinga, Theo Jan, 5,854,198, Cl. 510-444.000.

Osterman, Thomas J.: *See—*

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Ostlie, Brian W., to Minnesota Mining & Manufacturing Co. Sprayable surface defect detection composition and method of using same. 5,853,467, Cl. 106-31.280.

Ostojic, Stevan R. Lower back brace construction. 5,853,379, Cl. 602-19.000.

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Hern, John F.; and Smith, Kevin T., 5,853,169, Cl. 269-21.000.

Ota, Masuyuki; Kondo, Katsumi; and Oh-e, Masahito, to Hitach, Ltd. Active matrix type liquid crystal display system and driving method therefor. 5,854,616, Cl. 345-100.000.

Ota, Takeshi, to Fuji Xerox Co., Ltd. Optical communication network. 5,854,700, Cl. 359-136.000.

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Otani, Katsuya: *See—*

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Ott, Karl-Heinz: *See—*

Kakefuda, Genichi; Ott, Karl-Heinz; Kwagh, Jae-Gyu; and Stockton, Gerald W., 5,853,973, Cl. 435-4.000.

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Overhage, Craig; and Austin, Richard, to Tektronix, Inc. Logic signal extraction. 5,854,996, Cl. 702-189.000.

Overman, William C.: *See—*

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Owen, David Alan: *See—*

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Owen, Matthew: *See—*

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Owen, Richard Charles Andrew: *See—*

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Scott, Garrett Lee, 5,853,447, Cl. 65-121.000.

Owens Corning Fiberglas Technology, Inc.: *See—*

Smith, Roy E., 5,853,133, Cl. 242-18.00R.

Owens, Patrick M.: *See—*

Whayne, James G.; Kordis, Thomas F.; Fleischman, Sidney D.; Panescu, Dorin; Swanson, David K.; Owens, Patrick M.; Jackson, Jerome; Thompson, Russell B.; and McGee, David, 5,853,411, Cl. 606-41.000.

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Urabe, Hiroshi; Oyama, Hajime; and Hitomi, Tatsuya, 5,853,831, Cl. 428-35.700.

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Ogawa, Tsuneshi; Haginoya, Teru; Maruyama, Toshiharu; Nishiyama, Shigeki; and Ozaki, Shintaro, 5,854,462, Cl. 219-137.0WM.

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Pace, Ermanno; Mariani, Giorgio; and Fasan, Alessandro, to StMicroelectronics, Inc. Electroluminescent lamp driver circuit with signal tracking. 5,854,539, Cl. 315-208.000.

Pacesetter, Inc.: *See—*
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  Walter, Jeryle L.; and Sheetz, Terry, 5,852,872, Cl. 29-860.000.

Pacher, Franz, to Framatome Connectors Interlock, Inc. Initiator connector for airbag systems. 5,853,298, Cl. 439-352.000.

Pacific Communication Sciences: *See—*
  Peponides, George; and Balachandran, Kumar, 5,854,808, Cl. 375-224.000.

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  Johnson, Keith O.; and Pflaumer, Michael W., 5,854,600, Cl. 341-155.000.

Packard Bell NEC: *See—*
  Fuhs, Eric D.; Ojeda, Peter A.; and Zappacosta, Elisa E., 5,854,736, Cl. 361-683.000.

Page, David L.: *See—*
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Paint Trix Inc.: *See—*
  Woodruff, Byron J., 5,853,258, Cl. 401-219.000.

Palese, Peter; and Garcia-Sastre, Adolfo, to City University of New York, The Mount Sinai School of Medicine of the. Recombinant negative strand RNA virus expression systems and vaccines. 5 854,037, Cl. 435-172.300.

Palm, Herbert: *See—*
  Jaso, Mark A.; Palm, Herbert; and Poetzlberger, Hans Werner, 5,854,140, Cl. 438-740.000.

Palmquist, John Mark: *See—*
  Csipkes, Andrei; and Palmquist, John Mark, 5,854,852, Cl. 382-151.000.

Pan, Pai-Hung, to Micron Technology, Inc. Method of forming a contact landing pad. 5,854,127, Cl. 438-629.000.

Panarello, Salvatore: *See—*
  Skelton, John; Panarello, Salvatore; and Eagles, Dana Burton, 5,853,493, Cl. 134-7.000.

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Papp, Agnes: *See—*
  Matyus, Peter; Zara, Erzsebet; Farkas, Lajos; Papp, Agnes; Simay, Antal; Toldy, Lajos; Andrasi, Ferenc; Goldschmidt, Katalin; Hodula, Eszter; Mathe, Ildiko; Sutka, Klara; Fittler, Zsuzsanna; Vitkoczi, Valeria; Sebestyen, Laszlo; Sziraki, Istvan; Rusz, Marta; and Gal, Eva, 5,854,250, Cl. 514-255.000.

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Revis, Billy Wayne. Inline condensation alarm system for a central air conditioning unit. 5,854,518, Cl. 307-118.000.
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Rexam Graphics Inc.: *See—*
Anderson, Brian L.; and Warren, Brenda M., 5,853,899, Cl. 428-507.000.
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Arnold, Lyle J., Jr.; Reynolds, Mark A.; Schwartz, David A.; and Daily, William J., 5,854,410, Cl. 536-23.100.
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Wagner, Herbert, 5,853,461, Cl. 106-2.000.
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Langlois, Bruno; Ponce, Arnauld; and Guerin, Gilles, 5,853,807, Cl. 427-340.000.
Rhone Poulenc, Inc.: *See—*
Tomalski, Michael D.; and Gant, Daniel B., 5,854,002, Cl. 435-7.200.
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Wong, Johnny H.; Rhyne, Gregory Keith; and Tsengouras, Demetrios, 5,853,445, Cl. 55-343.000.
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MacMillan, Leann M.; Rice, Huston W.; Pathak, Bimal; and Thackray, Mark R., 5,854,886, Cl. 395-114.000.
Rich, Richard D.; Maandi, Eerik; Gontarz, Paula M.; and Chu, Hsien-Kun, to Loctite Corporation. Preapplied silicone threadlocker and sealant. 5,853,520, Cl. 156-293.000.
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Richart, Douglas S. Process and apparatus for the preparation of fine powders. 5,854,311, Cl. 523-309.000.
Richied, Donald E.; and Stecher, Anne M., to Illinois Superconductor Corporation. Thermal attachment device. 5,853,198, Cl. 285-41.000.
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Rickel, David; and McBeath, James B., to GLOBEtrotter Software, Inc. Static debugging tool and method. 5,854,924, Cl. 395-704.000.
Ricoh Company Ltd.: *See—*
Baxter, Michael A., 5,854,918, Cl. 395-555.000.
Cullen, John F.; and Ejiri, Koichi, 5,854,854, Cl. 382-176.000.
Furukawa, Akio; and Nakahira, Toshiaki, 5,854,949, Cl. 396-200.000.
Kato, Masayoshi, 5,853,626, Cl. 264-1.250.
Kishi, Kazuhito; Takemoto, Takeshi; and Kimura, Takashi, 5,854,465, Cl. 219-216.000.
Suzuki, Tetsuro; Niimi, Tatsuya; and Shimada, Tomoyuki, 5,853,935, Cl. 430-859.000.
Watanabe, Jun, 5,853,627, Cl. 264-2.300.
Ricoh Corporation: *See—*
Cullen, John F.; and Ejiri, Koichi, 5,854,854, Cl. 382-176.000.
Ricotti, Giulio; Bardelli, Roberto; and Rossi, Domenico, to SGS-Thomson Microelectronics, S.r.l. Electronic cord and circuit with a switch for modifying the resonant frequency of a receiver. 5,854,481, Cl. 230-492.000.
Riddle, Guy G., to Apple Computer, Inc. System for automatically adding additional data stream to existing media connection between two end points upon exchange of notifying and confirmation messages therebetween. 5,854,898, Cl. 395-200.610.
Ride, Inc.: *See—*
Alden, Richard P., 5,853,188, Cl. 280-627.000.
Riegel, Willi: *See—*
Schwiegk, Stefan; Hübinger, Wolfgang; Folda, Thomas; Ittemann, Peter; Riegel, Willi; Moench, Monika; and Mauthe, Peter, 5,854,305, Cl. 523-130.000.
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Riese, Walter C, to Vastar Resources, Inc. Method for completing a well in a coal formation. 5,853,224, Cl. 299-13.000.
Rigal, Jean-Pierre, to Salomon S.A. Tightening device with serrated strap and ratchet locking member. 5,852,852, Cl. 24-68.00R.
Riggle, Christopher T. Beverage container holder. 5,853,158, Cl. 248-311.200.
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Engberts, Jan Bernard Frederik Nicolaas; Wagenaar, Anno; Hoekstra, Dirk; Van Der Woude, Irene; and Ruiters, Marcel Herman Jozef, 5,853,694, Cl. 424-1.210.
Rimai, Donald Saul; and Leone, Salvatore, to Eastman Kodak Company. Eliminating triboelectrically generated background in an electrophotographically produced image. 5,853,941, Cl. 430-122.000.
Rinaldi, Robert. Greeting card with self-inflating balloon. 5,852,889, Cl. 40-124.060.
Rindo, Katsuhiko: *See—*
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Koponen, Ismo; Rintasalo, Iimari; Vainio, Jari; and Kaihovirta, Juha, 5,852,963, Cl. 83-53.000.
Rinz, James E., to Premix, Inc. Process for thickening thermoset resin molding compound compositions. 5,854,317, Cl. 523-508.000.
Rion, Robert B.; Goestenkors, Gregory N.; and Figlioli, David B., to Breed Automotive Technology, Inc. Fastenerless driver air bag cover and easy to assemble air bag module assembly. 5,853,190, Cl. 280-728.200.
Ripley, Ian Stanley; and Needham, Antony Hugh. Treatment of waste petroleum. 5,853,563, Cl. 208-13.000.
Rise, Mark T., to Medtronic, Inc. Method of and apparatus for preventing tissue ingrowth in infusion catheters. 5,853,424, Cl. 607-117.000.
Riso Kagaku Corporation: *See—*
Kuratani, Yasushi, 5,852,950, Cl. 74-440.000.
Matsuura, Tomoko; and Okawa, Teruaki, 5,853,466, Cl. 106-31.260.
Rissik, George Victor, to Galago Limited and Kenneth Dinner. Apparatus for automatic cleaning of a submerged surface. 5,852,841, Cl. 15-1.700.
Rit Technologies Ltd.: *See—*
Bengal, Ofer; and Pincu, David, 5,854,824, Cl. 379-34.000.
Ritt, Robert T.; Nemeth, Steve J., Jr.; and Roslund, Richard N., Jr., to Haworth, Inc. Height-adjustable chair arm assembly. 5,853,223, Cl. 297-411.360.
Ritter, Gerd; and Old, Lloyd J., to Ludwig Institute For Cancer Research. Process for producing GM1 specific antibodies. 5,854,007, Cl. 435-7.230.
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Kendall, John Hugh; Mohindra, Ranvir Biki; Rutherford, Duane Stephen; Satake, Satoru; Kanamoto, Sigeharu; and Kumamoto, Katsuyuki, 5,852,882, Cl. 34-599.000.
Rix, Geoff: *See—*
Schink, Michael; Rix, Geoff; and Kirwin, John, 5,854,334, Cl. 524-539.000.
Rizkalla, Nabil; Klein, Rita; and Milne, Stephen Bruce, to Scientific Design Company, Inc. Ethylene oxide catalyst. 5,854,167, Cl. 502-216.000.
Ro, Seyong: *See—*
Lim, Yongtaik; Ro, Seyong; and Hwang, Insung, 5,854,691, Cl. 358-403.000.
Robbins, Michael H.: *See—*
Blum, Robert L.; Robbins, Michael H.; Hearn, Lynn M.; and Nelson, Shona L., 5,854,187, Cl. 510-197.000.
Robert Bosch GmbH: *See—*
Drummer, Eugen, 5,853,161, Cl. 251-129.010.
Hackl, Matthias; and Kraemer, Wolfgang, 5,853,064, Cl. 180-422.000.
Kuettner, Klaus; Hahn, Dietmar; Flik, Gottfried; and Ohnmacht, Markus, 5,852,866, Cl. 29-608.000.
Lessing, Ulrich; Marto, Heinz-Arno; and Kaess, Reiner, 5,854,675, Cl. 356-241.000.
Schustek, Siegfried; and Ackermann, Manfred, 5,853,072, Cl. 192-42.000.
Speck, Hans-Reimer; Weber, Christian; and Huber, Thomas, 5,854,989, Cl. 701-93.000.
Wagner, Jochen; and Wiss, Helmut, 5,853,230, Cl. 303-113.400.
Willmann, Karl-Heinz; Breitenbacher, Juergen; Kellner, Andreas; and Dreilich, Ludwig, 5,853,229, Cl. 303-3.000.
Robert, Jean-Pierre: *See—*
Meynckens, Jean-Pierre; and Robert, Jean-Pierre, 5,853,654, Cl. 264-635.000.
Roberts, Gary Frederick: *See—*
Chen, Jiann Hsing; Demejo, Lawrence Paul; Roberts, Gary Frederick; and Aslam, Muhammed, 5,853,892, Cl. 428-421.000.
Robertson, Jeffrey Charles, to Eastman Kodak Company. Light tight chamber with closure and sensor for position of closure and cassette in chamber. 5,854,954, Cl. 396-535.000.
Robertson, Norrie R.: *See—*

Catherwood, Michael I.; Robertson, Norrie R.; and McKinnon, Gordon W., 5,854,944, Cl. 395-879.000.

Robeva, Anna: *See—*

Linden, Joel; Taylor, Heidi; Robeva, Anna; Woodard, Robin; and Jin, Xiaowei, 5,854,081, Cl. 436-501.000.

Robinson, Darrell; Learmont, Robert O.; Loehr, Karl R.; Pruehs, Allen V.; and Dropiewski, Keith C., to Ekstrom Industries, Inc. Watthour socket adapter with improved electrical connections. 5,853,300, Cl. 439-517.000.

Robinson, Eric J.: *See—*

Sainton, Joseph B.; Leedom, Charles M., Jr.; and Robinson, Eric J., 5,854,985, Cl. 455-553.000.

Robinson, Gale. Pen and instrument holder for physically impaired hands. 5,853,210, Cl. 294-25.000.

Robinson, James C.: *See—*

Canada, Ronald G.; Pearce, James W.; and Robinson, James C., 5,854,994, Cl. 702-56.000.

Robinson, Norman F., to McDonnell Douglas Corporation. Bleed valve for bleeding fluid from a hydraulic circuit. 5,853,071, Cl. 188-352.000.

Robinson, Ralph P., to Pfizer Inc. Cyclic imide derivatives. 5,854,275, Cl. 514-411.000.

Robinson, Ron: *See—*

Seaton, William Ernest; Fanning, Mark Joseph; Drager, Craig; Robinson, Ron; Morris, Roger James; Gayral, Jean-Pierre Bernard; and Gerst, JoAnne T., 5,853,667, Cl. 422-65.000.

Robinson-Benion, Cheryl L.: *See—*

Holt, Jeffrey T.; Jensen, Roy A.; King, Mary-Claire; Page, David L.; Szabo, Csilla I.; Jetton, Thomas L.; Robinson-Benion, Cheryl L.; and Thompson, Marilyn E., 5,854,222, Cl. 514-44.000.

Rockefeller University, The: *See—*

Fang, Kathy S.; and Hanafusa, Hidesaburo, 5,854,045, Cl. 435-196.000.

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Dodge, Robert D.; Hubert, James P.; Wash, Ricky D.; Minnick, James A.; and Zogg, Scott J. F., 5,854,787, Cl. 370-349.000.

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Aronowitz, Frederick; and Trozpek, Ludd A., 5,854,677, Cl. 356-350.000.

Dezonno, Anthony J., 5,854,832, Cl. 379-111.000.

Rodgers, Robert C.; and Hathcock, Lance S., to Ingersoll-Rand Company. Moisture separator for fluid compressor. 5,853,443, Cl. 55-456.000.

Rodrigo Sanchez, Jose Maria: *See—*

Garcia Aguilera, Jose Maria; and Rodrigo Sanchez, Jose Maria, 5,854,976, Cl. 455-411.000.

Rodriguez, Pascale: *See—*

Bednossian, Antoine; Langlois, Philippe; Lepretre, Pascal; Morel, Robert; Rodriguez, Pascale; and Velletaz, Gilbert, 5,853,305, Cl. 439-787.000.

Rodriguez-Parada, Jose N.: *See—*

Ma, Sheau-Hwa; and Rodriguez-Parada, Jose N., 5,854,331, Cl. 524-505.000.

Rögelein, Dieter. Protective device against thermal overload for a small high-heat-load electric motor. 5,854,584, Cl. 337-333.000.

Rogers, Paul Jason: *See—*

Lancaster, Rodney Peter; Lowrey, Ian; Rogers, Paul Jason; and Sinfield, Nigel Kenneth, 5,854,894, Cl. 395-200.430.

Rogers, Wilfred R.; and Cancellieri, Salvatore A., to Wiremold Company, The. Desktop raceway. 5,853,236, Cl. 312-223.600.

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Schmidt, Kurt, 5,854,570, Cl. 329-304.000.

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Duccini, Yves; Keenan, Andrea Claudette; and Shulman, Jan Edward, 5,854,197, Cl. 510-434.000.

Willingham, Gary Lewis; and Oltman, Linda Marguerite, 5,853,463, Cl. 106-18.350.

Röhm Enzyme Finland OY: *See—*

Buchert, Johanna; Siika-aho, Matti; Viikari, Liisa; Penttilä , Merja; Saloheimo, Anu; and Ranua, Marjatta, 5,854,047, Cl. 435-209.000.

Rohrbach, Manfred: *See—*

Altheimer, Helmut; Awrath, Norbert; Barth, Rudolf; Baumbach, Peter; Brosig, Jochen; Esser, Gregor; Fuess, Monika; Guilino, Guenther; Haimerl, Walter; Meixner, Christine; Pfeiffer, Herbert; and Rohrbach, Manfred, 5,854,669, Cl. 351-169.000.

Roldan, Judith Marie; and Saraf, Ravi F., to International Buisness Machines Corporation. Lead-free interconnection for electronic devices. 5,854,514, Cl. 257-746.000.

Rollin, Pierre E.; Elliott, Luanne; Ksiazek, Thomas G.; Nichol, Stuart T.; Morzunov, Sergey; and Ravkov, Eugeny, to United States of America, Health and Human Services; and National Institutes of Health Office of Technology Transfer. Black creek canal hantavirus and related methods. 5,853,980, Cl. 435-5.000.

Rollins, Barrett; and Zhang, Yujun, to Dana-Farber Cancer Institute. Chemokine N-terminal deletion mutations. 5,854,412, Cl. 536-23.100.

Rollins, Jeffry S.: *See—*

Wilkus, Stephen A.; Evans, James G.; and Rollins, Jeffry S., 5,853,196, Cl. 283-81.000.

Rollins, Scott; Smith, Brian R.; and Squinto, Stephen P., to Alexion Pharmaceuticals, Inc.; and Yale University. Use of C5-specific antibodies for reducing immune and hemostatic dysfunctions during extracorporeal circulation. 5,853,722, Cl. 424-145.100.

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Searle, John G, 5,853,119, Cl. 228-112.100.

Romagnoli, Andrea, to I.M.A. Industria Machine Automatiche S.p.A. Method of manufacturing double-chambered infusion bags by folding. 5,852,917, Cl. 53-479.000.

Roman, Gianfranco; and Pasut, Claudio, to Claber S.p.A. Device for the connection of electrical conductors to a control unit, preferably for an irrigation control apparatus. 5,853,302, Cl. 439-629.000.

Roman, James J.: *See—*

Beilin, Solomon I.; Chou, William T.; Kudzuma, David; Lee, Michael G.; Peters, Michael G.; Roman, James J.; Swamy, Som S.; Wang, Wen-chou Vincent; Moresco, Larry L.; and Murase, Teruo, 5,854,534, Cl. 257-691.000.

Roman, Jose M. Fiandor: *See—*

Gomez, Jose R. Ruiz; Calderon, Jose Maria Bueno; Garcia-Ochoa Dorado, Silvestre; Fraile Gabaldon, Maria T.; Pichel, Julia C.; Roman, Jose M. Fiandor; Gargallo Viola, Domingo; Cuevas Zurita, Juan C.; Lavandera Diaz, Jose L.; and Husss, Sophie, 5,854,280, Cl. 514-456.000.

Roman, Linda Carol; and Kurtz, Daniel Brian, to Kraft Foods, Inc. Container with stabilizing beads. 5,853,105, Cl. 220-575.000.

Romano, Andrew A.: *See—*

Hancock, R. Douglas; Romano, Andrew A.; and Noble, Russell T., 5,853,595, Cl. 210-698.000.

Romano, Charles E., Jr.: *See—*

Martin, Thomas W.; Romano, Charles E., Jr.; and Maskasky, Joe E., 5,853,470, Cl. 106-31.860.

Rombach, Horst: *See—*

Lesch, Hilmar; Kirchberger, Klaus; Stöckl, Werner; and Rombach, Horst, 5,854,789, Cl. 370-395.000.

Root, Loren F.; and McDunn, Kevin J., to Motorola, Inc. Method for spray-cooling a tunable semiconductor device. 5,854,092, Cl. 438-106.000.

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Tang, Dan; Zhou, Liuming; and Gerhardt, Robert, 5,853,487, Cl. 127-32.000.

Rose, Lynn M., to ICOS Corporation; and University of Washington, Board of Regents of the. Murine and humanizer 23F2G antibodies and cell lines expressing said antibodies. 5,854,070, Cl. 435-343.200.

Rose, Monte L. Slotted dovetail holding fixture. 5,853,035, Cl. 144-144.100.

Rose, Vincent H. Moving magnet indicating instruments with a plurality of damping fluid migration barriers. 5,854,552, Cl. 324-146.000.

Rosen, Arye: *See—*

Stabile, Paul J.; Ludington, David Norman; York, Pamela Kay; Rosen, Arye; Cherukuri, Satyam Choudary; Zanzucchi, Peter John; and Heaney, Paul, 5,854,684, Cl. 356-440.000.

Rosen, Louis A.: *See—*

Graham, Eric J.; Rosen, Louis A.; Goldman, Ira; Berliner, Jeffrey Scott; Collins, Thomas D.; and Walker, Clarence W., 5,854,445, Cl. 174-99.00B.

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Tagansky, Boaz; and Rosen, Yossi, 5,854,960, Cl. 399-239.000.

Rosenauer, Charles E., to Med-O-Tech, Inc. PC apparatus for cleaning. 5,853,014, Cl. 134-102.100.

Rosenbaum, Joel F.: *See—*

Krishaswamy, Silaipillayarputhur V.; Valek, William F.; Valko, Thomas M.; Milton, Curtis E., Jr.; and Rosenbaum, Joel F., 5,853,601, Cl. 216-2.000.

Rosenbaum, Larry A.: *See—*

Laurin, Dean; Buan, Angeles Lillian; Woo, Lecon; Ling, Michael T. K.; Ding, Yuan Pang Samuel; Anderson, William; Rosenbaum, Larry A.; Hayward, Denise S.; Hoppesch, Joseph P.; Nebgen, Gregg; and Westphal, Stanley, 5,854,347, Cl. 525-66.000.

Rosenberger, Bernd, to Rosenberger Hochfrequenztechnik GmbH & Co. Angle connector between a coaxial structure and a planar structure. 5,853,295, Cl. 439-63.000

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Rosenberger, Bernd, 5,853,295, Cl. 439-63.000.

Rosinger, Christopher: *See—*

Schnabel, Gerhard; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Rosinger, Christopher, 5,854,179, Cl. 504-214.000.

Roslund, Richard N., Jr.; and Wilkerson, Larry A., to Haworth, Inc. Height-adjustable chair back. 5,853,222, Cl. 297-353.000.

Roslund, Richard N., Jr.: *See—*

Ritt, Robert T.; Nemeth, Steve J., Jr.; and Roslund, Richard N., Jr., 5,853,223, Cl. 297-411.360.

Rosov, Gene A.: *See—*

Jovicic, Neboisa; and Rosov, Gene A., 5,855,007, Cl. 705-14.000.

Ross, Robert J.: *See—*

Koskan, Larry P.; Meah, Abdul Rehman Y.; Sanders, J. Larry; and Ross, Robert J., 5,854,177, Cl. 504-320.000.

Soltis, Lawrence A.; Ross, Robert J.; and Rammer, Douglas R., 5,852,909, Cl. 52-730.700.

Rossi, Domenico: *See—*

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Roth, Peter; and Molinar, Hector A., to Cypress Semiconductor Corp. Reduced-particle method of processing a semiconductor and/or integrated circuit. 5,854,138, Cl. 438-714.000.

Roth, Robert John Gordon; and Winterburn, Georgina Ann, to Shell Oil Company. Lubricant mixtures and grease compositions based thereon. 5,854,185, Cl. 508-492.000.

Rothaupt, Krystal Kay: *See—*

Brenner, Larry Bert; Briskey, Kenneth Charles; and Rothaupt, Krystal Kay, 5,854,896, Cl. 395-200.510.

Rothe, Mike; and Wu, Lin, to Tularik Inc. Screening method for agents that modulate human NIK activity. 5,854,003, Cl. 435-7.800.

Rothenberger Werkzeuge AG: *See—*

Fuhr, Jürgen; Herrgen, Rudolf; Nolle, Michael; and Weber, Thilo, 5,852,938, Cl. 62-129.000.

Rottinghaus, Alan P.; Lurey, Daniel M.; and Luz, Yuda Y., to Motorola, Inc. Multiple access up converter/modulator and method. 5,854,813, Cl. 375-308.000.

Rottmann, Oswald: *See—*

Maierhofer, Günther; Höfer, Paul; and Rottmann, Oswald, 5,853,753, Cl. 424-450.000.

Rötz, Steffen: *See—*

Lentz, Norbert; Witt, Karl-Heinz; and Rötz, Steffen, 5,853,275, Cl. 413-73.000.

Rounds, Todd Michael: *See—*

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Roussel, Hervé, to Protial, Societe Anonyme. Process for the production of a food ingredient constituted essentially of muscular protein fibers. 5,853,791, Cl. 426-646.000.

Rowe, Gerald: *See—*

Reichenmiller, Michael; Rowe, Gerald; Lacher, Franz; and Schmid, Wolf-Dieter, 5,852,931, Cl. 60-339.000.

RSA Data Security, Inc.: *See—*

Kaliski, Burton S., Jr.; and Yin, Yiqun Lisa, 5,854,759, Cl. 364-746.100.

RTI Resource Transforms International Ltd.: *See—*

Piskorz, Jan; Majerski, Piotr; and Radlein, Desmond, 5,853,548, Cl. 201-7.000.

Rubore Materials Sweden AB: *See—*

Josefsson, Percy, 5,853,070, Cl. 188-73.370.

Rudolph, James W.; and Purdy, Mark J., to B. F. Goodrich Company, The. Pressure gradient CVI/CVD apparatus process and product. 5,853,485, Cl. 118-715.000.

Rueger, David C.: *See—*

Oppermann, Hermann; Ozkaynak, Engin; Kuberasampath, Thangavel; Rueger, David C.; Pang, Roy H. L.; and Cohen, Charles M., 5,854,071, Cl. 435-353.000.

Ruhe, William R., Jr.: *See—*

Harrison, James J.; and Ruhe, William R., Jr., 5,853,434, Cl. 44-331.000.

Ruhmann, Heinrich: *See—*

Van Swam, Leonard F. P.; Garzarolli, Friedrich; and Ruhmann, Heinrich, 5,854,818, Cl. 376-409.000.

Ruiters, Marcel Herman Jozef: *See—*

Engberts, Jan Bernard Frederik Nicolaas; Wagenaar, Anno; Hoekstra, Dirk; Van Der Woude, Irene; and Ruiters, Marcel Herman Jozef, 5,853,694, Cl. 424-1.210.

Rummler, John M.; Beal, Thomas R.; and Marchesseault, Guy D., to Wastech International Inc. Treatment system. 5,853,579, Cl. 210-170.000.

Rupp, David C.: *See—*

Powell, Charles Hayes; and Rupp, David C., 5,854,303, Cl. 523-106.000.

Rushmere, John Derek: *See—*

Moffett, Robert Harvey; and Rushmere, John Derek, 5,853,616, Cl. 252-315.500.

Rusiñol, Luis Boguña; and Lopez, Miguel Mota, to Fico Transpar, S.A. Filter for electric pumps of automobile vehicle windscreen washers. 5,853,580, Cl. 210-172.000.

Rusmar Incorporated: *See—*

Kittle, Paul A., 5,853,050, Cl. 169-47.000.

Russell, Harold: *See—*

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Russell, Michael Geoffrey: *See—*

Baker, Raymond; Bourrain, Sylvie; Castro Pineiro, Jose Luis; Chambers, Mark Stuart; Guiblin, Alexander Richard; Hobbs, Sarah Christine; Jelley, Richard Alexander; Madin, Andrew; Matassa, Victor Giulio; Reeve, Austin John; Russell, Michael Geoffrey; Showell, Graham Andrew; Sternfeld, Francine; Street, Leslie Joseph; and Van Niel, Monique Bodil, 5,854,268, Cl. 514-383.000.

Russo, James J.: *See—*

Chang, Yuan; Bohenzky, Roy A.; Russo, James J.; Edelman, Isidore S.; and Moore, Patrick S., 5,853,734, Cl. 424-194.100.

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  - Tabata, Mitsunori; Kawatsuki, Masaaki; Miyamoto, Katsumi; Tsuchida, Hiroshi; Yoshinari, Tomohiro; Usui, Kazushi; Suganuma, Fujio; Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Hamada, Hideaki; Ito, Takehiko; Kintaichi, Yoshiaki; and Sasaki, Motoi, 5,853,679, Cl. 423-213.200.
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  - Kim, Min-Ho, 5,853,928, Cl. 430-28.000.
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  - Kim, Chang Sik, 5,853,608, Cl. 252-62.600.
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  - Cho, Young-Bok, 5,854,695, Cl. 358-498.000.
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  - Kim, Kee-Taek, 5,853,256, Cl. 400-624.000.
  - Kim, Yong-je, 5,854,876, Cl. 386-124.000.
  - Kim, Young-Saeng, 5,853,047, Cl. 165-151.000.
  - Lee, Chang-Hum; and Choi, Yun-Ho, 5,854,617, Cl. 345-102.000.
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  - Lee, Joo-Shik, 5,854,725, Cl. 360-106.000.
  - Lim, Beoyng-Cheol, 5,854,721, Cl. 360-106.000.
  - Lyu, Jae-jin, 5,853,822, Cl. 428-1.000.
  - Moon, Seong-yong; Shin, In-kyun; and Kang, Ho-young, 5,853,921, Cl. 430-5.000.
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- Samuelson, Lars Erik: *See—*
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- Sanchez, Laurent: *See—*
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  - Linker, Kevin L.; Conrad, Frank J.; Custer, Chad A.; and Rhykerd, Charles L., Jr., 5,854,431, Cl. 73-863.230.
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  - Stabile, Paul J.; Ludington, David Norman; York, Pamela Kay; Rosen, Arye; Cherukuri, Satyam Choudary; Zanzucchi, Peter John; and Heaney, Paul, 5,854,684, Cl. 356-440.000.
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  - Yoshida, Sadayoshi; and Sato, Kazunari, 5,854,577, Cl. 331-117.00D.
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  - Murakami, Hajime; Ashihara, Ryohei; Kubota, Kohei; and Sato, Koichi, 5,853,920, Cl. 429-229.000.
- Sato, Makoto: *See—*
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- Sato, Masayoshi: *See—*
  - Helmfrid, Sten; Ito, Kenchi; Tatsuno, Kimio; Kawamoto, Kazumi; Andou, Tetsuo; Momiji, Hiroshi; Komoda, Osamu; Kurosawa, Hisao; Sato, Masayoshi; Nitanda, Fumio; and Ito, Kohei, 5,854,870, Cl. 385-122.000.
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Spellane, Peter J.; Via, Francis A.; and Weil, Edward D., to Akzo Nobel NV. Corrosion protection of metals using aromatic amine compound(s). 5,853,462, Cl. 106-14.370.

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Spranger, Thomas: *See—*
- Beck, Oliver; Berndt, Ralf; Denk, Walter; Drohner, Hans Juergen; Fuchs, Manfred; Herbold, Gabriele; Putz, Ingo; Schork, Reinhold; Spranger, Thomas; and Ullrich, Walter, 5,853,323, Cl. 454-156.000.

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- Kuroda, Kyoko; Hattori, Masayuki; Yamakawa, Yoshitaka; Makino, Kenya; and Hayashi, Toshio, 5,854,384, Cl. 528-355.000.

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- Tanabe, Masato; Chao, Wan-Ru; Chong, Wesley K. M.; and Crowe, David F., 5,854,230, Cl. 514-173.000.

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- Baker, Raymond; Bourrain, Sylvie; Castro Pineiro, Jose Luis; Chambers, Mark Stuart; Guiblin, Alexander Richard; Hobbs, Sarah Christine; Jelley, Richard Alexander; Madin, Andrew; Matassa, Victor Giulio; Reeve, Austin John; Russell, Michael Geoffrey; Showell, Graham Andrew; Sternfeld, Francine; Street, Leslie Joseph; and Van Niel, Monique Bodil, 5,854,268, Cl. 514-383.000.

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  - Miranda, Felix A.; and Toncich, Stanley S., 5,854,559, Cl. 324-754.000.
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  - Ichiki, Tatsumi; Hamashima, Nagato; Nakamura, Teiji; Asami, Masayuki; Suzuki, Sadakatsu; and Ueno, Hiroshi, 5,854,161, Cl. 502-41.000.
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  - Brayer, Gary D.; Lee, Hung; Mauk, A. Grant; Smith, Michael; Tong, Harry; and Wan, Lianglu, 5,854,041, Cl. 435-192.000.
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  - Davidson, Richard W.; and Brabec, Vernon J., 5,854,988, Cl. 701-50.000.
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  - Asada, Hiroyoshi; Imai, Shiro; and Okamoto, Miyoshi, 5,854,148, Cl. 442-203.000.
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  - Haraldsson, N. Ulf A.; Huovila, Jyrki M.; Klerelid, Ingvar B. E.; and Törnefalk, Louise M., 5,853,545, Cl. 162-343.000.
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  - Wlodarczyk, Anthony M.; Wright, James T., III; and Baker, John L., 5,853,026, Cl. 137-613.000.
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  - Gouzien, Luc; Mouchot, Elisabeth; Lutran, Pierre; and Persing, Marc, 5,853,567, Cl. 208-132.000.
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  - Hansen, Donald W., Jr.; Currie, Mark G.; Hallinan, E. Ann; Fok, Kam F.; Hagen, Timothy J.; Bergmanis, Arija A.; Kramer, Steven W.; Lee, Len F.; Metz, Suzanne; Moore, William M.; Peterson, Karen B.; Pitzele, Barnett S.; Spangler, Dale P.; Webber, R. Keith; Toth, Mihaly V.; Trivedi, Mahima; and Tjoeng, Foe S., 5,854,234, Cl. 514-212.000.
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  - Eki, Toshio; Kuroda, Akemi; Otsuka, Toshiharu; and Uchimura, Yoshinobu, 5,853,562, Cl. 205-743.000.
  - Watanabe, Toshiya; Kojima, Eiichi; Norimoto, Keiichiro; Kimura, Tamon; Machida, Mitsuyoshi; Hayakawa, Makoto; Kitamura, Atsushi; Chikuni, Makoto; Saeki, Yoshimitsu; Kuga, Tatsuhiko; and Nakashima, Yasushi, 5,853,866, Cl. 428-312.800.
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  - Tamiya, Tadanori; and Oota, Takumi, 5,854,782, Cl. 369-192.000.
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  - Klar, Cindi, 5,853,706, Cl. 424-70.100.
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  - Ishikawa, Yuji; Kiguchi, Masao; Ohtani, Atsushi; Hirai, Nobuyuki; and Toyama, Takeshi, 5,854,888, Cl. 395-116.000.
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  - Goodby, John William; Toyne, Kenneth Johnson; Hird, Michael; and Lock, Stephen John, 5,853,613, Cl. 252-299.630.
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  - Kondo, Motohiro; Aono, Toshiya; Segawa, Masaya; Yamanishi, Koichi; Kondo, Kazuhiro; and Taya, Keiko, 5,853,981, Cl. 435-5.000.
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  - Itabashi, Tadashi; Kamikubo, Takashi; and Sawamura, Katsuhiko, 5,854,323, Cl. 524-88.000.
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  - Hikosaka, Atsushi; and Nozaki, Masahiro, 5,852,898, Cl. 49-498.100.
  - Koizumi, Junji; Mizutani, Haruyasu; and Shichida, Yoshiaki, 5,854,328, Cl. 524-451.000.
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- Tracey, Kevin J.: *See—*
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- Traise, John E., to Moore Business Forms, Inc. Separator for linerless labels. 5,853,117, Cl. 225-4.000.
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  - Kingsley, Gordon F.; Headley, Thomas D.; and Halpern, Lise N., 5,853,382, Cl. 604-4.000.
- Traver, Martin J.: *See—*
  - Small, Dorsey D.; Traver, Martin J.; Dunning, Edgar E., III; Clark, G. Todd; and Kellums, Bruce W., 5,853,113, Cl. 222-379.000.
- Traversari, Catia: *See—*
  - Brichard, Vincent; Van Pel, Aline; Traversari, Catia; Wölfel, Thomas; Boon-Falleur, Thierry; and De Plaen, Etienne, 5,854,203, Cl. 514-2.000.
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  - Gildea, David R., 5,854,605, Cl. 342-357.000.
  - Lennen, Gary R., 5,854,815, Cl. 375-343.000.
- Trimbo, Susan: *See—*
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  - Postlewaite, William M.; Vogel, Kim J.; Maynard, Jason; and Poole, Vincent, 5,854,891, Cl. 395-188.010.
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- Hansen, Donald W., Jr.; Currie, Mark G.; Hallinan, E. Ann; Fok, Kam F.; Hagen, Timothy J.; Bergmanis, Arija A.; Kramer, Steven W.; Lee, Len F.; Metz, Suzanne; Moore, William M.; Peterson, Karen B.; Pitzele, Barnett S.; Spangler, Dale P.; Webber, R. Keith; Toth, Mihaly V.; Trivedi, Mahima; and Tjoeng, Foe S., 5,854,234, Cl. 514-212.000.
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  - Dellinger, Douglas J.; Dahm, SueAnn C.; and Troll, Mark A., 5,853,993, Cl. 435-6.000.
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  - Carter, Peter R.; Hamman, Gary T.; Jackson, Kenneth S.; and Truman, Mari S., 5,853,413, Cl. 606-69.000.
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  - Chang, Yuan; Bohenzky, Roy A.; Russo, James J.; Edelman, Isidore S.; and Moore, Patrick S., 5,853,734, Cl. 424-194.100.
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  - Stein, Cy; and Rabbani, LeRoy, 5,854,223, Cl. 514-44.000.
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  - Leifeld, Ferdinand, 5,852,844, Cl. 15-301.000.
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  - Baker, Frederick L.; Peterson, Phillip S.; Lowney, Timothy M.; and Eckhart, Richard J., 5,853,194, Cl. 280-777.000.
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  - Lan, Chao-Yi; Horng, Shean-Ren; Shen, Yun-Hung; and Tsai, Hung-Jen, 5,854,134, Cl. 438-695.000.
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  - Ogoshi, Tsutomu; Tsurumaru, Yohka; Tsuboya, Hisao; Watanabe, Tsukasa; and Enami, Masao, 5,853,598, Cl. 210-724.000.
- Tsuchida, Hiroshi: *See—*
  - Tabata, Mitsunori; Kawatsuki, Masaaki; Miyamoto, Katsumi; Tsuchida, Hiroshi; Yoshinari, Tomohiro; Usui, Kazushi; Suganuma, Fujio; Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Hamada, Hideaki; Ito, Takehiko; Kintaichi, Yoshiaki; and Sasaki, Motoi, 5,853,679, Cl. 423-213.200.
- Tsuchida, Naoki: *See—*
  - Tsuzuku, Hiroyuki; Tsuchida, Naoki; and Ito, Takeshi, 5,852,994, Cl. 123-308.000.
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  - Mori, Yoshihiro; Tsuga, Kazuhiro; Hasebe, Takumi; Nakamura, Kazuhiko; Fukushima, Yoshihisa; Kozuka, Masayuki; Matsuda, Chieko; and Yamane, Yasuhiko, 5,854,873, Cl. 386-92.000.
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- Tsuji, Norimasa, to Fuji Photo Film Co., LTD. Dispersing machine. 5,853,132, Cl. 241-172.000.
- Tsuji, Shuichi; Kurosawa, Nobuyuki; Hamamoto, Toshiro; Lee, Young-Choon; Nakaoka, Takashi; and Kojima, Naoya, to Institute of Physical and Chemical Research, The. Sugar-chain synthetase and process for producing the same. 5,854,042, Cl. 435-193.000.
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- Tsujimoto, Takashi; and Mizutani, Mamoru, to NTN Corporation. Main shaft gear mechanism in a transmission for a vehicle. 5,852,947, Cl. 74-339.000.
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  - Yoshino, Hiroshi; Ueda, Norihiro; Niijima, Jun; Haneda, Toru; Kotake, Yoshihiko; Yoshimatsu, Kentaro; Watanabe, Tatsuo; Nagasu, Takeshi; Tsukahara, Naoko; Koyanagi, Nozomu; and Kitoh, Kyosuke, 5,854,274, Cl. 514-290.000.
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- Tsukude, Masaki: *See—*
  - Arimoto, Kazutami; and Tsukude, Masaki, 5,854,561, Cl. 327-534.000.
- Tsunekawa, Satoru: *See—*
  - Inuzuka, Tatsuhiro; Mano, Hiroyuki; Fujisawa, Kazuhiro; Konuma, Satoshi; Kinugawa, Kiyoshige; and Tsunekawa, Satoru, 5,854,879, Cl. 345-89.000.
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  - Kajigaya, Kazuhiko; Miyazawa, Kazuyuki; Tsunozaki, Manabu; Oshima, Kazuyoshi; Yamazaki, Takashi; Sakai, Yuji; Sawada, Jiro; Yamaguchi, Yasunori; Matsumoto, Tetsurou; Udo, Shinji; Yoshioka, Hiroshi; Saito, Hirokazu; Takano, Mitsuhiro; Morino, Makoto; Miyatake, Sinichi; Miyamoto, Eiji; Kasama, Yasuhiro; Endo, Akira; Hori, Ryoichi; Etoh, Jun; Horiguchi, Masashi; Ikenaga, Shinichi; and Kumata, Atsushi, 5,854,508, Cl. 257-786.000.
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  - Obata, Takao; Kumagai, Mitsuaki; Iura, Akihiko; Murata, Akio; Yamamoto, Shinji; Sato, Makoto; Okawado, Akira; Tsurumaru, Shinichiro; Miyata, Maki; Kobayashi, Toshiyuki; Akasawa, Nobuaki; Okano, Masahiko; and Miyanaga, Takao, 5,854,737, Cl. 361-686.000.
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  - Ogoshi, Tsutomu; Tsurumaru, Yohka; Tsuboya, Hisao; Watanabe, Tsukasa; and Enami, Masao, 5,853,598, Cl. 210-724.000.
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  - Okudaira, Terumi; Tsurumi, Yasuhisa; Hatanaka, Hiroshi; Kino, Toru; and Hashimoto, Seiji, 5,854,276, Cl. 514-424.000.
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  - Kohno, Tatsuoki; Kanda, Motoya; and Tsuruta, Shinji, 5,853,919, Cl. 429-223.000.
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  - Hallinan, Ann E.; Hansen, Donald W., Jr.; and Tsymbalov, Sofya, 5,854,251, Cl. 514-256.000.
- Tu, Francis: *See—*
  - Hu, Hung-Tzaw; and Tu, Francis, 5,853,543, Cl. 162-198.000.
- Tucker, Hugh N.: *See—*
  - Madsen, David C.; Kruzel, Chris; Trimbo, Susan; Voss, Theresa; Hennessy, Kathryn; Siegel, Carol; and Tucker, Hugh N., 5,853,377, Cl. 600-587.000.
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  - Bono, James L.; Tucker, Lewis A.; and Yee, Deborah J., 5,853,781, Cl. 426-110.000.
- Tuckner, Ronald F.; and Peterson, Glen John, to Tetra Laval Holdings & Finance, SA. Orientationally sensitive closure and orienting apparatus therefor. 5,852,913, Cl. 53-367.000.
- Tuf-Tite, Inc.: *See—*
  - Meyers, Theodore W., 5,852,901, Cl. 52-20.000.
- Tuffereau, Marie-Christine: *See—*
  - Benejean, Jacqueline; Flamand, Anne; Tuffereau, Marie-Christine; Coulon, Patrice; and Lafay, Florence, 5,853,735, Cl. 424-208.100.
- Tularik Inc.: *See—*
  - Rothe, Mike; and Wu, Lin, 5,854,003, Cl. 435-7.800.
- Tung, David W.: *See—*
  - Greff, Richard J.; and Tung, David W., 5,853,410, Cl. 606-32.000.
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  - Kudert, Frederick G.; Latreille, Maurice G.; McHenry, Robert J.; Nahill, George F.; Pfutzenreuter, Henry, III; Tennant, William A.; Tung, Thomas T.; and Vella, John, Jr., 5,853,772, Cl. 425-130.000.
- Turbett, James Lynn; and Iaia, Mark John, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Dispensing closure. 5,853,115, Cl. 222-531.000.
- Turecek, Peter: *See—*
  - Fischer, Bernhard; Mitterer, Artur; Dorner, Friedrich; Schwarz, Hans-Peter; Turecek, Peter; Eibl, Johann; Falkner, Falko-Guenter; Schlokat, Uwe; Mundt, Wolfgang; Reiter, Manfred; and Den-Bouwmeester, Renate, 5,854,403, Cl. 530-412.000.
- Turi, Raymond A.: *See—*
  - Gonzalez, Fernando; Lowrey, Tyler A.; Doan, Trung Tri; Turi, Raymond A.; and Wolstenholme, Graham R., 5,854,102, Cl. 438-237.000.
- Turkalj, Robert: *See—*
  - Pflaum, Zlatko; and Turkalj, Robert, 5,853,720, Cl. 424-124.000.

- Turner, Robert John. Crawler track assembly. 5,853,233, Cl. 305-123.000.
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  - DeBoer, Charles D.; Wen, Xin; and Tutt, Lee W., 5,854,175, Cl. 503-227.000.
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  - Yu, X. Shawn; Gingrich, Bryan R.; Tuttle, Robert L.; and Foco, Keith, 5,852,904, Cl. 52-220.700.
- Twardzik, Daniel R.; and Vedvick, Thomas S., to Corixa Corporation. Compounds and methods for treatment and diagnosis of prostate cancer. 5,854,206, Cl. 514-12.000.
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- Tzu, San-De, to Taiwan Semiconductor Manufacturing Company, Ltd. Double layer method for fabricating a rim type attenuating phase shifting mask. 5,853,923, Cl. 430-5.000.
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  - Trader, Terry F.; and Cox, Leslie Darrell, 5,854,837, Cl. 379-265.000.
- UAB Research Foundation, The: *See—*
  - Tice, Thomas R.; Gilley, Richard M.; Eldridge, John H.; and Staas, Jay K., 5,853,763, Cl. 424-489.000.
- UAB Research Foundation Ltd.: *See—*
  - Urry, Dan W.; McPherson, David T.; and Xu, Jie, 5,854,387, Cl. 530-323.000.
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- Uchida, Kouji: *See—*
  - Okano, Takashi; Uchida, Kouji; Kamafusa, Kouji; Kawakami, Hisatoshi; Sogabe, Masaharu; and Tanaka, Osamu, 5,853,123, Cl. 236-51.000.
- Uchimura, Shunichi; Suzuki, Hideyuki; and Fukui, Terunobu, to Oji Paper Co., Ltd. Both-side coated paper comprising kaolin for usE of printing. 5,853,870, Cl. 428-329.000.
- Uchimura, Yoshinobu: *See—*
  - Eki, Toshio; Kuroda, Akemi; Otsuka, Toshiharu; and Uchimura, Yoshinobu, 5,853,562, Cl. 205-743.000.
- Uchiyama, Keiji: *See—*
  - Motomura, Katsumi; Uchiyama, Keiji; Kameyama, Nobuyuki; Imamura, Takashi; Mochida, Mitsuyoshi; Hata, Yukitsugu; and Takagi, Junichi, 5,854,946, Cl. 396-6.000.
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Dybro, Niels; Zia, Roseanna; Miller, H. John, III; and Raines, Jason, 5,853,135, Cl. 242-374.000.

Ziemkowski, Ted B.: *See—*

McBride, John G.; and Ziemkowski, Ted B., 5,854,943, Cl. 395-871.000.

Zieres, Gary A., to Zieres, Gary A. Hose coupling boot. 5,853,200, Cl. 285-45.000.

Ziglar, Paul; and Fausel, Stephen A. Concealable drying bar for clothes hamper. 5,852,883, Cl. 34-621.000.

Zimmer, Inc.: *See—*

Bertin, Kim C.; Burke, Dennis W.; Stalcup, Gregory C.; Bays, Rodney; Vanlaningham, Richard D.; Dietz, Terry L.; and O'Connor, Daniel, 5,853,415, Cl. 606-80.000.

Zimmerman, Wendy: *See—*

Blanchette, Robert A.; Farrell, Roberta L.; Hadar, Yitzhak; Merritt, Johnnie E., II; Snyder, Robert A.; Wendler, Philip A.; and Zimmerman, Wendy, 5,853,537, Cl. 162-72.000.

Zircon Corporation: *See—*

Heger, Charles E., 5,854,603, Cl. 342-85.000.

Zitzmann, Heinrich, to Sensotherm Temperatursensorik GmhH. Method for producing a sensor for sensing a temperature and/or a flow. 5,853,793, Cl. 427-8.000.

Znaiden, Alexander Paul; Crotty, Brian Andrew; and Johnson, Anthony, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Vitamin C delivery system. 5,853,741, Cl. 424-401.000.

Zogg, Scott J. F.: *See—*

Dodge, Robert D.; Hubert, James P.; Wash, Ricky D.; Minnick, James A.; and Zogg, Scott J. F., 5,854,787, Cl. 370-349.000.

Zolotov, Shaul; Braverman, Oleg; Genis, Margarita; and Biale, David, to Dead Sea Works Ltd. Low sodium edible salt composition and process for its preparation. 5,853,792, Cl. 426-649.000.

Zoss, Robert A., to General Mills, Inc. Label for a rolled food item. 5,853,836, Cl. 428-40.100.

Zukin, Stephen R.: *See—*

Javitt, Daniel C.; and Zukin, Stephen R., 5,854,286, Cl. 514-561.000.

Zurke, Janusz, to Pierburg Aktiegesellschaft. Electromagnetic control valve responsive to positive and negative pressures. 5,853,162, Cl. 251-129.190.

Zushi, Hirofumi: *See—*

Toyoshima, Hiroshi; Harada, Masashige; Nagano, Tomohiro; Nishio, Yoji; Hiraishi, Atsushi; Komiyaji, Kunihiro; Yahata, Hideharu; Fukui, Kenichi; Zushi, Hirofumi; Sonoda, Takahiro; Kawachino, Haruko; and Morita, Sadayuki, 5,854,562, Cl. 327-55.000.

Zushma, Stephen: *See—*

Cusumano, Joseph V.; Dankworth, David C.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; Gorda, Keith R.; Gutierrez, Antonio; Stanat, Jon E.; Thaler, Warren A.; and Zushma, Stephen, 5,854,186, Cl. 508-554.000.

Zwahlen, Laurent; Zwahlen, Milva; and Schaffer, Rudolf. System and method for high frequency transmission of television shots. 5,854,654, Cl. 348-159.000.

Zwahlen, Milva: *See—*

Zwahlen, Laurent; Zwahlen, Milva; and Schaffer, Rudolf, 5,854,654, Cl. 348-159.000.

ZymoGenetics, Inc.: *See—*

Raymond, Christopher K.; Holderman, Susan D.; and Vanaja, Erica, 5,854,039, Cl. 435-172.300.

Zyzyck, Leonard: *See—*

Jakubicki, Gary; and Zyzyck, Leonard, 5,854,195, Cl. 510-426.000.

Zyzyck, Leonard A.: *See—*

Gambogi, Joan E.; Jakubicki, Gary J.; and Zyzyck, Leonard A., 5,853,743, Cl. 424-405.000.

1 Figments 5, LLC: *See—*

Murphy, Willis A.; and Anderson, Peter J., 5,853,531, Cl. 156-555.000.

3D Systems, Inc.: *See—*

Snead, David E.; Smalley, Dennis R.; Cohen, Adam L.; Allison, Joseph W.; Vorgitch, Thomas J.; and Chen, Thomas P., 5,854,748, Cl. 364-468.260.

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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29th DAY OF DECEMBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- Abe, Tetsuya; and Nozaki, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Dustproof view finder. RE. 36,018, Cl. 396-382.000.
- Albats, Paul: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Abe, Tetsuya; and Nozaki, Katsuhiko, RE. 36,018, Cl. 396-382.000.
- Bio-Rad Laboratories, Inc.: *See—*
  - Grushka, Eli; and Liu, Cheng-Ming, RE. 36,011, Cl. 204-451.000.
- Cap, Heinrich; Papst, Georg F.; and Zuckschwert, Edgar, to Papst Licensing, GmbH. Disc storage device having an integrated driving system. RE. 36,016, Cl. 360-97.010.
- Chowdhuri, S. Zema: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Cohn, Arnold K.: *See—*
  - Moore, Robert R.; and Cohn, Arnold K., RE. 36,020, Cl. 606-144.000.
- Couet, Benoit: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Dedic, Ian J., to Fujitsu Limited. Voltage storage circuits. RE. 36,014, Cl. 341-172.000.
- Evans, Michael L.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Fujitsu Limited: *See—*
  - Dedic, Ian J., RE. 36,014, Cl. 341-172.000.
- Grushka, Eli; and Liu, Cheng-Ming, to Bio-Rad Laboratories, Inc. Protein separations by capillary electrophoresis using amino acid-containing buffers. RE. 36 011, Cl. 204-451.000.
- Holenka, Jacques M.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Iu, Siu Leong, to Matsushita Electric Corporation of America. Apparatus and method for processing groups of fields in a video data compression system. RE. 36,015, Cl. 348-415.000.
- Jennmar Corporation: *See—*
  - Stankus, John C., RE. 36,019, Cl. 405-259.600.
- Lee, Thomas H., to Rambus, Inc. Differential charge pump circuit with high differential and low common mode impedance. RE. 36,013, Cl. 327-536.000.
- Liu, Cheng-Ming: *See—*
  - Grushka, Eli; and Liu, Cheng-Ming, RE. 36,011, Cl. 204-451.000.
- Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., to Schlumberger Technology Corporation. Accelerator-based methods and apparatus for measurement-while-drilling. RE. 36,012, Cl. 250-269.400.
- Matsushita Electric Corporation of America: *See—*
  - Iu, Siu Leong, RE. 36,015, Cl. 348-415.000.
- Moore, Robert R.; and Cohn, Arnold K., to Orthopedic Systems, Inc. Method and apparatus for tying suture to bone. RE. 36,020, Cl. 606-144.000.
- Moriarty, Keith A.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Nozaki, Katsuhiko: *See—*
  - Abe, Tetsuya; and Nozaki, Katsuhiko, RE. 36,018, Cl. 396-382.000.
- Orthopedic Systems, Inc.: *See—*
  - Moore, Robert R.; and Cohn, Arnold K., RE. 36,020, Cl. 606-144.000.
- Papst, Georg F.: *See—*
  - Cap, Heinrich; Papst, Georg F.; and Zuckschwert, Edgar, RE. 36,016, Cl. 360-97.010.
- Papst Licensing, GmbH: *See—*
  - Cap, Heinrich; Papst, Georg F.; and Zuckschwert, Edgar, RE. 36,016, Cl. 360-97.010.
- Raith, Alex K.: *See—*
  - Uddenfeldt, Jan E.; and Raith, Alex K., RE. 36,017, Cl. 375-230.000.
- Rambus, Inc.: *See—*
  - Lee, Thomas H., RE. 36,013, Cl. 327-536.000.
- Roscoe, Bradley A.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Schlumberger Technology Corporation: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Shultz, William E. Apparatus and method for removing bearings. RE. 36,009, Cl. 29-898.080.
- Sloan, William R.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Stankus, John C., to Jennmar Corporation. Roof control system. RE. 36,019, Cl. 405-259.600.
- Stephenson, Kenneth E.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Telefonaktiebolaget LM Ericsson: *See—*
  - Uddenfeldt, Jan E.; and Raith, Alex K., RE. 36,017, Cl. 375-230.000.
- Truax, Jerome A.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Uddenfeldt, Jan E.; and Raith, Alex K., to Telefonaktiebolaget LM Ericsson. Cellular digital mobile radio system and method of transmitting information in a digital cellular mobile radio system. RE. 36,017, Cl. 375-230.000.
- Ziegler, Wolfgang P.: *See—*
  - Loomis, William A.; Stephenson, Kenneth E.; Truax, Jerome A.; Ziegler, Wolfgang P.; Chowdhuri, S. Zema; Couet, Benoit; Evans, Michael L.; Albats, Paul; Roscoe, Bradley A.; Holenka, Jacques M.; Moriarty, Keith A.; and Sloan, William R., RE. 36,012, Cl. 250-269.400.
- Zuckschwert, Edgar: *See—*
  - Cap, Heinrich; Papst, Georg F.; and Zuckschwert, Edgar, RE. 36,016, Cl. 360-97.010.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- AcroMed Corp.: *See—*
  - Asher, Marc A.; Strippgen, Walter E.; Heinig, Charles F.; and Carson, William, B1 129,900, Cl. 606-61.000.
- Asher, Marc A.; Strippgen, Walter E.; Heinig, Charles F.; and Carson, William, to AcroMed Corp. Spinal column retaining method and apparatus. B1 129,900, Cl. 606-61.000.
- Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, to Hebrew University Jerusalem, Yissum, Research Development Company of the. Doped sol-gel glasses for obtaining chemical interactions. B1 300,564, Cl. 525-54.100.

- Avramidis, Stellios A., to Borg-Warner Automotive Transmission & Engine Components Corporation. Pitch equalized chain with frequency modulated engagement. B1 915,675, Cl. 474-213.000.
- Borg-Warner Automotive Transmission & Engine Components Corporation: *See—*
  - Avramidis, Stellios A., B1 915,675, Cl. 474-213.000.
- Boudreau, Robert J.: *See—*
  - Cunard, Joel C.; and Boudreau, Robert J., B1 393,268, Cl. 472-120.000.
- Braun, Sergei: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, B1 300,564, Cl. 525-54.100.
- Carson, William: *See—*
  - Asher, Marc A.; Strippgen, Walter E.; Heinig, Charles F.; and Carson, William, B1 129,900, Cl. 606-61.000.
- Cunard, Joel C.; and Boudreau, Robert J., to Hedstrom Corporation. Tandem swing. B1 393,268, Cl. 472-120.000.
- Hebrew University Jerusalem, Yissum, Research Development Company of the: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, B1 300,564, Cl. 525-54.100.
- Hedstrom Corporation: *See—*
  - Cunard, Joel C.; and Boudreau, Robert J., B1 393,268, Cl. 472-120.000.
- Heinig, Charles F.: *See—*
  - Asher; Marc A.; Strippgen, Walter E.; Heinig, Charles F.; and Carson, William, B1 129,900, Cl. 606-61.000.
- Hosseini, Sam S., to Mikron Industries. Window component extrusion. B1 362,917, Cl. D25-124.000.
- Mikron Industries: *See—*
  - Hosseini, Sam S., B1 362,917, Cl. D25-124.000.
- Novak, Joel S.: *See—*
  - Parsons, Natan E.; and Novak, Joel S., B1 839,039, Cl. 210-143.000.
- Ottolenghi, Michael: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, B1 300,564, Cl. 525-54.100.
- Parsons, Natan E.; and Novak, Joel S., to Recurrent Solutions Limited Partnership. Automatic flow-control device. B1 839,039, Cl. 210-143.000.
- Petkovsek, Glenn. Mailpiece and/or shipping item for special mailing and a method for assembling a mailpiece and/or shipping item requiring special services. B1 573,277, Cl. 283-79.000.
- Pol Scarpe Sportive S.r.l.: *See—*
  - Polegato, Mario, B1 044,096, Cl. 36-3.00R.
- Polegato, Mario, to Pol Scarpe Sportive S.r.l. Sole structure for footwear. B1 044,096, Cl. 36-3.00R.
- Recurrent Solutions Limited Partnership: *See—*
  - Parsons, Natan E.; and Novak, Joel S., B1 839,039, Cl. 210-143.000.
- Roberts, Joseph A., to Rock Ltd. Method of making high density self-aligning conductive networks and contact clusters. B1 343,616, Cl. 29-846.000.
- Rock Ltd.: *See—*
  - Roberts, Joseph A., B1 343,616, Cl. 29-846.000.
- Strippgen, Walter E.: *See—*
  - Asher, Marc A.; Strippgen, Walter E.; Heinig, Charles F.; and Carson, William, B1 129,900, Cl. 606-61.000.
- Zusman, Rivka: *See—*
  - Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Rivka, B1 300,564, Cl. 525-54.100.

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- A. K. Technical Laboratory, Inc.: *See—*
  - Takeuchi, Setsuyuki; and Ibe, Nobukuni, 403,243, Cl. D9-532.000.
- A/S Eccolet Sko: *See—*
  - Truelsen, Ejnar, 403,144, Cl. D2-953.000.
  - Truelsen, Ejnar, 403,145, Cl. D2-957.000.
- Abalos, Santiago C.; and Mueller, Franz, to Navistar International Transportation Corp. Exterior of a grille and grille insert for a truck. 403,285, Cl. D12-163.000.
- Abe, Toru: *See—*
  - Mehaffey, David E.; Rarick, Ty S.; Abe, Toru; and Fujita, Kazuhiro, 403,475, Cl. D32-21.000.
- Acushnet Company: *See—*
  - Erickson, John J., 403,147, Cl. D2-962.000.
- Adams, Larry Winston. Doll. 403,379, Cl. D21-631.000.
- Affholter, Erik. Belt for applying biomagnetic treatments. 403,422, Cl. D24-188.000.
- Aktiebolaget Electrolux: *See—*
  - Vaughan, James; Ryhr, Per-Olov; and Järvelä , Erkki, 403,476, Cl. D32-21.000.
- Allen Engineering Corp.: *See—*
  - Allen, J. Dewayne, 403,332, Cl. D15-31.000.
- Allen, J. Dewayne, to Allen Engineering Corp. Ventilated quick access support hood system for riding trowels. 403,332, Cl. D15-31.000.
- Allen, Walter Dale; Grabo, Keith Eric; Croyle, Warren Lee; Nowacki, Marc Christopher; and Hubbell, David Ray, Jr., to Goodyear Tire & Rubber Company, The. Tire tread. 403,281, Cl. D12-147.000.
- Allgeier, David M. J.: *See—*
  - Essex, John D.; McKnight, Darwin T.; Allgeier, David M. J.; and Waltz, Kevin S., 403,482, Cl. D32-331.000.
- Alltrista Plastics Corporation: *See—*
  - Richardson, Sam, III, 403,413, Cl. D23-280.400.
- American Tack & Hardware Co., Inc.: *See—*
  - Joss, Michael S., 403,442, Cl. D26-26.000.
- Andrus, Leonard C.; Green, Ronald D.; and Higgins, Bruce, to Brass-Craft Manufacturing Company. Hand held showerhead. 403,408, Cl. D23-223.000.
- APCO Graphics, Inc.: *See—*
  - Cobb, Ronald W.; Bell, Benjamin H.; Bowling, Ray C.; and Nicolaides, Charles, 403,360, Cl. D20-41.000.
- Applied Materials, Inc.: *See—*
  - Or, David Tsuenwai, 403,337, Cl. D15-199.000.
- Arai, Atsushi: *See—*
  - Ishii, Yasuhiro; and Arai, Atsushi, 403,271, Cl. D11-221.000.
- Arbuckle, James F., to Pelco. Camera enclosure. 403,340, Cl. D16-203.000.
- Arfele, Robert W.; Espiritu, George A.; and Martin, Ed R., Jr., to Dresser Industries, Inc. Four blade drill bit. 403,335, Cl. D15-139.000.
- Arfele, Robert W.; Espiritu, George A.; and Martin, Ed R., Jr., to Dresser Industries, Inc. Five blade drill bit. 403,336, Cl. D15-139.000.
- Ariyama, Hiroshi: *See—*
  - Kurata, Soji; Ariyama, Hiroshi; and Perez, Daniel, 403,261, Cl. D10-92.000.
- Ark Foundation: *See—*
  - Nissim, Ofer; and Fernandez, Maria A., 403,372, Cl. D21-480.000.
  - Nissim, Ofer; and Fernandez, Maria A., 403,373, Cl. D21-480.000.
  - Nissim, Ofer; and Fernandez, Maria A., 403,374, Cl. D21-480.000.
  - Nissim, Ofer; and Fernandez, Maria A., 403,375, Cl. D21-480.000.
  - Nissim, Ofer, 403,376, Cl. D21-480.000.
  - Nissim, Ofer; and Fernandez, Maria A., 403,377, Cl. D21-480.000.
- Armament Systems and Procedures, Inc.: *See—*
  - Parsons, Kevin L., 403,447, Cl. D26-37.000.
- Arzoumanian, Allen S. In-line multiple fuse holder. 403,307, Cl. D13-178.000.
- Ashworth, Steven W.: *See—*
  - Cruz, Anthony V.; and Ashworth, Steven W., 403,201, Cl. D7-350.000.
- Astra Aktiebolag: *See—*
  - Lundbom, Jan; and Näslund, Åsa, 403,396, Cl. D24-101.000.
- ATC International Japan Co., Ltd.: *See—*
  - Watanabe, Motoyoshi, 403,289, Cl. D12-209.000.
- Au, Ho Ching. Container for jewelry, watches, and glasses. 403,158, Cl. D3-294.000.
- aidAube, Martin: *See—*
  - Cadotte, Germain; and Aube, Martin, 403,272, Cl. D12-7.000.
  - Cadotte, Germain; and Aube, Martin, 403,273, Cl. D12-7.000.
- Aull, Joseph Louis; McElfresh, Jeffrey Joe; Sundkvist, Karl Eric; Wesolowski, Piotr Janusz; and Gnoerich, Wolfgang, to Goodyear Tire & Rubber Company, The. Tire tread. 403,282, Cl. D12-147.000.
- Awbrey, Jerry, to Esoteric Audio U.S.A., Inc. Electrical connector. 403,302, Cl. D13-133.000.
- Awbrey, Jerry; and Brown, Michael Dewayne, to Esoteric Audio U.S.A., Inc. Expandable power block. 403,304, Cl. D13-151.000.
- Balch, Howard S.: *See—*
  - O'Brien, Cathy Mishek; Paulson, J. Craig; and Balch, Howard S., 403,312, Cl. D14-114.000.
- Baldwin, Joseph R.; and Rivera, Flavio, to Creative Minds of Long Island, Inc. Holder for securing eyeglasses to a sunvisor. 403,294, Cl. D12-417.000.
- Baldwin, Joseph R.; and Rivera, Flavio, to Creative Minds Of Long Island, Inc. Holder for securing eyeglasses to a sunvisor. 403,295, Cl. D12-417.000.
- Ball, Graham Stanley; Johenning, Christopher Paul; Taube, John Janis; Melia, Janet Lynn; and Mantheiy, Christopher Alan, to Goodyear Tire & Rubber Company, The. Tire tread. 403,283, Cl. D12-149.000.
- Bandy, Gregory S.; and Keierleber, Kevin D., to Source Three, Inc. Holder for multiple compact digital disks. 403,197, Cl. D6-634.000.
- Bausch & Lomb Incorporated: *See—*
  - Conway, Simon M., 403,344, Cl. D16-327.000.
  - Flanagan, Mark J., 403,343, Cl. D16-326.000.
  - Flanagan, Mark J., 403,345, Cl. D16-327.000.
- Bearden, Delbert. Measuring tape. 403,258, Cl. D10-72.000.
- Beaumont, Judson, to Straight Line Designs, Inc. Crib. 403,174, Cl. D6-390.000.
- Beck, Benjamin; and Walter, Glen, to NBX Corporation. Telephone console. 403,321, Cl. D14-149.000.
- Beckett Corporation: *See—*
  - Walker, John Miles; and Enns, Douglas Brent, 403,329, Cl. D15-7.000.
- Beiersdorf AG: *See—*
  - Taylor, Richard A.; Hinds, Sherry A.; and Wiesemann, S. Michael, 403,424, Cl. D24-190.000.
  - Taylor, Richard A.; Hinds, Sherry A.; and Wiesemann, S. Michael, 403,425, Cl. D24-192.000.

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Bell, Benjamin H.: *See—*
  Cobb, Ronald W.; Bell, Benjamin H.; Bowling, Ray C.; and Nicolaides, Charles, 403,360, Cl. D20-41.000.
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  Neault, Michel; and Bellerose, René, 403,276, Cl. D12-101.000.
Benktzon, Maria; and Juhlin, Sven-Eric, to Isaberg Rapid AB. Staple extractor. 403,218, Cl. D8-48.000.
Berenguer, Jose: *See—*
  Cerda, Juan L.; Berenguer, Salvador; and Berenguer, Jose, 403,380, Cl. D21-633.000.
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  Cerda, Juan L.; Berenguer, Salvador; and Berenguer, Jose, 403,380, Cl. D21-633.000.
Berki, Andy Endre. Game board. 403,369, Cl. D21-362.000.
Bernard, Randy Levy; Fisher, Constance Lee; Peck, Daniel Charles; and Dreier, Kimberly Ann, to Procter & Gamble Company, The. Disposable absorbent article waistband. 403,400, Cl. D24-126.000.
Bernard, Randy Levy; Fisher, Constance Lee; Peck, Daniel Charles; and Dreier, Kimberly Ann, to Procter & Gamble Company, The. Disposable absorbent article side panel. 403,401, Cl. D24-126.000.
Bernard, Randy Levy; Fisher, Constance Lee; and Dreier, Kimberly Ann, to Procter & Gamble Company, The. Disposable absorbent article flap. 403,403, Cl. D24-126.000.
Bernard, Randy Levy; Fisher, Constance Lee; Peck, Daniel Charles; and Dreier, Kimberly Ann, to Procter & Gamble Company, The. Disposable absorbent article chassis. 403,404, Cl. D24-126.000.
Bernard, Randy Levy: *See—*
  Dreier, Kimberly Ann; Bernard, Randy Levy; Fisher, Constance Lee; and Peck, Daniel Charles, 403,402, Cl. D24-126.000.
Bernatz, Thomas H. Non-stackable container for cleaning golf balls, and golf equipment. 403,483, Cl. D32-35.000.
Berry Plastics Corporation: *See—*
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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 29, 1998

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99	5,853,030
149	5,853,031
CLASS 139	
449	5,853,032
CLASS 140	
123	5,853,033
CLASS 141	
330	5,853,034
CLASS 144	
144.1	5,853,035
154.5	5,853,036
329	5,853,037
357	5,853,038
CLASS 148	
113	5,853,499
247	5,853,500
319	5,853,502
320	5,853,503
324	5,853,504
327	5,853,501
433	5,853,505
514	5,853,506
519	5,853,507
550	5,853,508
CLASS 149	
18	5,854,442
CLASS 152	
450	5,853,509
CLASS 156	
64	5,853,510
71	5,853,511
78	5,853,512
89.12	5,853,513
	5,853,514
89.16	5,853,515
102	5,853,516
196	5,853,517
245	5,853,518
247	5,853,519
293	5,853,520
345	5,853,521
	5,853,522
	5,853,523
358	5,853,524
396	5,853,525
	5,853,526
470	5,853,527
474	5,853,528
512	5,853,529
541	5,853,530
555	5,853,531
584	5,853,532
	5,853,533
CLASS 160	
178.1 V	5,853,039
299	5,853,040
CLASS 162	
23	5,853,534
30.1	5,853,535
65	5,853,536
72	5,853,537
101	5,853,538
112	5,853,539
135	5,853,540
141	5,853,541
168.2	5,853,542
198	5,853,543
203	5,853,544
343	5,853,545
344	5,853,546
348	5,853,547
CLASS 164	
312	5,853,041
456	5,853,042
476	5,853,043
516	5,853,044
CLASS 165	
10	5,853,045
76	5,853,046
151	5,853,047
CLASS 166	
279	5,853,048
380	5,853,049
CLASS 169	
47	5,853,050
CLASS 172	
824	5,853,051
CLASS 173	
15	5,853,052
CLASS 174	
58	5,854,443
84 R	5,854,444
99 B	5,854,445
CLASS 175	
101	5,853,053
267	5,853,054
340	5,853,055
424	5,853,056
CLASS 177	
17	5,854,446
25.14	5,854,447
CLASS 178	
18.01	5,854,448

18.02	5,854,449
18.04	5,854,450
18.05	5,854,451

CLASS 180

16	5,853,057
65.1	5,853,058
65.6	5,853,059
69.2	5,853,060
190	5,853,061
206	5,853,062
300	5,853,063
422	5,853,064

CLASS 181

290	5,854,452
293	5,854,453

CLASS 182

18	5,853,065
20	5,853,066
221	5,853,067

CLASS 184

1.5	5,853,068

CLASS 187

247	5,854,454

CLASS 188

24.19	5,853,069
73.37	5,853,070
352	5,853,071

CLASS 192

42	5,853,072
46	5,853,073
58.682	5,853,074
70.16	5,853,075
87 14	5,853,076

CLASS 198

383	5,853,077
395	5,853,079
626.1	5,853,080
644	5,853,081
752	5,853,082

CLASS 200

1 B	5,854,455
11 TW	5,854,456
61.51	5,854,457
61.54	5,854,458
264	5,853,083
345	5,853,084

CLASS 201

7	5,853,548

CLASS 203

2	5,853,549
29	5,853,550
70	5,853,551

CLASS 204

192.26	5,853,552
286	5,853,553
451	RE. 36,011
487	5,853,554
537	5,853,555

CLASS 205

101	5,853,556
109	5,853,557
119	5,853,558
157	5,853,559
405	5,853,560
646	5,853,561
743	5,853,562

CLASS 206

5.1	5,853,085
315.6	5,853,086
380	5,853,087
427	5,853,088

CLASS 208

13	5,853,563
33	5,853,564
48 AA	5,853,565
109	5,853,566
132	5,853,567
160	5,853,568
212	5,853,569
216 PP	5,853,570

CLASS 209

167	5,853,571
534	5,853,089

CLASS 210

44 S	5,853,587
87	5,853,572
96.1	5,853,573
103	5,853,574
136	5,853,575
143	B1 839,039
150	5,853,576
168	5,853,577
169	5,853,578
170	5,853,579
172	5,853,580
241	5,853,581
321.89	5,853,582
340	5,853,583
390	5,853,584
394	5,853,585
406	5,853,586
605	5,853,588
	5,853,589
609	5,853,590
619	5,853,591
639	5,853,592
652	5,853,593
698	5,853,595
708	5,853,596
712	5,853,597
724	5,853,598
739	5,853,599
789	5,853,600

CLASS 211

13.1	5,853,090
40	5,853,091
70.6	5,853,092

CLASS 215

237	5,853,093
247	5,853,094
252	5,853,095
261	5,853,096
295	5,853,097

CLASS 216

2	5,853,601
46	5,853,602
84	5,853,603
88	5,853,604

CLASS 219

69.12	5,854,459
121.67	5,854,460
136	5,854,461
137 WM	5,854,462
145.22	5,854,463
207	5,854,464
216	5,854,465
227	5,854,466
443	5,854,468
521	5,854,469
528	5,854,470
540	5,854,471
549	5,854,472
626	5,854,473

CLASS 220

3.7	5,853,098
7	5,853,099
254	5,853,100
284	5,853,101
410	5,853,102
562	5,853,103
574	5,853,104
575	5,853,105
731	5,853,106
733	5,853,107

CLASS 221

163	5,853,108

CLASS 222

83	5,853,109
212	5,853,111
371	5,853,112
379	5,853,113
479	5,853,114
531	5,853,115
593	5,853,605

CLASS 224

404	5,853,116

CLASS 225

4	5,853,117

CLASS 226

173	5,853,118

CLASS 228

112.1	5,853,119

CLASS 229

120.09	5,853,120
188	5,853,121

CLASS 230

492	5,854,481

CLASS 235

379	5,854,581
383	5,854,474
	5,854,475
	5,854,476
384	5,854,477
462	5,854,478
	5,854,479
492	5,854,480

CLASS 236

44 C	5,853,122
51	5,853,123

CLASS 239

5	5,853,124
63	5,853,125
223	5,853,126
227	5,853,127
329	5,853,128
456	5,853,129
548	5,853,130

CLASS 241

100	5,853,131
172	5,853,132

CLASS 242

18 R	5,853,133
360	5,853,134
374	5,853,135
388.1	5,853,136
473.6	5,853,137
525.4	5,853,138
530.1	5,853,139
534	5,853,140
552	5,853,141
615.2	5,853,142

CLASS 244

3.21	5,853,143
17.13	5,853,144
17.25	5,853,145
31	5,853,147
110 B	5,853,148
121	5,853,149
137.2	5,853,150
158 A	5,853,151
221	5,853,152

CLASS 248

125.2	5,853,153
148	5,853,154
150	5,853,155
210	5,853,156
213.2	5,853,157
311.2	5,853,158
674	5,853,159

CLASS 249

103	5,853,606

CLASS 250

221	5,854,482
231.13	5,854,483
269 4	RE. 36,012
287	5,854,484
	5,854,485
288	5,854,486
306	5,854,487
309	5,854,488
370.06	5,854,489
492.23	5,854,490
559.31	5,854,491

CLASS 251

30.02	5,853,160
129.01	5,853,161
129 19	5,853,162

CLASS 252

8	5,853,607
62 6	5,853,608
68	5,853,609
70	5,853,610
89	5,853,611
299.61	5,853,612
299.63	5,853,613
301.21	5,853,615
301.4 R	5,853,614
315.5	5,853,616
321	5,853,617
	5,853,618
391	5,853,619
394	5,853,620
500	5,853,621
512	5,853,622

CLASS 254

100	5,853,163
213	5,853,164
366	5,853,165

CLASS 256

59	5,853,166
66	5,853,167

CLASS 257

31	5,854,492
39	5,854,493
57	5,854,494
77	5,854,495
	5,854,496
206	5,854,497
292	5,854,498
295	5,854,499
300	5,854,500
316	5,854,501
321	5,854,502
347	5,854,503
358	5,854,504
410	5,854,505
429	5,854,506
506	5,854,509
529	5,854,510
686	5,854,507
691	5,854,534
713	5,854,511
735	5,854,512
737	5,854,513
746	5,854,514
775	5,854,515
786	5,854,508

CLASS 260

998.2	5,853,623

CLASS 261

81	5,853,624
106	5,853,625

CLASS 264

1.25	5,853,626
2.3	5,853,627
6	5,853,628
35	5,853,629
40.5	5,853,630
40.6	5,853,631
42	5,853,632
54	5,853,633
86	5,853,634
103	5,853,635
129	5,853,636
132	5,853,637
154	5,853,638
177.19	5,853,639
180	5,853,640
211	5,853,641
236	5,853,642
272.15	5,853,643
322	5,853,644
331.15	5,853,645
338	5,853,646
345	5,853,647
348	5,853,648
446	5,853,649
511	5,853,650
512	5,853,651
614	5,853,652
625	5,853,653
635	5,853,654

CLASS 266

44	5,853,655
47	5,853,656
145	5,853,657
217	5,853,658

CLASS 269

6	5,853,168
21	5,853,169

CLASS 271

69	5,853,170
126	5,853,171

CLASS 273

108.5	5,853,172
246	5,853,173
447	5,853,174

CLASS 277

235 B	5,853,175
312	5,853,176
559	5,853,177
636	5,853,178

CLASS 280

11.22	5,853,179
32.6	5,853,180
47.35	5,853,181
87.042	5,853,182
124 179	5,853,183
242.1	5,853,184
414.1	5,853,185
491.3	5,853,186
495	5,853,187
627	5,853,188
652	5,853,189
728.2	5,853,190
730.2	5,853,191
739	5,853,192
748	5,853,193
777	5,853,194
784	5,853,195

CLASS 283

79	B1 573,277
81	5,853,196
91	5,853,197

CLASS 285

41	5,853,198
45	5,853,199
	5,853,200
179	5,853,201
256	5,853,202
259	5,853,203
305	5,853,204

CLASS 290

53	5,854,516

CLASS 292

87	5,853,205
201	5,853,206
256.6	5,853,207

CLASS 294

19.1	5,853,208
	5,853,209
25	5,853,210
116	5,853,211
147	5,853,212
158	5,853,213
161	5,853,214

CLASS 296

24.1	5,853,215
78.1	5,853,216
	5,853,217
153	5,853,218

CLASS 297

5	5,853,219
188.16	5,853,220
344.24	5,853,221
353	5,853,222
411.36	5,853,223

CLASS 299

13	5,853,224

CLASS 301

5.3	5,853,225
	5,853,226
5.7	5,853,227
37.37	5,853,228

CLASS 303

3	5,853,229
113.4	5,853,230
119.2	5,853,231

CLASS 305

123	5,853,233

CLASS 307

10.8	5,854,517
118	5,854,518
125	5,854,519
141	5,854,520

CLASS 310

12	5,854,521
89	5,854,522
90	5,854,524
214	5,854,525
254	5,854,526
313 A	5,854,527
323	5,854,528
	5,854,529
339	5,854,530

CLASS 312

31	5,853,234
117	5,853,235
223.6	5,853,236
257.1	5,853,237
304	5,853,238
348.2	5,853,239

CLASS 313

362 1	5,854,531
440	5,854,532
487	5,854,533
636	5,854,535

CLASS 315

5	5,854,536
82	5,854,537
105	5,854,538
169.1	5,854,540
185 R	5,854,541
208	5,854,539
291	5,854,542
307	5,854,543

CLASS 318

270	5,854,544
369	5,854,545
458	5,854,546
716	5,854,547
721	5,854,548

CLASS 320

110	5,854,549
127	5,854,550
163	5,854,551

CLASS 324

146	5,854,552
207.16	5,854,553
210	5,854,554
539	5,854,555
541	5,854,556
700	5,854,557
754	5,854,558
	5,854,559

CLASS 326

27	5,854,560

CLASS 327

55	5,854,562
74	5,854,563
78	5,854,564
202	5,854,565
403	5,854,566
437	5,854,567
534	5,854,561
536	RE. 36,013
537	5,854,568
543	5,854,569

CLASS 329

304	5,854,570

CLASS 330

129	5,854,571
282	5,854,572
292	5,854,573
293	5,854,574

CLASS 331

10	5,854,575
57	5,854,576
117 D	5,854,577
117 R	5,854,578

CLASS 333

193	5,854,579

CLASS 335

132	5,854,580

CLASS 337

169	5,854,582
290	5,854,583
333	5,854,584
367	5,854,585

CLASS 338

21	5,854,586
22 SD	5,854,587

CLASS 340

541	5,854,588
551	5,854,589
650	5,854,590
825.17	5,854,591
825 21	5,854,592
825.22	5,854,593
825.44	5,854,595
825.72	5,854,594

CLASS 341

50	5,854,596
51	5,854,597
120	5,854,598
143	5,854,599
155	5,854,600
172	RE 36,014

CLASS 342

13	5,854,601
25	5,854,602
85	5,854,603
175	5,854,604

357	5,854,605
359	5,854,609
372	5,854,610
373	5,854,611
383	5,854,612

CLASS 343

702	5,854,606
853	5,854,607
895	5,854,608

CLASS 345

32	5,854,613
89	5,854,879
90	5,854,614
99	5,854,615
100	5,854,616
102	5,854,617
104	5,854,881
115	5,854,618
116	5,854,619
153	5,854,620
158	5,854,621
161	5,854,622
167	5,854,623
169	5,854,624
173	5,854,625
211	5,854,627
340	5,854,628
341	5,854,629
352	5,854,630
419	5,854,631
431	5,854,633
473	5,854,634
507	5,854,635
	5,854,636
512	5,854,637
	5,854,638
	5,854,639
515	5,854,640
517	5,854,641

CLASS 347

8	5,854,643
40	5,854,642
54	5,854,644
68	5,854,645
85	5,854,646
101	5,854,647
104	5,854,648
106	5,854,649
122	5,854,650
241	5,854,651
246	5,854,652
255	5,854,653

CLASS 348

159	5,854,654
247	5,854,655
311	5,854,656
340	5,854,657
415	RE. 36,015
419	5,854,658
458	5,854,659
466	5,854,660
602	5,854,661
790	5,854,662

CLASS 349

42	5,854,663
92	5,854,664
119	5,854,665
180	5,854,666
187	5,854,667

CLASS 351

169	5,854,669
206	5,854,668

CLASS 353

20	5,853,240

CLASS 355

25	5,854,670
53	5,854,671
73	5,854,672

CLASS 356

71	5,854,673
237	5,854,674
241	5,854,675
315	5,854,676
350	5,854,677
	5,854,678
372	5,854,679
406	5,854,680
426	5,854,682
430	5,854,683
440	5,854,684
	5,854,685

CLASS 358

296	5,854,686
	5,854,687
	5,854,688
298	5,854,689
299	5,854,690
403	5,854,691
468	5,854,692
	5,854,693
473	5,854,694
498	5,854,695
	5,854,696

CLASS 359

34	5,854,697
119	5,854,698
125	5,854,699
136	5,854,700
137	5,854,701
152	5,854,702
167	5,854,703
189	5,854,704
196	5,854,705
465	5,854,706
487	5,854,707
512	5,854,708
529	5,854,709
559	5,854,710
697	5,854,711
823	5,854,712
850	5,854,713

CLASS 360

51	5,854,714
53	5,854,715
65	5,854,717
68	5,854,718
69	5,854,719
	5,854,720
77.04	5,854,722
96.5	5,854,723
97.01	RE. 36,016
104	5,854,724
106	5,854,721
	5,854,725
121	5,854,726
125	5,854,727
132	5,854,728

CLASS 361

4	5,854,729
38	5,854,730
93	5,854,731
120	5,854,732
200	5,854,764
212	5,854,733
321.5	5,854,734
681	5,854,735
683	5,854,736
686	5,854,737
695	5,854,738
703	5,854,739
760	5,854,740
813	5,854,741

CLASS 362

105	5,853,241
191	5,853,242

CLASS 363

71	5,854,743
97	5,854,742

CLASS 364

154	5,854,744
167.01	5,854,745
468.13	5,854,746
468.21	5,854,747
468.26	5,854,748
472.02	5,854,749
474.08	5,854,751
478.04	5,854,750
489	5,854,752
	5,854,753
578	5,854,754
703	5,854,755
724.16	5,854,756
725.03	5,854,757
726 02	5,854,758
746.1	5,854,759

CLASS 365

49	5,854,760
	5,854,761
185.04	5,854,762
189.04	5,854,763
201	5,854,765
218	5,854,766
219	5,854,767
226	5,854,768
230.02	5,854,769
230.03	5,854,770
	5,854,771
230 06	5,854,772

CLASS 366

76.9	5,853,243
141	5,853,244

CLASS 368

10	5,854,773
	5,854,774

CLASS 369

13	5,854,775
36	5,854,776
54	5,854,777
59	5,854,778
	5,854,779
112	5,854,780
124	5,854,781
192	5,854,782.

CLASS 370

232	5,854,783
311	5,854,784
332	5,854,785
335	5,854,786
349	5,854,787
395	5,854,789
401	5,854,790
412	5,854,791
428	5,854,792
503	5,854,793
509	5,854,794

CLASS 371

21.1	5,854,795
	5,854,796
22.1	5,854,797
27.1	5,854,798
	5,854,801
37.1	5,854,799
37.7	5,854,800

CLASS 372

22	5,854,802
31	5,854,803
38	5,854,804
70	5,854,805
82	5,854,806

CLASS 373

89	5,854,807

CLASS 374

109	5,853,246

CLASS 375

224	5,854,808
230	RE. 36,017
240	5,854,809
242	5,854,810
296	5,854,811
	5,854,812
308	5,854,813
340	5,854,814
343	5,854,815
376	5,854,816

CLASS 376

237	5,854,817
409	5,854,818

CLASS 378

34	5,854,819
51	5,854,820
53	5,854,821
112	5,854,833
122	5,854,822

CLASS 379

15	5,854,823
34	5,854,824
	5,854,825
68	5,854,826
88.02	5,854,827
93.31	5,854,828
100.12	5,854,829
100.15	5,854,830
102.06	5,854,831
111	5,854,832
113	5,854,834
119	5,854,835
207	5,854,836
265	5,854,837
413	5,854,839

CLASS 380

9	5,854,840
49	5,854,841

CLASS 381

25	5,854,843
79	5,854,844
108	5,854,845
174	5,854,846
302	5,854,847
357	5,854,848

CLASS 382

100	5,854,849
128	5,854,850
132	5,854,851
151	5,854,852
176	5,854,853
	5,854,854
187	5,854,855
232	5,854,856
	5,854,857
250	5,854,858
261	5,854,859
305	5,854,860
312	5,854,861

CLASS 383

95	5,853,247

CLASS 384

96	5,853,245
192	5,853,248
492	5,853,249
544	5,853,250

CLASS 385

2	5,854,862
12	5,854,863
30	5,854,864
31	5,854,865
39	5,854,866
49	5,854,867
50	5,854,868
92	5,854,869
122	5,854,870
123	5,854,871
133	5,854,872

CLASS 386

92	5,854,873
118	5,854,874
120	5,854,875
124	5,854,876
416	5,854,681

CLASS 388

812	5,854,877

CLASS 395

94	5,854,880
109	5,854,882
	5,854,883
110	5,854,884
113	5,854,885
114	5,854,886
116	5,854,888
183.19	5,854,889
187.01	5,854,890
188.01	5,854,891
200.13	5,854,887
200.34	5,854,892
	5,854,893
200.43	5,854,894
200.51	5,854,895
	5,854,896
200.54	5,854,897
200.61	5,854,898
200.68	5,854,899
	5,854,900
200.75	5,854,901
200.77	5,854,902
200.79	5,854,903
280	5,854,904
284	5,854,905
290	5,854,906
308	5,854,907
	5,854,908
309	5,854,909
	5,854,910
383	5,854,911
384	5,854,912
386	5,854,913
392	5,854,914
426	5,854,632
500	5,854,915
	5,854,916
551	5,854,917
555	5,854,918
561	5,854,919
562	5,854,920
586	5,854,921
595	5,854,922
605	5,854,923
704	5,854,924
	5,854,925
705	5,854,926
	5,854,927
	5,854,928
	5,854,929
	5,854,930
	5,854,931
709	5,854,933
	5,854,934
	5,854,935
710	5,854,936
800.01	5,854,937
800.3	5,854,938
800.41	5,854,939
825	5,854,940
	5,854,941
830	5,854,942
871	5,854,943
879	5,854,944
882	5,854,945

CLASS 396

6	5,854,946
55	5,854,947
93	5,854,948
200	5,854,949
310	5,854,950
378	5,854,951
382	RE. 36,018
413	5,854,952
535	5,854,954
611	5,854,953

CLASS 399

38	5,854,957
49	5,854,958
69	5,854,959
111	5,854,955
239	5,854,960
281	5,854,961
343	5,854,962
345	5,854,963
371	5,854,964
381	5,854,965

CLASS 400

88	5,853,251
103	5,853,252
120.02	5,853,253
207	5,853,254
237	5,853,255
624	5,853,256

CLASS 401

17	5,853,257
219	5,853,258

CLASS 402

3	5,853,259

CLASS 403

291	5,853,260
350	5,853,261

CLASS 404

71	5,853,262
94	5,853,263

CLASS 405

17	5,853,264
118	5,853,265
259.6	RE. 36,019

CLASS 406

143	5,853,266

CLASS 407

113	5,853,267
119	5,853,268

CLASS 408

1 R	5,853,269
87	5,853,270
146	5,853,271
199	5,853,272

CLASS 409

182	5,853,273
	5,853,274

CLASS 413

73	5,853,275

CLASS 414

255	5,853,276
408	5,853,277
462	5,853,278
	5,853,279
482	5,853,280
537	5,853,281
543	5,853,282
563	5,853,283
757	5,853,284

CLASS 416

96 R	5,853,285
193 A	5,853,286

CLASS 418

55.1	5,853,287
55.2	5,853,288

CLASS 419

67	5,854,966

CLASS 420

92	5,853,659
104	5,853,660
507	5,853,661

CLASS 422

40	5,853,662
50	5,853,663
54	5,853,664
62	5,853,665
65	5,853,666
	5,853,667
82.02	5,853,668
82.05	5,853,669
100	5,853,670
112	5,853,671
124	5,853,672
173	5,853,674
179	5,853,675
186.3	5,853,676
	5,854,967

CLASS 423

2	5,854,968
121	5,853,677
210	5,853,678
213.2	5,853,679
220	5,853,680
225	5,853,681
237	5,853,682
239.1	5,853,683
244.1	5,853,684
335	5,853,685
430	5,853,686
449.7	5,853,687
464	5,853,688
478	5,853,689
483	5,853,690
491	5,853,691
493	5,853,692
588	5,853,693

CLASS 424

1 21	5,853,694
1.65	5,853,695
1.85	5,853,696
9.2	5,853,697
9.363	5,853,699
9.52	5,853,698
47	5,853,700
	5,853,701
50	5,853,702
52	5,853,704
53	5,853,703
59	5,853,705
70.1	5,853,706
70.12	5,853,707
70.22	5,853,708
73	5,853,709
	5,853,710
78.03	5,853,711
	5,853,712
78.38	5,853,713
85.2	5,853,714
93.1	5,853,715
93.2	5,853,716
	5,853,718
93.21	5,853,717
	5,853,719
124	5,853,720
144.1	5,853,721
145.1	5,853,722
178.1	5,853,723
184.1	5,853,724
188.1	5,853,725
194.1	5,853,734
195.1	5,853,726
	5,853,727
	5,853,728
	5,853,729
	5,853,730
	5,853,731
	5,853,732
199 1	5,853,733
208.1	5,853,735
234.1	5,853,736
248.1	5,853,737
260.1	5,853,738
268.1	5,853,739
400	5,853,740
401	5,853,741
	5,853,742
405	5,853,743
422	5,853,744
423	5,853,745
426	5,853,746
439	5,853,747
	5,853,748
443	5,853,749
448	5,853,750

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449 5,853,751
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466 5,853,759
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488 5,853,762
489 5,853,763
499 5,853,764
581 5,853,765
632 5,853,766
659 5,853,767
667 5,853,768

CLASS 425
38 5,853,769
87 5,853,774
113 5,853,770
116 5,853,771
130 5,853,772
136 5,853,773
145 5,853,775
425.6 5,853,895
549 5,853,777
570 5,853,776

CLASS 426
20 5,853,779
82 5,853,780
89 5,853,778
110 5,853,781
474 5,853,782
496 5,853,783
536 5,853,784
565 5,853,785
582 5,853,786
595 5,853,788
634 5,853,789
644 5,853,790
646 5,853,791
649 5,853,792

CLASS 427
8 5,853,793
58 5,853,794
64 5,853,795
5,853,796
96 5,853,797
125 5,853,798
160 5,853,799
162 5,853,800
164 5,853,801
207.1 5,853,802
240 5,853,803
248.1 5,853,804
250 5,853,805
310 5,853,806
340 5,853,807
377 5,853,808
407.1 5,853,809
5,853,810
421 5,853,811
5,853,812
430.1 5,853,813
434.6 5,853,814
446 5,853,815
452 5,853,816
488 5,853,817
510 5,853,818
537 5,853,819
555 5,853,820
601 5,853,821

CLASS 428
1 5,853,822
7 5,853,823
11 5,853,824
15 5,853,825
5,853,826
23 5,853,827
34 5,853,828
35.7 5,853,829
5,853,830
5,853,831
36.2 5,853,832
36.6 5,853,833
36.9 5,853,834
38 5,853,835
40.1 5,853,836
43 5,853,837
5,853,838
64.1 5,853,839
5,853,840
99 5,853,841
5,853,842
116 5,853,843
119 5,853,844
126 5,853,845
131 5,853,846
141 5,853,847
143 5,853,848
5,853,849
148 5,853,850
149 5,853,851
167 5,853,852
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172 5,853,854
176 5,853,855
178 5,853,856
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195 5,853,858
196 5,853,859
204 5,853,860
207 5,853,861
215 5,853,862
223 5,853,863
261 5,853,864
297.4 5,853,865
312.8 5,853,866
317.9 5,853,867
323 5,853,868
325 5,853,869
329 5,853,870
332 5,853,871
5,853,872
336 5,853,873
343 5,853,874
349 5,853,875
352 5,853,876
364 5,853,878
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365 5,853,880
373 5,853,881
379 5,853,882
391 5,853,883
398 5,853,884
401 5,853,885
403 5,853,886
404 5,853,887
408 5,853,888
411.1 5,853,889
412 5,853,890
421 5,853,892
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422 5,853,894
429 5,853,896
457 5,853,897
488.4 5,853,898
507 5,853,899
514 5,853,900
537.5 5,853,901
593 5,853,902
669 5,853,903
670 5,853,904
690 5,853,905
5,853,906
694 SG 5,853,907

CLASS 429
7 5,853,908
13 5,853,909
17 5,853,910
41 5,853,911
61 5,853,912
63 5,853,913
66 5,853,914
99 5,853,915
190 5,853,916
194 5,853,917
218 5,853,918
223 5,853,919
229 5,853,920

CLASS 430
5 5,853,921
5,853,922
5,853,923
7 5,853,924
11 5,853,925
14 5,853,926
22 5,853,927
28 5,853,928
45 5,853,929
54 5,853,932
58 5,853,930
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59 5,853,933
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69 5,853,936
106.6 5,853,937
110 5,853,938
5,853,939
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122 5,853,941
137 5,853,942
5,853,943
5,853,944
139 5,853,945
5,853,946
165 5,853,947
166 5,853,948
191 5,853,949
204 5,853,950
264 5,853,951
270.1 5,853,952
5,853,953
5,853,954
270.12 5,853,955
280.1 5,853,957
286.1 5,853,958
320 5,853,959
321 5,853,960
325 5,853,961
331 5,853,962
399 5,853,963
440 5,853,964
491 5,853,956
496 5,853,965
501 5,853,966
502 5,853,967
506 5,853,968
510 5,853,969
536 5,853,970
555 5,853,971
569 5,853,972
859 5,853,935

CLASS 432
225 5,853,289

CLASS 433
86 5,853,290
176 5,853,291

CLASS 434
262 5,853,292
5,853,293

CLASS 435
4 5,853,973
5,853,974
5,853,975
5,853,976
5,853,977
5 5,853,978
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7.1 5,853,999
5,854,000
5,854,001
7.2 5,854,002
7.21 5,854,004
5,854,005
5,854,006
7.23 5,854,007
7.8 5,854,003
7.91 5,854,008
7.93 5,854,009
8 5,854,010
24 5,854,011
29 5,854,012
34 5,854,013
5,854,014
67 5,854,015
69.1 5,854,016
5,854,018
5,854,019
5,854,020
5,854,021
5,854,022
5,854,023
69.3 5,854,024
69.4 5,854,025
5,854,026
69.52 5,854,028
69.6 5,854,027
71.2 5,854,029
72 5,854,030
5,854,031
75 5,854,032
91.2 5,854,033
101 5,854,034
116 5,854,035
126 5,854,036
172.3 5,854,037
5,854,038
5,854,039
189 5,854,040
192 5,854,041
193 5,854,042
194 5,854,043
5,854,044
196 5,854,045
201 5,854,046
209 5,854,047
212 5,854,048
216 5,854,049
219 5,854,050
227 5,854,051
252.32 5,854,054
252.5 5,854,053
253.1 5,854,055
254.1 5,854,056
255.2 5,854,057
262 5,854,058
5,854,059
5,854,060
262.5 5,854,061
280 5,854,062
287.1 5,854,063
308.1 5,854,064
309.4 5,854,065
327 5,854,069
343.2 5,854,070
353 5,854,071
366 5,854,067
429 5,854,066

CLASS 436
12 5,854,073
24 5,854,072
46 5,854,074
5,854,075
69 5,854,076
110 5,854,077
133 5,854,078
152 5,854,079
178 5,854,080
501 5,854,081
518 5,854,082
523 5,854,083
541 5,854,084

CLASS 437
211 5,854,085

CLASS 438
18 5,854,086
26 5,854,087
39 5,854,088
41 5,854,089
47 5,854,090
70 5,854,091
106 5,854,092
5,854,093
111 5,854,094
166 5,854,096
182 5,854,097
201 5,854,099
202 5,854,100
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237 5,854,102
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255 5,854,095
257 5,854,108
275 5,854,109
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5,854,111
294 5,854,112
5,854,113
296 5,854,114
305 5,854,115
330 5,854,116
379 5,854,117
396 5,854,118
5,854,119
404 5,854,120
425 5,854,121
459 5,854,122
507 5,854,123
620 5,854,124
626 5,854,125
5,854,126
629 5,854,127
631 5,854,128
633 5,854,129
637 5,854,130
666 5,854,131
669 5,854,132
692 5,854,133
695 5,854,134
712 5,854,135
714 5,854,136
5,854,137
5,854,138
740 5,854,140
763 5,854,141
780 5,854,139

CLASS 439
17 5,853,294
63 5,853,295
92 5,853,296
327 5,853,297
352 5,853,298
419 5,853,299
517 5,853,300
622 5,853,301
629 5,853,302
637 5,853,303
721 5,853,304
787 5,853,305

CLASS 440
1 5,853,306
2 5,853,307
89 5,853,308

CLASS 441
40 5,853,309

CLASS 442
56 5,854,144
59 5,854,145
121 5,854,146
123 5,854,147
135 5,854,143
203 5,854,148
233 5,854,142
394 5,854,149

CLASS 445
1.24 5,853,310

CLASS 446
48 5,853,311
61 5,853,312
106 5,853,313
120 5,853,314
301 5,853,315

CLASS 451
11 5,853,316
288 5,853,317
425 5,853,318
548 5,853,319

CLASS 452
88 5,853,320
161 5,853,321

CLASS 453
63 5,853,322

CLASS 454
156 5,853,323

CLASS 455
68 5,854,969
90 5,854,970
126 5,854,971
5,854,972
245.1 5,854,973
330 5,854,974
408 5,854,975
411 5,854,976
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445 5,854,982
462 5,854,983
550 5,854,984
553 5,854,985
562 5,854,986

CLASS 463
2 5,853,324
13 5,853,325
37 5,853,326
39 5,853,327

CLASS 464
145 5,853,328

CLASS 472
25 5,853,329
60 5,853,330
88 5,853,331
120 B1 393,268
128 5,853,332

CLASS 473
42 5,853,333
142 5,853,334
196 5,853,335
282 5,853,336
365 5,853,337
562 5,853,338
576 5,853,339
579 5,853,340

CLASS 474
140 5,853,341
213 B1 915,675

CLASS 475
206 5,853,342
210 5,853,343
269 5,853,344
284 5,853,345
346 5,853,346

CLASS 476
595 5,853,787

CLASS 477
45 5,853,347
96 5,853,348
143 5,853,349
166 5,853,350

CLASS 478
357 5,853,877

CLASS 482
8 5,853,351
26 5,853,352
57 5,853,353
80 5,853,354
106 5,853,355
126 5,853,356
140 5,853,357

CLASS 483
1 5,853,358

CLASS 492
7 5,853,359

CLASS 493
178 5,853,360

CLASS 501
5 5,854,150
68 5,854,151
70 5,854,152
5,854,153
95.2 5,854,154
96.4 5,854,155
97.1 5,854,156
104 5,854,157
5,854,158
127 5,854,159
136 5,854,160

CLASS 502
41 5,854,161
45 5,854,162
56 5,854,163
109 5,854,164
117 5,854,165
153 5,854,166
216 5,854,167
225 5,854,168
242 5,854,169
308 5,854,170
330 5,854,171
349 5,854,172
417 5,854,173

CLASS 503
209 5,854,174
227 5,854,175

CLASS 504
105 5,854,176
214 5,854,179
320 5,854,177
326 5,854,178

CLASS 507
203 5,854,180

CLASS 508
180 5,854,181
186 5,854,182
316 5,854,183
405 5,854,184
492 5,854,185
554 5,854,186

CLASS 510
197 5,854,187
206 5,854,188
224 5,854,189
241 5,854,190
276 5,854,191
315 5,854,192
365 5,854,193
422 5,854,194
426 5,854,195
427 5,854,196
434 5,854,197
444 5,854,198

501 5,854,199
5,854,200
515 5,854,201

CLASS 514
1 5,854,202
5,854,203
5,854,204
5,854,205
5,854,207
3 5,854,208
6 5,854,209
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8 5,854,211
11 5,854,212
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12 5,854,206
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58 5,854,225
5,854,226
76 5,854,231
79 5,854,227
81 5,854,228
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173 5,854,230
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211 5,854,233
212 5,854,234
220 5,854,236
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233.8 5,854,243
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617 5,854,290
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725 5,854,292
844 5,854,293

CLASS 521
79 5,854,294
82 5,854,295
110 5,854,296
146 5,854,297

CLASS 522
25 5,854,298
66 5,854,299
85 5,854,300
90 5,854,301
172 5,854,302

CLASS 523
106 5,854,303
124 5,854,304
130 5,854,305
160 5,854,306
161 5,854,307
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179 5,854,309
309 5,854,311
404 5,854,312
406 5,854,313
416 5,854,314
427 5,854,315
442 5,854,316
508 5,854,317

CLASS 524
5 5,854,318
17 5,854,319
48 5,854,320
58 5,854,321
66 5,854,322
88 5,854,323
232 5,854,324
425 5,854,325
445 5,854,326
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451 5,854,328
457 5,854,329
495 5,854,330
505 5,854,331
507 5,854,332
539 5,854,334
571 5,854,335
588 5,854,336
591 5,854,337
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595 5,854,339
755 5,854,340
767 5,854,341
805 5,854,342
847 5,854,343
862 5,854,344

CLASS 525
54.1 B1 300,564
54.24 5,854,345
64 5,854,346
66 5,854,347
98 5,854,349
100 5,854,350
197 5,854,351
199 5,854,352
213 5,854,310
314 5,854,353
322 5,854,354
323 5,854,355
326.5 5,854,356
359.3 5,854,357
404 5,854,358
444 5,854,359
452 5,854,360
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